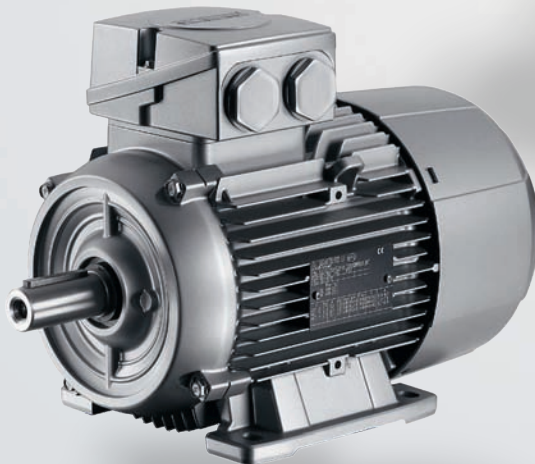


IEC Squirrel-Cage Motors

Frame sizes 56 to 450

Power range 0.06 to 1250 kW

Catalog D 81.1 · 2008



Motors

SIEMENS

Related catalogs

| | | | |
|---|---|--|---|
| <p>MOTEX Geared motors D 87.1</p> <p>E86060-K5287-A111-A2-7600</p> |  | <p>Industry Automation and Motion Control</p> <p>Information and ordering platform on the Internet at: www.siemens.com/automation/mall</p> |  |
| <p>FLENDER Standard Couplings MD 10.1</p> <p>E86060-K5710-A111-A2-7600</p> |  | <p>Additional documentation</p> <p>You will find all information material, such as brochures, catalogs, manuals and operating instructions for standard drive systems up-to-date on the Internet at the address http://www.siemens.com/motors/printmaterial</p> <p>You can order the listed documentation or download it in common file formats (PDF, ZIP).</p> | |
| <p>SINAMICS G110/SINAMICS G120 D 11.1 Inverter Chassis Units SINAMICS G120D Distributed Frequency Converters</p> <p>E86060-K5511-A111-A5-7600</p> |  | <p>Catalog CA 01 – Selection tool SD configurator</p> <p>The selection tool SD configurator is available in combination with the electronic catalog CA 01 on DVD.</p> | |
| <p>SINAMICS G130 D 11 Drive Converter Chassis Units SINAMICS G150 Drive Converter Cabinet Units</p> <p>E86060-K5511-A101-A4-7600</p> |  |  | |
| <p>MICROMASTER DA 51.2 MICROMASTER 420/430/440 Inverters 0.12 kW to 250 kW</p> <p>E86060-K5151-A121-A6-7600</p> |  | <p>Furthermore, the SD configurator can now be used on the Internet without installation. The SD configurator can be found in the Siemens Mall under the following address: http://www.siemens.com/sd-configurator</p> | |
| <p>MICROMASTER/COMBIMASTER DA 51.3 MICROMASTER 411 Inverter COMBIMASTER 411 Distributed Drive Solutions</p> <p>E86060-K5251-A131-A2-7600</p> |  | <p>In the main menu of the CA 01 under the tab "selection tool", you will find the SD configurators for low-voltage motors, MICROMASTER 4 inverters, SINAMICS G110 and SINAMICS G120 inverter chassis units as well as SINAMICS G120D distributed frequency converters and SIMATIC ET 200S FC and SIMATIC ET 200pro FC frequency converters for distributed I/O, complete with:</p> | |
| <p>Industrial Communication IK PI Part 5: ET 200 Distributed I/O ET 200S FC Frequency converter</p> <p>E86060-K6710-A101-B6-7600</p> |  | <ul style="list-style-type: none"> • Dimension drawing generator for motors • Data sheet generator for motors and inverters • Starting calculation • 3D models in .stp format • Extensive documentation | |
| <p>AC NEMA & IEC Motors D 81.2 Further details available on the Internet at: http://www.sea.siemens.com/motors</p> <p>Only PDF</p> |  | <p>Hardware and software requirements</p> <ul style="list-style-type: none"> • PC with 1.5 GHz CPU or faster • Operating systems <ul style="list-style-type: none"> – Windows 98/ME – Windows 2000 – Windows XP – Windows NT (Service Pack 6 or higher) – Windows Vista • 1024 MB work memory (minimum) • Screen resolution 1024 x 768, graphic with more than 256 colors • Small fonts • CD-ROM drive • Windows-compatible sound card • Windows-compatible mouse | |
| <p>Industry Automation and Motion Control CA 01 The Offline-Mall (DVD)</p> <p>E86060-D4001-A510-C7-7600</p> |  | <p>Installation</p> <p>You can install this catalog directly from the DVD as a partial version or full version on your hard disk or in the network.</p> | |

Motors

IEC Squirrel-Cage Motors

Frame sizes 56 to 450

Power range 0.06 to 1250 kW

Catalog D 81.1 · 2008



The products and systems described in this catalog are manufactured/distributed under application of a certified quality management system in accordance with DIN EN ISO 9001 (Certified Registration No. DE-000357 QM). The certificate is recognized by all IQNet countries.

Supersedes:

Catalog D 81.1 · 2007

Catalog News D 81.1 N · October 2007

The products contained in this catalog can also be found in the e-Catalog CA 01.

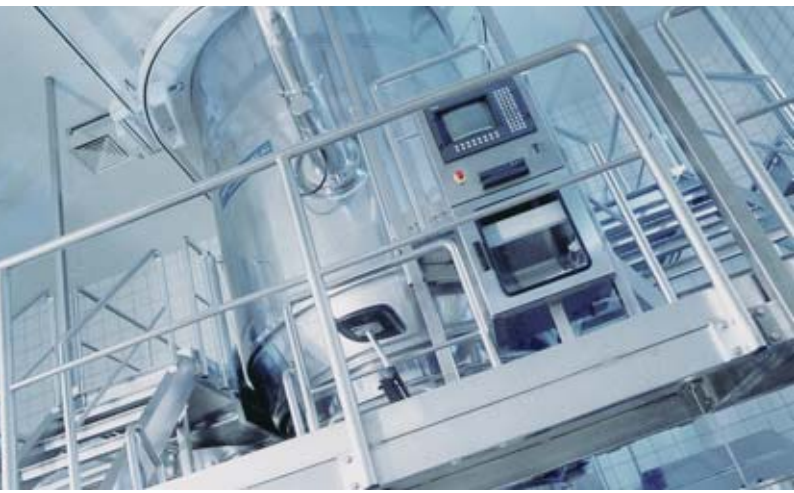
Order No.:

E86060-D4001-A510-C7-7600 (DVD)

Please contact
your local
Siemens branch

© Siemens AG 2008

| | |
|---|----|
| Introduction | 0 |
| New Generation 1LE1/1PC1 | 1 |
| Standard motors up to frame size 315 L | 2 |
| Non-standard motors frame size 315 and above | 3 |
| Explosion-proof motors | 4 |
| Motors operating with frequency converters | 5 |
| Pump motors | 6 |
| Fan motors | 7 |
| Compressor motors | 8 |
| Smoke-extraction motors | 9 |
| Marine motors | 10 |
| Appendix | 11 |





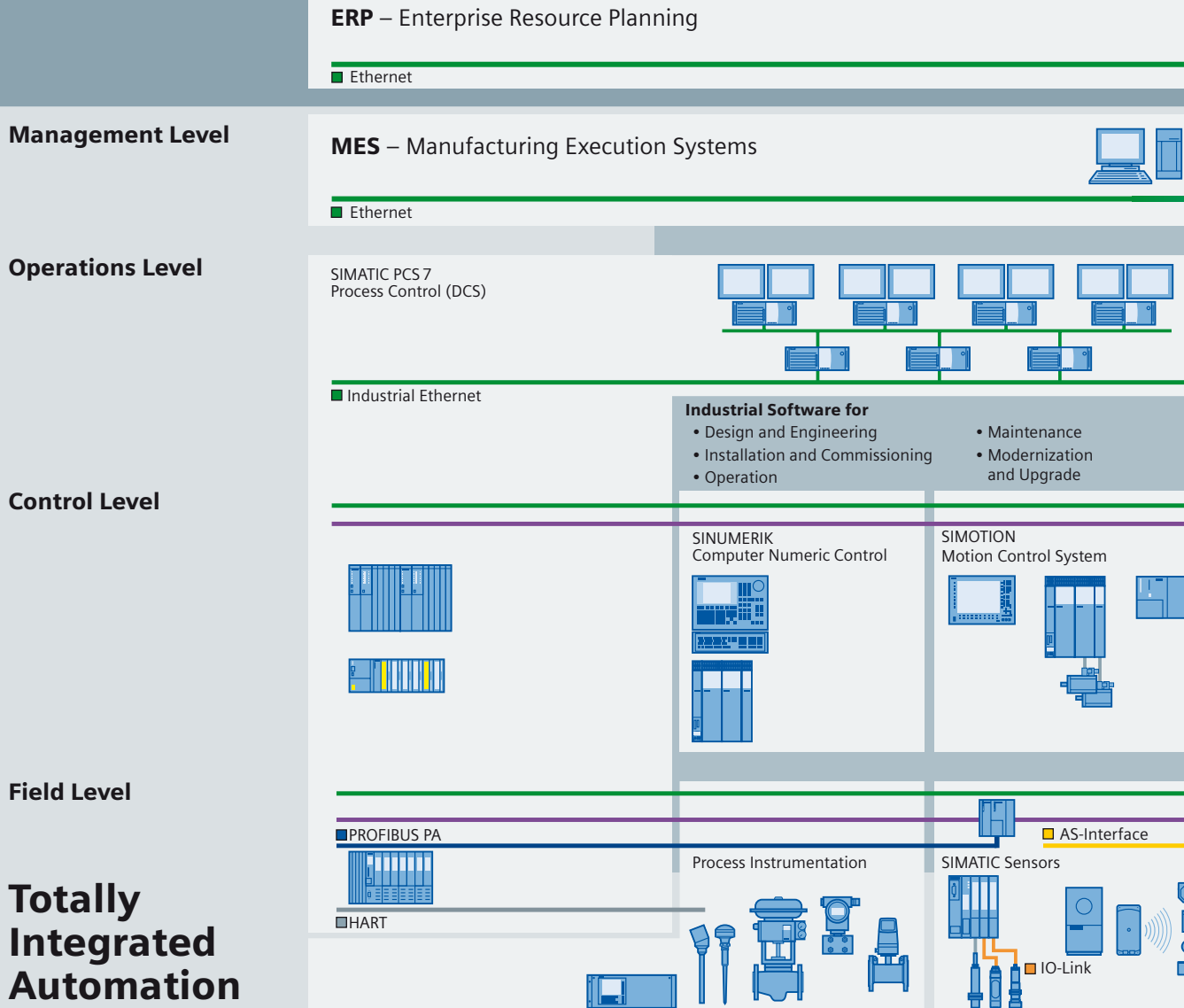
Answers for Industry.

Siemens Industry answers the challenges in the manufacturing and the process industry as well as in the building automation business. Our drive and automation solutions based on Totally Integrated Automation (TIA) and Totally Integrated Power (TIP) are employed in all kinds of industry. In the manufacturing and the process industry. In industrial as well as in functional buildings.

Siemens offers automation, drive, and low-voltage switching technology as well as industrial software from standard products up to entire industry solutions. The industry software enables our industry customers to optimize the entire value chain – from product design and development through manufacture and sales up to after-sales service. Our electrical and mechanical components offer integrated technologies for the entire drive train – from couplings to gear units, from motors to control and drive solutions for all engineering industries. Our technology platform TIP offers robust solutions for power distribution.

The high quality of our products sets industry-wide benchmarks. High environmental aims are part of our eco-management, and we implement these aims consistently. Right from product design, possible effects on the environment are examined. Hence many of our products and systems are RoHS compliant (Restriction of Hazardous Substances). As a matter of course, our production sites are certified according to DIN EN ISO 14001, but to us, environmental protection also means most efficient utilization of valuable resources. The best example are our energy-efficient drives with energy savings up to 60 %.

Check out the opportunities our automation and drive solutions provide. And discover how you can sustainably enhance your competitive edge with us.

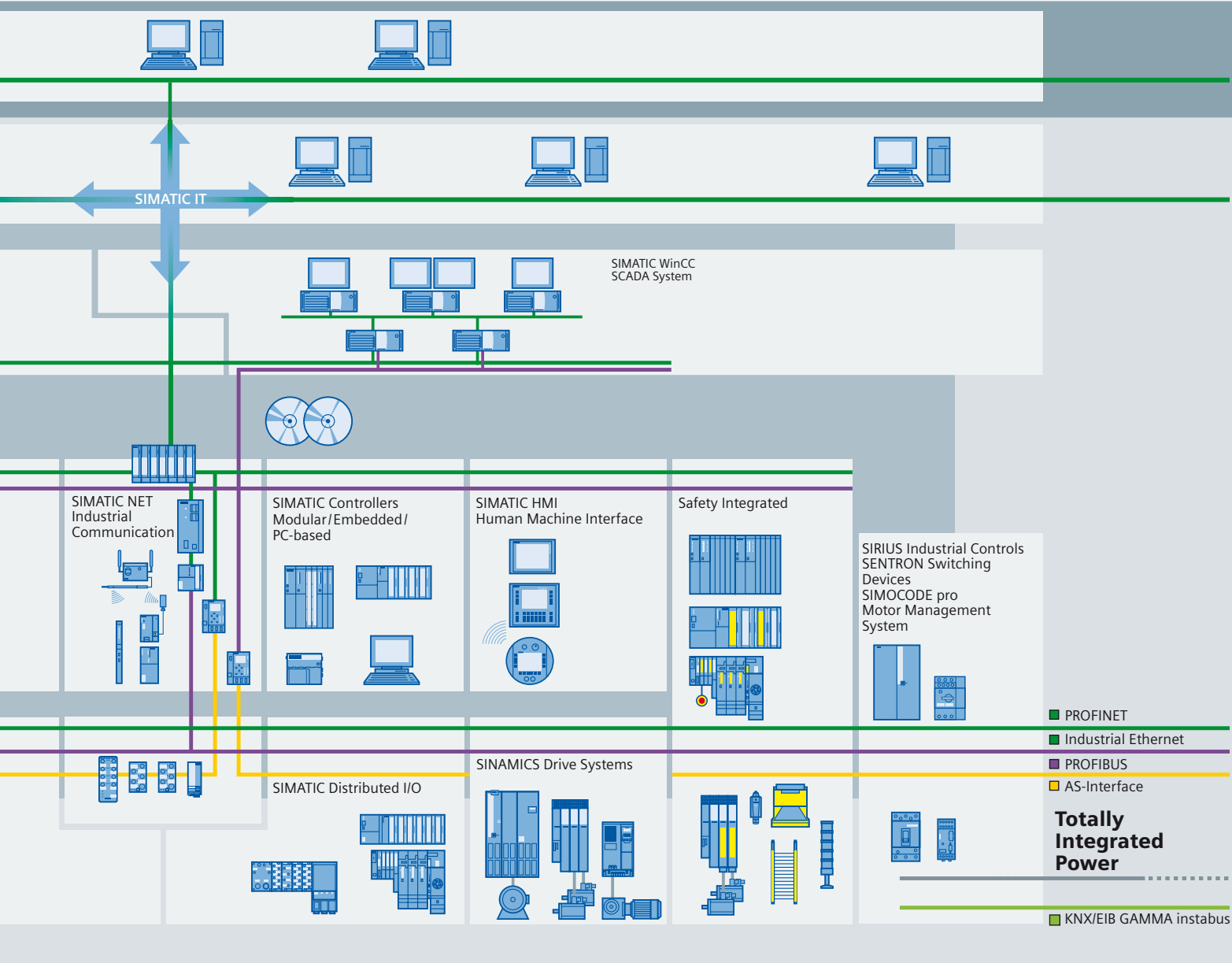


Setting standards in productivity and competitiveness.

Totally Integrated Automation.

Thanks to Totally Integrated Automation, Siemens is the only provider of an integrated basis for implementation of customized automation solutions – in all industries from inbound to outbound.

30.04.2008



TIA is characterized by its unique continuity.

It provides maximum transparency at all levels with reduced interfacing requirements – covering the field level, production control level, up to the corporate management level. With TIA you also profit throughout the complete life cycle of your plant – starting with the initial planning steps through operation up to modernization, where we offer a high measure of investment security resulting from continuity in the further development of our products and from reducing the number of interfaces to a minimum.

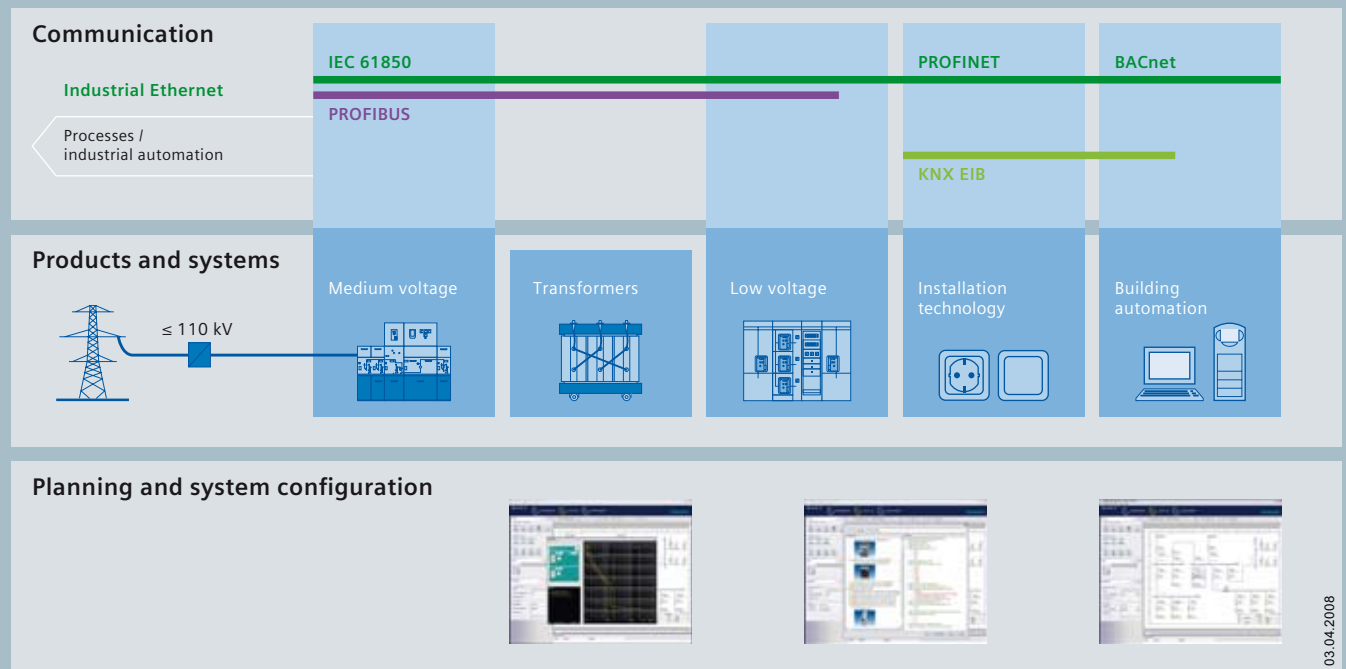
The unique continuity is already a defined characteristic at the development stage of our products and systems.

The result: maximum interoperability – covering the controller, HMI, drives, up to the process control system. This reduces the complexity of the automation solution in your plant. You will experience this, for example, in the engineering phase of the automation solution in the form of reduced time requirements and cost, or during operation using the continuous diagnostics facilities of Totally Integrated Automation for increasing the availability of your plant.



Integrated power distribution from one source.

Totally Integrated Power.



03.04.2008

Electrical power distribution in buildings requires integrated solutions. Our response: Totally Integrated Power. This means innovative and integrated, interface-optimized products and systems which have been optimally coordinated and complemented with communication and software modules that link power distribution to building automation or industrial automation. Totally Integrated Power accompanies power distribution projects from one end to the other. From A to Z. From the planning to the building's use: Totally Integrated Power offers significant advantages in every project stage and to everyone involved in the project – the investors, electrical planning engineers, electricians, users and building facility managers.

Our portfolio comprises everything from engineering tools to the matching hardware: from switchgear and distribution systems for medium voltage to transformers, from switching and circuit-protection devices to low-voltage switchgear and busbar trunking systems, as far as to the small distribution board and the wall outlet. It goes without saying that both the medium-voltage switchgear, which requires no maintenance, and the low-voltage switchgear are type-tested, and their busbar connections, too. Comprehensive protection systems ensure the safety of man and machine at any time.

Introduction



0/2 Guide to selecting and ordering the motors

0/2 Overview

- 0/2 • Recommendations for drive selection – step-by-step to the required motor
- 0/3 • Determining the motor type according to cooling method, degree of protection and frame design

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

0/7 Order No. code

0/7 Overview

0/8 Special versions

0/8 Overview

0/13 General technical data

0/13 Overview

- 0/13 • Cut-away diagram of a low-voltage motor
- 0/14 • Designs in accordance with standards and specifications
- 0/17 • Colors and paint finish
- 0/20 • Packaging, safety notes, documentation and test certificates
- 0/22 • Voltages, currents and frequencies
- 0/28 • Outputs
- 0/29 • Efficiency, power factor, rated torque, rated speed and direction of rotation
- 0/30 • Rating plate and extra rating plates
- 0/31 • Coolant temperature and site altitude
- 0/32 • Windings and insulation
- 0/34 • Motor protection
- 0/36 • Heating and ventilation
- 0/38 • Motor connection and connection box
- 0/52 • Types of construction
- 0/54 • Mechanical design and degrees of protection
- 0/56 • Balance and vibration quantity
- 0/56 • Shaft and rotor
- 0/58 • Bearings and lubrication
- 0/75 • Modular technology
 - 0/75 – 1XP8 001 rotary pulse encoder
 - 0/76 – Separately driven fan
 - 0/77 – Brakes
 - 0/84 – Combinations of basic versions
- 0/85 • Special technology

Introduction motors 1LE1/1PC1

0/94 Order No. code

0/94 Overview

0/95 Special versions

0/95 Overview

0/97 General technical data

0/97 Overview

- 0/97 • Cut-away diagram of a low-voltage motor
- 0/98 • Designs in accordance with standards and specifications
- 0/100 • Colors and paint finish
- 0/102 • Packaging, safety notes, documentation and test certificates
- 0/103 • Voltages, currents and frequencies
- 0/105 • Outputs
- 0/105 • Efficiency, power factor, rated torque, rated speed and direction of rotation
- 0/106 • Rating plate and extra rating plates
- 0/107 • Coolant temperature and site altitude
- 0/108 • Windings and insulation
- 0/110 • Motor protection
- 0/111 • Heating and ventilation
- 0/113 • Motor connection and connection box
- 0/116 • Types of construction
- 0/118 • Mechanical design and degrees of protection
- 0/120 • Balance and vibration quantity
- 0/121 • Shaft and rotor
- 0/122 • Bearings and lubrication
- 0/127 • Modular technology
 - 0/128 – 1XP8 012 rotary pulse encoder
 - 0/129 – Separately driven fan
 - 0/130 – Brakes
- 0/134 • Special technology

IEC Squirrel-Cage Motors

Introduction

Guide to selecting and ordering the motors

0

Overview

These “recommendations for drive selection” guide you step-by-step through this catalog to the required motor.

| Step 1 | Technical requirements for the motor | | |
|--|--|--|--|
| Determine the required product profile, the following are required: | Rated frequency and rated voltage | 3 AC 50/60 Hz, 400, 500 or 690 V | |
| | Duty | Standard duty (continuous duty S1 according to DIN EN 60034-1) | |
| | Degree of protection or type of explosion protection required | IP.. | |
| | Rated speed (No. of poles) | $n = \dots\dots\dots$ rpm | |
| | Rated output | $P = \dots\dots\dots$ kW | |
| | Rated torque | $M = P \cdot 9550/n = \dots\dots\dots$ Nm | |
| | Type of construction | IM.. | |
| Step 2 | Environmental requirements for the motor | | |
| Determine the installation conditions | Ambient temperature | ≤ 40 °C | > 40 °C |
| | Site altitude | ≤ 1000 m | > 1000 m |
| | Factors for derating | None | Determine the factor for derating (for derating factor, see “Technical information” – “Coolant temperature and site altitude”) |
| Step 3 | For preliminary selection of the motor, \Rightarrow see subsequent pages and the corresponding “Preliminary selection of the motor” tables in the different catalog parts | | |
| Determine the range of possible motors | Select the frame size and therefore the possible motors on the basis of the following parameters: cooling method, degree of protection, rated output, rated speed and rated torque range. Note: The standard temperature range of the motors is from -20 to $+40$ °C. | | |
| Step 4 | Detailed selection of the motor | | |
| Determine the basic Order No. of the motor | Determine the motor Order No. according to the following parameters: rated output, rated speed, rated torque and rated current from the “Selection and ordering data” for the motors that have already been identified as possibilities. | | |
| Step 5 | Selection of the special versions (see under “Special versions”) | | |
| Complete the motor Order No. | Determine special versions and the associated order codes (e. g. special voltages and types of construction, motor protection and degrees of protection, windings and insulation, colors and paint finish, mountings and technology, etc.) . | | |
| Step 6 | | | |
| Select the frequency converter, if required | For Order No. of the converter as well as its selection, see Catalogs D 11, D 11.1 , DA 51.2 and DA 51.3. | | |

Note on using this catalog

Due to the wide range of possible versions of low-voltage motors, the special features of the various motor series are not explained in detail in each case in this catalog part. The availability of individual technical designs can be established from catalog parts 1 to 10.

IEC Squirrel-Cage Motors

Introduction

Guide to selecting and ordering the motors

0

Determining the motor type according to cooling method, degree of protection and frame design (continued)

| Applications for surface-cooled motor types | Cooling method | Standard designation for degree of protection to DIN EN 60034 Part 5 | Frame design | Motor type (Positions 1 to 3 of the Order No.) + type series (Position 4 of the Order No.) Rated output at 50 Hz | Motor frame sizes (shaft heights) | | | | | | | | | | | | | | | |
|--|-------------------|--|--------------|---|-----------------------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 | 355 |
| Explosion-proof motors | | | | | Catalog Part 4 | | | | | | | | | | | | | | | |
| Motors in Zone 1 with type of protection "e" (Zone 1 Exe II T3) | Self-ventilated | IP55 | Aluminum | 1MA7 0.12 ... 16 kW | | | | | | | | | | | | | | | | |
| | | | Cast iron | | | | | | | | | | | | | | | | | |
| Motors in Zone 1 with type of protection "de" (Zone 1 Exde IIC T4) | Self-ventilated | IP55 | Cast iron | 1MJ6 0.25 ... 37 kW | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| Motors in Zone 2 with type of protection "n" | Self-ventilated | IP55 | Aluminum | 1LA7 0.09 ... 18.5 kW | | | | | | | | | | | | | | | | |
| | | | Aluminum | 1LA9 0.06 ... 37 kW | | | | | | | | | | | | | | | | |
| | | IP55 | Cast iron | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| Motors in Zone 21 with explosion protection | Self-ventilated | IP65 | Aluminum | 1LA7 0.09 ... 18.5 kW | | | | | | | | | | | | | | | | |
| | | | Aluminum | 1LA9 0.06 ... 37 kW | | | | | | | | | | | | | | | | |
| | | IP65 | Cast iron | | | | | | | | | | | | | | | | | |
| Motors in Zone 22 with explosion protection | Self-ventilated | IP55 | Aluminum | 1LA7 0.09 ... 18.5 kW | | | | | | | | | | | | | | | | |
| | | | Aluminum | 1LA9 0.06 ... 37 kW | | | | | | | | | | | | | | | | |
| | | IP55 | Cast iron | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| Motors operating with frequency converters | | | | | Catalog Part 5 | | | | | | | | | | | | | | | |
| Surface-cooled motors with standard insulation for voltages ≤500 V | | | | | | | | | | | | | | | | | | | | |
| For standard motors, non-standard motors, explosion-proof motors and fan motors, see catalog part 5. | | | | | | | | | | | | | | | | | | | | |
| Motors with special insulation for voltages up to 690 V (standard motors) | Self-ventilated | IP55 | Aluminum | 1LA7 1.5 ... 18.5 kW | | | | | | | | | | | | | | | | |
| | | | Cast iron | | | | | | | | | | | | | | | | | |
| Motors with special insulation for voltages up to 690 V (non-standard motors) | Self-ventilated | IP55 | Cast iron | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| Motors with mounted separately driven fan with special insulation for voltages up to 690 V | Forced-air cooled | IP55 | Cast iron | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |

IEC Squirrel-Cage Motors

Introduction

Guide to selecting and ordering the motors

0

Determining the motor type according to cooling method, degree of protection and frame design (continued)

| Applications for surface-cooled motor types | Cooling method | Standard designation for degree of protection to DIN EN 60034 Part 5 | Frame design | Motor type (Positions 1 to 3 of the Order No.) + type series (Position 4 of the Order No.) Rated output at 50 Hz | | Motor frame sizes (shaft heights) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-------------------|--|--------------|---|----|--|----|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------------------------|-----|------------------------|--|--|--|--|--|--|--|--|--|--|--|
| | | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 | 355 | 400 | 450 | | | | | | | | | | | | |
| Pump motors | | | | | | | | | | | | | | | | | | | | | | Catalog Part 6 | | | | | | | | | | | |
| Energy-saving motors with improved efficiency (Improved Efficiency EFF2) | Self-ventilated | IP55 | Aluminum | 1LA7 0.06 ... 18.5 kW | | 1LE1/1PC1 | | 1LA5 11 ... 45 kW | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | IP55 | Cast iron | | | 1LA6 0.75 ... 18.5 kW | | 1LG4 11 ... 200 kW | | | | | | | | | | | | | | | | | | | | | | | | | |
| Motors with increased output | Self-ventilated | IP55 | Aluminum | 1LA9 0.14 ... 53 kW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | IP55 | Cast iron | | | | | 1LG4 15 ... 110 kW | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fan motors | | | | | | | | | | | | | | | | | | | | | | Catalog Part 7 | | | | | | | | | | | |
| Motors in pole-changing version | Self-ventilated | IP55 | Aluminum | 1LA7 0.15 ... 17 kW | | 1LA5 18 ... 31 kW | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | IP55 | Cast iron | | | | | 1LG4 4.5 ... 175 kW | | | | | | | | | | | | | | | | | | | | | | | | | |
| Motors without external fan and without fan cover | Forced-air cooled | IP55 | Aluminum | 1PP7 0.09 ... 18.5 kW | | 1LE1/1PC1 | | 1PP5 11 ... 37 kW | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | IP55 | Cast iron | | | | | 1PP4 11 ... 200 kW | | | | | | | | | | | | | | | | | | | | | | | | | |
| Compressor motors | | | | | | | | | | | | | | | | | | | | | | Catalog Part 8 | | | | | | | | | | | |
| Energy-saving motors with high efficiency | Self-ventilated | IP55 | Aluminum | 1LA9 0.06 ... 37 kW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | IP55 | Cast iron | | | | | 1LG6 11 ... 200 kW | | | | | | | | | | | | | | | | | | | | | | | | | |
| Motors with increased output | Self-ventilated | IP55 | Aluminum | 1LA9 0.14 ... 53 kW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | IP55 | Cast iron | | | | | 1LG4 15 ... 110 kW | | | | | | | | | | | | | | | | | | | | | | | | | |
| Non-standard motor for mains-fed and converter-fed operation | Self-ventilated | IP55 | Cast iron | | | | | | | | | | | | | | | | | 1LA8 160 ... 1000 kW | | | | | | | | | | | | | |
| Smoke extraction motors | | | | | | | | | | | | | | | | | | | | | | Catalog Part 9 | | | | | | | | | | | |
| Temperature/time class F200, F300 | Self-ventilated | IP55 | Aluminum | 1LA7 0.37 ... 18.5 kW (0.09 ... 3.85 kW pole-changing) | | 1LA5 15 ... 45 kW (4.05 ... 8.6 kW pole-changing) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | IP55 | Cast iron | | | | | 1LG6 37 ... 200 kW | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Forced-air cooled | IP55 | Aluminum | 1PP7 0.37 ... 18.5 kW (0.09 ... 3.85 kW pole-changing) | | 1PP5 15 ... 45 kW (4.05 ... 8.6 kW pole-changing) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | IP55 | Cast iron | | | | | 1PP6 37 ... 200 kW | | | | | | | | | | | | | | | | | | | | | | | | | |
| Temperature/time class F400 | Self-ventilated | IP55 | Cast iron | 1LA6 1.5 ... 18.5 kW (0.3 ... 3.45 kW pole-changing) | | 1LG6 15 ... 200 kW | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Forced-air cooled | IP55 | Cast iron | 1PP6 1.5 ... 200 kW (0.3 ... 3.45 kW pole-changing) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Marine motors (motors for drives on ships below deck) | | | | | | | | | | | | | | | | | | | | | | Catalog Part 10 | | | | | | | | | | | |
| Type approved standard motors up to frame size 315 L – Energy-saving motors with improved efficiency (Improved Efficiency EFF2) | Self-ventilated | IP55 | Aluminum | 1LA7 0.06 ... 18.5 kW | | 1LA5 11 ... 45 kW | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | IP55 | Cast iron | | | 1LA6 0.75 ... 18.5 kW | | 1LG4 11 ... 200 kW | | | | | | | | | | | | | | | | | | | | | | | | | |
| Type approved standard motors up to frame size 315 L – Energy-saving motors with high efficiency (High Efficiency EFF1) | Self-ventilated | IP55 | Aluminum | 1LA9 0.06 ... 37 kW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | IP55 | Cast iron | | | | | 1LG6 11 ... 200 kW | | | | | | | | | | | | | | | | | | | | | | | | | |
| Type approved, explosion-proof motors up to frame size 315 L – Motors in Zone 1 with type of protection "e" (Zone 1 Exe II T3) | Self-ventilated | IP55 | Aluminum | 1MA7 0.12 ... 16 kW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | IP55 | Cast iron | | | | | 1MA6 1.3 ... 165 | | | | | | | | | | | | | | | | | | | | | | | | | |

IEC Squirrel-Cage Motors

Introduction

Guide to selecting and ordering the motors

0

Determining the motor type according to cooling method, degree of protection and frame design (continued)

| Applications for surface-cooled motor types | Cooling method | Standard designation for degree of protection to DIN EN 60034 Part 5 | Frame design | Motor type (Positions 1 to 3 of the Order No.) + type series (Position 4 of the Order No.) Rated output at 50 Hz | | | | | | | | | | | | | | | | | |
|---|-------------------|--|--------------|---|----|----|----|----------------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | | Motor frame sizes (shaft heights) | | | | | | | | | | | | | | | | | |
| | | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 | 355 | 400 | 450 |
| Catalog Part 10 | | | | | | | | | | | | | | | | | | | | | |
| Marine motors (motors for drives on ships below deck) (continue) | | | | | | | | | | | | | | | | | | | | | |
| Type approved, explosion-proof motors up to frame size 315 L – Motors in Zone 1 with type of protection “de” (Zone 1 Exde IIC T4) | Self-ventilated | IP55 | Cast iron | 1MJ6 0.25 ... 37 kW | | | | 1MJ7 18.5 ... 132 kW | | | | | | | | | | | | | |
| Type approved, explosion-proof motors up to frame size 315 L – Motors in Zone 2 with type of protection “n” | Self-ventilated | IP55 | Aluminum | 1LA7 0.09 -18.5 kW | | | | | | | | | | | | | | | | | |
| | | IP55 | Aluminum | 1LA9 0.06 ... 37 kW | | | | | | | | | | | | | | | | | |
| | | IP55 | Cast iron | 1LA6 0.75 ... 18.5 kW | | | | 1LG4/1LG6 11 ... 200 kW | | | | | | | | | | | | | |
| Explosion-proof motors up to frame size 315 L – Motors in Zone 21 with protection against dust explosions | Self-ventilated | IP55 | Aluminum | 1LA7 0.09 ... 18.5 kW | | | | 1LA5 11 ... 45 kW | | | | | | | | | | | | | |
| | | IP55 | Aluminum | 1LA9 0.06 ... 37 kW | | | | | | | | | | | | | | | | | |
| | | IP55 | Cast iron | | | | | 1LG4/1LG6 11 ... 200 kW | | | | | | | | | | | | | |
| Explosion-proof motors up to frame size 315 L – Motors in Zone 22 with protection against dust explosions | Self-ventilated | IP55 | Aluminum | 1LA7 0.09 ... 18.5 kW | | | | 1LA5 11 ... 45 kW | | | | | | | | | | | | | |
| | | IP55 | Aluminum | 1LA9 0.06 ... 37 kW | | | | | | | | | | | | | | | | | |
| | | IP55 | Cast iron | 1LA6 0.75 ... 18.5 kW | | | | 1LG4/1LG6 11 ... 200 kW | | | | | | | | | | | | | |
| Type approved fan motors – Motors in pole-changing version | Self-ventilated | IP55 | Aluminum | 1LA7 0.15 ... 17 kW | | | | 1LA5 18 ... 31 kW | | | | | | | | | | | | | |
| | | IP55 | Cast iron | | | | | 1LG4 4.5 ... 83 kW | | | | | | | | | | | | | |
| Type approved fan motors – Motors without external fan and without fan cover | Forced-air cooled | IP55 | Aluminum | 1PP7 0.09 ... 18.5 kW | | | | 1PP5 15 ... 37 kW | | | | | | | | | | | | | |
| | | IP55 | Cast iron | | | | | 1PP4 11 ... 200 kW | | | | | | | | | | | | | |
| Standard motors up to frame size 315 L | Self-cooled | IP55 | Aluminum | 1LP7 0.045 ... 7 kW | | | | 1LP5 5.5 ... 16.5 kW | | | | | | | | | | | | | |
| | | IP55 | Cast iron | | | | | 1LP4 3.7 ... 67 kW | | | | | | | | | | | | | |
| Smoke-extraction motors Temperature/time classes F200 and F300 | Self-ventilated | IP55 | Aluminum | 1LA7 0.09 ... 18.5 kW | | | | 1LA5 4.05 ... 45 kW | | | | | | | | | | | | | |
| | | IP55 | Cast iron | | | | | 1LG6 37 ... 200 kW | | | | | | | | | | | | | |
| | Forced-air cooled | IP55 | Aluminum | 1PP7 0.09 ... 18.5 kW | | | | 1PP5 4.05 ... 45 kW | | | | | | | | | | | | | |
| | | IP55 | Cast iron | | | | | | | | | 1PP6 37 ... 200 kW | | | | | | | | | |
| Smoke-extraction motors Temperature/time class F400 | Self-ventilated | IP55 | Cast iron | 1LA6 0.3 ... 22 kW | | | | 1LG6 15 ... 200 kW | | | | | | | | | | | | | |
| | Forced-air cooled | IP55 | Cast iron | 1PP6 0.3...200 kW | | | | | | | | | | | | | | | | | |
| Non-standard motor frame size 315 and above – Motors for mains-fed and converter-fed operation | Self-ventilated | IP55 | Cast iron | 1LA8 145 ... 1000 kW | | | | | | | | | | | | | | | | | |
| Non-standard motors frame size 315 and above – Forced-air cooled motors with mounted separately driven fan for converter-fed operation | Forced-air cooled | IP55 | Cast iron | 1PQ8 145 ... 1000 kW | | | | | | | | | | | | | | | | | |
| Non-standard motors frame size 315 and above – Self-ventilated motors with through-ventilation for mains-fed and converter-fed operation | Self-ventilated | IP23 | Cast iron | 1LL8 180 ... 1250 kW | | | | | | | | | | | | | | | | | |
| Non-standard motors frame size 315 and above – Water-cooled motors for mains-fed and converter-fed operation | Forced-air cooled | IP55 | Steel | 1) 1) | | | | | | | | | | | | | | | | | |
| Explosion-proof motors frame size 315 and above – Self-ventilated motors in Zones 2, 22 with type of protection “n” or protection against dust explosions | Self-ventilated | IP55 | Cast iron | 1LA8 160 ... 1000 kW | | | | | | | | | | | | | | | | | |

1) 1LH8 motor frame size 450, rated output 485 ... 1150 kW

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

Order No. code

0

Overview

The Order No. comprises a combination of letters and numbers and for clarity it is subdivided into two blocks which are connected by hyphens,

e. g.

1LA5223-4AA19-Z

M1F + A11 + G17

The first block (positions 1 to 7) identifies the motor type; further characteristics of the version are coded in the second block (positions 8 to 12).

For deviations in the second block from the catalog codes, either **-Z** or **9** should be used as appropriate.

Ordering data:

- Complete Order No. and order code(s) or plain text.
- If a quotation has been requested, please specify the quotation number in addition to the Order No.
- When ordering a complete motor as a spare part, please specify the works serial No. for the previously supplied motor as well as the Order No.

| Structure of the Order No.: | | Position: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | - | 8 | 9 | 10 | 11 | 12 | |
|---|---|-----------|---|---|---|----------------------------|---|---|---|---|---|---|----|----|----|-----|
| IEC squirrel-cage motors, surface-cooled | | | | | | | | | | | | | | | | |
| Positions 1 to 3: Digit, letter, letter | <ul style="list-style-type: none"> • Self-ventilated by fan mounted on and driven by rotor, aluminum or cast-iron housing • Self-ventilated by fan mounted on and driven by rotor, cast-iron housing • Self-ventilated by fan mounted on and driven by rotor, increased safety, type of protection Ex e II • Self-ventilated by fan mounted on and driven by rotor, explosion-proof enclosure, type of protection Ex de IIC • Self-ventilated with through-ventilation, cast-iron housing • Self-cooled without external fan, aluminum and cast-iron housing • Forced-air cooled by air flow from the fan to be driven, aluminum or cast-iron housing • Forced-air cooled by separately driven fan, cast-iron housing | 1 | L | A | | | | | | | | | | | | |
| Position 4: Digit | Type series 4 Type series 5 Type series 6 Type series 7 Type series 8 Type series 9 | | | | | 4 5 6 7 8 9 | | | | | | | | | | |
| Positions 5 to 7: 3 digits | Motor frame size (frame size comprising shaft height and construction length, codes from 050 to 457) | | | | | | | | | | | | | | | |
| Position 8: Digit | Number of poles | | | | | | | | | | | | | | | |
| Positions 9 to 10: Letter | Version | | | | | | | | | | | | | | | |
| Position 11: Digit | Voltage, circuit and frequency | | | | | | | | | | | | | | | |
| Position 12: Digit | Type of construction | | | | | | | | | | | | | | | |
| | Special order versions: Coded – Order code also required Not coded – Plain text also required | | | | | | | | | | | | | | | - Z |

Ordering example

| Selection criteria | Requirement | Structure of the Order No. |
|-------------------------------------|--|--|
| Motor type | Standard motor with improved efficiency, IP55 degree of protection, aluminum housing | 1LA5□□□□-□□□□□□ |
| Motor frame size/No. of poles/speed | 4-pole/1500 rpm | 1LA5223-4AA□□ |
| Rated output | 45 kW | 1LA5223-4AA1□ |
| Voltage and frequency | 230 VΔ/400 VY, 50 Hz | 1LA5223-4AA19 |
| Type of construction | IM V5 with protective cover | M1F |
| Special versions | 3 PTC thermistors | 1LA5223-4AA19-Z M1F A11 |
| | Mounted separately driven fan | 1LA5223-4AA19-Z M1F A11 G17 |

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

Special versions

0

Overview

The order codes and availability are assigned to the individual motor series in the "Selection and ordering data" in the individual catalog parts 2 to 10.

For voltages, see "Voltages, currents and frequencies" in the "Introduction" as well as in catalog parts 2 to 10.

For types of construction, see "Types of construction" in the "Introduction" as well as in catalog parts 2 to 10.

All available options are listed according to topics in the following table. An alphanumerical listing according to order codes can be found in the appendix under "Overview of order codes".

| Order code | Special versions | For further information, see Page |
|--|---|-----------------------------------|
| Motor protection | | |
| A10 | With PTC thermistors for alarm for converter-fed operation in Zones 2, 21, 22 | 0/33, 4/82 |
| A11 | Motor protection through PTC thermistor with 3 embedded temperature sensors for tripping | 0/34, 0/38 |
| A12 | Motor protection through PTC thermistor with 6 embedded temperature sensors for tripping and alarm | 0/35 |
| A15 | Motor protection with PTC thermistors for converter-fed operation with 3 or 4 embedded temperature sensors for tripping | 0/35, 4/3, 4/82 |
| A16 | Motor protection with PTC thermistors for converter-fed operation with 6 or 8 embedded temperature sensors for alarm and tripping | 0/33, 4/3, 4/82 |
| A23 | Motor temperature detection with embedded temperature sensor KTY 84-130 | 0/35 |
| A25 | Motor temperature detection with embedded temperature sensors 2 x KTY 84-130 | 0/35 |
| A31 | Temperature detectors for tripping | 0/34 |
| A60 | Installation of 3 PT 100 resistance thermometers in stator winding | 0/36 |
| A61 | Installation of 6 PT 100 resistance thermometers in stator winding | 0/36 |
| A72 | Installation of 2 PT 100 screw-in resistance thermometers (basic circuit) for rolling-contact bearings | 0/36 |
| A78 | Installation of 2 PT 100 screw-in resistance thermometers (3-wire circuit) for rolling-contact bearings | 0/36 |
| A80 | Installation of 2 PT 100 double screw-in resistance thermometers (3-wire circuit) for rolling-contact bearings | 0/36 |
| Motor connection and connection box | | |
| G55 | ECOFAST motor plug Han-Drive 10e for 230 VΔ/400 VY | 0/51 |
| G56 | ECOFAST motor plug EMC Han-Drive 10e for 230 VΔ/400 VY | 0/51 |
| K06 | Two-part plate on connection box | 0/39 |
| K09 | Connection box on RHS | 0/38 |
| K10 | Connection box on LHS | 0/38 |
| K11 | Connection box on top, feet screwed on | 0/38 |
| K15 | Connection box in cast-iron version | 0/38, 0/47 ... |
| K53 | Explosion-proof connection box, Ex d IIC type of protection | 0/38, 0/48 ... |
| K54 | One cable gland, metal | 0/39 |
| K55 | Cable gland, maximum configuration | 0/39 |
| K57 | Cable gland DIN 89280, maximum configuration | 0/39 |
| K83 | Rotation of the connection box through 90°, entry from DE | 0/39 |
| K84 | Rotation of the connection box through 90°, entry from NDE | 0/39 |
| K85 | Rotation of connection box through 180° | 0/39 |
| L00 | Next larger connection box | 0/38 |
| L01 | Undrilled entry plate | 0/40 |
| L13 | External earthing | 0/38 |
| L44 | 3 cables protruding, 0.5 m long | 0/40 |
| L45 | 3 cables protruding, 1.5 m long | 0/40 |
| L47 | 6 cables protruding, 0.5 m long | 0/40 |
| L48 | 6 cables protruding, 1.5 m long | 0/40 |
| L49 | 6 cables protruding, 3 m long | 0/40 |
| L51 | Protruding cable ends – right side | 0/40 |
| L52 | Protruding cable ends – left side | 0/40 |
| L97 | Auxiliary connection box 1XB3 020 | 0/50 |
| M46 | Stud terminal for cable connection, accessories pack (3 items) | 0/49 |
| M47 | Saddle terminal for connection without cable lug, accessories pack | 0/49 |
| M50 | Auxiliary connection box 1XB9 016 | 0/50 |
| M58 | Next larger connection box 1XB1 621 | 0/38 |
| M64 | Connection box on NDE | 0/38 |
| M69 | Terminal strip for main and auxiliary terminals | 0/49 |
| M88 | Auxiliary connection box 1XB9 014 (aluminum) | 0/50 |
| Windings and insulation | | |
| C11 | Temperature class 155 (F), used acc. to 155 (F), with service factor (SF) | 0/32 |
| C12 | Temperature class 155 (F), used acc. to 155 (F), with increased power rating | 0/32 |
| C13 | Temperature class 155 (F), used acc. to 155 (F), with increased coolant temperature | 0/33 |
| C18 | Temperature class 180 (H) at rated output and max. CT 60 °C | 0/33 |
| C19 | Increased air humidity/temperature with 30 to 60 g water per m ³ of air | 0/33 |

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

Special versions

0

Overview (continued)

| Order code | Special versions | For further information, see Page |
|--|---|-----------------------------------|
| Windings and insulation (continued) | | |
| C22 | Temperature class 155 (F), used acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 % | 0/33 |
| C23 | Temperature class 155 (F), used acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 % | 0/33 |
| C24 | Temperature class 155 (F), used acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 % | 0/33 |
| C25 | Temperature class 155 (F), used acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 % | 0/33 |
| C26 | Increased air humidity/temperature with 60 to 100 g water per m ³ of air | 0/33 |
| Y50 | <i>New!</i> Temperature class 155 (F), used acc. to 130 (B), with increased coolant temperature and/or site altitude | 0/33 |
| Y52 | Temperature class 155 (F), used acc. to 155 (F), other requirements | 0/33 |
| Colors and paint finish | | |
| K23 | Unpainted (only cast-iron parts primed) | 0/17 |
| K24 | Unpainted, only primed | 0/17 |
| K26 | Special finish in RAL 7030 stone gray | 0/18 |
| M91 | <i>New!</i> Offshore special finish | 0/17 |
| M94 | <i>New!</i> Sea air resistant special finish | 0/17 |
| Y51 | Special finish in special RAL colors | 0/17, 0/19 |
| Y53 | Standard finish in other standard RAL colors | 0/17, 0/18 |
| Y54 | Special finish in other standard RAL colors | 0/17, 0/18 |
| Modular technology – Basic versions | | |
| G17 | Mounting of separately driven fan | 0/76 |
| G26 | Mounting of brake | 0/77 ... |
| H57 | Mounting of 1XP8 001-1 (HTL) rotary pulse encoder | 0/75 |
| H58 | Mounting of 1XP8 001-2 (TTL) rotary pulse encoder | 0/75 |
| Modular technology – Combinations of basic versions | | |
| H61 | Mounting of separately driven fan and 1XP8 001-1 rotary pulse encoder | 0/84 |
| H62 | Mounting of brake and 1XP8 001-1 rotary pulse encoder | 0/84 |
| H63 | Mounting of brake and separately driven fan | 0/84 |
| H64 | Mounting of brake, separately driven fan and 1XP8 001-1 rotary pulse encoder | 0/84 |
| H97 | Mounting of separately driven fan and 1XP8 001-2 rotary pulse encoder | 0/84 |
| H98 | Mounting of brake and 1XP8 001-2 rotary pulse encoder | 0/84 |
| H99 | Mounting of brake, separately driven fan and 1XP8 001-2 rotary pulse encoder | 0/84 |
| Modular technology – Additional versions | | |
| C00 | Brake supply voltage 24 V DC | 0/83 |
| C01 | Brake supply voltage 400 V AC | 0/83 |
| C02 | Brake supply voltage 180 V DC, for operation on MM411-ECOFAST | 0/83 |
| K82 | Manual brake release with lever | 0/83 |
| Special technology | | |
| H15 | Prepared for mounting MMI | 0/15, 0/85 |
| H47 | Mounting of brake NFA (Stomag) | 0/85 |
| H70 | Mounting of LL 861 900 220 rotary pulse encoder | 0/85 |
| H72 | Mounting of HOG 9 D 1024 I rotary pulse encoder | 0/86 |
| H73 | Mounting of HOG 10 D 1024 I rotary pulse encoder | 0/87 |
| H78 | Prepared for mounting LL 861 900 220 | 0/85 |
| H79 | Prepared for mounting HOG 9 D 1024 I | 0/86 |
| H80 | Prepared for mounting HOG 10 D 1024 I | 0/87 |
| H86 | <i>New!</i> Mounting of explosion-proof rotary pulse encoder for use in Zones 2, 21, 22 | 4/5, 4/6 |
| H87 | <i>New!</i> Mounting of explosion-proof rotary pulse encoder for use on Ex d/de motors in Zone 1 | 4/5, 4/6 |
| J15 | <i>New!</i> Mounting of explosion-proof rotary pulse encoder HOG 10 DN 1024 I, connection box protection against moisture | 0/87 |
| J16 | <i>New!</i> Mounting of explosion-proof rotary pulse encoder HOG 10 DN 1024 I, connection box protection against dust | 0/88 |
| M95 | <i>New!</i> Mounting of explosion-proof separately driven fan Ex nA for use in Zone 2 | 4/5, 4/8 |
| M96 | <i>New!</i> Mounting of explosion-proof separately driven fan II 2D for use in Zone 21 | 4/5, 4/8 |
| M97 | <i>New!</i> Mounting of explosion-proof separately driven fan II 3D for use in Zone 22 | 4/5, 4/8 |
| M98 | <i>New!</i> Mounting of explosion-proof separately driven fan Ex de for use in Zone 1 | 4/5, 4/8 |
| Y70 | Mounting a special type of rotary pulse encoder | 0/85 |
| Y74 | <i>New!</i> Mounting of rotary pulse encoder HOG 10 DN 1024 I + FSL, (speed rpm), connection box protection against moisture | 0/88 |
| Y76 | <i>New!</i> Mounting of rotary pulse encoder HOG 10 DN 1024 I + FSL, (speed rpm), connection box protection against dust | 0/89 |
| Y79 | <i>New!</i> Mounting of rotary pulse encoder HOG 10 DN 1024 I + E SL 93, (speed rpm), connection box protection against moisture | 0/89 |

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

Special versions

Overview (continued)

| Order code | Special versions | For further information, see Page |
|--|---|-----------------------------------|
| Mechanical design and degrees of protection | | |
| K17 | Drive-end seal for flange-mounting motors with oil resistance to 0.1 bar | 0/54 |
| K32 | With two additional eyebolts for IM V1/IM V3 | 0/54 |
| K37 | Low-noise version for 2-pole motors with clockwise direction of rotation | 0/55 |
| K38 | Low-noise version for 2-pole motors with counter-clockwise direction of rotation | 0/55 |
| K50 | IP65 degree of protection | 0/54 |
| K52 | IP56 degree of protection (non-heavy-sea) | 0/54 |
| L03 | Vibration-proof version | 0/55 |
| L12 | Condensation drainage holes | 0/54 |
| M27 | Non-rusting screws (externally) | 0/55 |
| M44 | Earth brushes for converter-fed operation | 0/55 |
| M68 | Mechanical protection for encoder | 0/55 |
| Coolant temperature and site altitude | | |
| D02 | Coolant temperature -50 to +40 °C | 0/32 |
| D03 | Coolant temperature -40 to +40 °C | 0/32 |
| D04 | Coolant temperature -30 to +40 °C | 0/32 |
| D11 | Coolant temperature 45 °C, derating 4 % | 0/32 |
| D12 | Coolant temperature 50 °C, derating 8 % | 0/32 |
| D13 | Coolant temperature 55 °C, derating 13 % | 0/32 |
| D14 | Coolant temperature 60 °C, derating 18 % | 0/32 |
| D19 <i>New!</i> | Coolant temperature -40 °C to + 40 °C for EX motor | 4/5 |
| Designs in accordance with standards and specifications | | |
| D01 | CCC China Compulsory Certification | 0/16 |
| D30 | Electrical according to NEMA MG1-12 | 0/15 |
| D31 | Design according to UL with "Recognition Mark" | 0/15 |
| D32 | Ex certification for China | 4/83 |
| D33 <i>New!</i> | Certified for Korea according to KS C4202 | 0/16 |
| D40 | Canadian regulations (CSA) | 0/15, 0/16 |
| D46 <i>New!</i> | PSE Mark Japan | 0/16 |
| Design for Zones 1, 2, 21 and 22 according to ATEX | | |
| C27 | Stamping of Ex nA II on VIK rating plate | 4/83 |
| C30 | Outputs T1/T2 on rating plate | 4/81 |
| K30 | VIK design (comprises Zone 2 for mains-fed operation, without Ex nA II marking on rating plate) | 4/83 |
| M34 | Design for Zone 21, as well as Zone 22 for conducting dust (IP65) for mains-fed operation | 4/4, 4/81 |
| M35 | Design for Zone 22 for non-conducting dust (IP55) for mains-fed operation | 4/4, 4/81 |
| M38 | Design for Zone 21, as well as Zone 22 for conducting dust (IP65) for converter-fed operation, derating | 4/4, 4/83 |
| M39 | Design for Zone 22 for non-conducting dust (IP55) for converter-fed operation, derating | 4/4, 4/83 |
| M72 | Design for Zone 2 for mains-fed operation Ex nA II T3 to IEC/EN 60079-15 | 4/4, 4/81 ... |
| M73 | Design for Zone 2 for converter-fed operation, derating Ex nA II T3 to IEC/EN 60079-15 | 4/4, 4/83 |
| M74 <i>New!</i> | Design for Zones 2 and 22, for non-conducting dust (IP55), for mains-fed operation | 4/81 |
| M75 <i>New!</i> | Design for Zones 2 and 22, for non-conducting dust (IP55), for converter-fed operation, derating | 4/83 |
| M76 <i>New!</i> | Design for Zones 1 and 21, as well as for Zone 22 for conducting dust (IP65), for mains-fed operation | 4/81 |
| M77 <i>New!</i> | Design for Zones 1 and 21, as well as for Zone 22 for conducting dust (IP65), for converter-fed operation, derating | 4/82 |
| Y68 | Alternative converter (SIMOVERT MASTERDRIVES, SINAMICS G110, SINAMICS S120 or ET 200 S FC) | 4/82 |
| Marine version – Basic marine version | | |
| E00 | Without type test certificate according to ABS 50 °C/CCS 45 °C/RINA 45 °C, temperature class 155 (F), used according to 155 (F) | 10/4 ... |
| E11 | With/without type test certificate according to GL (Germanischer Lloyd), Germany, CT 45 °C, temperature class 155 (F), used according to 155 (F) | 10/4 ... |
| E21 | With/without type test certificate according to LR (Lloyds Register), Great Britain, CT 45 °C, temperature class 155 (F), used according to 155 (F) | 10/4 ... |
| E31 | With/without type test certificate according to BV (Bureau Veritas), France, CT 45 °C, temperature class 155 (F), used according to 155 (F) | 10/4 ... |
| E51 | With/without type test certificate according to DNV (Det Norske Veritas), Norway, CT 45 °C, temperature class 155 (F), used according to 155 (F) | 10/4 ... |
| E61 | With/without type test certificate according to ABS (American Bureau of Shipping), USA, CT 50 °C, temperature class 155 (F), used according to 155 (F) | 10/4 ... |
| E71 | With/without type test certificate according to CCS (Chinese Classification Society), China, CT 45 °C, temperature class 155 (F), used according to 155 (F) | 10/4 ... |
| E80 | Motor for use in shipping, higher ambient temperature and/or used as 155 (F) according to 130 (B) | 10/10 ... |

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

Special versions

0

Overview (continued)

| Order code | Special versions | For further information, see Page |
|---|---|-----------------------------------|
| Marine version – Acceptance/certification | | |
| E09 | Individual acceptance by marine classification society with supervision of construction and acceptance test certificate 3.2 according to EN 10204 | 10/4 ... |
| E10 | Individual acceptance by marine classification society | 10/4 ... |
| F83 | Type test with heat run for horizontal motors, with acceptance | 10/6 ... |
| F93 | Type test with heat run for vertical motors, with acceptance | 10/23 ... |
| Standardline (only for motor series 1LA8) | | |
| B20 | Standardline version | 3/13 |
| Bearings and lubrication | | |
| G50 | Measuring nipple for SPM shock pulse measurement for bearing inspection | 0/58 |
| K20 | Bearing design for increased cantilever forces | 0/58, 0/62 ... |
| K36 | Special bearing for DE and NDE, bearing size 63 | 0/58, 0/63 ... |
| K40 | Regreasing device | 0/58 |
| K94 | Located bearing DE | 0/58 |
| L04 | Located bearing NDE | 0/58 |
| L27 | Insulated bearing cartridge | 0/58 |
| Balance and vibration quantity | | |
| K02 | Vibration quantity level B | 0/56 |
| L68 | Full key balancing | 0/56 |
| M37 | <i>New!</i> Balancing without key | 0/56 |
| Shaft and rotor | | |
| K04 | Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors | 0/57 |
| K16 | Second standard shaft extension | 0/56 |
| K42 | Shaft extension with standard dimensions, without featherkey way | 0/57 |
| L39 | Concentricity of shaft extension in accordance with DIN 42955 Tolerance R | 0/57 |
| M65 | Standard shaft made of non-rusting steel | 0/57 |
| Y55 | Non-standard cylindrical shaft extension | 0/57 |
| Heating and ventilation | | |
| H17 | Fan cover for textile industry | 0/37 |
| K34 | Cast-iron fan cover | 0/37 |
| K35 | Metal external fan | 0/37 |
| K45 | Anti-condensation heaters for 230 V | 0/36 |
| K46 | Anti-condensation heaters for 115 V | 0/36 |
| L36 | Sheet metal fan cover | 0/37 |
| M14 | <i>New!</i> Anti-condensation heater, Ex. 115 V | 0/36 |
| M15 | <i>New!</i> Anti-condensation heater, Ex. 230 V | 0/36 |
| Y81 | Separately driven fan with non-standard voltage and/or frequency | 0/37 |
| Rating plate and extra rating plates | | |
| B06 | <i>New!</i> Second lubricating plate, supplied loose | 0/30 |
| K31 | Second rating plate, loose | 0/30 |
| Y80 | Extra rating plate or rating plate with deviating rating plate data | 0/30 |
| Y82 | Extra rating plate with identification code | 0/30 |
| Y84 | Additional information on rating plate and on package label (maximum of 20 characters) | 0/30 |
| Packaging, safety notes, documentation and test certificates | | |
| B00 | Without safety and commissioning note. Customer's declaration of renouncement required. | 0/21 |
| B01 | Complete with one set of safety and commissioning notes per wire-lattice pallet | 0/21 |
| B02 | Acceptance test certificate 3.1 according to EN 10204 | 0/21 |
| B23 | Operating instructions German/English enclosed in print | 0/21 |
| B31 | Document – Electrical data sheet | 0/21, 3/52 ... |
| B32 | Document – Order dimension drawing | 0/21, 3/52 ... |
| B37 | Document – Load characteristics | 0/21, 3/52 ... |
| F01 | Standard test (routine test) with acceptance | 0/21, 3/52 ... |
| F03 | Visual acceptance and report handover with acceptance | 0/21, 3/52 ... |
| F04 | Temperature-rise test, without acceptance | 0/21, 3/53 ... |
| F05 | Temperature-rise test, with acceptance | 0/21, 3/53 ... |
| F28 | Noise measurement during idling, no noise analysis, no acceptance | 0/21, 3/53 ... |
| F29 | Noise measurement during idling, no noise analysis, with acceptance | 0/21, 3/53 ... |

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

Special versions

0

Overview (continued)

| Order code | Special versions | For further information, see Page |
|---|---|-----------------------------------|
| Packaging, safety notes, documentation and test certificates (continued) | | |
| F34 | Recording of current and torque curves with torque metering shaft during starting, without acceptance | 0/21, 3/53 ... |
| F35 | Recording of current and torque curves with torque metering shaft during starting, with acceptance | 0/21, 3/53 ... |
| F52 | Measurement of the locked-rotor torque and locked-rotor current, without acceptance | 0/21, 3/53 ... |
| F53 | Measurement of the locked-rotor torque and locked-rotor current, with acceptance | 0/21, 3/53 ... |
| F62 | Noise analysis, without acceptance | 0/21, 3/53 ... |
| F63 | Noise analysis, with acceptance | 0/21, 3/53 ... |
| F82 | Type test with heat run for horizontal motors, without acceptance | 0/21, 3/53 ... |
| F83 | Type test with heat run for horizontal motors, with acceptance | 0/21, 3/53 ... 10/6, 10/10 ... |
| F92 | Type test with heat run for vertical motors, without acceptance | 0/21, 3/53 ... |
| F93 | Type test with heat run for vertical motors, with acceptance | 0/21, 3/53 ... |
| L99 | Wire-lattice pallet | 0/20 |
| M32 | Connected in star for dispatch | 0/20 |
| M33 | Connected in delta for dispatch | 0/20 |

IEC Squirrel-Cage Motors

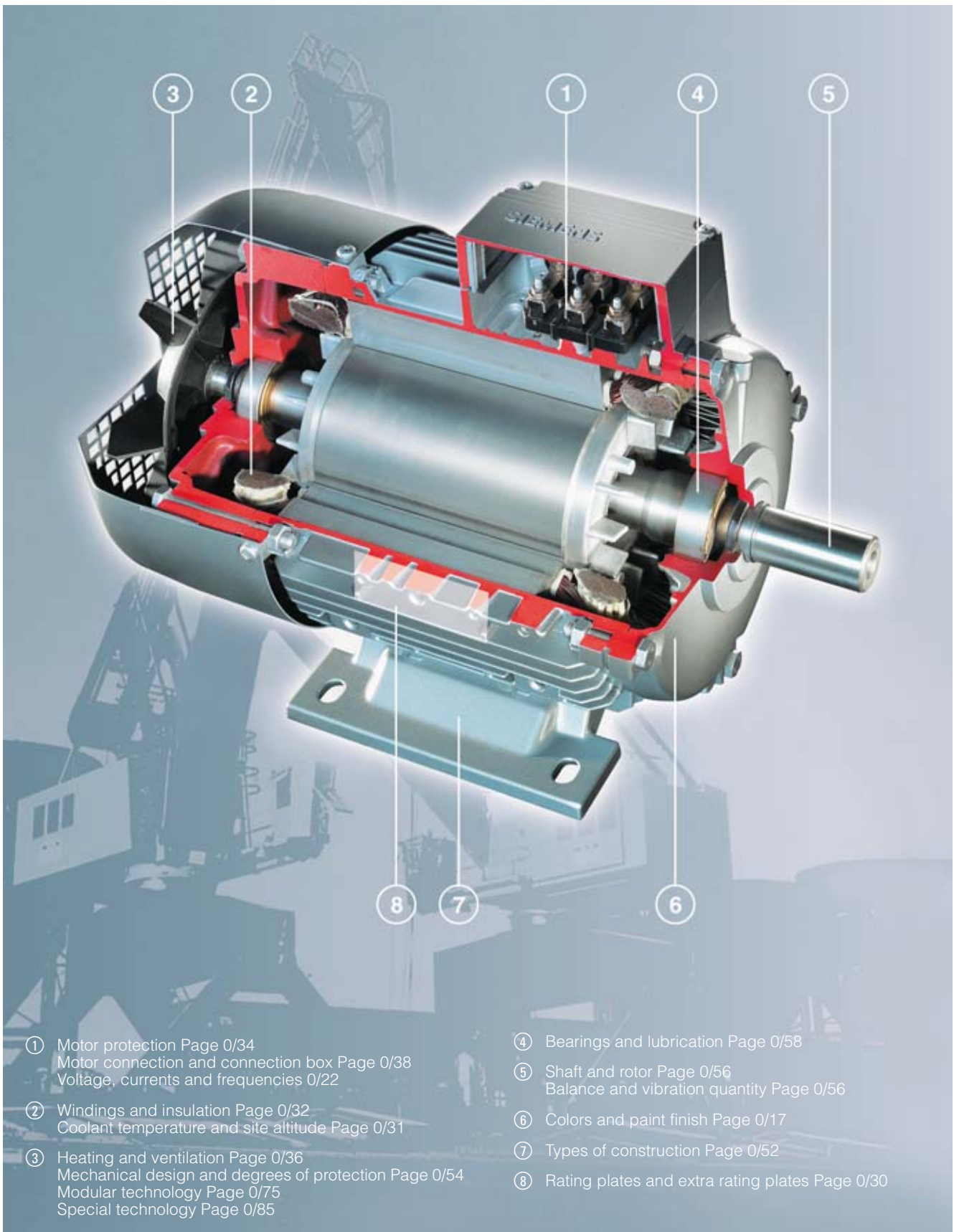
Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

0

Overview

Cut-away diagram of a low-voltage motor



- ① Motor protection Page 0/34
Motor connection and connection box Page 0/38
Voltage, currents and frequencies 0/22
- ② Windings and insulation Page 0/32
Coolant temperature and site altitude Page 0/31
- ③ Heating and ventilation Page 0/36
Mechanical design and degrees of protection Page 0/54
Modular technology Page 0/75
Special technology Page 0/85

- ④ Bearings and lubrication Page 0/58
- ⑤ Shaft and rotor Page 0/56
Balance and vibration quantity Page 0/56
- ⑥ Colors and paint finish Page 0/17
- ⑦ Types of construction Page 0/52
- ⑧ Rating plates and extra rating plates Page 0/30

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Designs in accordance with standards and specifications

Applicable standards and specifications

The motors comply with the appropriate standards and regulations, especially those listed in the table below.

| Title | IEC/EN | DIN EN |
|---|------------------------|-----------------|
| General specifications for rotating electrical machines | IEC 60034-1, IEC 60085 | DIN EN 60034-1 |
| Specification of the losses and efficiency of rotating electrical machines | IEC 60034-2 | DIN EN 60034-2 |
| Asynchronous AC motors for general use with standardized dimensions and outputs | IEC 60072 fixing only | DIN EN 50347 |
| Restart characteristics for rotating electrical machines | IEC 60034-12 | DIN EN 60034-12 |
| Terminal designations and direction of rotation for electrical machines | IEC 60034-8 | DIN EN 60034-8 |
| Designation for type of construction, installation and terminal box position | IEC 60034-7 | DIN EN 60034-7 |
| Entry to terminal box | – | DIN 42925 |
| Built-in thermal protection | IEC 60034-11 | DIN EN 60034-11 |
| Noise limit values for rotating electrical machines | IEC 60034-9 | DIN EN 60034-9 |
| IEC standard voltages | IEC 60038 | DIN IEC 60038 |
| Cooling methods for rotating electrical machines | IEC 60034-6 | DIN EN 60034-6 |
| Vibration severity of rotating electrical machines | IEC 60034-14 | DIN EN 60034-14 |
| Vibration limits | – | DIN ISO 10816 |
| Degrees of protection of rotating electrical machines | IEC 60034-5 | DIN EN 60034-5 |
| In addition, the following applies to Ex motors: | | |
| General regulations | IEC/EN 60079-0 | DIN EN 60079-0 |
| Explosion-proof enclosure "d" | IEC/EN 60079-1 | DIN EN 60079-1 |
| Increased safety "e" | IEC/EN 60079-7 | DIN EN 60079-7 |
| Type of protection "n" (non sparking) | IEC/EN 60079-15 | DIN EN 60079-15 |
| Areas containing flammable dust | IEC/EN 61241 | DIN EN 61241 |

National standards

The motors comply with the IEC or European standards listed above. The European standards replace the national standards in the following European countries:

Germany (VDE), France (NF C), Belgium (NBNC), Great Britain (BS), Italy (CEI), Netherlands (NEN), Sweden (SS), Switzerland (SEV) etc.

The motors also comply with various national standards. The following standards (with the exception of non-standard motors) have been harmonized with IEC publication 60034-1 or replaced with DIN EN 60034-1 so that the motors can be operated at standard rated output.

| | |
|--------------------|--|
| AS 1359 | Australia (higher output assignment than stated in DIN EN 50347 for frame size 250 M and above) |
| CSA C22.2, No. 100 | Canada |
| IS 325 IS 4722 | India |
| NEK – IEC 60034-1 | Norway |

Explosion-proof motors:

Since the requirements of explosion-proof motors comply with the European standards EN 60079-0, EN 60079-1, EN 60079-7 and Directive 94/9/EG (ATEX 95), certificates issued by authorized testing agencies (PTB, DMT, etc.) are accepted by all member states of the EU. The remaining members of CENELEC, Switzerland in particular, also accept the certificates.

The EU is currently changing the standard series from EN 50014ff to IEC / EN 60079-xx and IEC / EN 61241-xx. The transition period is approximately 2 years. After changing the standards, the first E of the marking of the type of protection will be omitted. For example: Old: EEx de – New: Ex de. The first E represented Euronorm.

Tolerances for electrical data

According to DIN EN 60034, the following tolerances are permitted: Motors which comply with DIN EN 60034-1 must have a voltage tolerance of $\pm 5\%$ / frequency tolerance of $\pm 2\%$ (Design A), if utilized, the permitted limit temperature of the temperature class may be exceeded by 10 K.

A tolerance of $\pm 5\%$ also applies to the rated voltage range in accordance with DIN EN 60034-1. Rated voltage and rated voltage range see Page 0/23.

Efficiency η for

$$P_{\text{rated}} \leq 150 \text{ kW: } -0.15 \cdot (1 - \eta)$$

$$P_{\text{rated}} > 150 \text{ kW: } -0.1 \cdot (1 - \eta)$$

with η being a decimal number.

$$\text{Power factor} - \frac{1 - \cos \phi}{6}$$

- Minimum absolute value: 0.02
- Maximum absolute value: 0.07

Slip $\pm 20\%$ (for motors $< 1 \text{ kW}$ $\pm 30\%$ is admissible)

Locked-rotor current $+20\%$

Locked-rotor torque -15% to $+25\%$

Breakdown torque -10%

Moment of inertia $\pm 10\%$

 1MA motors:

Add 10 % to the certified values for the locked-rotor current.

Energy-saving motors with European efficiency classification in accordance with EU/CEMEP (European Committee of Manufacturers of Electrical Machines and Power Electronics)

Low-voltage motors in the output range of 1.1 to 90 kW, 2-pole and 4-pole are marked in accordance with the EU/CEMEP agreement with the efficiency class EFF2 (Improved Efficiency) or EFF (High Efficiency).

So that the requirements of efficiency classes EFF and EFF2 are fulfilled, the active parts of the motor have been optimized. The procedure for calculating the efficiency is based on the loss-summation method according to IEC 60034-2.

Motors for the North American market

For motors which comply with North American regulations (NEMA, CSA, UL, etc.), it must always be checked whether the motors will be used in the US or Canada and whether they are subject to state laws.

Minimum efficiencies required by law

In 1997, an act was passed in the US to define minimum efficiencies for low-voltage three-phase motors (EPACT = Energy Policy Act). An act is in force in Canada that is largely identical, although it is based on different verification methods. The efficiency is verified for these motors for the USA using IEEE 112, Test Method B and for Canada using CSA-C390. Apart from a few exceptions, all low-voltage three-phase motors exported to the USA or Canada must comply with the legal requirements on efficiency.

The law requires minimum efficiencies for 2, 4 and 6-pole motors with a voltage of 230 and 460 V/60 Hz, in the output range of 1 to 200 HP (0.75 to 150 kW). Explosion-proof motors must also be included. 1LA9 and 1LG6 are also available in the design for Zones 2, 21 and 22.

According to EPACT, the following are excluded from the efficiency requirements, for example.

- Motors whose frame size output classification does not correspond with the standard series according to NEMA MG1-12.
- Flange-mounting motors without feet
- Brake motors
- Converter-fed motors
- Motors with design letter C and higher

For more information on EPACT:

<http://www.eren.doe.gov/>

Special requirements for the USA: Energy Policy Act

The act lays down that the nominal efficiency at full load and a "CC" number (Compliance Certification) must be included on the rating plate. The "CC" number is issued by the US Department of Energy (DOE). The following information is stamped on the rating plate of EPACT motors which must be marked by law: Nominal efficiency (service factor SF 1.15), design letter, code letter, CONT, CC-Nr. CC 032A (Siemens) and NEMA MG1-12.

Special requirements for Canada: CSA – Energy Efficiency Verification

These motors fulfill the minimum efficiency requirements laid down by the CSA standard C390. These motors are available as 1LA9 or 1LG6 and can be ordered with order code **D40** and are also marked with the CSA-E verification on the rating plate.



NEMA – Order code D30

The motors with increased efficiency according to EPACT are designed to meet the NEMA MG1-12 electrical standard and are marked accordingly. The mechanical design of all motors is compliant only to IEC, not to NEMA dimensions.

All motors in the **D30** version correspond to NEMA Design A (i. e. standard torque characteristic in accordance with NEMA and no starting current limitation).

For Design B, C and D, a special version is required (on request). According to NEC-ANSI-C1, Division 2, Class I, Group A, B, D, all 1LA/1LG motors that comply with Zone 2 can be used.

All other 1LA/1LG motors must be ordered with order code **D30**. Data on the rating plate: Rated voltage (voltage tolerance of $\pm 10\%$), nominal efficiency, design letter, code letter, CONT and NEMA MG1-12.

UL approval – Order code D31

The motors based on the 1LA/1LG basic series are listed for up to 600 V by Underwriters Laboratories Inc. ("Recognition Mark" = R/C).

For Zones 2, 21, 22 and Ex e motors or Ex de motors as well as marine motors, there is no listing.

This is not possible in combination with the option "temperature class 180 (H) at rated output and maximal coolant temperature of 60 °C", order code **C18**.

The motors must be ordered with order code **D31**, voltage code "9" and the order code for voltage and frequency.

According to UL, motor voltages are only certified up to 600 V, i. e. voltage codes 1, 3, 4 or 5. For this reason, voltage code "6" for example is omitted (400 V Δ /690 VY/ 50 Hz or 460 V Δ /60 Hz). Voltages 400 V Δ and 460 V Δ , for example, should be ordered as follows:

| Voltage | Voltage code |
|--|---------------------------------|
| 400 V Δ /50 Hz or 460 V Δ /60 Hz (50 Hz output) | 9 with L1U ¹⁾ |
| 460 V Δ /60 Hz (50 Hz output) | 9 with L2T |
| 460 V Δ /60 Hz (60 Hz output) | 9 with L2F |

The "UL Recognition Mark" is included on the rating plate of the motor.



In addition, the motor is designed to meet the NEMA MG1-12 electrical standard (with the exception of non-standard motors) and includes the following data on the rating plate: Rated voltage (voltage tolerance of $\pm 10\%$), nominal efficiency, design letter, code letter, CONT and NEMA MG1-12.

Externally or internally mounted components such as

- Motor protection
- Heating element
- Separately driven fan
- Brake
- Encoder
- Power connection
- Plug connector

are UL-R/C, CSA or C-US listed or used by manufacturers in accordance with regulations. It may have to be decided whether the motor is suitable for the application.

The motors can be operated with a frequency converter – separate converter or built-on (**1UA7**/order code **H15**) – with 50/60 Hz.

Deviating frequency settings must be tested at final acceptance.

The external fans for 1LA8 and 1LL8 motors must be made of metal.

The following versions are possible:

- 2-pole²⁾ motors, only in combination with K37 or K38
- 4, 6 and 8-pole motors, only in combination with K35

¹⁾ Only applicable to non-standard motors.

²⁾ Frame size 450 in 2-pole version, on request.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

0

For 1PQ8 motors, UL listed motors with separately driven fan (400 V Δ 50 Hz/460 V Δ 60 Hz) are used. Other voltages up to 600 V and/or other frequencies must be ordered using the order code Y81 and plain text. For 1LA8 and 1PQ8 motors of frame size 315, when option **D31** is ordered, connection box gt 640 will be automatically replaced without additional charge with connection box 1XB1 621. The connection boxes are designed with an undrilled cable entry. UL-R/C cable glands must be used for cable entry.

CSA approval – Order code D40

Motors based on the 1LA/1LG basic series are approved for up to 690 V in accordance with the Canadian regulations of the “Canadian Standard Association” (CSA). Externally or internally mounted components which are used are listed by CSA or are used by manufacturers in accordance with regulations. It may have to be decided whether the motor is suitable for the application. For Zones 2, 21, 22 and Ex e motors or Ex de motors as well as marine motors, there is no approval.

This is not possible in combination with the option “temperature class 180 (H) at rated output and maximal coolant temperature of 60 °C”, order code C18, for 1LA5, 1LG4, 1PP4 and 1PP5 motor series.

The motors must be ordered with the order code **D40**, voltage code “**9**” and order code for voltage and frequency. The CSA mark and the rated voltage (voltage tolerance of $\pm 10\%$) are included on the rating plate.



When energy-saving motors (1LA9, 1LG6) are ordered, they also include the CSA-E mark on the rating plate.



Other versions:

For versions and certification of explosion-proof motors in compliance with directive 94/9/EU (ATEX) as well as VIK versions, see catalog part 4 “Explosion-proof motors”.

For versions for use in shipping, see Section 10 “Marine motors”.

Export of low-voltage motors to China

CCC – China Compulsory Certification – Order code D01

“Small power motors” which are exported to China must be certified up to a rated output of:

2-pole: ≤ 2.2 kW

4-pole: ≤ 1.1 kW

6-pole: ≤ 0.75 kW

8-pole: ≤ 0.55 kW

The **1LA7, 1LA9, 1MA7 and 1MJ6** motors which must be certified have been certified by the CQC (China Quality Cert. Center). When ordered with the D01 order code, the “CCC” logo and “Factory Code” are included on the rating plate and packaging.



A005216

Factory Code:

A005216 = Works Bad Neustadt

A010607 = Works Mohelnice

Note:

Chinese customs checks the need for certification of imported products by means of commodity code.

The following do not need to be certified:

- Motors imported to China which have already been installed in a machine
- Repair parts

Export of low-voltage motors to Japan

PSE Mark Japan – Order Code D46

PSE marking is a mandatory certification in Japan in accordance with the electrical devices and safety of materials act. “Small power motors” with a rated output of up to 3 kW which are exported to Japan must bear the PSE marking. Marking is only applicable to motor series 1LA7, 1LP7, 1PP7 in catalog parts 2 “Standard motors up to frame size 315 L” and 7 “Motors with fans”.

The motors concerned are marked on the rating plate with the following “PSE” logo.



Export of low-voltage motors to Korea

Korea certification – Order Code D33

Certification confirms that the efficiency and power factor are in compliance with KSC 4202 (KEMCO). The certification is applicable to EFF1 motors of the 1LA9 and 1LG6 series in 2, 4 and 6 pole versions from 0.75 kW to 200 kW 400 V 50 Hz.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

0

Colors and paint finish

To protect the drives against corrosion and external influences, high-quality coatings based on 2-K epoxy resin are offered in various different colors.

| Version | Suitability of paint finish for climate group in accordance with DIN IEC 60721, Part 2-1 | |
|-----------------|---|---|
| Standard finish | Moderate (extended) for indoors and outdoors under a roof not directly subjected to weather conditions | Briefly: up to 120 °C Contin.: up to 100 °C |
| Special finish | Worldwide (global) for outdoor use in direct sunlight and/or weather conditions. Suitable for use in the tropics for <60 % relative humidity at 40 °C | Briefly: up to 140 °C Contin.: up to 120 °C Also: for aggressive atmospheres up to 1 % acid and alkali concentration or permanent dampness in sheltered rooms |

“Sea air resistant” special finish system – Order code **M94**

| Field of application | Resistance |
|--|---|
| <ul style="list-style-type: none"> Recommended for indoor installations or outdoor installations exposed to direct weather conditions Industrial climate with moderate SO₂ exposure, inshore maritime climate, but not offshore maritime climate, e.g. for crane drives and also in the paper industry Complies with the test requirements of DIN EN ISO 12944-2 Corrosion Category C4 | <ul style="list-style-type: none"> Chemical exposure to 5 % acid and caustic solution concentration Suitable for use in the tropics up to 75 % relative humidity at 50 °C Thermal stability from –40 to 140 °C |

“Offshore” special finish system – Order code **M91**

| Field of application | Resistance |
|--|---|
| <ul style="list-style-type: none"> Recommended for outdoor installations exposed to direct weather conditions Industrial climate with moderate SO₂ exposure and offshore maritime climate, e.g. for crane drives Complies with the test requirements of DIN EN ISO 12944-2 Corrosion Category C5 | <ul style="list-style-type: none"> Chemical exposure to 5 % acid and caustic solution concentration Suitable for use in the tropics up to 75 % relative humidity at 60 °C Thermal stability from –40 to 140 °C |

All motors are painted with RAL 7030 (stone gray) if the color is not specified.

Other colors can be ordered with standard finish using order code **Y53** and the RAL number in plain text for an additional charge (for an overview of the available RAL No./RAL colors see the following table for order code **Y53**).

Other colors in special finish must be ordered with the order code **Y51** or **Y54** and the RAL number in plain text (for an overview of the available RAL No./RAL colors, see the following tables for order codes **Y51** and **Y54**).

Direct sunlight can change the color. If color stability is required, it is recommended to use a polyurethane-based paint (only on request).

All paint finishes can be painted over with commercially available paints. Special paint with increased layer thickness available on request.

If required, the motors can be supplied only coated in primer, order code **K24**, or unpainted (unworked cast-iron surfaces in primer) using order code **K23**.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

0

Standard finish in other standard RAL colors – Order code **Y53**
(RAL number is required in plain text)

| RAL No. | Color name | RAL No. | Color name |
|---------|----------------|---------|-----------------|
| 1002 | Sand yellow | 6011 | Reseda green |
| 1013 | Pearl white | 6019 | Pastel green |
| 1015 | Light ivory | 6021 | Pale green |
| 1019 | Gray beige | 7000 | Squirrel gray |
| 2003 | Pastel orange | 7001 | Silver gray |
| 2004 | Pure orange | 7004 | Signal gray |
| 3000 | Flame red | 7011 | Iron gray |
| 3007 | Black red | 7016 | Anthracite gray |
| 5007 | Brilliant blue | 7022 | Umber gray |
| 5009 | Azure blue | 7031 | Blue gray |
| 5010 | Gentian blue | 7032 | Pebble gray |
| 5012 | Light blue | 7033 | Cement gray |
| 5015 | Sky blue | 7035 | Light gray |
| 5017 | Traffic blue | 9001 | Cream |
| 5018 | Teal blue | 9002 | Gray white |
| 5019 | Capri blue | 9005 | Jet black |

Special finish in standard RAL color with defined order codes
(special finish in other standard RAL colors can be ordered
indicating the RAL number in plain text with order code **Y54**)

For 1LA5, 1LA6, 1LA7, 1LA9, 1MA7, 1MA6, 1MJ6, 1PP5, 1LP5,
1PP7 and 1LP7 motors up to frame size 200 L, the special finish
is in RAL 7030 stone gray (order code **K26**) standard version.

| RAL No. | Color name | Order code |
|---------|------------|------------|
| 7030 | Stone gray | K26 |

Special finish in other standard RAL colors – Order code **Y54**
(RAL number is required in plain text)

| RAL No. | Color name | RAL No. | Color name |
|---------|----------------|---------|-----------------|
| 1002 | Sand yellow | 6011 | Reseda green |
| 1013 | Pearl white | 6019 | Pastel green |
| 1015 | Light ivory | 6021 | Pale green |
| 1019 | Gray beige | 7000 | Squirrel gray |
| 2003 | Pastel orange | 7001 | Silver gray |
| 2004 | Pure orange | 7004 | Signal gray |
| 3000 | Flame red | 7011 | Iron gray |
| 3007 | Black red | 7016 | Anthracite gray |
| 5007 | Brilliant blue | 7022 | Umber gray |
| 5009 | Azure blue | 7031 | Blue gray |
| 5010 | Gentian blue | 7032 | Pebble gray |
| 5012 | Light blue | 7033 | Cement gray |
| 5015 | Sky blue | 7035 | Light gray |
| 5017 | Traffic blue | 9001 | Cream |
| 5018 | Teal blue | 9002 | Gray white |
| 5019 | Capri blue | 9005 | Set black |

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Special finish in special RAL colors – Order code **Y51** (RAL number is required in plain text)

| RAL No. | Color name | RAL No. | Color name | RAL No. | Color name | RAL No. | Color name |
|---------|-------------------|---------|------------------|---------|------------------|---------|------------------|
| 1000 | Green beige | 3014 | Antique pink | 6003 | Olive green | 7036 | Platinum gray |
| 1001 | Beige | 3015 | Light pink | 6004 | Blue green | 7037 | Dusty gray |
| 1003 | Signal yellow | 3016 | Coral red | 6005 | Moss green | 7038 | Agate gray |
| 1004 | Golden yellow | 3017 | Rose | 6006 | Gray olive | 7039 | Quartz gray |
| 1005 | Honey yellow | 3018 | Strawberry red | 6007 | Bottle green | 7040 | Window gray |
| 1006 | Maize yellow | 3020 | Traffic red | 6008 | Brown green | 7042 | Traffic gray A |
| 1007 | Daffodil yellow | 3022 | Salmon pink | 6009 | Fir green | 7043 | Traffic gray B |
| 1011 | Brown beige | 3027 | Raspberry red | 6010 | Grass green | 7044 | Silk gray |
| 1012 | Lemon yellow | 3031 | Orient red | 6012 | Black green | 7045 | Tele gray 1 |
| 1014 | Dark ivory | 3032 | Pearl ruby red | 6013 | Reed green | 7046 | Tele gray 2 |
| 1016 | Sulfur yellow | 3033 | Pearl pink | 6014 | Yellow olive | 7047 | Tele gray 4 |
| 1017 | Saffron yellow | 4001 | Red lilac | 6015 | Black olive | 7048 | Pearl mouse gray |
| 1018 | Zinc yellow | 4002 | Red violet | 6016 | Turquoise green | 8000 | Green brown |
| 1020 | Olive yellow | 4003 | Heather violet | 6017 | May green | 8001 | Ocher brown |
| 1021 | Rape yellow | 4004 | Claret violet | 6018 | Yellow green | 8002 | Signal brown |
| 1023 | Traffic yellow | 4005 | Blue lilac | 6020 | Chrome green | 8003 | Clay brown |
| 1024 | Ochre yellow | 4006 | Traffic purple | 6022 | Olive drab | 8004 | Copper brown |
| 1027 | Curry | 4007 | Purple violet | 6024 | Traffic green | 8007 | Fawn brown |
| 1028 | Melon yellow | 4008 | Signal violet | 6025 | Fern green | 8008 | Olive brown |
| 1032 | Broom yellow | 4009 | Pastel violet | 6026 | Opal green | 8011 | Nut brown |
| 1033 | Dahlia yellow | 4010 | Tele magenta | 6027 | Light green | 8012 | Red brown |
| 1034 | Pastel yellow | 4011 | Pearl violet | 6028 | Pine green | 8014 | Sepia brown |
| 1035 | Pearl beige | 4012 | Pearl blackberry | 6029 | Mint green | 8015 | Chestnut |
| 1036 | Pearl gold | 5000 | Violet blue | 6032 | Signal green | 8016 | Mahogany |
| 1037 | Sun yellow | 5001 | Green blue | 6033 | Mint turquoise | 8017 | Chocolate |
| 2000 | Yellow orange | 5002 | Ultramarine | 6034 | Pastel turquoise | 8019 | Gray brown |
| 2001 | Red orange | 5003 | Sapphire blue | 6035 | Pearl green | 8022 | Black brown |
| 2002 | Vermilion | 5004 | Black blue | 6036 | Pearl opal green | 8023 | Orange brown |
| 2008 | Bright red orange | 5005 | Signal blue | 7002 | Olive gray | 8024 | Beige brown |
| 2009 | Traffic orange | 5008 | Gray blue | 7003 | Moss gray | 8025 | Pale brown |
| 2010 | Signal orange | 5011 | Steel blue | 7005 | Mouse gray | 8028 | Terra brown |
| 2011 | Deep orange | 5013 | Cobalt blue | 7006 | Beige gray | 8029 | Pearl copper |
| 2012 | Salmon orange | 5014 | Pigeon blue | 7008 | Khaki gray | 9003 | Signal white |
| 2013 | Pearl orange | 5020 | Ocean blue | 7009 | Green gray | 9004 | Signal black |
| 3001 | Signal red | 5021 | Water blue | 7010 | Tarpaulin gray | 9006 | White aluminum |
| 3002 | Carmine red | 5022 | Night blue | 7012 | Basalt gray | 9007 | Gray aluminum |
| 3003 | Ruby red | 5023 | Distant blue | 7013 | Brown gray | 9010 | Pure white |
| 3004 | Purple red | 5024 | Pastel blue | 7015 | Slate gray | 9011 | Graphite black |
| 3005 | Wine red | 5025 | Pearl gentian | 7021 | Black gray | 9016 | Traffic white |
| 3009 | Oxide red | 5026 | Pearl night blue | 7023 | Concrete gray | 9017 | Traffic black |
| 3011 | Brown red | 6000 | Patina green | 7024 | Graphite gray | 9018 | Papyrus white |
| 3012 | Beige red | 6001 | Emerald green | 7026 | Granite gray | 9022 | Pearl light gray |
| 3013 | Tomato red | 6002 | Leaf green | 7034 | Yellow gray | 9023 | Pearl dark gray |

Coating structure and colors not specified in the catalog are available on request.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Packaging, safety notes, documentation and test certificates

Connected in star for dispatch – Order code **M32**

The terminal board of the motor is connected in star for dispatch.

Connected in delta for dispatch – Order code **M33**

The terminal board of the motor is connected in delta for dispatch.

Packing weights and packing dimensions

| Packing weights | | For land transport | | | | | |
|--------------------------|---|----------------------------|--------------------|------------------|------------------------------------|--------------------|------------------|
| For motors Frame size | Type 1LA5 .../1LA7 ..., 1LA6 ..., 1LA9 ..., 1LG4 ..., 1LG6 ..., 1LP4 ..., 1LP5 .../1LP7 ..., 1MA6 ..., 1MA7 ..., 1MJ6 ..., 1MJ7 ..., 1PP4 ..., 1PP5 .../1PP7 ... | Type of construction IM B3 | | | Types of construction IM B5, IM V1 | | |
| | | In box Tare | On batters Tare | In crate Tare | In box Tare | On batters Tare | In crate Tare |
| | | kg | kg | kg | kg | kg | kg |
| 56 M | ... 050/053 | 0.65 | – | – | 0.65 | – | – |
| 63 M | ... 060/063 | 0.65 | – | – | 0.65 | – | – |
| 71 M | ... 070 | 0.65 | – | – | 0.65 | – | – |
| | ... 073 | 0.65 | – | – | 0.65 | – | – |
| 80 M | ... 080 | 0.65 | – | – | 0.65 | – | – |
| | ... 083 | 0.65 | – | – | 0.65 | – | – |
| 90 S | ... 090 | 0.65 | – | – | 0.65 | – | – |
| 90 L | ... 096/097 | 0.65 | – | – | 0.65 | – | – |
| 100 L | ... 106/107 | 1.3 | – | – | 1.3 | – | – |
| 112 M | ... 113 | 1.5 | – | – | 1.5 | – | – |
| 132 S | ... 130/131 | 4.7 | – | – | 5.2 | – | – |
| 132 M | ... 133/134 | 4.7 | – | – | 5.2 | – | – |
| 160 M | ... 163/164 | 4.8 | – | – | 5.7 | – | – |
| 160 L | ... 166 | 4.8 | – | – | 5.7 | – | – |
| 180 M | ... 183 | 13.0 | – | – | 13.4 | – | – |
| 180 L | ... 186 | 13.0 | – | – | 13.4 | – | – |
| 200 L | ... 206/207 | 13.5 | – | – | 13.5 | – | – |
| 225 S | ... 220 | 13.7 | 7 | 20 | 13.7 | 10 | 20 |
| 225 M | ... 223 | 13.7 | 7 | 20 | 13.7 | 10 | 20 |
| 250 M | ... 253 | – | 20 | 36 | – | 20 | 40 |
| 280 S | ... 280 | – | 20 | 36 | – | 20 | 40 |
| 280 M | ... 283 | – | 20 | 36 | – | 20 | 40 |
| 315 S | ... 310 | – | 20 | 38 | – | 20 | 45 |
| 315 M | ... 313 | – | 20 | 38 | – | 20 | 45 |
| 315 L | ... 316/317/318 | – | 22 | 40 | – | 22 | 45 |

Values for 1PP6 motors on request.

Data apply for individual packaging. For frame sizes 56 to 180 L, wire-lattice pallets can be used, order code **L99**.

Packing weights and packing dimensions for 1LA8, 1PQ8 and 1LL8 motors

| For motors Frame size | Type 1LA8 ..., 1PQ8 ..., 1LL8 ... | Packing weights | | | |
|--------------------------|--|--|------------------------------------|------------------------------------|------------------------------------|
| | | Land transport on batters | | Sea transport in wooden cases | |
| | | Type of construction IM B3 Tare | Type of construction IM V1 Tare | Type of construction IM B3 Tare | Type of construction IM V1 Tare |
| | | kg | kg | kg | kg |
| 315 | ... 315/317 | 30 | 55 | 270 | 310 |
| 355 | ... 353/355/357 | 40 | 65 | 320 | 365 |
| 400 | ... 403/405/407 | 45 | 75 | 390 | 445 |
| 450 | ... 453/455/457 | 50 | 85 | 450 | 510 |
| Maximum motor dimensions | | Allowances for maximum motor dimensions (packing dimensions = motor dimensions + allowance) | | | |
| | | Land transport on batters | | Sea transport in wooden cases | |
| | | Type of construction IM B3 | Type of construction IM V1 | Type of construction IM B3 | Type of construction IM V1 |
| | | approx. | approx. | approx. | approx. |
| | | mm | mm | mm | mm |
| Length | | +250 | +250 | +250 | +250 |
| Width | | +200 | +300 | +200 | +200 |
| Height | | +200 | +250 | +500 | +500 |

Safety notes

The motors are supplied without safety and commissioning notes for most motor types and frame sizes. A customer's declaration of renouncement is required.

Without safety and commissioning note – Order code **B00**

The motors are supplied with only one set of safety and commissioning notes per wire-lattice pallet for most motor types and frame sizes.

Complete with one set of safety and commissioning notes per wire-lattice pallet – Order code **B01**Documentation

The documentation for non-standard motors frame size 315 and above (catalog part 3) contains as standard:

- Safety and commissioning notes (paper)
- Operating instructions (on CD)
- EU manufacturer's declaration (on CD)
- Acceptance test certificate 3.1 according to EN 10204 (by e-mail)
- Routine test certificate (by e-mail)

For non-standard motors from frame size 315 and above (catalog part 3) the following documents are optionally available:

- Document – Electrical data sheet – Order code **B31**
- Document – Order dimension drawing – Order code **B32**
- Document – Load characteristics – Order code **B37** (on request, only available for motors for mains-fed operation)

Optionally available documents for other motors:

- Operating instructions German/English enclosed in print – Order code **B23**
- "SD Manual Collection": all manuals for low-voltage motors, geared motors and low-voltage converters on DVD in 5 languages, see catalog part 11 "Appendix".

Test certificates**Acceptance test certificate 3.1 according to EN 10204** – Order code **B02**

An acceptance test certificate 3.1 according to EN 10204 can be supplied for most motors.

The tests listed below are mainly intended for non-standard motors (catalog part 3). The assignment of order codes to motor types can be found in the "Special versions" section of the relevant catalog parts.

Standard test (routine test) with acceptance – Order code **F01**

Standard routine testing of the motor, but with acceptance by an external representative (e.g. customer). The routine test is required to check the correct functioning of a motor where the characteristic data are known and were determined on a machine of the same type in a detailed type test. For a routine test, characteristic variables are determined, which after being converted to the basic data, are compared with the reference values for this machine type.

Visual acceptance and report handover with acceptance – Order code **F03**

Visual acceptance of the motor by external representative (e.g. customer) and handover of the routine test report to external representative (e.g. customer).

Temperature-rise test without acceptance – Order code **F04**

For the temperature-rise test, the temperature rise of a motor is measured in continuous duty. To do this, the motor is connected to a load (dynamometer), and operated with the rated power.

Temperature-rise test with acceptance – Order code **F05**

As for order code F04, but with acceptance by an external representative (e.g. customer).

Noise measurement during idling, no noise analysis, no acceptance – Order code **F28**

The A-rated sound pressure level L_{pA} is measured during idling at rated voltage. The number of measuring points and their locations are specified in the test certificate.

Noise measurement during idling, no noise analysis, with acceptance – Order code **F29**

As for order code F28, but with acceptance by an external representative (e.g. customer).

Recording of current and torque curves with torque metering shaft during starting, without acceptance – Order code **F34**

The measurement is used to determine the starting response of a motor. By comparison with the load torque characteristic, the acceleration torque can be calculated. This can be used to check that a complete machine set has started correctly. This measurement is only meaningful for motors that are directly mains-fed and is not offered for motors that are designed for converter-fed operation.

Recording of current and torque curves with torque metering shaft during starting, with acceptance – Order code **F35**

As for order code F34, but with acceptance by an external representative (e.g. customer).

Measurement of the locked-rotor torque and locked-rotor current without acceptance – Order code **F52**

The torque and current are determined when the rotor is locked. This measurement is only meaningful for motors that are directly mains-fed and is not offered for motors that are designed for converter-fed operation.

Measurement of the locked-rotor torque and locked-rotor current with acceptance – Order code **F53**

As for order code F52, but with acceptance by an external representative (e.g. customer).

Noise measurement during idling, with noise analysis, without acceptance – Order code **F62**

As for F28, but a noise analysis is also performed. The signal is divided up into frequency bands and the level is determined in each band.

Noise measurement during idling, with noise analysis, with acceptance – Order code **F63**

As for order code F62, but with acceptance by an external representative (e.g. customer).

Type test with heat run for horizontal motors, without acceptance – Order code **F82**

During the type test, a temperature-rise test is performed; no-load, short-circuit and load characteristics are recorded; the iron losses and friction losses are determined and the efficiency is calculated from the summed losses. This option is only applicable to motors with a horizontal type of construction.

Type test with heat run for horizontal motors, with acceptance – Order code **F83**

As for order code F82, but with acceptance by an external representative (e.g. customer, classification society).

Type test with heat run for vertical motors, without acceptance – Order code **F92**

As for order code F82, but only for motors with a vertical type of construction.

Type test with heat run for vertical motors, with acceptance – Order code **F93**

As for order code F92, but with acceptance by an external representative (e.g. customer, classification society).

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

0

Voltages, currents and frequencies

Standard voltages

EN 60034-1 differentiates between Category A (combination of voltage deviation $\pm 5\%$ and frequency deviation $\pm 2\%$) and Category B (combination of voltage deviation $\pm 10\%$ and frequency deviation $+3/-5\%$) for voltage and frequency fluctuations. The motors can supply their rated torque in both Category A and Category B. In Category A, the temperature rise is approx. 10 K higher than during normal operation.

| Standard | Category | Category |
|--|--|--|
| EN 60034 - 1 | A | B |
| Voltage deviation | $\pm 5\%$ | $\pm 10\%$ |
| Frequency deviation | $\pm 2\%$ | $+3\%/-5\%$ |
| Rating plate data stamped with rated voltage (e.g. 230 V) | a $\pm 5\%$ (e.g. 230 V $\pm 5\%$) | a $\pm 10\%$ (e.g. 230 $\pm 10\%$) |
| Rating plate data stamped with rated voltage ranges b to c (e.g. 220 to 240 V) | b -5% to c $+5\%$ (e.g. 220 -5% to 240 $+5\%$) | b -10% to c $+10\%$ (e.g. 220 -10% to 240 $+10\%$) |

According to the standard, longer operation is not recommended for Category B, therefore this is not permitted for explosion-proof motors. See Page 0/31 for details of the rating plate inscriptions and examples. The selection and ordering data state the rated current at 400 V and where applicable 690 V. The DIN IEC 60038 standard specifies a tolerance of $\pm 10\%$ for mains voltages of 230 V, 400 V and 690 V. The rating plates of motors with voltage code 0, 1 or 6 also include a rated voltage range in addition to the rated voltage (see table).

The rated currents at 420 V and for 1LA8 motors 660 V or 725 V are listed in the table on Pages 0/26, 0/27 and on the rating plate.

The tolerance laid down by DIN EN 60034-1 applies to all converter-fed 1LA8 motors as well as to 1LA5, 1LA7, 1LG6, 1PQ8 and 1LL8 motors with special 690 V insulation, i.e. no rated voltage range is specified on the rating plate.

For 1LA and 1LG motors, type of protection "n" (Zone 2), a rated voltage range is not specified.

| Mains voltages | Rated voltage range | Voltage code |
|---|--|-----------------|
| 1LA, 1LG, 1MJ, 1PQ8 and 1LL8 motors | | |
| 230 V Δ /400 VY, 50 Hz | 220 ... 240 V Δ /380 ... 420 VY 50 Hz | 1 ¹⁾ |
| 400 V Δ /690 VY, 50 Hz | 380 ... 420 V Δ /660 ... 725 VY, 50 Hz | 6 |
| 500 VY, 50 Hz | - | 3 |
| 500 V Δ , 50 Hz | - | 5 |
| 1LA and 1LG motors | | |
| Second rating plate with 50 and 60 Hz data, frame sizes 56 to 315 M for 1LA9 and 1LG6 with output at 60 Hz additionally in HP | | |
| 460 V, 60 Hz | 440 ... 480V, 60 Hz | 1, 6 |
| 1MA motors | | |
| 230 V Δ /400 VY, 50 Hz | 218 ... 242 V Δ /380 ... 420 VY, 50 Hz | 1 |
| 400 V Δ /690 VY, 50 Hz | 380 ... 420 V Δ /655 ... 725 VY, 50 Hz | 6 |

1MA motors:

For non-standard frequencies, the t_E times and, where applicable, the rated output, may differ from those specified in the selection tables; in this case, a new or supplementary certificate is needed. For Δ connection, overload protection with phase-failure protection must be provided.

Non-standard voltages and/or frequencies

The tolerance laid down by DIN EN 60034-1 applies to all non-standard voltages.

Order codes have been allocated for a number of non-standard voltages at 50 or 60 Hz. They are ordered by specifying the code digit 9 for voltage in the 11th position of the Order No. and the appropriate order code.

L8Y Standard winding

Winding in accordance with voltage codes 0, 4, 5, 6, 7 or 8; rating plate is stamped with order details.

The rated voltage is permitted to deviate up to $\pm 5\%$ from the medium voltage of the defined voltage codes (0, 4, 5, 6, 7 or 8). The order code **L8Y** is only possible for non-standard motors of the motor series 1LA8, 1PQ8 and 1LL8. Order code **L8Y** does not apply to explosion-proof motors, converter-fed motors and motors for the North American market (in connection with order codes D30, D31 or D40).

L1Y Non-standard winding for voltages between 200 V (380 V for 1LA8, 1PQ8 and 1LL8 motor series) and 690 V and rated outputs.

For voltages and rated outputs outside these ranges, please inquire.

| Motor series | Frame size | Rated voltages for L1Y that can be supplied | |
|---|-------------|---|-----------------------|
| | | Lowest / highest voltage in V for | |
| | | Delta | Star |
| 1LA7, 1LA9, 1LP7, 1MA7, 1MJ6, 1PP7 | 56 ... 90 | 200/500 ²⁾ | 250/690 ³⁾ |
| 1LA6, 1LA7, 1LA9, 1LP7, 1MA6, 1MA7, 1MJ6, 1PP6, 1PP7 | 100 ... 160 | 200/690 | 250/690 |
| 1LA5, 1LA9, 1LP5, 1MA6, 1MJ6, 1PP5, 1PP6 | 180 ... 200 | 200/690 | 250/690 |
| 1LA5, 1LP5, 1PP5 | 225 | 200/690 | 250/690 |

L3Y Non-standard winding Y/ Δ starting at low speed (only possible for 1LA7 and 1LA5 pole-changing motors).

When ordering **L8Y**, **L1Y** and **L3Y**, state in plain text: Voltage, frequency and connection.

Order codes for other rated voltages in the relevant catalog parts

For converter-fed motors and smoke extraction motors, only order code **L1Y** is possible. For non-standard motors, order code **L8Y** is also possible for converter-fed operation. The order codes listed below are possible for other motors; see the relevant catalog parts.

¹⁾ Not applicable to non-standard motors.

²⁾ Highest voltage in delta circuit for 1MA7 060-2 and 1MA7 063-4 290 V as well as for 1MA7 060-4 230 V.

³⁾ Highest voltage in star circuit for 1MA7 060-2 and 1MA7 063-4 500 V as well as for 1MA7 060-4 400 V.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Further voltages for standard motors

| Voltage at 50 Hz | Required output at 50 Hz | Order code for 50 Hz constant-speed motors (not pole-changing) ¹⁾ | Frame sizes for motor | | | | | |
|--|---------------------------------|---|-----------------------|-------------|------------|---------------|------------|---------------|
| | | | 1LA5, 1LA7 | 1LA6 | 1LA9 | 1LG4, 1LG6 | 1LP5, 1LP7 | 1LP4 |
| 220 VΔ/380 VY ²⁾ (210 ... 230 VΔ/ 360 ... 400 VY) | 50 Hz output | L1R | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 M | 63 ... 200 | 180 ... 315 L |
| 230 VΔ (220 ... 240 VΔ) | 50 Hz output | L1E | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 M | 63 ... 200 | 180 ... 315 M |
| 380 VΔ/660 VY ³⁾ (360 ... 400 VΔ/ 625 ... 695 VY) | 50 Hz output | L1L | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 L | 63 ... 200 | 180 ... 315 L |
| 415 VY (395 ... 435 VY) | 50 Hz output | L1C | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 M | 63 ... 200 | 180 ... 315 L |
| 415 VΔ (395 ... 435 VΔ) | 50 Hz output | L1D | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 L | 63 ... 200 | 180 ... 315 L |
| 400 VY (380 ... 420 VY) | 50 Hz output | L1A | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 M | 63 ... 200 | 180 ... 315 L |
| 400 VΔ (380 ... 420 VΔ) | 50 Hz output | L1B | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 L | 63 ... 200 | 180 ... 315 L |
| 400 VΔ (460 VΔ at 60 Hz) (380 ... 420 VΔ) | 50 Hz output | L1U | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 L | 63 ... 200 | 180 ... 315 L |

| Voltage at 60 Hz | Required output at 60 Hz | Order code for 60 Hz constant-speed motors (not pole-changing) | Frame sizes for motors | | | | | |
|-------------------------|---------------------------------|---|------------------------|-------------|------------|---------------|------------|---------------|
| | | | 1LA5, 1LA7 | 1LA6 | 1LA9 | 1LG4, 1LG6 | 1LP5, 1LP7 | 1LP4 |
| 220 VΔ/380 VY | 50 Hz output | L2A | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 M | 63 ... 200 | 180 ... 315 L |
| 220 VΔ/380 VY | 60 Hz output | L2B | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 M | 63 ... 200 | 180 ... 315 L |
| 380 VΔ/660 VY | 50 Hz output | L2C | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 L | 63 ... 200 | 180 ... 315 L |
| 380 VΔ/660 VY | 60 Hz output | L2D | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 L | 63 ... 200 | 180 ... 315 L |
| 440 VY | 50 Hz output | L2Q | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 M | 63 ... 200 | 180 ... 315 L |
| 440 VY | 60 Hz output | L2W | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 M | 63 ... 200 | 180 ... 315 L |
| 440 VΔ | 50 Hz output | L2R | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 L | 63 ... 200 | 180 ... 315 L |
| 440 VΔ | 60 Hz output | L2X | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 L | 63 ... 200 | 180 ... 315 L |
| 460 VY | 50 Hz output | L2S | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 M | 63 ... 200 | 180 ... 315 L |
| 460 VY | 60 Hz output | L2E | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 M | 63 ... 200 | 180 ... 315 L |
| 460 VΔ | 50 Hz output | L2T | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 L | 63 ... 200 | 180 ... 315 L |
| 460 VΔ | 60 Hz output | L2F | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 L | 63 ... 200 | 180 ... 315 L |
| 575 VY | 50 Hz output | L2U | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 M | 63 ... 200 | 180 ... 315 L |
| 575 VY | 60 Hz output | L2L | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 M | 63 ... 200 | 180 ... 315 L |
| 575 VΔ | 50 Hz output | L2V | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 L | 63 ... 200 | 180 ... 315 L |
| 575 VΔ | 60 Hz output | L2M | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 L | 63 ... 200 | 180 ... 315 L |

| Voltage at 60 Hz | Required output at 60 Hz | Order code for 60 Hz motors multi-voltage | Frame sizes for motors | | | | | |
|-------------------------|---------------------------------|--|------------------------|------|-------------|------------|-------------|------|
| | | | 1LA5, 1LA7 | 1LA6 | 1LA9 | 1LG4, 1LG6 | 1LP5, 1LP7 | 1LP4 |
| 230 VYY/460 VY 60 Hz | 50 Hz output | L3E | 56 ... 200 | – | 56 ... 200 | – | 63 ... 200 | – |
| 230 VYY/460 VY 60 Hz | 60 Hz output | L3F | 56 ... 200 | – | 56 ... 200 | – | 63 ... 200 | – |
| 230 VΔΔ/460 VΔ 60 Hz | 50 Hz output | L3G | 100 ... 200 | – | 100 ... 200 | – | 100 ... 200 | – |
| 230 VΔΔ/460 VΔ 60 Hz | 60 Hz output | L3H | 100 ... 200 | – | 100 ... 200 | – | 100 ... 200 | – |

| Voltage at 60 Hz | Required output at 60 Hz | Order code for 60 Hz motors pole-changing | Frame sizes for motors | | | | | |
|-------------------------|---------------------------------|--|------------------------|------|------|------------|------------|------|
| | | | 1LA5, 1LA7 | 1LA6 | 1LA9 | 1LG4, 1LG6 | 1LP5, 1LP7 | 1LP4 |
| 220 V | 50 Hz output | L4A | 63 ... 200 | – | – | – | – | – |
| 220 V | 60 Hz output | L4B | 63 ... 200 | – | – | – | – | – |
| 380 V | 50 Hz output | L4C | 63 ... 200 | – | – | – | – | – |
| 380 V | 60 Hz output | L4D | 63 ... 200 | – | – | – | – | – |
| 440 V | 50 Hz output | L4G | 63 ... 200 | – | – | – | – | – |
| 440 V | 60 Hz output | L4E | 63 ... 200 | – | – | – | – | – |
| 460 V | 50 Hz output | L4J | 63 ... 200 | – | – | – | – | – |
| 460 V | 60 Hz output | L4H | 63 ... 200 | – | – | – | – | – |
| 575 V | 50 Hz output | L4N | 63 ... 200 | – | – | – | – | – |
| 575 V | 60 Hz output | L4M | 63 ... 200 | – | – | – | – | – |

¹⁾ For order codes **L1A, L1B, L1C, L1D, L1E, L1L, L1R** and **L1U**, a rated voltage range is also included on the rating plate.

²⁾ For the order code **L1R** a voltage of 440 VY 60 Hz is also possible for 1LA5, 1LA7, 1LA9, 1LP5 and 1LP7 motor series.

³⁾ For the order code **L1L** a voltage of 440 VΔ 60 Hz is also possible for 1LA5, 1LA7, 1LA9, 1LP5 and 1LP7 motor series.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Further voltages for non-standard motors

| Voltage at 60 Hz | Required output at 60 Hz | Order code for 60 Hz constant-speed motors (not pole-changing) | Frame sizes for motors | | |
|------------------|--------------------------|--|------------------------|-------------|-------------|
| | | | 1LA8 | 1PQ8 | 1LL8 |
| 220 VΔ/380 VY | 50 Hz output | L2A | – | – | – |
| 220 VΔ/380 VY | 60 Hz output | L2B | – | – | – |
| 380 VΔ/660 VY | 50 Hz output | L2C | 315 ... 450 | 315 ... 450 | 315 ... 450 |
| 380 VΔ/660 VY | 60 Hz output | L2D | 315 ... 450 | 315 ... 450 | 315 ... 450 |
| 440 VY | 50 Hz output | L2Q | – | – | – |
| 440 VY | 60 Hz output | L2W | – | – | – |
| 440 VΔ | 50 Hz output | L2R | 315 ... 450 | 315 ... 450 | 315 ... 450 |
| 440 VΔ | 60 Hz output | L2X | 315 ... 450 | 315 ... 450 | 315 ... 450 |
| 460 VY | 50 Hz output | L2S | – | – | – |
| 460 VY | 60 Hz output | L2E | – | – | – |
| 460 VΔ | 50 Hz output | L2T | 315 ... 450 | 315 ... 450 | 315 ... 450 |
| 460 VΔ | 60 Hz output | L2F | 315 ... 450 | 315 ... 450 | 315 ... 450 |
| 575 VY | 50 Hz output | L2U | – | – | – |
| 575 VY | 60 Hz output | L2L | – | – | – |
| 575 VΔ | 50 Hz output | L2V | 315 ... 450 | 315 ... 450 | 315 ... 450 |
| 575 VΔ | 60 Hz output | L2M | 315 ... 450 | 315 ... 450 | 315 ... 450 |

Further voltages for explosion-proof motors

| Voltage at 50 Hz | Required output at 50 Hz | Order code for 50 Hz constant-speed motors (not pole-changing) | Frame sizes for motors | | | | | | |
|--|--------------------------|--|------------------------|-------------|------------|---------------|--------------------------|------------|---------------|
| | | | 1LA5, 1LA7 | 1LA6 | 1LA9 | 1LG4, 1LG6 | 1MA6, 1MA7 ²⁾ | 1MJ6 | 1MJ7 |
| 220 VΔ/380 VY ³⁾ (210 ... 230 VΔ/ 360 ... 400 VY) | 50 Hz output | L1R | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 M | 63 ... 315 M | 71 ... 200 | 225 ... 315 M |
| 230 VΔ (220 ... 240 VΔ) | 50 Hz output | L1E | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 M | 63 ... 315 M | 71 ... 200 | 225 ... 315 M |
| 380 VΔ/660 VY ⁴⁾ (360 ... 400 VΔ/ 625 ... 695 VY) | 50 Hz output | L1L | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 L | 71 ... 315 L | 71 ... 200 | 225 ... 315 M |
| 415 VY (395 ... 435 VY) | 50 Hz output | L1C | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 M | 63 ... 315 M | 71 ... 200 | 225 ... 315 M |
| 415 VΔ (395 ... 435 VΔ) | 50 Hz output | L1D | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 L | 71 ... 315 L | 71 ... 200 | 225 ... 315 M |
| 400 VY (380 ... 420 VY) | 50 Hz output | L1A | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 M | – | – | – |
| 400 VΔ (380 ... 420 VΔ) | 50 Hz output | L1B⁵⁾ | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 L | – | – | – |
| 400 VΔ (460 VΔ at 60 Hz) (380 ... 420 VΔ) | 50 Hz output | L1U | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 L | – | – | – |
| 400 VΔ (only 4-8-pole) | 87 Hz output | L3A | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 M | – | – | – |

| Voltage at 60 Hz | Required output at 60 Hz | Order code for 60 Hz constant-speed motors (not pole-changing) | Frame sizes for motors | | | | | | |
|------------------|--------------------------|--|------------------------|-------------|------------|---------------|--------------------------|------------|---------------|
| | | | 1LA5, 1LA7 | 1LA6 | 1LA9 | 1LG4, 1LG6 | 1MA6, 1MA7 ⁶⁾ | 1MJ6 | 1MJ7 |
| 220 VΔ/380 VY | 50 Hz output | L2A | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 M | 63 ... 315 M | 71 ... 200 | 225 ... 315 M |
| 220 VΔ/380 VY | 60 Hz output | L2B | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 M | – | 71 ... 200 | 225 ... 315 M |
| 380 VΔ/660 VY | 50 Hz output | L2C | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 L | 63 ... 315 L | 71 ... 200 | 225 ... 315 M |
| 380 VΔ/660 VY | 60 Hz output | L2D | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 L | – | 71 ... 200 | 225 ... 315 M |
| 440 VY | 50 Hz output | L2Q | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 M | 63 ... 315 M | 71 ... 200 | 225 ... 315 M |
| 440 VY | 60 Hz output | L2W | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 M | – | 71 ... 200 | 225 ... 315 M |
| 440 VΔ | 50 Hz output | L2R | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 L | 63 ... 315 L | 71 ... 200 | 225 ... 315 M |
| 440 VΔ | 60 Hz output | L2X | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 L | – | 71 ... 200 | 225 ... 315 M |
| 460 VY | 50 Hz output | L2S | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 M | 63 ... 315 M | 71 ... 200 | 225 ... 315 M |
| 460 VY | 60 Hz output | L2E | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 M | – | 71 ... 200 | 225 ... 315 M |
| 460 VΔ | 50 Hz output | L2T | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 L | 63 ... 315 L | 71 ... 200 | 225 ... 315 M |
| 460 VΔ | 60 Hz output | L2F | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 L | – | 71 ... 200 | 225 ... 315 M |
| 575 VY | 50 Hz output | L2U | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 M | 63 ... 315 M | 71 ... 200 | 225 ... 315 M |
| 575 VY | 60 Hz output | L2L | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 M | – | 71 ... 200 | 225 ... 315 M |
| 575 VΔ | 50 Hz output | L2V | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 L | 63 ... 315 L | 71 ... 200 | 225 ... 315 M |
| 575 VΔ | 60 Hz output | L2M | 56 ... 225 | 100 ... 160 | 56 ... 200 | 180 ... 315 L | – | 71 ... 200 | 225 ... 315 M |

1) For order codes **L1A**, **L1C**, **L1D**, **L1E**, **L1L**, **L1R** and **L1U**, a rated voltage range is also included on the rating plate, with the exception of versions in Zone 2 type of protection "n" or Ex n II T3.

2) For further information on the rated voltage range see Page 4/84.

3) For the order code **L1R** a voltage of 440 VY 60 Hz is also possible for 1LA5, 1LA7, 1LA9, 1LP5 and 1LP7 motor series.

4) For the order code **L1L** a voltage of 440 VΔ 60 Hz is also possible for 1LA5, 1LA7, 1LA9, 1LP5 and 1LP7 motor series.

5) For converter-fed operation, the converter output for a voltage according to the table is included on the rating plate.

6) A special certificate is required.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

0

Further voltages for fan motors

| Voltage at 50 Hz | Required output at 50 Hz | Order code for 50 Hz constant-speed motors (not pole-changing) ¹⁾ | Frame sizes for motors | |
|--|---------------------------------|---|------------------------|---------------|
| | | | 1PP5, 1PP7 | 1PP4 |
| 220 VΔ/380 VY ²⁾ (210 ... 230 VΔ/ 360 ... 400 VY) | 50 Hz output | L1R | 63 ... 200 | 180 ... 315 M |
| 230 VΔ (220 ... 240 VΔ) | 50 Hz output | L1E | 63 ... 200 | 180 ... 315 M |
| 380 VΔ/660 VY ³⁾ (360 ... 400 VΔ/ 625 ... 695 VY) | 50 Hz output | L1L | 63 ... 200 | 180 ... 315 L |
| 415 VY (395 ... 435 VY) | 50 Hz output | L1C | 63 ... 200 | 180 ... 315 M |
| 415 VΔ (395 ... 435 VΔ) | 50 Hz output | L1D | 63 ... 200 | 180 ... 315 L |
| 400 VY (380 ... 420 VY) | 50 Hz output | L1A | 63 ... 200 | 180 ... 315 M |
| 400 VΔ (380 ... 420 VΔ) | 50 Hz output | L1B | 63 ... 200 | 180 ... 315 L |
| 400 VΔ (460 VΔ at 60 Hz) (380 ... 420 VΔ) | 50 Hz output | L1U | 63 ... 200 | 180 ... 315 L |

| Voltage at 60 Hz | Required output at 60 Hz | Order code for 60 Hz constant-speed motors (not pole-changing) | Frame sizes for motors | |
|-------------------------|---------------------------------|---|------------------------|---------------|
| | | | 1PP5, 1PP7 | 1PP4 |
| 220 VΔ/380 VY | 50 Hz output | L2A | 63 ... 200 | 180 ... 315 M |
| 220 VΔ/380 VY | 60 Hz output | L2B | 63 ... 200 | 180 ... 315 M |
| 380 VΔ/660 VY | 50 Hz output | L2C | 63 ... 200 | 180 ... 315 L |
| 380 VΔ/660 VY | 60 Hz output | L2D | 63 ... 200 | 180 ... 315 L |
| 440 VY | 50 Hz output | L2Q | 63 ... 200 | 180 ... 315 M |
| 440 VY | 60 Hz output | L2W | 63 ... 200 | 180 ... 315 M |
| 440 VΔ | 50 Hz output | L2R | 63 ... 200 | 180 ... 315 L |
| 440 VΔ | 60 Hz output | L2X | 63 ... 200 | 180 ... 315 L |
| 460 VY | 50 Hz output | L2S | 63 ... 200 | 180 ... 315 M |
| 460 VY | 60 Hz output | L2E | 63 ... 200 | 180 ... 315 M |
| 460 VΔ | 50 Hz output | L2T | 63 ... 200 | 180 ... 315 L |
| 460 VΔ | 60 Hz output | L2F | 63 ... 200 | 180 ... 315 L |
| 575 VY | 50 Hz output | L2U | 63 ... 200 | 180 ... 315 M |
| 575 VY | 60 Hz output | L2L | 63 ... 200 | 180 ... 315 M |
| 575 VΔ | 50 Hz output | L2V | 63 ... 200 | 180 ... 315 L |
| 575 VΔ | 60 Hz output | L2M | 63 ... 200 | 180 ... 315 L |

| Voltage at 60 Hz | Required output at 60 Hz | Order code for 60 Hz motors, multi-voltage | Frame sizes for motors | |
|-------------------------|---------------------------------|---|------------------------|------|
| | | | 1PP5, 1PP7 | 1PP4 |
| 230 VYY/460 VY 60 Hz | 50 Hz output | L3E | 63 ... 200 | – |
| 230 VYY/460 VY 60 Hz | 60 Hz output | L3F | 63 ... 200 | – |
| 230 VΔΔ/460 VΔ 60 Hz | 50 Hz output | L3G | 100 ... 200 | – |
| 230 VΔΔ/460 VΔ 60 Hz | 60 Hz output | L3H | 100 ... 200 | – |

| Voltage at 60 Hz | Required output at 60 Hz | Order code for 60 Hz motors, pole-changing | Frame sizes for motors | |
|-------------------------|---------------------------------|---|------------------------|-------------|
| | | | 1LA5, 1LA7 | 1LG4 |
| 220 V | 50 Hz output | L4A | 80 ... 200 | 180 ... 280 |
| 220 V | 60 Hz output | L4B | 80 ... 200 | 180 ... 280 |
| 380 V | 50 Hz output | L4C | 80 ... 200 | 180 ... 280 |
| 380 V | 60 Hz output | L4D | 80 ... 200 | 180 ... 280 |
| 440 V | 50 Hz output | L4G | 80 ... 200 | 180 ... 280 |
| 440 V | 60 Hz output | L4E | 80 ... 200 | 180 ... 280 |
| 460 V | 50 Hz output | L4J | 80 ... 200 | 180 ... 280 |
| 460 V | 60 Hz output | L4H | 80 ... 200 | 180 ... 280 |
| 575 V | 50 Hz output | L4N | 80 ... 200 | 180 ... 280 |
| 575 V | 60 Hz output | L4M | 80 ... 200 | 180 ... 280 |

¹⁾ For order codes **L1A, L1B, L1C, L1D, L1E, L1L, L1R** and **L1U** a rated voltage range is also included on the rating plate.

²⁾ For the order code **L1R** a voltage of 440 VY 60 Hz is also possible for 1PP5 and 1PP7 motor series.

³⁾ For the order code **L1L** a voltage of 440 VΔ 60 Hz is also possible for 1PP5 and 1PP7 motor series.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Rated currents for rated voltage range 380 V to 420 V at 50 Hz

| | Currents for voltage and number of poles | | | | | | | |
|--------------------------|--|------|--------|------|--------|------|--------|------|
| | 380 V | | 420 V | | 380 V | | 420 V | |
| | 2-pole | | 4-pole | | 6-pole | | 8-pole | |
| | A | A | A | A | A | A | A | A |
| 1LA7, 1LA5 motors | | | | | | | | |
| 1LA7 050 | 0.27 | 0.26 | 0.21 | 0.21 | – | – | – | – |
| 1LA7 053 | 0.33 | 0.32 | 0.30 | 0.31 | – | – | – | – |
| 1LA7 060 | 0.52 | 0.53 | 0.42 | 0.44 | – | – | – | – |
| 1LA7 063 | 0.69 | 0.71 | 0.58 | 0.59 | 0.48 | 0.5 | – | – |
| 1LA7 070 | 1.05 | 1.02 | 0.80 | 0.77 | 0.66 | 0.64 | 0.36 | 0.36 |
| 1LA7 073 | 1.38 | 1.41 | 1.07 | 1.06 | 0.80 | 0.80 | 0.51 | 0.52 |
| 1LA7 080 | 1.75 | 1.79 | 1.50 | 1.50 | 1.18 | 1.25 | 0.73 | 0.80 |
| 1LA7 083 | 2.45 | 2.50 | 2.12 | 2.17 | 1.62 | 1.66 | 1.01 | 1.10 |
| 1LA7 090 | 3.40 | 3.35 | 2.60 | 2.60 | 2.10 | 2.15 | 1.15 | 1.18 |
| 1LA7 096 | 4.70 | 4.65 | 3.50 | 3.50 | 3.0 | 2.95 | 1.63 | 1.60 |
| 1LA7 106 | 6.25 | 6.15 | 4.8 | 4.8 | 4.0 | 4.1 | 2.25 | 2.2 |
| 1LA7 107 | – | – | 6.5 | 6.8 | – | – | 3.0 | 3.0 |
| 1LA7 113 | 8.2 | 7.7 | 8.4 | 8.3 | 5.4 | 5.3 | 4.1 | 4.2 |
| 1LA7 130 | 10.6 | 10.4 | 11.4 | 11.9 | 7.3 | 7.5 | 5.9 | 6.0 |
| 1LA7 131 | 14.1 | 13.8 | – | – | – | – | – | – |
| 1LA7 133 | – | – | 15.4 | 15.5 | 9.5 | 9.7 | 7.9 | 7.9 |
| 1LA7 134 | – | – | – | – | 13.0 | 13.1 | – | – |
| 1LA7 163 | 21.0 | 20.5 | 22.3 | 21.5 | 17.5 | 17.3 | 9.9 | 10.6 |
| 1LA7 164 | 28.0 | 26.0 | – | – | – | – | 13.1 | 13.4 |
| 1LA7 166 | 34.0 | 32.0 | 29.5 | 28.5 | 24.8 | 24.7 | 17.6 | 18.4 |
| 1LA5 183 | 40 | 38 | 36 | 35 | – | – | – | – |
| 1LA5 186 | – | – | 42 | 41 | 32.7 | 31 | 26.5 | 23.5 |
| 1LA5 206 | 55 | 52 | – | – | 40 | 38.5 | – | – |
| 1LA5 207 | 67 | 64 | 57 | 54 | 46.5 | 45.5 | 34 | 31 |
| 1LA5 220 | – | – | 69 | 64 | – | – | 40 | 37 |
| 1LA5 223 | 81 | 76 | 84 | 78 | 64 | 63 | 47 | 43 |
| 1LA6, 1LG4 motors | | | | | | | | |
| 1LA6 106 | 6.25 | 6.15 | 4.8 | 4.8 | 4.0 | 4.1 | 2.25 | 2.2 |
| 1LA6 107 | – | – | 6.5 | 6.8 | – | – | 3.0 | 3.0 |
| 1LA6 113 | 8.2 | 7.7 | 8.4 | 8.3 | 5.4 | 5.3 | 4.1 | 4.2 |
| 1LA6 130 | 10.6 | 10.4 | 11.4 | 11.9 | 7.3 | 7.5 | 5.9 | 6.0 |
| 1LA6 131 | 14.1 | 13.8 | – | – | – | – | – | – |
| 1LA6 133 | – | – | 15.4 | 15.5 | 9.5 | 9.7 | 7.9 | 7.9 |
| 1LA6 134 | – | – | – | – | 13.0 | 13.1 | – | – |
| 1LA6 163 | 21.0 | 20.5 | 22.3 | 21.5 | 17.5 | 17.3 | 9.9 | 10.6 |
| 1LA6 164 | 28.0 | 26.0 | – | – | – | – | 13.1 | 13.4 |
| 1LA6 166 | 34.0 | 32.0 | 29.5 | 28.5 | 24.8 | 24.7 | 17.6 | 18.4 |
| 1LG4 183 | 41.5 | 40 | 36 | 35 | – | – | – | – |
| 1LG4 186 | – | – | 42.5 | 41.5 | 30.5 | 28.5 | 25.5 | 25 |
| 1LG4 188 | 56 | 54 | 59 | 60 | 38.5 | 37 | 34.5 | 34.5 |
| 1LG4 206 | 56 | 52 | – | – | 37 | 37 | – | – |
| 1LG4 207 | 67 | 63 | 57 | 55 | 45 | 42.5 | 33.5 | 32 |
| 1LG4 208 | 82 | 77 | 70 | 69 | 61 | 60 | 40.5 | 39 |
| 1LG4 220 | – | – | 72 | 65 | – | – | 40.5 | 36.5 |
| 1LG4 223 | 83 | 75 | 85 | 77 | 60 | 54 | 46.5 | 42 |
| 1LG4 228 | 100 | 90 | 104 | 94 | 73 | 66 | 64 | 58 |
| 1LG4 253 | 100 | 93 | 104 | 98 | 73 | 68 | 60 | 57 |
| 1LG4 258 | 134 | 128 | 138 | 134 | 87 | 81 | 73 | 69 |
| 1LG4 280 | 136 | 126 | 144 | 132 | 87 | 80 | 76 | 70 |
| 1LG4 283 | 162 | 150 | 168 | 156 | 106 | 97 | 92 | 84 |
| 1LG4 288 | 196 | 182 | 204 | 190 | 146 | 134 | 112 | 102 |
| 1LG4 310 | 198 | 188 | 205 | 194 | 142 | 136 | 110 | 104 |
| 1LG4 313 | 230 | 215 | 245 | 230 | 170 | 162 | 146 | 136 |
| 1LG4 316 | 280 | 255 | 295 | 275 | 205 | 190 | 174 | 164 |
| 1LG4 317 | 345 | 315 | 360 | 330 | 245 | 225 | 210 | 198 |
| 1LG4 318 | – | – | – | – | 295 | 275 | 250 | 240 |

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

| | Currents for voltage and number of poles | | | | | | | |
|--------------------------|--|-------------------|--------------------|-------------------|-------------------|-------------------|--------|------|
| | 380 V | | 420 V | | 380 V | | 420 V | |
| | 2-pole | | 4-pole | | 6-pole | | 8-pole | |
| | A | A | A | A | A | A | A | A |
| 1LG6, 1LA8 motors | | | | | | | | |
| 1LG6 183 | 40.5 | 37.5 | 36 | 34.5 | – | – | – | – |
| 1LG6 186 | – | – | 42.5 | 40.5 | 30.5 | 29 | 24.5 | 23 |
| 1LG6 206 | 54 | 51 | – | – | 37 | 35.5 | – | – |
| 1LG6 207 | 66 | 62 | 56 | 54 | 44 | 40.5 | 32.5 | 30.5 |
| 1LG6 220 | – | – | 70 | 64 | – | – | 38 | 34.5 |
| 1LG6 223 | 81 | 73 | 84 | 76 | 59 | 53 | 45 | 41 |
| 1LG6 253 | 97 | 90 | 99 | 94 | 72 | 67 | 59 | 55 |
| 1LG6 280 | 134 | 124 | 138 | 128 | 85 | 79 | 75 | 69 |
| 1LG6 283 | 158 | 146 | 166 | 154 | 104 | 96 | 91 | 83 |
| 1LG6 310 | 192 | 174 | 200 | 184 | 142 | 134 | 106 | 100 |
| 1LG6 313 | 230 | 210 | 235 | 215 | 166 | 156 | 142 | 136 |
| 1LG6 316 | 275 | 250 | 285 | 265 | 205 | 190 | 170 | 158 |
| 1LG6 317 | 340 | 305 | 355 | 330 | 245 | 225 | 205 | 194 |
| 1LG6 318 | – | – | – | – | 290 | 275 | 250 | 230 |
| 1LA8 315 | 435 | 400 | 450 | 425 | 360 | 340 | 310 | 295 |
| 1LA8 317 | 540 | 495 | 560 | 530 | 450 | 420 | 385 | 365 |
| 1LA8 353 | 620 | 570 | 640 | 590 | – | – | – | – |
| 1LA8 355 | 690 | 630 | 720 | 680 | 570 | 530 | 480 | 455 |
| 1LA8 357 | 860 | 790 | 880 | 820 | 720 | 670 | 600 | 560 |
| 1LA8 403 | 950 | 880 | 990 | 930 | 810 | 760 | 680 | 640 |
| 1LA8 405 | 1080 | 990 | 1100 | 1040 | 890 | 840 | 760 | 720 |
| 1LA8 407 | 690 ¹⁾ | 640 ²⁾ | 710 ¹⁾ | 670 ²⁾ | 1000 | 940 | 850 | 810 |
| 1LA8 453 | 780 ¹⁾ | 730 ²⁾ | 810 ¹⁾ | 750 ²⁾ | 1160 | 1060 | 960 | 910 |
| 1LA8 455 | 880 ¹⁾ | 810 ²⁾ | 910 ¹⁾ | 860 ²⁾ | 740 ¹⁾ | 690 ²⁾ | 1080 | 1020 |
| 1LA8 457 | 970 ¹⁾ | 890 ²⁾ | 1000 ¹⁾ | 940 ²⁾ | 830 ¹⁾ | 770 ²⁾ | 1200 | 1140 |

The rating plates of 1MJ6 motors specify the maximum current in the voltage range in addition to the rated current. This maximum is approximately 5 % higher than the rated current.

¹⁾ Only available for 690 V, see catalog part 3 "Non-standard motors frame size 315 and above"; but in 660 V design.

²⁾ Only available for 690 V, see catalog part 3 "Non-standard motors frame size 315 and above"; but in 725 V design.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

0

Outputs

The outputs and the rated outputs are listed in the selection tables and in the separate catalog parts for 50 Hz and in most

Table of rated output at 60 Hz for single-speed motors

| Motor type | Admissible output at 60 Hz for voltages between 220 V or 380 V and 725 V | | | |
|--|--|-----------|-----------|-----------|
| | 2-pole kW | 4-pole kW | 6-pole kW | 8-pole kW |
| 1LA6, 1LG4, 1LG6, 1LA7, 1MJ6, 1MJ7 motors | | | | |
| 1LA7 050 – – | 0.105 | 0.07 | – | – |
| 1LA7 053 – – | 0.14 | 0.105 | – | – |
| 1LA7 060 – – | 0.21 | 0.14 | – | – |
| 1LA7 063 – – | 0.29 | 0.21 | 0.1 | – |
| 1LA7 070 – 1MJ6 070 | 0.43 | 0.29 | 0.21 | 0.1 |
| 1LA7 073 – 1MJ6 073 | 0.63 | 0.43 | 0.29 | 0.14 |
| 1LA7 080 – 1MJ6 080 | 0.86 | 0.63 | 0.43 | 0.21 |
| 1LA7 083 – 1MJ6 083 | 1.3 | 0.86 | 0.63 | 0.29 |
| 1LA7 090 – 1MJ6 096 | 1.75 | 1.3 | 0.86 | 0.43 |
| 1LA7 096 – 1MJ6 097 | 2.55 | 1.75 | 1.3 | 0.63 |
| 1LA7 106 1LA6 106 1MJ6 106 | 3.45 | 2.55 | 1.75 | 0.86 |
| 1LA7 107 1LA6 107 1MJ6 107 | – | 3.45 | – | 1.3 |
| 1LA7 113 1LA6 113 1MJ6 113 | 4.6 | 4.6 | 2.55 | 1.75 |
| 1LA7 130 1LA6 130 1MJ6 130 | 6.3 | 6.3 | 3.45 | 2.55 |
| 1LA7 131 1LA6 131 1MJ6 131 | 8.6 | – | – | – |
| 1LA7 133 1LA6 133 1MJ6 133 | – | 8.6 | 4.6 | 3.45 |
| 1LA7 134 1LA6 134 1MJ6 134 | – | – | 6.3 | – |
| 1LA7 163 1LA6 163 1MJ6 163 | 12.6 | 12.6 | 8.6 | 4.6 |
| 1LA7 164 1LA6 164 1MJ6 164 | 17.3 | – | – | 6.3 |
| 1LA7 166 1LA6 166 1MJ6 166 | 21.3 | 17.3 | 12.6 | 8.6 |
| 1LA5 183 1LG . 183 1MJ6 183 | 24.5 | 21.3 | – | – |
| 1LA5 186 1LG . 186 1MJ6 186 | – | 25.3 | 18 | 3.2 |
| – 1LG . 188 – | 33.5 | 34.5 | 22 | 18 |
| 1LA5 206 1LG . 206 1MJ6 206 | 33.5 | – | 22 | – |
| 1LA5 207 1LG . 207 1MJ6 207 | 41.5 | 34.5 | 26.5 | 18 |
| – 1LG . 208 – | 51 | 42.5 | 36 | 22 |
| 1LA5 220 1LG . 220 1MJ7 220 | – | 42.5 | – | 22 |
| 1LA5 223 1LG . 223 1MJ7 223 | 51 | 52 | 36 | 26.5 |
| – 1LG . 228 – | 62 | 63 | 44.5 | 36 |
| – 1LG . 253 1MJ7 253 | 62 | 63 | 44.5 | 36 |
| – 1LG . 258 – | 84 | 86 | 54 | 44.5 |
| – 1LG . 280 1MJ7 280 | 84 | 86 | 54 | 44.5 |
| – 1LG . 283 1MJ7 283 | 101 | 104 | 66 | 54 |
| – 1LG . 288 – | 123 | 127 | 90 | 66 |
| – 1LG . 310 1MJ7 310 | 123 | 127 | 90 | 66 |
| – 1LG . 313 1MJ7 313 | 148 | 152 | 108 | 90 |
| – 1LG . 316 – | 180 | 184 | 132 | 108 |
| – 1LG . 317 – | 224 | 230 | 158 | 132 |
| – 1LG . 318 – | – | – | 192 | 158 |

Table of rated output at 60 Hz for pole-changing motors

At 60 Hz, the output can be increased in accordance with the factors listed in the table below. The output is increased separately for each number of poles, i.e. for 6/4-pole motors, frame sizes 180 to 315, 60 Hz, the 6-pole output can be increased by 20 % and the 4-pole output can be increased by 15 %.

Possible versions of 2-pole motors

| Frame size | Horizontal type of construction | | | Vertical type of construction | | |
|-------------|---------------------------------|-----------------|-------------------|-------------------------------|-------|-------|
| | 50 Hz with foot | 60 Hz with foot | 50 Hz with flange | 60 Hz with flange | 50 Hz | 60 Hz |
| 56 to 315 M | • | • | • | • | • | • |
| 315 L | • | • | – | – | • | • |
| 315 | • | • | • | • | • | • |
| 355 and 400 | • | • | • | • | • | – |
| 450 | • | – | • | – | • | – |

cases also for 60 Hz. For 60 Hz, the rated output values must, in some cases, be increased, e.g. for pole-changing motors.

| Motor type | Admissible output at 60 Hz for voltages between 380 V and 725 V | | | |
|--------------------|---|-----------|-----------|-----------|
| | 2-pole kW | 4-pole kW | 6-pole kW | 8-pole kW |
| 1LA8 motors | | | | |
| 1LA8 315 – – | 280 | 288 | 230 | 184 |
| 1LA8 317 – – | 353 | 362 | 288 | 230 |
| 1LA8 353 – – | 398 | 408 | – | – |
| 1LA8 355 – – | 448 | 460 | 362 | 288 |
| 1LA8 357 – – | 560 | 575 | 460 | 362 |
| 1LA8 403 – – | 616 | 644 | 518 | 408 |
| 1LA8 405 – – | 693 | 725 | 575 | 460 |
| 1LA8 407 – – | – | 817 | 644 | 518 |
| 1LA8 453 – – | – | – | 725 | 575 |
| 1LA8 455 – – | – | – | – | 644 |
| 1LA8 457 – – | – | – | – | 725 |

The speed increases to approx. 120 % in relation to 50 Hz motors.

Higher outputs/voltages are available on request!

| Frame size | Number of poles | Factor for increased output at 60 Hz for voltages between 220 or 380 and 725 V |
|------------|-----------------|--|
| 56 to 160 | 2 to 8 | 1.15 |
| 180 to 315 | 2 | 1.12 |
| | 4 | 1.15 |
| | 6 and 8 | 1.2 |

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Assignment of the standard power kW-HP and vice versa in accordance with IEC

$$\text{kW} \cdot 1,341 = \text{HP}$$

$$\text{HP} \cdot 0,746 = \text{kW}$$

| P_{rated} kW | P_{rated} HP | P_{rated} kW | P_{rated} HP | P_{rated} kW | P_{rated} HP | P_{rated} kW | P_{rated} HP | P_{rated} kW | P_{rated} HP | P_{rated} kW | P_{rated} HP |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 0.06 | 0.08 | 0.37 | 0.5 | 2.2 | 3 | 11 | 15 | 37 | 50 | 110 | 150 |
| 0.09 | 0.12 | 0.55 | 0.75 | 3 | 4 | 15 | 20 | 45 | 60 | 132 | 200 |
| 0.12 | 0.16 | 0.75 | 1 | 4 | 5 | 18.5 | 25 | 55 | 75 | 160 | 250 |
| 0.18 | 0.25 | 1.1 | 1.5 | 5.5 | 7.5 | 22 | 30 | 75 | 100 | 200 | 300 |
| 0.25 | 0.33 | 1.5 | 2 | 7.5 | 10 | 30 | 40 | 90 | 125 | | |

Efficiency, power factor, rated torque, rated speed and direction of rotation

Efficiency and power factor

The efficiency η and power factor $\cos \varphi$ for each rated output are listed in the selection tables in the individual sections of this catalog.

For EFF1 and EFF2 motors, the 3/4 load efficiency is also indicated.

| Part-load efficiency % at | | | | | |
|---------------------------|------|------|-----------|------|--|
| 1/4 | 1/2 | 3/4 | 4/4 | 5/4 | |
| of full load | | | | | |
| 93 | 96 | 97 | 97 | 96.5 | |
| 92 | 95 | 96 | 96 | 95.5 | |
| 90 | 93.5 | 95 | 95 | 94.5 | |
| 89 | 92.5 | 94 | 94 | 93.5 | |
| 88 | 91.5 | 93 | 93 | 92.5 | |
| 87 | 91 | 92 | 92 | 91.5 | |
| 86 | 90 | 91 | 91 | 90 | |
| 85 | 89 | 90 | 90 | 89 | |
| 84 | 88 | 89 | 89 | 88 | |
| 80 | 87 | 88 | 88 | 87 | |
| 79 | 86 | 87 | 87 | 86 | |
| 78 | 85 | 86 | 86 | 85 | |
| 76 | 84 | 85 | 85 | 83.5 | |
| 74 | 83 | 84 | 84 | 82.5 | |
| 72 | 82 | 83 | 83 | 81.5 | |
| 70 | 81 | 82 | 82 | 80.5 | |
| 68 | 80 | 81 | 81 | 79.5 | |
| 66 | 79 | 80 | 80 | 78.5 | |
| 64 | 77 | 79.5 | 79 | 77.5 | |
| 62 | 75.5 | 78.5 | 78 | 76.5 | |
| 60 | 74 | 77.5 | 77 | 75 | |
| 58 | 73 | 76 | 76 | 74 | |
| 56 | 72 | 75 | 75 | 73 | |
| 55 | 71 | 74 | 74 | 72 | |
| 54 | 70 | 73 | 73 | 71 | |
| 53 | 68 | 72 | 72 | 70 | |
| 52 | 67 | 71 | 71 | 69 | |
| 51 | 66 | 70 | 70 | 68 | |
| 50 | 65 | 69 | 69 | 67 | |
| 49 | 64 | 67.5 | 68 | 66 | |
| 48 | 62 | 66.5 | 67 | 65 | |
| 47 | 61 | 65 | 66 | 64 | |
| 46 | 60 | 64 | 65 | 63 | |
| 45 | 59 | 63 | 64 | 62 | |
| 44 | 57 | 62 | 63 | 61 | |
| 43 | 56 | 60.5 | 62 | 60.5 | |
| 42 | 55 | 59.5 | 61 | 59.5 | |
| 41 | 54 | 58.5 | 60 | 58.5 | |

The part-load values stated in the tables below are averages; precise values can be provided on request.

| Part-load power factor at | | | | |
|---------------------------|------|------|-------------|------|
| 1/4 | 1/2 | 3/4 | 4/4 | 5/4 |
| of full load | | | | |
| 0.70 | 0.86 | 0.90 | 0.92 | 0.92 |
| 0.65 | 0.85 | 0.89 | 0.91 | 0.91 |
| 0.63 | 0.83 | 0.88 | 0.90 | 0.90 |
| 0.61 | 0.80 | 0.86 | 0.89 | 0.89 |
| 0.57 | 0.78 | 0.85 | 0.88 | 0.88 |
| 0.53 | 0.76 | 0.84 | 0.87 | 0.87 |
| 0.51 | 0.75 | 0.83 | 0.86 | 0.86 |
| 0.49 | 0.73 | 0.81 | 0.85 | 0.86 |
| 0.47 | 0.71 | 0.80 | 0.84 | 0.85 |
| 0.45 | 0.69 | 0.79 | 0.83 | 0.84 |
| 0.43 | 0.67 | 0.77 | 0.82 | 0.83 |
| 0.41 | 0.66 | 0.76 | 0.81 | 0.82 |
| 0.40 | 0.65 | 0.75 | 0.80 | 0.81 |
| 0.38 | 0.63 | 0.74 | 0.79 | 0.80 |
| 0.36 | 0.61 | 0.72 | 0.78 | 0.80 |
| 0.34 | 0.59 | 0.71 | 0.77 | 0.79 |
| 0.32 | 0.58 | 0.70 | 0.76 | 0.78 |
| 0.30 | 0.56 | 0.69 | 0.75 | 0.78 |
| 0.29 | 0.55 | 0.68 | 0.74 | 0.77 |
| 0.28 | 0.54 | 0.67 | 0.73 | 0.77 |
| 0.27 | 0.52 | 0.63 | 0.72 | 0.76 |
| 0.26 | 0.50 | 0.62 | 0.71 | 0.76 |

Rated torque

The rated torque in Nm delivered at the motor shaft is

$$M = \frac{9.55 \cdot P \cdot 1000}{n}$$

P Rated output in kW
 n Speed in rpm

Note:

If the voltage deviates from its rated value within the allowed limits, the locked-rotor torque, the pull-up torque and the breakdown torque vary with the approximate square of the value, but the locked-rotor current varies approximately linearly.


In the case of squirrel-cage motors, the locked-rotor torque and breakdown torque are listed in the selection tables as multiples of the rated torque.

The normal practise is to start squirrel-cage motors directly on line. The torque class indicates that with direct-on-line starting, even if there is – 5 % undervoltage, it is possible to start up the motor against a load torque of

- 160 % for CL 16
- 130 % for CL 13
- 100 % for CL 10
- 70 % for CL 7
- 50 % for CL 5

of the rated torque.

The individual torque characteristics are available in the SD configurator. In addition, it is possible to perform calculations with the supplied start-up program.

 For type 1MA motors in the standard design for T1/T2 and T3 and different rated outputs, the torque class specified for the higher output applies.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Rated speed and direction of rotation

The rated speeds are applicable for the rated data. The synchronous speed changes proportionally with the line frequency. The motors are suitable for clockwise and counter-clockwise rotation.

This does not apply to the following 2-pole motors:

- 1LA8, 1LL8 frame size 355 and above for clockwise rotation only; alternatively order code **K38** for counter-clockwise rotation only
- 1LA8, 1MJ6, 1MA6 and 1LG4 in VIK version from frame size 315 and above.

If U1, V1, W1 are connected to L1, L2, L3, clockwise rotation results as viewed onto the drive-end shaft extension. Counter-clockwise rotation is achieved by swapping two phases (see also "Heating and ventilation").

Rating plate and extra rating plates

DIN EN 60034-1 lays down that the approximate total weight for all motors from frame size 90 (from approx. 30 kg) is indicated on the rating plate.


An extra rating plate can be supplied loose for all motors, order code **K31**.
Supplementary data can be indicated on the rating plate or extra rating plate and on the packaging label (maximum of 20 characters), order code **Y84**.

An extra rating plate can also be supplied for the identification code, order code **Y82**.

An extra rating plate or a rating plate can also be ordered with different rating plate data, order code **Y80**.

An extra rating plate can be supplied loose for all motors of frame sizes 100 to 315, order code **B06**.

In the standard version, the rating plate is available in international format or in the English/German language. The language for the rating plate can be ordered by specifying in plain text. An overview of the languages that can be ordered, at additional cost in some cases, is provided by the table below.

 In addition, for 1MA motors:

With the exception of 2-pole motors from frame size 225 M or larger, all motors are suitable for both T1/T2 and T3 (uniform design).

If the rated output for T1/T2 differs from that of T3, the data for both output values is stated separately.

Overview of the languages on the rating plate

| Motor type | Frame size | Rating plate | | | | | | | | Double rating plate 50 Hz and 60 Hz data for | |
|------------|-------------|--------------------|----------------|--------------|------------------------------|------------------------------|--------------|--------------------|--------------|--|---|
| | | Inter- national | German (de) | English (en) | German (de)/ English (en) | French (fr)/ Spanish (es) | Italian (it) | Portuguese (pt) | Russian (ru) | 500 VY and 575 VY | 230 VΔ/ 400 VY and 460 VY 500 VΔ and 575 VΔ |
| 1LA5 | 180 ... 225 | ☐ | | ○ | | | | | | ☐ | ☐ |
| 1LA6 | 100 ... 160 | ☐ | | ○ | | | | | | ☐ | ☐ |
| 1LA7 | 56 ... 160 | ☐ | | ○ | | | | | | ☐ | ☐ |
| 1LA8 | 315 ... 450 | | | | ☐ | ○ | ○ | ○ | | | |
| 1LA9 | 56 ... 200 | ☐ | | ○ | | | | | | ☐ | ☐ |
| 1LG4 | 180 ... 315 | | | | ☐ | | | | ✓ | | ☐ |
| 1LG6 | 180 ... 315 | ☐ | | | | | | | ✓ | | ☐ |
| 1LL8 | 315 ... 450 | | | | ☐ | ○ | ○ | ○ | | | |
| 1LP4 | 180 ... 315 | | | | ☐ | | | | ✓ | | ☐ |
| 1LP5 | 63 ... 160 | ☐ | | ○ | | | | | | ☐ | ☐ |
| 1LP7 | 180 ... 200 | ☐ | | ○ | | | | | | ☐ | ☐ |
| 1MA6 | 100 ... 180 | | | ○ | ☐ | | | | | | |
| 1MA6 | 180 ... 200 | | | ○ | ☐ | | | | | | |
| 1MA6 | 225 ... 315 | | | ○ | ☐ | ○ | ○ | ○ | ✓ | | |
| 1MA7 | 63 ... 160 | ☐ | | ○ | | | | | | | |
| 1MJ6 | 71 ... 200 | ☐ | | ○ | | | | | | | |
| 1MJ7 | 225 ... 315 | | | | ☐ | ○ | ○ | ○ | ✓ | | |
| 1PP4 | 180 ... 315 | | | | ☐ | | | | ✓ | | ☐ |
| 1PP5 | 180 ... 200 | ☐ | | ○ | | | | | | ☐ | ☐ |
| 1PP6 | 100 ... 315 | | | | ☐ | | | | ✓ | | ☐ |
| 1PP7 | 63 ... 160 | ☐ | | ○ | | | | | | ☐ | ☐ |
| 1PQ8 | 315 ... 450 | | | | ☐ | ○ | ○ | ○ | | | |

- ☐ Standard version
- Without additional charge
- ✓ With additional charge

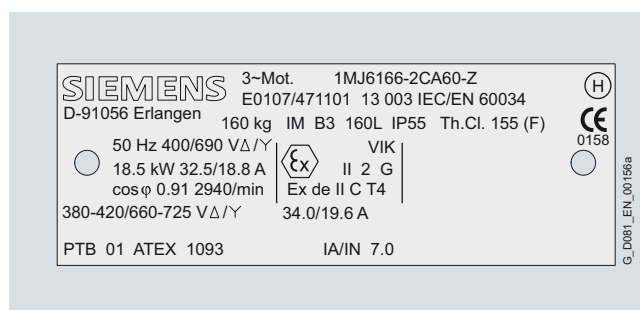
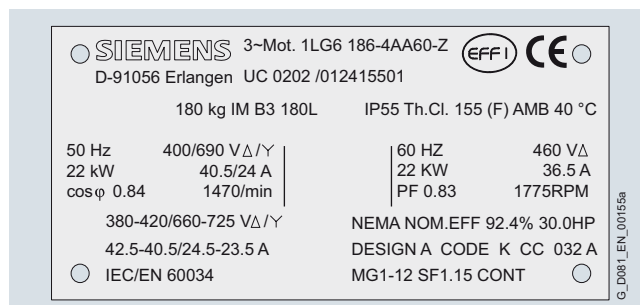
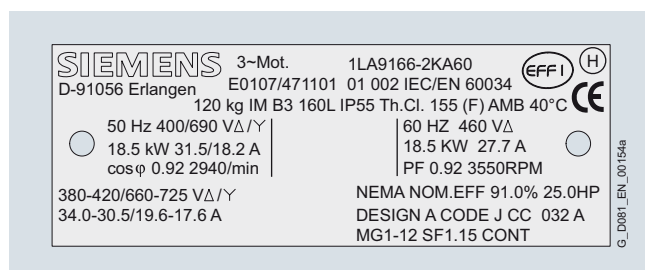
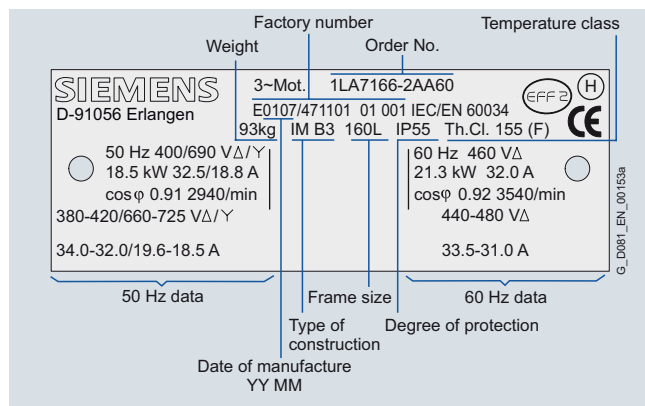
IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Examples of rating plates

See the catalog part "Non-standard motors" for rating plates for motor series 1LA8, 1PQ8 and 1LL8.



Coolant temperature and site altitude

The rated output specified in the selection tables is applicable for continuous duty in accordance with DIN EN 60034-1 at a frequency of 50 Hz, a coolant temperature (CT) or ambient temperature (AT) of 40 °C and a site altitude (SA) or up to 1000 m above sea level.

For higher coolant temperatures and/or site altitudes higher than 1000 m above sea level, the specified motor output must be reduced using the factor k_{HT} .

Depending on the frame size of the motor or the number of poles, special windings may be added to the motors for the different operating conditions.

This results in an admissible output of the motor of:

$$P_{adm.} = P_{rated} \cdot k_{HT}$$

Reduction factor k_{HT} for different site altitudes and/or coolant temperatures

| Site altitude above sea level m | Site altitude above sea level Coolant temperature | | | | | |
|------------------------------------|--|-----------------|-------|-------|-------|-------|
| | <30 °C | 30 °C ... 40 °C | 45 °C | 50 °C | 55 °C | 60 °C |
| 1000 | 1.07 | 1.00 | 0.96 | 0.92 | 0.87 | 0.82 |
| 1500 | 1.04 | 0.97 | 0.93 | 0.89 | 0.84 | 0.79 |
| 2000 | 1.00 | 0.94 | 0.90 | 0.86 | 0.82 | 0.77 |
| 2500 | 0.96 | 0.90 | 0.86 | 0.83 | 0.78 | 0.74 |
| 3000 | 0.92 | 0.86 | 0.82 | 0.79 | 0.75 | 0.70 |
| 3500 | 0.88 | 0.82 | 0.79 | 0.75 | 0.71 | 0.67 |
| 4000 | 0.82 | 0.77 | 0.74 | 0.71 | 0.67 | 0.63 |

Coolant temperature and site altitude are rounded-off to 5 °C or 500 m.

If the admissible motor output is no longer adequate for the drive, it should be checked whether the motor with the next higher rate output fulfills the requirements.

| Abbreviation | Description | Units |
|--------------|--|-------|
| $P_{adm.}$ | Admissible motor output | kW |
| P_{rated} | Rated output | kW |
| k_{HT} | Factor for abnormal coolant temperature and/or site altitude | |

The motors are designed for temperature class 155 (F) and used in temperature class 130 (B). Under non-standard operating conditions, if they are to be used in class 130 (B), the admissible output must be determined from the tables below.

If explosion-proof motors are to be used (with the exception of 1MJ6) at coolant temperatures that exceed 40 °C and site altitudes higher than 1000 m above sea level, the appropriate correction factors must be requested.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

For the following outputs, rms values are specified for coolant temperatures (CT) of 45 °C and 50 °C that must be specified when ordering.

| Power (kW) | Admissible output at 50 Hz | |
|-------------|----------------------------|--------------|
| | For CT 45 °C | For CT 50 °C |
| kW | kW | kW |
| 11 | 10.5 | 10 |
| 15 | 14.5 | 13.8 |
| 18.5 | 17.8 | 17 |
| 22 | 21 | 20 |
| 30 | 29 | 27.5 |
| 37 | 35.5 | 34 |
| 45 | 43 | 41.5 |
| 55 | 53 | 51 |
| 75 | 72 | 69 |
| 90 | 86 | 83 |
| 110 | 106 | 101 |
| 132 | 127 | 122 |
| 145 | 139 | 133 |
| 160 | 153 | 147 |
| 180 | 173 | 166 |
| 200 | 192 | 184 |
| 250 | 240 | 230 |
| 280 | 269 | 258 |
| 315 | 302 | 290 |
| 355 | 340 | 325 |
| 400 | 384 | 368 |
| 450 | 432 | 414 |
| 500 | 480 | 460 |
| 560 | 538 | 515 |
| 630 | 605 | 580 |
| 710 | 682 | 663 |
| 800 | 768 | 736 |
| 900 | 864 | 828 |
| 1000 | 960 | 920 |

For details of derating for use in class 155 (F), see "DURIGNIT IR 2000" insulation system.

Motors for coolant temperatures other than 40 °C or site altitudes higher than 1000 m above sea level for use in temperature class 130 (B), must always be ordered with the supplementary order code "**-Z**" and plain text. In the case of extreme derating, the operating data for the motors will be less favourable due to partial utilization.

The following special versions are possible for 1LG4, 1LG6, 1LP4, 1PP4 and 1LA8 motors:

- Motors for coolant temperatures from -50 to +40 °C order code **D02** (not for 1LA8)
- Motors for coolant temperatures from -40 to +40 °C order code **D03**
- Motors for coolant temperatures from -30 to +40 °C order code **D04**

The following special versions are possible for 1LA8, 1PQ8 and 1LL8 motors:

- Motors for 45 °C coolant temperature, 4 % derating, order code **D11**
- Motors for 50 °C coolant temperature, 8 % derating, order code **D12**
- Motors for 55 °C coolant temperature, 13 % derating, order code **D13**
- Motors for 60 °C coolant temperature, 18 % derating, order code **D14**

For details of order codes for use in temperature class 155 (F), see "DURIGNIT IR 2000 insulation system" under "Windings and insulation".

The following applies to all motors:

The motors can withstand 1.5 times the rated current at rated voltage and frequency for two minutes (DIN EN 60034).

Ambient temperature:

All motors can be used in the standard version at ambient temperatures between -20 and +40 °C.

Motors can be used in temperature class 155 (F)

- at 40 °C with service factor 1.1, i.e. the motor can be continuously overloaded with 10 % of the rated output (for motors of 1LG6 and 1LA9 series, with the exception of 1LA9 with increased output, with service factor 1.15, i.e. 15 % of the rated output)
- above 40 °C at rated output.

When motors are used in temperature class 130 (B) for higher ambient temperatures and site altitudes, derating occurs in accordance with the table "Reduction factor k_{HT} for different site altitudes and/or coolant temperatures".

For motors ex-stock, the service factor is indicated on the rating plate.

For other temperatures, special measures are necessary.

When brakes are to be mounted on motors intended for operation at temperatures below freezing, please contact your local Siemens office.

Windings and insulation

DURIGNIT IR 2000 insulation system

The DURIGNIT IR 2000 insulation system comprises high-grade enameled wires and insulating sheet materials combined with solvent-free impregnating resin.

The system ensures a high level of mechanical and electrical strength as well as good serviceability and a long motor life.

The insulation system protects the winding against aggressive gases, vapors, dust, oil and increased air humidity. It can withstand the usual vibration stressing.

The insulation is suitable up to an absolute air humidity of 30 g water per m³ of air. Moisture condensation should be prevented from forming on the winding. Please contact your local Siemens office if higher values are present.

Please inquire about extreme applications.

Winding and insulation design with regard to temperature class and air humidity

All motors are designed for temperature class 155 (F).

At rated output with mains-fed operation, the motors can be used in temperature class 130 (B).

Temperature class 155 (F), used according to 155 (F), with service factor (SF)

For all 1LA motors (with the exception of 1LA9 with increased output, as these are already used according to temperature class 155 (F)), 1LG, 1LL8 and 1PP motors for mains-fed operation in frame sizes 56 to 355 for the rated output given in the selection table and rated voltage, a service factor of 1.1 can be specified (for 1LA9 and 1LG6 SF = 1.15) and 1.05 for frame sizes 400 and 450.

Order code **C11**.

Temperature class 155 (F), used according to 155 (F), for increased output

For motors supplied from stock (with the exception of 1LA9 with increased output, as these are already used according to temperature class 155 (F)) and 1LA8 motors, the service factor is indicated on the rating plate as standard. For use according to temperature class 155 (F), the rated output according to the selection and ordering data can be increased by 10 % (15 % for 1LA9, with the exception of 1LA9 with increased output, and 1LG6) and by 1.05 for frame sizes 400 and 450.

Order code **C12**.

Temperature class 155 (F), used according to 155 (F), with increased coolant temperature

At the output specified in the catalog under mains-fed operation, the coolant temperature can be increased to 55 °C (50 °C for frame sizes 400 and 450) with the exception of 1LA9 with increased output.

Order code **C13**

The service factor (SF) is not indicated on the rating plate for order codes C12 and C13.

For converter-fed operation at the output specified in the catalog, the motors are used according to temperature class 155 (F). Order codes C11, C12 and C13 are not possible. This applies to motors up to 500 V and to motors up to 690 V.

Temperature class 180 (H), used according to 155 (F), with Service Factor (SF1.1)

For all 1LA8, 1PQ8 and 1LL8 motors for mains-fed operation in frame sizes 315 to 355 for the rated output given in the selection table and rated voltage, a service factor of 1.1 and 1.05 can be specified (for frame sizes 400 and 450). For use according to temperature class 180 (H), as service factor of 1.1 for mains-fed operation is also permissible.

For all 1LA8, 1PQ8 and 1LL8 motors for converter-fed operation in frame sizes 315 to 450 for the rated output given in the selection table and rated voltage, a service factor of 1.1 can be specified. The thermal service life of the motor winding increases by at least 5 times when used in converter-fed operation.

Use according to temperature class 180 (H) is not possible for all motors. All 400 V versions are available only on request. Due to the rated current, a larger connection box of type 1XB9600 is generally provided for frame sizes 400 (2 and 4 pole) and 450 (all pole numbers) – part of order code C14. The temperature class 180 (H) does not apply to motors with separately driven fan with 1PQ8.

Order code **C14**

Temperature class 155 (F), used according to 130 (B), with increased coolant temperature and/or site altitude

For standard motors, explosion-proof motors and fan motors 1LA5, 1LA6, 1LA7, 1LA9 (with the exception of 1LA9 with increased output since these are already used according to temperature class 155 (F)), 1LG4, 1LG6, 1LP4, 1MJ6, 1MJ7, 1PP4, 1PP5, and 1PP7, a version designed for temperature class 155 (F) for use according to temperature class 130 (B) can be ordered with other customized requirements with specification in plain text.

Order code **Y50**

Temperature class 155 (F), used according to 155 (F), other requirements

For 1LA5, 1LA6, 1LA7, 1LA9, 1LG4, 1LG6, 1PP4, 1PP5 and 1PP7 standard motors and fan motors as well as 1MA6 and 1MA7 explosion-proof motors, a version can be ordered designed for temperature class 155 (F), for use according to temperature class 155 (F) with different customized requirements, by specifying the information in plain text. Certification costs may be charged in the case of 1MA6 and 1MA7 motors.

Order code **Y52**

Temperature class 180 (H) at rated output and maximum coolant temperature (CT) 60 °C

For motor series 1LA5, 1LA6, 1LA7, 1LG4, 1PP4, 1PP5 and 1PP7, use according to temperature class 180 (H) is permitted at rated output and at a maximum coolant temperature of 60 °C. This does not apply to explosion-proof motors of Zones 2, 21 and 22 and to motors with UL approval (order code **D31**). Not possible for CSA approval (order code **D40**) for 1LA5, 1LG4, 1PP4 and 1PP5 motor series. The specified grease life applies to a coolant temperature of 40 °C. For a 10 K increase in coolant temperature, the grease life or lubrication interval is halved.

Order code **C18**

Temperature class 155 (F), used according to 130 (B), coolant temperature 45 °C, approx. 4 % derating

For motors of series 1LA5, 1LA6, 1LA7, 1LA9 (with the exception of 1LA9 with increased output), 1LG4, 1LG6, 1MA6, 1MA7, 1MJ6, 1MJ7, 1PP4, 1PP5, and 1PP7, a version can be ordered that is designed to temperature class 155 (F), for use according to temperature class 130 (B) at a maximum coolant temperature of 45 °C at 4 % derating.

Order code **C22**

Temperature class 155 (F), used according to 130 (B), coolant temperature 50 °C, approx. 8 % derating

For motors of series 1LA5, 1LA6, 1LA7, 1LA9 (with the exception of 1LA9 with increased output), 1LG4, 1LG6, 1MA6, 1MA7, 1MJ6, 1MJ7, 1PP4, 1PP5, and 1PP7, a version can be ordered that is designed to temperature class 155 (F), for use according to temperature class 130 (B) at a maximum coolant temperature of 50 °C at 8 % derating.

Order code **C23**

Temperature class 155 (F), used according to 130 (B), coolant temperature 55 °C, approx. 13 % derating

For motors of series 1LA5, 1LA6, 1LA7, 1LA9 (with the exception of 1LA9 with increased output), 1LG4, 1LG6, 1MA6, 1MA7, 1MJ6, 1MJ7, 1PP4, 1PP5, and 1PP7, a version can be ordered that is designed to temperature class 155 (F), for use according to temperature class 130 (B) at a maximum coolant temperature of 55 °C at 13 % derating.

Order code **C24**

Temperature class 155 (F), used according to 130 (B), coolant temperature 60 °C, approx. 18 % derating

For motors of series 1LA5, 1LA6, 1LA7, 1LA9 (with the exception of 1LA9 with increased output), 1LG4, 1LG6, 1MA6, 1MA7, 1MJ6, 1MJ7, 1PP4, 1PP5, and 1PP7, a version can be ordered designed for temperature class 155 (F), for use according to temperature class 130 (B) at a maximum coolant temperature of 60 °C at 18 % derating.

Order code **C25**

Increased air temperature/humidity with 30 to 60 g water per m³ of air

For motors of series 1LA5, 1LA6, 1LA7, 1LA9, 1LG4, 1LG6, 1LP4, 1LP5, 1LP7, 1MA6, 1MA7, 1MJ6, 1MJ7, 1PP4, 1PP5 and 1PP7, a version can be ordered for increased air humidity of between 30 and 60 g water per m³ of air depending on the temperature as listed in the table below. This version includes condensation drainage holes (order code L12) – with the exception of 1MJ motors. A condensation protection by means of anti-condensation heaters for 230 V (order code K45) is included in 1MJ6 and 1MJ7 motors.

Order code **C19**.

Please contact your local Siemens office if order code **C19** is to be combined with additional mountings.

Increased air temperature/humidity with more than 60 g up to 100 g water per m³ of air

For motors of series 1LA5, 1LA6, 1LA7, 1LA9, 1LG4, 1LG6, 1LP4, 1LP5, 1LP7, 1MA6, 1MA7, 1MJ6, 1MJ7, 1PP4, 1PP5 and 1PP7, a version can be ordered for increased air humidity of between more than 60 g and 100 g water per m³ of air depending on the temperature as listed in the table below. This version includes condensation drainage holes (order code L12) – with the exception of 1MJ motors. A condensation protection by means of anti-condensation heaters for 230 V (order code K45) is included in 1MJ6 and 1MJ7 motors.

Order code **C26**.

Please contact your local Siemens office if order code **C26** is to be combined with additional mountings (e.g. rotary pulse encoders, brakes).

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Absolute/relative conversion of air humidity

| Relative humidity | Temperature | | | | | | | |
|-------------------|-------------|-------|-------|-------|-------|-------|-------|-------|
| | 20 °C | 30 °C | 40 °C | 50 °C | 60 °C | 70 °C | 80 °C | 90 °C |
| 10 % | 2 | 3 | 5 | 8 | 13 | 20 | 29 | 42 |
| 15 % | 3 | 5 | 8 | 12 | 19 | 30 | 44 | 63 |
| 20 % | 3 | 6 | 10 | 17 | 26 | 39 | 58 | 84 |
| 25 % | 4 | 8 | 13 | 21 | 32 | 49 | 73 | 105 |
| 30 % | 5 | 9 | 15 | 25 | 39 | 59 | 87 | 126 |
| 35 % | 6 | 11 | 18 | 29 | 45 | 69 | 102 | 146 |
| 40 % | 7 | 12 | 20 | 33 | 52 | 79 | 116 | 167 |
| 45 % | 8 | 14 | 23 | 37 | 58 | 89 | 131 | 188 |
| 50 % | 9 | 15 | 26 | 41 | 65 | 98 | 145 | 209 |
| 55 % | 10 | 17 | 28 | 46 | 71 | 108 | 160 | 230 |
| 60 % | 10 | 19 | 31 | 50 | 78 | 118 | 174 | 251 |
| 65 % | 11 | 20 | 33 | 54 | 84 | 128 | 189 | 272 |
| 70 % | 12 | 21 | 36 | 58 | 91 | 138 | 203 | 293 |
| 75 % | 13 | 23 | 38 | 62 | 97 | 148 | 218 | 314 |
| 80 % | 14 | 24 | 41 | 66 | 104 | 157 | 233 | 335 |
| 85 % | 15 | 26 | 43 | 70 | 110 | 167 | 247 | 356 |
| 90 % | 16 | 27 | 46 | 74 | 117 | 177 | 262 | 377 |
| 95 % | 16 | 29 | 49 | 79 | 123 | 187 | 276 | 398 |
| 100 % | 17 | 30 | 51 | 83 | 130 | 197 | 291 | 419 |

The values in the table with a blue background are covered by the standard version (up to 30 g water per m³ of air).

The values in the table with a light gray background are covered by order code **C19** (30 to 60 g of water per m³ of air).

The values in the table with a dark gray background are covered by order code **C26** (60 to 100 g of water per m³ of air).

Please contact your local Siemens office regarding requirements exceeding 100 g water per m³ of air

Restarting against residual field and opposite phase

All motors can be reclosed against 100 % residual field after a mains voltage failure.

Motor protection

A distinction is made between current-dependent and motor-temperature-dependent protection devices.

Current-dependent protection devices

Fuses are only used to protect mains cables in the event of a short-circuit. They are not suitable for overload protection of the motor.

The motors are usually protected by delayed overload protection devices (circuit-breakers for motor protection or overload relays).

This protection is current-dependent and is particularly effective in the case of a locked rotor.

For standard duty with short start-up times and starting currents that are not excessive and for low numbers of switching operations, motor protection switches provide adequate protection. Motor protection switches are not suitable for high starting duty or large numbers of switching operations. Differences in the thermal time constants for the protection equipment and the motor results in unnecessary early tripping when the protection switch is set to rated current.

Motor-temperature-dependent protection devices

Temperature detectors installed in the motor winding are suitable protection devices in the case of slowly rising motor temperature.

When a limit temperature is reached, these **bimetal switches** (NC contacts) can deactivate an auxiliary circuit. The circuit can only be reclosed following a considerable fall in temperature. When the motor current rises quickly (e.g. with a locked rotor), these switches are not suitable due to their large thermal time constants.

Temperature detectors for tripping

Order code **A31**

The temperature monitors have the following current carrying capacity and switching capacity:

230 V AC cosφ: 2.5 A

24 V DC: 1.6 A

The most comprehensive protection against thermal overloading of the motor is provided by **PTC thermistors (thermistor motor protection)** installed in the motor winding. Due to its low heating capacity and excellent thermal contact with the winding, the winding temperature can be closely monitored. When a limit temperature is reached (nominal tripping temperature), the PTC thermistor undergoes a step change in resistance. This is evaluated by a tripping unit and can be used to open auxiliary circuits. The PTC thermistors themselves cannot be subjected to high currents and voltages. This would result in destruction of the semiconductor. The switching hysteresis of the PTC thermistor and tripping unit is low, which supports fast restarting of the drive. Motors with this type of protection are recommended for high duty starting, switching duty, extreme changes in load, high ambient temperatures or fluctuating supply systems.

Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping.

In the connection box, 2 auxiliary terminals are required. The maximum number of auxiliary terminals in the main connection box of the motor is specified under "Number of auxiliary terminals" in the section "Motor connection and connection box". An auxiliary connection box is required when the total number of auxiliary terminals in the connection box of the motor exceeds the specified values. For an additional charge, the connections can be routed through a separate auxiliary connection box (order code L97, M50 or M88, see "Auxiliary connection box" in the section "Motor connection and connection box").

Order code **A11**

For pole-changing motors with two separate windings, the number of temperature sensors must be doubled.

Two sets of three temperature sensors are used if a warning is required before the motor is shut down (tripped). The warning is normally set to 10 K below the tripping temperature.

Motor protection with PTC thermistors with 6 embedded temperature sensors for tripping and alarm.

In the connection box, 4 auxiliary terminals are required.

Order code **A12**

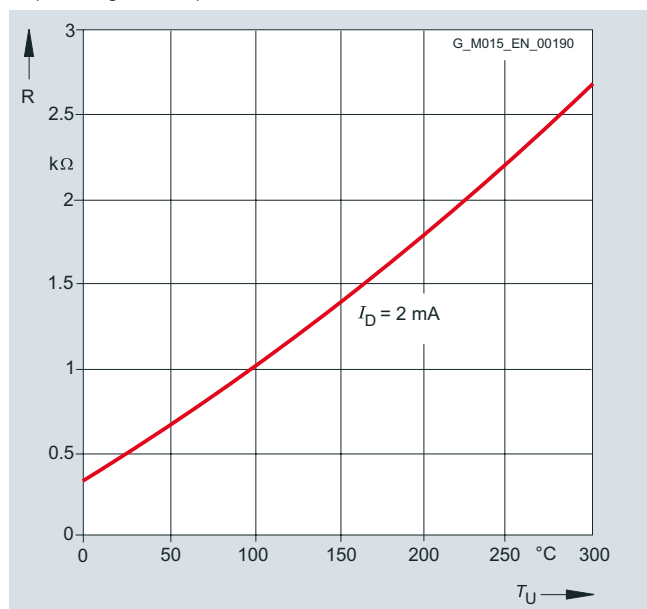
- All 1LA8 motors are equipped in the standard version with 6 PTC thermistors for alarm and tripping.
- For 1LA, 1MJ and 1LG motors, the tripping temperature corresponds to PTC thermistors for temperature class 155 (F).
- For 1LA8, 1LL and 1PQ motors, the tripping temperature corresponds to PTC thermistors for temperature class 155 (F), also for 1LA8 in Zone 22.
- For 1LA and 1LG motors for Zones 2, 21, 22 or VIK thermistors temperature class 130 (B) (see catalog part "Motors operating with frequency converters").

In order to achieve full thermal protection it is necessary to combine a thermally delayed overcurrent release and a PTC thermistor. For full motor protection implemented only with PTC thermistors, please inquire.

Motor temperature detection with converter-fed operation

KTY 84-130 temperature sensor

This sensor is a semi-conductor that changes its resistance depending on temperature in accordance with a defined curve.



KTY 84-130 temperature sensor characteristic

Some converters from Siemens determine the motor temperature using the resistance of the temperature sensor. They can be set to a required temperature for alarm and tripping.

Motor temperature detection with embedded temperature sensor KTY 84-130.

In the connection box, 2 auxiliary terminals are required.

The maximum number of auxiliary terminals in the main connection box of the motor is specified under "Number of auxiliary terminals" in the section "Motor connection and connection box".

An auxiliary connection box is required when the total number of auxiliary terminals in the connection box of the motor exceeds the specified values. For an additional charge, the connections can be routed through a separate auxiliary connection box (order code L97, M50 or M88, see "Auxiliary connection box" in the section "Motor connection and connection box").

Order code **A23**

For 1LA8 motors, the standard PTC thermistors are omitted when ordering with order code **A23**. A combination of A12 and A23 is possible, price on request.

OR

Motor temperature detection with embedded temperature sensors 2 x KTY 84-130.

In the connection box, 4 auxiliary terminals are required.

Order code **A25**

The temperature sensor is embedded in the winding head of the motor in the same manner as a PTC thermistor. Evaluation is performed, for example, in the converter.

For mains-fed operation, the temperature monitoring device 3RS10 that is part of the protection equipment can be ordered separately. For further details, see Catalog LV 1, Order No.: E86060-K1002-A101-A7-7600.

Motor protection

1LA and 1LG motors for Zones 2, 21 and 22 for converter-fed operation already have a PTC thermistor for tripping as standard. For converter-fed operation, a PTC thermistor for alarm can be ordered additionally.

PTC thermistor for alarm for converter-fed operation in Zones 2, 21 and 22.

In the connection box, 2 auxiliary terminals are required.

Order code **A10**

1MJ motors:

PTC thermistors must always be used if the duty is not S1 (continuous operation) in accordance with IEC 60034-1/DIN EN 60034-1.

If 1MJ motors are operated with converters, the PTC thermistor in the winding is essential. For 1MJ6/1MJ7 motors, an additional PTC thermistor is installed in the connection box.

Motor protection with PTC thermistors for converter-fed operation with 3 or 4 embedded temperature sensors for tripping.

In the connection box, 2 auxiliary terminals are required.

Order code **A15**.

or

Motor protection with PTC thermistors for converter-fed operation with 6 or 8 embedded temperature sensors for alarm and tripping.

In the connection box, 4 auxiliary terminals are required.

Order code **A16**.

For versions with temperature sensors, in some cases, anti-condensation heaters cannot be mounted or can only be mounted for certain frame sizes. See "Special versions" in the corresponding catalog parts.

If thermistor protection is required, 3 PTC thermistors connected in series are embedded in the stator winding of the motor.

The 3RN1 temperature monitoring device that is part of the protection equipment must be ordered separately – it is PTB certified. For further details about mode of operation, circuit and prices, see Catalog LV 1,

Order No.: E86060-K1002-A101-A7-7600.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

0

Motor temperature detection with resistance thermometers

The resistance thermometers are embedded in the stator winding or in the rolling contact bearings or bearing plates of the motors. The following possibilities can be implemented:

Stator winding:

3 or 6 PT 100 resistance thermometers are embedded in the stator winding in 2-wire connection. The two connections for each resistance thermometer are routed through the main connection box. In the connection box, 6 or 12 auxiliary terminals are required. The maximum number of auxiliary terminals in the main connection box of the motor is specified under "Number of auxiliary terminals" in the section "Motor connection and connection box". An auxiliary connection box is required when the total number of auxiliary terminals in the connection box of the motor exceeds the specified values.

For an additional charge, the connections can be routed through a separate auxiliary connection box (order code L97, M50 or M88, see "Auxiliary connection box" in the section "Motor connection and connection box"); 3-wire or 4-wire connection (from the terminal strip) is also possible (please inquire).

The resistance thermometer embedded in the winding head is calibrated to 100 Ω at 0 °C. The base values for the resistances (i.e. the relationship between the resistance and temperature) as well as the admissible deviations are laid down in DIN IEC 751. The changes in temperature are transferred to a display device in the form of changes in resistance.

The display devices are not included in the price and are not included in the delivery package.

Installation of 3 PT 100 resistance thermometers in stator winding.

In the connection box, 6 auxiliary terminals are required.

Order code **A60**

Installation of 6 PT100 resistance thermometers in stator winding.

In the connection box, 12 auxiliary terminals are required.

Order code **A61**

Note regarding non-standard 1LA8 motors: When A61 is ordered, the PTC thermistors installed as standard in the motor are omitted. A combination of A12 and A61 is possible, price on request.

Rolling contact bearings or bearing plates:

The bearing thermometers are screwed into the bearing plates of the drive end (DE) and non-drive-end (NDE). The wires are routed through the main connection box.

In the connection box, auxiliary terminals are required. The maximum number of auxiliary terminals in the main connection box of the motor is specified under "Number of auxiliary terminals" in the section "Motor connection and connection box". An auxiliary connection box is required when the total number of auxiliary terminals in the connection box of the motor exceeds the specified values.

For an additional charge, the connections can be routed through a separate auxiliary terminal box (order code L97, M50 or M88, see "Auxiliary connection box" in the section "Motor connection and connection box"). The changes in temperature are transferred to a display device in the form of changes in resistance. The display device is not included in the price and is not included in the delivery package.

Installation of 2 PT 100 screw-in resistance thermometers (basic circuit) for rolling-contact bearings.

In the connection box, 4 auxiliary terminals are required.

Order code **A72**

Installation of 2 PT 100 screw-in resistance thermometers (3-wire circuit) for rolling-contact bearings.

In the connection box, 6 auxiliary terminals are required.

Order code **A78**

Installation of 2 PT 100 double screw-in resistance thermometers (3-wire circuit) for rolling-contact bearings.

In the connection box, 12 auxiliary terminals are required.

Order code **A80**

Heating and ventilation

Anti-condensation heaters

Supply voltage 230 V (1~)

Order code **K45**

or

Order code **M15**

Supply voltage 115 V (1~)

Order code **K46**

or

Order code **M14**

Motors whose windings are at risk of condensation due to the climatic conditions, e.g. inactive motors in humid atmospheres or motors that are subjected to widely fluctuating temperatures can be equipped with anti-condensation heaters.

An additional cable entry M16 x 1.5 or M20 x 1.5 (M20 x 1.5 or M25 x 1.5 for 1LA8, 1PQ8 and 1LL8 motor series) is provided for the connecting cable.

Anti-condensation heaters must not be switched on during operation.

1MJ6 motors:

For 1MJ6 motors up to frame size 160 L, a built-in anti-condensation heater is not possible for versions with PTC thermistors.

For 1MA and 1LA motors. In designs for Zone 21:

Built-in anti-condensation heaters are not possible up to frame size 200L.

For 1LA8 and 1PQ8 motor series in designs for Zone 2, the anti-condensation heater can only be switched on after the motor has been switched off for one hour.

Instead of an anti-condensation heater, another possibility (without additional charge) is connection of a voltage that is approximately 4 to 10 % of the rated motor voltage to stator terminals U1 and V1; 20 to 30 % of rated motor current is sufficient to heat the motor (this does not apply to 1MA6 frame sizes 225 M to 315 L, 1LA8, 1PQ8 and 1LL8).

| Motor series | Frame size | Heater output of the anti-condensation heaters in Watt (W) | |
|---|-------------|--|------------|
| | | Supply voltage at | |
| | | 230 V | 115 V |
| | | Order code | Order code |
| | | K45 | K46 |
| 1LA5, 1LP5, 1PP5, 1LA6, 1LA7, 1LP7, 1PP7, 1LA9, 1MJ6 | 56 ... 80 | 25 | 25 |
| | 90 ... 112 | 50 | 50 |
| | 132 ... 200 | 100 | 100 |
| | 225 | 100 | 100 |
| 1LG4, 1LP4, 1PP4, 1LG6, 1MA6, 1MJ7 | 180 ... 200 | 55 | 55 |
| | 225 ... 250 | 92 | 92 |
| 1LG4, 1LG6 in designs for Zone 2 | 180 ... 200 | 48 | 48 |
| | 225 ... 250 | 92 | 92 |
| | 280 ... 315 | 105 | 105 |
| 1MA6 | 280 ... 315 | 105 | 105 |
| 1LG4, 1LP4, 1PP4, 1LG6, 1MJ7 | 280 ... 315 | 109 | 109 |
| 1LA8, 1PQ8, 1LL8 | 315 ... 450 | 200 | 183 |

Fans/Separately driven fans

Motors of frame sizes 63 to 450 have radial-flow fans in the standard version that cool regardless of the direction of rotation of the motor (cooling method IC 411 acc. to DIN EN 60034-6, IC01 for 1LL8 motor series). The air flow is forced from the non-drive-end (NDE) to the drive end (DE).

Motors of frame size 56 do not have a fan (IC 410).

For details of separately driven fans for frame sizes 100 to 315, see also Page 0/76.

1LA8 and 1LL8 (frame size 355 and above) 2-pole motors have an axial-flow fan for clockwise rotation in the standard version. The fan can be subsequently reinstalled for counter-clockwise rotation.

Motors of the 1LA8 series are also available in a version with a separately driven fan (cooling method IC 416 – 1PQ8 series) and in a version with through-ventilation (cooling method IC 01, IP23 degree of protection – 1LL8 series).

1PQ8 motors have separately driven fans that cool regardless of the speed of the main motor (IC416).

Supply voltages for 1PQ8 separately driven fans:
230 VΔ/400 VY ±10 %, 50 Hz, 460 VΔ ±10 %, 60 Hz.

Other voltages/frequencies can be ordered by specifying in plain text with order code **Y81** (additional charge).

Supply voltage of separately driven fan for 1LG motors:

The supply voltage of the separately driven fan conforms to the stated rated voltage ranges of table "Technical data of the separately driven fan", see Page 0/76. Deviating voltages/frequencies can be ordered with order code Y81 and plain text (additional charge).

When the motor is mounted and the air intake is restricted, then it must be ensured that a minimum clearance is maintained between the fan cover and the wall. This clearance is calculated from the difference between the protective cover and the fan cover (dimension LM – L) or is specified in the detail dimension drawing.

For design of the fan/separately driven fan and the fan cover, see the tables below.

Metal external fan impeller

The standard fan impeller made of plastic can be replaced with a fan impeller made of metal. This version can be supplied for motor series 1LA5, 1LA6, 1LA7, 1LA8, 1LA9, 1LG4, 1LG6, 1MA6, 1MA7, 1MJ6, 1MJ7 and 1LL8.

For motor series 1LA5, 1LA6, 1LA7, 1LA9, 1LG4 and 1LG6, the metal external fan can also be used with converter-fed operation.

A metal external fan is already included for the low-noise version.

Up to frame size 160, the metal external fan impeller is manufactured from sheet aluminum or steel and for frame size 180 and above it is manufactured from cast iron or sheet steel.

Order codes **K35**

Fan cover for textile industry

For motors 1LG4 and 1LG6, the fan cover can be used in the standard version for the textile industry.

For motor series 1LA5, 1LA6, 1LA7 and 1LA9, a version of the fan cover can be supplied specially for the textile industry. This has a protective cover and is made of non-corrosive sheet steel. Order code **H17**

Cast-iron fan cover

For 1MA6 motor series, frame sizes 225 to 315, the fan cover can be supplied in cast-iron instead of plastic.

Order code **K34**

Sheet metal fan cover

For 1LG4 and 1LG6 motor series, the fan cover can be supplied in sheet metal instead of plastic.

Order code **L36**

For 1LA8, 1PQ8 and 1LL8 motor series, the sheet-metal fan cover is supplied as standard.

Design of fan and fan cover for standard motors, explosion-proof motors, motors operating with frequency converters, fan motors and smoke extraction motors:

| Motor series | Frame size | Fan material ¹⁾ | Fan cover material ¹⁾ |
|-------------------|-------------|----------------------------|--|
| 1LA5, 1LA7 | 63 ... 225 | Plastic | Non-corrosive sheet steel |
| 1LA9 | 63 ... 200 | | |
| 1LA6 | 100 ... 160 | | |
| 1MA7 | 63 ... 160 | | |
| 1MA6 | 100 ... 315 | | |
| 1MJ6 | 71 ... 200 | | |
| 1MJ7 | 255 ... 315 | | |
| 1LG4, 1LG6 | 180 ... 315 | Plastic | Glass fiber strengthened plastic ²⁾ |

Design of the fan/separately driven fan and the fan cover for non-standard motors

| Motor series | Frame size | Fan material ³⁾ | Fan cover material |
|-------------------|-------------|---|------------------------------|
| 1LA8, 1LL8 | 315 | Radial-flow fan, plastic | Non-corrosive sheet steel |
| 1PQ8 | | Radial-flow fan, sheet steel | |
| 1LA8, 1LL8 | 355 ... 400 | Axial-flow fan, cast aluminum | Radial-flow fan, plastic |
| 1PQ8 | | Radial-flow fan, sheet steel | Radial-flow fan, sheet steel |
| 1LA8, 1LL8 | 450 | Axial-flow fan, hub: cast aluminum, vane: plastic | Radial-flow fan, plastic |
| 1PQ8 | | Radial-flow fan, sheet steel | Radial-flow fan, sheet steel |

¹⁾ The plastic fan can be used at ambient temperatures of up to 70 °C. For designs for Zones 21 and 22 and VIK, other materials are used in some cases.

²⁾ For designs:
for Zones 2, 21 and 22 VIK (order code **K30**),
CSA (order code **D40**)
UL (order code **D31**)
a fan cover is used that is made of non-corrosive sheet steel.

³⁾ The plastic fan can be used at ambient temperatures of up to 70 °C. For designs for Zones 21 and 22, VIK and UL, other materials are used in some cases.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Motor connection and connection box

Connection, circuit and connection box

Location of the connection box

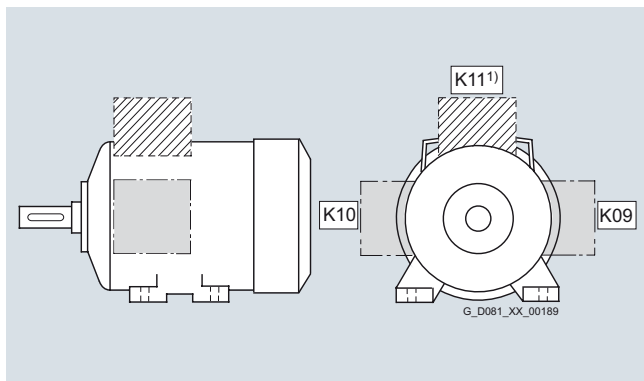
The connection box of the motor can be mounted in four different locations or positions. The position of the connection box must always be viewed from the drive end (DE). The standard position of the connection box is on top, with the exception of non-standard motors in which case the standard position of the connection box is on the right-hand side.

Connection box on right-hand side – Order code **K09**

Connection box on left-hand side – Order code **K10**

If rotation of the connection box is possible later for motors that are supplied as standard with cast feet, the version "Connection box on top, feet screwed on" is recommended.

Order code **K11**



The number of winding ends depends on the winding design. Three-phase motors are connected to the three phase conductors L1, L2 and L3 of a three-phase system. The rated voltage of the motor in the running connection must match the phase conductor voltages of the network.

When the three phases are operating in a time sequence and are connected to the terminals of the motor in alphabetical order U1, V1 and W1, clockwise rotation is established as viewed from the motor shaft. The direction of rotation of the motor can be reversed if two connecting leads are interchanged.

Labeled terminals are provided to connect the protective conductor.

A protective earth terminal is provided in the connection box for earthing. An earth terminal is located on the outside of the motor housing (special version in the case of 1LA5, 1LA6, 1LA7 and 1LA9 motors. Order code **L13**).

If a brake control system or thermal protection is installed, the connections will also be in the connection box. The motors are suitable for direct connection to the line supply.

Design of the connection box

Connection boxes for motors to Exn (Zone 2) type of protection and for protection against dust explosions (Zone 21) differ from the basic version. For dust explosion protection (Zone 22), the connection boxes of the basic version are used.

For 1LG4 and 1LG6 motors, frame sizes 180 to 225 and 1MA6 motors frame sizes 180 to 200, 1MJ6 frame sizes 71 to 160 M and frame sizes 180 to 200 L, a connection box is available in cast iron.

Order code **K15**

For 1LA6 and 1MA6 frame size 100 – 160, 1MJ6 frame size 160 L and 1MJ7, 1MA6 frame size 225 – 315 standard version. Not possible for 1LA7 and 1MA7.

For 1MJ motors:

The connection boxes are designed to Ex e type of protection. The ends of the windings for motors up to frame size 160 are routed through a shared explosion-proof leadthrough into the connection box; for frame size 180 and above, they are routed through single leadthroughs.

For 1MJ motors, an explosion-proof connection box with Ex d II C type of protection is available.

Order code **K53**

For motor series 1LA8, 1PQ8 and 1LL8, the ends of the windings are routed through single leadthroughs into the connection box.

The number of terminals and the size of the connection box is designed for standard requirements. For special requirements or if the customer requires a larger connection box, the connection box for the next larger frame size can be supplied.

For all motors except for non-standard motors and 1MJ motors:

Next larger connection box (only frame size 180 and above)

Order code **L00**

Detailed assignment of connection boxes, see Page 0/43 and 0/46.

For non-standard motors (motor series 1LA8, 1PQ8 and 1LL8)

Next larger 1XB1 621 connection box

Order code **M58**

Next larger 1XB1 631 connection box

Order code **L00**

Detailed assignment of connection boxes, see Page 0/43 and 0/44.

If the necessary installation angle of the motor would cause machine components to collide with the connection box, the connection box can be moved from the drive end (DE) to the non-drive end (NDE).

Order code **M64**

Not possible for explosion-proof motors.

Motor connection

Line feeder cables

The line feeder cables must be dimensioned acc. to DIN VDE 0298. The number of required feeder cables, if necessary in parallel, is defined by:

- The max. cable cross-section which can be connected
- The cable type
- Routing
- Ambient temperature and the corresponding admissible current in accordance with DIN VDE 0298

Parallel feeders

Some motors must be fitted with parallel feeders due to the admissible current per terminal. These motors are indicated in the selection and ordering data in the respective catalog parts. With 1XB7 connection boxes, 2 parallel feeders are possible; with 1XB1 631 connection boxes, up to 4 parallel feeders are possible; and with GT640 and 1XB1 621 connection boxes, 2 parallel feeders are possible.

For motors with an upper connection box section and auxiliary terminals (e.g. with order code **A11**), an M16 x 1.5 or M20 x 1.5 cable gland with plug is additionally available.

For further details, see the data sheet function in SD configurator.

¹⁾ Possible for frame size IM B3, IM B6, IM B7, IM B8, IM V6 with/without protective cover, IM B35.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

1LA7 and 1LA9 in frame size 100 L to 160 L

The connection box is integrated into the frame. Two knock-outs are provided at each side for boltings. The nuts for the boltings are supplied with the connection box.

Cable entry on connection box

Unless stated otherwise, the cable entry is located in the standard position as shown in the illustration below.

The connection box can also be rotated such that the cable entry is located

- Towards the drive end (DE)
(rotation of connection box by 90°, entry from DE)
Order code **K83**
- Towards the non-drive end (NDE)
(rotation of connection box by 90°, entry from NDE)
Order code **K84**

With options **K83** and **K84**, 1LA7 motors of frame sizes 100 to 160 require an additional connection box upper section. This measure results in increased height of the connection box. The dimension AD increases by approx. 30 mm, dimension AF changes depending on the frame size by between 45 and 47 mm. For the precise values of AD and AF, see "Dimension drawings" in the corresponding catalog parts.

If the cable entry is rotated by 180°, special measures are required for 1LA7 and 1LA5 motors of frame sizes 63 to 90 as well as 180 to 225 (without a change in dimensions). (Rotation of the connection box by 180°)

Order code **K85**

From frame size 100 to 160, the break-outs in the connection box can be used.

The dimensions of the connection box are listed in the relevant catalog parts in accordance with the frame size and the "Dimension drawings".

If the position of the connection box (connection box RHS, LHS or above) is changed, the position of the cable entry must be checked and, if necessary, it can be ordered with the corresponding order codes (**K83**; **K84**; **K85**).

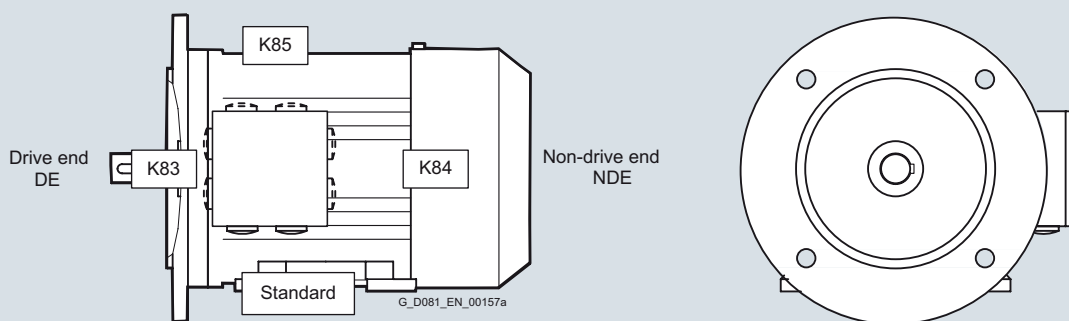
Ordering example

Connection box RHS (Order code **K09**):

If no other order code is specified, cable entry is from below.

With additional order code **K83**:

Cable entry from drive end (DE)



For cable entry to a standard connection box, a **cable gland** can be ordered for motor connection.

One cable gland, metal

Order code **K54**

For cable entry to a connection box with the options of motor protection or anti-condensation heating, **two cable glands** will be supplied.

Cable glands are supplied in metal as standard. For temperatures below -30 °C and/or higher than +60 °C, the material is selected/used according to the temperature.

Cable gland, maximum configuration

Order code **K55**

For non-standard motors (motor series 1LA8, 1PQ8 and 1LL8), the cable entry can be implemented in accordance with DIN 89280 for the maximum possible configuration of cable glands in the connection box.

Order code **K57**

A two-part plate on the connection box can be supplied if required.

Order code **K06**

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

0

For special requirements for which the standard holes for the cable entries are inadequate, too large or when the routing must be implemented differently, an undrilled entry plate can be supplied to allow holes to be drilled as required on assembly.
Order code **L01**

Protruding cable ends

For confined spaces, protruding cable ends can be ordered, without a connection box with cover plate.

For protruding cable ends for smoke extraction motors, see catalog part 9 "Smoke extraction motors".

The following lengths of protruding cables can already be ordered using order codes on request:

- 3 cables protruding, 0.5 m long ¹⁾
Order code **L44**
- 3 cables protruding, 1.5 m long ¹⁾
Order code **L45**
- 6 cables protruding, 0.5 m long
Order code **L47**
- 6 cables protruding, 1.5 m long
Order code **L48**
- 6 cables protruding, 3.0 m long
Order code **L49**

The cross-section of the named cables refers to a coolant temperature up to CT 40 °C

It is also possible to rotate the position of the three protruding cables:

- Cable connection on right side, as viewed from drive end (DE) ²⁾
Order code **L51**
- Cable connection on left side, as viewed from non-drive end (NDE) ²⁾
Order code **L52**

For 1LG4/1LG6/1LP4/1PP4 motors, it is also possible to order the length of protruding cable in plain text with order codes **L51** and **L52**.

In combination with winding monitoring (order code **A11, A12, A15, A16, A23, A25 or A31**) or anti-condensation heating (order code **K45 or K46**), option **L44, L45, L47, L48 or L49** must be specified twice on ordering.

Position of protruding cables

Motor series 1LA7

Frame sizes 56 to 160:

As standard, above at drive end (DE).

Motor series 1LA6

Frame sizes 100 to 160:

As standard, above at drive end (DE).

Motor series 1LA5

Frame sizes 180 to 225:

As standard, above at drive end (DE).

Motor series 1LA9

Frame sizes 56 to 200:

As standard, above at drive end (DE).

Motor series 1LG4/1LG6/1LP4/1PP4

Frame sizes 180 to 315:

As standard, above at drive end (DE).

Optionally left or right at drive end (DE)

¹⁾ With only 3 protruding cables additional plain text specifying star or delta connection is required.

²⁾ For motor series 1LA5, 1LA6, 1LA7, 1PP5 and 1PP6 only possible for smoke-extraction motors.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

0

Connection, circuit and connection box

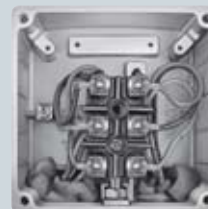
Type gk 030



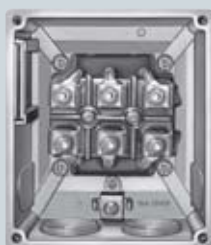
Type gk 127



Type gk 130, gk 230, gk 330
(not for 1LA5, 1LG4, 1LG6)



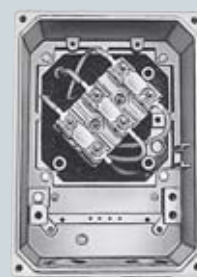
Type gk 330 (for 1LA5, 1LG4, 1LG6)



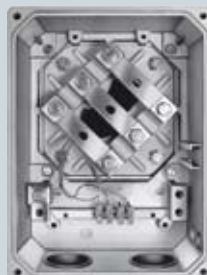
Type gk 135, gk 235, gk 335



Type gk 430, gk 431



Type 1XB7 222



Type gt 520, gt 540, gt 620, gt 640



Type 1XB7 422, 1XB7 522



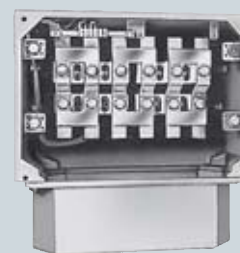
Type 1XB7 622



Type 1XB1 621



Type 1XB1 631



IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

0

Type gk 465



Type 1XC1 270, 1XC1 380



Type 1XC1 480, 1XC1 580



Type 1XB7 322



Connection boxes for 1LA, 1LG, 1LP and 1PP motors

| Motors | Frame size | Number of cable entries | Connection box material | Feeder connection |
|-------------------------|------------------------------|--|------------------------------|-------------------------------------|
| 1LA7, 1LA9 | 56 ... 71 | 2 cable glands incl. Plugs | Aluminum alloy | Without cable lug or with cable lug |
| 1LP7, 1PP7 | 80 ... 90 | | | |
| | 100 ... 160 | 2 holes 180° apart, 4 break-out openings sealed with cast iron skin (2 left, 2 right), connection box is moulded | | |
| 1LA5, 1LA9 | 180 ... 225 | 2 holes with plugs | | |
| 1LP5, 1PP5 | | | | |
| 1LA6 | 100 ... 160 | | Cast iron | |
| 1LG4, 1LG6 | 180 ... 200 | | Aluminum alloy ¹⁾ | Without cable lug |
| 1LP4, 1PP4, 1PP6 | 225 | | | With cable lug |
| | 250 ... 315 | | | |
| 1LA8, 1PQ8, 1LL8 | 315 ... 355 ^{2) 3)} | | Cast iron | |
| | 400 ... 450 | 4 holes with plugs | | |

Possible positions of connection boxes for 1LA, 1LG, 1LP and 1PP motors

| Motors | Frame size | Connection box position | | | Rotation of connection box | | Retrofitting possible |
|-------------------------|-------------|-------------------------|---------------------|-----------------------|----------------------------|--------------------|-----------------------|
| | | top | Side, right or left | Retrofitting possible | 90° ⁴⁾ | 180° ⁴⁾ | |
| 1LA5, 1LA7, 1LA9 | 56 ... 71 | ○ | – | – | ○ | ○ | Yes |
| 1LP5, 1LP7 | 80 ... 90 | ○ | ○ | – | ○ | ○ | Yes |
| 1PP5, 1PP7 | 100 ... 160 | ○ | ○ | – | – ⁵⁾ | ○ | Yes |
| | 180 ... 225 | ○ | ○ | – | ○ | ○ | Yes |
| 1LA6 | 100 ... 160 | ○ | ○ | – | ○ | ○ | Yes |
| 1LG4, 1LG6 | 180 ... 315 | ○ | ○ | – ⁶⁾ | ○ | ○ | Yes |
| 1LP4, 1PP4, 1PP6 | | | | | | | |
| 1LA8 | 315 | ○ | ○ ²⁾ | – | ○ | ○ | – |
| | 355 | ○ | ○ ²⁾ | – | ○ | ○ | – |
| | 400, 450 | ○ | ○ ²⁾ | – | ○ | ○ | – |

○ Available version

For further details of 1LA8 motors, see "Dimensions", "1LA8".

¹⁾ Connection box in cast-iron version **K15**.

²⁾ 15° to the vertical in each case

³⁾ Frame sizes 357-2 and 357-4 as for frame sizes 400 and 450

⁴⁾ The position of the cable entry must be specified when ordering.

⁵⁾ Design for 1LA7 motors available on request.

⁶⁾ Retrofittable with screwed on feet (order codes **K09**, **K10** and **K11**).

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

0

Connection boxes for 1LA, 1LG, 1LL, 1LP, 1PP and 1PQ motors in standard version and for Zone 22

See the next section of the catalog for connection boxes for 1LA8, 1PQ8 and 1LL8.

| Frame size | Connection box | Number of terminals | Contact screw thread | Max. conductor size | Sealing range | Cable entry ^{1) 2)} | Cable entry for CSA version order code D40 ³⁾ |
|--|------------------------|---------------------|----------------------|----------------------|---------------|------------------------------|---|
| | Type | | | mm ² | mm | Size | Size |
| 1LA5, 1LA7, 1LA9, 1LP5, 1PP7, 1PP5 and 1PP7 | | | | | | | |
| 56 | gk 030 | 6 | M4 | 1.5 | 9 ... 17 | M25 x 1.5 | NPT 1/2" |
| 63 | (gk 127) ⁴⁾ | | | (2.5 with cable lug) | 4.5 ... 10 | M16 x 1.5 | |
| 71 | | | | | | | |
| 80 | | | | | | | |
| 90 | | | | | | | |
| 100 | gk 130 | 6 | M4 | 4 | 11 ... 21 | 2 x M32 x 1.5 | NPT 3/4" |
| 112 | | | | | | | |
| 132 | gk 230 | 6 | M4 | 6 | 11 ... 21 | 2 x M32 x 1.5 | NPT 3/4" |
| 160 | gk 330 | 6 | M5 | 16 | 19 ... 28 | 2 x M40 x 1.5 | NPT 1" |
| 180 | | | | | | | NPT 1 1/2" |
| 200 | gk 430 | 6 | M6 | 25 | 27 ... 35 | 2 x M50 x 1.5 | NPT 2" |
| 225 | gk 431 | 6 | M8 | 35 | 27 ... 35 | 2 x M50 x 1.5 | |
| 1LA6 | | | | | | | |
| 100 | gk 135 | 6 | M4 | 4 | 11 ... 21 | 2 x M32 x 1.5 | NPT 1/2" |
| 112 | | | | | | | |
| 132 | gk 235 | 6 | M4 | 6 | 11 ... 21 | 2 x M32 x 1.5 | NPT 3/4" |
| 160 | gk 335 | 6 | M5 | 16 | 19 ... 28 | 2 x M40 x 1.5 | NPT 1" |
| 1LG4, 1LG6, 1LP4, 1PP4 and 1PP6 | | | | | | | |
| 180 | gk 330 | 6 | M5 | 16 | 19 ... 28 | M40 x 1.5 | M40 x 1.5 ¹³⁾ |
| 200 | gk 430 | 6 | M6 | 25 | 27 ... 35 | M50 x 1.5 | M50 x 1.5 ¹³⁾ |
| 225 | gk 431 | 6 | M8 | 35 | 27 ... 35 | M50 x 1.5 | M50 x 1.5 ¹³⁾ |
| 250 | gt 520 | 6 | M10 | 120 | 34 ... 42 | M63 x 1.5 | M63 x 1.5 ¹³⁾ |
| 280 | | | | | | | |
| 315 | gt 620 | 6 | M12 | 240 ⁵⁾ | 38 ... 45 | M63 x 1.5 | M63 x 1.5 ¹³⁾ |

The connection box table does not apply to pole-changing motors with three speeds.

A two-part plate can be supplied. Order code **K06**. For frame size 250 M and above, with strain relief.

Connection boxes for 1LA8 and 1PQ8 motors in standard version

Mains-fed operation

| Frame size | Connection box | Number of terminals | Contact screw thread | Max. rec. conductor cross-section | Outer cable diameter (sealing range) | Cable entry ⁶⁾ | Cable gland option K57 ⁷⁾ | Auxiliary lead Outer cable diameter | Cable entry | Two-part plate option K06 | Auxiliary lead outer cable diameter |
|--------------------------|-------------------------|---------------------|----------------------|-----------------------------------|--------------------------------------|---------------------------|---|-------------------------------------|-------------|----------------------------------|-------------------------------------|
| | Type | | | mm ² | mm | Size | Size | mm | Size | mm | mm |
| 1LA8 ... 1PQ8 ... | | | | | | | | | | | |
| ... 315 | gt 640 | 6 | M12 | 185 | 41.0 ... 56.5 | 2 x M72x2 + 2 x M20x1.5 | 2 x M72x2 | 7 ... 13 | 2 x M20x1.5 | – | – |
| ... 317 | (8) 9) 11) | | | | | | | | | | |
| ... 353 | 1XB1 621 | 6 | M16 | 240 | 56.0 ... 68.5 | 2 x M80x2 + 2 x M25x1.5 | 2 x M80x2 | 11.5 ... 15.5 | 2 x M25x1.5 | 40 ... 70 | 2 x D80 + 2 x M25x1.5 |
| ... 355 | (8) 10) | | | | | | | | | | |
| ... 357-6 | | | | | | | | | | | |
| ... 357-8 | | | | | | | | | | | |
| ... 357-2 | 1XB1 631 ¹⁰⁾ | 12 | M16 | 240 | 56.0 ... 68.5 | 4 x M80x2 + 2 x M25x1.5 | 4 x M80x2 | 11.5 ... 15.5 | 2 x M25x1.5 | 40 ... 75 | 4 x D80 + 2 x M25x1.5 |
| ... 357-4 | 1XB1 631 ¹²⁾ | | | | | | | | | | |
| ... 40 | | | | | | | | | | | |
| ... 45 | | | | | | | | | | | |

1) Designed for cable glands with O-ring.

2) For 1LA7 motors frame sizes 100 to 160, speed nuts are enclosed for the cable glands.

3) Not possible for motors in Zone 22.

4) (gk 127) For frame sizes 63 to 90, with additional installation of several temperature sensors, order code **A12**, terminal strip for main and auxiliary terminals order code **M69** or a brake, a larger connection box will be necessary. The specified values do not change. The gk 127 is standard for Zone 22.

5) With cable cross-sections ≥ 240 mm², it is recommended that the next larger connection box is used (order code **L00**). Alternatively, order a two-part plate (order code **K06**).

6) Others available on request.

7) With option **K57**, the cable glands can be supplied.

8) With option **L00**, the motor can be supplied with the 1XB1 631 connection box (recommended for cable cross-sections ≥ 240 mm²).

9) Cable entry without removable plate, cable entry in connection box casing.

10) Cable entry with removable plate or supports.

11) With option **M58**, the motor can be supplied with the 1XB1 621 connection box (recommended for cable cross-sections > 185 mm²).

12) With option **K11** connection box on top the 1XB1 634 connection box will be supplied.

13) NPT-thread can be ordered with order code **Y61**.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Converter-fed operation

| Frame size | Connection box | Number of terminals | Contact screw thread | Max. rec. conductor cross-section | Outer cable diameter (sealing range) | Cable entry ¹⁾ | Cable gland option K57 ²⁾ | Auxiliary lead Outer cable diameter | Cable gland option K57 ²⁾ |
|--|----------------------------|---------------------|----------------------|-----------------------------------|--------------------------------------|---------------------------|---|-------------------------------------|---|
| Type | | | | mm ² | mm | Size | Size | mm | Size |
| 1LA8 ... 1PQ8 ... | | | | | | | | | |
| ... 315 ... 317 | gt 640 ^{3) 4) 6)} | 6 | M12 | 185 | 41.0 ... 56.5 | 2 x M72x2 + 2 x M20x1.5 | 2 x M72x2 | 9 ... 13 | 2 x M20x1.5 |
| ... 353 ... 355 ... 357-6 ... 357-8 | 1XB1 621 ^{3) 5)} | 6 | M16 | 240 | 56.0 ... 68.5 | 2 x M80x2 + 2 x M25x1.5 | 2 x M80x2 | 11 ... 16 | 2 x M25x1.5 |
| ... 357-2 ... 357-4 ... 40 ... 45 | 1XB1 631 ^{5) 7)} | 12 | M16 | 240 | 56.0 ... 68.5 | 4 x M80x2 + 2 x M25x1.5 | 4 x M80x2 | 11 ... 16 | 2 x M25x1.5 |

Connection boxes for 1LL8 motors in standard version

Mains-fed operation

| Frame size | Connection box | Number of terminals | Contact screw thread | Max. rec. conductor cross-section | Outer cable diameter (sealing range) | Cable entry ¹⁾ | Cable gland option K57 ⁸⁾ | Auxiliary lead Outer cable diameter | Cable gland option K57 ⁸⁾ | Two-part plate option K06 Admissible outer cable diameter | Cable entry | Auxiliary lead outer cable diameter |
|--------------------------------|---------------------------|---------------------|----------------------|-----------------------------------|--------------------------------------|---------------------------|---|-------------------------------------|---|--|-----------------------|-------------------------------------|
| Type | | | | mm ² | mm | Size | Size | mm | Size | mm | Size | mm |
| 1LL8 ... | | | | | | | | | | | | |
| ... 31 | 1XB1 621 ^{9) 5)} | 6 | M16 | 240 | 56.0 ... 68.5 | 2 x M80x2 + 2 x M25x1.5 | 2 x M80x2 | 11.5 ... 15.5 | 2 x M25x1.5 | 40 ... 70 | 2 x D80 + 2 x M25x1.5 | 11.5 ... 15.5 |
| ... 35 | 1XB1 631 ⁵⁾ | 12 | M16 | 240 | 56.0 ... 68.5 | 4 x M80x2 + 2 x M25x1.5 | 4 x M80x2 | 11.5 ... 15.5 | 2 x M25x1.5 | 40 ... 75 | 4 x D80 + 2 x M25x1.5 | 11.5 ... 15.5 |
| ... 40 ... 45 | 1XB1 631 ⁷⁾ | | | | | | | | | | | |

Converter-fed operation

| Frame size | Connection box | Number of terminals | Contact screw thread | Max. rec. conductor cross-section | Outer cable diameter (sealing range) | Cable entry ¹⁾ | Cable gland option K57 ²⁾ | Auxiliary lead Outer cable diameter | Cable gland option K57 ²⁾ |
|--------------------------------|---------------------------|---------------------|----------------------|-----------------------------------|--------------------------------------|---------------------------|---|-------------------------------------|---|
| Type | | | | mm ² | mm | Size | Size | mm | Size |
| 1LL8 ... | | | | | | | | | |
| ... 31 | 1XB1 621 ^{9) 5)} | 6 | M16 | 240 | 56.0 ... 68.5 | 2 x M80x2 + 2 x M25x1.5 | 2 x M80x2 | 11 ... 16 | 2 x M25x1.5 |
| ... 35 | 1XB1 631 ⁵⁾ | 12 | M16 | 240 | 56.0 ... 68.5 | 4 x M80x2 + 2 x M25x1.5 | 4 x M80x2 | 11 ... 16 | 2 x M25x1.5 |
| ... 40 ... 45 | 1XB1 631 ⁷⁾ | | | | | | | | |

¹⁾ Others available on request.

²⁾ Shielded cable (EMC); with option **K57**, the cable glands can be supplied.

³⁾ With option **L00**, the motor can be supplied with the 1XB1 631 connection box (recommended for cable cross-sections ≥ 240 mm²).

⁴⁾ Cable entry without removable plate, cable entry in connection box casing.

⁵⁾ Cable entry with removable plate or supports.

⁶⁾ With option **M58**, the motor can be supplied with the 1XB1 621 connection box (recommended for cable cross-sections > 185 mm²).

⁷⁾ With option **K11** connection box on top the 1XB1 634 connection box will be supplied.

⁸⁾ With option **K57**, the cable glands can be supplied.

⁹⁾ With option **L00**, the motor can be supplied with the 1XB1 631 connection box.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Connection boxes for 1MA6 and 1MA7 explosion-proof motors and for 1LA6/7/9 and 1LG4/6 motors in Ex n version or for Zone 2 and Zone 21

| Motors | Frame size | Number of cable entries | Connection box material | Feeder connection |
|------------------|-------------------------|---|-------------------------|---|
| 1MA7, 1LA7, 1LA9 | 56 ¹⁾ ... 90 | 2 holes incl. 1 certified cable gland with sealing washer and 1 certified plug | Aluminum alloy | Without cable lug ²⁾ or with cable lug |
| | 100 ... 160 | 4 holes incl. 1 certified cable gland with sealing washer and 3 certified plugs | | |
| 1MA6, 1LA6 | 100 ... 160 | 2 holes incl. 1 certified cable gland with sealing washer and 1 certified plug | Cast iron | |
| 1MA6, 1LA9 | 180 ... 200 | 2 holes incl. 1 certified cable gland with sealing washer and 1 certified plug | Aluminum alloy | |
| | 225 | 2 holes with 2 certified cable glands with sealing washer | Cast iron | |
| | 250 ... 315 | | | |
| 1LG4, 1LG6 | 180 ... 225 | 2 holes incl. 1 certified cable gland with sealing washer and 1 certified plug | Aluminum alloy | |
| | 250 ... 315 | 2 holes with 2 certified cable glands with sealing washer | Cast iron | |

Connection boxes for 1LA8 and 1PQ8 explosion-proof motors in Ex n version or for Zone 2 and Zone 22

| Motors | Frame size | Number of cable entries | Connection box material | Feeder connection |
|------------|---------------------------------------|-------------------------|-------------------------|-------------------|
| 1LA8, 1PQ8 | 315, 355 ^{3) 4)} 400, 450 | Undrilled cable entry | Cast iron | With cable lug |

Connection boxes for 1LA8 and 1PQ8 explosion-proof motors in Ex n version or for Zone 2 and Zone 22

| Frame size | Connection box | Number of terminals | Contact screw thread | Recommended max. conductor cross-section | Cable entry ⁵⁾ | Two-part plate option K06 | | |
|--|-------------------|---------------------|----------------------|--|---------------------------------|----------------------------------|---------------|-------------------------------------|
| | | | | | | Max. outer cable diameter | Cable entry | Auxiliary lead outer cable diameter |
| | Type | | | mm ² | Size | mm | Size | mm |
| 1LA8 ... 1PQ8 ... | | | | | | | | |
| ... 315 ... 317 | 1XB1 621 6) 7) | 6 | M16 | 240 | Undrilled cable entry 40 ... 70 | 2 x D80 + 2 x M25x1.5 | 11.5 ... 15.5 | |
| ... 353 ... 355 ... 357-6 ... 357-8 | 1XB1 621 6) 8) | 6 | M16 | 240 | Undrilled cable entry 40 ... 70 | 2 x D80 + 2 x M25x1.5 | 11.5 ... 15.5 | |
| ... 357-2 ... 357-4 ... 40 ... 45 | 1XB1 631 8) | 12 | M16 | 240 | Undrilled cable entry 40 ... 75 | 4 x D80 + 2 x M25x1.5 | 11.5 ... 15.5 | |

Possible positions of connection boxes for 1MA6 and 1MA7 explosion-proof motors and for 1LA6 and 1LA7 motors in Ex n version or for Zone 2 and Zone 21

| Motors | Frame size | Connection box position | | | Retrofitting possible | Rotation of connection box | | Retrofitting possible |
|------------------------------|--------------------------|-------------------------|---------------------|---|-----------------------|----------------------------|--------------------|-----------------------|
| | | Above | Side, right or left | | | 90° ⁹⁾ | 180° ⁹⁾ | |
| 1MA7 and 1LA7 in Zones 2, 21 | 56 ¹⁰⁾ ... 71 | ○ | – | – | ○ | ○ | Yes | |
| | 80 ... 90 | ○ | ○ | – | ○ | ○ | Yes | |
| | 100 ... 160 | ○ | ○ | ○ | – | ○ ¹¹⁾ | Yes | |
| 1MA6 and 1LA6 in Zones 2, 21 | 100 ... 160 | ○ | ○ | ○ | ○ | ○ | Yes | |
| | 180 ... 225 | ○ | ○ | – | ○ | ○ | Yes | |
| | 250 ... 315 | ○ | ○ | – | ○ | ○ | Yes | |

○ Available version

1) 1MA7 motor series as well as 1LA7/1LA9 motor series in Zone 2, only frame size 63 and above.

2) The components required for connection without cable lugs are supplied with motors of frame size 225 and above as an accessory pack in the connection box.

3) 15° to the vertical in each case.

4) Frame sizes 357-2 and 357-4 as for frame sizes 400 and 450.

5) Others available on request.

6) With option **L00**, the motor can be supplied with the 1XB1 631 connection box (recommended for cable cross-sections ≥ 240 mm²).

7) Cable entry without removable plate, cable entry in connection box casing.

8) Cable entry with removable plate or supports.

9) The position of the cable entry must be specified when ordering.

10) 1MA7 motor series as well as 1LA7 motor series in Zone 2, only frame size 63 and above.

11) From frame size 100 upwards.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Standard connection boxes for 1MA6, 1MA7 explosion-proof motors and for 1LA6, 1LA7, 1LA9, 1LG4 and 1LG6 motors in Ex n, VIK version, Zone 2 and Zone 21

| Frame size | Connection box Type | Number of terminals | Contact screw thread | Max. connectable cross-section mm ² | Sealing range mm | Cable entry ¹⁾ | Two-part plate Max. outer cable diameter mm |
|------------------------|------------------------|------------------------|-------------------------|--|---------------------|---------------------------|--|
| | | | | | | Size | |
| 1MA7, LA7, 1LA9 | | | | | | | |
| 56 ²⁾ | gk 130 | 6 | M4 | 4 | 9 ... 17 | M25 x 1.5 | – |
| 63 | | | | | 4.5 ... 10 | M16 x 1.5 | |
| 71 | | | | | | | |
| 80 | | | | | | | |
| 90 | | | | | | | |
| 100 | | | | | 14 ... 21 | M32 x 1.5 | – |
| 112 | | | | | | | |
| 132 | gk 230 | 6 | M4 | 6 | 14 ... 21 | M32 x 1.5 | – |
| 160 | gk 330 | 6 | M5 | 16 | 19 ... 28 | M40 x 1.5 | – |
| 180 | 1XB7 222 | 6 | M6 | 10 | 19 ... 28 | M40 x 1.5 | – |
| 200 | 1XB7 322 | 6 | M8 | 50 | 26 ... 35 | M50 x 1.5 | – |
| 1MA6, 1LA6 | | | | | | | |
| 100 | gk 135 | 6 | M4 | 4 | 14 ... 21 | M32 x 1.5 | – |
| 112 | | | | | | | |
| 132 | gk 235 | 6 | M4 | 6 | | | |
| 160 | gk 335 | 6 | M5 | 16 | 19 ... 28 | M40 x 1.5 | – |
| 180 | 1XB7 222 | 6 | M6 | 10 | 19 ... 28 | M40 x 1.5 | – |
| 200 | 1XB7 322 | 6 | M8 | 50 | 26 ... 35 | M50 x 1.5 | – |
| 225 | | | | | | | |
| 250 | 1XB7 422 | 6 | M10 | 120 | 34 ... 42 | M63 x 1.5 | – |
| 280 | | | | | | | |
| 315 | 1XB7 522 | 6 | M12 | 240 | 38 ... 45 | M63 x 1.5 | – |
| 1LG4, 1LG6 | | | | | | | |
| 180 | gt 351 | 6 | M6 | 16 | 19 ... 27 | M40 x 1.5 | – |
| 200 | gt 451 | 6 | M8 | 50 | 24 ... 35 | M50 x 1.5 | – |
| 225 | | | | | | | |
| 250 | gt 540 | 6 | M10 | 120 | 34 ... 42 | M63 x 1.5 | – |
| 280 | | | | | | | |
| 315 | gt 640 | 6 | M12 | 240 | 38 ... 45 | M63 x 1.5 | – |

With 1MA motors, unused drilled holes must be sealed in accordance with EN 50014.

Connection boxes in Ex de IIC type of protection for explosion-proof motors 1MJ6 and 1MJ7

| Motors | Frame size | Number of cable entries | Connection box material | Feeder connection |
|-------------|--------------|--|-------------------------|---|
| 1MJ6 | 71 ... 160 M | 2 holes incl. 1 certified cable gland with sealing washer and 1 certified plug | Aluminum alloy | Without cable lug ³⁾ or with cable lug |
| | 160 L | | Cast iron | |
| | 180 ... 200 | | Aluminum alloy | |
| 1MJ7 | 225 | 2 holes with 2 certified cable glands with sealing washer | Cast iron | |
| | 250 ... 315 | | | |

Possible positions of the connection boxes in Ex de type of protection for explosion-proof motors 1MJ6 and 1MJ7

| Motors | Frame size | Connection box position | | | Rotation of connection box | | Retrofitting possible |
|-------------|-------------|-------------------------|---------------------|-----------------------|----------------------------|--------------------|-----------------------|
| | | Above | Side, right or left | Retrofitting possible | 90° ⁴⁾ | 180° ⁴⁾ | |
| 1MJ6 | 71 ... 200 | ○ | ○ | – | ○ | ○ | Yes |
| 1MJ7 | 225 ... 315 | ○ | ○ | – | ○ | ○ | Yes |

○ Available version

¹⁾ Designed for cable glands with O-ring.

²⁾ 1MA7 motor series as well as 1LA7/1LA9 motor series in Zone 2, only frame size 63 and above.

³⁾ The components required for connection without cable lugs are supplied with 1MJ7 motors of frame size 225 M and above as an accessory pack in the connection box.

⁴⁾ The position of the cable entry must be specified when ordering.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

0

Standard connection boxes in Ex de type of protection for explosion-proof motors 1MJ6 and 1MJ7

| Frame size | Connection box | Number of terminals | Contact screw thread | Max. connectable cross-section mm ² | Sealing range mm | Cable entry ¹⁾ |
|-------------------|----------------|---------------------|----------------------|---|---------------------|--|
| | Type | | | | | Size |
| 1MJ6, 1MJ7 | | | | | | |
| 71 | gk 330 | 6 | M4 | 4 | 9 ... 17 | 2 x M25 x 1.5 |
| 80 | | | | | | 1 x M16 x 1.5 |
| 90 | gk 420 | 6 | M4 | 6 | 9 ... 17 | |
| 100 | | | | | | 2 x M32 x 1.5 |
| 112 | gk 420 | 6 | M4 | 6 | 11 ... 21 | 1 x M16 x 1.5 |
| 132 | | | | | | |
| 160 M | gk 420 | 6 | M4 | 6 | 19 ... 28 | 2 x M40 x 1.5 |
| 160 L | | | | | | 1 x M16 x 1.5 |
| 180 | 1XC1 270 | 6 | M6 | 25 | 19 ... 28 | 2 x M40 x 1.5 |
| | | | | | | Version with auxiliary circuit 2 x M40 x 1.5 2 x M16 x 1.5 |
| 200 | 1XC1 380 | 6 | M8 | 50 | 26 ... 35 | 2 x M50 x 1.5 |
| 225 | | | | | | Version with auxiliary circuit 2 x M50 x 1.5 2 x M16 x 1.5 |
| 250 | 1XC1 480 | 6 | M10 | 120 | 34 ... 42 | 2 x M63 x 1.5 |
| 280 | | | | | | |
| 315 | 1XC1 580 | 6 | M12 | 240 | 38 ... 45 | 2 x M63 x 1.5 |

With 1MJ motors, unused drilled holes must be sealed in accordance with EN 50014.

Connection boxes in cast iron version (order code K15) for motors 1LG4, 1LG6 and 1MA6, 1MJ6, 1MJ7 explosion-proof motors

| Motors | Frame size | Number of cable entries | Connection box material | Feeder connection |
|---|--------------|---|-------------------------|---|
| 1MJ6 | 71 ... 160 M | 2 holes incl. 1 certified cable gland with sealing washer and 1 certified plug | Cast iron | Without cable lug ³⁾ or with cable lug |
| | 180 ... 200 | | | |
| 1LG4, 1LG6, 1MA6, 1MJ7 | 180 ... 225 | 2 holes incl. 2 certified cable glands with sealing washer and 1 certified plug | Cast iron | |

Possible positions of the connection boxes in cast iron version (order code K15) for 1LG4, 1LG6 motors and 1MA6, 1MJ6, 1MJ7 explosion-proof motors

| Motors | Frame size | Connection box position | | | Rotation of connection box | | |
|---|--------------|-------------------------|---------------------|-----------------------|----------------------------|--------------------|-----------------------|
| | | Above | Side, right or left | Retrofitting possible | 90° ⁴⁾ | 180° ⁴⁾ | Retrofitting possible |
| 1MJ6 | 71 ... 80 | ○ | – | – | ○ | ○ | Yes |
| | 90 ... 160 M | ○ | ○ | – | ○ | ○ | Yes |
| | 180 ... 200 | ○ | ○ | – | ○ | ○ | Yes |
| 1LG4, 1LG6, 1MA6, 1MJ7 | 180 ... 225 | ○ | ○ | – | ○ | ○ | Yes |

○ Available version

- 1) Designed for cable glands with O-ring.
- 2) Standard version with cable entry glands split lengthwise for 35 to 75 mm and strain relief.
- 3) The components required for connection without cable lugs are supplied with 1MJ7 motors of frame size 225 M and above as an accessory pack in the connection box.
- 4) The position of the cable entry must be specified when ordering.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Connection boxes in cast iron version (order code K15) for motors 1LG4, 1LG6 and 1MA6, 1MJ6, 1MJ7 explosion-proof motors

| Frame size | Connection box Type | Number of terminals | Contact screw thread | Max. connectable cross-section mm ² | Sealing range mm | Cable entry ¹⁾ Size |
|----------------------------|------------------------|---------------------|----------------------|--|---------------------|---|
| 1MJ6 | | | | | | |
| 71 | gk 065 | 6 | M4 | 4 | 9 ... 17 | 2 x M25 x 1.5 1 x M16 x 1.5 |
| 80 | | | | | | |
| 90 | | | | 6 | | |
| 100 | gk 065 | 6 | M4 | 6 | 11 ... 21 | 2 x M32 x 1.5 1 x M16 x 1.5 |
| 112 | gk 265 | 6 | M4 | 6 | 11 ... 21 | 2 x M32 x 1.5 1 x M16 x 1.5 |
| 132 | gk 465 | 6 | M4 | 6 | 11 ... 21 | 2 x M32 x 1.5 1 x M16 x 1.5 |
| 160 M | gk 465 | 6 | M4 | 6 | 19 ... 28 | 2 x M40 x 1.5 1 x M16 x 1.5 |
| 160 L ²⁾ | gk 465 | 6 | M5 | 16 | 19 ... 28 | 2 x M40 x 1.5 1 x M16 x 1.5 |
| 180 | 1XC1 290 | 6 | M6 | 25 | 26 ... 35 | 2 x M50 x 1.5 Version with auxiliary circuit: 2 x M50 x 1.5 2 x M16 x 1.5 |
| 200 | 1XC1 390 | 6 | M8 | 50 | 26 ... 35 | 2 x M50 x 1.5 Version with auxiliary circuit: 2 x M50 x 1.5 2 x M16 x 1.5 |
| 1LG4, 1LG6 | | | | | | |
| 180 | gt 320 | 6 | M5 | 16 | 19 ... 28 | M40 x 1.5 |
| 200 | gt 420 | 6 | M6 | 25 | 24 ... 35 | M50 x 1.5 |
| 225 | gt 421 | 6 | M8 | 25 | 24 ... 35 | M50 x 1.5 |
| 1MA6 | | | | | | |
| 180 | 1XB7 323 | 6 | M8 | 50 | 24 ... 35 | M50 x 1.5 |
| 200 | 1XB7 323 | 6 | M8 | 50 | 24 ... 35 | M50 x 1.5 |

With 1MJ motors, unused drilled holes must be sealed in accordance with EN 50014.

Explosion-proof connection boxes in Ex d IIC type of protection (order code K53) for explosion-proof motors 1MJ6 and 1MJ7

| Motors | Frame size | Number of cable entries | Connection box material | Feeder connection ³⁾ |
|-------------|-------------|---|-------------------------|--|
| 1MJ6 | 71 ... 200 | In standard version: 1 certified plug In versions with PTC thermistors: 2 certified plugs | Cast iron | Without cable lug ⁴⁾ or with cable lug |
| 1MJ7 | 225 | In standard version: 1 certified cable gland and 1 certified plug In versions with auxiliary circuit: 2 certified cable glands | Welded steel | |
| | 250 ... 315 | | | |

Possible positions of the explosion-proof connection boxes in Ex d IIC type of protection (order code K53) for explosion-proof motors 1MJ6 and 1MJ7

| Motors | Frame size | Connection box position | | | Rotation of connection box | | Retrofitting possible |
|-------------|-------------|-------------------------|---------------------|-----------------------|----------------------------|--------------------|-----------------------|
| | | Above | Side, right or left | Retrofitting possible | 90° ⁵⁾ | 180° ⁵⁾ | |
| 1MJ6 | 71 ... 80 | ○ | – | – | ○ | ○ | Yes |
| | 90 ... 200 | ○ | ○ | – | ○ | ○ | Yes |
| 1MJ7 | 225 ... 315 | ○ | ○ | – | ○ | ○ | Yes |

○ Available version

¹⁾ Designed for cable glands with O-ring.

²⁾ With 1MJ6 frame size 160 L, option **K15** is the standard version. The connection box corresponds to the standard connection box.

³⁾ The number of cables and their outer cable diameter must be specified when ordering – does not apply to 1MJ7 motors.

⁴⁾ The components required for connection without cable lugs are supplied with 1MJ7 motors of frame size 225 M and above as an accessory pack in the connection box.

⁵⁾ The position of the cable entry must be specified when ordering.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Explosion-proof connection boxes in Ex d IIC type of protection (order code K53) for explosion-proof motors 1MJ6 and 1MJ7

| Frame size | Connection box Type | Number of terminals | Contact screw thread | Max. connectable cross-section mm ² | Sealing range mm | Cable entry Size |
|-------------------|------------------------|------------------------|-------------------------|--|-------------------------------------|--|
| 1MJ6, 1MJ7 | | | | | | |
| 71 | gk 065d | 6 | M4 | 4 | | Standard: 1 x M25 x 1.5 ¹⁾ |
| 80 | | | | | | Version with auxiliary circuit: 1 x M25 x 1.5 1 x M20 x 1.5 |
| 90 | | | | | | 6 |
| 100 | gk 065d | 6 | M4 | 6 | | Standard: 1 x M32 x 1.5 ¹⁾ |
| 112 | gk 265d | 6 | M4 | 6 | | Version with auxiliary circuit: 1 x M32 x 1.5 1 x M20 x 1.5 |
| 132 | gk 465d | 6 | M4 | 6 | | |
| 160 M | gk 465d | 6 | M4 | 6 | | Standard: 1 x M40 x 1.5 ¹⁾ |
| 160 L | gk 465d | 6 | M5 | 16 | | Version with auxiliary circuit: 1 x M40 x 1.5 1 x M20 x 1.5 |
| 180 | 1XC3 22. | 6 | M6 | 25 | | Standard: 1 x M40 x 1.5 ¹⁾ |
| | | | | | | Version with auxiliary circuit: 1 x M40 x 1.5 1 x M20 x 1.5 |
| 200 | 1XC3 32. | 6 | M8 | 50 | | Standard: 1 x M50 x 1.5 ¹⁾ |
| | | | | | | Version with auxiliary circuit: 1 x M50 x 1.5 1 x M20 x 1.5 |
| 225 | 1XC3 32. | 6 | M8 | 50 | M40: 23.5 ... 32 M20: 6.5 ... 12 | Standard: 1 x M40 x 1.5 1 x plug M40 x 1.5 |
| | | | | | | Version with auxiliary circuit: 1 x M40 x 1.5 1 x M20 x 1.5 |
| 250 | 1XC3 42. | 6 | M10 | 120 | M50: 31.5 ... 44 M20: 6.5 ... 12 | Standard: 1 x M50 x 1.5 |
| 280 | | | | | | 1 x plug M50 x 1.5 |
| | | | | | | Version with auxiliary circuit: 1 x M50 x 1.5 1 x M20 x 1.5 |
| 315 | 1XC3 52. | 6 | M12 | 240 | M50: 31.5 ... 44 M20: 6.5 ... 12 | Standard: 1 x M50 x 1.5 1 x plug M50 x 1.5 |
| | | | | | | Version with auxiliary circuit: 1 x M50 x 1.5 1 x M20 x 1.5 |

With 1MJ motors, unused drilled holes must be sealed in accordance with EN 50014.

Terminal connection

The terminal board accommodates the terminals that are connected to the leads to the motor windings. The terminals are designed so that up to frame size 225, the external (line) connections can be made without the need for cable lugs. With frame size 250 and above, standard connection is with cable lugs.

For the 1LG4/1LG6/1LP4/1PP4 motor series, for frame sizes 250 to 315, stud terminals are available for connection using cable lugs (accessory pack, 3 items).

Order code **M46**

With frame size 250 and above, if connection without cable lugs is required, the appropriate saddle terminals for connection without cable lugs (accessory pack, 6 items) must be ordered for motor series 1LG4/1LG6/1LP4/1PP4 frame sizes 250 to 315. In the connection box of 1MJ7 Ex motors, frame sizes 250 M to 315 L, 6 low saddle terminals are enclosed as standard for connection without cable lugs. When connecting cables with a large cross-section (not stranded), they can be connected optionally in two tiers. For this purpose, high saddle terminals can be supplied in the future as an accompanying pack (3 items).

Order code **M47**

For Exe and Exde motors, connection is generally without cable lugs.

The terminal board is permanently mounted on the housing for all motors so that if the connection box is rotated, rotation of the connections for the motor windings is prevented.

Exception:

With connection boxes 1XB1 621 and 1XB1 631, the terminal support is mounted on the lower section of the connection box.

For motor series 1LA7/1LP7/1PP7 frame sizes 63 to 90, a terminal strip can be supplied for the main and auxiliary terminals.

Order code **M69**

¹⁾ Designed for explosion-proof cable glands. The drilled holes for cable entry are closed with plugs certified for explosion-proof applications.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Number of auxiliary terminals for 1LA, 1LG, 1LL, 1LP, 1PP and 1PQ motors – Standard version

Motor series 1LA5, 1LA6, 1LA7, 1LP5, 1LP7, 1PP5, 1PP7 have no auxiliary terminals in the standard version.

The maximum number of auxiliary terminals in the main connection box of the motor is specified. An auxiliary connection box is required when the total number of auxiliary terminals exceeds the specified values. The connections can be routed through a separate auxiliary connection box.

For motor series

- 1LA8, 1PQ8 and 1LL8 frame sizes 315 to 450
- 1MA6 frame sizes 225 to 315
- 1MJ7 frame sizes 225 to 315

the 1XB3 020 connection box is available.

Order code **L97**

For non-standard motors (1LA8, 1PQ8 and 1LL8 motor series), the following can be supplied:

1XB9 016 auxiliary connection box – Order code **M50**

1XB9 014 auxiliary connection box (aluminum) – Order code **M88**

| Type series | Frame size | Main connection box | Maximum No. of auxiliary terminals |
|--|------------|---------------------|------------------------------------|
| 1LG4, 1LG6, 1LP4, 1PP4, 1PP6 | 180 | gk 330 | 4 |
| | 200 | gk 430 | 10 |
| | 225 | gk 431 | 10 |
| | 250 | gt 520 | 12 |
| | 280 | | |
| | 315 | gt 620 | 18 |
| 1MA6 | 225 | 1XB7 322 | 8 |
| | 250 | 1XB7 422 | 12 |
| | 280 | | |
| | 315 | 1XB7 522 | 14 |
| 1MJ7 | 225 | 1XC1 380 | 4 |
| | 250 | 1XC1 480 | |
| | 280 | | |
| | 315 | 1XC1 580 | 6 |
| 1LA8, 1PQ8, 1LL8 | 315 | gt 640 | 6 |
| | 355 | 1XB1 621 | 12 |
| | 400 | 1XB1 631 | 24 |
| | 450 | | |

IEC Squirrel-Cage Motors













Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

0


Types of construction

Standard types of construction and special types of construction

| Type of construction acc. to DIN EN 60034-7 | | Frame size | Code 12th position | Order code |
|---|---|---------------------------------|--|-----------------|
| Without flange | | | | |
| IM B3 |  | 56 M to 450 | 0 ⁴⁾ | – |
| IM B6/IM 1051, IM B7/IM 1061, IM B8/IM 1071 |    | 56 M to 315 L | 0 | – |
| IM V5/IM1011 without protective cover |  | 56 M to 315 M 315 L | 0 ⁵⁾ 9 ¹⁾⁵⁾ | – M1D |
| IM V6/IM 1031 |  | 56 M to 315 M 315 L | 0 9 ¹⁾ | – M1E |
| IM V5/IM 1011 with protective cover |  | 63 M to 315 L | 9 ¹⁾⁷⁾ | M1F |
| With flange | | | | |
| IM B5/IM 3001 |  | 56 M to 315 M | 1 ²⁾ | – |
| IM V1/IM 3011 without protective cover |  | 56 M to 315 M 315 L to 450 | 1 ²⁾³⁾⁵⁾ 8 ¹⁾⁴⁾⁵⁾ | – – |
| IM V1/IM 3011 with protective cover |  | 63 M to 450 | 4 ¹⁾²⁾³⁾⁷⁾ | – |
| IM V3/IM 3031 |  | 56 M to 160 L 180 M to 315 M | 1 9 ²⁾³⁾ | – M1G |
| IM B35/IM 2001 ⁶⁾ |  | 56 M to 450 | 6 ⁴⁾ | – |

In the DIN EN 50347 standard, flange FF with through holes and flange FT with tapped holes are specified.

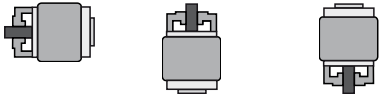


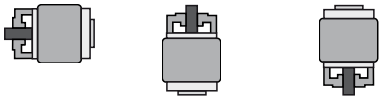


- 1) For 2-pole 1LG4 and 1LG6 motors, of frame size 315 L, a 60 Hz version is possible on request.
- 2) 1LG4/1LG6, 1MA6 and 1MJ7 motors in frame sizes 225 S to 315 L are supplied with two screw-in eyebolts (four eyebolts for 1LG6 318) in accordance with IM B5, whereby one can be rotated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.
- 3) For frame sizes 180 M to 225 M, the 1LA5 motors can be supplied with two additional eyebolts; state Order No. suffix "Z" and order code **K32**.
- 4) Frame size 450, 2-pole, 60 Hz is not possible.

- 5)  For explosion-proof motors: For types of construction with shaft extension pointing downwards, the version "with protective cover" is mandatory. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.
- 6) In the case of 1LA8, the corresponding flange diameter is greater than twice the shaft height.
- 7) A second **K16** shaft extension is not possible.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

| Type of construction acc. to DIN EN 60034-7 | Frame size | Code 12th position | Order code |
|--|---|---------------------------|------------|
| With standard flange | | | |
| IM B14/IM 3601, IM V19/IM 3631, IM V18/IM 3611 without protective cover |  56 M to 160 L | 2 ^{2) 4)} | – |
| IM V 18/IM 3611 with protective cover |  63 M to 160 L | 9 ^{1) 2)} | M2A |
| IM B34/IM 2101 |  56 M to 160 L | 7 ^{2) 4)} | – |
| With special flange | | | |
| IM B14/IM 3601, IM V19/IM 3631, IM V18/IM 3611 without protective cover |  56 M to 160 L | 3 ^{3) 4)} | – |
| IM V18/IM 3611 with protective cover |  63 M to 160 L | 9 ^{1) 3)} | M2B |
| IM B34/IM 2101 |  56 M to 160 L | 9 ³⁾ | M2C |

In DIN EN 50347, standard flanges are assigned to the frame sizes as FT with tapped holes. The special flange was assigned as a large flange in the previous DIN 42677.

The dimensions of the following types of construction are identical:

IM B3, IM B6, IM B7, IM B8, IM V5 and IM V6
IM B5, IM V1 and IM V3
IM B14, IM V18 and IM V19

Motors in the standard output range can be ordered in basic types of construction IM B3, IM B5 or IM B14 and operated in mounting positions IM B6, IM B7, IM B8, IM V5, IM V6, IM V1, IM V3 (up to frame size 160 L) or IM V18 and IM V19. Eyebolts are available for transport and installation in a horizontal position. In conjunction with the eyebolts, for the purpose of stabilizing the position when the motor is arranged vertically, additional lifting straps (DIN EN 1492-1) and/or clamping bands (DIN EN 12195-2) must be used. If mounting position IM V1 is ordered, eyebolts are supplied for vertical mounting.

- For this reason, they are normally designated only with the basic type of construction on the rating plate.
- If motors of frame size 180 M in a type of construction with feet are mounted on the wall, it is recommended that the motor feet are supported.

With motors that have a vertical shaft extension, the end user must prevent an ingress of fluid along the shaft.

In the case of all types of construction with shaft extension down, the version "with protective cover" is urgently recommended, see the section "Degrees of protection".

Motor series 1LA8, 1PQ8 and 1LL8 are available in types of construction IM B3, IM V1 with and without cover, as well as IM B35.


Frame design

Motors in the types of construction with feet have, in some case, two fixing holes at the non-drive end (NDE), see dimension tables. A code is cast into the motor close to the retaining holes to identify the frame size.

¹⁾ A second **K16** shaft extension is not possible.

²⁾ For 1MJ6 motors, only possible up to frame size 90.

³⁾ For 1MJ6 motors, only possible up to frame size 80.

⁴⁾  For explosion-proof motors: For types of construction with shaft extension pointing downwards, the version "with protective cover" is mandatory. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Mechanical design and degrees of protection

Preparation for gear mounting

The flange-mounting motors can be equipped with a radial seal in order to mount gearing.
Order code **K17**.

It must be ensured that the sealing ring is lubricated using grease, oil mist or oil spray (it is not permissible to use pressurized oil > 0.1 bar).

We recommend that the admissible bearing loads are carefully checked.

Please inquire about gear mounting for 1LA8 non-standard motors.

Eyebolts and transport

1LA7, 1MA7 and 1LA5 motors of frame size 100 L and above have two horizontal eyebolts in the horizontal type of construction. For motors in vertical type of construction, two rotatable eyebolts are also supplied.

1LA6 and 1MA6 motors are supplied in a horizontal type of construction with feet complete with one eyebolt.

Horizontal types of construction for flange-mounting in frame sizes 100 to 160 are supplied with one eyebolt. With vertical types of construction, a rotatable eyebolt is also supplied. All flange-mounting types of construction in frame sizes 180 M to 315 L are supplied with two diagonal eyebolts. They can be relocated for vertical types of construction.

1LG4 and 1LG6 motors are supplied in a horizontal type of construction with two diagonal eyebolts. For vertical types of construction, the eyebolts can be rotated.

All the available eyebolts specifically provided for the type of construction must be used during transport.

1MA6, 1MJ6 and 1MJ7 motors of frame size 180 M and above have one eyebolt in type of construction IM B3 in the standard version and two eyebolts in type of construction IM B5. If type of construction IM V1 is used, one of the eyebolts must be rotated whereby it is important to note that forces perpendicular to the ring plane are not permitted.

1LA8, 1PQ8 and 1LL8 motors have two diagonally fixed eyebolts. The IM V1 types of construction have hinged eyebolts.

1MJ6 motors, frame sizes 90 L to 132 M have two eyebolts, frame sizes 160 M and 160 L have one eyebolt.

For frame sizes 180 M to 225 M, 1LA5 motors can be supplied with two additional eyebolts for types of construction IM V1/IM V3.

Order code **K32**

| Frame material | | | |
|-------------------------|---------------------------------------|-------------------------------------|----------------------------------|
| Type series | Frame size | Frame material | Frame feet |
| 1LA5, 1LA7, 1LA9 | 56 to 100 ¹⁾ 112 to 225 | Aluminum alloy Aluminum alloy | Cast Screwed on |
| 1MA7 | 63 to 100 ¹⁾ 112 to 160 | Aluminum alloy Aluminum alloy | Cast Screwed on |
| 1LG4, 1LG6 | 180 M to 315 L | Cast iron | Cast ²⁾ |
| 1LA6, 1MA6 | 100 to 200 225 to 315 M 315 L | Cast iron Cast iron Cast iron | Screwed on Cast Screwed on |
| 1MJ6 | 71 and 80 90 to 200 | Cast iron Cast iron | Cast Screwed on |
| 1MJ7 | 225 to 315 | Cast iron | Screwed on |
| 1LA8, 1PQ8, 1LL8 | 315 to 450 | Cast iron | Cast |

¹⁾ Frame sizes 80, 90 and 100 in the version "Connection box on LHS/RHS" order code **K09/K10** have feet that are screwed on.

²⁾ Basic version, cast feet: Special version "screwed on feet" for order codes **K09, K10** and **K11**.

Degrees of protection

All motors are designed to IP55 degree of protection. They can be installed in dusty or humid environments. The motors are suitable for operation in tropical climates. Guide value <60 % relative air humidity at CT 40 °C. Other requirements are available on request.

1LL8 motors are available to IP23 degree of protection and are of a similar construction to 1LA8 motors. IP23 degree of protection is achieved by opening the internal cooling circuit and supplying it with external cooling air. Motors of the 1LL8 type series are only intended for installation indoors. They must not be subjected to humid, salty or corrosive atmospheres.

Most motors can be supplied in IP56 and IP65 degrees of protection on request.

Brief explanation of the degrees of protection

IP55: Protection against harmful dust deposits, protection against water jets from any direction.

IP56 (non-heavy-sea):

Protection against harmful dust deposits, protection against water jets from any direction.

Order code **K52**

DIN EN 60034-5 defines protection level 6 for water protection as: "Protection against water due to heavy seas or water in a powerful jet". IP56 non-heavy-sea degree of protection can only be used with the requirement "Protection against a powerful jet" and not for the requirement "Protection against heavy sea".

This is not possible in combination with brake 2LM8 (used for motors up to and including frame size 225, order code G26) and/or in combination with order code (K23) without paint finish, cast iron primed.

IP65: Complete protection against dust deposits, protection against water jets from any direction.

Order code **K50**

In DIN EN 60034-5, the code 6 for protection against the ingress of foreign bodies and touch hazard protection for electrical machines is not listed – Data for code 6 (protection against the ingress of dust) is given in EN 60529.

Not possible in combination with rotary pulse encoder HOG 9 D 1024I (order code H72, H79) and / or brake 2LM8 (used for motors up to and including frame size 225, order code G26) and/or in combination with order code (K23) without paint finish, cast iron primed.

DIN EN 60529 contains a comprehensive description of this degree of protection as well as test conditions.

With motors that have a vertical shaft extension, the end user must prevent an ingress of fluid along the shaft.

For motors with shaft extension pointing downwards, the version "with protective cover" is urgently recommended, see "Types of construction".

With flange-mounting motors, for IM V3 type of construction, collection of fluid in the flange basin can be prevented by drainage holes (on request).

Drainage holes are usually available in 1MA6 and 1MA7 motors of frame size 225 and above and in all 1LG4 and 1LG6 motors.

1LG4, 1LG6, 1LA8, 1LL8, 1PQ8 motors and 1MA6 motors of frame size 225 and above have condensation drainage holes that are sealed with plugs.

Motors for Zones 2 and 21 (1MA6 of frame size 225 and above and 1LG4 and 1LG6) have condensation drainage holes that are sealed with screws.

Condensation drainage holes can also be implemented in motors designed for Zones 2, 21 and 22.

The condensation drainage holes at the drive end (DE) and non-drive end (NDE) are sealed (IP55) on delivery. If condensation drainage holes are required in motors of the IM B6, IM B7 or IM B8 type of construction (feet located on side or top), it is necessary to relocate the bearing plates at the drive end (DE) and non-drive end (NDE) so that the condensation drainage holes situated between the feet on delivery are underneath.

Order code **L12**

When the motors are used or are stored outdoors (not 1LL8) we recommend that they are kept under some sort of cover so that they are not subject to direct intensive solar radiation, rain, snow, ice or dust over a long period of time. In such cases, technical consultation may be appropriate.

When the motors are used outdoors or in a corrosive environment, it is recommended that non-rusting screws are used externally.

Order code **M27**

Vibration-proof version

A load of 1.5g in all 3 planes for up to 1 % of the service life of the motor is possible.

Order code **L03**

For availability of individual options for the relevant motor series, see Section "Special versions" in the individual catalog parts.

Noise levels for mains-fed operation

The noise levels are measured in accordance with DIN EN ISO 1680 in a dead room. It is specified as the A-weighted measuring-surface sound pressure level L_{pFA} in dB (A).

This is the spatial mean value of the sound pressure levels measured on the measuring surface. The measuring surface is a cube 1 m away from the surface of the motor. The sound power level is also specified as L_{WA} in dB (A).

The specified values are valid at 50 Hz at rated output (see the selection and ordering data in the appropriate catalog parts). The tolerance is +3 dB. At 60 Hz, the values are approximately 4 dB (A) higher. Please inquire about the noise levels for pole-changing motors, motors with increased output or converter-fed motors.

To reduce noise levels, 2-pole motors with frame size 132 S and above and 1LA8 and 1LL8 2-pole motors of frame size 315 can be fitted with an axial-flow fan that is only suitable for one direction of rotation. The values can be taken from the table "Low-noise version" below and for 1LA8 or 1LL8 2-pole motors from the selection and ordering data in catalog part 3 "Non-standard motors of frame size 315 and above".

Clockwise rotation

Order code **K37**

Counter-clockwise rotation

Order code **K38**

The motors up to frame size 315 L are up to 80 mm longer than normal.

A second shaft extension and/or mounting of an encoder are not possible (see "Special versions" in the relevant catalog parts).

| Low-noise version | | | |
|---|------------|---------------------|--------------------|
| Type series | Frame size | 2-pole motors | |
| | | L_{pFA} dB (A) | L_{WA} dB (A) |
| 1LA5, 1LA6, 1LA7, 1MA7, 1MA6, 1MJ6, 1MJ7 | 132 | 64 | 76 |
| | 160 | 64 | 76 |
| | 180 | 63 | 76 |
| | 200 | 63 | 76 |
| | 225 | 68 | 80 |
| | 250 | 70 | 82 |
| | 280 | 72 | 84 |
| 315 | 74 | 86 | |
| 1LG4, 1LG6 ¹⁾ | 180 | 65 | 78 |
| | 200 | 70 | 83 |
| | 225 | 68 | 81 |
| | 250 | 70 | 83 |
| | 280 | 72 | 85 |
| | 315 | 74 | 87 |

Earth brushes are available for converter-fed operation for 1LG4 and 1LG6 motors.

Order code **M44**

Only available on request.

The rotary pulse encoders of "modular technology" and "special technology" are fitted as standard with a protective cover made of plastic, with the exception of 1LG motors. A protective cover made of non-corrosive sheet steel is available for 1LA5, 1LA6 and 1LA7 motors, see "Mechanical protection for encoders".

Order code **M68**

¹⁾ Not necessary for 1LG6 motors because these motors are already noise optimized.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Balance and vibration quantity

All of the rotors are dynamically balanced with half key. This corresponds to vibration quantity level A (normal). The vibrational characteristics and behaviour of electrical machinery is specified in DIN EN 60034-14. Feather key agreement for balancing "half-key" (H) is specified here based on DIN ISO 8821.

The feather key agreement type for balancing is stamped on the face of the customer-specific drive-end (DE) / non-drive end (NDE) shaft extension.

F = Balancing with full key
(Agreement full-key)

H = Balancing with half key
(Agreement half-key)

N = Balancing without key – Plain text required
(without feather key agreement)

Motors up to frame size 112 have the type of balancing marked exclusively on the rating plate.

Full key balancing or balancing with full key can be supplied if order code **L68** is specified (additional charge).

| Vibration quantity level | Machine installation | Limits (rms values) for max. vibration quantity of vibration distance (s), vibration speed (v) and acceleration (a) for the shaft height H | | | | | | | | |
|--------------------------|----------------------|--|-------------------|--------------------------------|-----------------|-------------------|--------------------------------|-----------------|-------------------|--------------------------------|
| | | Shaft height H in mm 56 ≤ H ≤ 132 | | | 132 < H ≤ 280 | | | H > 280 | | |
| | | s_{rms} μm | v_{rms} mm/s | a_{rms} mm/s ² | s_{rms} μm | v_{rms} mm/s | a_{rms} mm/s ² | s_{rms} μm | v_{rms} mm/s | a_{rms} mm/s ² |
| A | Free suspension | 25 | 1.6 | 2.5 | 35 | 2.2 | 3.5 | 45 | 2.8 | 4.4 |
| | Rigid clamping | 21 | 1.3 | 2.0 | 29 | 1.8 | 2.8 | 37 | 2.3 | 3.6 |
| B | Free suspension | 11 | 0.7 | 1.1 | 18 | 1.1 | 1.7 | 29 | 1.8 | 2.8 |
| | Rigid clamping | – | – | – | 14 | 0.9 | 1.4 | 24 | 1.5 | 2.4 |

For details, see standard DIN EN 60034-14 Sept. 2004.

Shaft and rotor

Shaft extension

60° center hole to DIN 332, Part 2 with M3 to M24 tapped hole depending on the shaft diameter (see dimension tables in the corresponding catalog parts)

Second standard shaft extension.

Order code **K16**.

Not possible for the motor version with protective cover.

The second shaft extension can transmit the full rated output via a coupling output up to frame size 315 M (please inquire about reduced transmitted power for frame sizes of 315 L and above). For motor series 1LA8 and 1LL8, the second shaft extension can transmit 50 % of the rated output with a coupling output. (Please contact your local Siemens office if higher values are required.) The full rated output is not applicable for 1LA motors, frame sizes 90 S to 112 M. These motors can only transmit the rated output of the next smaller size.

Please also inquire about the transmitted power and admissible cantilever force if belt pulleys, chains or gear pinions are used on the second shaft extension.

A second shaft extension is not available if a rotary pulse encoder and/or separately driven fan is mounted (also applicable to motor series 1PQ8). Please inquire if a brake is mounted. For motor series 1LA8 and 1LL8, the second standard shaft extension is only available on request for 2-pole motors – please specify the weight of the coupling and type of lever arm.

Balancing without key (N) is possible with order code **M37** on request (additional charge).

The vibration quantity level A is the standard version and is valid for a rated frequency up to 60 Hz.

For special requirements concerning smooth running, a low-vibration version B can be supplied (additional charge).

Vibration quantity level B.

Not possible with parallel roller bearings.

Order code **K02**

The limits stated in the table below are applicable to freely suspended motors running uncoupled and at no load as well as to rigidly installed 1LA8 motors, frame size 450.

For converter-fed operation with frequencies greater than 60 Hz, special balancing is required for compliance with the specified limit values (plain text: Max. supply frequency speed).

For further details, see the online help in SD configurator.

The non-drive end (NDE) of frame sizes 100 L to 225 M has an M8 center hole, DR form, for mounting the 1XP8 001 rotary pulse encoder or for fitting and extraction tools.

The non-drive end (NDE) of the 1LG4 and 1LG6 motors of frame sizes 180 M to 315 L, has an M16 center hole, DS form.

Shaft extension (DE)

| Diameter mm | Thread mm |
|----------------|--------------|
| 7 ... 10 | DR M3 |
| >10 ... 13 | DR M4 |
| >13 ... 16 | DR M5 |
| >16 ... 21 | DR M6 |
| >21 ... 24 | DR M8 |
| >24 ... 30 | DR M10 |
| >30 ... 38 | DR M12 |
| >38 ... 50 | DS M16 |
| >50 ... 85 | DS M20 |
| >85 ... 130 | DS M24 |

Dimensions and tolerances for keyways and keys are designed to DIN EN 50347. The motors are always supplied with a key inserted in the shaft.

Shaft extension with standard dimensions, without featherkey way

For motor series 1LA5, 1LA6, 1LA7, 1LA8, 1LA9, 1LG4, 1LG6, 1LL8, 1LP4, 1LP5, 1LP7, 1MA6, 1MA7, 1PP4, 1PP5, 1PP7 and 1PQ8, the standard shaft extension can be ordered with standard dimensions without a featherkey way.

Order code **K42**

Standard shaft made of non-rusting steel

For motor series 1LA5, 1LA6, 1LA7, 1LP5, 1LP7, 1PP5 and 1PP7, a standard shaft made of non-rusting steel (material X20Cr13V) can be ordered. This is only possible for shaft extensions of standard dimensions. For non-standard shaft dimensions, there will be an additional charge!

Order code **M65**

Please inquire about other rust-resistant materials.

Please inquire regarding motor series 1LG4 and 1LG6.

Non-standard cylindrical shaft extension

The non-standard cylindrical shaft extension can be used on the drive end (DE) or non-drive end (NDE). The featherkey is always supplied with it.

Order code **Y55**

When motors are ordered which have a longer or shorter shaft extension as standard, the required position and length of the featherkey way must be specified in a sketch. It must be ensured that only featherkeys in accordance with DIN 6885, Form A are permitted to be used. The location of the featherkey way is in the

center of the shaft extension and, in the case of non-standard motors, 5 mm from the shaft extension. The length is defined by the manufacturer normatively.

Not valid for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals, etc.), hollow shafts.

For 1MJ motors with longer shaft extensions than standard, the admissible cantilever force must be reduced accordingly. This will ensure that the shaft does not sag more than with the standard shaft extension (please inquire).

For order code **Y55** and second standard shaft extension **K16** (see previous page):

- Dimensions D and DA must be less than or equal to the inner diameter of the roller bearing (see dimension tables under "Dimensions" in the relevant catalog parts)
- Dimensions E and EA must be smaller than or equal to 2 x length E (standard) of the shaft extension

A non-standard cylindrical shaft extension can be supplied for the motor series listed in the table "Admissible changes to shaft extension" below up to the specified maximum lengths and diameters as compared to the standard shaft.

It is the responsibility of the customer to ensure that the admissible cantilever forces are reduced in accordance with the non-standard shaft extension.

Admissible changes to the shaft extension:

| Motor series | Frame size | Number of poles | Shaft extension length E in mm | | Shaft extension diameter D in mm | |
|---|-------------------|-----------------|-----------------------------------|------------|-------------------------------------|--------------------------|
| | | | Standard | Up to max. | Standard | Up to max. ¹⁾ |
| 1LA6, 1LA7, 1LA9, 1MA6, 1LP7, 1PP7 | 56 | 2 ... 8 | 20 | 40 | 9 | 12 |
| | 63 | | 23 | 46 | 11 | |
| | 71 | | 30 | 60 | 14 | 15 |
| | 80 | | 40 | 80 | 19 | 20 |
| | 90 | | 50 | 100 | 24 | 25 |
| | 100 | | 60 | 120 | 28 | 30 |
| | 112 | | | | | |
| | 132 | | 80 | 160 | 38 | 40 |
| | 160 | | 110 | 220 | 42 | 45 |
| 1LA5, 1LA9, 1LG4, 1LG6, 1MA6, 1LP4, 1LP5, 1PP4, 1PP5 | 180 | 2 ... 8 | | | 48 | 48 |
| | 200 | | | | 55 | 55 |
| | 225 | 2 | | | | 60 |
| | 250 | 4 ... 8 | 140 | 280 | 60 | |
| | | 2 | | | | 70 |
| | 280 | 4 ... 8 | | | 65 | |
| | | 2 | | | | 75 |
| | 315 | 4 ... 8 | | | 75 | 80 |
| | | 2 | | | 65 | |
| 1LA8, 1PQ8 | 315 ²⁾ | 4 ... 8 | 170 | 340 | 80 | 90 |
| | | 2 | 140 | 280 | 65 | 70 |
| | 355 ²⁾ | 4 ... 8 | 170 | 340 | 85 | 85 |
| | | 2 | 140 | 280 | 75 | 80 |
| | 400 | 4 ... 8 | 170 | 340 | 95 | 95 |
| | | 2 | | | 80 | 80 |
| | 450 | 4 ... 8 | 210 | 420 | 110 | 115 |
| | | 2 | 170 | 340 | 90 | 90 |
| | | 4 ... 8 | 210 | 420 | 120 | 125 |

Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors

The following are specified in DIN 42955 with Tolerance N (normal) and Tolerance R (reduced):

1. Concentricity tolerances for the shaft extension
2. Coaxiality tolerances for the shaft extension and flange centering
3. Linear movement tolerances for the shaft extension and flange surface

The concentricity of the shaft extension, coaxiality and linear movement according to DIN 42955 Tolerance R for flange-mounting motors can be ordered using order code **K04**.

This order code can be combined for motors with deep-groove bearings of series 60.., 62.. and 63... This cannot be supplied in combination with parallel roller bearings (e.g. bearings for increased cantilever forces, order code K20), brake or encoder mounting.

Concentricity of the shaft extension can be ordered according to DIN 42955 Tolerance R for types of construction without a flange with order code **L39**.

¹⁾ At admissible diameter, a step increase in shaft diameter is not possible.

²⁾ For bearing design for increased cantilever forces order code **K20** a shaft diameter of 95 mm for frame size 315 and a shaft diameter of 100 mm for frame size 355 is possible for 4, 6 and 8-pole motors. See dimension drawings Page 3/65 and 3/67.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Bearings and lubrication

Bearing lifetime (nominal lifetime)

The nominal bearing lifetime is defined acc. to standardized calculation procedures (DIN ISO 281) and is reached or even exceeded for 90 % of the bearings when the motors are operated in the compliance with the data provided in the catalog.

Under average operating conditions, a lifetime (L_{h10}) of 100,000 hours can be achieved.

Generally, the bearing lifetime is defined by the bearing size, the bearing load, the operating conditions, the speed and the grease lifetime.

Bearing system

The bearing lifetime of motors with horizontal type of construction is at least 40,000 hours if there is no additional axial loading at the coupling output and at least 20,000 hours with the admissible permitted loads.

This assumes that the motor is operated at 50 Hz. The nominal bearing lifetime is reduced for converter-fed operation at higher frequencies.

For the admissible vibration values measured at the bearing plate, evaluation zones A and B specified in ISO 10816 are applicable in order to achieve the calculated lifetime under continuous duty. If higher vibration speeds will occur under the operating conditions, special arrangements will be necessary (please inquire).

For standard motors applies the following:

In the basic bearing system, the floating bearing is situated at the drive end (DE) and the located bearing (axially located from frame size 160 and above) is situated at the non-drive end (NDE). On request, the located bearing can also be supplied at the drive end (DE) (Fig. 3, Page 0/64).

For ordering standard motors quote order code **K94**.

For 1LA8, 1PQ8 and 1LL8 non-standard motors applies the following:

In the basic bearing system, the floating bearing is situated at the non-drive end (NDE) and the located bearing is situated at the drive end (DE).

On request, the located bearing can also be supplied at the non-drive end (NDE).

Price on request.

The bearing system is axially preloaded with a spring element to ensure smooth running of the motor without play.

This is not the case in versions with parallel roller bearings. The bearings of these motors must always run under adequate radial force (motors must not be operated on a testbed without additional radial loads).

Motors of series 1LA6, 1LA7, 1LA9 and 1MA7 up to and including frame size 132 have a "floating" bearing arrangement (see Fig. 1, Page 0/64).

Up to frame size 132, an additional axially-secured located bearing can be supplied on the non-drive end (NDE) complete with a retaining ring (see Figure 2, Page 0/64).

Order code **L04**

For frame size 160 and above, bearings are usually axially located (see Figures 2, 4 and 5, Page 0/64).

For increased cantilever forces (e.g. belt drives), reinforced bearings can be used at the drive end (DE).

Order code **K20**

Motors 1LG4/6 in frame sizes 180 to 315, 2-pole, can be supplied with reinforced deep-groove bearings at both ends (size range 03).

Special bearings for DE and NDE, bearing size 63

Order code **K36**

A measuring nipple for SPM shock pulse measurement is mounted to check bearing vibration. The motors have 1 or 2 tapped holes per bearing plate and a measuring nipple with a protective cap. If a second tapped holes is provided, it is fitted with a sealing cap.

Order code **G50**

Bearing arrangement for increased cantilever forces on Pages 0/62 and 0/63 – admissible loading on Pages 0/67 and 0/68.

Insulated bearings

To prevent damage as a result of bearing currents, insulated bearings can be supplied at the non-drive end NDE from frame size 225 to 315 and are recommended for frame size 225 and above. This bearing design is also possible for 1MJ7 motors from frame size 250 to 315. In a version in combination with mounting of brake (order code G26), the insulated motor bearings are mounted on the drive end (DE).

Order code **L27**

The insulated bearing is standard for all 1LA8, 1PQ8 and 1LL8 motors which are identified for converter-fed operation.

Permanent lubrication

For permanent lubrication, the bearing grease lifetime is matched to the bearing lifetime. This can, however, only be achieved if the motor is operated in accordance with the catalog specifications.

In the basic version, the motors up to and including shaft height 250 have permanent lubrication.

Regreasing

For motors which can be re-greased at defined re-greasing intervals, the bearing lifetime can be extended and/or unfavourable factors such as temperature, mounting conditions, speed, bearing size and mechanical load can be compensated.

From a shaft height of 280 upwards, regreasing with an M10 x 1 flat greasing nipple to DIN 3404 is provided.

It is possible to regrease motors, shaft heights 100 to 250. A lubricating nipple is optionally provided.

Order code **K40**

In the case of motors equipped with regreasing devices, information regarding greasing intervals, quantity and type of grease and any additional data is provided on the lubrication or rating plate. (Re-greasing intervals for basic version on Page 0/59). The regreasing device cannot be mounted in combination with mounting of the brake, order Code G26.

Mechanical stress and grease lifetime

High speeds that exceed the rated speed with converter-fed operation and the resulting increased vibrations alter the mechanical running smoothness and the bearings are subjected to increased mechanical stress. This reduces the grease lifetime and the bearing lifetime (please inquire where applicable).

For converter-fed operation in particular, compliance with the mechanical limit speeds n_{adm} at admissible supply frequency f_{max} is essential, see catalog part 5 "Motors operating with frequency converters".

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Grease lifetime and regreasing intervals for horizontal installation

| Permanent lubrication ¹⁾ | | | | |
|---|------------|----------------------|-----------------|--|
| Type series | Frame size | Type | Number of poles | Grease lifetime up to CT 40 °C ²⁾ |
| All | 56 to 250 | | 2 to 8 | 20000 h or 40000 h ³⁾ |
| Regreasing (basic version) ¹⁾ | | | | |
| Type series | Frame size | Type | Number of poles | Regreasing interval up to CT 40 °C ²⁾ |
| 1LA6, 1PP6 | 100 to 160 | ... 10 . to ... 16 . | 2 to 8 | 8000 h |
| 1LA5, 1LP5, 1PP5 1LA7, 1LP7, 1PP7 1LA9 | 100 to 225 | ... 10 . to ... 22 . | 2 to 8 | 8000 h |
| 1LA8.. 1PQ8.. | 315 to 400 | ... 31 . to ... 40 . | 2 | 4000 h |
| | | ... 31 . to ... 40 . | 4 to 8 | 6000 h |
| | 450 | ... 45 . | 2 | 3000 h |
| | | ... 45 . | 4 to 8 | 6000 h |
| 1LL8.. | 315 | ... 31 . | 2 | 4000 h |
| | | ... 31 . | 4 to 8 | 8000 h / 4000 h ⁴⁾ |
| | 355 to 450 | ... 35 . to ... 45 . | 2 | 4000 h |
| | | ... 35 . to ... 45 . | 4 to 8 | 6000 h / 3000 h ⁴⁾ |
| 1LG4, 1LP4, 1PP4 1LG6, 1PP6 | 180 to 280 | ... 18 . to ... 28 . | 2 | 4000 h |
| | | ... 18 . to ... 28 . | 4 to 8 | 8000 h |
| | 315 | ... 31 | 2 | 3000 h |
| | | ... 31 | 4 to 8 | 6000 h |
| 1MA6 | 100 to 200 | ... 10 . to ... 20 . | 2 to 8 | 8000 h |
| | 225 to 280 | ... 22 . to ... 28 . | 2 | 4000 h |
| | | ... 22 . to ... 28 . | 4 to 8 | 8000 h |
| | 315 | ... 315 | 2 | 3000 h |
| | | ... 315 | 4 to 8 | 6000 h |
| 1MA7 | 100 to 160 | ... 10 . to ... 16 . | 2 to 8 | 8000 h |
| 1MJ6, 1MJ7 | 180 to 200 | ... 18 . to ... 20 . | 2 to 8 | 8000 h |
| | | ... 18 . to ... 20 . | 2 | 4000 h |
| | 225 to 280 | ... 22 . to ... 28 . | 4 to 8 | 8000 h |
| | | ... 22 . to ... 28 . | 2 | 4000 h |
| | 315 | ... 315 | 2 | 4000 h |
| | | ... 315 | 4 to 8 | 8000 h |

¹⁾ For special uses and special greases, please inquire about grease lifetime and regreasing intervals.

²⁾ If the coolant temperature is increased by 10 K, the grease lifetime and regreasing interval are halved.

³⁾ 40 000 h applies for horizontally installed motors with coupling output without additional axial loads.

⁴⁾ Regreasing interval for IM V1 type of construction.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Bearing selection table for 1LA5, 1LA6, 1LA7, 1LA9, 1LG, 1LP, 1MA and 1PP motors – basic version

The bearing selection tables are only intended for planning purposes. Authoritative information on the actual type of bearings fitted in motors already supplied can be obtained by the factory by quoting the serial number or can be read from the lubricating plate on 1LA8 motors.

When deep-groove ball bearings with sideplates are used, the side plate is on the inside. For located bearings on drive end DE for 1LA5, 1LA7, 1LA9, 1MA6 and 1MA7 motors, see special version in Figure 3 (Page 0/64).

| For motors frame size | Type | Number of poles | Drive end (DE) bearing | | Non-drive end NDE bearing | | Figures on Pages 0/64 and 0/65 | |
|--|---|-----------------|---------------------------------|----------------------------------|---------------------------------|-----------------------------------|--------------------------------|---------------|
| | | | Horizontal type of construction | Vertical type of construction | Horizontal type of construction | Vertical type of construction | | |
| 1LA5 . . . , 1LA6 . . . , 1LA7 . . . , 1LA9 . . . , 1LP5 . . . , 1LP7 . . . , 1MA6 . . . , 1MA7 . . . , 1PP5 . . . , 1PP7 . . . | | | | | | | | |
| 56 M | 05 . | 2 to 8 | 6201 ZC3 | 6201 ZC3 | 6201 ZC3 | 6201 ZC3 | Fig. 1 | |
| 63 M | 06 . | 2 to 8 | 6201 ZC3 | 6201 ZC3 | 6201 ZC3 | 6201 ZC3 | | |
| 71 M | 07 . | 2 to 8 | 6202 ZC3 | 6202 ZC3 | 6202 ZC3 | 6202 ZC3 | | |
| 80 M | 08 . | 2 to 8 | 6004 ZC3 | 6004 ZC3 | 6004 ZC3 | 6004 ZC3 | | |
| 90 S/L | 09 . | 2 to 8 | 6205 ZC3 | 6205 ZC3 | 6004 ZC3 | 6004 ZC3 | | |
| 100 L | 10 . | 2 to 8 | 6206 ZC3 ¹⁾ | 6206 ZC3 ¹⁾ | 6205 ZC3 ¹⁾ | 6205 ZC3 ¹⁾ | | |
| 112 M | 11 . | 2 to 8 | 6206 ZC3 ¹⁾ | 6206 ZC3 ¹⁾ | 6205 ZC3 ¹⁾ | 6205 ZC3 ¹⁾ | | |
| 132 S/M | 13 . | 2 to 8 | 6208 ZC3 ¹⁾ | 6208 ZC3 ¹⁾ | 6208 ZC3 ¹⁾ | 6208 ZC3 ¹⁾ | | |
| 160 M/L | 16 . | 2 to 8 | 6209 ZC3 ¹⁾ | 6209 ZC3 ¹⁾ | 6209 ZC3 ¹⁾ | 6209 ZC3 ¹⁾ | | Fig. 2 |
| 180 M/L | 18 . | 2 to 8 | 6210 ZC3 ²⁾ | 6210 ZC3 ²⁾ | 6210 ZC3 ²⁾ | 6210 ZC3 ²⁾ | | Fig. 4 |
| 200 L | 20 . | 2 to 8 | 6212 ZC3 ²⁾ | 6212 ZC3 ²⁾ | 6212 ZC3 ²⁾ | 6212 ZC3 ²⁾ | Fig. 5 | |
| 225 S/M | 22 . | 2 to 8 | 6213 ZC3 ²⁾ | 6213 ZC3 ²⁾ | 6212 ZC3 ²⁾⁵⁾ | 6212 ZC3 ²⁾⁵⁾ | | |
| 250 M | 25 . | 2 to 8 | 6215 ZC3 ²⁾ | 6215 ZC3 ²⁾ | 6215 ZC3 ²⁾ | 6215 ZC3 ²⁾ | | |
| 280 S/M | 28 . | 2 4 to 8 | 6216 C3 6317 C3 | 6216 C3 6317 C3 | 6216 C3 6317 C3 | 6216 C3 6317 C3 | | |
| 315 S/M | 310 313 | 2 4 to 8 | 6217 C3 6319 C3 | 6217 C3 6319 C3 | 6217 C3 6319 C3 | 6217 C3 6319 C3 | Fig. 5 | |
| 315 L | 316 317 318 | 2 4 to 8 | 6217 C3 6319 C3 | 6217 C3 6319 C3 | 6217 C3 6319 C3 | 7217 BEP 6319 C3 | | |
| 1LG4 . . . , 1LG6 . . . , 1LP4 . . . , 1PP4 . . . , 1PP6 . . . | | | | | | | | |
| 180 M/L | 18 . | 2 to 8 | 6210 ZC3 ⁴⁾ | 6210 ZC3 ⁴⁾ | 6210 ZC3 ⁴⁾ | 6210 ZC3 ⁴⁾ | Fig. 4 | |
| 200 L | 20 . | 2 to 8 | 6212 ZC3 ⁴⁾ | 6212 ZC3 ⁴⁾ | 6212 ZC3 ⁴⁾ | 6212 ZC3 ⁴⁾ | | |
| 225 S/M | 22 . | 2 to 8 | 6213 ZC3 ⁴⁾ | 6213 ZC3 ⁴⁾ | 6213 ZC3 ⁴⁾ | 6213 ZC3 ⁴⁾ | | |
| 250 M | 25 . | 2 to 8 | 6215 ZC3 ⁴⁾ | 6215 ZC3 ⁴⁾ | 6215 ZC3 ⁴⁾ | 6215 ZC3 ⁴⁾ | | |
| 280 S/M | 28 . | 2 4 to 8 | 6217 C3 6317 C3 | 6217 C3 6317 C3 | 6217 C3 6317 C3 | 6217 C3 6317 C3 | Fig. 5 | |
| 315 S/M | 310 313 | 2 4 to 8 | 6219 C3 6319 C3 | 6219 C3 6319 C3 | 6219 C3 6319 C3 | 6219 C3 6319 C3 | | |
| 315 L | 316 317 318 | 2 4 to 8 | 6219 C3 6319 C3 | 6219 C3 ³⁾ 6319 C3 | 6219 C3 6319 C3 | 7219 BEP ³⁾ 6319 C3 | | |

¹⁾ Deep-groove bearings are used for regreasable versions (order code **K40**).

²⁾ Deep-groove bearings are not used for regreasable versions (order code **K40**) of 1MA6 motors of frame sizes 180 M to 250 M.

³⁾ Only at 50 Hz.

⁴⁾ Deep-groove bearings are not used for regreasable versions (order code **K40**).

⁵⁾ For 1MA6 motors frame size 225 S/M bearing 6213 ZC3 at the non-drive end NDE (BS).

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

0

Bearing selection table for 1LA8, 1PQ8 and 1LL8 motors – basic version

| For motors frame size | Type | Number of poles | Drive end (DE) bearing | | Non-drive end (NDE) bearing | | Figures on Pages 0/64 and 0/65 | |
|--------------------------------|---------------------|-----------------|---------------------------------|-------------------------------|---------------------------------|-------------------------------|--------------------------------|------------------|
| | | | Horizontal type of construction | Vertical type of construction | Horizontal type of construction | Vertical type of construction | | |
| 1LA8 . . . , 1PQ8 . . . | | | | | | | | |
| 315 | 31 . | 2 | 6218 C3 | 6218 C3 | 6218 C3 | 6218 C3 | Fig. 6 and Fig. 7 | |
| | | 4 to 8 | 6218 C3 | 6218 C3 | 6218 C3 | 6218 C3 | | |
| 355 | 35 . | 2 | 6218 C3 | 7218 B + 6218 C3 | 6218 C3 | 6218 C3 | | |
| | | 4 to 8 | 6220 C3 | 7220 B + 6220 C3 | 6220 C3 | 6220 C3 | | |
| 400 | 40 . | 2 | 6218 C3 | 7218 B + 6218 C3 | 6218 C3 | 6218 C3 | | |
| | | 4 to 8 | 6224 C3 | 7224 B + 6224 C3 | 6224 C3 | 6224 C3 | | |
| 450 | 45 . | 2 | 6220 C3 | 7220 B + 6220 C3 | 6220 C3 | 6220 C3 | | |
| | | 4 to 8 | 6226 C3 | 7226 B + 6226 C3 | 6226 C3 | 6226 C3 | | |
| 1LL8 . . . | | | | | | | | |
| 315 | 31 . | 2 | 6218 C3 | 6218 C3 | 6218 C3 | 6218 C3 | | No figure |
| | | 4 to 8 | 6220 C3 | 7220 B + 6220 C3 | 6218 C3 | 6218 C3 | | |
| 355 | 35 . | 2 | 6218 C3 | 6218 C3 | 6218 C3 | 6218 C3 | | |
| | | 4 to 8 | 6224 C3 | 7224 B + 6224 C3 | 6220 C3 | 6220 C3 | | |
| 400 | 40 . | 2 | 6218 C3 | 6218 C3 | 6218 C3 | 6218 C3 | | |
| | | 4 to 8 | 6226 C3 | 7226 B + 6226 C3 | 6224 C3 | 6224 C3 | | |
| 450 | 45 . | 2 | 6220 C3 | 6220 C3 | 6220 C3 | 6220 C3 | | |
| | | 4 to 8 | 6228 C3 | 7228 B + 6226 C3 | 6228 C3 | 6226 C3 | | |

1LA8, 1PQ8 and 1LL8 non-standard motors are transported horizontally. They can be transported vertically at an additional charge on request.

Bearing selection table for 1MJ motors – basic version

| For motors frame size | Type | Number of poles | Drive end (DE) bearing | | Non-drive end (NDE) bearing | | Figure on Page 0/65 |
|-----------------------|------------------|-----------------|---------------------------------|-------------------------------|---------------------------------|-------------------------------|---------------------|
| | | | Horizontal type of construction | Vertical type of construction | Horizontal type of construction | Vertical type of construction | |
| 71 M | 1MJ6 07 . | 2 to 8 | 6202 ZC3 | 6202 ZC3 | 6202 ZC3 | 6202 ZC3 | Fig. 8 |
| 80 M | 1MJ6 08 . | 2 to 8 | 6004 ZC3 | 6004 ZC3 | 6004 ZC3 | 6004 ZC3 | Fig. 9 |
| 90 S/L | 1MJ6 09 . | 2 to 8 | 6205 C3 | 6205 C3 | 6205 C3 | 6205 C3 | |
| 100 L | 1MJ6 10 . | 2 to 8 | 6206 C3 | 6206 C3 | 6206 C3 | 6206 C3 | Fig. 10 |
| 112 M | 1MJ6 11 . | 2 to 8 | 6306 C3 | 6306 C3 | 6306 C3 | 6306 C3 | |
| 132 S/M | 1MJ6 13 . | 2 to 8 | 6308 C3 | 6308 C3 | 6308 C3 | 6308 C3 | Fig. 11 |
| 160 M/L | 1MJ6 16 . | 2 to 8 | 6309 C3 | 6309 C3 | 6309 C3 | 6309 C3 | |
| 180 M/L | 1MJ6 18 . | 2 to 8 | 6210 C3 | 6210 C3 | 6210 C3 | 6210 C3 | Fig. 12 |
| 200 L | 1MJ6 20 . | 2 to 8 | 6212 C3 | 6212 C3 | 6212 C3 | 6212 C3 | |
| 225 S/M | 1MJ7 22 . | 2 to 8 | 6213 C3 | 6213 C3 | 6213 C3 | 6213 C3 | Fig. 12 |
| 250 M | 1MJ7 25 . | 2 to 8 | 6215 C3 | 6215 C3 | 6215 C3 | 6215 C3 | |
| 280 S/M | 1MJ7 28 . | 2 to 8 | NU 216 | NU 216 | 6216 C3 | 6216 C3 | Fig. 12 |
| 315 S/M | 1MJ7 31 . | 2 | NU 217 ¹⁾ | NU 217 ¹⁾ | 6217 C3 | 6217 C3 | |
| | | 4 to 8 | NU 218 ²⁾ | NU 218 ²⁾ | 6218 C3 | 6218 C3 | |

¹⁾ Special version with deep groove bearing 6216 C3 on request. Recommended for coupling output or low cantilever forces.

²⁾ Special version with deep groove bearing 6217 C3 on request. Recommended for coupling output or low cantilever forces.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Bearing selection table for 1LA5, 1LA6, 1LA7, 1LA9, 1LG, 1LP, 1MA and 1PP motors – Bearings for increased cantilever forces – Order code **K20**

Please inquire about noise and vibration data.

For NU bearings (parallel roller bearings), in contrast to standard bearings, a minimum cantilever force is required. Parallel roller bearings are not suitable for coupling output.

The bearing selection tables are only intended for planning purposes. Authoritative information on the actual type of bearings fitted in motors already supplied can be obtained by the factory

by quoting the serial number or can be read from the lubricating plate on 1LA8 motors.

When deep-groove ball bearings with sideplates are used, the side plate is on the inside.

1MJ8 motors at 60 Hz on request.

| For motors frame size | Type | Number of poles | Drive end (DE) bearing | | Non-drive end NDE bearing | | Figure on Page 0/64 | |
|--|--|-----------------|---------------------------------|--------------------------------|---------------------------------|-------------------------------|---------------------|---------------|
| | | | Horizontal type of construction | Vertical type of construction | Horizontal type of construction | Vertical type of construction | | |
| 1LA5 . . . , 1LA6 . . . , 1LA7 . . . , 1LA9 . . . , 1LP5 . . . , 1LP7 . . . , 1MA6 . . . , 1MA7 . . . , 1PP5 . . . , 1PP7 . . . | | | | | | | | |
| 100 L | 10 . | 2 to 8 | 6306 ZC3 | 6306 ZC3 | 6205 2ZC3 ¹⁾ | 6205 2ZC3 ¹⁾ | No figure | |
| 112 M | 11 . | 2 to 8 | 6306 ZC3 | 6306 ZC3 | 6205 2ZC3 ¹⁾ | 6205 2ZC3 ¹⁾ | | |
| 132 S/M | 13 . | 2 to 8 | 6308 ZC3 | 6308 ZC3 | 6208 2ZC3 ¹⁾ | 6208 2ZC3 ¹⁾ | | |
| 160 M/L | 16 . | 2 to 8 | 6309 ZC3 | 6309 ZC3 | 6209 2ZC3 ¹⁾ | 6209 2ZC3 ¹⁾ | | |
| 180 M/L | 18 . | 2 to 8 | 6310 ZC3 | 6310 ZC3 | 6210 ZC3 | 6210 ZC3 | | |
| 200 L | 20 . | 2 to 8 | 6312 ZC3 | 6312 ZC3 | 6212 ZC3 | 6212 ZC3 | | |
| 225 S/M | 22 . | 2 to 8 | NU 213 E ²⁾³⁾ | NU 213 E ²⁾³⁾ | 6212 ZC3 ⁴⁾ | 6212 ZC3 ⁴⁾ | | |
| 250 M | 25 . | 2 to 8 | NU 215 E ²⁾ | NU 215 E ²⁾ | 6215 ZC3 | 6215 ZC3 | | |
| 280 S/M | 28 . | 2 4 to 8 | NU 216 E NU 317 E | NU 216 E NU 317 E | 6216 C3 6317 C3 | 6216 C3 6317 C3 | | |
| 315 S/M | 310 313 | 2 4 to 8 | NU 217 E NU 319 E | NU 217 E NU 319 E | 6217 C3 6319 C3 | 6217 C3 6319 C3 | | |
| 315 L | 316 317 318 | 2 4 to 8 | NU 217 E NU 319 E | – NU 319 E | 6217 C3 6319 C3 | – 6319 C3 | | |
| 1LG4 . . . , 1LG6 . . . , 1LP4 . . . , 1PP4 . . . | | | | | | | | |
| 180 M/L | 18 . | 2 to 8 | NU 210 | NU 210 | 6210 C3 | 6210 C3 | | Fig. 4 |
| 200 L | 20 . | 2 to 8 | NU 212 | NU 212 | 6212 C3 | 6212 C3 | | |
| 225 S/M | 22 . | 2 to 8 | NU 213 | NU 213 | 6213 C3 | 6213 C3 | | |
| 250 M | 25 . | 2 to 8 | NU 215 | NU 215 | 6215 C3 | 6215 C3 | | |
| 280 S/M | 28 . | 2 4 to 8 | NU 217 NU 317 | NU 217 NU 317 | 6217 C3 6317 C3 | 6217 C3 6317 C3 | Fig. 5 | |
| 315 S/M | 310 313 | 2 4 to 8 | NU 219 ⁵⁾ NU 319 | NU 219 ⁵⁾ NU 319 | 6219 C3 6319 C3 | 6219 C3 6319 C3 | | |
| 315 L | 316 317 318 | 2 4 to 8 | NU 219 ⁵⁾ NU 319 | NU 219 ⁵⁾ NU 319 | 6219 C3 6319 C3 | 6219 C3 6319 C3 | | |

¹⁾ Bearings with a side plate are used for regreasable versions (order code **K40**).

²⁾ Deep-groove bearings of size range O3 are also possible (order code **K36**).

³⁾ For 1LA5 motors frame size 225 S/M bearing 6313 ZC3 at the drive end.

⁴⁾ For 1MA6 motors frame size 225 S/M bearing 6213 ZC3 at the non-drive end.

⁵⁾ Only at 50 Hz.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Bearing selection table for 1LA8, 1PQ8 and 1LL8 motors – bearings for increased cantilever forces – Order code **K20**

| For motors frame size | Type | Number of poles | Drive end (DE) bearing | | Non-drive end NDE bearing | | |
|------------------------------------|---------------------|-----------------|---------------------------------|-------------------------------|---------------------------------|-------------------------------|------------------|
| | | | Horizontal type of construction | Vertical type of construction | Horizontal type of construction | Vertical type of construction | |
| 1LA8 . . . , 1PQ8 . . . | | | | | | | |
| 315 | 31 . | 4 to 8 | NU 320 E | On request | 6218 C3 | On request | No figure |
| 355 | 35 . | 4 to 8 | NU 322 E | On request | 6220 C3 | On request | |

Please inquire about noise and vibration data. For NU bearings, in contrast to standard bearings, a minimum cantilever force is required. The bearing selection tables are only intended for planning purposes. Binding statements about the bearings for motors which have already been shipped can be requested. Please specify the serial number.

The motors are transported horizontally; they can be transported vertically at additional cost on request. Reinforced bearings are available for frame sizes 400 and 450 as well as IM V1 types of construction as well as for 1LL8 motors on request. Please specify cantilever force and dimension x. Reinforced bearings cannot be supplied for 2-pole motors.

Bearing selection table for 1MJ6 and 1MJ7 motors – Bearings for increased cantilever forces – Order code **K20**

| For motors frame size | Type | Number of poles | Drive end (DE) bearing | | Non-drive end NDE bearing | | |
|-----------------------|---------------------|-----------------|---------------------------------|-------------------------------|---------------------------------|-------------------------------|------------------|
| | | | Horizontal type of construction | Vertical type of construction | Horizontal type of construction | Vertical type of construction | |
| 1MJ6 . . . | | | | | | | |
| 180 M/L | 18 . | 2 to 8 | NU 210 | NU 210 | 6210 ZC3 | 6210 ZC3 | No figure |
| 200 L | 20 . | 2 to 8 | NU 212 | NU 212 | 6212 ZC3 | 6212 ZC3 | |
| 1MJ7 . . . | | | | | | | |
| 225 M/L | 22 . | 2 to 8 | NU 213 | NU 213 | 6213 C3 | 6213 C3 | No figure |
| 250 M | 25 . | 2 to 8 | NU 215 | NU 215 | 6215 C3 | 6215 C3 | |

Bearing selection table for 1LG4, 1LG6, 1LP4 and 1PP4 motors – Deep-groove bearings reinforced at both ends – Order code **K36**

| For motors frame size | Type | Number of poles | Drive end (DE) bearing | | Non-drive end NDE bearing | | Figure on Page 0/64 |
|--|---------------------|-----------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|---------------------|
| | | | Horizontal type of construction | Vertical type of construction | Horizontal type of construction | Vertical type of construction | |
| 1LG4 . . . , 1LG6 . . . , 1LP4 . . . , 1PP4 . . . | | | | | | | |
| 180 M/L | 18 . | 2 to 8 | 6310 ZC3 ¹⁾ | 6310 ZC3 ¹⁾ | 6310 ZC3 ¹⁾ | 6310 ZC3 ¹⁾ | Fig. 4 |
| 200 L | 20 . | 2 to 8 | 6312 ZC3 ¹⁾ | 6312 ZC3 ¹⁾ | 6312 ZC3 ¹⁾ | 6312 ZC3 ¹⁾ | |
| 225 S/M | 22 . | 2 to 8 | 6313 ZC3 ¹⁾ | 6313 ZC3 ¹⁾ | 6313 ZC3 ¹⁾ | 6313 ZC3 ¹⁾ | |
| 250 M | 25 . | 2 to 8 | 6315 ZC3 ¹⁾ | 6315 ZC3 ¹⁾ | 6315 ZC3 ¹⁾ | 6315 ZC3 ¹⁾ | |
| 280 S/M | 28 . | 2 4 to 8 | 6317 C3 6317 C3 ²⁾ | 6317 C3 6317 C3 ²⁾ | 6317 C3 6317 C3 ²⁾ | 6317 C3 6317 C3 ²⁾ | Fig. 5 |
| 315 S/M/L | 31 . | 2 4 to 8 | 6316 C3 6319 C3 ²⁾ | 6316 C3 6319 C3 ²⁾ | 6316 C3 6319 C3 ²⁾ | 6316 C3 6319 C3 ²⁾ | |

¹⁾ Deep-groove bearings are not used for regreasable versions (order code **K40**).

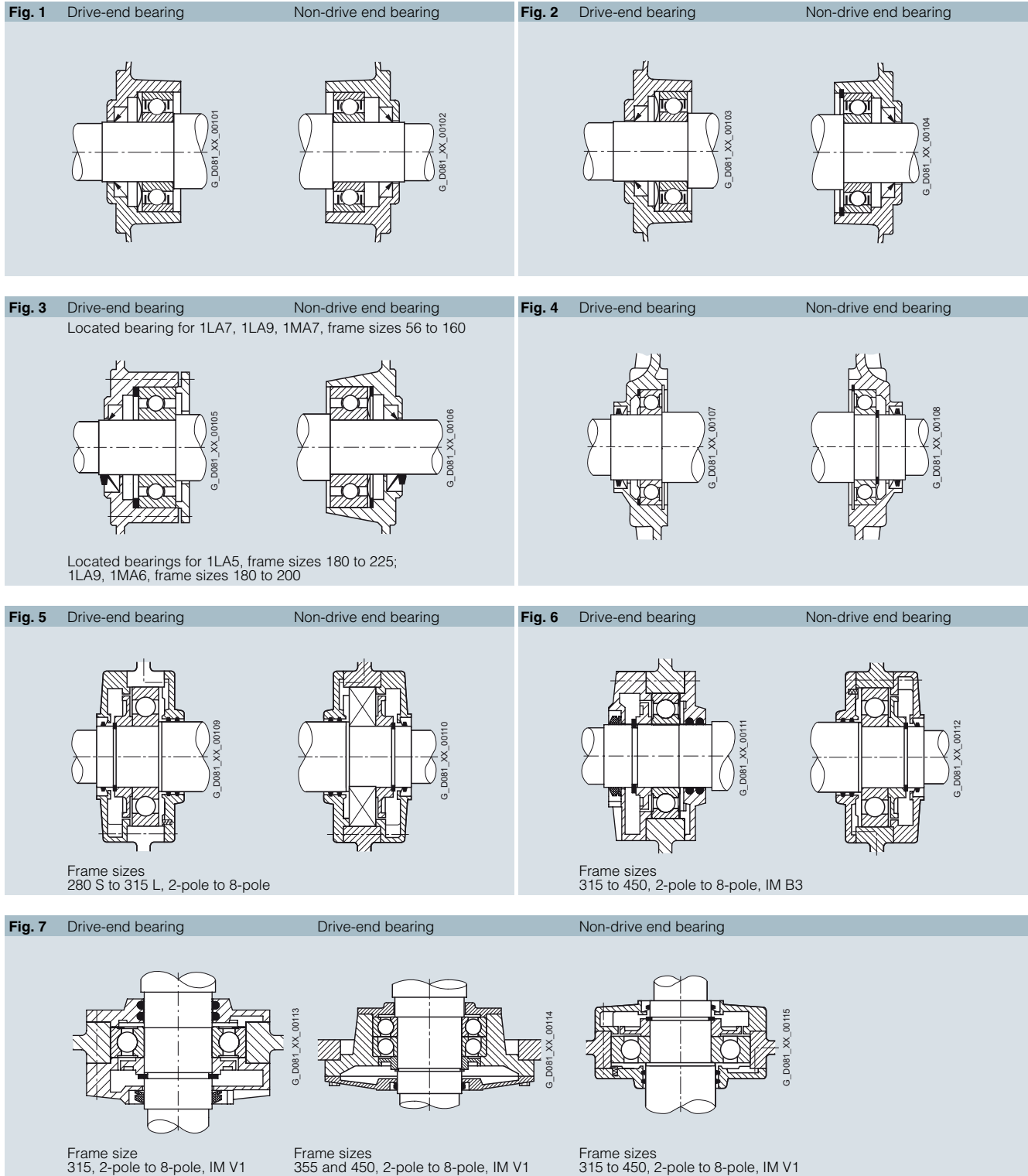
²⁾ As for basic version.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Diagrams of bearings

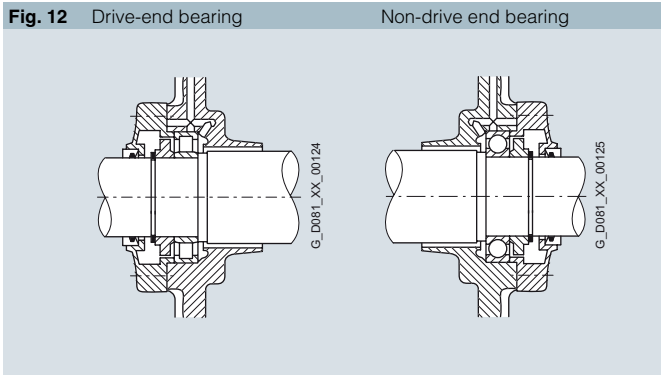
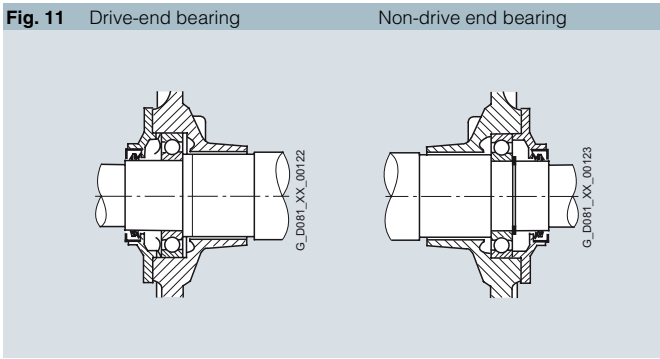
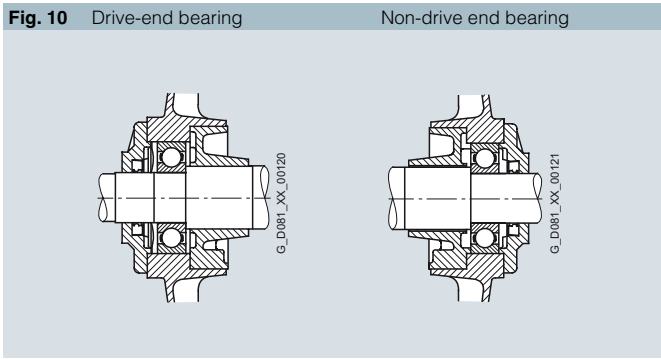
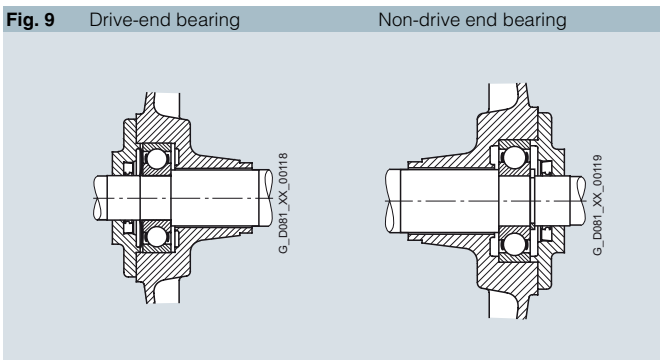
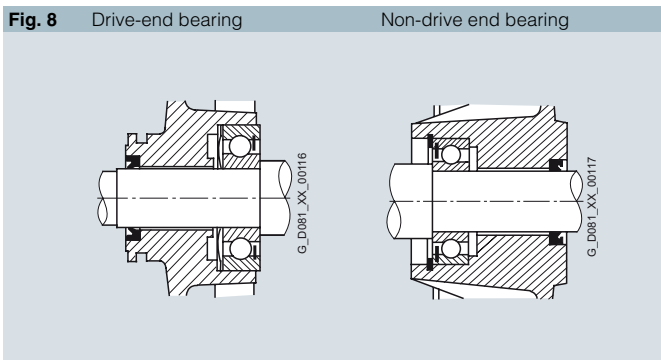


IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

0



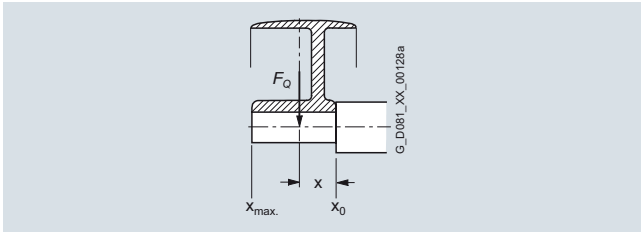
IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Admissible cantilever forces

Admissible cantilever forces, basic version



In order to calculate the admissible cantilever forces for a radial load, the line of force (i.e. the centerline of the pulley) of the cantilever force F_Q (N) must lie within the free shaft extension (dimension x).

Dimension x [mm] is the distance between the point of application of force F_Q and the shaft shoulder. Dimension x_{max} corresponds to the length of the shaft extension.

Total cantilever force $F_Q = c \cdot F_U$

The pre-tension factor c is a value gained from experience from the belt manufacturer. The following approximate value can be assumed:

For normal flat leather belts with an idler pulley $c = 2$;
 for V-belts $c = 2$ to 2.5;
 for special synthetic belts (depending on the type and load) $c = 2$ to 2.5.

The circumferential force F_U (N) is calculated using the following equation

$$F_U = 2 \cdot 10^7 \cdot \frac{P}{n \cdot D}$$

F_U circumferential force in N
 P rated motor power (transmitted power) in kW
 n rated motor speed
 D pulley diameter in mm

The pulleys are standardized acc. to DIN 2211, Sheet 3.

The admissible cantilever forces at 60 Hz are approx. 80 % of the 50 Hz values (please inquire).

Admissible cantilever forces for the basic 50 Hz version

Valid are: x_0 values for $x = 0$ and x_{max} values for $x = l$ (l = shaft extension)

| For motors | Admissible cantilever force for x_0 | Admissible cantilever force for x_{max} . | | | | | |
|----------------|---------------------------------------|---|-------|-------|-------|-------|-------|
| | | Type | Type | | | | |
| Frame size | Number of poles | N | N | N | N | N | N |
| | | 1LG4 | 1MA6 | 1MJ6 | 1LG4 | 1MA6 | 1MJ6 |
| | | 1LG6 | | 1MJ7 | 1LG6 | | 1MJ7 |
| 250 M | 2 | 3190 | 3650 | 3650 | 2530 | 2950 | 2950 |
| | 4 | 4000 | 4400 | 4400 | 3350 | 3600 | 3600 |
| | 6 | 4700 | 5350 | 5350 | 3900 | 4350 | 4350 |
| | 8 | 5200 | 5700 | 5700 | 4400 | 4700 | 4700 |
| 280 S 280 M | 2 | 4000 | 3350 | 8100 | 3250 | 2800 | 6700 |
| | 4 | 8400 | 8400 | 9700 | 7000 | 7200 | 8050 |
| | 6 | 9700 | 10000 | 11700 | 8100 | 8900 | 9700 |
| | 8 | 10750 | 11000 | 12800 | 9000 | 9850 | 10600 |
| 315 S 315 M | 2 | 4750 | 3950 | 9000 | 3890 | 3350 | 7600 |
| | 4 | 9100 | 9900 | 13100 | 7300 | 8100 | 10800 |
| | 6 | 10700 | 12100 | 15600 | 8700 | 9900 | 12800 |
| | 8 | 11600 | 13300 | 16900 | 9600 | 10900 | 13900 |
| 315 L | 2 | 4000 | 3100 | 8800 | 3280 | 2700 | 7600 |
| | 4 | 8400 | 8800 | 24000 | 7500 | 7450 | 12000 |
| | 6 | 9700 | 11400 | 25000 | 9100 | 9600 | 12000 |
| | 8 | 11100 | 12500 | 26000 | 10200 | 10500 | 12000 |

Admissible cantilever forces for the basic 50 Hz version

Valid are: x_0 values for $x = 0$ and x_{max} values for $x = l$ (l = shaft extension)

| For motors | Admissible cantilever force for x_0 | Admissible cantilever force for x_{max} . | | | | | |
|----------------|---------------------------------------|---|------|------|------|------|------|
| | | Type | Type | | | | |
| Frame size | Number of poles | N | N | N | N | N | N |
| | | 1LA5 | 1LG4 | 1MJ6 | 1LA5 | 1LG4 | 1MJ6 |
| | | 1LA7 | 1LG6 | 1MJ7 | 1LA7 | 1LG6 | 1MJ7 |
| | | 1LA9 | 1LP4 | | 1LA9 | 1LP4 | |
| | | 1MA6 | 1PP4 | | 1MA6 | 1PP4 | |
| | | 1MA7 | 1PP6 | | 1MA7 | 1PP6 | |
| | | 1LA6 | | | 1LA6 | | |
| | | 1LP5 | | | 1LP5 | | |
| | | 1LP7 | | | 1LP7 | | |
| | | 1PP5 | | | 1PP5 | | |
| | | 1PP7 | | | 1PP7 | | |
| 56 M | 2 | 270 | - | - | 240 | - | - |
| | 4 | 350 | - | - | 305 | - | - |
| | 6 | 415 | - | - | 360 | - | - |
| 63 M | 2 | 270 | - | - | 240 | - | - |
| | 4 | 350 | - | - | 305 | - | - |
| | 6 | 415 | - | - | 360 | - | - |
| 71 M | 2 | 415 | - | 260 | 355 | - | 260 |
| | 4 | 530 | - | 260 | 450 | - | 260 |
| | 6 | 630 | - | 260 | 535 | - | 260 |
| | 8 | 690 | - | - | 585 | - | - |
| 80 M | 2 | 485 | - | 485 | 400 | - | 400 |
| | 4 | 625 | - | 560 | 515 | - | 515 |
| | 6 | 735 | - | 560 | 605 | - | 560 |
| | 8 | 815 | - | - | 675 | - | - |
| 90 S 90 L | 2 | 725 | - | 725 | 605 | - | 605 |
| | 4 | 920 | - | 920 | 775 | - | 775 |
| | 6 | 1090 | - | 1090 | 910 | - | 910 |
| | 8 | 1230 | - | 1230 | 1030 | - | 1030 |
| 100 L | 2 | 1030 | - | 1030 | 840 | - | 840 |
| | 4 | 1310 | - | 1310 | 1060 | - | 1060 |
| | 6 | 1550 | - | 1550 | 1250 | - | 1250 |
| | 8 | 1720 | - | 1720 | 1400 | - | 1400 |
| 112 M | 2 | 1010 | - | 1680 | 830 | - | 1490 |
| | 4 | 1270 | - | 1960 | 1040 | - | 1580 |
| | 6 | 1520 | - | 2140 | 1240 | - | 1720 |
| | 8 | 1690 | - | 2450 | 1380 | - | 1950 |
| 132 S 132 M | 2 | 1490 | - | 2250 | 1180 | - | 1820 |
| | 4 | 1940 | - | 2720 | 1530 | - | 2170 |
| | 6 | 2260 | - | 3100 | 1780 | - | 2420 |
| | 8 | 2500 | - | 3400 | 1980 | - | 2700 |
| 160 M 160 L | 2 | 1540 | - | 2800 | 1210 | - | 2250 |
| | 4 | 2040 | - | 3330 | 1590 | - | 2600 |
| | 6 | 2330 | - | 3750 | 1820 | - | 2900 |
| | 8 | 2660 | - | 3750 | 2080 | - | 2900 |
| 180 M 180 L | 2 | 2000 | 1780 | 2000 | 1550 | 1410 | 1550 |
| | 4 | 2350 | 2240 | 2350 | 1950 | 1820 | 1950 |
| | 6 | 2800 | 2550 | 2800 | 2250 | 2120 | 2250 |
| | 8 | 3050 | 2860 | 3050 | 2500 | 2330 | 2500 |
| 200 L | 2 | 2550 | 2380 | 2550 | 2100 | 1930 | 2100 |
| | 4 | 3350 | 3050 | 3350 | 2750 | 2530 | 2750 |
| | 6 | 3900 | 3500 | 3900 | 3200 | 2930 | 3200 |
| | 8 | 4150 | 3800 | 4150 | 3450 | 3210 | 3450 |
| 225 S 225 M | 2 | 3050 | 2820 | 3050 | 2550 | 2290 | 2550 |
| | 4 | 3750 | 3500 | 3750 | 2950 | 2760 | 2950 |
| | 6 | 4550 | 4050 | 4550 | 3600 | 3240 | 3600 |
| | 8 | 4850 | 4500 | 4850 | 3900 | 3500 | 3900 |

Table continues overleaf

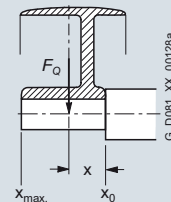
Admissible cantilever forces for the basic 50 Hz version**Valid are: x_0 values for $x = 0$ and x_{max} values for $x = l$ (l = shaft extension)**

| For motors | Admissible cantilever force for x_0 | | Admissible cantilever force for x_{max} | |
|-------------------|---------------------------------------|--------------------------------|---|--------------------------------|
| Frame size | Number of poles | Type | Type | Type |
| | | N | N | N |
| | | 1LA8, 1PQ8¹⁾ | | 1LA8, 1PQ8¹⁾ |
| 315 ... 450 | 2 ... 8 | See diagrams Page 0/69 | See diagrams Page 0/69 | See diagrams Page 0/69 |

For 1LA8 motors in horizontal type of construction, the admissible cantilever forces are specified with regard to the axial forces.

It should be observed that for types of construction IM B6, IM B7, IM B8, IM V5 and IM V6 the belt tension is only permitted to act parallel to the mounting plane or towards the mounting plane and the feet must be supported. Both feet must be secured for foot-mounting types of construction.

Refer to Pages 0/67 to 0/68 if the cantilever forces are higher than those listed above.

Bearing design for increased cantilever forces**Admissible cantilever forces at 50 Hz for 1LA, 1MA, 1MJ, 1LP and 1PP motors****Deep-groove ball bearings at the drive end (DE) – Order code K20**

| For motors | Frame size | Type | Number of poles | Admissible cantilever force F_Q | |
|------------|------------|-----------------|-----------------|--|--------------|
| | | | | at x_0 | at x_{max} |
| | | | | N | N |
| | | | | 1LA5 ... , 1LA6 ... , 1LA7 ... , 1LA9 ... , 1MA6 ... , 1MA7 ... , 1MJ6 ... , 1MJ7 ... , 1LP5 ... , 1LP7 ... , 1PP5 ... , 1PP7 ... | |
| | 100 | 10 . | 2 | 1680 | 1490 |
| | | | 4 | 1960 | 1580 |
| | | | 6 | 2140 | 1720 |
| | | | 8 | 2450 | 1950 |
| | 112 | 113 | 2 | 1680 | 1490 |
| | | | 4 | 1960 | 1580 |
| | | | 6 | 2140 | 1720 |
| | | | 8 | 2450 | 1950 |
| | 132 | 13 . | 2 | 2250 | 1820 |
| | | | 4 | 2720 | 2170 |
| | | | 6 | 3100 | 2420 |
| | | | 8 | 3400 | 2700 |
| | 160 | 16 . | 2 | 2800 | 2250 |
| | | | 4 | 3330 | 2600 |
| | | | 6 | 3750 | 2900 |
| | | | 8 | 3750 | 2900 |
| | 180 | 18 . | 2 | 3700 | 3000 |
| | | | 4 | 4450 | 3600 |
| | | | 6 | 5100 | 4150 |
| | | | 8 | 5550 | 4500 |
| | 200 | 20 . | 2 | 5200 | 4300 |
| | | | 4 | 6450 | 5350 |
| | | | 6 | 7300 | 6100 |
| | | | 8 | 7900 | 6550 |
| | 225 | 1LA522 . | 2 | 5200 | 4300 |
| | | 1LP5 ... | 4 | 6450 | 5350 |
| | | 1PP5 ... | 6 | 7300 | 6100 |
| | | | 8 | 7900 | 6550 |

¹⁾ Data for 1LL8 is available on request.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Admissible cantilever forces at 50 Hz for 1LG motors

Parallel roller bearings at the drive end (DE) – Order code K20

Valid are: x_0 values for $x = 0$ and x_{max} values for $x = l$ (l = shaft extension)

| Frame size | Type | Number of poles | Admissible cantilever force F_Q | |
|--|----------------------|-----------------|-----------------------------------|--------------|
| | | | at x_0 | at x_{max} |
| | | | N | N |
| 1LG4 ... , 1LG6 ... , 1LP4 ... , 1PP4 ... | | | | |
| 180 M, 180 L | 18 . | 2 | 4550 | 3600 |
| | | 4 | 5650 | 4050 |
| | | 6 | 6350 | 4050 |
| | | 8 | 6950 | 4050 |
| 200 L | 20 . | 2 | 6600 | 5350 |
| | | 4 | 8200 | 6850 |
| | | 6 | 9300 | 6300 |
| | | 8 | 10100 | 7400 |
| 225 S, 225 M | 22 . | 2 | 7500 | 6250 |
| | | 4 | 9150 | 7200 |
| | | 6 | 10400 | 7400 |
| | | 8 | 11300 | 7350 |
| 250 M | 25 . | 2 | 9100 | 7300 |
| | | 4 | 11300 | 9300 |
| | | 6 | 12800 | 10500 |
| | | 8 | 14100 | 10500 |
| 280 S ¹⁾ , 280 M ¹⁾ | 28 . | 2 | 11400 | 9350 |
| 315 S ¹⁾ , 315 M ¹⁾ | 310 313 | 2 | 14700 | 12300 |
| 315 L ¹⁾ | 316 317 | 2 | 14600 | 12700 |

Admissible cantilever forces at 50 Hz for 1LG motors

Deep-groove bearings reinforced at both ends DE/NDE – Order code K36

Valid are: x_0 values for $x = 0$ and x_{max} values for $x = l$ (l = shaft extension)

| Frame size | Type | Number of poles | Admissible cantilever force F_Q | |
|----------------------------|----------------------|-----------------|-----------------------------------|--------------|
| | | | at x_0 | at x_{max} |
| | | | N | N |
| 1LG4 ... , 1LG6 ... | | | | |
| 180 M, 180 L | 18 . | 2 | 3280 | 2600 |
| | | 4 | 4150 | 3430 |
| | | 6 | 4750 | 3950 |
| | | 8 | 5250 | 4050 |
| 200 L | 20 . | 2 | 4350 | 3500 |
| | | 4 | 5550 | 4550 |
| | | 6 | 6350 | 5350 |
| | | 8 | 7000 | 5900 |
| 225 S, 225 M | 22 . | 2 | 4850 | 3950 |
| | | 4 | 6100 | 4850 |
| | | 6 | 7050 | 5650 |
| | | 8 | 7750 | 6150 |
| 250 M | 25 . | 2 | 5800 | 4600 |
| | | 4 | 7400 | 6050 |
| | | 6 | 8500 | 7050 |
| | | 8 | 9350 | 7850 |
| 280 S, 280 M | 28 . | 2 | – | – |
| 315 S, 315 M | 310 313 | 2 | 5650 | 4650 |
| 315 L | 316 317 | 2 | 5450 | 4650 |

Admissible cantilever forces at 50 Hz for 1MA and 1MJ motors

Parallel roller bearings at the drive end (DE) – Order code K20

For motors

| Frame size | Type | Number of poles | Admissible cantilever force F_Q | |
|----------------------------|-----------|-----------------|-----------------------------------|--------------|
| | | | at x_0 | at x_{max} |
| | | | N | N |
| 1MA6 ... , 1MJ7 ... | | | | |
| 225 | 22 . | 2 | 8100 | 6800 |
| | | 4 | 9800 | 7800 |
| | | 6 | 11200 | 8800 |
| | | 8 | 12200 | 9700 |
| 250 | 25 . | 2 | 9600 | 7900 |
| | | 4 | 11600 | 9600 |
| | | 6 | 13200 | 10800 |
| | | 8 | 14400 | 11800 |
| 280 ^{1) 2)} | 28 . | 2 | 10000 | 8400 |
| 315 S ^{1) 2)} | 310 | 2 | 12000 | 10200 |
| 315 M ^{1) 2)} | 313 | | | |
| 315 L ^{1) 2)} | 316 | 2 | 11800 | 10200 |
| | 317 | | (horizontal type of construction) | |
| 1LA8 , 1PQ8 | | | | |
| 315 to 355 | | 2 to 8 | See diagrams Page 0/70 | |

It should be observed that for types of construction IM B6, IM B7, IM B8, IM V5 and IM V6 the belt tension is only permitted to act parallel to the mounting plane or towards the mounting plane and the feet must be supported.

¹⁾ Admissible cantilever forces for 1LG4, 1LG6, 1LP4, 1PP4 and 1MA6 frame sizes 280 to 315 L in 4-pole to 8-pole version, see Page 0/70.

²⁾ Not applicable to 1MJ motors with frame sizes 280 to 315, because this is the standard version.

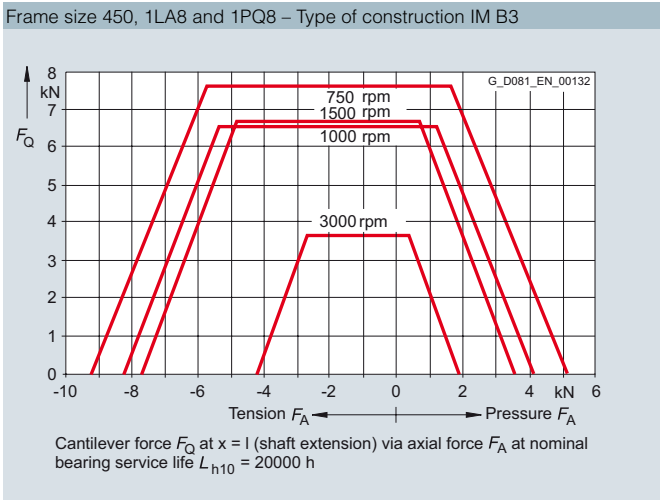
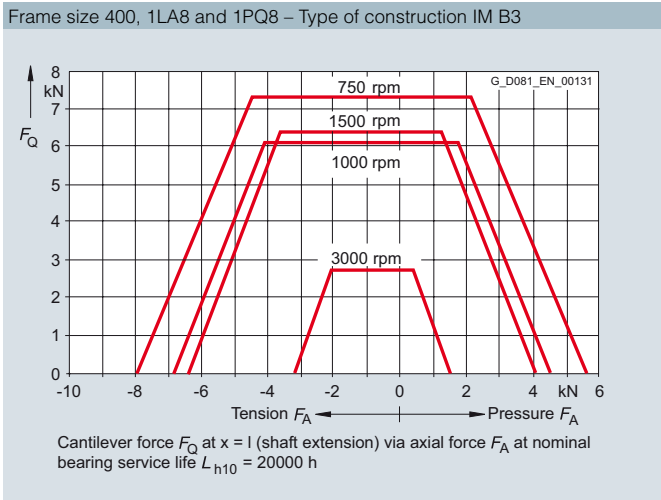
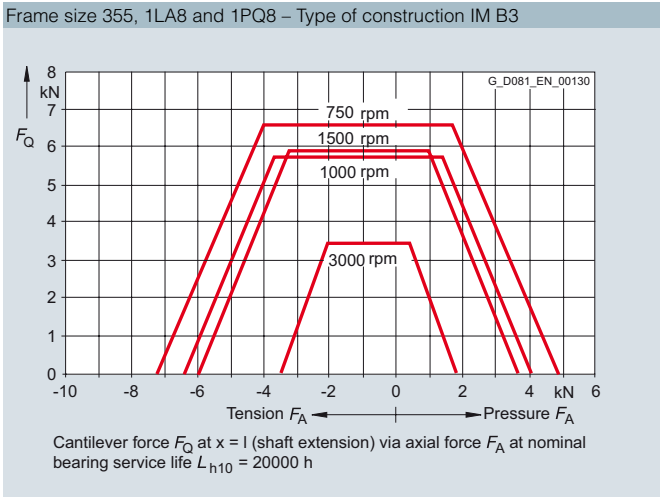
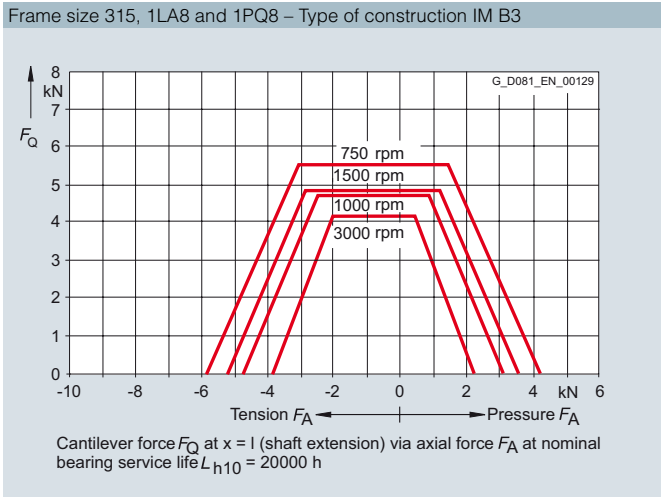
IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data



Admissible cantilever forces at 50 Hz for 1LA8 and 1PQ8 motors – basic version



IEC Squirrel-Cage Motors

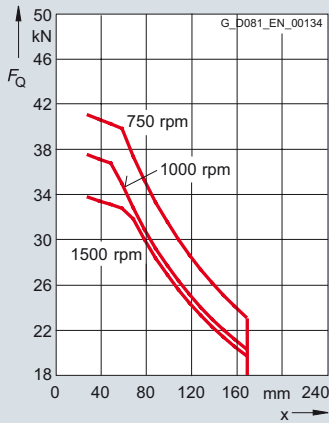
Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

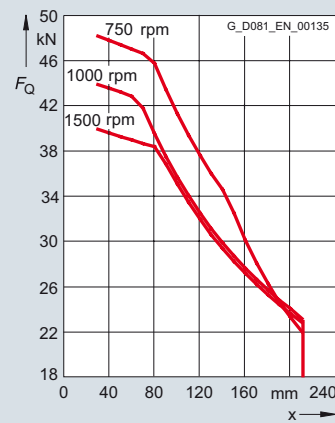
0

Admissible cantilever forces at 50 Hz for 1LA8 and 1PQ8 motors – Bearings for increased cantilever forces – Order code **K20**

Frame size 315, 1LA8 and 1PQ8 – Type of construction IM B3



Frame size 355, 1LA8 and 1PQ8 – Type of construction IM B3

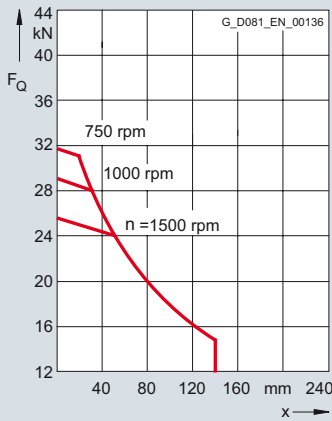


At 60 Hz, the admissible cantilever force must be reduced to 80 %.

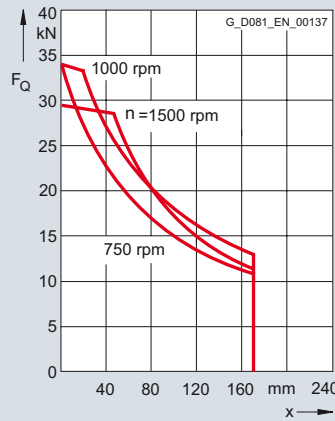
For all motors of frame sizes 400 and 450, IM V1 and 1LL8 motors with reinforced bearings available on request. Please specify cantilever force and lever arm.

Admissible cantilever forces at 50 Hz for 1LG motors – Bearings for increased cantilever forces – Order code **K20**

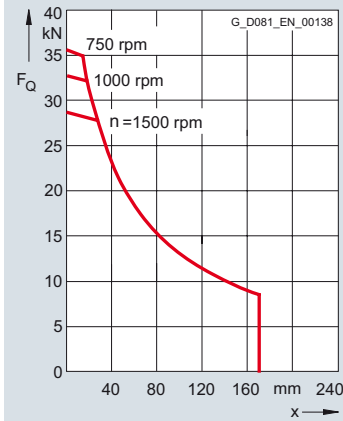
Frame size 280, 4-pole to 8-pole, 1LG4/1LG6, 1LP4/1PP4



Frame size 315, 4-pole to 8-pole, 1LG4/1LG6, 1LP4/1PP4

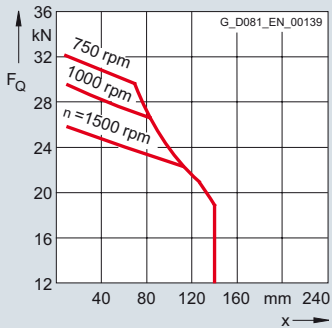


Frame size 315 S/M, 4-pole to 8-pole, 1LG4/1LG6, 1LP4/1PP4

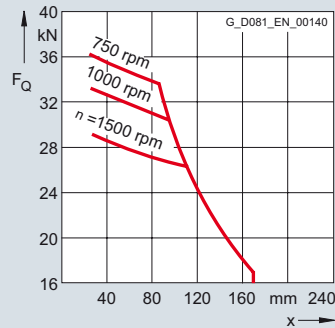


Admissible cantilever forces at 50 Hz for 1MA motors – Bearings for increased cantilever forces – Order code **K20**

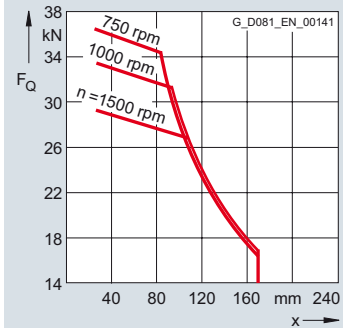
Frame size 280, 4-pole to 8-pole, 1MA6



Frame size 315 S/M, 4-pole to 8-pole, 1MA6



Frame size 315 L, 4-pole to 8-pole, 1MA6



IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Admissible axial load

1LA5, 1LA6, 1LA7, 1LP5, 1LP7, 1MA6, 1MA7, 1MJ6, 1MJ7, 1PP5, 1PP6, 1PP7 motors in vertical type of construction – basic version

| Frame size | Shaft extension pointing | | | | | | | | | | | | | | | |
|------------|--------------------------|-----------------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | 3000 rpm | | | | 1500 rpm | | | | 1000 rpm | | | | 750 rpm | | | |
| | downwards | | upwards | | downwards | | upwards | | downwards | | upwards | | downwards | | upwards | |
| | Load down | Load up | Load down | Load up | Load down | Load up | Load down | Load up | Load down | Load up | Load down | Load up | Load down | Load up | Load down | Load up |
| 56 | 80 | 245 | 230 | 95 | 80 | 330 | 310 | 95 | 80 | 410 | 390 | 95 | – | – | – | – |
| 63 | 80 | 245 | 230 | 95 | 80 | 330 | 310 | 95 | 80 | 410 | 390 | 95 | – | – | – | – |
| 71 | 105 | 365 | 335 | 130 | 90 | 380 | 440 | 130 | 90 | 590 | 550 | 130 | 90 | 700 | 660 | 130 |
| 80 | 110 | 425 | 360 | 160 | 100 | 540 | 480 | 165 | 100 | 650 | 590 | 165 | 100 | 760 | 700 | 165 |
| 90 | 110 | 440 | 360 | 180 | 100 | 680 | 580 | 190 | 100 | 920 | 820 | 190 | 100 | 1150 | 1050 | 190 |
| 100 | 140 | 700 | 550 | 280 | 130 | 990 | 820 | 285 | 130 | 1280 | 1110 | 285 | 130 | 1560 | 1390 | 285 |
| 112 | 140 (140)* | 710 (1050)* | 550 (800)* | 300 (300)* | 130 (130)* | 1000 (1350)* | 820 (1100)* | 310 (300)* | 130 (130)* | 1290 (1720)* | 1110 (1500)* | 310 (310)* | 130 (130)* | 1570 (2000)* | 1390 (1850)* | 310 (310)* |
| 132 | 200 (1500)* | 1200 (1550)* | 950 (1300)* | 470 (470)* | 180 (1500)* | 1680 (2100)* | 1200 (1600)* | 470 (470)* | 180 (280)* | 1900 (2400)* | 1600 (2100)* | 470 (470)* | 190 (290)* | 2200 (2800)* | 1900 (2400)* | 440 (440)* |
| 160 | 1500 (2000)* | 1400 (1720)* | 950 (1300)* | 1900 (2500)* | 1900 (2500)* | 1800 (2400)* | 1300 (1720)* | 2200 (2800)* | 2200 (2800)* | 1600 (2800)* | 2700 (3600)* | 2700 (3600)* | 2700 (3600)* | 2700 (3600)* | 1950 (2600)* | 2900 (3700)* |

| For motors Frame size | Shaft extension downwards | | | | | | | | | | | | | | | | |
|--------------------------|--|----------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|-------|------|
| | 3000 rpm | | | | 1500 rpm | | | | 1000 rpm | | | | 750 rpm | | | | |
| | Type | Load down | Load up | Load down | Load up | Load down | Load up | Load down | Load up | Load down | Load up | Load down | Load up | Load down | Load up | | |
| | 1LA5... 1LA6... 1MJ6... 1MJ7... 1LP5... 1PP5... | 1MA6 1LP5 1PP5 | 1MJ6... 1MA6 1LP5 1PP5 | 1LA5... 1MA6 1LP5 1PP5 | 1MJ6... 1MJ7 1LP5 1PP5 | 1LA5... 1MA6 1LP5 1PP5 | 1MJ6... 1MJ7 1LP5 1PP5 | 1LA5... 1MA6 1LP5 1PP5 | 1MJ6... 1MJ7 1LP5 1PP5 | 1LA5... 1MA6 1LP5 1PP5 | 1MJ6... 1MA6 1LP5 1PP5 | 1LA5... 1MA6 1LP5 1PP5 | 1MJ6... 1MA6 1LP5 1PP5 | 1LA5... 1MA6 1LP5 1PP5 | 1MJ6... 1MA6 1LP5 1PP5 | | |
| | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | | |
| 180 M | 183 | 1150 | 1150 | 1900 | 1900 | 1400 | 1400 | 2350 | 2350 | – | – | – | – | – | – | | |
| 180 L | 186 | – | – | – | – | 1400 | 1400 | 2400 | 2400 | 1700 | 1700 | 2850 | 2850 | 2000 | 2000 | 3150 | 3150 |
| 200 L | 206 | 1650 | 1650 | 2750 | 2750 | – | – | – | – | 2550 | 2550 | 3950 | 3950 | – | – | – | – |
| | 207 | 1550 | 1550 | 2800 | 2800 | 2000 | 2000 | 3350 | 3350 | 2400 | 2400 | 3950 | 3950 | 2800 | 2800 | 4500 | 4500 |
| 225 S | 220 | – | – | – | – | 2300 | 2300 | 3020 | 3020 | – | – | – | – | 3200 | 3200 | 4080 | 4080 |
| 225 M | 223 | 1890 | 1890 | 2190 | 2190 | 2180 | 2180 | 3060 | 3060 | 2700 | 2700 | 3500 | 3500 | 3040 | 3040 | 4120 | 4120 |
| 250 M | 253 | 1750 | 1750 | 2790 | 2790 | 2160 | 2160 | 3760 | 3760 | 2740 | 2740 | 4340 | 4340 | 2990 | 2990 | 4890 | 4890 |
| 280 S | 280 | 380 | 1150 | 4480 | 3850 | 3830 | 1350 | 8790 | 4950 | 5340 | 2350 | 10000 | 5650 | 6280 | 2850 | 11000 | 6250 |
| 280 M | 283 | 180 | 900 | 4580 | 3900 | 3550 | 1000 | 8910 | 5000 | 5000 | 2000 | 10100 | 5700 | 5930 | 2450 | 11100 | 6300 |
| 315 S | 310 | 210 | 900 | 5270 | 4500 | 3700 | 1700 | 10200 | 6400 | 5150 | 2300 | 11700 | 7050 | 6520 | 3400 | 13000 | 7950 |
| 315 M | 313 | 100 | 650 | 5350 | 4550 | 3330 | 1600 | 10400 | 6900 | 4740 | 2050 | 11700 | 7500 | 5800 | 2800 | 13000 | 8400 |
| 315 L | 316 | 9270 | – | 770 | – | 2330 | – | 10400 | – | 3650 | – | 11700 | – | 4630 | – | 13000 | – |
| | 317 | 9270 | – | 840 | – | 1370 | – | 10800 | – | 2990 | – | 11600 | – | 3760 | – | 13000 | – |
| | 318 | 9270 | – | 840 | – | 1370 | – | 10800 | – | 2990 | – | 11600 | – | 3760 | – | 13000 | – |

The values shown do not assume a cantilever force on the shaft extension.

The admissible loads are valid for operation at 50 Hz; for 60 Hz, please inquire.

The calculation of the admissible axial load was based on the drive with generally available coupling. For suppliers, see the relevant catalog part, section "Accessories".

Please inquire if the load direction alternates.

* The values in brackets for frame sizes 112 to 160 apply to 1MJ6 motors.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

1LA5, 1LA6, 1LA7, 1LP7, 1MA6, 1MA7, 1MJ6, 1MJ7, 1PP6, 1PP7 motors in horizontal type of construction – Basic version

| Frame size | 3000 rpm | | | | 1500 rpm | | | | 1000 rpm | | | | 750 rpm | | | |
|------------|-----------------|----------------|-------------------------------------|-----------------|-----------------|-----------------|-------------------------------------|-----------------|-----------------|-----------------|-------------------------------------|-----------------|-----------------|-----------------|-------------------------------------|-----------------|
| | Tensile load | | Thrust load (N) with radial load at | | Tensile load | | Thrust load (N) with radial load at | | Tensile load | | Thrust load (N) with radial load at | | Tensile load | | Thrust load (N) with radial load at | |
| | X_0 | $X_{max.}$ | X_0 | $X_{max.}$ | X_0 | $X_{max.}$ | X_0 | $X_{max.}$ | X_0 | $X_{max.}$ | X_0 | $X_{max.}$ | X_0 | $X_{max.}$ | X_0 | $X_{max.}$ |
| N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| 56 | 90 | 120 | 90 | 240 | 90 | 140 | 110 | 320 | 90 | 170 | 120 | 400 | – | – | – | – |
| 63 | 90 | 120 | 90 | 240 | 90 | 140 | 110 | 320 | 90 | 170 | 120 | 400 | – | – | – | – |
| 71 | 120 | 150 | 120 | 350 | 120 | 210 | 150 | 460 | 120 | 260 | 180 | 570 | 120 | 300 | 210 | 680 |
| 80 | 140 | 190 | 150 | 400 | 140 | 300 | 260 | 510 | 140 | 330 | 280 | 620 | 140 | 340 | 290 | 730 |
| 90 | 150 | 300 | 280 | 400 | 150 | 400 | 360 | 630 | 150 | 480 | 430 | 870 | 150 | 550 | 500 | 1100 |
| 100 | 220 | 450 | 350 | 630 | 220 | 600 | 500 | 910 | 220 | 650 | 550 | 1200 | 220 | 750 | 650 | 1480 |
| 112 | 220 (220)* | 450 (850)* | 350 (700)* | 630 (1050)* | 220 (220)* | 600 (1150)* | 500 (1000)* | 910 (1350)* | 220 (220)* | 650 (1300)* | 550 (1150)* | 1200 (1720)* | 220 (220)* | 750 (1450)* | 650 (1300)* | 1480 (2000)* |
| 132 | 350 (350)* | 650 (1000)* | 520 (900)* | 1200 (1550)* | 350 (350)* | 850 (1250)* | 700 (1150)* | 1600 (2100)* | 350 (350)* | 1020 (1500)* | 890 (1400)* | 1900 (2400)* | 350 (350)* | 1150 (1750)* | 1020 (1650)* | 2200 (2800)* |
| 160 | 1500 (2100)* | 850 (1280)* | 720 (1100)* | 1500 (2100)* | 1500 (2100)* | 1050 (1680)* | 920 (1700)* | 1800 (2350)* | 1500 (2100)* | 1250 (2050)* | 1120 (1920)* | 2200 (2900)* | 1500 (2100)* | 1350 (2400)* | 1220 (2200)* | 2600 (3300)* |

| Frame size | Type | 3000 rpm | | 1500 rpm | | 1000 rpm | | 750 rpm | |
|------------|--|-------------------|--------------|-------------------|--------------|-------------------|--------------|-------------------|---------------|
| | | Loading direction | | Loading direction | | Loading direction | | Loading direction | |
| | | Tension | Thrust | Tension | Thrust | Tension | Thrust | Tension | Thrust |
| | 1LA5 ... 1MA6 ... 1MJ6 ... 1MJ7 ... 1LP5 ... 1PP5 ... | N | N | N | N | N | N | N | N |
| 180 M | ... 183 | 1400 | 1400 | 1700 | 1700 | – | – | – | – |
| 180 L | ... 186 | – | – | 1700 | 1700 | 2050 | 2050 | 2400 | 2400 |
| 200 L | ... 206 | 2000 | 2000 | – | – | 3000 | 3000 | – | – |
| | ... 207 | 1950 | 1950 | 2450 | 2450 | 2900 | 2900 | 3400 | 3400 |
| 225 S | ... 220 | – | – | 2980 | 1960 | – | – | 3880 | 2860 |
| 225 M | ... 223 | 2390 | 1370 | 2900 | 1880 | 3380 | 2360 | 3810 | 2790 |
| 250 M | ... 253 | 2450 | 1655 | 3070 | 2270 | 3620 | 2820 | 4000 | 3200 |
| 280 S | ... 280 | 1330 (3700)* | 2900 (2100)* | 5080 (4200)* | 6740 (2600)* | 6410 (5000)* | 8070 (3400)* | 7390 (5550)* | 9050 (3950)* |
| 280 M | ... 283 | 1200 (3600)* | 2800 (2000)* | 4990 (4000)* | 6650 (2400)* | 6260 (4800)* | 7920 (3200)* | 7220 (5350)* | 8880 (3750)* |
| 315 S | ... 310 | 1500 (3800)* | 3160 (2200)* | 5350 (4900)* | 7450 (3300)* | 6740 (5500)* | 8810 (3900)* | 8010 (6500)* | 10110 (4900)* |
| 315 M | ... 313 | 1400 (3650)* | 3180 (2050)* | 5260 (4900)* | 7360 (3300)* | 6560 (5450)* | 8660 (3850)* | 7690 (6250)* | 9790 (4650)* |
| 315 L | ... 316 | 1080 | 2740 | 4580 | 6680 | 5770 | 7870 | 6820 | 8920 |
| | ... 317 | 940 | 2600 | 4170 | 6270 | 5410 | 7510 | 6410 | 8510 |
| | ... 318 | 940 | 2600 | 4170 | 6270 | 5410 | 7510 | 6410 | 8510 |

The values shown do not assume a cantilever force on the shaft extension.

The admissible loads are valid for operation at 50 Hz; for 60 Hz, please inquire.

The calculation of the admissible axial load was based on the drive with generally available coupling. For suppliers, see the relevant catalog part, section "Accessories".

Please inquire if the load direction alternates.

* The values in brackets for frame sizes 112 to 160 apply to 1MJ6 motors and frame sizes 280 S to 315 M apply to 1MJ7 motors.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

1LG4, 1LG6, 1LP4, 1PP4 and 1PP6 motors in vertical type of construction – Basic version

| For motors | | | | | | | | | |
|---|-------------|----------|------|----------|-------|----------|-------|---------|-------|
| Frame size | Type | 3000 rpm | | 1500 rpm | | 1000 rpm | | 750 rpm | |
| | 1LG4 . . . | Load | Load | Load | Load | Load | Load | Load | Load |
| | 1LG6 . . . | down | up | down | up | down | up | down | up |
| | 1LP4 . . . | | | | | | | | |
| | 1PP4 . . . | | | | | | | | |
| | 1PP6 . . . | N | N | N | N | N | N | N | N |
| Shaft extension downwards | | | | | | | | | |
| 180 M | 183 | 1140 | 1150 | 1500 | 1600 | – | – | – | – |
| 180 L | 186 | – | – | 1380 | 1630 | 1650 | 2000 | 2020 | 2250 |
| | 188 | 1140 | 1190 | 1390 | 1650 | 1640 | 2030 | 1880 | 2280 |
| 200 L | 206 | 1610 | 1480 | – | – | 2420 | 2550 | – | – |
| | 207 | 1510 | 1530 | 2030 | 2100 | 2220 | 2610 | 2610 | 2970 |
| | 208 | 1510 | 1590 | 1990 | 2120 | 2210 | 2680 | 2600 | 3060 |
| 225 S | 220 | – | – | 2110 | 2690 | – | – | 2830 | 3710 |
| 225 M | 223 | 1540 | 1990 | 1920 | 2770 | 2260 | 3300 | 2620 | 3770 |
| | 228 | 1540 | 2070 | 1950 | 2840 | 2240 | 3430 | 2610 | 3880 |
| 250 M | 253 | 1680 | 2760 | 2110 | 3740 | 2740 | 4350 | 3070 | 4920 |
| | 258 | 1660 | 2870 | 2110 | 3960 | 2740 | 4520 | 3070 | 5160 |
| 280 S | 280 | 390 | 4670 | 3190 | 8200 | 4510 | 9290 | 5510 | 10300 |
| 280 M | 283 | 100 | 4780 | 2790 | 8340 | 4210 | 9450 | 5200 | 10400 |
| | 288 | 100 | 4950 | 2700 | 8570 | 4170 | 9600 | 5160 | 10600 |
| 315 S | 310 | 840 | 6330 | 3380 | 10200 | 4760 | 11500 | 5860 | 12600 |
| 315 M | 313 | 530 | 6490 | 2870 | 10500 | 4200 | 11800 | 5420 | 12900 |
| 315 L | 316 | 8830 | 590 | 2450 | 11000 | 3680 | 12300 | 4800 | 13400 |
| | 317 | 8410 | 690 | 1800 | 11400 | 3100 | 12800 | 4410 | 13900 |
| | 318 | 8170 | 800 | 1620 | 12000 | 2690 | 13400 | 3820 | 14300 |
| Shaft extension pointing upwards | | | | | | | | | |
| 180 M | 183 | 1900 | 390 | 2260 | 840 | – | – | – | – |
| 180 L | 186 | – | – | 2140 | 870 | 2410 | 1240 | 2780 | 1490 |
| | 188 | 1900 | 430 | 2150 | 890 | 2400 | 1270 | 2640 | 1520 |
| 200 L | 206 | 2760 | 330 | – | – | 3570 | 1400 | – | – |
| | 207 | 2660 | 380 | 3180 | 950 | 3370 | 1460 | 3760 | 1820 |
| | 208 | 2660 | 440 | 3140 | 970 | 3360 | 1530 | 3750 | 1910 |
| 225 S | 220 | – | – | 3130 | 1670 | – | – | 3850 | 2690 |
| 225 M | 223 | 2560 | 970 | 2940 | 1750 | 3280 | 2280 | 3640 | 2750 |
| | 228 | 2560 | 1050 | 2970 | 1820 | 3260 | 2410 | 3630 | 2860 |
| 250 M | 253 | 2480 | 1960 | 2910 | 2940 | 3540 | 3550 | 3870 | 4120 |
| | 258 | 2460 | 2070 | 2910 | 3160 | 3540 | 3720 | 3870 | 4360 |
| 280 S | 280 | 1960 | 3100 | 4760 | 6630 | 6080 | 7720 | 7080 | 8730 |
| 280 M | 283 | 1670 | 3210 | 4360 | 6770 | 5780 | 7880 | 6770 | 8830 |
| | 288 | 1670 | 3380 | 4270 | 7000 | 5740 | 8030 | 6730 | 9030 |
| 315 S | 310 | 2410 | 4760 | 5380 | 8200 | 6760 | 9500 | 7860 | 10600 |
| 315 M | 313 | 2100 | 4920 | 4870 | 8500 | 6200 | 9800 | 7420 | 10900 |
| 315 L | 316 | 10400 | – | 4450 | 9000 | 5680 | 10300 | 6800 | 11400 |
| | 317 | 9980 | – | 3800 | 9400 | 5100 | 10800 | 6410 | 11900 |
| | 318 | 9740 | – | 3620 | 10000 | 4690 | 11400 | 5820 | 12300 |

Values shown without assuming a cantilever force on the shaft extension.

The admissible loads apply to operation at 50 Hz; please inquire about 60 Hz.

The figures for the admissible axial loads have been calculated assuming that standard coupling types are used for the drive.

For suppliers, see the relevant catalog part, section "Accessories".

Please inquire if the loading direction alternates.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

1LG4, 1LG6, 1LP4, 1PP4 and 1PP6 motors in horizontal type of construction – Basic version

| For motors Frame size | Type | 3000 rpm | | 1500 rpm | | 1000 rpm | | 750 rpm | |
|--------------------------|----------|-------------------|--------|-------------------|--------|-------------------|--------|-------------------|--------|
| | | Loading direction | | Loading direction | | Loading direction | | Loading direction | |
| | | Tension | Thrust | Tension | Thrust | Tension | Thrust | Tension | Thrust |
| | 1LG4 ... | | | | | | | | |
| | 1LG6 ... | | | | | | | | |
| | 1LP4 ... | | | | | | | | |
| | 1PP4 ... | | | | | | | | |
| | 1PP6 ... | N | N | N | N | N | N | N | N |
| 180 M | ... 183 | 1550 | 790 | 1950 | 1190 | – | – | – | – |
| 180 L | ... 186 | – | – | 1890 | 1130 | 2220 | 1460 | 2470 | 1710 |
| | ... 188 | 1550 | 790 | 1900 | 1140 | 2220 | 1460 | 2460 | 1700 |
| 200 L | ... 206 | 2150 | 990 | – | – | 3090 | 1940 | – | – |
| | ... 207 | 2130 | 970 | 2670 | 1520 | 3030 | 1880 | 3410 | 2260 |
| | ... 208 | 2130 | 970 | 2630 | 1480 | 3020 | 1870 | 3410 | 2250 |
| 225 S | ... 220 | – | – | 2950 | 1920 | – | – | 3820 | 2790 |
| 225 M | ... 223 | 2320 | 1290 | 2910 | 1880 | 3360 | 2330 | 3760 | 2740 |
| | ... 228 | 2320 | 1290 | 2910 | 1880 | 3350 | 2320 | 3760 | 2730 |
| 250 M | ... 253 | 2510 | 1710 | 3150 | 2350 | 3750 | 2950 | 4180 | 3380 |
| | ... 258 | 2510 | 1710 | 3140 | 2340 | 3750 | 2950 | 4170 | 3370 |
| 280 S | ... 280 | 1790 | 3360 | 4970 | 6540 | 6180 | 7750 | 7170 | 8740 |
| 280 M | ... 283 | 1720 | 3290 | 4860 | 6430 | 6110 | 7680 | 7090 | 8660 |
| | ... 288 | 1720 | 3290 | 4850 | 6420 | 6100 | 7670 | 7080 | 8650 |
| 315 S | ... 310 | 2610 | 4180 | 5520 | 7520 | 6830 | 8830 | 7940 | 9940 |
| 315 M | ... 313 | 2500 | 4070 | 5320 | 7320 | 6520 | 8520 | 7850 | 9850 |
| 315 L | ... 316 | 2450 | 4020 | 5230 | 7230 | 6370 | 8370 | 7520 | 9520 |
| | ... 317 | 2320 | 3890 | 5050 | 7050 | 6110 | 8110 | 7350 | 9350 |
| | ... 318 | 2300 | 3870 | 4950 | 6950 | 5950 | 7950 | 7080 | 9080 |

1LA8 and 1PQ8 motors in vertical type of construction – Basic version

| For motors Frame size | Type | Shaft extension facing downwards | | | | 1000 rpm | | 750 rpm | |
|--------------------------|----------|----------------------------------|---------|-----------|---------|-----------|---------|-----------|---------|
| | | 3000 rpm | | 1500 rpm | | Load down | Load up | Load down | Load up |
| | | Load down | Load up | Load down | Load up | | | | |
| | 1LA8 ... | | | | | | | | |
| | 1PQ8 ... | | | | | | | | |
| | 1LL8 ... | N | N | N | N | N | N | N | N |
| 315 | ... 315 | 1900 | 5240 | 2790 | 6930 | 3060 | 8600 | 3850 | 9390 |
| | ... 317 | 1440 | 5680 | 2280 | 7420 | 2390 | 9230 | 3190 | 10030 |
| 355 | ... 353 | 8480 | 5570 | 14550 | 7900 | – | – | – | – |
| | ... 355 | 8180 | 5860 | 14200 | 8240 | 15690 | 10650 | 17840 | 11650 |
| | ... 357 | 7530 | 6500 | 13400 | 9030 | 14540 | 11780 | 16690 | 12780 |
| 400 | ... 403 | 6780 | 7260 | 17640 | 11160 | 19500 | 14160 | 22260 | 15330 |
| | ... 405 | 6330 | 7700 | 17040 | 11750 | 18750 | 14910 | 21510 | 16070 |
| | ... 407 | 5930 | 8100 | 16340 | 12440 | 17900 | 15750 | 20660 | 16910 |
| 450 | ... 453 | 5330 | 9650 | 17720 | 13020 | 19950 | 16250 | 23040 | 17550 |
| | ... 455 | 4730 | 10250 | 17020 | 13720 | 19050 | 17140 | 22140 | 18440 |
| | ... 457 | 4130 | 10840 | 16270 | 14460 | 18000 | 18180 | 21090 | 19480 |

For 1LA8 and 1PQ8 motors in a horizontal type of construction, the admissible cantilever forces are specified with regard to the axial forces, see Page 0/69.

Data is available for 1LL8 motors on request.

Values shown without assuming a cantilever force on the shaft extension.

The admissible loads apply to operation at 50 Hz; please inquire about 60 Hz.

The figures for the admissible axial loads have been calculated assuming that standard coupling types are used for the drive.

For suppliers, see the relevant catalog part, section "Accessories".

Please inquire if the loading direction alternates.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Modular technology

Basic versions

The range of potential applications for the 1LA and 1LG motors can be broadened considerably by mounting the following modules (e.g. the motors can be used as brake motors).

- **1XP8 001** rotary pulse encoder, frame sizes 71 M to 315 L
- Separately driven fan, frame sizes 100 L to 315 L
- Brake, frame sizes 63 to 315 L

The brake must always be mounted in the factory for safety reasons. The rotary pulse encoder and/or the separately driven fan can also be retrofitted.

The degree of protection of the motors with modular technology is IP55. Higher degrees of protection on request.

When a rotary pulse encoder, brake or separately driven fan is mounted, the length of the motor increases by Δl . For an explanation of the additional dimensions and weights, see "Technology", "Dimensions and weights".

1XP8 001 rotary pulse encoder



1XP8 001 rotary pulse encoder

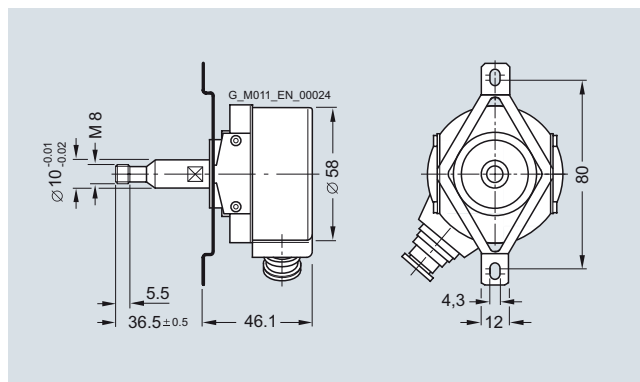
The rotary pulse encoder can be supplied already mounted in an HTL version as **1XP8 001-1** with order code **H57** or in a TTL version as **1XP8 001-2** with order code **H58**. The rotary pulse encoder can only be mounted on a standard non-drive end (NDE), i.e. a second shaft extension or protective cover cannot be supplied.

It can also be ordered separately and retrofitted (please inquire beforehand), Order No. **1XP8 001-1** or **1XP8 001-2** (see catalog part 2 "Standard motors", "Accessories").

The 1XP8 001 rotary pulse encoder is suitable for standard applications. The encoder does not have insulated bearings; therefore, it cannot be recommended at the risk of bearing currents in combination with insulated bearing cartridge NDE, order code L27, or with insulated bearing cartridge DE. For further encoders, see "Special technology" from Page 0/85.

All 1LG4 and 1LG6 motors that are listed in the catalog have an M16 center hole, form DS on the non-drive end (NDE). When a rotary pulse encoder is mounted, the length of the motor increases by Δl . For an explanation of the additional dimensions and weights, see "Technology", "Dimensions and weights".

The rotary pulse encoders of "Modular technology" and "Special technology" are fitted as standard with a protective cover made of plastic. A protective cover made of non-corrosive sheet steel is available for 1LA5, 1LA6 and 1LA7 motors, see "Mechanical protection for encoders", order code **M68**, under "Mechanical design and degrees of protection".



Mounting dimensions of 1XP8 001 rotary pulse encoder

Mounting of encoder at temperatures below $-20\text{ }^{\circ}\text{C}$ and higher than $+40\text{ }^{\circ}\text{C}$ on request.

Technical data of rotary pulse encoders

| | 1XP8 001-1 (HTL version) | 1XP8 001-2 (TTL version) |
|--|--|---|
| Supply voltage U_B | +10 V to +30 V | 5 V $\pm 10\%$ |
| Current input without load | 200 mA | 150 mA |
| Admissible load current per output | max. 100 mA | max. 20 mA |
| Pulses per revolution | 1024 | 1024 |
| Outputs | 2 square-wave pulses A, B – 2 inverted square-wave pulses A, B Zero pulse and inverted zero pulse | 2 square-wave pulses A, B Zero pulse and inverted zero pulse |
| Pulse offset between the two outputs | $90^{\circ} \pm 20\%$ | $90^{\circ} \pm 20\%$ |
| Output amplitude | $U_{\text{High}} > U_B - 3.5\text{ V}$ $U_{\text{Low}} < 3\text{ V}$ | $U_{\text{High}} > 2.5\text{ V}$ $U_{\text{Low}} < 0.5\text{ V}$ |
| Minimum edge interval | 0.8 μs at 160 kHz | 0.45 μs at 300 kHz |
| Edge steepness (without load or cable) | $t_+, t_- \leq 200\text{ ns}$ | $t_+, t_- \leq 100\text{ ns}$ |
| Maximum frequency | 160 kHz | 300 kHz |
| Maximum speed | 9000 rpm | 12000 rpm |
| Temperature range | -20 to $+80\text{ }^{\circ}\text{C}$ | -20 to $+100\text{ }^{\circ}\text{C}$ |
| Degree of protection | IP66 | IP66 |
| Admissible radial cantilever force | 60 N | 60 N |
| Admissible axial force | 40 N | 40 N |
| Termination system | 12-pin connector (mating connector is supplied) | |
| Certification | CSA, UL | CSA, UL |
| Weight | 0.3 kg | 0.3 kg |

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Separately driven fan

The use of a separately driven fan is recommended to increase motor utilization at low speeds and to limit noise generation at speeds significantly higher than the synchronous speed. Both of these results can only be achieved with converter-fed operation. Please inquire about traction and vibratory operation.

The separately driven fan can be supplied already fitted, order code **G17**.

It can also be ordered separately and retrofitted. For selection information and order numbers, see catalog part 2 "Standard motors", "Accessories". A rating plate listing all the important data is fitted to the separately driven fan. Order code **Y81** and

plain text are required for supply voltages outside the rated voltage ranges for 1LG motors. Please note the direction of rotation of the separately driven fan (axial-flow fan) when connecting it. The admissible coolant temperatures for frame sizes 100 to 225¹⁾ are $CT_{min.} -25\text{ °C}$ and $CT_{max.} +65\text{ °C}$ ²⁾, lower/higher coolant temperatures on request. The admissible coolant temperatures for frame sizes 250 to 315 are $CT_{min.} -20\text{ °C}$ and $CT_{max.} +50\text{ °C}$, lower/higher coolant temperatures on request.

When a separately driven fan is mounted, the length of the motor increases by Δl . For an explanation of the additional dimensions and weights, see "Technology", "Dimensions and weights".

Technical data of the separately driven fan (in accordance with tolerance DIN EN 60034-1)

| Frame size | Rated voltage range | | Frequency | Rated speed | Power consumption | Rated current |
|--------------------------|---------------------|---------------------|-----------|-------------|-------------------|---------------|
| | V | | Hz | rpm | kW | A |
| 100 | 1 AC | 230 to 277 | 50 | 2790 | 0.075 | 0.29 |
| | 3 AC | 220 to 290 Δ | 50 | 2830 | 0.086 | 0.27 |
| | 3 AC | 380 to 500 Y | 50 | 2830 | 0.086 | 0.16 |
| | 1 AC | 230 to 277 | 60 | 3280 | 0.094 | 0.28 |
| | 3 AC | 220 to 332 Δ | 60 | 3490 | 0.093 | 0.27 |
| | 3 AC | 380 to 575 Y | 60 | 3490 | 0.093 | 0.16 |
| 112 | 1 AC | 230 to 277 | 50 | 2720 | 0.073 | 0.26 |
| | 3 AC | 220 to 290 Δ | 50 | 2770 | 0.085 | 0.27 |
| | 3 AC | 380 to 500 Y | 50 | 2770 | 0.085 | 0.15 |
| | 1 AC | 230 to 277 | 60 | 3000 | 0.107 | 0.31 |
| | 3 AC | 220 to 332 Δ | 60 | 3280 | 0.094 | 0.28 |
| | 3 AC | 380 to 575 Y | 60 | 3280 | 0.094 | 0.16 |
| 132 | 1 AC | 230 to 277 | 50 | 2860 | 0.115 | 0.40 |
| | 3 AC | 220 to 290 Δ | 50 | 2880 | 0.138 | 0.45 |
| | 3 AC | 380 to 500 Y | 50 | 2880 | 0.138 | 0.24 |
| | 1 AC | 230 to 277 | 60 | 3380 | 0.185 | 0.59 |
| | 3 AC | 220 to 332 Δ | 60 | 3470 | 0.148 | 0.41 |
| | 3 AC | 380 to 575 Y | 60 | 3470 | 0.148 | 0.24 |
| 160 to 225 ³⁾ | 1 AC | 230 to 277 | 50 | 2780 | 0.236 | 0.96 |
| | 3 AC | 220 to 290 Δ | 50 | 2840 | 0.220 | 0.76 |
| | 3 AC | 380 to 500 Y | 50 | 2830 | 0.220 | 0.43 |
| | 3 AC | 220 to 332 Δ | 60 | 3400 | 0.284 | 0.94 |
| | 3 AC | 380 to 575 Y | 60 | 3400 | 0.284 | 0.56 |
| 250 M to 280 M | 3 AC | 200 to 240 Δ | 50 | 2720 | 0.450 | 2.00 |
| | 3 AC | 380 to 420 Y | 50 | 2720 | 0.450 | 1.15 |
| | 3 AC | 440 to 480 Y | 60 | 3320 | 0.520 | 1.05 |
| 315 2-pole | 3 AC | 200 to 240 Δ | 50 | 2750 | 0.650 | 2.85 |
| | 3 AC | 380 to 420 Y | 50 | 2750 | 0.650 | 1.64 |
| | 3 AC | 440 to 480 Y | 60 | 3365 | 0.750 | 1.60 |
| 315 4, 6, 8-pole | 3 AC | 200 to 240 Δ | 50 | 2720 | 0.450 | 2.00 |
| | 3 AC | 380 to 420 Y | 50 | 2720 | 0.450 | 1.15 |
| | 3 AC | 440 to 480 Y | 60 | 3320 | 0.520 | 1.05 |

¹⁾ Separately driven fans with order numbers **1PP...** are used for 1LG motors of frame size 225 and above. The admissible coolant temperatures are $CT_{min.} -20\text{ °C}$ and $CT_{max.} +50\text{ °C}$

²⁾ The admissible coolant temperature for single phase versions (1AC) for frame size 160 and above is $CT_{max.} +50\text{ °C}$.

³⁾ Separately driven fans with order numbers **1PP...** are used for 1LG motors of frame size 225 and above. The values for frame sizes 250 M to 280 M are then applicable.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Mounting of separately driven fan and rotary pulse encoder with separately driven fan for 1LA5, 1LA6, 1LA7 and 1LG motors

| Version | Frame size | Number of poles | Order No. |
|--|-------------------|---|---|
| Separately driven fan incl. mounting parts ¹⁾ | 100 | all | 2CW2 180-8RF54-1AB0 |
| | 112 | all | 2CW2 210-8RF54-1AB1 |
| | 132 | all | 2CW2 250-8RF54-1AB2 |
| | 160 | all | 2CW2 300-8RF54-1AB3 |
| | 180 | all | 2CW2 300-8RF54-1AB4 |
| | 200 | all | 2CW2 300-8RF54-1AB5 |
| | 225 ²⁾ | all | 2CW2 300-8RF54-1AB6 |
| | 250 | all | 1PP9 063-2LA12-Z A11+K50 ³⁾ |
| | 280 | all | 1PP9 063-2LA12-Z A11+K50 ³⁾ |
| | 315 | 2 | 1PP9 070-2LA12-Z A11+K50 ³⁾ |
| 315 | 4 to 8 | 1PP9 063-2LA12-Z A11+K50 ³⁾ | |
| Separately driven fan and rotary pulse encoder 1XP8 001-1 (HTL) ⁴⁾ incl. mounting parts ¹⁾ | 100 | all | 2CW2 180-8RF54-2AB0 |
| | 112 | all | 2CW2 210-8RF54-2AB1 |
| | 132 | all | 2CW2 250-8RF54-2AB2 |
| | 160 | all | 2CW2 300-8RF54-2AB3 |
| | 180 | all | 2CW2 300-8RF54-2AB4 |
| | 200 | all | 2CW2 300-8RF54-2AB5 |
| | 225 ²⁾ | all | 2CW2 300-8RF54-2AB6 |

Brakes

Spring-operated disk brakes are used for the brakes with order code **G26**. Depending on the selected motor, brake types **2LM8** or **KFB** are used. In the standard version, the brakes are supplied for connection to 230 V with rectifier. The supply voltage for brakes is explained under "Modular technology – Additional versions".

For the design of each brake type, the braking time, run-on revolutions, braking energy per braking procedure as well as the service life of the brake linings, see "Configuration of motors with brakes".

When a brake is mounted, the length of the motor increases by Δl . For an explanation of the additional dimensions and weights, see "Technology", "Dimensions and weights". When a brake is mounted on a 1LA7 motor, a larger connection box (GK 127) is used for frame sizes 63 to 90.

2LM8 spring-operated disk brake

This brake is mounted on 1LA5 and 1LA7 motors in the frame sizes 63 to 225 and on 1LG motors in the frame sizes 180 to 225 as standard.

The 2LM8 brake has IP55 degree of protection.

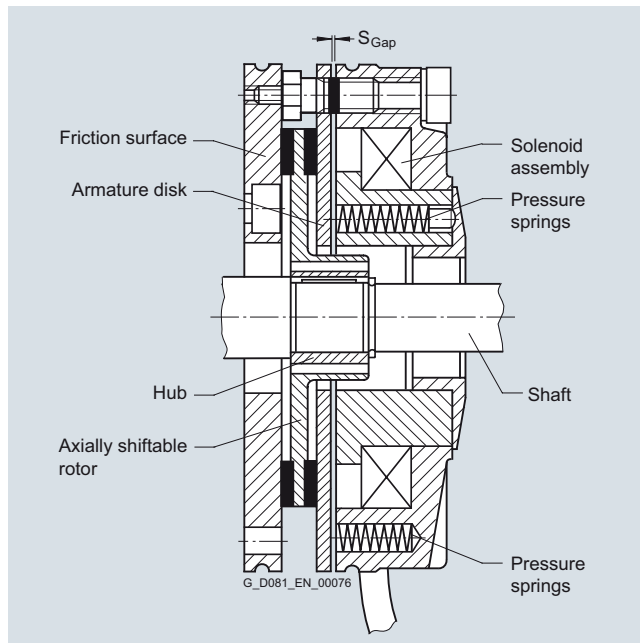
Please inquire if motors with brakes are to be operated below the freezing point or in very humid environments (e.g. close to the sea) with long standstill times.

Design and mode of operation

The brake takes the form of a single-disk brake with two friction surfaces.

The braking torque is generated by friction when pressure is applied by one or more pressure springs in the de-energized state. The brake is released electromagnetically.

When the motor brakes, the rotor which can be axially shifted on the hub or the shaft is pressed via the armature disk against the friction surface by means of the springs. In the braked state, there is a gap S_{Gap} between the armature disk and the solenoid component. To release the brake, the solenoid is energized with DC voltage. The resulting magnetic force pulls the armature disk against the spring force on to the solenoid component. The spring force is then no longer applied to the rotor which can rotate freely.



Design of the 2LM8 spring-operated disk brake

Rating plate

The motors have a second rating plate on the opposite side to the motor rating plate. The brake data is indicated on this second rating plate.

¹⁾ The separately driven fan **2CW2 ...** comprises a complete fan unit with impeller, the separately driven fan **1PP9 ...** only comprises the fan motor without mounting components and impeller.

²⁾ For 1LG motors with separately driven fan with Order No. **1PP9 063-2LA12-Z A11+K50** (weight 4.37 kg).

³⁾ For replacement purposes only.

⁴⁾ Rotary pulse encoder **1XP8001-2** (TTL) on request.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

0

Operating values for spring-operated brakes with standard excitation

| For motor frame size | Brake type | Rated braking torque at 100 rpm | Rated braking torque in relation to rated braking torque at 100 rpm in % for the following speeds | | | Supply voltage | Current/power input ¹⁾ | | | Brake application time t_2 ²⁾ | Brake release time | Brake moment of inertia | Noise level L_p with rated air gap | Service capability of the brake | | | | | |
|----------------------|--|---------------------------------|---|----------|------------|----------------|-----------------------------------|-----|-----|--|--------------------|-------------------------|--------------------------------------|---------------------------------|----|-------------------|--------|------------------------------|--|
| | | | 1500 rpm | 3000 rpm | Max. speed | | V | A | W | | | | | ms | ms | kg m ² | dB (A) | Lifetime of brake lining L | Air gap adjustment required after braking energy L_N |
| | | | | | | | | | | | | | | | | | | | |
| 63 | 2LM8 005-1NA10 2LM8 005-1NA60 2LM8 005-1NA80 | 5 | 87 | 80 | 65 | AC 230 | 0.1 | 20 | 25 | 56 | 0.000013 | 77 | 105 | 16 | | | | | |
| | | | | | | AC 400 | 0.11 | | | | | | | | | | | | |
| | | | | | | DC 24 | 0.83 | | | | | | | | | | | | |
| 71 | 2LM8 005-2NA10 2LM8 005-2NA60 2LM8 005-2NA80 | 5 | 87 | 80 | 65 | AC 230 | 0.1 | 20 | 25 | 56 | 0.000013 | 77 | 105 | 16 | | | | | |
| | | | | | | AC 400 | 0.11 | | | | | | | | | | | | |
| | | | | | | DC 24 | 0.83 | | | | | | | | | | | | |
| 80 | 2LM8 010-3NA10 2LM8 010-3NA60 2LM8 010-3NA80 | 10 | 85 | 78 | 65 | AC 230 | 0.12 | 25 | 26 | 70 | 0.000045 | 75 | 270 | 29 | | | | | |
| | | | | | | AC 400 | 0.14 | | | | | | | | | | | | |
| | | | | | | DC 24 | 1.04 | | | | | | | | | | | | |
| 90 | 2LM8 020-4NA10 2LM8 020-4NA60 2LM8 020-4NA80 | 20 | 83 | 76 | 66 | AC 230 | 0.15 | 32 | 37 | 90 | 0.00016 | 75 | 740 | 79 | | | | | |
| | | | | | | AC 400 | 0.17 | | | | | | | | | | | | |
| | | | | | | DC 24 | 1.25 | | | | | | | | | | | | |
| 100 | 2LM8 040-5NA10 2LM8 040-5NA60 2LM8 040-5NA80 | 40 | 81 | 74 | 66 | AC 230 | 0.2 | 40 | 43 | 140 | 0.00036 | 80 | 1350 | 115 | | | | | |
| | | | | | | AC 400 | 0.22 | | | | | | | | | | | | |
| | | | | | | DC 24 | 1.67 | | | | | | | | | | | | |
| 112 | 2LM8 060-6NA10 2LM8 060-6NA60 2LM8 060-6NA80 | 60 | 80 | 73 | 65 | AC 230 | 0.25 | 53 | 60 | 210 | 0.00063 | 77 | 1600 | 215 | | | | | |
| | | | | | | AC 400 | 0.28 | | | | | | | | | | | | |
| | | | | | | DC 24 | 2.1 | | | | | | | | | | | | |
| 132 | 2LM8 100-7NA10 2LM8 100-7NA60 2LM8 100-7NA80 | 100 | 79 | 72 | 65 | AC 230 | 0.27 | 55 | 50 | 270 | 0.0015 | 77 | 2450 | 325 | | | | | |
| | | | | | | AC 400 | 0.31 | | | | | | | | | | | | |
| | | | | | | DC 24 | 2.3 | | | | | | | | | | | | |
| 160 | 2LM8 260-8NA10 2LM8 260-8NA60 2LM8 260-8NA80 | 260 | 75 | 68 | 65 | AC 230 | 0.5 | 100 | 165 | 340 | 0.0073 | 79 | 7300 | 935 | | | | | |
| | | | | | | AC 400 | 0.47 | | | | | | | | | | | | |
| | | | | | | DC 24 | 4.2 | | | | | | | | | | | | |
| 180 | 2LM8 315-0NA10 2LM8 315-0NA60 2LM8 315-0NA80 | 315 | 75 | 68 | 65 | AC 230 | 0.5 | 100 | 152 | 410 | 0.0073 | 79 | 5500 | 470 | | | | | |
| | | | | | | AC 400 | 0.56 | | | | | | | | | | | | |
| | | | | | | DC 24 | 4.2 | | | | | | | | | | | | |
| 200, 225 | 2LM8 400-0NA10 2LM8 400-0NA60 2LM8 400-0NA80 | 400 | 73 | 68 | 65 | AC 230 | 0.55 | 110 | 230 | 390 | 0.0200 | 93 | 9450 | 1260 | | | | | |
| | | | | | | AC 400 | 0.61 | | | | | | | | | | | | |
| | | | | | | DC 24 | 4.6 | | | | | | | | | | | | |

¹⁾ For 400 V AC and for 24 V DC, the power can deviate by up to +10 % as a function of the selected supply voltage.

²⁾ The specified switching times are valid for switching on the DC side with a rated release travel and with the coil already warm. They are average values which may vary depending on factors such as the rectifier type and the release travel. The brake application time for switching on the AC side, for example, is approximately 6 times longer than for switching on the DC side.

Lifetime of the brake lining

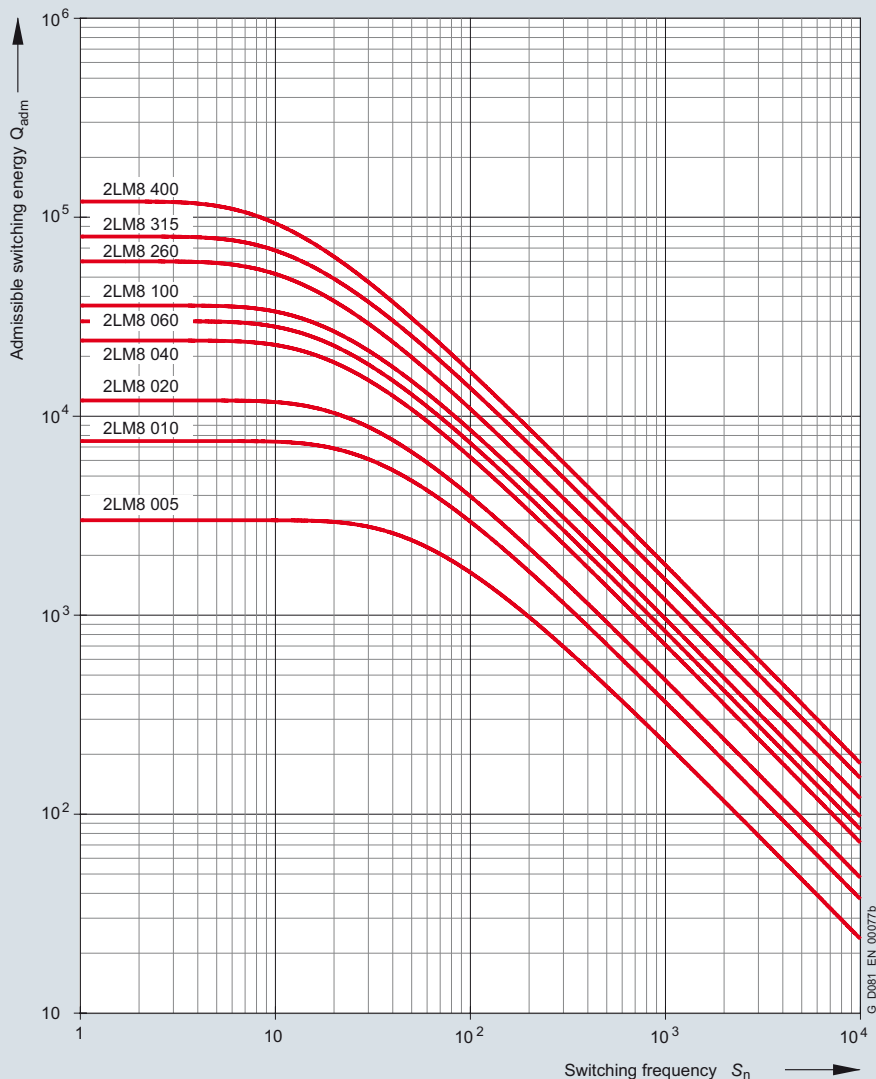
The braking energy L_N up to when the brake should be adjusted, depends on various factors. The main influencing factors include the masses to be braked, the operating speed, the switching frequency and therefore the temperature at the frictional surfaces. It is therefore not possible to specify a value for the friction energy until readjustment that is valid for all operating conditions.

The specific wear on the friction surfaces (volume of wear per unit of friction energy) is approximately 0.05 to 2 cm³/kWh when the brake is used as a service brake.

Admissible speeds

The maximum admissible speeds from which emergency stops can be made, are listed in the table. These speeds should be considered as recommended values and must be checked under actual operating conditions.

The maximum admissible friction energy depends on the switching frequency and is shown for the various brakes in the figure "Admissible switching energy as a function of the switching frequency". Increased wear can be expected when the brakes are used for emergency stops.



IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

0

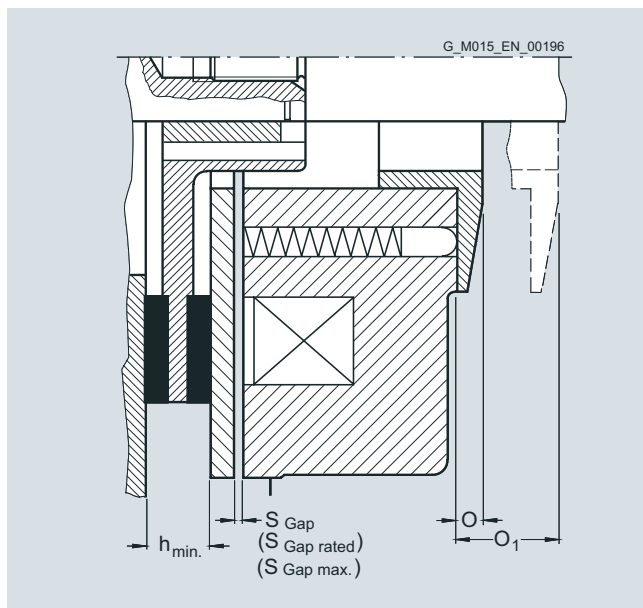
| For motor frame size | Brake type | Admissible speeds | | | Changing the braking torque | | | Readjusting the air gap | | |
|----------------------|------------------------|--|---|-------------------|-----------------------------|------------------------|---------------------|--------------------------------------|------------------------------------|--|
| | | Max. operating rpm if max. operating energy utilised | Max. no-load rpm with emergency stop function | | Reduction per notch | Dim. "O ₁ " | Min. braking torque | Rated air gap S _{Gap Rated} | Max. air gap S _{Gap max.} | Min. rotor thickness h _{min.} |
| | | | Horizontal mounting | Vertical mounting | | | | | | |
| | | rpm | rpm | rpm | Nm | mm | Nm | mm | mm | mm |
| 63 | 2LM8 005-1NA .. | 3000 | 6000 | 6000 | 0.17 | 7.0 | 3.7 | 0.2 | 0.4 | 4.5 |
| 71 | 2LM8 005-2NA .. | 3000 | 6000 | 6000 | 0.17 | 7.0 | 3.7 | 0.2 | 0.4 | 4.5 |
| 80 | 2LM8 010-3NA .. | 3000 | 6000 | 6000 | 0.35 | 8.0 | 7.0 | 0.2 | 0.45 | 5.5 |
| 90 | 2LM8 020-4NA .. | 3000 | 6000 | 6000 | 0.76 | 7.5 | 18.2 | 0.2 | 0.55 | 7.5 |
| 100 | 2LM8 040-5NA .. | 3000 | 6000 | 6000 | 1.29 | 12.5 | 21.3 | 0.3 | 0.65 | 8.0 |
| 112 | 2LM8 060-6NA .. | 3000 | 6000 | 6000 | 1.66 | 11.0 | 32.8 | 0.3 | 0.75 | 7.5 |
| 132 | 2LM8 100-7NA .. | 3000 | 5300 | 5000 | 1.55 | 13.0 | 61.1 | 0.3 | 0.75 | 8.0 |
| 160 | 2LM8 260-8NA .. | 1500 | 4400 | 3200 | 5.6 | 17.0 | 157.5 | 0.4 | 1.2 | 12.0 |
| 180 | 2LM8 315-0NA .. | 1500 | 4400 | 3200 | 5.6 | 17.0 | 178.4 | 0.4 | 1.0 | 12.0 |
| 200, 225 | 2LM8 400-0NA .. | 1500 | 3000 | 3000 | 6.15 | 21.0 | 248.7 | 0.5 | 1.5 | 15.5 |

Changing the braking torque

The brake is supplied with the braking torque already set. For 2LM8 brakes, the torque can be reduced to the dimension O₁ by unscrewing the adjusting ring with a hook spanner. The braking torque changes by the values shown in the above table for each notch of the adjusting ring.

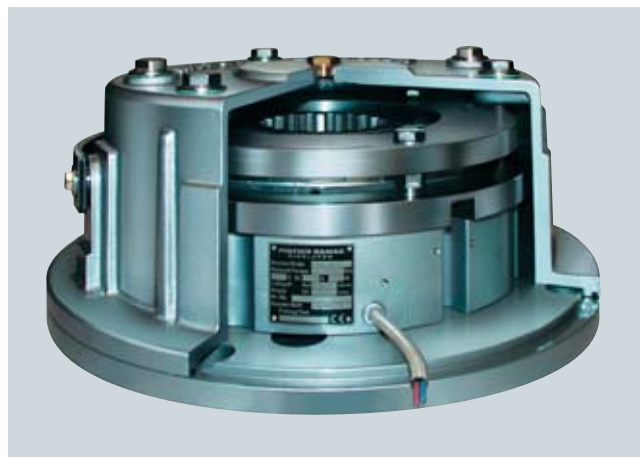
Readjusting the air gap

Under normal operating conditions, the brake is practically maintenance-free. The air gap S_{Gap} must only be checked at regular intervals if the application requires an extremely large amount of frictional energy and readjusted to the rated gap S_{Gap Rated} at the latest when the maximum air gap S_{Gap max.} is reached.



KFB spring-operated brake

This brake is the standard brake for 1LG motors in frame sizes 250 to 315. For frame sizes 180 to 225, apart from the standard brake 2LM8, KFB brakes can also be supplied. Special brake selections are available on request.



KFB spring-operated brake

The KFB solenoid double-disk spring-operated brake is a safety brake which brakes the motor if the supply is disconnected (power failure, emergency stop). The KFB brake, IP65 degree of protection, is mainly used for electric motors for traversing, cross-traversing and lifting gear in cranes as well as for special industrial applications.

Design and mode of operation

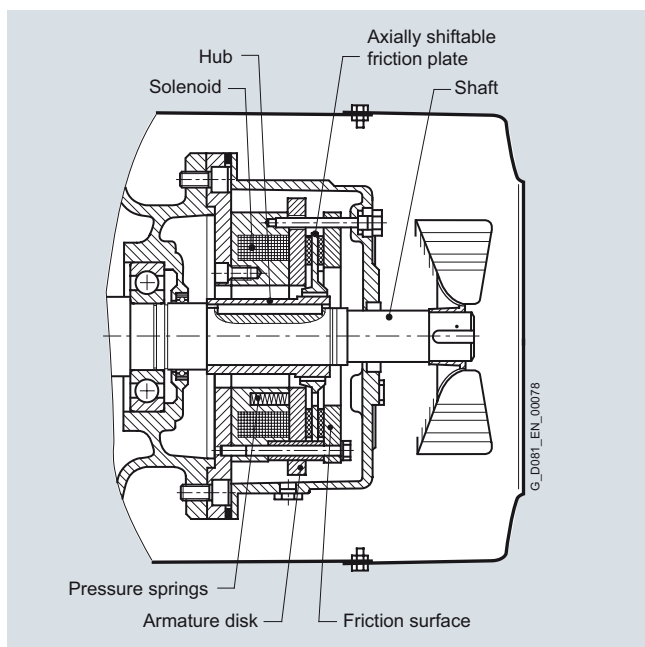
When the brake current is switched on, an electromagnetic field develops which overcomes the spring force of the brake. The corresponding modules, including the motor shaft, can rotate freely. The brake is released. If the brake current is switched off or if there is a power failure, the electromagnetic field of the brake disappears. The mechanical braking energy is transferred to the motor shaft. The motor is braked.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

0



Rating plate

The motors have a rating plate that indicates the brake data on the opposite side to the motor rating plate.

Other characteristics of the KFB brake

- High IP65 degree of protection
- Corrosion-resistant in seawater and in the tropics.
- The brake is a dynamic brake, not simply a holding brake. For this reason there is less wear, especially in the case of emergency stops (commissioning).
- High wear reserves – repeated stepless air gap readjustment is possible. This results in extremely long operating times and low service and operating costs.
- The function and wear can be monitored with microswitches and proximity switches. Microswitch On/Off is standard for LG motors. Anti-condensation heating is possible as an option.
- Fully functional brake for enclosure acceptance test. Visual inspection of brake is possible during operation.
- The brake (air gap) can be adjusted in the factory, for example, and mounted on the motor without further adjustments.

The wear parts can be replaced without great outlay. After the housing has been opened (three screws), it is easy to replace the friction plate. It is not necessary to disassemble the entire brake.

Overview of brake selection for 1LG motors

| | | For motor Frame size | | | | | |
|---|----------------------|-------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | | 180 ¹⁾ | 200 ¹⁾ | 225 ¹⁾ | 250 ²⁾ | 280 ²⁾ | 315 ²⁾ |
| Number of poles | | 2 to 8 | 2 to 8 | 2 to 8 | 2 to 8 | 4 to 8 | 4 to 8 |
| NDE bearing | | 6310C3 | 6312C3 | 6313C3 | 6215C3 | 6317C3 | 6319C3 |
| Flange bearing plate for NDE brake mounting | | A300 | A350 | A350 | A400 | A450 | A550 |
| Max. diameter for 2nd. shaft extension | | 48k6 | 55m6 | 55m6 | 48m6 | 65m6 | 70m6 |
| Brake type | | KFB 25 | KFB 40 | KFB 40 | KFB 63 | KFB 100 | KFB 160 |
| Braking torque | Nm | 250 | 400 | 400 | 630 | 1000 | 1600 |
| n_{max} – IM B3 | rpm | 6000 | 5500 | 5500 | 4700 | 4000 | 3600 |
| n_{max} – IM V1 | rpm | 6000 | 5500 | 5500 | 4700 | 4000 | 3600 |
| Output at 110 V DC | W | 158 | 196 | 196 | 220 | 307 | 344 |
| Current at 230 V AC (207 V DC coil voltage) | A | 0.77 | 0.91 | 0.91 | 1 | 1.53 | 1.64 |
| Current at 400 V AC (180 V DC coil voltage) | A | 0.8 | 1.18 | 1.18 | 1.25 | 1.8 | 2.1 |
| Current at 110 V DC | A | 1.44 | 1.78 | 1.78 | 2 | 2.79 | 3.13 |
| Current at 24 V DC | A | 5.21 | 6.92 | 9.62 | 8.17 | 12.2 | 12.8 |
| Application time t_2 | ms | 70 | 80 | 80 | 110 | 125 | 180 |
| Release time | ms | 240 | 250 | 250 | 340 | 370 | 500 |
| Brake moment of inertia | Kg m ² | 0.0048 | 0.0068 | 0.0068 | 0.0175 | 0.036 | 0.050 |
| Lifetime of brake lining L | Nm · 10 ⁶ | 3600 | 3110 | 3110 | 4615 | 7375 | 10945 |
| Air gap adjustment required after braking energy L_N | Nm · 10 ⁶ | 810 | 935 | 935 | 1185 | 2330 | 3485 |

¹⁾ The standard brake for frame sizes 180 to 225 is the 2LM8 brake. KFB brake on request.

²⁾ The standard brake for frame sizes 250 to 315 is the KFB brake.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Configuration of motors with brakes

Braking time

The time it takes the motor to come to a standstill comprises two components:

- The application time of the brake t_2
- The braking time t_{Br}

$$t_{Br} = \frac{J \cdot n_{rated}}{9.55 \cdot (T_B \pm T_L)}$$

- t_{Br} Braking time in s
 J Total moment of inertia in kgm^2
 n_{Rated} Rated speed of the motor with brake in rpm
 T_B Rated braking torque in Nm
 T_L Average load torque in Nm
 (if T_L supports braking, T_L is positive)

Braking energy per braking operation Q_{adm}

The braking energy per braking operation in Nm comprises the energy of the moments of inertia to be braked Q_{Kin} and the energy Q_L , which must be applied in order to brake against a load torque.

$$Q_{adm} = Q_{Kin} + Q_L$$

- The energy of the moments of inertia in Nm

$$Q_{Kin} = \frac{J \cdot n_{rated}^2}{182.4}$$

- n_{Rated} Rated speed before braking in rpm
 J Total moment of inertia in kgm^2

- The braking energy in Nm against a load torque:

$$Q_L = \frac{\pm T_L \cdot n_{rated} \cdot t_{Br}}{19.1}$$

- T_L average load torque in Nm
 T_L is positive if it acts against the brake
 T_L is negative if it supports the brake

Run-on revolutions U

The number of run-on revolutions U of the motor with brake can be calculated as follows:

$$U = \frac{n_{rated}}{60} \left(t_2 + \frac{t_{Br}}{2} \right)$$

- t_2 Brake application time in ms

Lifetime of the brake lining L and readjustment of the air gap

The brake lining wears due to friction which increases the air gap and the release time for the brake at standard excitation.

When the brake lining is worn out, it can be replaced easily.

In order to calculate the lifetime of the brake lining in terms of operations S_{max} , then the lifetime of the brake lining L in Nm must be divided by the braking energy Q_{adm} :

$$S_{max} = \frac{L}{Q_{adm}}$$

The interval between adjustments N in can be calculated in terms of operations by dividing the braking energy L_N which the brake can output until it is necessary to readjust the working air gap by Q_{adm} :

$$N = \frac{L_N}{Q_{adm}}$$

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

0

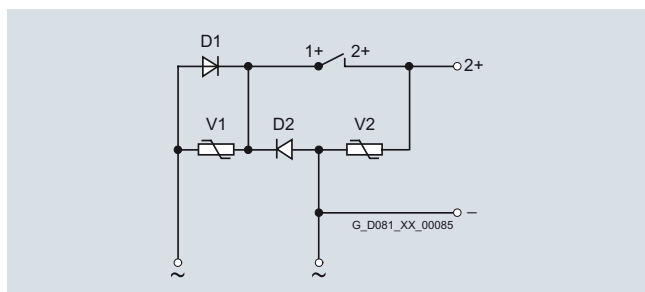
Additional versions

Depending on the selected motor, brake types 2LM8 or KFB are used.

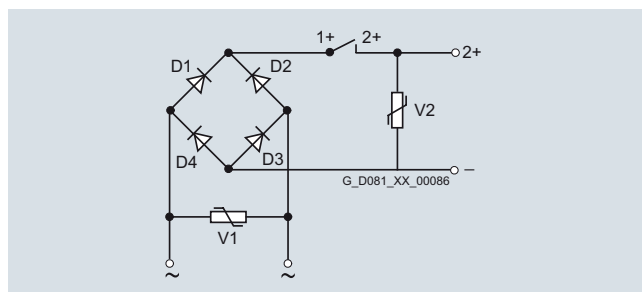
| 2LM8 spring-operated disk brake | KFB spring-operated brake |
|---|--|
| Motor series | |
| This brake is mounted on 1LA5 and 1LA7 motors in the frame sizes 63 to 225 and on 1LG motors in the frame sizes 180 to 225 as standard. | This brake is the standard brake for 1LG motors in frame sizes 250 to 315. |
| Voltage and frequency | |
| The solenoids and the rectifiers of the brakes are designed for connection to the following voltages: 1 AC 50 Hz 230 V $\pm 10\%$ or 1 AC 60 Hz 230 V $\pm 10\%$ | The solenoids and the rectifiers of the brakes are designed for connection to the following voltages: 1 AC 50 Hz 230 V $\pm 10\%$ |
| When 60 Hz is used, the voltage for the brake must not be increased! | When 60 Hz is used, the voltage for the brake must not be increased! |
| The brake can also be supplied for other voltages: | The brake can also be supplied for other voltages: |
| <ul style="list-style-type: none"> Brake supply voltage: 24 V DC Order code C00 Brake supply voltage: 400 V AC (directly at the terminal strip) Order code C01 Brake supply voltage: 180 V DC, for operation on MM411 ECOFAST (directly at the terminal strip) Order code C02 | <ul style="list-style-type: none"> Brake supply voltage: 24 V DC Order code C00 Brake supply voltage: 400 V AC (directly at the terminal strip) Order code C01 |
| Order codes C00 , C01 and C02 may only be used in conjunction with order code G26 . | The codes C00 and C01 may only be used in conjunction with Code G26 . |
| Connections | |
| Labeled terminals are provided in the main connection box of the motor to connect the brake. | The motors are equipped with an additional connection box on the side of the main connection box that is used specifically for connection of the brake. KFB brakes are connected through a standard bridge or half-wave rectifier. See the circuit diagrams below. |
| The AC voltage for the brake excitation winding is connected to the two free terminals of the rectifier block (~). | A special circuit is not required. Optimal switching times are achieved without the need to use special circuits. |
| The brake can be released when the motor is at a standstill by separately exciting the solenoid. In this case, an AC voltage must be connected at the rectifier block terminals. The brake remains released as long as this voltage is present. | |
| The rectifier is protected against overvoltages by varistors in the input and output circuits. | |
| For 24 V DC brakes, the brake terminals are directly connected to the DC voltage source. | |
| See the circuit diagrams below. | |
| Fast brake application | |
| If the brake is disconnected from the line supply, the brake is applied. The application time for the brake disk is delayed as a result of the inductance of the solenoid (shutdown on the AC side). This results in a considerable delay before the brake is mechanically applied. In order to achieve short brake application times, the circuit must be interrupted on the DC side. To realize this, the wire jumpers, located between contacts 1+ and 2+ at the rectifier are removed and replaced by the contact of an external switch (see circuit diagrams below). | Not available for the KFB brake. |
| For 1LG motors with a 2LM8 brake, "Fast application of the brake" is not possible in the standard version. Please contact your local Siemens office for advice. | |
| Manual brake release with lever | |
| The brakes can be supplied with a mechanical manual release with lever. Order code K82 . | The brake can be released manually with screws as standard. Mechanical manual release with a lever can be ordered with Order code K82 . |
| The dimensions of the brake lever depend on the motor frame size and can be read from the dimension drawing generator for motors in the SD configurator tool for low-voltage motors. | The dimensions of the brake lever depend on the motor frame size and can be read from the dimension drawing generator for motors in the SD configurator tool for low-voltage motors. |

Bridge rectifier / half-wave rectifier

Brakes are connected through a standard bridge or half-wave rectifier or directly to the 2LM8 or KFB brake. See the circuit diagrams below.



Half-wave rectifier 400 V AC



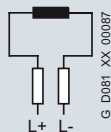
Bridge rectifier, 230 V AC

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

0



Brake connection for 24 V DC

Combinations of basic versions

The following combinations of modular technology can be supplied by the factory when ordered using the predefined order codes:

Mounting of brake ¹⁾ and 1XP8 001 rotary pulse encoder

The brake (order code G26) and the rotary pulse encoder 1XP8 001-1 HTL (order code H57) can be supplied already mounted in combination.

Order code **H62**.

The brake (order code G26) and the rotary pulse encoder 1XP8 001-2 TTL (order code H58) can be supplied already mounted in combination.

Order code **H98**.

Mounting of separately driven fan and 1XP8 001 rotary pulse encoder

The separately driven fan (order code G17) and the rotary pulse encoder 1XP8 001-1 HTL (order code H57) can be supplied already mounted in combination.

Order code **H61**.

The separately driven fan (order code G17) and the rotary pulse encoder 1XP8 001-2 TTL (order code H58) can be supplied already mounted in combination.

Order code **H97**.

Mounting of brake ¹⁾ and separately driven fan

The brake (order code G26) and separately driven fan (order code G17) can be supplied already mounted in combination.

Order code **H63**.

Mounting of brake, ¹⁾ separately driven fan and 1XP8 001 rotary pulse encoder

The brake (order code G26), the separately driven fan (order code G17) and the rotary pulse encoder 1XP8 001-1 HTL (order code H57) can be supplied already mounted in combination.

Order code **H64**.

The brake (order code G26), the separately driven fan (order code G17) and the rotary pulse encoder 1XP8 001-2 TTL (order code H58) can be supplied already mounted in combination.

Order code **H99**.

When a rotary pulse encoder, brake or separately driven fan is mounted, the length of the motor increases by Δl . For an explanation of the additional dimensions and weights, see "Technology", "Dimensions and weights".

¹⁾ The spring-operated brake 2LM8 (see from Page 0/77) is mounted as standard on 1LA5 and 1LA7 motors in the frame sizes 63 to 225 and on 1LG motors in frame sizes 180 to 225.
For 1LG motors in the frame sizes 250 to 315 the spring-operated brake KFB is the standard brake (see from Page 0/80).

General technical data

Special technology

Prepared for mounting MICROMASTER Integrated (MMI)

Converter mounting is possible for motor series 1LA7 frame sizes 56 to 132 for 230 V Δ /400 VY if the MICROMASTER DA 51.3 type is specified. Not possible for motors with special insulation for 690 V.

Order code **H15**

Brake (specially for 1LA8 and 1PQ8 motor series)

For motor series 1LA8 and 1PQ8, a solenoid double-disk spring-operated brake of type NFA (from Stromag) can be supplied at the drive end (DE). The brake can only be used as a holding brake. See the table below for values for the holding brake torque.

Order code **H47**, price on request

| For motors | Brake size | Holding brake torque T_H |
|-------------------|------------|-------------------------------|
| 1LA8, 1PQ8 | NFA | Nm |
| 31 . | 160/250 | 2500 |
| 35 . | 160/250 | 2500 |
| | 250/400 | 4000 |
| 40 . | 250/400 | 4000 |
| | 400/630 | 6300 |
| 45 . | 400/630 | 6300 |
| | 630/1000 | 10000 |

When a brake is mounted, the length of the motor increases by Δl . For an explanation of the additional dimensions and weights, see "Technology", "Dimensions and weights".

The brake is generally procured and mounted by the factory.

Further information is available on request.

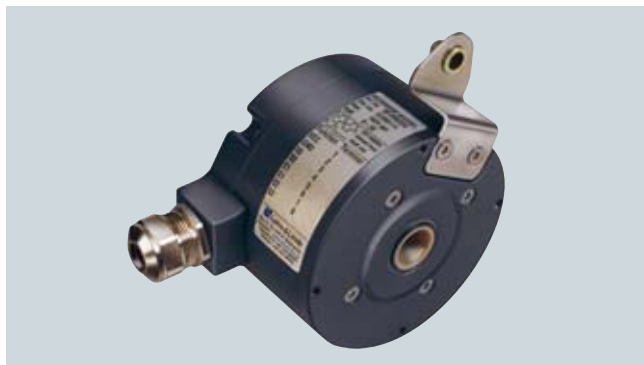
The "Special technology" comprises rotary pulse encoders for frame sizes 100 L to 450 of 1LA5, 1LA6, 1LA7, 1LA8 and 1LG4/6 motors. Please inquire about the specified rotary pulse encoders for 1LA9 motors.

The order codes listed under "Special technology" cannot be combined in the case of 1LA motors with order codes from the modular technology range.

For 1LG motors, order codes **G17** (mounting of separately driven fan), **G26** (mounting of brake) and **H63** (mounting of brake and separately driven fan) from the modular technology range can be combined with the "Special technology" rotary pulse encoders.

When a rotary pulse encoder is mounted, the length of the motor increases by Δl . For an explanation of the additional dimensions and weights, see "Technology", "Dimensions and weights".

LL 861 900 220 rotary pulse encoder



With its rugged construction, this rotary pulse encoder is also suitable for difficult operating environments. It is resistant to shock and vibration and has insulated bearings.

The LL 861 900 220 rotary pulse encoder can be supplied already mounted.

Order code **H70**.

The LL 861 900 220 rotary pulse encoder can be retrofitted. The motor must be prepared for this. When the motor is ordered, order code **H78** must be specified. The rotary pulse encoder is not part of the scope of supply in this case. The mounting components required will be supplied. For motors in Zone 2 (Ex n), a special rotary pulse encoder can be supplied (please inquire).

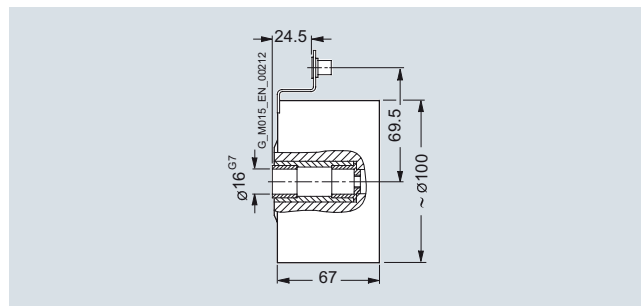
The version of the rotary pulse encoder with a diagnostics system (ADS) can be supplied by Leine and Linde.

Manufacturer:

Leine and Linde (Germany) GmbH
Bahnhofstraße 36
73430 Aalen
Tel. +49 (0)73 61-78093-0
Fax +49 (0)73 61-78093-11

<http://www.leinelinde.com>

e-mail: info@leinelinde.se



Mounting dimensions of LL 861 900 220 rotary pulse encoder

Technical data for LL 861 900 220 (HTL version)

Mounting of encoder at temperatures below $-20\text{ }^{\circ}\text{C}$ and higher than $+40\text{ }^{\circ}\text{C}$ on request.

| Supply voltage U_B | 9 V to +30 V |
|--------------------------------------|--|
| Current input without load | max. 80 mA |
| Admissible load current per output | 40 mA |
| Pulses per revolution | 1024 |
| Outputs | 6 short-circuit proof square-wave pulses A, A', B, B', 0, 0', High Current HTL |
| Pulse offset between the two outputs | $90^{\circ} \pm 25^{\circ}$ el. |
| Output amplitude | $U_{\text{High}} > U_B - 4\text{ V}$ $U_{\text{Low}} < 2.5\text{ V}$ |
| Mark space ratio | 1:1 $\pm 10\%$ |
| Edge steepness | 50 V/ μs (without load) |
| Maximum frequency | 100 kHz for 350 m cable |
| Admissible speed | 4000 rpm |
| Temperature range | -20 to $+80\text{ }^{\circ}\text{C}$ |
| Degree of protection | IP65 |
| Admissible radial cantilever force | 300 N |
| Admissible axial force | 100 N |
| Termination system | Terminal strips in encoder, cable connection M20 x 1.5 radial |
| Weight | Approx. 1.3 kg |

Mounting a special type of rotary pulse encoder

For motor series 1LA8, 1PQ8 and 1LL8, if the encoder designation is specified in the order, a special type of rotary pulse encoder can be supplied already mounted, provided the technical executability is given. In this case, the encoder is procured by the factory. When ordering, specify the rotary pulse encoder in plain text.

Order code **Y70**. Price and availability on request.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

HOG9 D 1024 I rotary pulse encoder



The encoder is fitted with insulated bearings.

The HOG 9 D 1024 I rotary pulse encoder can be supplied already mounted.

Order code **H72**.

The HOG 9 D 1024 I rotary pulse encoder can be retrofitted. The motor must be prepared for this. When the motor is ordered, order code **H79** must be specified. The rotary pulse encoder is not part of the scope of supply in this case. The mounting components required will be supplied.

Manufacturer:

Baumer Hübner GmbH

Planufer 92b

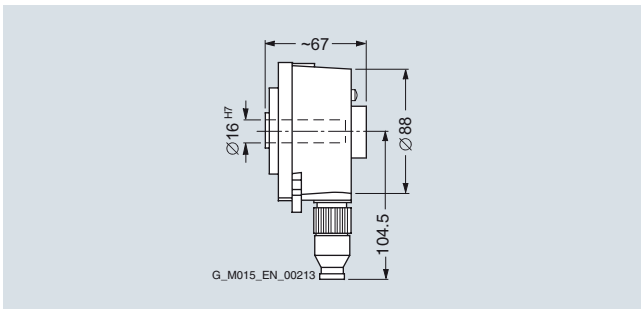
10967 Berlin

Tel. +49 (0)30-6 90 03-0

Fax +49 (0)30-6 90 03-1 04

<http://www.baumerhuebner.com>

e-mail: info@baumerhuebner.com



HOG 9 D 1024 I rotary pulse encoder

Technical data for HOG 9 D 1024 I rotary pulse encoder (HTL version)

Mounting of encoder at temperatures below -20 °C and higher than $+40\text{ °C}$ on request.

| | |
|--|---|
| Supply voltage U_B | +9 V to +30 V |
| Current input without load | 50 to 100 mA |
| Admissible load current per output | 60 mA, 300 mA (peak) |
| Pulses per revolution | 1024 |
| Outputs | 4 short-circuit proof square-wave pulses A, B and A', B' |
| Pulse offset between the two outputs | $90^\circ \pm 20\%$ |
| Output amplitude | $U_{\text{High}} \geq U_B - 3.5\text{ V}$ $U_{\text{Low}} \leq 1.5\text{ V}$ |
| Mark space ratio | $1:1 \pm 20\%$ |
| Edge steepness | $10\text{ V}/\mu\text{s}$ |
| Maximum frequency | 120 kHz |
| Maximum speed | 7000 rpm |
| Temperature range | $-30\text{ to }+100\text{ °C}$ |
| Degree of protection | IP56 |
| Admissible radial cantilever force | 300 N |
| Admissible axial force | 200 N |
| Termination system | Radial plug (mating connector is part of the scope of supply) |
| Mech. design acc. to Hübner Ident. No. | 73 522 E |
| Weight | Approx. 0.7 kg |

HOG 10 D rotary pulse encoder



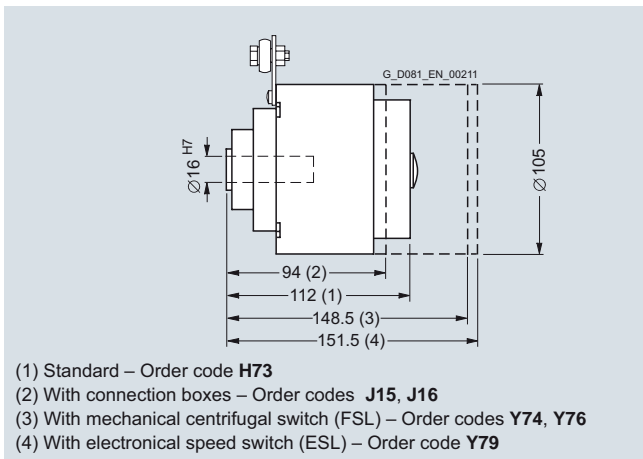
This encoder is extremely rugged and is therefore suitable for difficult operating conditions. It is fitted with insulated bearings.

The HOG 10 D rotary pulse encoder can be supplied already mounted in different versions. The manufacturer is the same; only the technical data and the respective dimensions and weights change.

Mounting of encoder at temperatures below -20 °C and higher than $+40\text{ °C}$ on request.

Manufacturer:
Baumer Hübner GmbH
Planufer 92b
10967 Berlin
Tel. +49 (0)30-6 90 03-0
Fax +49 (0)30-6 90 03-1 04

<http://www.baumerhuebner.com>
e-mail: info@baumerhuebner.com



- (1) Standard – Order code **H73**
(2) With connection boxes – Order codes **J15, J16**
(3) With mechanical centrifugal switch (FSL) – Order codes **Y74, Y76**
(4) With electronic speed switch (ESL) – Order code **Y79**

HOG 10 D 1024 rotary pulse encoder

HOG 10 D 1024 I rotary pulse encoder

The rotary pulse encoder HOG 10 D 1024 I can be supplied already mounted.

Order code **H73**

The rotary pulse encoder HOG 10 D 1024 I can also be retrofitted to a motor prepared for this. When the motor is ordered, order code **H80** must be specified. The rotary pulse encoder is not part of the scope of supply in this case. The mounting components required will be supplied.

Technical data for HOG 10 D 1024 I (HTL version)

| | |
|--|---|
| Supply voltage U_B | +9 V to +30 V |
| Current input without load | Approx. 100 mA |
| Admissible load current per output | 60 mA, 300 mA (peak) |
| Pulses per revolution | 1024 |
| Outputs | 4 short-circuit proof square-wave pulses A, B and A', B' |
| Pulse offset between the two outputs | $90^\circ \pm 20\%$ |
| Output amplitude | $U_{High} \geq U_B - 3.5\text{ V}$ $U_{Low} \leq 1.5\text{ V}$ |
| Mark space ratio | $1:1 \pm 20\%$ |
| Edge steepness | $10\text{ V}/\mu\text{s}$ |
| Maximum frequency | 120 kHz |
| Maximum speed | 7000 rpm |
| Temperature range | $-40\text{ to }+100\text{ °C}$ |
| Degree of protection | IP66 |
| Admissible radial cantilever force | 400 N |
| Admissible axial force | 250 N |
| Termination system | Terminals, cable connection M20 x 1.5 |
| Mech. design acc. to Hübner Ident. No. | 74 055 E |
| Weight | Approx. 1.6 kg |

Rotary pulse encoder HOG 10 DN 1024 I, connection box protection against moisture

The rotary pulse encoder HOG 10 DN 1024 I can be supplied with the already mounted connection box in version with protection against moisture (IP56).

Order code **J15**

Technical data HOG 10 DN 1024 I (HTL version), connection box protection against moisture

| | |
|---|---|
| Supply voltage U_B | +9 V to +30 V |
| Current input without load | Approx. 100 mA |
| Admissible load current per output | 60 mA, 300 mA peak |
| Pulses per revolution | 1024 |
| Outputs | 6 short-circuit proof square-wave pulses A, B and A', B', N, N' |
| Pulse offset between the two outputs | $90^\circ \pm 20\%$ |
| Output amplitude | $U_{High} \geq U_B - 3.5\text{ V}$ $U_{Low} \leq 1.5\text{ V}$ |
| Mark space ratio | $1:1 \pm 20\%$ |
| Edge steepness | $10\text{ V}/\mu\text{s}$ |
| Maximum frequency | 120 kHz |
| Maximum speed | 7000 rpm |
| Temperature range | $-40\text{ to }+100\text{ °C}$ |
| Degree of protection | IP66 |
| Max. admissible radial cantilever force | 400 N |
| Max. admissible axial force | 250 N |
| Termination system | Terminals, cable connection M20 x 1.5 |
| Mech. design acc. to Hübner Ident. No. | 74 007E-HOG10 |
| Weight | Approx. 1.6 kg |

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

Rotary pulse encoder HOG 10 DN 1024 I, connection box protection against dust

The rotary pulse encoder HOG 10 DN 1024 I can be supplied with the already mounted connection box in version with protection against dust (IP65).

Order code **J16**

Technical data HOG 10 DN 1024 I (HTL version), connection box protection against dust

| Supply voltage U_B | +9 V to +30 V |
|---|---|
| Current input without load | Approx. 100 mA |
| Admissible load current per output | 60 mA, 300 mA peak |
| Pulses per revolution | 1024 |
| Outputs | 6 short-circuit proof square-wave pulses A, B and A', B', N, N' |
| Pulse offset between the two outputs | 90° ±20 % |
| Output amplitude | $U_{High} \geq U_B - 3.5 \text{ V}$ $U_{Low} \leq 1.5 \text{ V}$ |
| Mark space ratio | 1:1 ±20 % |
| Edge steepness | 10 V/μs |
| Maximum frequency | 120 kHz |
| Maximum speed | 7000 rpm |
| Temperature range | -40 to +100 °C |
| Degree of protection | IP66 |
| Max. admissible radial cantilever force | 400 N |
| Max. admissible axial force | 250 N |
| Termination system | Terminals, cable connection M20 x 1.5 |
| Mech. design acc. to Hübner Ident. No. | 74 006E-HOG10 |
| Weight | Approx. 1.6 kg |

Rotary pulse encoder HOG 10 DN 1024 I + FSL, (speed ... rpm), connection box protection against moisture

The rotary pulse encoder HOG 10 DN 1024 I can be supplied with the already mounted connection box in version with protection against moisture (IP56) and mechanical centrifugal switch (FSL).

An operating speed of the centrifugal switch within the admissible range must be specified in plain text, see technical data of the rotary pulse encoder.

Order code **Y74**

Technical data HOG 10 DN 1024 I (HTL version) + FSL, (speed rpm), connection box protection against moisture

| Supply voltage U_B | +9 V to +30 V |
|---|---|
| Current input without load | Approx. 100 mA |
| Admissible load current per output | 60 mA, 300 mA peak |
| Pulses per revolution | 1024 |
| Outputs | 6 short-circuit proof square-wave pulses A, B and A', B', N, N' |
| Pulse offset between the two outputs | 90° ±20 % |
| Output amplitude | $U_{High} \geq U_B - 3.5 \text{ V}$ $U_{Low} \leq 1.5 \text{ V}$ |
| Mark space ratio | 1:1 ±20 % |
| Edge steepness | 10 V/μs |
| Maximum frequency | 120 kHz |
| Maximum speed | 7000 rpm |
| Temperature range | -40 to +100 °C |
| Degree of protection | IP66 |
| Max. admissible radial cantilever force | 400 N |
| Max. admissible axial force | 250 N |
| Centrifugal switch | |
| Operating speed | 850 ... 4900 rpm |
| Maximum speed | 1.25 x n |
| Differential gap, clockwise/counter-clockwise | ≈ 3 % |
| Speed hysteresis | ≈ 40 % |
| Switching capacity | 6 A/230 V AC; 1 A 125 V DC |
| Termination system | Terminals, cable connection M20 x 1.5 + M20 x 1.5 |
| Mech. design acc. to Hübner Ident. No. | 74 035F-HOG10 |
| Weight | Approx. 2.1 kg |

Rotary pulse encoder HOG 10 DN 1024 I + FSL, connection box protection against dust

The rotary pulse encoder HOG 10 DN 1024 I can be supplied with the already mounted connection box in version with protection against dust (IP65) and mechanical centrifugal switch (FSL). An operating speed of the centrifugal switch within the admissible range must be specified in plain text, see technical data of the rotary pulse encoder.

Order code **Y76**

Technical data HOG 10 DN 1024 I (HTL version +) + FSL, (speed rpm), connection box protection against dust

| Supply voltage U_B | +9 V to +30 V |
|---|---|
| Current input without load | Approx. 100 mA |
| Admissible load current per output | 60 mA, 300 mA peak |
| Pulses per revolution | 1024 |
| Outputs | 6 short-circuit proof square-wave pulses A, B and A', B', N, N' |
| Pulse offset between the two outputs | 90° ±20 % |
| Output amplitude | $U_{High} \geq U_B - 3.5 V$ $U_{Low} \leq 1.5 V$ |
| Mark space ratio | 1:1 ±20 % |
| Edge steepness | 10 V/μs |
| Maximum frequency | 120 kHz |
| Maximum speed | 7000 rpm |
| Temperature range | -40 to +100 °C |
| Degree of protection | IP66 |
| Max. admissible radial cantilever force | 400 N |
| Max. admissible axial force | 250 N |
| Centrifugal switch | |
| Operating speed | 850 ... 4900 rpm |
| Maximum speed | 1.25 x n |
| Differential gap, clockwise/counter-clockwise | ≈ 3 % |
| Speed hysteresis | ≈ 40 % |
| Switching capacity | 6 A/230 V AC; 1 A 125 V DC |
| Termination system | Terminals, cable connection M20 x 1.5 + M20 x 1.5 |
| Mech. design acc. to Hübner Ident. No. | 74 022F-HOG10 |
| Weight | Approx. 2.1 kg |

Rotary pulse encoder HOG 10 DN 1024 I + ESL 93, (speed ... rpm), connection box protection against dust

The rotary pulse encoder HOG 10 DN 1024 I can be supplied with the already mounted connection box in version with protection against dust (IP65) and electronic speed switch (ESL). One up to three operating speeds of the electronic switch within the admissible range must be specified in plain text, see technical data of the rotary pulse encoder.

Order code **Y79**

Technical data HOG 10 DN 1024 I (HTL version) + ESL 93, (speed rpm), connection box protection against dust

| Supply voltage U_B | +9 V to +30 V |
|---|---|
| Current input without load | Approx. 100 mA |
| Admissible load current per output | 60 mA, 300 mA peak |
| Pulses per revolution | 1024 |
| Outputs | 6 short-circuit proof square-wave pulses A, B and A', B', N, N' |
| Pulse offset between the two outputs | 90° ±20 % |
| Output amplitude | $U_{High} \geq U_B - 3.5 V$ $U_{Low} \leq 1.5 V$ |
| Mark space ratio | 1:1 ±20 % |
| Edge steepness | 10 V/μs |
| Maximum frequency | 120 kHz |
| Maximum speed | 7000 rpm |
| Temperature range | -40 to +100 °C |
| Degree of protection | IP66 |
| Max. admissible radial cantilever force | 400 N |
| Max. admissible axial force | 250 N |
| Electronical switch | |
| Operating speed | 3 x 200 ... 5000 rpm |
| Maximum speed | 6000 rpm |
| Switching accuracy | ± (2-4) % |
| Switching capacity | 3 x 49 mADC |
| With relay module (external relay module required!) | 3 x 6 A/230 V AC; 1 A 125 V DC |
| Differential gap, clockwise/counter-clockwise | ≈ 3 % |
| Speed hysteresis | max. 30 % |
| Principle | Electronics |
| Auxiliary power | 12 V/5 mA |
| Termination system | Terminals, cable connection M20 x 1.5 + M20 x 1.5 |
| Mech. design acc. to Hübner Ident. No. | 74 031E-HOG10 |
| Weight | Approx. 2.9 kg |

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

0

Dimensions and weight

Fig. 1 Brake
Order code **G26**
[optionally with manual release, order code **K82**]

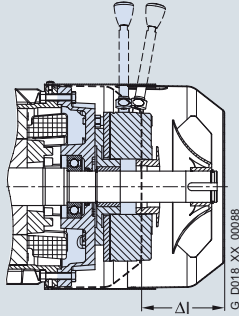


Fig. 2 Brake for 1LA8 and 1PQ8 motor series at drive end (DE)
Order code **H47**

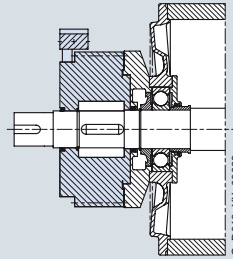


Fig. 3 Rotary pulse encoders (on cover)
Order codes **H57, H58, H70, H72, H73, (H78), (H79), (H80), J15, J16, Y74, Y76, Y79**

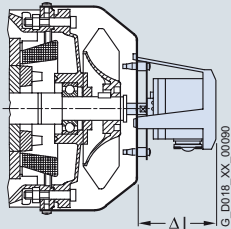
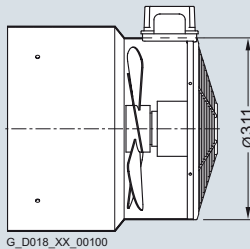
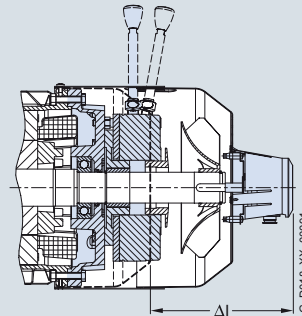


Fig. 4 Brake and rotary pulse encoder (on cover) 1XP8 001
Order codes **H62, H98**
[optionally with manual release, order code **K82**]



For motor series 1LA5 frame sizes 180 to 225 with separately driven fan, the fan attachment becomes narrower on the non-drive end (NDE) of the motor housing.

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

0

**1LA frame sizes 100 to 225,
1LG frame sizes 180 and 200**

1LG frame size 225 and above

Fig. 5 Separately driven fan
Order code **G17**

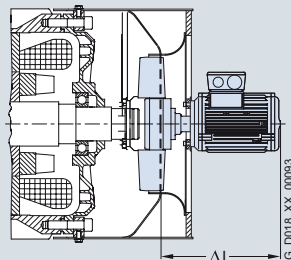
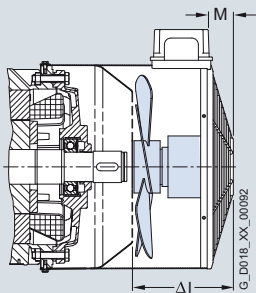


Fig. 6 Brake and separately driven fan
Order code **H63**
[optionally with manual release **K82**]

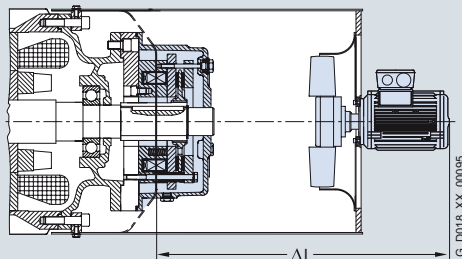
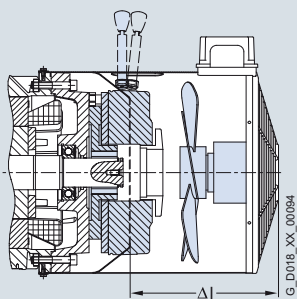


Fig. 7 Rotary pulse encoder (under cover) 1XP8 001 and separately driven fan
Order codes **H61, H97**

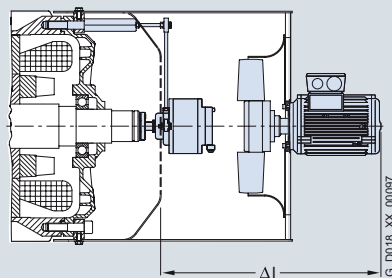
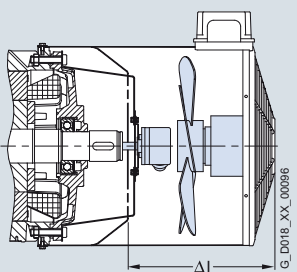
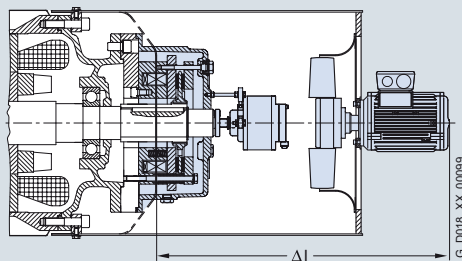
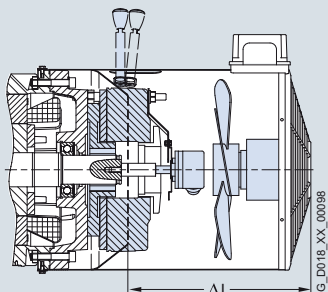


Fig. 8 Brake, rotary pulse encoder (under cover) 1XP8 001 and separately driven fan
Order codes **H64, H99**
[optionally with manual release (**K82**)]



IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

| Frame size | Assignment | | | | | | | | | | | | | | | | | |
|-------------------|-------------------|-------------------|-------------------|------------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|-----|-------------------|-----|-------------------|-----|-------------------|-----|
| | Fig. 1 | | Fig. 2 | | Fig. 3 | | | | | | | | | | | | | |
| | Brake | | Brake | | Pulse encoder | | | | | | | | | | | | | |
| | | | | | 1XP8 001 | | LL 861 900220 | | HOG9 D 1024 I | | HOG10 D 1024 I | | J15, J16 | | Y74, Y76 | | Y79 | |
| Order code G26 | | Order code H47 | | Order code H57, H58 | | Order codes H70 | | Order codes H72 | | Order codes H73 | | | | | | | | |
| Δl | Weight approx. | Δl | Weight approx. | Δl | Weight approx. | Δl | Weight approx. | Δl | Weight approx. | Δl | Weight approx. | Δl | Weight approx. | Δl | Weight approx. | Δl | Weight approx. | |
| mm | kg | mm | kg | mm | kg | mm | kg | mm | kg | mm | kg | mm | kg | mm | kg | mm | kg | |
| 1LA7, 1LA5 | | | | | | | | | | | | | | | | | | |
| 63 | 51 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 71 | 51 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 80 | 54 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 90 | 75 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 100 | 78 | 6 | - | - | 78 | 0.3 | 91 | 1.3 | 89 | 0.9 | 134 | 1.6 | - | - | - | - | - | |
| 112 | 87 | 8 | - | - | 78 | 0.3 | 91 | 1.3 | 89 | 0.9 | 134 | 1.6 | - | - | - | - | - | |
| 132 | 106 | 12 | - | - | 78 | 0.3 | 91 | 1.3 | 89 | 0.9 | 134 | 1.6 | - | - | - | - | - | |
| 160 | 129 | 26 | - | - | 78 | 0.3 | 91 | 1.3 | 89 | 0.9 | 134 | 1.6 | - | - | - | - | - | |
| 180 | 137 | 27 | - | - | 78 | 0.3 | 91 | 1.3 | 89 | 0.9 | 134 | 1.6 | - | - | - | - | - | |
| 200 | 142 | 41 | - | - | 78 | 0.3 | 91 | 1.3 | 89 | 0.9 | 134 | 1.6 | - | - | - | - | - | |
| 225 | 142 | 41 | - | - | 78 | 0.3 | 91 | 1.3 | 89 | 0.9 | 134 | 1.6 | - | - | - | - | - | |
| 1LA6 | | | | | | | | | | | | | | | | | | |
| 100 | - | - | - | - | 78 | 0.3 | 91 | 1.3 | 89 | 0.9 | 134 | 1.6 | 116 | 1.6 | - | - | - | |
| 112 | - | - | - | - | 78 | 0.3 | 91 | 1.3 | 89 | 0.9 | 134 | 1.6 | 116 | 1.6 | - | - | - | |
| 132 | - | - | - | - | 78 | 0.3 | 91 | 1.3 | 89 | 0.9 | 134 | 1.6 | 116 | 1.6 | - | - | - | |
| 160 | - | - | - | - | 78 | 0.3 | 91 | 1.3 | 89 | 0.9 | 134 | 1.6 | 116 | 1.6 | - | - | - | |
| 1LG4, 1LG6 | | | | | | | | | | | | | | | | | | |
| 180 | 125 | 22 | - | - | 63 | 0.3 | 86 | 1.3 | 72 | 0.9 | 116 | 1.6 | 98 | 1.6 | 153 | 2.1 | 156 | 2.9 |
| 200 | 137 | 32 | - | - | 63 | 0.3 | 86 | 1.3 | 72 | 0.9 | 116 | 1.6 | 98 | 1.6 | 153 | 2.1 | 156 | 2.9 |
| 225 | 239 | 63 | - | - | 63 | 0.3 | 86 | 1.3 | 72 | 0.9 | 116 | 1.6 | 98 | 1.6 | 153 | 2.1 | 156 | 2.9 |
| 250 | 225 | 83 | - | - | 63 | 0.3 | 86 | 1.3 | 72 | 0.9 | 116 | 1.6 | 98 | 1.6 | 153 | 2.1 | 156 | 2.9 |
| 280 | 227 | 118 | - | - | 63 | 0.3 | 86 | 1.3 | 72 | 0.9 | 116 | 1.6 | 98 | 1.6 | 153 | 2.1 | 156 | 2.9 |
| 315 | 265 | 255 | - | - | 63 | 0.3 | 86 | 1.3 | 72 | 0.9 | 116 | 1.6 | 98 | 1.6 | 153 | 2.1 | 156 | 2.9 |
| 1LA8, 1PQ8 | | | | | | | | | | | | | | | | | | |
| 315 | - | - | 205 | 120 | - | - | 125 | 1.3 | - | - | 125 | 1.6 | - | - | - | - | - | |
| 355 | - | - | 225 | 165 | - | - | 125 | 1.3 | - | - | 125 | 1.6 | - | - | - | - | - | |
| 400 | - | - | 251 | 220 | - | - | 125 | 1.3 | - | - | 125 | 1.6 | - | - | - | - | - | |
| 450 | - | - | 270 | 325 | - | - | 125 | 1.3 | - | - | 125 | 1.6 | - | - | - | - | - | |
| 1LL8 | | | | | | | | | | | | | | | | | | |
| 315 | - | - | - | - | - | - | 125 | 1.3 | - | - | 125 | 1.6 | - | - | - | - | - | |
| 355 | - | - | - | - | - | - | 125 | 1.3 | - | - | 125 | 1.6 | - | - | - | - | - | |
| 400 | - | - | - | - | - | - | 125 | 1.3 | - | - | 125 | 1.6 | - | - | - | - | - | |
| 450 | - | - | - | - | - | - | 125 | 1.3 | - | - | 125 | 1.6 | - | - | - | - | - | |

IEC Squirrel-Cage Motors

Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

General technical data

| Frame size | Assignment | | | | | | | | | | | |
|-------------------|--|-----------------|-------------------------------------|----|-----------------|---|-----------------|---|-----------------|--|-----------------|--------------------------|
| | Fig. 4 | | Fig. 5 | | | Fig. 6 | | Fig. 7 | | Fig. 8 | | Diameter of the fan cowl |
| | Brake and rotary pulse encoder (on cowl) 1XP8 001 | | Separately driven fan ¹⁾ | | | Brake and separately driven fan ¹⁾ | | Rotary pulse encoder (under the cowl) 1XP8 001 and separately driven fan ¹⁾ | | Brake, rotary pulse encoder (under the cowl) 1XP8 001 and separately driven fan ¹⁾ | | |
| | Order codes H62, H98 | | Order code G17 | | | Order code H63 | | Order codes H61, H97 | | Order codes H64, H99 | | |
| | Δl | Weight, approx. | Δl | M | Weight, approx. | Δl | Weight, approx. | Δl | Weight, approx. | Δl | Weight, approx. | |
| | mm | kg | mm | mm | kg | mm | kg | kg | kg | mm | kg | mm |
| 1LA7, 1LA5 | | | | | | | | | | | | |
| 63 | – | – | – | – | – | – | – | – | – | – | – | – |
| 71 | – | – | – | – | – | – | – | – | – | – | – | – |
| 80 | – | – | – | – | – | – | – | – | – | – | – | – |
| 90 | – | – | – | – | – | – | – | – | – | – | – | – |
| 100 | 156 | 6.3 | 141 | 30 | 4.0 | 141 | 10.0 | 226 | 4.3 | 226 | 10.3 | 202 |
| 112 | 165 | 8.3 | 158 | 30 | 4.5 | 158 | 12.5 | 226 | 4.8 | 226 | 12.8 | 227 |
| 132 | 184 | 12.3 | 177 | 40 | 5.5 | 177 | 17.5 | 247 | 5.8 | 247 | 17.8 | 226 |
| 160 | 207 | 26.3 | 227 | 40 | 7.0 | 227 | 33.0 | 289 | 7.3 | 289 | 33.3 | 320 |
| 180 | 215 | 27.3 | 269 | 40 | 10.0 | 269 | 37.0 | 269 | 10.3 | 269 | 37.3 | 311 (358) |
| 200 | 220 | 41.3 | 272 | 40 | 11.0 | 272 | 52.0 | 272 | 11.3 | 272 | 52.3 | 311 (398) |
| 225 | 220 | 41.3 | 272 | 40 | 11.0 | 272 | 52.0 | 272 | 11.3 | 272 | 52.3 | 311 (398) |
| 1LA6 | | | | | | | | | | | | |
| 100 | – | – | 141 | 30 | 4.0 | – | – | 226 | 4.3 | – | – | 202 |
| 112 | – | – | 158 | 30 | 4.5 | – | – | 226 | 4.8 | – | – | 227 |
| 132 | – | – | 177 | 40 | 5.5 | – | – | 247 | 5.8 | – | – | 226 |
| 160 | – | – | 227 | 40 | 7.0 | – | – | 289 | 7.3 | – | – | 320 |
| 1LG4, 1LG6 | | | | | | | | | | | | |
| 180 | 203 | 22.3 | 269 | 40 | 10.0 | 269 | 32 | 269 | 10.3 | 269 | 32.3 | 356 |
| 200 | 215 | 32.3 | 272 | 40 | 11.0 | 272 | 43 | 272 | 11.3 | 272 | 43.3 | 396 |
| 225 | 317 | 63.3 | 235 | 0 | 22.0 | 576 | 85 | 425 | 22.3 | 576 | 85.3 | 439 |
| 250 | 303 | 83.3 | 235 | 0 | 25.0 | 578 | 108 | 425 | 25.3 | 578 | 108.3 | 489 |
| 280 | 305 | 118.3 | 235 | 0 | 28.0 | 550 | 146 | 425 | 28.3 | 550 | 146.3 | 539 |
| 315 | 343 | 255.3 | 247 | 0 | 36.0 | 577 | 291 | 437 | 36.3 | 577 | 291.3 | 604 |

The values in brackets () refer to the diameter of the motor flange because this is larger than the diameter of the fan cowl (see figure on Page 0/90).

¹⁾ For frame sizes 100 to 200 and for 1LA5 up to frame size 225, the dimensions of the connection box for the separately driven fan, length x width x height, are 95 mm x 105 mm x 54 mm. For motor series 1LG4/1LG6 (frame sizes 225 to 315), the dimensions of the connection box for the separately driven fan, length x width x height, are 75 mm x 75 mm x 38 mm.

IEC Squirrel-Cage Motors

Introduction motors 1LE1, 1PC1

Order No. code

0

Overview

The order number consists of a combination of figures and letters and is divided into three blocks linked with hyphens for a better overview, e.g.

1LE1001-1DB20-1AA5-Z
H00

The first block (Positions 1 to 7) identifies the motor type; the second block (Positions 8 to 12) defines the motor frame size and length, the number of poles and in some cases the frequency/output; and in the third block (Positions 13 to 16), the frequency/output, type of construction and other design features are encoded.

For deviations in the second and third block from the catalog codes, either **-Z** or **9** should be used as appropriate.

Ordering data:

- Complete Order No. and order code(s) or plain text.
- If a quotation has been requested, please specify the quotation number in addition to the Order No.
- When ordering a complete motor as a spare part, please specify the works serial No. for the previously supplied motor as well as the Order No.

| Structure of the Order No.: | | Position: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | - | 8 | 9 | 10 | 11 | 12 | - | 13 | 14 | 15 | 16 | |
|--|--|-----------|---|---|---|---|---|---|---|---|---|---|----|----|----|---|----|----|----|----|------------------|
| IEC squirrel-cage motors, surface-cooled | | | | | | | | | | | | | | | | | | | | | |
| Positions 1 to 4: Digit, letter, letter, digit | New generation Design or version (motor type) | | 1 | L | E | 1 | | | | | | | | | | | | | | | |
| | <ul style="list-style-type: none"> • Standard: Self-ventilated by fan mounted on and driven by rotor • Expansion option (F90): Forced-air cooled by air flow from the fan to be driven • Special: Self-cooled without external fan and fan cover | | | | | | | | | | | | | | | | | | | | |
| Positions 5 to 7: 3 digits | <ul style="list-style-type: none"> • Motors with high efficiency (High Efficiency, EFF1), aluminum housing • Motors with improved efficiency (Improved Efficiency, EFF2), aluminum housing | | | | | | 0 | 0 | 1 | | | | | | | | | | | | |
| Positions 8, 9 and 11: Digit, letter, digit | Motor frame size (frame size as a combination of shaft height and overall length, encoded) | | | | | | | | | | 1 | A | | | 0 | | | | | | |
| Position 10: Letter | Number of poles A ... D = 2-, 4-, 6-, 8-pole | | | | | | | | | | | | A | | | | | | | | |
| Positions 12 and 13: 2 digits | Voltage, circuit and frequency | | | | | | | | | | | | | | 0 | | 0 | | | | |
| Position 14: Letter | Type of construction (A – V) | | | | | | | | | | | | | | | | | A | | | |
| Position 15: Letter | Motor protection (A – Z; special versions encoded) | | | | | | | | | | | | | | | | | | A | | |
| Position 16: Digit | Mechanical design (motor version and connection box position) <ul style="list-style-type: none"> • General Line motors with shorter delivery times, limited options (connection box on top, cast feet, only basic versions possible, non-drive-end (NDE) cannot be modified) • All options are possible or can be modified <ul style="list-style-type: none"> - Connection box on top - Connection box on RHS (viewed from DE) - Connection box on LHS (viewed from DE) - Connection box below | | | | | | | | | | | | | | | | | | | 0 | |
| | Special order versions: encoded – additional order code required not encoded – additional plain text required | | | | | | | | | | | | | | | | | | | | 4 5 6 7 |
| | | | | | | | | | | | | | | | | | | | | | - Z |

Ordering example

| Selection criteria | Requirement | Structure of the Order No. |
|--------------------------------------|--|---|
| Motor type | New generation Standard motor with high efficiency EFF1, IP55 degree of protection, aluminum version | 1LE1001-□□□□□□-□□□□□ |
| Motor frame size/No. of poles/speed | 160/4-pole/1500 rpm | 1LE1001-1DB2□-□□□□□ |
| Rated output | 11 kW | |
| Voltage and frequency | 230 VΔ/400 VY, 50 Hz | 1LE1001-1DB22-2□□□□ |
| Type of construction | IM V5 with protective cover ¹⁾ | 1LE1001-1DB22-2C□□□-Z |
| (Special versions) | 3 PTC thermistors (motor protection with 3 embedded temperature sensors for tripping ²⁾) | 1LE1001-1DB22-2CB□□-Z |
| Mechanical design (motor version) | Connection box on RHS (viewed from DE) | 1LE1001-1DB22-2CB5-Z |
| | Mounted separately driven fan | 1LE1001-1DB22-2CB5-Z H00 F70 |

¹⁾ Standard without protective cover – the protective cover is defined with option **H00** and this option must be ordered in addition.

²⁾ No additional option must be specified in the order.

Overview

The order codes and availability are assigned to the individual motor series in the "Selection and ordering data" in catalog part 1.

For

- Voltages
- Types of constructions
- Motor protection
- Motor connection and connection box

see the relevant heading in section "General technical data" in this catalog part.

All available options are listed according to topics in the following table. An alphanumerical listing according to order codes can be found in the appendix under "Overview of order codes".

Attention:

For 1LE1 and 1PC1 motors apply only the "Special versions" of the following table and of catalog part 1. Motor protection and motor connection or connection box can be defined as Order No. supplement with the positions 15 or 16 of the Order No.

| Order code | Special versions | For further information, see Page |
|---|---|-----------------------------------|
| Motor connection and connection box | | |
| R15 | One cable gland, metal | 0/114 |
| R10 | Rotation of the connection box through 90°, entry from DE | 0/114 |
| R11 | Rotation of the connection box through 90°, entry from NDE | 0/114 |
| R12 | Rotation of the connection box through 180° | 0/114 |
| R50 <i>New!</i> | Larger connection box | 0/113 |
| R30 <i>New!</i> | Reduction piece for M cable gland in accordance with British standard, both cable entries mounted | 0/114 |
| H04 | External earthing | 0/113 |
| R20 <i>New!</i> | 3 cables protruding, 0.5 m long | 0/114 |
| R21 <i>New!</i> | 3 cables protruding, 1.5 m long | 0/114 |
| R22 <i>New!</i> | 6 cables protruding, 0.5 m long | 0/114 |
| R23 <i>New!</i> | 6 cables protruding, 1.5 m long | 0/114 |
| R24 <i>New!</i> | 6 cables protruding, 3 m long | 0/114 |
| H08 <i>New!</i> | Connection box on NDE | 0/113 |
| Windings and insulation | | |
| N01 | Temperature class 155 (F), used acc. to 155 (F), with service factor (SF) | 0/108 |
| N02 | Temperature class 155 (F), used acc. to 155 (F), with increased output | 0/108 |
| N03 | Temperature class 155 (F), used acc. to 155 (F), with increased coolant temperature | 0/108 |
| N11 <i>New!</i> | Temperature class 180 (H) at rated power and max. CT 60 °C | 0/108 |
| N20 <i>New!</i> | Increased air humidity/temperature with 30 to 60 g water per m ³ of air | 0/108 |
| N05 | Temperature class 155 (F), used acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 % | 0/108 |
| N06 | Temperature class 155 (F), used acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 % | 0/108 |
| N07 | Temperature class 155 (F), used acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 % | 0/108 |
| N08 | Temperature class 155 (F), used acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 % | 0/108 |
| N21 <i>New!</i> | Increased air humidity/temperature with 60 to 100 g water per m ³ of air | 0/108 |
| Y52 | Temperature class 155 (F), used acc. to 155 (F), other requirements | 0/108 |
| Colors and paint finish | | |
| Y54 | Special finish in other standard RAL colors | 0/101 |
| Y51 | Special finish in special RAL colors | 0/101 |
| S03 <i>New!</i> | Special finish sea air resistant | 0/100 |
| S00 | Unpainted (only cast iron parts primed) | 0/100 |
| S01 | Unpainted, only primed | 0/100 |
| Modular technology – Basic versions | | |
| F70 | Mounting of separately driven fan | 0/129 |
| F01 | Mounting of brake | 0/130 ... |
| G01 | Mounting of 1XP8012-10 (HTL) rotary pulse encoder | 0/128 |
| G02 | Mounting of 1XP8012-20 (TTL) rotary pulse encoder | 0/128 |
| Modular technology – Additional versions | | |
| F10 | Brake supply voltage 24 V DC | 0/133 |
| F11 | Brake supply voltage 230 V AC, 50/60 Hz | 0/133 |
| F12 | Brake supply voltage 400 V AC, 50/60 Hz | 0/133 |
| F50 | Mechanical manual brake release with lever (no locking) | 0/133 |
| Special technology | | |
| G04 | Mounting of LL 861 900 220 rotary pulse encoder | 0/134 |
| G05 | Mounting of HOG 9 D 1024 I rotary pulse encoder | 0/135 |
| G06 | Mounting of HOG 10 D 1024 I rotary pulse encoder | 0/136 |

IEC Squirrel-Cage Motors

Introduction motors 1LE1, 1PC1

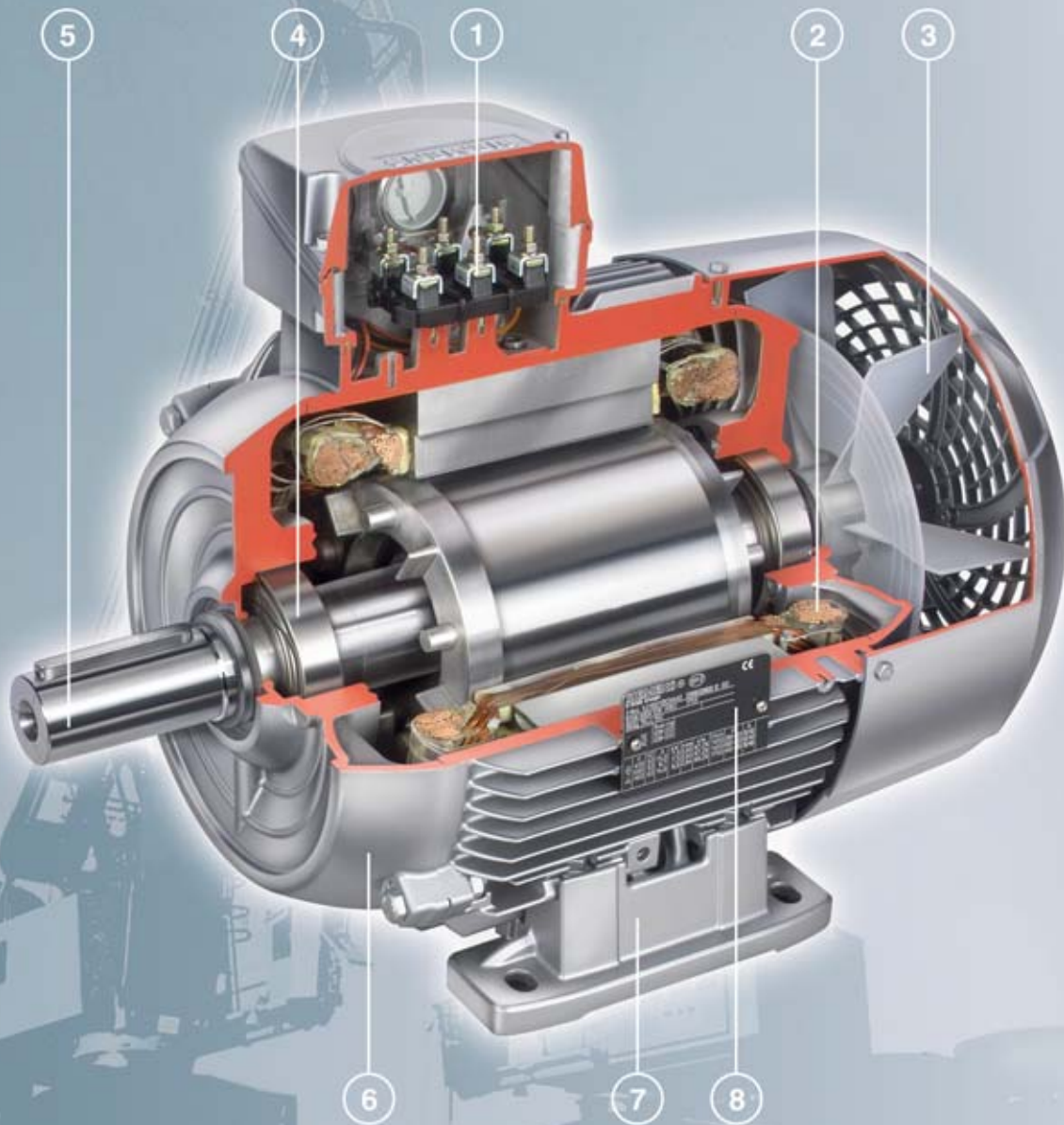
Special versions

Overview "Special versions" (Fortsetzung)

| Order code | Special versions | For further information, see Page |
|---|---|-----------------------------------|
| Mechanical design and degrees of protection | | |
| H00 | Protective cover for types of construction | 0/119 |
| H01 | Screwed-on feet (instead of cast) | 0/113 |
| H23 | <i>New!</i> Radial seal on DE for flange-mounting motors with oil resistance to 0.1 bar | 0/118 |
| F77 | <i>New!</i> Low-noise version for 2-pole motors with clockwise direction of rotation | 0/119 |
| F78 | <i>New!</i> Low-noise version for 2-pole motors with counter-clockwise direction of rotation | 0/119 |
| H20 | <i>New!</i> IP65 degree of protection | 0/119 |
| H22 | <i>New!</i> IP56 degree of protection (non-heavy-sea) | 0/119 |
| H02 | <i>New!</i> Vibration-proof version | 0/119 |
| H03 | Condensation drainage holes | 0/119 |
| H07 | <i>New!</i> Non-rusting screws (externally) | 0/119 |
| G40 | Prepared for mountings, only center hole | 0/118 |
| G41 | Prepared for mountings with D12 shaft | 0/118 |
| G42 | Prepared for mountings with D16 shaft | 0/118 |
| G43 | <i>New!</i> Protective cover for encoder (loosely enclosed – only for mountings acc. to order codes G40, G41 and G42) | 0/118 |
| Coolant temperature and site altitude | | |
| D03 | <i>New!</i> Coolant temperature –40 °C to +40 °C | 0/107 |
| D04 | <i>New!</i> Coolant temperature –30 °C to +40 °C | 0/107 |
| Designs in accordance with standards and specifications | | |
| D30 | <i>New!</i> Electrical according to NEMA MG1-12 | 0/99 |
| D31 | <i>New!</i> Design according to UL with "Recognition Mark" | 0/99 |
| D40 | <i>New!</i> Canadian regulations (CSA) | 0/98, 0/99 |
| D46 | <i>New!</i> PSE Mark Japan | 0/99 |
| Bearings and lubrication | | |
| Q01 | Measuring nipple for SPM shock pulse measurement for bearing inspection | 0/122 |
| L22 | Bearing design for increased cantilever forces | 0/122, 0/124 ... |
| L25 | Special bearing for DE and NDE, bearing size 63 | 0/122, 0/124 ... |
| L23 | Regreasing device | 0/122 |
| L20 | Located bearing at DE | 0/122 |
| L21 | Located bearing at NDE | 0/122 |
| Balance and vibration quantity | | |
| L00 | Vibration quantity level B | 0/120 |
| L02 | Full-key balancing | 0/120 |
| L01 | Balancing without fitted key | 0/120 |
| Shaft and rotor | | |
| L08 | Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors | 0/121 |
| L05 | Second standard shaft extension | 0/121 |
| L04 | <i>New!</i> Shaft extension with standard dimensions, without featherkey way | 0/121 |
| L07 | Concentricity of shaft extension in accordance with DIN 42955 Tolerance R | 0/121 |
| L06 | Standard shaft made of non-rusting steel | 0/121 |
| Y55 | <i>New!</i> Non-standard cylindrical shaft extension | 0/121 |
| Heating and ventilation | | |
| F75 | <i>New!</i> Fan cover for textile industry | 0/111 |
| F76 | <i>New!</i> Metal external fan | 0/111 |
| Q02 | Anti-condensation heaters for 230 V | 0/111 |
| Q03 | Anti-condensation heaters for 115 V | 0/111 |
| F74 | Sheet metal fan cover | 0/111 |
| Rating plate and extra rating plates | | |
| M10 | Second rating plate, loose | 0/106 |
| M11 | Nirosta rating plate | 0/106 |
| Y80 | Extra rating plate or rating plate with deviating rating plate data | 0/106 |
| Y82 | Extra rating plate with identification codes | 0/106 |
| Y84 | Additional information on rating plate and on package label (max. of 20 characters) | 0/106 |
| Packaging, safety notes, documentation and test certificates | | |
| B00 | Without safety and commissioning note. Customer's declaration of renouncement required. | 0/102 |
| B01 | With one safety and start-up guide per box pallet | 0/102 |
| B02 | Acceptance test certificate 3.1 in accordance with EN 10204 | 0/102 |
| B04 | Printed operating instructions English/German enclosed | 0/102 |
| B83 | <i>New!</i> Type test with heat run for horizontal motors, with acceptance | 0/102 |
| B99 | Wire-lattice pallet | 0/102 |
| M01 | Connected in star for dispatch | 0/102 |
| M02 | Connected in delta for dispatch | 0/102 |

Overview

Cut-away diagram of a low-voltage motor



- | | |
|---|--|
| <p>① Motor protection Page 0/110 Motor connection and connection box Page 0/113 Voltages, currents and frequencies Page 0/103</p> <p>② Windings and insulation Page 0/108 Coolant temperature and site altitude Page 0/107</p> <p>③ Heating and ventilation Page 0/111 Mechanical design and degrees of protection Page 0/118 Modular technology Page 0/127 Special technology Page 0/134</p> | <p>④ Bearings and lubrication Page 0/122</p> <p>⑤ Shaft and rotor Page 0/121 Balance and vibration quantity Page 0/120</p> <p>⑥ Colors and paint finish Page 0/100</p> <p>⑦ Types of construction Page 0/116</p> <p>⑧ Rating plates and extra rating plates Page 0/106</p> |
|---|--|

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

Designs in accordance with standards and specifications

Applicable standards and specifications

The motors comply with the appropriate standards and regulations, especially those listed in the table below.

| Title | IEC/EN | DIN EN |
|---|------------------------------------|-----------------|
| General specifications for rotating electrical machines | IEC 60034-1, IEC 60085 | DIN EN 60034-1 |
| Specification of the losses and efficiency of rotating electrical machines | IEC 60034-2 | DIN EN 60034-2 |
| Asynchronous AC motors for general use with standardized dimensions and outputs | IEC 60072 mounting dimensions only | DIN EN 50347 |
| Restart characteristics for rotating electrical machines | IEC 60034-12 | DIN EN 60034-12 |
| Terminal designations and direction of rotation for electrical machines | IEC 60034-8 | DIN EN 60034-8 |
| Designation for type of construction, installation and connection box position | IEC 60034-7 | DIN EN 60034-7 |
| Entry to connection box | – | DIN 42925 |
| Built-in thermal protection | IEC 60034-11 | DIN EN 60034-11 |
| Noise limit values for rotating electrical machines | IEC 60034-9 | DIN EN 60034-9 |
| IEC standard voltages | IEC 60038 | DIN IEC 60038 |
| Cooling methods for rotating electrical machines | IEC 60034-6 | DIN EN 60034-6 |
| Vibration severity of rotating electrical machines | IEC 60034-14 | DIN EN 60034-14 |
| Vibration limits | – | DIN ISO 10816 |
| Degrees of protection of rotating electrical machines | IEC 60034-5 | DIN EN 60034-5 |

National standards

The motors comply with the IEC or European standards listed above. The European standards replace the national standards in the following EU member states: Germany (VDE), France (NF C), Belgium (NBNC), Great Britain (BS), Italy (CEI), Netherlands (NEN), Sweden (SS), Switzerland (SEV) etc.

The motors also comply with various national standards. The following standards have been harmonized with IEC publication 60034-1 or replaced with DIN EN 60034-1 so that the motors can be operated at standard rated output.

| Title | Country |
|-------------------|---------|
| CSAC22.2, No. 100 | Canada |
| IS 325 IS 4722 | India |
| NEK – IEC 60034-1 | Norway |

Tolerances for electrical data

According to DIN EN 60034, the following tolerances are permitted:

Motors which comply with DIN EN 60034-1 must have a voltage tolerance of $\pm 5\%$ / frequency tolerance of $\pm 2\%$ (Design A). If utilized, the admissible limit temperature of the temperature class may be exceeded by 10 K.

A tolerance of $\pm 5\%$ also applies to the rated voltage range in accordance with DIN EN 60034-1. For rated voltage and rated voltage range, see Page 0/103.

Efficiency η at

$$P_{\text{rated}} \leq 150 \text{ kW: } -0.15 \cdot (1 - \eta)$$

$$P_{\text{rated}} > 150 \text{ kW: } -0.1 \cdot (1 - \eta)$$

With η being a decimal number.

$$\text{Power factor} = \frac{1 - \cos \varphi}{6}$$

- Minimum absolute value: 0.02
- Maximum absolute value: 0.07

Slip $\pm 20\%$ (for motors $< 1 \text{ kW}$ $\pm 30\%$ is admissible)

Locked-rotor current $+20\%$

Locked-rotor torque -15% to $+25\%$

Breakdown torque -10%

Moment of inertia $\pm 10\%$

Energy-saving motors with European efficiency classification in accordance with EU/CEMEP (European Committee of Manufacturers of Electrical Machines and Power Electronics)

Low-voltage motors in the output range of 1.1 to 90 kW, 2-pole and 4-pole are marked in accordance with the EU/CEMEP agreement with the efficiency class EFF2 (Improved Efficiency) or EFF3 (High Efficiency).

So that the requirements of efficiency classes EFF1 and EFF2 are fulfilled, the active parts of the motor have been optimized. The procedure for calculating the efficiency is based on the loss summation method according to IEC 60034-2.

Motors for the North American market

For motors which comply with North American regulations (NEMA, CSA, UL, etc.), it must always be checked whether the motors will be used in the US or Canada and whether they are subject to state laws.

Minimum efficiencies required by law

In 1997, an act was passed in the US to define minimum efficiencies for low-voltage three-phase motors (EPACT = Energy Policy Act). An act is in force in Canada that is largely identical, although it is based on different verification methods. The efficiency is verified for these motors for the USA using IEEE 112, Test Method B and for Canada using CSA-C390. Apart from a few exceptions, all low-voltage three-phase motors exported to the USA or Canada must comply with the legal requirements on efficiency.

The law requires minimum efficiencies for 2, 4 and 6-pole motors with a voltage of 230 and 460 V/60 Hz, in the output range of 1 to 200 HP (0.75 to 150 kW).

According to EPACT, the following are excluded from the efficiency requirements, for example.

- Motors whose frame size output classification does not correspond with the standard series according to NEMA MG1-12.
- Flange-mounting motors without feet
- Brake motors
- Converter-fed motors
- Motors with design letter C and higher

For more information on EPACT:

<http://www.eren.doe.gov/>

Special requirements for the USA: Energy Policy Act

The act lays down that the nominal efficiency at full load and a "CC" number (Compliance Certification) must be included on the rating plate. The "CC" number is issued by the US Department of Energy (DOE). The following information is stamped on the rating plate of EPACT motors which must be marked by law: Nominal efficiency (service factor SF 1.15), design letter, code letter, CONT, CC-Nr. CC 032A (Siemens) and NEMA MG1-12.

Special requirements for Canada: CSA – Energy Efficiency Verification

These motors fulfill the minimum efficiency requirements laid down by the CSA standard C390. These motors are available as 1LE1 and can be ordered with order code **D40** and are also marked with the CSA-E verification on the rating plate.



IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

NEMA – Order code D30

The motors with increased efficiency according to EPACT are designed to meet the NEMA MG1-12 electrical standard and are marked accordingly. The mechanical design of all motors is compliant only to IEC, not to NEMA dimensions.

All motors in the EPACT and **D30** version correspond to NEMA Design A (i. e. standard torque characteristic in accordance with NEMA and no starting current limitation).

For Design B, C and D, a special version is required (on request).

All other 1LE1/1PC1 motors must be ordered with order code **D30**.

Data on the rating plate: Rated voltage (voltage tolerance of 10 %), nominal efficiency, design letter, code letter, CONT and NEMA MG1-12.

UL approval – Order code D31

The motors based on the 1LE1/1PC1 basic series are listed for up to 600 V by Underwriters Laboratories Inc. ("Recognition Mark" = R/C).

This is not possible in combination with the option "temperature class 180 (H) at rated output and maximal coolant temperature of 60 °C", order code N11.

According to UL, motor voltages are only certified up to 600 V, i.e. voltage codes 22, 27 or 40. For this reason, the indication 690 VY for voltage code "34" (400 VΔ/690 VY/ 50 Hz or 460 VΔ/60 Hz), for example, is omitted on the rating plate.

The "UL Recognition Mark" is included on the rating plate of the motor.



In addition, the motor is designed to meet the NEMA MG1-12 electrical standard and includes the following data on the rating plate: Rated voltage (voltage tolerance of 10 %), nominal efficiency, design letter, code letter, CONT and NEMA MG1-12. The motors must only be ordered with order code **D31**.

Externally or internally mounted components such as

- Motor protection
- Heating element
- Separately driven fan
- Brake
- Encoder
- Power connection
- Plug connector

are UL-R/C, CSA or C-US listed or used by manufacturers in accordance with regulations. It may have to be decided whether the motor is suitable for the application.

The motors can be operated with a frequency converter with 50/60 Hz.

Deviating frequency settings must be tested at final acceptance.

The following versions are possible:

- 2-pole motors, only in combination with F77 or F78 low-noise versions
- 4, 6 and 8-pole motors, only in combination with F76 metal external fan

CSA approval – Order code D40

Motors based on the 1LE1/1PC1 basic series are approved for up to 690 V in accordance with the Canadian regulations of the "Canadian Standard Association" (CSA). Externally or internally mounted components which are used are listed by CSA or are used by manufacturers in accordance with regulations. It may have to be decided whether the motor is suitable for the application.

This is not possible in combination with the option "temperature class 180 (H) at rated output and maximal coolant temperature of 60 °C", order code N11, for 1LE1 and 1PC1 motor series.

The motors must be ordered with the order code **D40**, voltage code "90" and order code for voltage and frequency. The CSA mark and the rated voltage (voltage tolerance of 10 %) are included on the rating plate.



When energy-saving motors (1LE1 in design EFF1) are ordered, they also include the CSA-E mark on the rating plate.



Export of low-voltage motors to China

CCC – China Compulsory Certification – Order code D01

"Small power motors" which are exported to China must be certified up to a rated output of:

- 2-pole: ≤ 2.2 kW
- 4-pole: ≤ 1.1 kW
- 6-pole: ≤ 0.75 kW
- 8-pole: ≤ 0.55 kW

The **1LE1 motors which must be certified** have been certified by the CQC (China Quality Cert. Center). When ordered with the D01 order code, the "CCC" logo and "Factory Code" are included on the rating plate and packaging.



Factory Code:

A005216 = Works Bad Neustadt

A010607 = Works Mohelnice

Note:

Chinese customs checks the need for certification of imported products by means of commodity code.

The following do not need to be certified:

- Motors imported to China which have already been installed in a machine
- Repair parts

Export of low-voltage motors to Japan

PSE Mark Japan – Order Code D46

PSE marking is a mandatory certification in Japan in accordance with the electrical devices and safety of materials act. "Small power motors" with a rated output of up to 3 kW which are exported to Japan must bear the PSE marking.

The motors concerned are marked on the rating plate with the following "PSE" logo.



IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

Colors and paint finish

To protect the drives against corrosion and external influences, high-quality coatings based on 2-K epoxy resin are offered in various different colors.

| Type | Suitability of paint finish for climate group in accordance with DIN IEC 60721, Part 2-1 | |
|----------------|---|--|
| Special finish | Worldwide (global) for outdoor use in direct sunlight and/or weather conditions. Suitable for use in the tropics for <60 % relative humidity at 40 °C | Briefly: Up to 140 °C Contin.: Up to 120 °C Also: for aggressive atmospheres up to 1 % acid and alkali concentrations or permanent dampness in sheltered rooms |

Special finish system "sea air resistant" – Order code **S03**

| Field of application | Resistance |
|--|---|
| <ul style="list-style-type: none"> Recommended for indoor installations or outdoor installations exposed to direct weather conditions Industrial climate with moderate SO₂ exposure, inshore maritime climate, but not offshore maritime climate, e.g. for crane drives and also in the paper industry Complies with the test requirements of DIN EN ISO 12944-2 Corrosion Category C4 | <ul style="list-style-type: none"> Chemical exposure to 5 % acid and caustic solution concentration Suitable for use in the tropics up to 75 % relative humidity at 50 °C Thermal stability from –40 to 140 °C |

All motors are painted with RAL 7030 (stone gray) if the color is not specified.

Other colors in special finish must be ordered with order codes **Y51** or **Y54** and the required RAL number in plain text (for a selection of the available RAL numbers/colors, see the following page for tables for order codes **Y51** and **Y54**).

Direct sunlight may change the color. If consistent colors are required, we recommend paint based on polyurethane. Please inquire.

All paint finishes can be painted over with commercially available paints. Special paints and increased layer thickness available on request.

If required, the motors can be supplied coated only in primer, order code **S01**, or unpainted (unmachined cast-iron surfaces, but primed) using order code **S00**.

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

Special finish in standard RAL colors – Order code **Y54** (RAL number is required in plain text)

| RAL No. | Color name | RAL No. | Color name |
|---------|----------------|---------|-----------------|
| 1002 | Sand yellow | 6011 | Reseda green |
| 1013 | Pearl white | 6019 | Pastel green |
| 1015 | Light ivory | 6021 | Pale green |
| 1019 | Gray beige | 7000 | Squirrel gray |
| 2003 | Pastel orange | 7001 | Silver gray |
| 2004 | Pure orange | 7004 | Signal gray |
| 3000 | Flame red | 7011 | Iron gray |
| 3007 | Black red | 7016 | Anthracite gray |
| 5007 | Brilliant blue | 7022 | Umber gray |
| 5009 | Azure blue | 7031 | Blue gray |
| 5010 | Gentian blue | 7032 | Pebble gray |
| 5012 | Light blue | 7033 | Cement gray |
| 5015 | Sky blue | 7035 | Light gray |
| 5017 | Traffic blue | 9001 | Cream |
| 5018 | Teal blue | 9002 | Gray white |
| 5019 | Capri blue | 9005 | Jet black |

Special finish in special RAL colors – Order code **Y51** (RAL number is required in plain text)

| RAL No. | Color name | RAL No. | Color name | RAL No. | Color name | RAL No. | Color name |
|---------|-------------------|---------|------------------|---------|------------------|---------|------------------|
| 1000 | Green beige | 3014 | Antique pink | 6003 | Olive green | 7036 | Platinum gray |
| 1001 | Beige | 3015 | Light pink | 6004 | Blue green | 7037 | Dusty gray |
| 1003 | Signal yellow | 3016 | Coral red | 6005 | Moss green | 7038 | Agate gray |
| 1004 | Golden yellow | 3017 | Rose | 6006 | Gray olive | 7039 | Quartz gray |
| 1005 | Honey yellow | 3018 | Strawberry red | 6007 | Bottle green | 7040 | Window gray |
| 1006 | Maize yellow | 3020 | Traffic red | 6008 | Brown green | 7042 | Traffic gray A |
| 1007 | Daffodil yellow | 3022 | Salmon pink | 6009 | Fir green | 7043 | Traffic gray B |
| 1011 | Brown beige | 3027 | Raspberry red | 6010 | Grass green | 7044 | Silk gray |
| 1012 | Lemon yellow | 3031 | Orient red | 6012 | Black green | 7045 | Tele gray 1 |
| 1014 | Dark ivory | 3032 | Pearl ruby red | 6013 | Reed green | 7046 | Tele gray 2 |
| 1016 | Sulfur yellow | 3033 | Pearl pink | 6014 | Yellow olive | 7047 | Tele gray 4 |
| 1017 | Saffron yellow | 4001 | Red lilac | 6015 | Black olive | 7048 | Pearl mouse gray |
| 1018 | Zinc yellow | 4002 | Red violet | 6016 | Turquoise green | 8000 | Green brown |
| 1020 | Olive yellow | 4003 | Heather violet | 6017 | May green | 8001 | Ocher brown |
| 1021 | Rape yellow | 4004 | Claret violet | 6018 | Yellow green | 8002 | Signal brown |
| 1023 | Traffic yellow | 4005 | Blue lilac | 6020 | Chrome green | 8003 | Clay brown |
| 1024 | Ochre yellow | 4006 | Traffic purple | 6022 | Olive drab | 8004 | Copper brown |
| 1027 | Curry | 4007 | Purple violet | 6024 | Traffic green | 8007 | Fawn brown |
| 1028 | Melon yellow | 4008 | Signal violet | 6025 | Fern green | 8008 | Olive brown |
| 1032 | Broom yellow | 4009 | Pastel violet | 6026 | Opal green | 8011 | Nut brown |
| 1033 | Dahlia yellow | 4010 | Tele magenta | 6027 | Light green | 8012 | Red brown |
| 1034 | Pastel yellow | 4011 | Pearl violet | 6028 | Pine green | 8014 | Sepia brown |
| 1035 | Pearl beige | 4012 | Pearl blackberry | 6029 | Mint green | 8015 | Chestnut |
| 1036 | Pearl gold | 5000 | Violet blue | 6032 | Signal green | 8016 | Mahogany |
| 1037 | Sun yellow | 5001 | Green blue | 6033 | Mint turquoise | 8017 | Chocolate |
| 2000 | Yellow orange | 5002 | Ultramarine | 6034 | Pastel turquoise | 8019 | Gray brown |
| 2001 | Red orange | 5003 | Sapphire blue | 6035 | Pearl green | 8022 | Black brown |
| 2002 | Vermilion | 5004 | Black blue | 6036 | Pearl opal green | 8023 | Orange brown |
| 2008 | Bright red orange | 5005 | Signal blue | 7002 | Olive gray | 8024 | Beige brown |
| 2009 | Traffic orange | 5008 | Gray blue | 7003 | Moss gray | 8025 | Pale brown |
| 2010 | Signal orange | 5011 | Steel blue | 7005 | Mouse gray | 8028 | Terra brown |
| 2011 | Deep orange | 5013 | Cobalt blue | 7006 | Beige gray | 8029 | Pearl copper |
| 2012 | Salmon orange | 5014 | Pigeon blue | 7008 | Khaki gray | 9003 | Signal white |
| 2013 | Pearl orange | 5020 | Ocean blue | 7009 | Green gray | 9004 | Signal black |
| 3001 | Signal red | 5021 | Water blue | 7010 | Tarpaulin gray | 9006 | White aluminum |
| 3002 | Carmine red | 5022 | Night blue | 7012 | Basalt gray | 9007 | Gray aluminum |
| 3003 | Ruby red | 5023 | Distant blue | 7013 | Brown gray | 9010 | Pure white |
| 3004 | Purple red | 5024 | Pastel blue | 7015 | Slate gray | 9011 | Graphite black |
| 3005 | Wine red | 5025 | Pearl gentian | 7021 | Black gray | 9016 | Traffic white |
| 3009 | Oxide red | 5026 | Pearl night blue | 7023 | Concrete gray | 9017 | Traffic black |
| 3011 | Brown red | 6000 | Patina green | 7024 | Graphite gray | 9018 | Papyrus white |
| 3012 | Beige red | 6001 | Emerald green | 7026 | Granite gray | 9022 | Pearl light gray |
| 3013 | Tomato red | 6002 | Leaf green | 7034 | Yellow gray | 9023 | Pearl dark gray |

Coating structure and colors not specified in the catalog are available on request.

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

Packaging, safety notes, documentation and test certificates

Connected in star for dispatch – Order code **M01**

The terminal board of the motor is connected in star for dispatch.

Connected in delta for dispatch – Order code **M02**

The terminal board of the motor is connected in delta for dispatch.

Packing weights

| Packing weights | | For land transport | | | | | | | |
|--------------------------|--|----------------------------|--|--------------------|------------------|-----------------------------------|--|--------------------|------------------|
| For motors Frame size | Type 1LE1 ... - 1PC1 ... - | Type of construction IM B3 | | | | Type of construction IM B5, IM V1 | | | |
| | | In box Tare | On wooden board ISPM covered by cardboard on top and sides Tare | On battens Tare | In crate Tare | In box Tare | On wooden board ISPM covered by cardboard on top and sides Tare | On battens Tare | In crate Tare |
| | | kg | kg | kg | kg | kg | kg | kg | kg |
| 100 L | 1A.4 | – | 5.0 | – | – | – | 5.0 | – | – |
| | 1A.5 | – | 5.0 | – | – | – | 5.0 | – | – |
| | 1A.6 | – | 5.0 | – | – | – | 5.0 | – | – |
| 112 M | 1B.2 | – | 5.0 | – | – | – | 5.0 | – | – |
| | 1B.6 | – | 5.0 | – | – | – | 5.0 | – | – |
| 132 S | 1C.0 | 4.7 | – | – | – | 5.2 | – | – | – |
| | 1C.1 | 4.7 | – | – | – | 5.2 | – | – | – |
| 132 M | 1C.2 | 4.7 | – | – | – | 5.2 | – | – | – |
| | 1C.3 | 4.7 | – | – | – | 5.2 | – | – | – |
| | 1C.6 | 8.7 | – | – | – | 9.2 | – | – | – |
| 160 M | 1D.2 | 4.8 | – | – | – | 5.7 | – | – | – |
| | 1D.3 | 4.8 | – | – | – | 5.7 | – | – | – |
| 160 L | 1D.4 | 4.8 | – | – | – | 5.7 | – | – | – |
| | 1D.6 | 8.8 | – | – | – | 9.7 | – | – | – |

Data apply for individual packaging. Packing in wire-lattice pallets can be used, order code **B99**.

Safety notes

If the motors are to be delivered without safety and commissioning notes, a customer's declaration of renouncement is required.

Without safety and commissioning note – Order code **B00**

The motors are supplied with only one set of safety and commissioning notes per wire-lattice pallet for most motor types and frame sizes.

Complete with one set of safety and commissioning notes per wire-lattice pallet – Order code **B01**

Documentation

The following documents are optionally available:

- Printed operating instructions English/German enclosed – Order code **B04**
- All manuals for low-voltage motors, geared motors and low-voltage converters are now available on DVD in 5 languages, see "SD Manual Collection for CA 01" in catalog part 11 "Appendix".

Test certificates

Acceptance test certificate 3.1 according to EN 10204 – Order code **B02**

An acceptance test certificate 3.1 according to EN 10204 can be supplied for most motors.

Type test with heat run for horizontal motors, with acceptance – Order code **B83**

During the type test, a temperature-rise test is performed; no-load, short-circuit and load characteristics are recorded; the iron losses and friction losses are determined and the efficiency is calculated from the summed losses. This option is only applicable to motors with a horizontal type of construction. The acceptance is carried out by an external representative (e.g. customer, classification society).

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

Voltages, currents and frequencies

Standard voltages

EN 60034-1 differentiates between Category A (combination of voltage deviation $\pm 5\%$ and frequency deviation $\pm 2\%$) and Category B (combination of voltage deviation $\pm 10\%$ and frequency deviation $+3/-5\%$) for voltage and frequency fluctuations. The motors can supply their rated torque in both Category A and Category B. In Category A, the temperature rise is approx. 10 K higher than during rated duty.

| Standard | Category | Category |
|---|---|---|
| 60034 – 1 | A | B |
| Voltage deviation | $\pm 5\%$ | $\pm 10\%$ |
| Frequency deviation | $\pm 2\%$ | $+3\%/-5\%$ |
| Rating plate data stamped with rated voltage a (e.g. 230 V) | a $\pm 5\%$ (e.g. 230 V $\pm 5\%$) | a $\pm 10\%$ (e.g. 230 $\pm 10\%$) |
| Rating plate data stamped with rated voltage ranges b to c (e.g. 220 to 240V) | b -5% to c $+5\%$ (e.g. 220 -5% to 240 $+5\%$) | b -10% to c $+10\%$ (e.g. 220 -10% to 240 $+10\%$) |

According to the standard, longer duty is not recommended for Category B. See "Rating plates and extra rating plates" for details of the rating plate inscriptions and corresponding examples. The selection and ordering data state the rated current at 400 V. The DIN IEC 60038 standard specifies a tolerance of $\pm 10\%$ for mains voltages of 230 V, 400 V and 690 V. The rating plates of motors with voltage code 22 or 34 specify a rated voltage range in addition to the rated voltage (see table below).

The rated currents at 380/420 V are specified in the table "Rated currents for rated voltage range 380 V to 420 V at 50 Hz" and on the rating plate.

| Mains voltages | Rated voltage range | Voltage code |
|-------------------------------|---|--------------|
| 1LE1 motors | | |
| 230 V Δ /400 VY, 50 Hz | 220 ... 240 V Δ /380 ... 420 VY, 50 Hz | 22 |
| 400 V Δ /690 VY, 50 Hz | 380 ... 420 V Δ /660 ... 725 VY, 50 Hz | 34 |
| 500 VY, 50 Hz | – | 27 |
| 500 V Δ , 50 Hz | – | 40 |

Non-standard voltages and/or frequencies

The tolerance laid down by DIN EN 60034-1 applies to all non-standard voltages. Order codes have been allocated for a number of non-standard voltages at 50 or 60 Hz. They are ordered by specifying the code digit 9 for voltage in the 12th position of the Order No. as well as the code digit 0 in the 13th position of the Order No. and the appropriate order code.

M1Y Non-standard winding for voltages between 200 V and 690 V and rated outputs.

For voltages and rated outputs outside the range, please inquire.

| Motor series | Frame size | Rated voltages that are available for M1Y | |
|--------------|-------------|--|-----------------|
| | | Lowest/highest voltage in V for | Star connection |
| 1LE1 | 100 ... 160 | 200/690 | 250/690 |

Order codes for other rated voltages are listed under "Order No. supplements" in the "Selection and ordering data" as well as "Special versions" under "Voltages".

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

Rated currents for rated voltage range 380 V to 420 V at 50 Hz

| Motor type | Frame size | Currents for voltage and number of poles | | | | | | | |
|--|------------|--|------|--------|------|--------|------|--------|------|
| | | 380 V | | 420 V | | 380 V | | 420 V | |
| | | 2-pole | | 4-pole | | 6-pole | | 8-pole | |
| | | / | / | / | / | / | / | / | / |
| A | | A | | A | | A | | A | |
| General Line motors with shorter delivery time | | | | | | | | | |
| Self-ventilated energy-saving motors with improved efficiency – Aluminum series 1LE1 | | | | | | | | | |
| Forced-air cooled motors without external fan and fan cover with improved efficiency – Aluminum series 1LE1 | | | | | | | | | |
| 1LE1002-1A.4 | 100 L | 6.3 | 5.7 | 5.0 | 4.9 | 3.75 | 4.15 | 2.8 | 3.3 |
| 1LE1002-1A.5 | 100 L | – | – | 6.4 | 6.1 | – | – | 3.65 | 4.1 |
| 1LE1002-1B.2 | 112 M | 8.3 | 7.5 | 8.4 | 8.1 | 5.4 | 5.5 | 4.0 | 4.4 |
| 1LE1002-1C.0 | 132 S | 10.9 | 10.3 | 11.5 | 11.4 | 7.3 | 7.7 | 5.9 | 6.0 |
| 1LE1002-1C.1 | 132 S | 14.5 | 13.9 | – | – | – | – | – | – |
| 1LE1002-1C.2 | 132 M | – | – | 15.2 | 15.2 | 9.3 | 9.4 | 7.9 | 8.1 |
| 1LE1002-1C.3 | 132 M | – | – | – | – | 13.7 | 12.9 | – | – |
| 1LE1002-1D.2 | 160 M | 21.7 | 20.7 | 22.4 | 22.8 | 17.0 | 17.7 | 10.5 | 11.6 |
| 1LE1002-1D.3 | 160 M | 29.6 | 28.9 | – | – | – | – | 13.8 | 14.6 |
| 1LE1002-1D.4 | 160 L | 35.0 | 33.5 | 30.0 | 30.2 | 22.3 | 24.7 | 18.9 | 19.4 |
| Self-ventilated energy-saving motors with high efficiency – Aluminum series 1LE1 | | | | | | | | | |
| Forced-air cooled motors without external fan and fan cover with high efficiency – Aluminum series 1LE1 | | | | | | | | | |
| 1LE1001-1A.4 | 100 L | 6.1 | 6.1 | 4.65 | 4.65 | 3.55 | 3.55 | 2.65 | 2.95 |
| 1LE1001-1A.5 | 100 L | – | – | 6.2 | 6.1 | – | – | 3.85 | 4.35 |
| 1LE1001-1B.2 | 112 M | 7.8 | 7.6 | 8.3 | 8.2 | 5.1 | 5.0 | 4.3 | 4.3 |
| 1LE1001-1C.0 | 132 S | 10.1 | 10.5 | 11.4 | 11.4 | 7.0 | 7.1 | 6.6 | 6.6 |
| 1LE1001-1C.1 | 132 S | 14.2 | 13.7 | – | – | – | – | – | – |
| 1LE1001-1C.2 | 132 M | – | – | 14.8 | 14.4 | 8.6 | 8.9 | 7.9 | 8.2 |
| 1LE1001-1C.3 | 132 M | – | – | – | – | 12 | 11.9 | – | – |
| 1LE1001-1D.2 | 160 M | 20.0 | 21.0 | 21.5 | 20.5 | 16.1 | 15.8 | 9.8 | 9.6 |
| 1LE1001-1D.3 | 160 M | 28.0 | 27.0 | – | – | – | – | 13.4 | 13.3 |
| 1LE1001-1D.4 | 160 L | 34.0 | 33.0 | 28.5 | 27.5 | 22.5 | 21.5 | 17.5 | 16.8 |
| Self-ventilated motors with increased output with improved efficiency – Aluminum series 1LE1 | | | | | | | | | |
| 1LE1002-1A.6 | 100 L | 8.1 | 7.9 | 8.5 | 8.5 | 5.4 | 5 | – | – |
| 1LE1002-1B.6 | 112 M | 11.2 | 10.2 | 12 | 10.8 | 7.5 | 8.0 | – | – |
| 1LE1002-1C.6 | 132 M | 20.3 | 18.9 | 21.8 | 21.3 | 17.0 | 17.6 | – | – |
| 1LE1002-1D.6 | 160 L | 40.2 | 37.9 | 36.1 | 35.5 | 33.5 | 34.0 | – | – |
| Self-ventilated motors with increased output and high efficiency – Aluminum series 1LE1 | | | | | | | | | |
| 1LE1001-1A.6 | 100 L | 7.8 | 7.6 | 8.3 | 8.4 | 5.0 | 4.95 | – | – |
| 1LE1001-1B.6 | 112 M | 10.4 | 9.8 | 11.2 | 11.1 | 6.6 | 6.5 | – | – |
| 1LE1001-1C.6 | 132 M | 20 | 19.1 | 21.5 | 21 | 16.5 | 16.5 | – | – |
| 1LE1001-1D.6 | 160 L | 40.0 | 37.5 | 35.5 | 34.5 | 30.5 | 29.0 | – | – |

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

Outputs

The outputs or rated outputs are listed in the selection tables for both 50 Hz and 60 Hz.

Assignment of the standard power kW-HP and vice versa in accordance with IEC

$$\text{kW} \cdot 1.341 = \text{HP}$$

$$\text{HP} \cdot 0.746 = \text{kW}$$

| P_{rated} kW | P_{rated} HP | P_{rated} kW | P_{rated} HP | P_{rated} kW | P_{rated} HP | P_{rated} kW | P_{rated} HP | P_{rated} kW | P_{rated} HP | P_{rated} kW | P_{rated} HP |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 0.06 | 0.08 | 0.37 | 0.5 | 2.2 | 3 | 11 | 15 | 37 | 50 | 110 | 150 |
| 0.09 | 0.12 | 0.55 | 0.75 | 3 | 4 | 15 | 20 | 45 | 60 | 132 | 200 |
| 0.12 | 0.16 | 0.75 | 1 | 4 | 5 | 18.5 | 25 | 55 | 75 | 160 | 250 |
| 0.18 | 0.25 | 1.1 | 1.5 | 5.5 | 7.5 | 22 | 30 | 75 | 100 | 200 | 300 |
| 0.25 | 0.33 | 1.5 | 2 | 7.5 | 10 | 30 | 40 | 90 | 125 | | |

Efficiency, power factor, rated torque, rated speed and direction of rotation

Efficiency and power factor

The efficiency η and power factor $\cos \varphi$ for each rated output are listed in the selection tables in the individual sections of this catalog.

For EFF1 and EFF2 motors, the 3/4-load-efficiency is also indicated in the selection tables.

The part-load values stated in the two tables below are averages; precise values can be provided on request.

| Part-load efficiency in % at | | | | |
|------------------------------|------|------|-----------|------|
| 1/4 | 1/2 | 3/4 | 4/4 | 5/4 |
| of full load | | | | |
| 93 | 96 | 97 | 97 | 96.5 |
| 92 | 95 | 96 | 96 | 95.5 |
| 90 | 93.5 | 95 | 95 | 94.5 |
| 89 | 92.5 | 94 | 94 | 93.5 |
| 88 | 91.5 | 93 | 93 | 92.5 |
| 87 | 91 | 92 | 92 | 91.5 |
| 86 | 90 | 91 | 91 | 90 |
| 85 | 89 | 90 | 90 | 89 |
| 84 | 88 | 89 | 89 | 88 |
| 80 | 87 | 88 | 88 | 87 |
| 79 | 86 | 87 | 87 | 86 |
| 78 | 85 | 86 | 86 | 85 |
| 76 | 84 | 85 | 85 | 83.5 |
| 74 | 83 | 84 | 84 | 82.5 |
| 72 | 82 | 83 | 83 | 81.5 |
| 70 | 81 | 82 | 82 | 80.5 |
| 68 | 80 | 81 | 81 | 79.5 |
| 66 | 79 | 80 | 80 | 78.5 |
| 64 | 77 | 79.5 | 79 | 77.5 |
| 62 | 75.5 | 78.5 | 78 | 76.5 |
| 60 | 74 | 77.5 | 77 | 75 |
| 58 | 73 | 76 | 76 | 74 |
| 56 | 72 | 75 | 75 | 73 |
| 55 | 71 | 74 | 74 | 72 |
| 54 | 70 | 73 | 73 | 71 |
| 53 | 68 | 72 | 72 | 70 |
| 52 | 67 | 71 | 71 | 69 |
| 51 | 66 | 70 | 70 | 68 |
| 50 | 65 | 69 | 69 | 67 |
| 49 | 64 | 67.5 | 68 | 66 |
| 48 | 62 | 66.5 | 67 | 65 |
| 47 | 61 | 65 | 66 | 64 |
| 46 | 60 | 64 | 65 | 63 |
| 45 | 59 | 63 | 64 | 62 |
| 44 | 57 | 62 | 63 | 61 |
| 43 | 56 | 60.5 | 62 | 60.5 |
| 42 | 55 | 59.5 | 61 | 59.5 |
| 41 | 54 | 58.5 | 60 | 58.5 |

| Part-load power factor at | | | | |
|---------------------------|------|------|-------------|------|
| 1/4 | 1/2 | 3/4 | 4/4 | 5/4 |
| of full load | | | | |
| 0.70 | 0.86 | 0.90 | 0.92 | 0.92 |
| 0.65 | 0.85 | 0.89 | 0.91 | 0.91 |
| 0.63 | 0.83 | 0.88 | 0.90 | 0.90 |
| 0.61 | 0.80 | 0.86 | 0.89 | 0.89 |
| 0.57 | 0.78 | 0.85 | 0.88 | 0.88 |
| 0.53 | 0.76 | 0.84 | 0.87 | 0.87 |
| 0.51 | 0.75 | 0.83 | 0.86 | 0.86 |
| 0.49 | 0.73 | 0.81 | 0.85 | 0.86 |
| 0.47 | 0.71 | 0.80 | 0.84 | 0.85 |
| 0.45 | 0.69 | 0.79 | 0.83 | 0.84 |
| 0.43 | 0.67 | 0.77 | 0.82 | 0.83 |
| 0.41 | 0.66 | 0.76 | 0.81 | 0.82 |
| 0.40 | 0.65 | 0.75 | 0.80 | 0.81 |
| 0.38 | 0.63 | 0.74 | 0.79 | 0.80 |
| 0.36 | 0.61 | 0.72 | 0.78 | 0.80 |
| 0.34 | 0.59 | 0.71 | 0.77 | 0.79 |
| 0.32 | 0.58 | 0.70 | 0.76 | 0.78 |
| 0.30 | 0.56 | 0.69 | 0.75 | 0.78 |
| 0.29 | 0.55 | 0.68 | 0.74 | 0.77 |
| 0.28 | 0.54 | 0.67 | 0.73 | 0.77 |
| 0.27 | 0.52 | 0.63 | 0.72 | 0.76 |
| 0.26 | 0.50 | 0.62 | 0.71 | 0.76 |

Rated speed and direction of rotation

The rated speeds are applicable for the rated data. The synchronous speed changes proportionally with the line frequency. The motors are suitable for clockwise and counter-clockwise rotation.

If U1, V1, W1 are connected to L1, L2, L3, clockwise rotation results as viewed onto the drive-end shaft extension. Counter-clockwise rotation is achieved by swapping two phases (see also "Heating and ventilation", Page 0/111).

Rated torque

The rated torque in Nm delivered at the motor shaft is

$$M = \frac{9.55 \cdot P \cdot 1000}{n}$$

P Rated output in kW
 n Speed in rpm

Note:

If the voltage deviates from its rated value within the admissible limits, the locked-rotor torque, the pull-up torque and the breakdown torque vary with the approximate square of the value, but the locked-rotor current varies approximately linearly.

In the case of squirrel-cage motors, the locked-rotor torque and breakdown torque are listed in the selection tables as multiples of the rated torque.

The normal practice is to start squirrel-cage motors directly on line. The torque class indicates that with direct-on-line starting, even if there is an undervoltage of -5% , it is possible to start up the motor against a load torque of

- 160 % for CL 16
- 130 % for CL 13
- 100 % for CL 10
- 70 % for CL 7
- 50 % for CL 5

of the rated torque.

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

Rating plate and extra rating plates

DIN EN 60034-1 lays down that the approximate total weight for all motors is indicated on the rating plate.

An extra rating plate can be supplied loose for all motors, order code **M10**.

Non-rusting steel rating plate, for scratch, heat, cold and acid resistance can be obtained, order code **M11**.

Supplementary data (max. of 20 characters) can be indicated on the rating plate or extra rating plate and on the packaging label, order code **Y84**.

An extra rating plate for identification codes is also possible, order code **Y82**.

An extra rating plate or a rating plate with different rating plate data can also be ordered, order code **Y80**.

In the standard version, the rating plate is available in international format or in the German/English language. The language for the rating plate can be ordered by specifying it in plain text. An overview of the languages that can be ordered, at additional cost in some cases, is provided in the table below.

Overview of the languages on the rating plate

| Motor type | Frame size | Rating plate | | | | | | | Double rating plate 50/60 Hz data for | | |
|------------------|-------------|-------------------------------------|----------------|--------------------------|------------------------------------|------------------------------------|-----------------|----------------------|--|-------------------------------------|---|
| | | International | German (de) | English (en) | German (de)/ English (en) | French (fr)/ Spanish (es) | Italian (it) | Portu- guese (pt) | Russian (ru) | 500 VY and 575 VY | 230 VΔ/ 400 VY and 460 V 400 VΔ/ 690 VY and 460 VΔ |
| 1LE1/1PC1 | 100 ... 160 | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

- Standard version
 Without additional charge

Example of a rating plate

SIEMENS
D-91056 Erlangen

3-Mot. 1LE1 002-1DB43-4AA0- E0605/0496382 02 001

IEC/EN 60034 160L IMB3 IP55

73 kg Th.Cl. 155(F)

Bearing
DE 6209-2ZC3
NE 6209-2ZC3

| V | Hz | A | kW | cos φ | eta | 1/min | V | A |
|-------|----|------|------|-------|-------|-------|---------|-----------|
| 400 Δ | 50 | 29,5 | 15 | 0,82 | 89,4% | 1460 | 380-420 | 30,0-30,2 |
| 690 Y | 50 | 17,1 | 15 | 0,82 | 89,4% | 1460 | 660-725 | 17,4-17,5 |
| 460 Δ | 60 | 29,5 | 17,3 | 0,82 | 89,4% | 1760 | 440-480 | 30,2-29,8 |

Legend:

- 1 Machine type: Three-phase Low-voltage motor
- 2 Order No.
- 3 Factory number (Ident No., serial number)
- 4 Type of construction
- 5 Degree of protection
- 6 Rated voltage [V] and winding connections
- 7 Frequency [Hz]
- 8 Rated current [A]
- 9 Rated output [kW]
- 10 Power factor [cos φ]
- 11 Efficiency
- 12 Rated speed [rpm]
- 13 Voltage range [V]
- 14 Current range [A]
- 15 Machine weight [kg]
- 16 Standards and regulations
- 17 Temperature class
- 18 Frame size
- 19 Additional details (optional)
- 20 Operating temperature range (only if it deviates from normal)
- 21 Site altitude (only when higher than 1000 m)
- 22 Customer data (optional)
- 23 Date of manufacture YYMM

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

Coolant temperature and site altitude

The rated output specified in the selection tables is applicable for continuous duty in accordance with DIN EN 60034-1 at the frequency of 50 Hz, a coolant temperature (CT) or ambient temperature of 40 °C and a site altitude (SA) up to 1000 m above sea level.

For higher coolant temperatures and/or site altitudes greater than 1000 m above sea level, the specified motor output must be reduced using the factor k_{HT} .

Depending on the frame size of the motor or the number of poles, special windings may be added to the motors for different operating conditions.

This results in an admissible output of the motor of:

$$P_{adm.} = P_{rated} \cdot k_{HT}$$

Reduction factor k_{HT} for different site altitudes and/or coolant temperatures

| Site altitude above sea level m | Site altitude above sea level Coolant temperature | | | | | |
|------------------------------------|--|-----------------|-------|-------|-------|-------|
| | <30 °C | 30 °C ... 40 °C | 45 °C | 50 °C | 55 °C | 60 °C |
| 1000 | 1.07 | 1.00 | 0.96 | 0.92 | 0.87 | 0.82 |
| 1500 | 1.04 | 0.97 | 0.93 | 0.89 | 0.84 | 0.79 |
| 2000 | 1.00 | 0.94 | 0.90 | 0.86 | 0.82 | 0.77 |
| 2500 | 0.96 | 0.90 | 0.86 | 0.83 | 0.78 | 0.74 |
| 3000 | 0.92 | 0.86 | 0.82 | 0.79 | 0.75 | 0.70 |
| 3500 | 0.88 | 0.82 | 0.79 | 0.75 | 0.71 | 0.67 |
| 4000 | 0.82 | 0.77 | 0.74 | 0.71 | 0.67 | 0.63 |

Coolant temperature and site altitude are rounded-off to 5 °C or 500 m.

For the following outputs, rms values are specified for coolant temperatures (CT) of 45 °C and 50 °C that must be specified when ordering.

| Power kW | Admissible output at 50 Hz | |
|-------------|----------------------------|--------------------|
| | for CT 45 °C kW | for CT 50 °C kW |
| 11 | 10.5 | 10 |
| 15 | 14.5 | 13.8 |
| 18.5 | 17.8 | 17 |
| 22 | 21 | 20 |
| 30 | 29 | 27.5 |

For details of derating for use in class 155 (F), see "DURIGNIT IR 2000 insulation system".

Motors for coolant temperatures other than 40 °C or site altitudes higher than 1000 m above sea level for use in temperature class 130 (B) must always be ordered with the supplementary order code "**-Z**" and plain text. In the case of extreme derating, the operating data for the motors will also be less favorable due to partial utilization.

The following special versions are possible for 1LE1 and 1PC1 motors:

- Motors for coolant temperatures from -40 to +40 °C order code **D03**
- Motors for coolant temperatures from -30 to +40 °C order code **D04**

When ordering with order codes **D03** and **D04** in combination with mountings, the respective technical data have to be observed; request required.

For details of order codes for use in temperature class 155 (F), see "DURIGNIT IR 2000 insulation system" under "Windings and insulation", Page 0/108.

The following applies to all motors:

The motors can withstand 1.5 times the rated current at rated voltage and frequency for two minutes (DIN EN 60034).

If the admissible motor output is no longer adequate for the drive, it should be checked whether the motor with the next higher rated output fulfills the requirements.

| Abbreviation | Description | Unit |
|--------------|--|------|
| $P_{adm.}$ | Admissible motor output | kW |
| P_{rated} | Rated output | kW |
| k_{HT} | Factor for abnormal coolant temperature and/or site altitude | |

The motors are designed for temperature class 155 (F) and used in temperature class 130 (B). Under non-standard operating conditions, if they are to be used in class 130 (B), the admissible output must be determined from the tables below.

Ambient temperature:

All motors can be used in the standard version at ambient temperatures between -20 to +40 °C.

Motors can be used in temperature class 155 (F)

- at 40 °C with service factor 1.1, i.e. the motor can be continuously overloaded with 10 % of the rated output in the case of EFF2 motors
- at 40 °C with service factor 1.15, i.e. the motor can be continuously overloaded with 15 % of the rated output in the case of EFF1 motors
- above 40 °C at rated output.

When motors are used in temperature class 130 (B) for higher ambient temperatures and/or site altitudes, derating occurs in accordance with the table "Reduction factor k_{HT} for different site altitudes and/or coolant temperatures".

For motors ex stock, the service factor is indicated on the rating plate.

For other temperatures, special measures are necessary. When brakes are to be mounted on at temperatures below freezing, please inquire.

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

Windings and insulation

DURIGNIT IR 2000 insulation system

The DURIGNIT IR 2000 insulation system comprises high-grade enameled wires and insulating sheet materials combined with solvent-free impregnating resin.

The system ensures a high level of mechanical and electrical strength as well as good serviceability and a long motor life.

The insulation system protects the winding against aggressive gases, vapors, dust, oil and increased air humidity. It can withstand the usual vibration stressing.

The insulation is suitable up to an absolute air humidity of 30 g water per m³ of air. Moisture condensation should be prevented from forming on the winding. Please inquire if higher values are required.

Please inquire about extreme applications.

Restarting against residual field and opposite phase

All motors can be reclosed against 100 % residual field after a mains voltage failure.

Winding and insulation design with regard to temperature class and air humidity

All motors are designed for temperature class 155 (F).

At rated output with mains-fed operation, the motors can be used in temperature class 130 (B).

Temperature class 155 (F), used according to 155 (F), with service factor (SF)

For all 1LE1/1PC1 motors for mains-fed operation for the rated output given in the selection table and rated voltage, a service factor of 1.1 can be specified for EFF2 motors (SF = 1.15 for EFF1 motors) also for motors with increased output.

Order code **N01**

Temperature class 155 (F), used according to 155 (F), for increased output

When used according to temperature class 155 (F), the rated output as specified in the selection and ordering data can be increased by 10 % for EFF2 motors (15 % for EFF1 motors) also for motors with increased output.

Order code **N02**

Temperature class 155 (F), used according to 155 (F), with increased coolant temperature

For mains-fed motors at outputs in accordance with the catalog, the coolant temperature can be raised to 55 °C.

Order code **N03**

The service factor (SF) is not indicated on the rating plate for order codes N02 and N03.

For converter-fed operation at the output specified in the catalog, the motors are used in accordance with temperature class 155 (F). Order codes N01, N02 and N03 are not possible. This applies to motors up to 460 V.

Temperature class 155 (F), used according to 155 (F), other requirements

The motors can be ordered according to temperature class 155 (F) for use according to temperature class 155 (F) with other customized requirements if they are specified in plain text in the order.

Order code **Y52**

Temperature class 180 (H) at rated output and maximum coolant temperature CT 60 °C

For motor series 1LE1 and 1PC1, use according to temperature class 180 (H) is permitted at rated output and at a maximum coolant temperature of 60 °C. This does not apply to motor series 1LE1 and 1PC1 with UL approval (order code D31) and CSA approval (order code D40). The specified grease life applies to a coolant temperature of 40 °C. For a 10 K increase in coolant temperature, the grease life or lubrication interval is halved.

Order code **N11**

Temperature class 155 (F), used according to 130 (B), coolant temperature 45 °C, approx. 4 % derating

For the 1LE1 motor series, a version for temperature class 155 (F) can be used according to temperature class 130 (B) at a maximum coolant temperature of 45 °C with a 4 % reduction in rated output.

Order code **N05**

Temperature class 155 (F), used according to 130 (B), coolant temperature 50 °C, approx. 8 % derating

For the 1LE1 motor series, a version for temperature class 155 (F) can be used according to temperature class 130 (B) at a maximum coolant temperature of 50 °C with a 8 % reduction in rated output.

Order code **N06**

Temperature class 155 (F), used according to 130 (B), coolant temperature 55 °C, approx. 13 % derating

For the 1LE1 motor series, a version for temperature class 155 (F) can be used according to temperature class 130 (B) at a maximum coolant temperature of 55 °C with a 13 % reduction in rated output.

Order code **N07**

Temperature class 155 (F), used according to 130 (B), coolant temperature 60 °C, approx. 18 % derating

For the 1LE1 motor series, a version for temperature class 155 (F) can be used according to temperature class 130 (B) at a maximum coolant temperature of 60 °C with a 18 % reduction in rated output.

Order code **N08**

Increased air temperature/humidity with 30 to 60 g water per m³ of air

For motors of series 1LE1 and 1PC1, a version can be ordered for increased air humidity of between 30 and 60 g water per m³ of air depending on the temperature as listed in the table below. This option includes condensation drainage holes (order code H03).

Order code **N20**

Please contact your local Siemens office if order code N20 is to be combined with additional mountings (eg. rotary pulse encoders, brakes).

Increased air temperature/humidity with 60 to 100 g water per m³ of air

For motors of series 1LE1 and 1PC1, a version can be ordered for increased air humidity of between 60 and 100 g water per m³ of air depending on the temperature as listed in the table below. This option includes condensation drainage holes (order code H03).

Order code **N21**

Please contact your local Siemens office if order code N21 is to be combined with additional mountings (eg. rotary pulse encoders, brakes).

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

Absolute/relative conversion of air humidity

| Relative humidity | Temperature | | | | | | | |
|-------------------|-------------|-------|-------|-------|-------|-------|-------|-------|
| | 20 °C | 30 °C | 40 °C | 50 °C | 60 °C | 70 °C | 80 °C | 90 °C |
| 10 % | 2 | 3 | 5 | 8 | 13 | 20 | 29 | 42 |
| 15 % | 3 | 5 | 8 | 12 | 19 | 30 | 44 | 63 |
| 20 % | 3 | 6 | 10 | 17 | 26 | 39 | 58 | 84 |
| 25 % | 4 | 8 | 13 | 21 | 32 | 49 | 73 | 105 |
| 30 % | 5 | 9 | 15 | 25 | 39 | 59 | 87 | 126 |
| 35 % | 6 | 11 | 18 | 29 | 45 | 69 | 102 | 146 |
| 40 % | 7 | 12 | 20 | 33 | 52 | 79 | 116 | 167 |
| 45 % | 8 | 14 | 23 | 37 | 58 | 89 | 131 | 188 |
| 50 % | 9 | 15 | 26 | 41 | 65 | 98 | 145 | 209 |
| 55 % | 10 | 17 | 28 | 46 | 71 | 108 | 160 | 230 |
| 60 % | 10 | 19 | 31 | 50 | 78 | 118 | 174 | 251 |
| 65 % | 11 | 20 | 33 | 54 | 84 | 128 | 189 | 272 |
| 70 % | 12 | 21 | 36 | 58 | 91 | 138 | 203 | 293 |
| 75 % | 13 | 23 | 38 | 62 | 97 | 148 | 218 | 314 |
| 80 % | 14 | 24 | 41 | 66 | 104 | 157 | 233 | 335 |
| 85 % | 15 | 26 | 43 | 70 | 110 | 167 | 247 | 356 |
| 90 % | 16 | 27 | 46 | 74 | 117 | 177 | 262 | 377 |
| 95 % | 16 | 29 | 49 | 79 | 123 | 187 | 276 | 398 |
| 100 % | 17 | 30 | 51 | 83 | 130 | 197 | 291 | 419 |

The values in the table with a blue background are covered by the standard version (up to 30 g water per m³ of air).

The values in the table with a light gray background are covered by order code **N20** (30 to 60 g of water per m³ of air).

The values in the table with a dark gray background are covered by order code **N21** (60 to 100 g of water per m³ of air).

Please contact your local Siemens office regarding requirements exceeding 100 g water per m³ of air

Restarting against residual field and opposite phase

All motors can be reclosed against 100 % residual field after a mains voltage failure.

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

Motor protection

The order variants for motor protection are coded with letters in the 15th position of the Order No. and, if necessary, using order codes.

In the standard version, the motor is designed without motor protection.

15th position of Order No. letter **A**

A distinction is made between current-dependent and motor-temperature-dependent protection devices.

Current-dependent protection devices

Fuses are only used to protect mains cables in the event of a short-circuit. They are not suitable for overload protection of the motor.

The motors are usually protected by delayed overload protection devices (circuit breakers for motor protection or overload relays).

This protection is current-dependent and is particularly effective in the case of a locked rotor.

For standard duty with short start-up times and starting currents that are not excessive and for low numbers of switching operations, motor protection switches provide adequate protection. Motor protection switches are not suitable for heavy starting duty or large numbers of switching operations. Differences in the thermal time constants for the protection equipment and the motor results in unnecessary early tripping when the protection switch is set to rated current.

Motor-temperature-dependent protection devices

Temperature detectors installed in the motor winding are suitable protection devices in the case of slowly rising motor temperature.

When a limit temperature is reached, these **bimetal switches** (NC contacts) can deactivate an auxiliary circuit. The circuit can only be reclosed following a considerable fall in temperature. When the motor current rises quickly (e.g. with a locked rotor), these switches are not suitable due to their large thermal time constants.

Temperature detectors for tripping

15th position of Order No. letter **Z** and order code **Q3A**

The most comprehensive protection against thermal overloading of the motor is provided by **PTC thermistors (thermistor motor protection)** installed in the motor winding. The temperature of the winding can be accurately monitored thanks to its low heating capacity and the excellent heat contact with the winding. When a limit temperature is reached (rated tripping temperature), the PTC thermistors undergo a step change in resistance. This is evaluated by a tripping unit and can be used to open auxiliary circuits. The PTC thermistors themselves cannot be subjected to high currents and voltages. This would result in destruction of the semiconductor. The switching hysteresis of the PTC thermistor and tripping unit is low, which supports fast re-starting of the drive. Motors with this type of protection are recommended for heavy duty starting, switching duty, extreme changes in load, high ambient temperatures or fluctuating supply systems.

Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping. In the connection box, 2 auxiliary terminals are required.

15th position of Order No. letter **B**

The temperature detectors have the following current carrying capacity and switching capacity:

230 V AC $\cos\phi$: 2.5 A

24 V DC: 1.6 A

Two sets of three temperature sensors are used if a warning is required before the motor is shut down (tripped). The warning is normally set to 10 K below the tripping temperature.

Motor protection with PTC thermistors with 6 embedded temperature sensors for alarm and tripping. In the connection box, 4 auxiliary terminals are required.

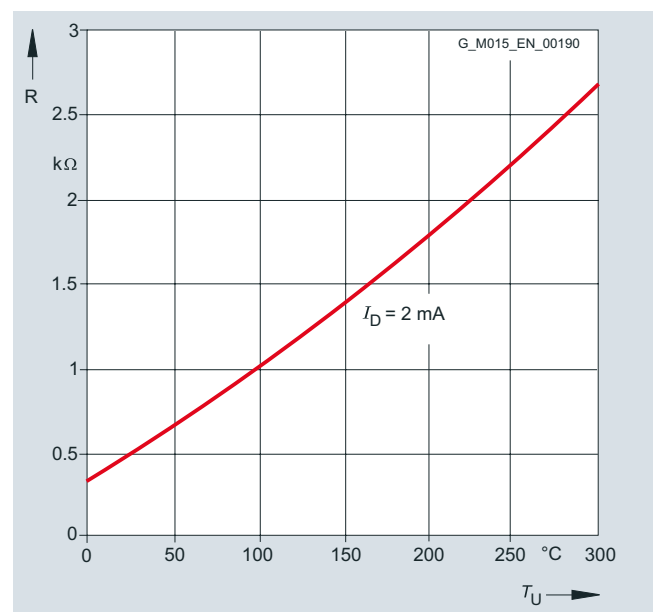
15th position of Order No. letter **C**

In order to achieve full thermal protection, it is necessary to combine a thermally delayed overcurrent release and a PTC thermistor. For full motor protection implemented only with PTC thermistors, please inquire.

Motor temperature detection with converter-fed operation

KTY 84-130 temperature sensor

This sensor is a semiconductor that changes its resistance depending on temperature in accordance with a defined curve.



KTY 84-130 temperature sensor characteristic

Some converters from Siemens determine the motor temperature using the resistance of the temperature sensor. They can be set to a required temperature for alarm and tripping.

Motor temperature detection with embedded temperature sensor KTY 84-130. Two auxiliary terminals are required in the connection box.

15th position of Order No. letter **F**

The temperature sensor is embedded in the winding head of the motor in the same manner as a PTC thermistor. Evaluation is performed, for example, in the converter.

For mains-fed operation, the temperature monitoring device 3RS10 that is part of the protection equipment can be ordered separately. For further details, see Catalog LV 1, Order No.: E86060-K1002-A101-A7-7600.

With NTC thermistors (mainly in the case of special machines), the tripping temperature can also be adjusted later on the tripping unit. NTC thermistors for tripping

15th position of Order No. letter **Z** and order code **Q2A**

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

Heating and ventilation

Anti-condensation heaters

Supply voltage 230 V (1~)
Order code **Q02**

Supply voltage 115 V (1~)
Order code **Q03**

Motors whose windings are at risk of condensation due to the climatic conditions, e.g. inactive motors in humid atmospheres or motors that are subjected to widely fluctuating temperatures, can be equipped with anti-condensation heaters.

An additional M16 x 1.5 cable entry is provided for the connecting cable in the connection box.

Anti-condensation heaters must not be switched on during operation.

| Motor series | Frame size | Heater output of anti-condensation heaters in Watt (W) | |
|------------------|-------------|--|-------------------------|
| | | Supply voltage at 230 V | Supply voltage at 115 V |
| | | Order code Q02 | Order code Q03 |
| 1LE1/1PC1 | 100 ... 112 | 50 | 50 |
| 1LE1/1PC1 | 132 ... 160 | 100 | 100 |

Instead of an anti-condensation heater, another possibility (at no extra cost) is connection of a voltage that is approximately 4 to 10 % of the rated motor voltage to stator terminals U1 and V1; 20 to 30 % of the rated motor current are sufficient to heat the motor.

Fans/Separately driven fans

1LE1 motors of frame sizes 100 ... 160 have radial-flow fans in the standard version (with the exception of 1LE1 with option F90 – version “Forced-air cooled motors without external fan and fan cover”) that cool regardless of the direction of rotation of the motor (cooling method IC 411 acc. to DIN EN 60034-6). The air flow is forced from the non-drive-end (NDE) to the drive end (DE). For details of separately driven fans for frame sizes 100 ... 160, see Page 0/129.

Supply voltage of separately driven fan for 1LE1 motors:
The supply voltage tolerance of the separately driven fan is $\pm 5\%$; for voltage ranges, Page 0/129.

When the motor is mounted and the air intake is restricted, it must be ensured that a minimum clearance is maintained between the fan cover and the wall. This clearance is calculated from the difference between the protective cover and the fan cover (differential dimension LM – L) or is specified in the detailed dimension drawing (see also Dimensional drawings from Page 1/68).

For design of the fan/separately driven fan and the fan cover, see the table below.

| Motor series | Frame size | Fan material | Fan cover material |
|--------------|-------------|--------------|-----------------------|
| 1LE1 | 100 ... 160 | plastic | plastic ¹⁾ |

Metal external fan impeller

The standard fan impeller made of plastic can be replaced with a fan impeller made of metal. This version can be supplied 1LE1 (with the exception of 1LE1 with option F90 – version “Forced-air cooled motors without external fan and fan cover”). With the 1LE1 motor series, the metal fan can also be used for converter-fed operation.

A metal external fan is already included for the low-noise version.

Up to frame size 160, the metal external fan impeller is manufactured from sheet aluminum or steel.

Order codes **F76**

Fan cover for textile industry

For motors 1LE1 (with the exception of 1LE1 with option F90 – version “Forced-air cooled motors without external fan and fan cover”), the fan cover can be used in the standard version for the textile industry.

For motor series 1LE1 (with the exception of 1LE1 with option F90 – version “Forced-air cooled motors without external fan and fan cover”), a version of the fan cover can be supplied specially for the textile industry. This has a protective cover and is made of non-corrosive sheet steel.

When a fan cover is mounted for the textile industry, the length of the motor increases by 64 mm for frame sizes 100/112 and by 71 mm for frame sizes 132/160.

Order code **F75**

Sheet metal fan cover

For 1LE1 motor series (with the exception of 1LE1 with option F90 – version “Forced-air cooled motors without external fan and fan cover”), the fan cover can be supplied in sheet metal instead of plastic.

Order code **F74**

¹⁾ The sheet metal fan cover is used for type of construction codes **A, D, F, H, J, K, L, N, T, U, V** in combination with option **H03** (condensation drainage holes). Mounted separately driven fans and brakes are only available for versions with sheet metal fan covers.

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

Necessary minimum cooling air flow for forced-air-cooled motors in standard duty

The required cooling air flow indicated in the selection table applies to continuous duty according to DIN EN 60034-1 at a coolant temperature (CT) and ambient temperature, respectively, of 40 °C and a site altitude (SA) of up to 1000 m above sea level.

In the motor version without external fan and fan cover, order code **F90**, the motor is located in the air flow of the fan to be

driven which must drive the minimum cooling air flow over the motor housing. The minimum air flow must pass closely over the housing (comparable to self-ventilation of the motor). Otherwise, higher air flows are required to comply with admissible motor heating levels. For a higher cooling air flow, the operating temperature of the motor can be reduced.

| Frame size | Required cooling air flow for number of poles | | | | | | | | | |
|------------|---|-----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | 2 | | 4 | | | | 6 | | 8 | |
| | EFF1/EFF2 | | EFF1 | | EFF2 | | EFF1/EFF2 | | EFF1/EFF2 | |
| | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz |
| | m ³ /min. | m ³ /min. | m ³ /min. | m ³ /min. | m ³ /min. | m ³ /min. | m ³ /min. | m ³ /min. | m ³ /min. | m ³ /min. |
| 100 | 3.8 | 4.4 | 2.1 | 2.6 | 2.3 | 2.8 | 1.5 | 1.8 | 1.2 | 1.3 |
| 112 | 5.0/5.4 ¹⁾ | 5.7/6.1 ¹⁾ | 2.9 | 3.5 | 2.9 | 3.5 | 1.9 | 2.3 | 1.4 | 1.6 |
| 132 | 6.3 | 7.3 | 4.6 | 5.7 | 4.6 | 5.7 | 3.1 | 3.8 | 2.4 | 2.9 |
| 160 | 10.9 | 13.3 | 6.7 | 8.1 | 7.6 | 9.1 | 5 | 6.1 | 3.8 | 4.5 |

¹⁾ Value: EFF1/EFF2

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

Motor connection and connection box

Connection, circuit and connection box

Location of the connection box

The order variants for motor connection are coded with digits in the 16th position of the Order No.

The connection box of the motor can be mounted in four different locations or positions. The position of the connection box must always be viewed from the drive end (DE).

The standard position of the connection box for *General Line motors* is on top
16th position of Order No. digit **0**.

The standard position of the connection box for all other motors is on top
16th position of Order No. digit **4**.

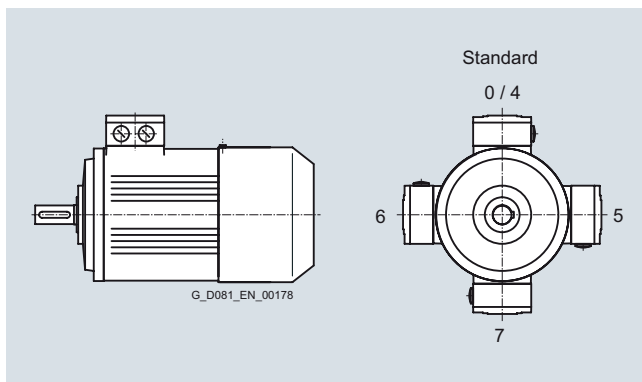
For all motors with feet (apart from motors with increased output), cast feet are standard. If rotation of the connection box in the future has to be provided for, it is recommended that the option "Screwed-on feet" (instead of cast feet), order code **H01**, is ordered.

For motors with feet and increased output, screwed-on feet are standard. The connection box can be rotated later.

Connection box on RHS
16th position of Order No. digit **5**.

Connection box on LHS
16th position of Order No. digit **6**.

Connection box bottom
16th position of Order No. digit **7**.



Location of the connection box with the corresponding digits in the 16th position of the order number

The number of winding ends depends on the winding design. Three-phase motors are connected to the three phase conductors L1, L2 and L3 of a three-phase system. The rated voltage of the motor in the running connection must match the phase conductor voltages of the network.

When the three phases are operating in a time sequence and are connected to the terminals of the motor in alphabetical order U1, V1 and W1, clockwise rotation is established as viewed from the motor shaft. The direction of rotation of the motor can be reversed if two connecting leads are interchanged.

Labeled terminals are provided to connect the protective conductor.

A PE terminal is provided in the connection box for grounding. A grounding terminal is provided on the outside of the motor frame – special version for 1LE1/1PC1 motors.

Order code **H04**.

If a brake control system or thermal protection is installed, the connections will also be in the connection box. The motors are suitable for direct connection to the line supply.

Design of the connection box

The number of terminals and the size of the connection box are designed for standard requirements.

For special requirements or upon the customer's request, a larger connection box, can be delivered.

Order code **R50**

If the necessary installation angle of the motor would cause machine components to collide with the connection box, the connection box can be moved from the drive end (DE) to the non-drive end (NDE). Only use according to temperature class 155 (F) possible.

Order code **H08**

Not possible for explosion-proof motors.

Motor connection

Line feeder cables

The line feeder cables must be dimensioned acc. to DIN VDE 0298. The number of required feeder cables, if necessary in parallel, is defined by:

- The max. cable cross-section which can be connected
- The cable type
- Routing
- Ambient temperature and the corresponding admissible current in accordance with DIN VDE 0298

For motors with auxiliary terminals (e.g. 15th position of Order No. is letter **B**) an M16 x 1.5 cable gland with plug is additionally provided.

For further details, see the data sheet function in the SD generator.

The connection box is located on the housing and bolted in place. The connection box can be turned 4 x 90° on the terminal base of the machine's housing in the case of a terminal board with 6 terminal studs (standard design).

There are 2 entry holes at the standard position complete with sealing plugs and locknuts (see figure).



Connection box in standard position

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

Cable entry on connection box

Unless stated otherwise, the cable entry is located in the standard position as shown in the illustration.

The connection box can also be rotated such that the cable entry is located

- Towards the drive end (DE)
(rotation of connection box by 90°, entry from DE)
Order code **R10**
- Towards the non-drive end (NDE)
(rotation of connection box by 90°, entry from NDE)
Order code **R11**
- Opposite
(rotation of connection box by 180°, entry from opposite end)
Order code **R12**

The dimensions of the connection box are listed in part "Dimensions", see Pages 1/65 to 1/75 in accordance with the frame size and the "Dimension drawings".

If the position of the connection box (connection box RHS, LHS or above) is changed, the position of the cable entry must be checked and, if necessary, it can be ordered with the corresponding order codes (**R10**, **R11** and **R12**).

Ordering example:

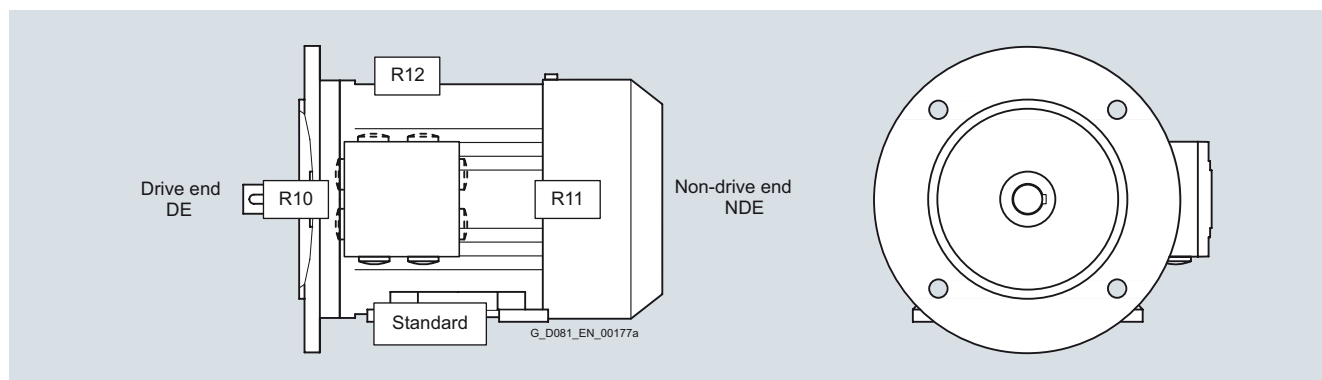
Connection box on RHS (16th position of Order No. digit 5):
Without additional order code, cable entry from below.

With additional order code **R10**:
Cable entry from drive end (DE)



Connection box in standard position, detailed view

For cable entry to a standard connection box, a metal cable entry can be ordered for motor connection.
One cable gland, metal
Order code **R15**



Locations of the cable entries with corresponding order codes

For special requirements for which standard holes for the cable entries are inadequate for the British market in UK, reduction pieces for M cable glands in accordance with British Standard that are mounted on both cable entries can be supplied.

Order code **R30**

| Frame size | Cable entry acc. to | |
|------------|---------------------|------------------|
| | IEC | British Standard |
| 100 | 2 x M32 | 2 x M20 |
| 112/132 | 2 x M32 | 2 x M25 |
| 160 | 2 x M40 | 2 x M32 |

Protruding cable ends

For confined spaces, protruding cable ends can be ordered, without a connection box with cover plate.

The following lengths of protruding cables can already be ordered using order codes on request:

- 3 cables protruding, 0.5 m long ¹⁾
Order code **R20**
- 3 cables protruding, 1.5 m long ¹⁾
Order code **R21**
- 6 cables protruding, 0.5 m long
Order code **R22**
- 6 cables protruding, 1.5 m long
Order code **R23**
- 6 cables protruding, 3.0 m long
Order code **R24**

The cross-section of the named cables refers to a coolant temperature up to CT 40 °C.

¹⁾ With only 3 protruding cables additional plain text specifying star or delta connection is required.

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

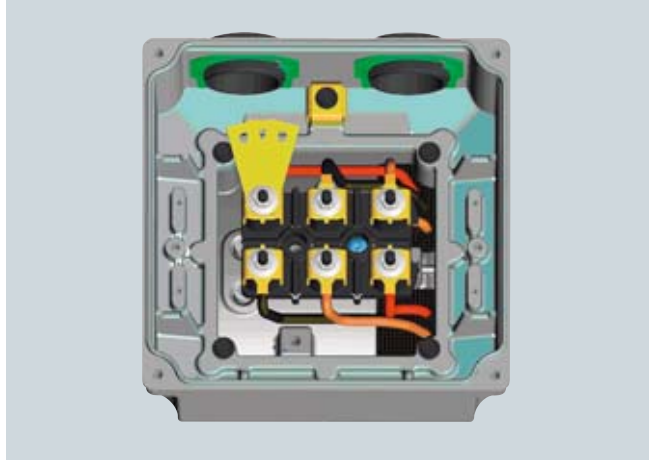
0

Connection, circuit and connection box

Standard connection box TB1 F00, TB1 H00, TB1 J00



Larger connection box type TB1F10, TB1H10, TB1J10



Standard connection boxes/larger connection box for 1LE1/1PC1 motors – basic data

| Motors | Frame size | Number of cable entries | Connection box material | Feeder connection |
|-------------|-------------|--|-------------------------|-------------------|
| 1LE1 | 100 ... 160 | 2 entries complete with sealing plugs and locknuts Connection box is mounted and bolted in place. | Aluminum alloy | Without cable lug |

Possible positions of the standard connection boxes/Larger connection box for 1LE1/1PC1 motors

| Motors | Frame size | Connection box position | | | Rotation of connection box | | Retrofitting possible |
|-------------|-------------|-------------------------|---------------------|-----------------------|----------------------------|------|-----------------------|
| | | Above | Side, right or left | Retrofitting possible | 90° | 180° | |
| 1LE1 | 100 ... 160 | ○ | ○ | – ¹⁾ | ○ | ○ | Yes |

○ Available version

Standard connection boxes/larger connection box for 1LE1/1PC1 motors in standard version

| Frame size | Connection box | Number of terminals | Contact screw thread | Max. connectable cross-section | Outer cable diameter (sealing range) | Cable entry ²⁾ | Two-part plate Adm. outer cable diameter |
|-------------|-------------------|---------------------|----------------------|--------------------------------|--------------------------------------|---------------------------|--|
| | standard / larger | | | mm ² | mm | | mm |
| 1LE1 | | | | | | | |
| 100 | TB1 F00/TB1F10 | 6 | M4 | 4 | 11 ... 21 | 2 x M32 x 1.5 | – |
| 112 | | | | | | | |
| 132 | TB1 H00/TB1H10 | 6 | M4 | 6 | 11 ... 21 | 2 x M32 x 1.5 | – |
| 160 | TB1 J00/TB1J10 | 6 | M5 | 16 | 19 ... 28 | 2 x M40 x 1.5 | – |

– Not available

Terminal connection

The terminal board accommodates the terminals that are connected to the leads to the motor windings. The terminals are designed so that for frame sizes 100 ... 160 the external (line) connections can be made without the need for cable lugs.

¹⁾ Retrofittable screwed-on feet (16th position of Order No. digit **5, 6, 7** and **4** with order code **H01**).

²⁾ Designed for cable glands with O-ring.

IEC Squirrel-Cage Motors













Introduction motors 1LE1/1PC1

General technical data

0

Types of construction

Standard types of construction and special types of construction

| Type of construction acc. to DIN EN 60034-7 | | Frame size | Letter 14th position of the Order No. | Order No. supplement -Z with order code |
|--|---|----------------|---|--|
| Without flange | | | | |
| IM B3 |  | 100 L to 160 L | A | – |
| IM B6/IM 1051 |  | 100 L to 160 L | T | – |
| IM B7/IM 1061 |  | 100 L to 160 L | U | – |
| IM B8/IM 1071 |  | 100 L to 160 L | V | – |
| IM V5/IM 1011 without protective cover |  | 100 L to 160 L | C | – |
| IM V6/IM 1031 |  | 100 L to 160 L | D | – |
| IM V5/IM 1011 with protective cover |  | 100 L to 160 L | C | + H00 ¹⁾ |
| With flange | | | | |
| IM B5/IM 3001 |  | 100 L to 160 L | F | – |
| IM V1/IM 3011 without protective cover |  | 100 L to 160 L | G | – |
| IM V1/IM 3011 with protective cover |  | 100 L to 160 L | G | + H00 ¹⁾ |
| IM V3/IM 3031 |  | 100 L to 160 L | H | – |
| IM B35/IM 2001 |  | 100 L to 160 L | J | – |











In the DIN EN 50347 standard, flanges FF with through holes and flanges FT with tapped holes are specified.

¹⁾ A second shaft extension **L05** is not possible.

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

| Type of construction acc. to DIN EN 60034-7 | | Frame size | Letter 14th position of the Order No. | Order No. supplement -Z with order code |
|--|---|----------------|---|--|
| With standard flange | | | | |
| IM B14/IM 3601 |  | 100 L to 160 L | K | – |
| IM V19/IM 3631 |  | 100 L to 160 L | L | – |
| IM V18/IM 3611 without protective cover |  | 100 L to 160 L | M | – |
| IM V 18/IM 3611 with protective cover |  | 100 L to 160 L | M | + H00 ¹⁾ |
| IM B34/IM 2101 |  | 100 L to 160 L | N | – |
| With special flange (next larger standard flange) | | | | |
| IM B14/IM 3601 |  | 100 L to 160 L | K | + P01 |
| IM V19/IM 3631 |  | 100 L to 160 L | L | + P01 |
| IM V18/IM 3611 without protective cover |  | 100 L to 160 L | M | + P01 |
| IM V 18/IM 3611 with protective cover |  | 100 L to 160 L | M | + P01 + H00 ¹⁾ |
| IM B34/IM 2101 |  | 100 L to 160 L | N | + P01 |

In DIN EN 50347, standard flanges are assigned to the frame sizes as FT with tapped holes. The special flange was assigned as a large flange in the previous DIN 42677.

The dimensions of the following types of construction are identical:

IM B3, IM B6, IM B7, IM B8, IM V5 and IM V6
IM B5, IM V1 and IM V3
IM B14, IM V18 and IM V19

Motors in the standard output range can be ordered in basic types of construction IM B3, IM B5 and IM B14 and can be operated in the following mounting positions – IM B6, IM B7, IM B8, IM V5, IM V6, IM V1, IM V3 (up to frame size 160 L) or IM V18 and IM V19. Eyebolts are available for transport and installation in a horizontal position. In conjunction with the eyebolts, for the purpose of stabilizing the position when the motor is arranged vertically, additional lifting straps (DIN EN 1492-1) and/or clamp bands (DIN EN 12195-2) must be used.

If mounting position IM V1 is ordered, eyebolts are supplied for vertical mounting.

The motors are designated in accordance with the types of construction on the rating plate.

With motors that have a vertical shaft extension, the end user must prevent an ingress of fluid along the shaft.

In the case of all types of construction with shaft extension down, the version “with protective cover” is urgently recommended, see the section “Degrees of protection”, Page 0/119.

Frame design

Motors in the types of construction with feet have, in some cases, two fixing holes at the feet at the non-drive end (NDE), see dimension tables, Pages 1/68 to 1/75. A code is cast into the motor close to the fixing retaining holes to identify the frame size.

A metal fan cover is used as standard for horizontal types of construction and types of constructions with shaft extension facing upwards (14th position of Order No. letter **A, T, U, V, D, F, H, J, K, L** or **N**) in combination with condensation drainage holes, order code **H03**.

¹⁾ A second shaft extension **L05** is not possible.

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

Mechanical design and degrees of protection

Preparation for gear mounting

The flange-mounting motors can be equipped with a radial seal in order to mount gearing.

Order code **H23**

It must be ensured that the sealing ring is lubricated using grease, oil mist or oil spray (it is not permissible to use pressurized oil > 0.1 bar).

We recommend that the admissible bearing loads are carefully checked.

Eyebolts and transport

1LE1/1PC1 motors without feet have four cast eyebolts as standard, each offset by 90°; in the case of screwed-on feet, two eyebolts are covered by the feet, so in this case only two eyebolts are available for use.

| Frame material | | | |
|------------------|-------------|----------------|--------------------|
| Type series | Frame size | Frame material | Frame feet |
| 1LE1/1PC1 | 100 ... 160 | Aluminum alloy | Cast ¹⁾ |

Preparation for mountings

The encoders of the “modular and special technology” can be fitted at a later time. The motor must be prepared for this. Possible for all 1LE1 motors (with the exception of 1LE1 with option F90 – version “Forced-air cooled motors without external fan and fan cover”).

For the brake with order code F01 and for all encoders from the “modular and special technology”, this preparation of the shaft extension on NDE can be ordered with the option “Prepared for mounting, only center hole”.

Order code **G40**

The length of the motor does not change because the shaft extension is still under the fan cover.

For the encoders

- 1XP8 012-10 order code G01
- 1XP8 012-20 order code G02

from the “modular technology”, this preparation of the shaft extension on NDE can be ordered with the option “Prepared for mounting with shaft D12”.

Order code **G41**

By using option **G41**, the motor length increases by dimension Δl . For explanations of additional dimensions and weights, see “Technology”, “Dimensions and weights” from Page 0/137.

For the encoders

- LL 861 900 220 order code G04
- HOG 9 D 1024 I order code G05
- HOG 10 D 1024 I order code G06

from the “special technology”, this preparation of the shaft extension on NDE can be ordered with the option “Prepared for mounting with shaft D16”.

Order code **G42**

By using option **G42**, the motor length increases by dimension Δl . For explanations of additional dimensions and weights, see “Technology”, “Dimensions and weights” from Page 0/137.

Motors that are prepared for additional mountings (order codes G40, G41, G42) are supplied without protective cover as standard.

If a protective cover is requested as cover or as mechanical protection for mounting provided by the customer, it can be ordered with order code **G43**. It must be mounted according to the supplied installation instructions. The protective cover has supports of different lengths that, depending on the height of the mounting, can be used during the installation.

The standard protective cover (order code **H00**) is not suitable for protecting additional mountings such as the rotary pulse encoder.

The order codes **G40**, **G41** and **G42** are not possible in combination with order code **L00**, vibration quantity level B.

¹⁾ Basic version, cast feet: Special version “Screwed-on feet (instead of cast)” with digit **5**, **6** and **7** in the 16th position of the Order No. or digit **4** with order code **H01**. Screwed-on feet are standard for motors with increased output.

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

Degrees of protection

All motors are designed to IP55 degree of protection. They can be installed in dusty or humid environments. The motors are suitable for operation in tropical climates. Guide value <60 % relative air humidity at CT 40 °C. Other requirements are available on request.

Brief explanation of the degree of protection

IP55: Protection against harmful dust deposits, protection against water jets from any direction.

IP56 (non-heavy-sea):

Protection against harmful dust deposits, protection against water jets from any direction.

Order code **H22**

DIN EN 60034-5 defines protection level 6 for water protection as: "Protection against water due to heavy seas or water in a powerful jet". IP56 non-heavy-sea degree of protection can only be used with the requirement "Protection against a powerful jet" and not for the requirement "Protection against heavy sea". Not possible in combination with brake 2LM8 (order code **F01**).

IP65: Complete protection against dust deposits, protection against water jets from any direction.

Order code **H20**

In DIN EN 60034-5, the code 6 for protection against the ingress of foreign bodies and touch hazard protection for electrical machines is not listed – data for code 6 (protection against the ingress of dust) is given in EN 60529.

Not possible in combination with rotary pulse encoder HOG 9 D 1024I (order code **G05**) and/or brake 2LM8 (order code **F01**) and/or in combination with option "unpainted, only cast iron parts primed" (**S00**).

DIN EN 60529 contains a comprehensive description of this degree of protection as well as test conditions.

With motors that have a vertical shaft extension, the end user must prevent an ingress of fluid along the shaft.

For motors with shaft extension pointing downwards, the version "protective cover for types of construction", order code **H00**, is urgently recommended, see also "Types of construction", Page 0/116.

With flange-mounting motors, for IM V3 type of construction, collection of fluid in the flange basin can be prevented by drainage holes (on request).

The condensation drainage holes at the drive end (DE) and non-drive end (NDE) are sealed (IP55) on delivery. If the condensation drainage holes are ordered for motors to the IM B6, IM B7 or IM B8 type of construction (feet located on side or top), the position of the drainage holes will be in the correct position for the type of construction.

Order code **H03**

A metal fan cover is used as standard for horizontal types of construction and types of constructions with shaft extension facing upwards (14th position of Order No. letter **A, T, U, V, D, F, H, J, K, L** or **N**) in combination with condensation drainage holes, order code **H03**, to facilitate mounting/demounting.

When the motors are used or stored outdoors we recommend that they are kept under some sort of cover so that they are not subjected to direct intensive solar radiation, rain, snow, ice or dust over a long period of time. In such cases, technical consultation may be appropriate.

When the motors are used outdoors or in a corrosive environment, it is recommended that non-rusting screws are used externally.

Order code **H07**

Vibration-proof version

A load of 1.5 g in all 3 planes for up to 1 % of the service life of the motor is possible.

Order code **H02**

For availability of individual options for the relevant motor series, see section "Special versions" in catalog part 1.

Noise levels for mains-fed operation

The noise levels are measured in accordance with DIN EN ISO 1680 in a dead room. It is specified as the A-valued measuring-surface sound pressure level L_{pFA} in dB (A).

This is the spatial mean value of the sound pressure levels measured on the measuring surface. The measuring surface is a cube 1 m away from the surface of the motor. The sound power level is also specified as L_{WA} in dB (A).

The specified values are valid at 50 Hz at rated output (see the Selection and ordering data). The tolerance is +3 dB. At 60 Hz, the values are approximately 4 dB (A) higher. Please inquire about the noise levels for motors with converter-fed operation.

To reduce noise levels, 2-pole motors with frame size 132 S can be fitted with an axial-flow fan that is only suitable for one direction of rotation. The values can be taken from the table "Low-noise version" below.

Clockwise rotation

Order code **F77**

Counter-clockwise rotation

Order code **F78**

A second shaft extension and/or mountings (mounting of brake, external fan, or encoder) are not possible.

Low-noise version

| Type series | Frame size | 2-pole motors | |
|---------------------------|------------|---------------------|--------------------|
| | | L_{pFA} dB (A) | L_{WA} dB (A) |
| 1LE1 ¹⁾ | 132 | 60 | 72 |
| | 160 | 60 | 72 |

¹⁾ With the exception of 1LE1 with option F90 – version "Forced-air cooled motors without external fan and fan cover".

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

Balance and vibration quantity

All of the rotors are dynamically balanced with an inserted half key. This corresponds to vibration quantity level A (normal/standard). The vibrational characteristics and behavior of electrical machinery is specified in DIN EN 60034-14 Sept. 2004. Based on DIN ISO 8821, the key convention "half key" (H) must be used for balancing.

The type of key convention used for balancing is stamped on the face of the DE/NDE.

- F = Balancing with full key
(Full-key convention)
- H = Balancing with half key
(Half-key convention) – standard
- N = Balancing without key –
Plain text required (Convention without key)

This is indicated on the rating plate of motors up to frame size 112. Full-key balancing or balancing with full-key (F) is possible on request with order code **L02** (additional charge).

Balancing without featherkey (N) is possible on request by specifying code **L01** (additional charge).

Vibration quantity level A is the standard version and is valid for a rated frequency of 60 Hz.

Low-vibration version B can be supplied to fulfill stricter requirements on smooth running (additional charge).

Vibration quantity level B
Not possible with parallel roller bearings.

Order code **L00**

The order code **L00** vibration quantity level B is not possible in combination with order codes **G40**, **G41** and **G42**.

The limits stated in the table are applicable for uncoupled, idling motors in free suspension.

For converter-fed operation with frequencies greater than 60 Hz, special balancing is required for compliance with the specified limit values (plain text: max. supply frequency/speed).

For further details, see the online help in the SD configurator (available soon).

Limits (rms values) for max. vibration quantity of vibration distance (s), vibration speed (v) and acceleration (a) for the shaft height H

| Vibration quantity level | Machine installation | Shaft height H in mm | | | | | | | | |
|--------------------------|----------------------|----------------------|-------------------|--------------------------------|-----------------|-------------------|--------------------------------|-----------------|-------------------|--------------------------------|
| | | 56 ≤ H ≤ 132 | | | 132 < H ≤ 280 | | | H > 280 | | |
| | | s_{rms} μm | v_{rms} mm/s | a_{rms} mm/s ² | s_{rms} μm | v_{rms} mm/s | a_{rms} mm/s ² | s_{rms} μm | v_{rms} mm/s | a_{rms} mm/s ² |
| A | Free suspension | 25 | 1.6 | 2.5 | 35 | 2.2 | 3.5 | 45 | 2.8 | 4.4 |
| | Rigid clamping | 21 | 1.3 | 2.0 | 29 | 1.8 | 2.8 | 37 | 2.3 | 3.6 |
| B | Free suspension | 11 | 0.7 | 1.1 | 18 | 1.1 | 1.7 | 29 | 1.8 | 2.8 |
| | Rigid clamping | – | – | – | 14 | 0.9 | 1.4 | 24 | 1.5 | 2.4 |

For details, see standard DIN EN 60034-14, Sept. 2004.

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

Shaft and rotor

Shaft extension

60° center hole to DIN 332, Part 2 with M3 to M24 tapped hole depending on the shaft diameter (see dimension tables, Pages 1/68 to 1/75.)

Second standard shaft extension.

Order code **L05**

Possible for all 1LE1 motors (with the exception of 1LE1 with option F90 – version “Forced-air cooled motors without external fan and fan cover”).

The second shaft extension can transmit the full rated output via coupling output.

Please also inquire about the transmitted power and admissible cantilever force if belt pulleys, chains or gear pinions are used on the second shaft extension.

A second shaft extension is not available if a rotary pulse encoder and/or separately driven fan is mounted. Please inquire if a brake is mounted.

| DE (shaft extension) | |
|----------------------|-----------|
| Diameter mm | Thread mm |
| 7 ... 10 | DR M3 |
| >10 ... 13 | DR M4 |
| >13 ... 16 | DR M5 |
| >16 ... 21 | DR M6 |
| >21 ... 24 | DR M8 |
| >24 ... 30 | DR M10 |
| >30 ... 38 | DR M12 |
| >38 ... 50 | DS M16 |
| >50 ... 85 | DS M20 |
| >85 ... 130 | DS M24 |

Dimensions and tolerances for keyways and keys are designed to DIN EN 50347. The motors are always supplied with a key inserted in the shaft.

Admissible changes to the shaft extension:

| Motor series | Frame size | Shaft extension length E in mm | | Shaft extension diameter D in mm | |
|-------------------|------------|--------------------------------|------------|----------------------------------|--------------------------|
| | | Standard | Up to max. | Standard | Up to max. ¹⁾ |
| 1LE1, 1PC1 | 100 | 60 | 120 | 28 | 30 |
| | 112 | | | | |
| | 132 | 80 | 160 | 38 | 40 |
| | 160 | 110 | 220 | 42 | 45 |

Shaft extension with standard dimensions, without featherkey way

For motor series 1LE1 and 1PC1, the standard shaft extension can be ordered with standard dimensions without featherkey way.

Order code **L04**

Standard shaft made of non-rusting steel

For motor series 1LE1, a standard shaft made of non-rusting steel can be ordered. This is only possible for shaft extensions of standard dimensions. For non-standard shaft dimensions, there will be an additional charge!

Order code **L06**

Please inquire about other non-rusting materials.

Non-standard cylindrical shaft extension

The non-standard cylindrical shaft extension can be used on the drive end (DE) or non-drive end (NDE). The featherkey is always supplied with it.

Order code **Y55**

When motors are ordered which have a longer or shorter shaft extension as standard, the required position and length of the featherkey way must be specified in a sketch. It must be ensured that only featherkeys in accordance with DIN 6885, Form A are permitted to be used. The location of the featherkey way is in the center of the shaft extension. The length is defined by the manufacturer normatively.

Not valid for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely “thin” shafts, special geometry dimensions (e.g. square journals, etc.), hollow shafts.

For order code **Y55** and second standard shaft extension **L05** (see previous page):

- Dimensions D and DA must be less than or equal to the inner diameter of the roller bearing (see dimension tables under “Dimensions” in catalog part 1)
- Dimensions E and EA must be smaller than or equal to 2 x length E (standard) of the shaft extension

A non-standard cylindrical shaft extension can be supplied for the motor series listed in the table “Admissible changes to shaft extension” below up to the specified maximum lengths and diameters as compared to the standard shaft.

It is the responsibility of the customer to ensure that the admissible cantilever forces are reduced in accordance with the non-standard shaft extension.

Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors

The following are specified in DIN 42955 with Tolerance N (normal) and Tolerance R (reduced):

1. Concentricity tolerances for the shaft extension
2. Coaxiality tolerances for the shaft extension and flange centering
3. Linear movement tolerances for the shaft extension and flange surface

The concentricity of the shaft extension, coaxiality and linear movement according to DIN 42955 Tolerance R for flange-mounting motors can be ordered using order code **L08**. This order code can be combined for motors with deep-groove bearings of series 60.., 62.. and 63... This cannot be supplied in combination with brake or encoder mounting.

Concentricity of the shaft extension can be ordered according to DIN 42955 Tolerance R for types of construction without flange with order code **L07**.

¹⁾ At maximum admissible diameter, a step increase in shaft diameter is not possible.

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

Bearings and lubrication

Bearing lifetime (nominal lifetime)

The nominal bearing lifetime is defined acc. to standardized calculation procedures (DIN ISO 281) and is reached or even exceeded for 90 % of the bearings when the motors are operated in compliance with the data provided in the catalog.

Under average operating conditions, a lifetime (L_{h10}) of 100 000 hours can be achieved.

Generally, the bearing lifetime is defined by the bearing size, the bearing load, the operating conditions, the speed and the grease lifetime.

Bearing system

The bearing lifetime of motors with horizontal type of construction is at least 40 000 hours if there is no additional axial loading at the coupling output and at least 20 000 hours with the maximum admissible loads.

This assumes that the motor is operated at 50 Hz. The nominal bearing lifetime is reduced for converter-fed operation at higher frequencies.

For the admissible vibration values measured at the bearing plate, evaluation zones A and B specified in ISO 10816 are applicable in order to achieve the calculated lifetime under continuous duty. If higher vibration speeds will occur under the operating conditions, special arrangements will be necessary (please inquire).

In the basic bearing system, the floating bearing is situated at the drive end (DE) and the located bearing is situated at the non-drive end (NDE).

The bearing system is axially preloaded with a spring element at the drive end (DE) to ensure smooth running of the motor without play. (see Figure 1 of the Diagrams of bearings, Page 0/124).

For frame size 160 and above, the located bearing is axially secured at the non-drive end (NDE). Up to frame size 132, an additional axially-secured located bearing can be supplied on the non-drive end (NDE) complete with a retaining ring (see Figure 2 of the Diagrams of bearings, Page 0/124).
Order code **L21**

On request, the located bearing can also be supplied at the drive end (DE) (see Figure 3 of the Diagrams of bearings, Page 0/124).
Order code **L20**

For increased cantilever forces (e.g. belt drives), reinforced bearings can be used at the drive end (DE).
Order code **L22**

Motors 1LE1/1PC1 can be supplied with reinforced deep-groove bearings at both ends (size range 03). Special bearings for DE and NDE, bearing size 63, the bearing plates are manufactured from cast-iron for this purpose.
Order code **L25**

A measuring nipple for SPM shock pulse measurement is mounted to check bearing vibration. The motors have a tapped hole for each bearing plate and a measuring nipple with a protective plug. If a second tapped hole is provided, it is fitted with a sealing plug.
Order code **Q01**

Bearing selection for increased cantilever forces (see the table "Bearing selection for 1LE1/1PC1 motors – Bearing for increased cantilever forces", Page 0/124) – "Admissible axial load" from Page 0/126.

Permanent lubrication

For permanent lubrication, the bearing grease lifetime is matched to the bearing lifetime. This can, however, only be achieved if the motor is operated in accordance with the catalog specifications.

In the basic version, the motors have permanent lubrication.

Regreasing

For motors which can be regreased at defined regreasing intervals, the bearing lifetime can be extended and/or unfavorable factors such as temperature, mounting conditions, speed, bearing size and mechanical load can be compensated.

It is possible to regrease motors, shaft heights 100 to 160. A lubricating nipple is optionally provided.
Order code **L23**

For motors with regreasing device, data concerning regreasing intervals, grease quantity, type of grease and, where applicable, additional data are stated on the rating plate or lubricating plate. For regreasing intervals for basic versions see table "Grease lifetime and regreasing intervals for horizontal installation". The regreasing device cannot be mounted in combination with mounting of the brake, order code F01.

Mechanical stress and grease lifetime

High speeds that exceed the rated speed with converter-fed operation and the resulting increased vibrations alter the mechanical running smoothness and the bearings are subjected to increased mechanical stress. This reduces the grease lifetime and the bearing lifetime (please inquire where applicable).

For converter-fed operation in particular, compliance with the mechanical limit speeds n_{max} at maximum supply frequency f_{max} is essential, see the following table "Mechanical limit speeds n_{max} at maximum supply frequency f_{max} ".

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

Mechanical limit speeds n_{max} at maximum supply frequency f_{max} (standard values)

| Motor frame size | 2-pole | | 4-pole | | 6-pole | | 8-pole | |
|------------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|
| | n_{max} rpm | f_{max} Hz | n_{max} rpm | f_{max} Hz | n_{max} rpm | f_{max} Hz | n_{max} rpm | f_{max} Hz |
| 1LE1/1PC1 | | | | | | | | |
| 100 L | 6000 | 100 | 4200 | 140 | 3600 | 180 | 3000 | 200 |
| 112 M | 6000 | 100 | 4200 | 140 | 3600 | 180 | 3000 | 200 |
| 132 S/M | 5600 | 90 | 4200 | 140 | 3600 | 180 | 3000 | 200 |
| 160 M/L | 4800 | 80 | 4200 | 140 | 3600 | 180 | 3000 | 200 |

Grease lifetime and regreasing intervals for **horizontal** installation

| Permanent lubrication ¹⁾ | | | |
|---|-------------|-----------------|--|
| Type series | Frame size | Number of poles | Grease lifetime up to CT 40 °C ²⁾ |
| 1LE1/1PC1 | 100 ... 160 | 2 to 8 | 20000 h or 40000 h ³⁾ |
| Regreasing (basic version) ¹⁾ | | | |
| Type series | Frame size | Number of poles | Regreasing interval up to CT 40 °C ²⁾ |
| 1LE1/1PC1 | 100 ... 160 | 2 to 8 | 8000 h |

¹⁾ For special uses and special greases, please inquire about grease lifetime and regreasing intervals.

²⁾ If the coolant temperature is increased by 10 K, the grease lifetime and regreasing interval are halved.

³⁾ 40000 h apply to horizontally installed motors with coupling output without additional axial loads.

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

Bearing selection table for 1LE1/1PC1 motors – basic version

The bearing selection tables are only intended for planning purposes. Authoritative information on the actual type of bearings fitted in motors already supplied can be obtained by the factory by quoting the serial number or can be read from the rating plate.

When deep-groove ball bearings with side plates are used, the side plate is on the inside. Located bearing at drive end (DE) for 1LE1/1PC1 motors, see special version Figure 2 in the “Diagrams of bearings”, below on this page.

| For motors frame size | Number of poles | Drive end (DE) bearing | | Non-drive end (NDE) bearing | | Figure, below on this page |
|-----------------------|-----------------|---------------------------------|-------------------------------|---------------------------------|-------------------------------|----------------------------|
| | | Horizontal type of construction | Vertical type of construction | Horizontal type of construction | Vertical type of construction | |
| 1LE1/1PC1 | | | | | | |
| 100 L | 2 to 8 | 6206 2ZC3 | 6206 2ZC3 | 6206 2ZC3 | 6206 2ZC3 | Fig. 1 |
| 112 M | 2 to 8 | 6206 2ZC3 | 6206 2ZC3 | 6206 2ZC3 | 6206 2ZC3 | Fig. 1 |
| 132 S/M | 2 to 8 | 6208 2ZC3 ¹⁾ | 6208 2ZC3 ¹⁾ | 6208 2ZC3 ¹⁾ | 6208 2ZC3 ¹⁾ | Fig. 1 |
| 160 M/L | 2 to 8 | 6209 2ZC3 ¹⁾ | 6209 2ZC3 ¹⁾ | 6209 2ZC3 ¹⁾ | 6209 2ZC3 ¹⁾ | Fig. 2 |

Bearing selection table for 1LE1/1PC1 motors – Bearings for increased cantilever forces – Order code **L22**

Please inquire about noise and vibration data. The bearing selection tables are only intended for planning purposes. Authoritative information on the actual type of bearings fitted in motors already supplied can be obtained by the factory by quoting the

serial number or can be read from the rating plate. When deep-groove ball bearings with side plates are used, the side plate is on the inside.

| For motors frame size | Number of poles | Drive end (DE) bearing | | Non-drive end (NDE) bearing | | Figure, below on this page |
|-----------------------|-----------------|---------------------------------|-------------------------------|---------------------------------|-------------------------------|----------------------------|
| | | Horizontal type of construction | Vertical type of construction | Horizontal type of construction | Vertical type of construction | |
| 1LE1/1PC1 | | | | | | |
| 100 L | 2 to 8 | 6306 2ZC3 ¹⁾ | 6306 2ZC3 ¹⁾ | 6206 2ZC3 ¹⁾ | 6206 2ZC3 ¹⁾ | Fig. 1 |
| 112 M | 2 to 8 | 6306 2ZC3 ¹⁾ | 6306 2ZC3 ¹⁾ | 6206 2ZC3 ¹⁾ | 6206 2ZC3 ¹⁾ | Fig. 1 |
| 132 S/M | 2 to 8 | 6308 2ZC3 ¹⁾ | 6308 2ZC3 ¹⁾ | 6208 2ZC3 ¹⁾ | 6208 2ZC3 ¹⁾ | Fig. 1 |
| 160 M/L | 2 to 8 | 6309 2ZC3 ¹⁾ | 6309 2ZC3 ¹⁾ | 6209 2ZC3 ¹⁾ | 6209 2ZC3 ¹⁾ | Fig. 2 |

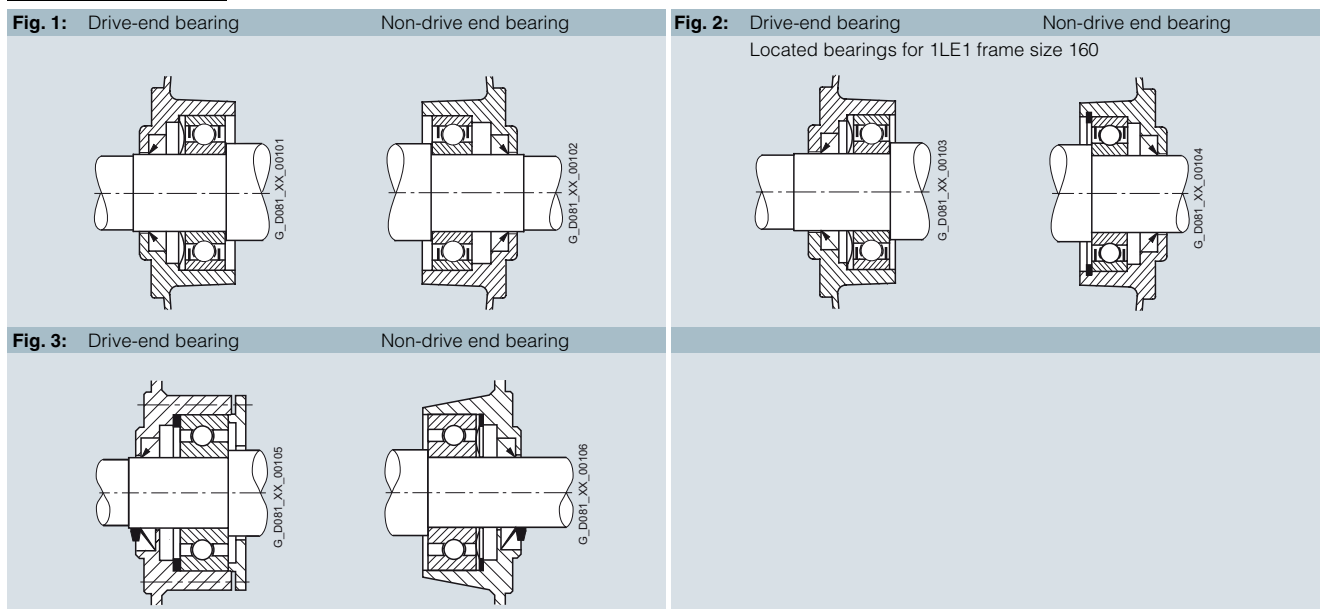
Bearing selection table for 1LE1/1PC1 motors – Deep-groove bearings reinforced at both ends – Order code **L25**

Please inquire about noise and vibration data. The bearing selection tables are only intended for planning purposes. Authoritative information on the actual type of bearings fitted in motors already supplied can be obtained by the factory by quoting the

serial number or can be read from the rating plate. When deep-groove ball bearings with side plates are used, the side plate is on the inside.

| For motors frame size | Number of poles | Drive end (DE) bearing | | Non-drive end (NDE) bearing | | Figure, below on this page |
|-----------------------|-----------------|---------------------------------|-------------------------------|---------------------------------|-------------------------------|----------------------------|
| | | Horizontal type of construction | Vertical type of construction | Horizontal type of construction | Vertical type of construction | |
| 1LE1/1PC1 | | | | | | |
| 100 L | 2 to 8 | 6306 2ZC3 ¹⁾ | 6306 2ZC3 ¹⁾ | 6306 2ZC3 ¹⁾ | 6306 2ZC3 ¹⁾ | Fig. 1 |
| 112 M | 2 to 8 | 6306 2ZC3 ¹⁾ | 6306 2ZC3 ¹⁾ | 6306 2ZC3 ¹⁾ | 6306 2ZC3 ¹⁾ | Fig. 1 |
| 132 S/M | 2 to 8 | 6308 2ZC3 ¹⁾ | 6308 2ZC3 ¹⁾ | 6308 2ZC3 ¹⁾ | 6308 2ZC3 ¹⁾ | Fig. 1 |
| 160 M/L | 2 to 8 | 6309 2ZC3 ¹⁾ | 6309 2ZC3 ¹⁾ | 6309 2ZC3 ¹⁾ | 6309 2ZC3 ¹⁾ | Fig. 2 |

Diagrams of bearings



¹⁾ Bearings with a side plate are used for regreasable versions (order code **L23**).

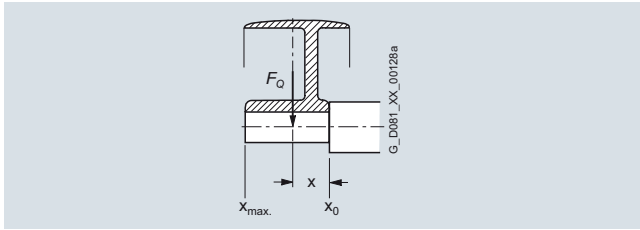
IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

Admissible cantilever forces

Admissible cantilever forces, basic version



In order to calculate the admissible cantilever forces for a radial load, the line of force (i.e. the centerline of the pulley) of the cantilever force F_Q (N) must lie within the free shaft extension (dimension X).

Dimension x [mm] is the distance between the point of application of force F_Q and the shaft shoulder. Dimension x_{max} , corresponds to the length of the shaft extension.

Total cantilever force $F_Q = c \cdot F_u$

The pre-tension factor c is a value gained from experience from the belt manufacturer. The following approximate value can be assumed:

For normal flat leather belts with an idler pulley $c = 2$;
for V-belts $c = 2$ to 2.5;
for special synthetic belts (depending on the type of load and type of belt) $c = 2$ to 2.5.

The circumferential force F_u (N) is calculated using the following equation

$$F_u = 2 \cdot 10^7 \frac{P}{n \cdot D}$$

F_u circumferential force in N
 P rated motor output (transmitted power) in kW
 n fan speed in rpm
 D belt pulley diameter in mm

The pulleys are standardized acc. to DIN 2211, Sheet 3.

The admissible cantilever forces at 60 Hz are approx. 80 % of the 50 Hz values (please inquire).

It should be observed that for types of construction IM B6, IM B7, IM B8, IM V5 and IM V6 the belt tension is only permitted to act parallel to the mounting plane or towards the mounting plane and the feet must be supported. Both feet must be secured for foot-mounting types of construction.

Refer to "Bearing design for increased cantilever forces", Page 0/126.

Admissible cantilever forces for the basic 50 Hz version

Valid are: x_0 values for $x = 0$ and x_{max} values für $x = l$ (l = shaft extension)

| Frame size | Order No. | Number of poles | Admissible cantilever force | |
|------------|-----------|-----------------|-----------------------------|------------------------|
| | | | at x_0 Type | at x_{max} . Type |
| | | | N | N |

1LE1 motor values for EFF1 motors with increased output¹⁾ (Self-ventilated motors with increased output and high efficiency):

| | | | | |
|-----|--------------------|---|------|------|
| 100 | 1LE1001-1AA | 2 | 1010 | 825 |
| | 1LE1001-1AB | 4 | 1230 | 1010 |
| | 1LE1001-1AC | 6 | 1440 | 1180 |
| 112 | 1LE1001-1BA | 2 | 970 | 785 |
| | 1LE1001-1BB | 4 | 1235 | 1000 |
| | 1LE1001-1BC | 6 | 1440 | 1165 |
| 132 | 1LE1001-1CA | 2 | 1470 | 1180 |
| | 1LE1001-1CB | 4 | 1830 | 1470 |
| | 1LE1001-1CC | 6 | 2150 | 1730 |
| 160 | 1LE1001-1DA | 2 | 1550 | 1270 |
| | 1LE1001-1DB | 4 | 1910 | 1550 |
| | 1LE1001-1DC | 6 | 2230 | 1810 |

Admissible cantilever forces for the basic 50 Hz version

Valid are: x_0 values for $x = 0$ and x_{max} values für $x = l$ (l = shaft extension)

| Frame size | Order No. | Number of poles | Admissible cantilever force | |
|------------|-----------|-----------------|-----------------------------|------------------------|
| | | | at x_0 Type | at x_{max} . Type |
| | | | N | N |

1LE1 motors, standard values for EFF1 motors¹⁾ (Self-ventilated energy-saving motors with high efficiency/ Forced-air cooled motors without external fan and fan cover with high efficiency) 1PC1 motors, standard values for EFF1 motors¹⁾ (Self-cooled motors with high efficiency):

| | | | | |
|-----|--------------------|---|------|------|
| 100 | 1LE1001-1AA | 2 | 1020 | 815 |
| | 1PC1001-1AA | | | |
| | 1LE1001-1AB | 4 | 1250 | 1000 |
| | 1PC1001-1AB | | | |
| | 1LE1001-1AC | 6 | 1450 | 1155 |
| | 1PC1001-1AC | | | |
| | 1LE1001-1AD | 8 | 1615 | 1290 |
| | 1PC1001-1AD | | | |
| 112 | 1LE1001-1BA | 2 | 1000 | 790 |
| | 1PC1001-1BA | | | |
| | 1LE1001-1BB | 4 | 1250 | 990 |
| | 1PC1001-1BB | | | |
| | 1LE1001-1BC | 6 | 1450 | 1150 |
| | 1PC1001-1BC | | | |
| | 1LE1001-1BD | 8 | 1610 | 1275 |
| | 1PC1001-1BD | | | |
| 132 | 1LE1001-1CA | 2 | 1505 | 1170 |
| | 1PC1001-1CA | | | |
| | 1LE1001-1CB | 4 | 1880 | 1460 |
| | 1PC1001-1CB | | | |
| | 1LE1001-1CC | 6 | 2170 | 1680 |
| | 1PC1001-1CC | | | |
| | 1LE1001-1CD | 8 | 2420 | 1880 |
| | 1PC1001-1CD | | | |
| 160 | 1LE1001-1DA | 2 | 1560 | 1240 |
| | 1PC1001-1DA | | | |
| | 1LE1001-1DB | 4 | 2040 | 1590 |
| | 1PC1001-1DB | | | |
| | 1LE1001-1DC | 6 | 2350 | 1820 |
| | 1PC1001-1DC | | | |
| | 1LE1001-1DD | 8 | 2610 | 2030 |
| | 1PC1001-1DD | | | |

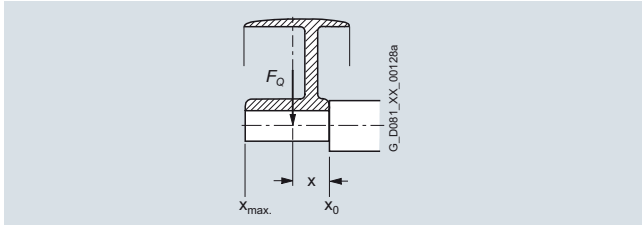
¹⁾ The admissible cantilever force load of EFF2 motors can be increased by up to 5 %.

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

Bearing design for increased cantilever forces



It should be observed that for types of construction IM B6, IM B7, IM B8, IM V5 and IM V6 the belt tension is only permitted to act parallel to the mounting plane or towards the mounting plane and the feet must be supported. Both feet must be secured for foot-mounted types of construction.

Admissible cantilever forces for the basic 50 Hz version Deep-groove ball bearings at the drive end (DE) – Order code L22 Valid are: x_0 values for $x = 0$ and x_{max} . values für $x = l$ (l = shaft extension)

| Frame size | Order No. | Number of poles | Admissible cantilever force | |
|------------|-----------|-----------------|-----------------------------|----------------|
| | | | at x_0 | at x_{max} . |
| | | | Type | Type |
| | | | N | N |

1LE1 motor values for EFF 1 motors with increased output ¹⁾ (Self-ventilated motors with increased output and high efficiency):

| | | | | |
|-----|--------------------|---|------|------|
| 100 | 1LE1001-1AA | 2 | 1585 | 1300 |
| | 1LE1001-1AB | 4 | 1960 | 1610 |
| | 1LE1001-1AC | 6 | 2270 | 1865 |
| 112 | 1LE1001-1BA | 2 | 1545 | 1250 |
| | 1LE1001-1BB | 4 | 1960 | 1585 |
| | 1LE1001-1BC | 6 | 2270 | 1835 |
| 132 | 1LE1001-1CA | 2 | 2285 | 1840 |
| | 1LE1001-1CB | 4 | 2860 | 2300 |
| | 1LE1001-1CC | 6 | 3320 | 2670 |
| 160 | 1LE1001-1DA | 2 | 2800 | 2240 |
| | 1LE1001-1DB | 4 | 3450 | 2270 |
| | 1LE1001-1DC | 6 | 4000 | 3200 |

Admissible cantilever forces for the basic 50 Hz version

Deep-groove ball bearings at the drive end (DE) – Order code L22

Valid are: x_0 values for $x = 0$ and x_{max} . values für $x = l$ (l = shaft extension)

| Frame size | Order No. | Number of poles | Admissible cantilever force | |
|------------|-----------|-----------------|-----------------------------|----------------|
| | | | at x_0 | at x_{max} . |
| | | | Type | Type |
| | | | N | N |

1LE1 motors standard values for EFF1 motors ¹⁾ (Self-ventilated energy-saving motors with high efficiency/ Forced-air cooled motors without external fan and fan cover with high efficiency) 1PC1 motors, standard values for EFF1 motors ¹⁾ (Self-cooled motors with high efficiency):

| | | | | |
|-----|--------------------|---|------|------|
| 100 | 1LE1001-1AA | 2 | 1590 | 1270 |
| | 1PC1001-1AA | | | |
| | 1LE1001-1AB | 4 | 1970 | 1575 |
| | 1PC1001-1AB | | | |
| | 1LE1001-1AC | 6 | 2270 | 1815 |
| | 1PC1001-1AC | | | |
| | 1LE1001-1AD | 8 | 2520 | 2015 |
| | 1PC1001-1AD | | | |
| 112 | 1LE1001-1BA | 2 | 1565 | 1240 |
| | 1PC1001-1BA | | | |
| | 1LE1001-1BB | 4 | 1965 | 1555 |
| | 1PC1001-1BB | | | |
| | 1LE1001-1BC | 6 | 2270 | 1800 |
| | 1PC1001-1BC | | | |
| | 1LE1001-1BD | 8 | 2510 | 1990 |
| | 1PC1001-1BD | | | |
| 132 | 1LE1001-1CA | 2 | 2310 | 1795 |
| | 1PC1001-1CA | | | |
| | 1LE1001-1CB | 4 | 2900 | 2250 |
| | 1PC1001-1CB | | | |
| | 1LE1001-1CC | 6 | 3330 | 2580 |
| | 1PC1001-1CC | | | |
| | 1LE1001-1CD | 8 | 3700 | 2870 |
| | 1PC1001-1CD | | | |
| 160 | 1LE1001-1DA | 2 | 2810 | 2170 |
| | 1PC1001-1DA | | | |
| | 1LE1001-1DB | 4 | 3540 | 2750 |
| | 1PC1001-1DB | | | |
| | 1LE1001-1DC | 6 | 4070 | 3160 |
| | 1PC1001-1DC | | | |
| | 1LE1001-1DD | 8 | 4510 | 3500 |
| | 1PC1001-1DD | | | |

Admissible axial load

1LE1 motors in vertical type of construction – basic version (except motors with increased output)

| Frame size | Shaft extension pointing | | | | | | | | | | | | | | | |
|------------|--------------------------|---------|-----------|---------|-----------|---------|-----------|---------|-----------|---------|-----------|---------|-----------|---------|-----------|---------|
| | 3000 rpm | | | | 1500 rpm | | | | 1000 rpm | | | | 750 rpm | | | |
| | downwards | | upwards | | downwards | | upwards | | downwards | | upwards | | downwards | | upwards | |
| | Load down | Load up | Load down | Load up | Load down | Load up | Load down | Load up | Load down | Load up | Load down | Load up | Load down | Load up | Load down | Load up |
| 100 | 140 | 700 | 550 | 280 | 130 | 990 | 820 | 285 | 130 | 1280 | 1110 | 285 | 130 | 1560 | 1390 | 285 |
| 112 | 140 | 710 | 550 | 300 | 130 | 1000 | 820 | 310 | 130 | 1290 | 1110 | 310 | 130 | 1570 | 1390 | 310 |
| 132 | 200 | 1200 | 950 | 470 | 180 | 1680 | 1200 | 470 | 180 | 1900 | 1600 | 470 | 190 | 2200 | 1900 | 440 |
| 160 | 1500 | 1400 | 950 | 1900 | 1900 | 1800 | 1300 | 2200 | 2200 | 2200 | 1600 | 2700 | 2700 | 2700 | 1950 | 2900 |

The values shown do not assume a cantilever force on the shaft extension.
The admissible loads are valid for operation at 50 Hz; for 60 Hz, please inquire.

The calculation of the admissible axial load was based on the drive with generally available coupling. For suppliers, see the relevant section of the catalog, section "Accessories", Page 1/64.
Please inquire if the load direction alternates.

¹⁾ The admissible cantilever force load of EFF2 motors can be increased by up to 5 %.

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

1LE1/1PC1 motors in horizontal type of construction – basic version (except motors with increased output)

| Frame size | 3000 rpm | | | | 1500 rpm | | | | 1000 rpm | | | | 750 rpm | | | |
|------------|---------------|-------------------------------------|------------|---------------------|---------------|-------------------------------------|------------|---------------------|---------------|-------------------------------------|------------|---------------------|---------------|-------------------------------------|------------|---------------------|
| | Ten-sile load | Thrust load (N) with radial load at | | | Ten-sile load | Thrust load (N) with radial load at | | | Ten-sile load | Thrust load (N) with radial load at | | | Ten-sile load | Thrust load (N) with radial load at | | |
| | | x_0 | $x_{max.}$ | without radial load | | x_0 | $x_{max.}$ | without radial load | | x_0 | $x_{max.}$ | without radial load | | x_0 | $x_{max.}$ | without radial load |
| N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| 100 | 220 | 450 | 350 | 630 | 220 | 600 | 500 | 910 | 220 | 650 | 550 | 1200 | 220 | 750 | 650 | 1480 |
| 112 | 220 | 450 | 350 | 630 | 220 | 600 | 500 | 910 | 220 | 650 | 550 | 1200 | 220 | 750 | 650 | 1480 |
| 132 | 350 | 650 | 520 | 1200 | 350 | 850 | 700 | 1600 | 350 | 1020 | 890 | 1900 | 350 | 1150 | 1020 | 2200 |
| 160 | 1500 | 850 | 720 | 1500 | 1500 | 1050 | 920 | 1800 | 1500 | 1250 | 1120 | 2200 | 1500 | 1350 | 1220 | 2600 |

The values shown do not assume a cantilever force on the shaft extension.

The admissible loads are valid for operation at 50 Hz; for 60 Hz, please inquire.

The calculation of the admissible axial load was based on the drive with generally available coupling. For suppliers, see the relevant section of the catalog "Accessories", Page 1/64. Please inquire if the load direction alternates.

Modular technology

Basic versions

The range of potential applications for the 1LE1 motors (with the exception of 1LE1 with option F90 – version "Forced-air cooled motors without external fan and fan cover" and 1PC1) can be broadened considerably by mounting the following modules (e.g. as brake motors).

- **1XP8 012** rotary pulse encoder
- Separately driven fan
- Brake

The brake must always be mounted in the factory for safety reasons. The rotary pulse encoder and/or the separately driven fan can also be retrofitted.

The degree of protection of the motors with modular technology is IP55. Higher degrees of protection on request.

When a rotary pulse encoder, brake or separately driven fan is mounted, the length of the motor increases by Δl . For an explanation of the additional dimensions and weights, see "Technology", "Dimensions and weights" from Page 0/137.

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

1XP8 012 rotary pulse encoder

The rotary pulse encoder can be supplied already mounted in an HTL version as **1XP8 012-10** with order code **G01** or in a TTL version as **1XP8 012-20** with order code **G02**. The rotary pulse encoder can only be mounted on a standard non-drive end (NDE), i.e. a second shaft extension cannot be supplied.

The encoder can be retrofitted. The motor must be prepared for this. When the motor is ordered, the option "Prepared for mountings, center hole only", order code **G40**, or the option "Prepared for mountings with shaft D12", order code **G41**, must be specified (see "Mechanical design and degrees of protection", Page 0/118).

The 1XP8 012 rotary pulse encoder is suitable for standard applications. For further encoders, see "Special technology", Page 0/134.

When the rotary pulse encoder is mounted, the length of the motor increases by Δl . For an explanation of the additional dimensions and weights, see "Technology", "Dimensions and weights" from Page 0/137.

The rotary pulse encoders of "Modular technology" and "Special technology" are fitted as standard with a protective cover made of non-corrosive sheet steel.

Mounting of encoder at temperatures below -20 °C and higher than $+40\text{ °C}$ on request.

Technical data of rotary pulse encoders

| | 1XP8 012-10 (HTL version) +10 V to +30 V | 1XP8 012-20 (TTL version) 5V \pm 10 % |
|--|--|---|
| Supply voltage U_B | | |
| Current input without load | 150 mA | 120 mA |
| Admissible load current per output | max. 100 mA | max. 20 mA |
| Pulses per revolution | 1024 | 1024 |
| Outputs | 2 square-wave pulses A, B – 2 inverted square-wave pulses A, B Zero pulse and inverted zero pulse | |
| Pulse offset between the two outputs | 90° | 90° |
| Output amplitude | $U_{\text{high}} = U_B - 2.5\text{ V}$ $U_{\text{low}} = 1.6\text{ V}$ | $U_{\text{high}} > 2.5\text{ V}$ $U_{\text{low}} < 0.5\text{ V}$ |
| Edge interval | $\geq 0.43\text{ }\mu\text{s}$ | $\geq 0.43\text{ }\mu\text{s}$ |
| Sampling rate | $\leq 300\text{ kHz}$ | $\leq 300\text{ kHz}$ |
| Maximum speed | 6000 rpm | 6000 rpm |
| Transportation/storage temperature range | $-30\text{ to }+80\text{ °C}$ | $-30\text{ to }+80\text{ °C}$ |
| Operating temperature range flange socket or fixed cable | $-40\text{ to }+100\text{ °C}$ | $-40\text{ to }+100\text{ °C}$ |
| Operating temperature range flexible cable | $-10\text{ to }+100\text{ °C}$ | $-10\text{ to }+100\text{ °C}$ |
| Degree of protection | IP66 | IP66 |
| Maximum admissible radial cantilever force | 60 N | 60 N |
| Maximum admissible axial force | 40 N | 40 N |
| Connection system | 12-pin connector (mating connector is supplied) | |
| Certification | CSA, UL | CSA, UL |
| Weight | 0.3 kg | 0.3 kg |

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

Separately driven fan

The use of a separately driven fan is recommended to increase motor utilization at low speeds and to limit noise generation at speeds significantly higher than the synchronous speed. Both of these results can only be achieved with converter-fed operation. Please inquire about traction and vibratory operation.

The separately driven fan can be supplied already fitted, order code **F70**.

It can also be ordered separately and retrofitted. For selection information and order numbers, see the section "Accessories" (available soon). A rating plate listing all the important data is fitted to the separately driven fan. Please note the direction of rotation of the separately driven fan (axial-flow fan) when connecting it. Admissible coolant temperatures $CT_{min.}$ -25 °C , $CT_{max.}$ $+65\text{ °C}$ ¹⁾, lower/higher coolant temperatures on request. When the separately driven fan is mounted, the length of the motor increases by Δ l. For an explanation of the additional dimensions and weights, see "Technology", "Dimensions and weights" from Page 0/137.

Technical data of the separately driven fan (acc. to DIN EN 60034-1 Tolerance)

| Frame size | Rated voltage range | | Frequency | Rated speed | Power consumption | Rated current |
|------------|---------------------|---------------------|-----------|-------------|-------------------|---------------|
| | V | | Hz | rpm | kW | A |
| 100 | 1 AC | 230 to 277 | 50 | 2790 | 0.075 | 0.29 |
| | 3 AC | 220 to 290 Δ | 50 | 2830 | 0.086 | 0.27 |
| | 3 AC | 380 to 500 Y | 50 | 2830 | 0.086 | 0.16 |
| | 1 AC | 230 to 277 | 60 | 3280 | 0.094 | 0.28 |
| | 3 AC | 220 to 332 Δ | 60 | 3490 | 0.093 | 0.27 |
| | 3 AC | 380 to 575 Y | 60 | 3490 | 0.093 | 0.16 |
| 112 | 1 AC | 230 to 277 | 50 | 2720 | 0.073 | 0.26 |
| | 3 AC | 220 to 290 Δ | 50 | 2770 | 0.085 | 0.27 |
| | 3 AC | 380 to 500 Y | 50 | 2770 | 0.085 | 0.15 |
| | 1 AC | 230 to 277 | 60 | 3000 | 0.107 | 0.31 |
| | 3 AC | 220 to 332 Δ | 60 | 3280 | 0.094 | 0.28 |
| | 3 AC | 380 to 575 Y | 60 | 3280 | 0.094 | 0.16 |
| 132 | 1 AC | 230 to 277 | 50 | 2860 | 0.115 | 0.40 |
| | 3 AC | 220 to 290 Δ | 50 | 2880 | 0.138 | 0.45 |
| | 3 AC | 380 to 500 Y | 50 | 2880 | 0.138 | 0.24 |
| | 1 AC | 230 to 277 | 60 | 3380 | 0.185 | 0.59 |
| | 3 AC | 220 to 332 Δ | 60 | 3470 | 0.148 | 0.41 |
| | 3 AC | 380 to 575 Y | 60 | 3470 | 0.148 | 0.24 |
| 160 | 1 AC | 230 to 277 | 50 | 2780 | 0.236 | 0.96 |
| | 3 AC | 220 to 290 Δ | 50 | 2840 | 0.220 | 0.76 |
| | 3 AC | 380 to 500 Y | 50 | 2830 | 0.220 | 0.43 |
| | 3 AC | 220 to 332 Δ | 60 | 3400 | 0.284 | 0.94 |
| | 3 AC | 380 to 575 Y | 60 | 3400 | 0.284 | 0.56 |

¹⁾ The admissible coolant temperature for single phase versions (1 AC) for frame size 160 is $CT_{max.}$ $+50\text{ °C}$.

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

Brakes

Spring-operated disk brakes are used for the brakes with order code **F01**. When the brake is ordered, the supply voltage must be specified. The supply voltage for brakes is explained under "Modular technology – Additional versions", Page 0/133.

For the design of each brake type, the braking time, run-on revolutions, braking energy per braking procedure as well as the service life of the brake linings, see "Configuration of motors with brakes", Page 0/132.

When a brake is mounted, the length of the motor increases by Δl . For an explanation of the additional dimensions and weights, see "Technology", "Dimensions and weights" from Page 0/137.

The brake can be retrofitted by authorized partners. The motor must be prepared for this. When the motor is ordered, the option "Prepared for mountings, center hole only", order code G40, must be specified (see "Mechanical design and degrees of protection", Page 0/118).

2LM8 spring-operated disk brake

The 2LM8 brake has IP55 degree of protection.

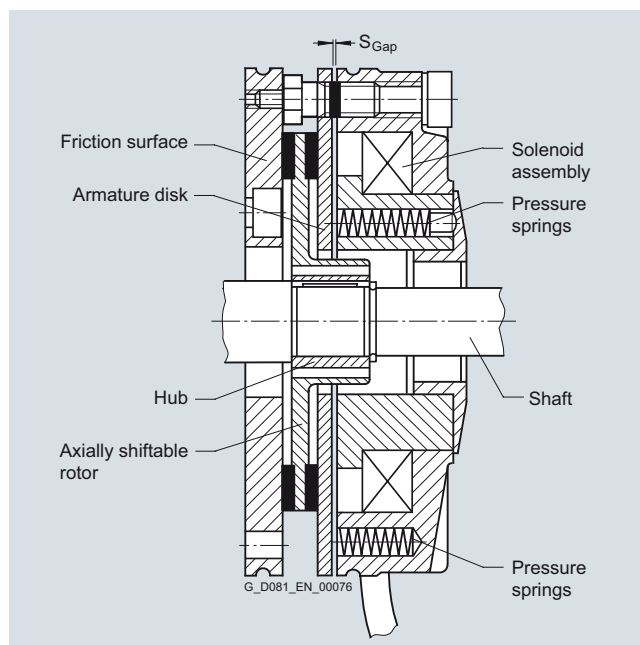
Please inquire if motors with brakes are to be operated below the freezing point or in very humid environments (e.g. close to the sea) with long standstill times. Please inquire if the brake motors are used for converter-fed operation with low speeds.

Design and mode of operation

The brake takes the form of a single-disk brake with two friction surfaces.

The braking torque is generated by friction when pressure is applied by one or more pressure springs in the de-energized state. The brake is released electromagnetically.

When the motor brakes, the rotor which can be axially shifted on the hub or the shaft is pressed via the armature disk against the friction surface by means of the springs. In the braked state, there is a gap S_{Gap} between the armature disk and the solenoid component. To release the brake, the solenoid is energized with DC voltage. The resulting magnetic force pulls the armature disk against the spring force on to the solenoid component. The spring force is then no longer applied to the rotor which can rotate freely.



Design of the 2LM8 spring-operated disk brake

Rating plate

The following brake data are specified on the motor rating plate.

Brake type, supply voltage, frequency, current, temperature class, braking torque

Operating values for spring-operated brakes with standard excitation

| For motor Frame size | Brake type | Rated braking torque at 100 rpm | Rated braking torque at 100 rpm in % at the following speeds | | | Supply voltage | Current/power input ¹⁾ | | | Brake application time t_2 ²⁾ | Brake release time | Brake moment of inertia | Noise level L_p with rated air gap | Service capability of the brake | |
|----------------------|-----------------------|---------------------------------|--|----------|------------|----------------|-----------------------------------|-----|-----|--|--------------------|-------------------------|--------------------------------------|---------------------------------|--|
| | | | 1500 rpm | 3000 rpm | Max. speed | | V | A | W | | | | | Lifetime of brake lining L | Air gap adjustment required after braking energy L_N |
| | | Nm | % | % | % | V | A | W | ms | ms | kgm ² | dB (A) | Nm · 10 | Nm · 10 | |
| 100 | 2LM8 040-5NA10 | 40 | 81 | 74 | 66 | AC 230 | 0.2 | 40 | 43 | 140 | 0.00036 | 80 | 1350 | 115 | |
| | 2LM8 040-5NA60 | | | | | AC 400 | 0.22 | | | | | | | | |
| | 2LM8 040-5NA80 | | | | | DC 24 | 1.67 | | | | | | | | |
| 112 | 2LM8 060-6NA10 | 60 | 80 | 73 | 65 | AC 230 | 0.25 | 53 | 60 | 210 | 0.00063 | 77 | 1600 | 215 | |
| | 2LM8 060-6NA60 | | | | | AC 400 | 0.28 | | | | | | | | |
| | 2LM8 060-6NA80 | | | | | DC 24 | 2.1 | | | | | | | | |
| 132 | 2LM8 100-7NA10 | 100 | 79 | 72 | 65 | AC 230 | 0.27 | 55 | 50 | 270 | 0.0015 | 77 | 2450 | 325 | |
| | 2LM8 100-7NA60 | | | | | AC 400 | 0.31 | | | | | | | | |
| | 2LM8 100-7NA80 | | | | | DC 24 | 2.3 | | | | | | | | |
| 160 | 2LM8 260-8NA10 | 260 | 75 | 68 | 65 | AC 230 | 0.5 | 100 | 165 | 340 | 0.0073 | 79 | 7300 | 935 | |
| | 2LM8 260-8NA60 | | | | | AC 400 | 0.47 | | | | | | | | |
| | 2LM8 260-8NA80 | | | | | DC 24 | 4.2 | | | | | | | | |

¹⁾ For 400 V AC and for 24 V DC, the power can deviate by up to +10 % as a result of the selected supply voltage.

²⁾ The specified switching times are valid for switching on the DC side with a rated release travel and with the coil already warm. They are average values which may vary depending on factors such as the rectifier type and the release travel. The brake application time for switching on the AC side, for example, is approximately 6 times longer than for switching on the DC side.

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

Lifetime of the brake lining

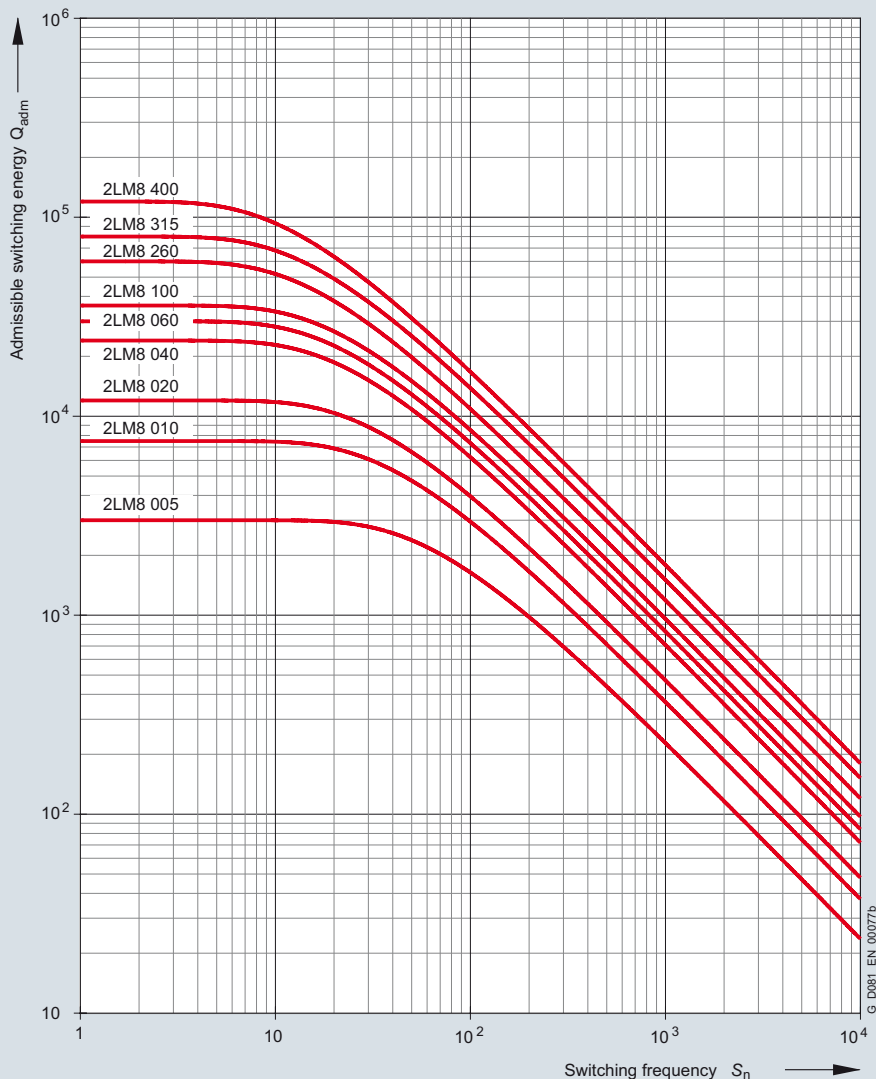
The braking energy L_N up to when the brake should be adjusted, depends on various factors. The main influencing factors include the masses to be braked, the operating speed, the switching frequency and therefore the temperature at the frictional surfaces. It is therefore not possible to specify a value for the friction energy until readjustment that is valid for all operating conditions.

When used as operating brake, the specific frictional surface wear (wear volume for the frictional work) is approximately 0.05 up to 2 cm³/kWh.

Maximum admissible speeds

The maximum admissible speeds from which emergency stops can be made, are listed in the next table. These speeds should be considered as recommended values and must be checked under actual operating conditions.

The maximum admissible friction energy depends on the switching frequency and is shown for the individual brakes in the following diagram. Increased wear can be expected when the brakes are used for emergency stops.



| For motor Frame size | Brake type | Maximum admissible speeds | | | Changing the braking torque | | | Readjusting the air gap | | |
|----------------------------|------------------------|--|---|------------------------|-----------------------------|------------------------|-------------------|--------------------------|---|--|
| | | Max. adm. operating speed if max. adm. operating energy utilized | Max. adm. no-load speed with emergency stop function | Horizontal mounting | Vertical mounting | Reduction per notch | Dimension "O1" | Min. brak- ing torque | Rated air gap $S_{Gap \text{ Rated}}$ | Maximum air gap $S_{Gap \text{ max.}}$ |
| | | rpm | rpm | rpm | Nm | mm | Nm | mm | mm | mm |
| 100 | 2LM8 040-5NA .. | 3000 | 6000 | 6000 | 1.29 | 12.5 | 21.3 | 0.3 | 0.65 | 8.0 |
| 112 | 2LM8 060-6NA .. | 3000 | 6000 | 6000 | 1.66 | 11.0 | 32.8 | 0.3 | 0.75 | 7.5 |
| 132 | 2LM8 100-7NA .. | 3000 | 5300 | 5000 | 1.55 | 13.0 | 61.1 | 0.3 | 0.75 | 8.0 |
| 160 | 2LM8 260-8NA .. | 1500 | 4400 | 3200 | 5.6 | 17.0 | 157.5 | 0.4 | 1.2 | 12.0 |

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

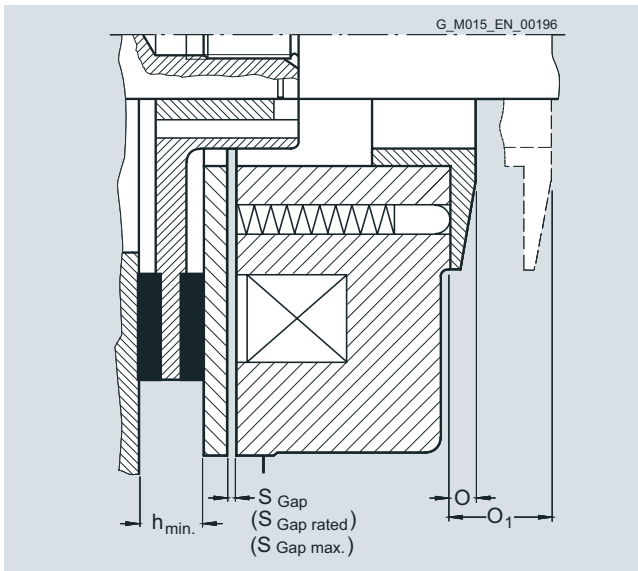
0

Changing the braking torque

The brake is supplied with the braking torque already set. For 2LM8 brakes, the torque can be reduced to the dimension O_1 by unscrewing the adjusting ring with a hook spanner. The braking torque changes by the values shown in the above table for each notch of the adjusting ring.

Readjusting the air gap

Under normal operating conditions, the brake is practically maintenance-free. The air gap S_{Gap} must only be checked at regular intervals if the application requires an extremely large amount of frictional energy and readjusted to the rated gap $S_{\text{Gap rated}}$ at the latest when the maximum air gap $S_{\text{Gap max.}}$ is reached.



Configuration of motors with brakes

Braking time

The time it takes the motor to come to a standstill comprises two components:

- The application time of the brake t_2
- The braking time t_{Br}

$$t_{\text{Br}} = \frac{J \cdot n_{\text{rated}}}{9.55 \cdot (T_{\text{B}} \pm T_{\text{L}})}$$

| | |
|--------------------|---|
| t_{Br} | Braking time in s |
| J | Total moment of inertia in kgm^2 |
| n_{rated} | Rated speed of the motor with brake in rpm |
| T_{B} | Rated braking torque in Nm |
| T_{L} | Average load torque in Nm (if T_{L} supports braking, T_{L} is positive) |

Braking energy per braking operation Q_{adm}

The braking energy per braking operation in Nm comprises the energy of the moments of inertia to be braked Q_{Kin} and the energy Q_{L} , which must be applied in order to brake against a load torque:

$$Q_{\text{adm}} = Q_{\text{Kin}} + Q_{\text{L}}$$

- The energy of the moments of inertia in Nm

$$Q_{\text{Kin}} = \frac{J \cdot n_{\text{rated}}^2}{182.4}$$

n_{rated} Rated speed before braking in rpm
 J Total moment of inertia in kg m^2

- The braking energy in Nm against a load torque

$$Q_{\text{L}} = \frac{\pm T_{\text{L}} \cdot n_{\text{rated}} \cdot t_{\text{Br}}}{19.1}$$

T_{L} average load torque in Nm
 T_{L} is positive if it acts against the brake
 T_{L} is negative if it supports the brake

Run-on revolutions U

The number of run-on revolutions U of the motor with brake can be calculated as follows:

$$U = \frac{n_{\text{rated}}}{60} \left(t_2 + \frac{t_{\text{Br}}}{2} \right)$$

t_2 Brake application time in ms

Lifetime of the brake lining L and readjustment of the air gap

The brake lining wears due to friction which increases the air gap and the release time for the brake at standard excitation.

When the brake lining is worn out, it can be replaced easily.

In order to calculate the lifetime of the brake lining in terms of operations $S_{\text{max.}}$, the lifetime of the brake lining L in Nm must be divided by the braking energy Q_{adm} :

$$S_{\text{max}} = \frac{L}{Q_{\text{adm}}}$$

The interval between adjustments N in switching frequencies can be calculated in terms of operations by dividing the braking energy L_{N} which the brake can output until it is necessary to readjust the working air gap by Q_{adm} :

$$N = \frac{L_{\text{N}}}{Q_{\text{adm}}}$$

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

Additional versions

2LM8 spring-operated disk brake

Motor series

This brake is mounted on 1LE1 motors as standard (with the exception of 1LE1 with order code F90 – version “Forced-air cooled motors without external fan and fan cover”, and 1PC1).

Voltage and frequency

The solenoid coil and the brake rectifier can be connected to the following voltages or can be supplied for the following voltages:

- Brake supply voltage: 24 V DC
Order code **F10**
- Brake supply voltage: 230 V AC
Order code **F11**
- Brake supply voltage: 400 V AC
(directly at the terminal strip)
Order code **F12**

When 60 Hz is used, the voltage for the brake must not be increased!

Order codes **F10**, **F11** and **F12** may only be used in conjunction with order code **F01**.

Connections

Labeled terminals are provided in the main connection box of the motor to connect the brake.

The AC voltage for the brake excitation winding is connected to the two free terminals of the rectifier block (~).

The brake can be released when the motor is at a standstill by separately exciting the solenoid. In this case, an AC voltage must be connected at the rectifier block terminals. The brake remains released as long as this voltage is present.

The rectifier is protected against overvoltages by varistors in the input and output circuits.

For 24 V DC brakes, the brake terminals are directly connected to the DC voltage source.

See the circuit diagrams below.

Fast brake application

If the brake is disconnected from the line supply, the brake is applied. The application time for the brake disk is delayed as a result of the inductance of the solenoid (shutdown on the AC side). This results in a considerable delay before the brake is mechanically applied. In order to achieve short brake application times, the circuit must be interrupted on the DC side. To realize this, the wire jumpers, located between contacts 1+ and 2+ at the rectifier are removed and replaced by the contacts of an external switch (see circuit diagrams below).

Manual brake release with lever

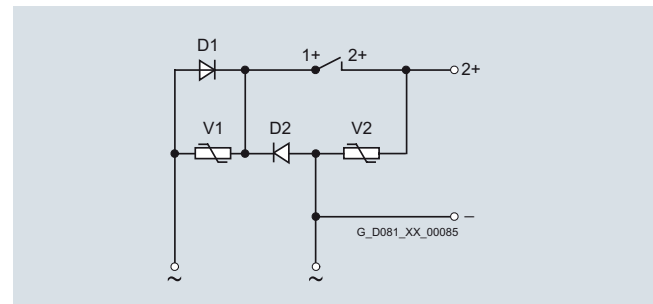
The brakes can be supplied with a mechanical manual release with lever.

Order code **F50**.

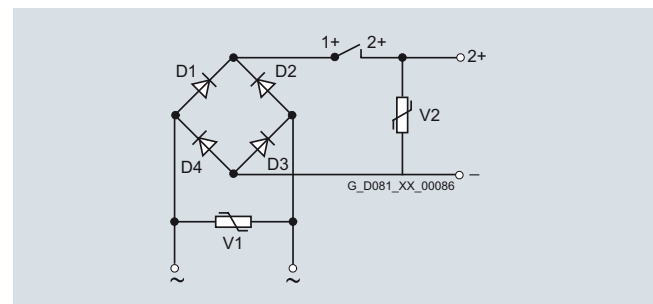
The dimensions of the brake lever depend on the motor frame size and can be read from the dimension drawing generator for motors in the SD configurator tool for low-voltage motors.

Bridge rectifier / half-wave rectifier

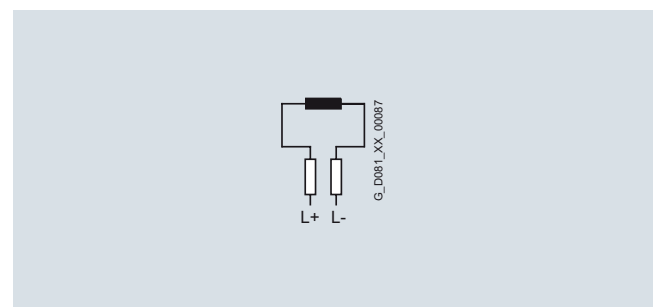
Brakes are connected through a standard bridge or half-wave rectifier or directly to the 2LM8 brake. See the circuit diagrams below.



Half-wave rectifier, 400 V AC



Bridge rectifier, 230 V AC



Brake connection for 24 V DC

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

Special technology

The range of "Special technology" comprises rotary pulse encoders for the 1LE1 motors (with the exception of 1LE1 with order code F90 – version "Forced-air cooled motors without external fan and fan cover", and 1PC1).

The 1LE1 motors with the order codes **F70** (mounted separately driven fan), **F01** (mounted brake) and **F01 + F70** (mounted brake and separately driven fan) from the "Modular technology" range can be combined with the LL 861 900 200, HOG 9 D 1024 I and HOG 10 D 1024 I rotary pulse encoders from the "Special technology" range.

When a rotary pulse encoder is mounted, the length of the motor increases by Δ l. For an explanation of the additional dimensions and weights, see "Technology", "Dimensions and weights" from Page 0/137.

The rotary pulse encoders of "Modular technology" and "Special technology" are fitted as standard with a protective cover made of non-corrosive sheet steel.

Rotary pulse encoder LL 861 900 220



With its rugged construction, this rotary pulse encoder is also suitable for difficult operating environments. It is resistant to shock and vibration and has insulated bearings.

The LL 861 900 220 rotary pulse encoder can be supplied already mounted.

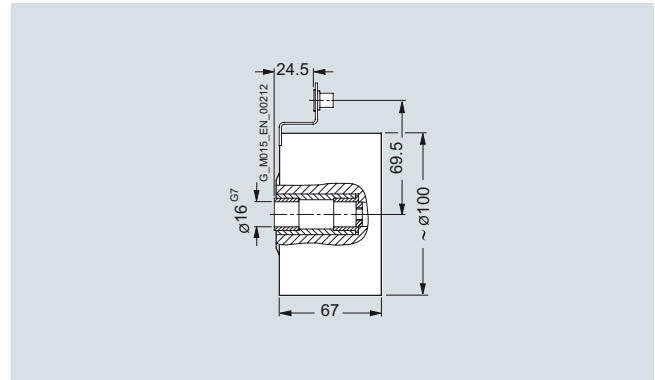
Order code **G04**.

*The LL 861 900 220 rotary pulse encoder can be retrofitted. The motor must be prepared for this. When the motor is ordered, the option "Prepared for mountings, center hole only", order code **G40**, or the option "Prepared for mountings with shaft D16", order code **G42**, must be specified (see "Mechanical design and degrees of protection", Page 0/118). The rotary pulse encoder is not part of the scope of supply in this case.*

The version of the rotary pulse encoder with a diagnostics system (ADS) can be supplied by Leine and Linde.

Manufacturer:
Leine and Linde (Deutschland) GmbH
Bahnhofstraße 36
73430 Aalen
Tel. +49 (0) 73 61-78093-0
Fax +49 (0) 73 61-78093-11

<http://www.leinelinde.com>
e-mail: info@leinelinde.se



Mounting dimensions of rotary pulse encoder LL 861 900 220

Technical data for LL 861 900 220 (HTL version)

Mounting of encoder at temperatures below -20 °C and higher than $+40\text{ °C}$ on request.

| Supply voltage U_B | +9 V to +30 V |
|--------------------------------------|--|
| Current input without load | max. 80 mA |
| Admissible load current per output | 40 mA |
| Pulses per revolution | 1024 |
| Outputs | 6 short-circuit proof square-wave pulses A, A', B, B', 0, 0' |
| Pulse offset between the two outputs | $90^\circ \pm 25^\circ$ el. |
| Output amplitude | $U_{\text{High}} > 20\text{ V}$ $U_{\text{Low}} < 2.5\text{ V}$ |
| Mark space ratio | $1:1 \pm 10\%$ |
| Edge steepness | $50\text{ V}/\mu\text{s}$ (without load) |
| Maximum frequency | 100 kHz for 350 m cable |
| Maximum speed | 4000 rpm |
| Temperature range | -20 to $+80\text{ °C}$ |
| Degree of protection | IP65 |
| Maximum adm. radial cantilever force | 300 N |
| Maximum adm. axial force | 100 N |
| Connection system | Terminal strips in encoder Cable connection M20 x 1.5 radial |
| Weight | Approx. 1.3 kg |

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

HOG 9 D 1024 rotary pulse encoder



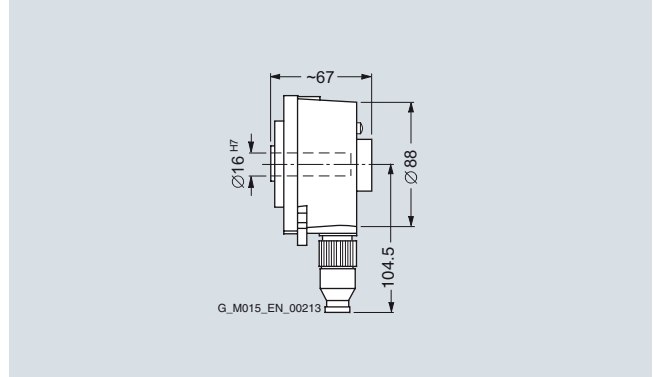
The encoder is fitted with insulated bearings.

The HOG 9 D 1024 I rotary pulse encoder can be supplied already mounted.
Order code **G05**.

The HOG 9 D 1024 I rotary pulse encoder can be retrofitted. The motor must be prepared for this. When the motor is ordered, the option "Prepared for mountings, center hole only", order code **G40**, or the option "Prepared for mountings with shaft D16", order code **G42**, must be specified (see "Mechanical design and degrees of protection", Page 0/118). The rotary pulse encoder is not part of the scope of supply in this case.

Manufacturer:
Baumer Hübner GmbH
Planufer 92b
10967 Berlin
Tel. +49 (0) 30-6 90 03-0
Fax +49 (0) 30-6 90 03-1 04

<http://www.baumerhuebner.com>
e-mail: info@baumerhuebner.com



Mounting dimensions for HOG 9 D 1024 I rotary pulse encoder

Technical data for HOG 9 D 1024 (TTL version)

Mounting of encoder at temperatures below -20 °C and higher than $+40\text{ °C}$ on request.

| Supply voltage U_B | +9 V to +30 V |
|--|---|
| Current input without load | 50 mA to 100 mA |
| Admissible load current per output | 60 mA, 300 mA peak |
| Pulses per revolution | 1024 |
| Outputs | 4 short-circuit proof square-wave pulses A, B and A', B' |
| Pulse offset between the two outputs | $90^\circ \pm 20\%$ |
| Output amplitude | $U_{\text{High}} \geq U_B - 3.5\text{ V}$ $U_{\text{Low}} \leq 1.5\text{ V}$ |
| Mark space ratio | $1:1 \pm 20\%$ |
| Edge steepness | 10 V/ μs |
| Maximum frequency | 120 kHz |
| Maximum speed | 7000 rpm |
| Temperature range | -20 to $+100\text{ °C}$ |
| Degree of protection | IP56 |
| Maximum adm. radial cantilever force | 150 N |
| Maximum adm. axial force | 100 N |
| Connection system | Radial right-angle plug (mating connector is part of the scope of supply) |
| Mech. design acc. to Hübner Ident. No. | 73 522 B |
| Weight | Approx. 0.9 kg |

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

HOG 10 D 1024 I rotary pulse encoder



This encoder is extremely rugged and is therefore suitable for difficult operating conditions. It is fitted with insulated bearings.

The HOG 10 D 1024 I rotary pulse encoder can be supplied already mounted.

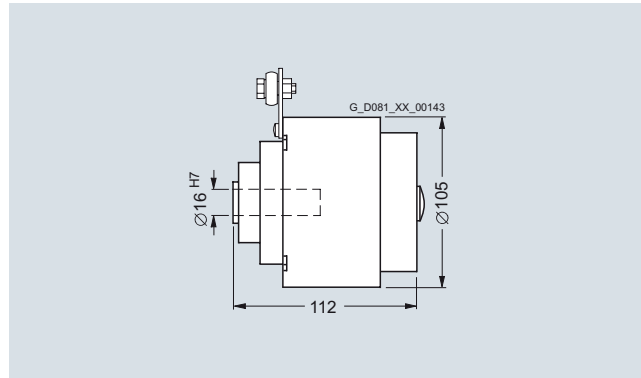
Order code **G06**.

*The HOG 10 D 1024 I rotary pulse encoder can be retrofitted. The motor must be prepared for this. When the motor is ordered, the option "Prepared for mountings, center hole only", order code **G40**, or the option "Prepared for mountings with shaft D16", order code **G42**, must be specified (see "Mechanical design and degrees of protection", Page 0/118). The rotary pulse encoder is not part of the scope of supply in this case.*

Manufacturer:

Baumer Hübner GmbH
Planufer 92b
10967 Berlin
Tel. +49 (0) 30-6 90 03-0
Fax +49 (0) 30-6 90 03-1 04

<http://www.baumerhuebner.com>
e-mail: info@baumerhuebner.com



Mounting dimensions for HOG 10 D 1024 I rotary pulse encoder

Technical data for HOG 10 D 1024 (HTL version)

Mounting of encoder at temperatures below -20 °C and higher than $+40\text{ °C}$ on request.

| Supply voltage U_B | +9 V to +30 V |
|---|---|
| Current input without load | Approx. 100 mA |
| Admissible load current per output | 60 mA, 300 mA peak |
| Pulses per revolution | 1024 |
| Outputs | 4 short-circuit proof square-wave pulses A, B and A', B' |
| Pulse offset between the two outputs | $90^\circ \pm 20\%$ |
| Output amplitude | $U_{High} \geq U_B - 3.5\text{ V}$ $U_{Low} \leq 1.5\text{ V}$ |
| Mark space ratio | $1:1 \pm 20\%$ |
| Edge steepness | 10 V/ μ s |
| Maximum frequency | 120 kHz |
| Maximum speed | 7000 rpm |
| Temperature range | $-20\text{ to }+100\text{ °C}$ |
| Degree of protection | IP66 |
| Maximum adm. radial cantilever force | 150 N |
| Maximum adm. axial force | 80 N |
| Connection system | Terminals, cable connection M20 x 1.5 |
| Mech. design acc. to Hübner Ident. No. | 74 055 B |
| Weight | Approx. 1.6 kg |

Dimensions and weight

Fig. 1 Brake
Order code **F01**
[optionally with manual release, order code **F50**]

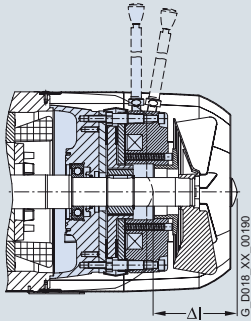


Fig. 2 Standard protective cover for types of construction
Order code **H00**

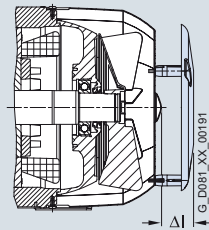


Fig. 3 Rotary pulse encoder (on cover)
Order code **G01/G02/G04/G05/G06**
[protective cover as standard]

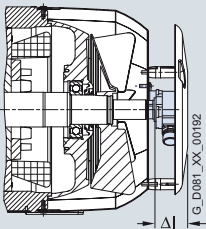


Fig. 4 Brake and rotary pulse encoder (on cover)
Order code **F01**
+ G01/G02/G04/G05/G06
[optionally with manual release, order code **F50**;
protective cover as standard]

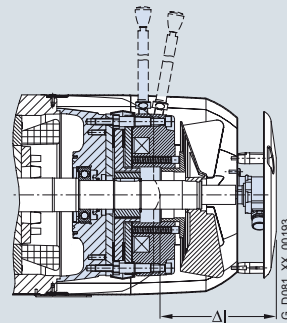


Fig. 5 Separately driven fan
Order code **F70**

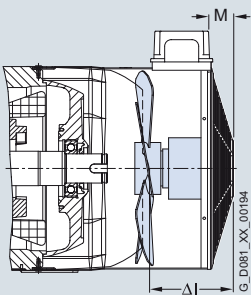
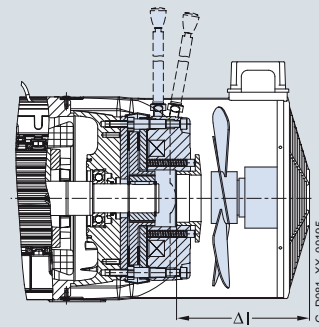


Fig. 6 Brake and separately driven fan
Order code **F01 + F70**
[optionally with manual release, order code **F50**]



IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

Fig. 7 Rotary pulse encoder (under the cover) and separately driven fan
Order code **F70**
+ **G01/G02/G04/G05/G06**

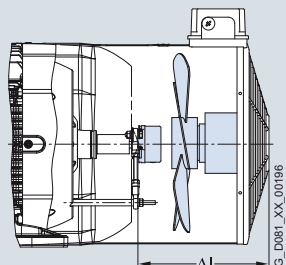


Fig. 8 Brake, rotary pulse encoder (under the cover) and separately driven fan
Order code **F01 + F70**
+ **G01/G02/G04/G05/G06**
[optionally with manual release, order code **F50**]

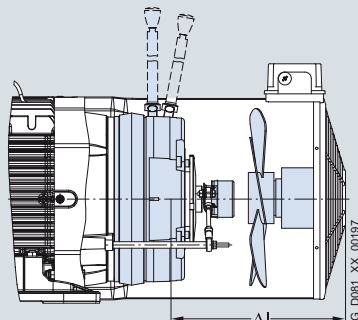


Fig. 9 Protective cover for separately driven fan
Order code **H00**

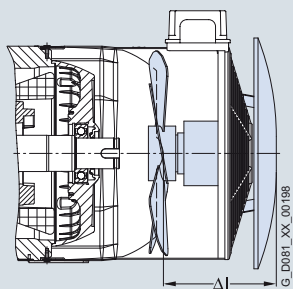


Fig. 10 Prepared for mountings – only center hole
(for brake order code **F01** and/or rotary pulse encoder
order codes **G01/G02/G04/G05/G06**)
Order code **G40**

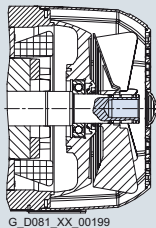
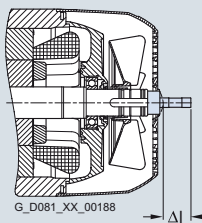


Fig. 11 Prepared for mountings with shaft D12/D16
Order codes **G41/G42**



Dimensions Δl and weights, see from Page 0/139.

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

| Assignment | | | | | | | | | | | | |
|-------------|----------------|----------------|------------------|----------------|---|----------------|----------------------------------|----------------|---------------------------------|----------------|----------------------------------|----------------|
| Frame size | Fig. 1 | | Fig. 2 | | Fig. 3 | | | | | | | |
| | Brake | | Protective cover | | Rotary pulse encoder including protective cover | | | | | | | |
| | Order code F01 | | Order code H00 | | 1XP8 012 Order codes G01, G02 | | LL 861 900 220 Order code G04 | | HOG9 D 1024 I Order code G05 | | HOG10 D 1024 I Order code G06 | |
| | Δl | Weight approx. | Δl | Weight approx. | Δl | Weight approx. | Δl | Weight approx. | Δl | Weight approx. | Δl | Weight approx. |
| | mm | kg | mm | kg | mm | kg | mm | kg | mm | kg | mm | kg |
| 1LE1 | | | | | | | | | | | | |
| 100 | 81 | 5.9 | 33 | 0.4 | 49 | 0.9 | 76 | 1.9 | 76 | 1.5 | 119 | 2.2 |
| 112 | 88 | 7.8 | 33 | 0.4 | 49 | 0.8 | 76 | 1.9 | 76 | 1.5 | 119 | 2.2 |
| 132 | 114 | 11.9 | 51.5 | 0.7 | 51.5 | 1.3 | 78.5 | 2.4 | 78.5 | 2 | 121.5 | 2.7 |
| 160 | 130 | 30.7 | 50 | 0.7 | 50 | 1.5 | 77 | 2.7 | 77 | 2.3 | 120 | 3 |

| Assignment | | | | | | | | | | | | |
|-------------|---|----------------|---|----------------|--|----------------|---|----------------|-----------------------|----|----------------|--|
| Frame size | Fig. 4 | | | | | | | | Fig. 5 | | | |
| | Brake and rotary pulse encoder (on cover) | | | | | | | | Separately driven fan | | | |
| | 1XP8 012 Order codes F01 + G01/G02 | | LL 861 900 220 Order codes F01 + G04 | | HOG9 D 1024 I Order codes F01 + G05 | | HOG10 D 1024 I Order codes F01 + G06 | | Order code F70 | | | |
| | Δl | Weight approx. | Δl | Weight approx. | Δl | Weight approx. | Δl | Weight approx. | Δl | M | Weight approx. | |
| | mm | kg | mm | kg | mm | kg | mm | kg | mm | mm | kg | |
| 1LE1 | | | | | | | | | | | | |
| 100 | 130 | 6.8 | 157 | 7.8 | 157 | 7.4 | 200 | 8.1 | 86.5 | 30 | 2.4 | |
| 112 | 137 | 8.6 | 164 | 9.7 | 164 | 9.3 | 207 | 10 | 81.5 | 30 | 2.6 | |
| 132 | 165.5 | 13.2 | 192.5 | 14.3 | 192.5 | 13.9 | 235.5 | 14.6 | 116 | 40 | 3.8 | |
| 160 | 180 | 32.2 | 207 | 33.4 | 207 | 33 | 250 | 33.7 | 135.5 | 40 | 6.5 | |

| Assignment | | | | | | | | | | | | |
|-------------|---------------------------------|----------------|---------------------------------|----------------|--|----------------|-----------------------|----------------|-----------------------|----------------|-----------------------|----------------|
| Frame size | Fig. 6 | | | | Fig. 7 | | | | | | | |
| | Brake and separately driven fan | | | | Separately driven fan and rotary pulse encoder (under cover) | | | | | | | |
| | Order codes F01 + F70 | | Order codes F01 + F70 + G01/G02 | | Order codes F70 + G01/G02 | | Order codes F70 + G04 | | Order codes F70 + G05 | | Order codes F70 + G06 | |
| | Δl | Weight approx. | Δl | Weight approx. | Δl | Weight approx. | Δl | Weight approx. | Δl | Weight approx. | Δl | Weight approx. |
| | mm | kg | mm | kg | mm | kg | mm | kg | mm | kg | mm | kg |
| 1LE1 | | | | | | | | | | | | |
| 100 | 161.5 | 8.3 | 161.5 | 3.3 | 161.5 | 4.3 | 161.5 | 3.9 | 196.5 | 4.6 | | |
| 112 | 156.5 | 10.4 | 156.5 | 3.4 | 156.5 | 4.5 | 156.5 | 4.1 | 191.5 | 4.8 | | |
| 132 | 186 | 15.7 | 186 | 5.1 | 186 | 6.2 | 186 | 5.8 | 241 | 6.5 | | |
| 160 | 205.5 | 37.2 | 205.5 | 8 | 205.5 | 9.2 | 205.5 | 8.8 | 270.5 | 9.5 | | |

| Assignment | | | | | | | | | | | | |
|-------------|---|----------------|-----------------------------|----------------|-----------------------------|----------------|-----------------------------|----------------|--|----------------|---------------------------|--|
| Frame size | Fig. 8 | | | | | | | | Fig. 9 | | | |
| | Brake, separately driven fan and rotary pulse encoder (under cover) | | | | | | | | Protective cover for separately driven fan | | | |
| | Order codes F01 + F70 + G01/G02 | | Order codes F01 + F70 + G04 | | Order codes F01 + F70 + G05 | | Order codes F01 + F70 + G06 | | Order code H00 | | | |
| | Δl | Weight approx. | Δl | Weight approx. | Δl | Weight approx. | Δl | Weight approx. | Δl | Weight approx. | Diameter of the fan cover | |
| | mm | kg | mm | kg | mm | kg | mm | kg | mm | kg | mm | |
| 1LE1 | | | | | | | | | | | | |
| 100 | 196.5 | 9.2 | 196.5 | 10.2 | 196.5 | 9.8 | 246.5 | 10.5 | 30 | 1.4 | 210 | |
| 112 | 191.5 | 11.2 | 191.5 | 12.3 | 191.5 | 11.9 | 241.5 | 12.6 | 33 | 1.8 | 249 | |
| 132 | 241 | 17 | 241 | 18.1 | 241 | 17.7 | 291 | 18.4 | 24 | 2.4 | 300 | |
| 160 | 270.5 | 38.7 | 270.5 | 39.9 | 270.5 | 39.5 | 320.5 | 40.2 | 31 | 3 | 338 | |

IEC Squirrel-Cage Motors

Introduction motors 1LE1/1PC1

General technical data

0

| Assignment | | Fig. 10 | | Fig. 11 | | | | |
|-------------|--|-----------------------|----------------------|---|-----------------------|----------------------|-----------------------|----------------------|
| Frame size | Prepared for mountings – only center hole (for Brake order code F01 and/or rotary pulse encoder order codes G01/G02/G04/G05/G06) Order code G40 | Order code G40 | Weight approx. kg | Prepared for mountings with shaft D12/D16 Order codes G41/G42 | Order code G41 | Weight approx. kg | Order code G42 | Weight approx. kg |
| | Δl mm | | | | Δl mm | | Δl mm | |
| 1LE1 | | | | | | | | |
| 100 | 0 | 0 | 0 | 11.3 | 0.15 | 0.15 | 47.3 | 0.2 |
| 112 | 0 | 0 | 0 | 7.5 | 0.15 | 0.15 | 47.3 | 0.2 |
| 132 | 0 | 0.1 | 0.1 | 10.3 | 0.3 | 0.3 | 50.3 | 0.4 |
| 160 | 0 | 0.2 | 0.2 | 5.6 | 0.4 | 0.4 | 45.6 | 0.7 |

New Generation 1LE1/1PC1



| | |
|-------------|---|
| 1/2 | Orientation |
| 1/2 | Overview |
| 1/3 | Benefits |
| 1/4 | Application |
| 1/4 | Technical specifications |
| 1/5 | Selection and ordering data |
| 1/7 | More information |
| 1/8 | General Line motors with shorter delivery time |
| 1/8 | Selection and ordering data |
| 1/18 | Self-ventilated energy-saving motors with improved efficiency |
| 1/18 | Selection and ordering data |
| 1/22 | Self-ventilated energy-saving motors with high efficiency |
| 1/22 | Selection and ordering data |
| 1/30 | Self-ventilated motors with increased output and improved efficiency |
| 1/30 | Selection and ordering data |
| 1/34 | Self-ventilated motors with increased output and high efficiency |
| 1/34 | Selection and ordering data |
| 1/38 | Forced-air cooled motors without external fan and fan cover with improved efficiency |
| 1/38 | Selection and ordering data |
| 1/42 | Forced-air cooled motors without external fan and fan cover with high efficiency |
| 1/42 | Selection and ordering data |
| 1/46 | Self-cooled motors without external fan and fan cover with improved efficiency |
| 1/46 | Selection and ordering data |
| 1/50 | Self-cooled motors without external fan and fan cover with high efficiency |
| 1/50 | Selection and ordering data |
| 1/54 | Special versions |
| 1/54 | Selection and ordering data |
| 1/54 | • Voltages |
| 1/55 | • Options |
| 1/64 | Accessories |
| 1/64 | Overview |
| 1/64 | More information |
| 1/65 | Dimensions |
| 1/65 | Overview |
| 1/67 | More information |
| 1/68 | Dimensional drawings |

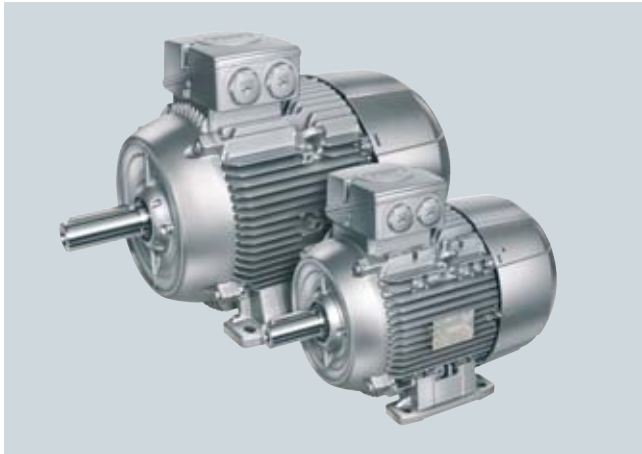
IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Orientation

Overview

1



Increasing energy costs have resulted in greater emphasis on the power consumption of drive systems. It is extremely important to utilize the full potential for minimization here to secure competitiveness today and in the future. The environment will also profit from reduced energy consumption.

With this in mind, we have already developed a new generation of low-voltage motors that you can use in drives to move even more than before. Innovative copper rotors that we develop and manufacture entirely in-house create the perfect conditions for motors with a high degree of efficiency (EFF2 and EFF1 motors are located in the same housing). The new motors for EFF1 (High Efficiency) offer considerable energy savings and protect our environment.

The modular mounting concept also provides total flexibility: Each motor is based on a uniform concept for all markets worldwide. Our motors are manufactured in accordance with modern ecological principles and give machines and plants more drive. Worldwide and for every application. Efficiency over the complete life cycle is a clear benefit of our motors especially for the use of 1LE1/1PC1 designed to EFF1. All machine manufacturers and plant operators can profit from this – not to mention the environment. We will be launching our new 1LE1/1PC1 motors onto the market step by step.

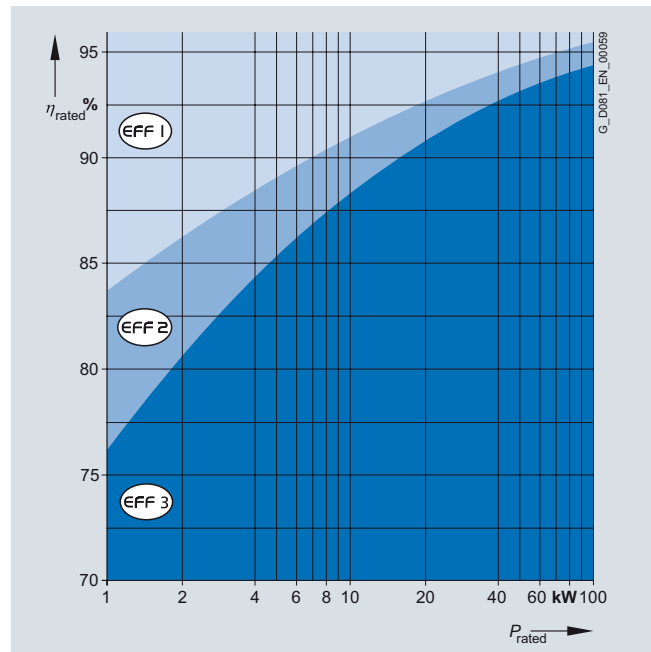
Classified energy-saving motors for an efficient energy balance

Depending on requirements, energy-saving motors are available for an efficient energy balance for the EU in accordance with CEMEP (European Committee of Manufacturers of Electrical Machines and Power Electronics) as well as for the North American market in accordance with EPACT (US Energy Policy Act).

Efficiency requirements according to CEMEP

CEMEP classifies efficiency levels for 2-pole and 4-pole motors with outputs of 1.1 to 90 kW. Three efficiency classes are defined:

- **EFF1** (High Efficiency motors – referred to below as “Motors with high efficiency”)
- **EFF2** (Improved Efficiency motors – referred to below as “Motors with improved efficiency”)
- **EFF3** (Conventional Efficiency motors)



At a glance: EU/CEMEP for Europe

- **Status**
Voluntary compliance with efficiency classification
- **Covers**
2-pole, 4-pole 50 Hz squirrel-cage motors from 1.1 to 90 kW (at 400 V and 50 Hz)
- **Required marking**
Efficiency class on the motor rating plate
 η_{rated} , $\eta_{3/4}$ load and efficiency class in the documentation

Efficiency requirements according to EPACT

In 1997, an act was passed in the US to define minimum efficiencies for low-voltage three-phase motors (EPACT).

An act is in force in Canada that is largely identical, although it is based on different verification methods. The efficiency is verified for these motors for the USA using IEEE 112, Test Method B and for Canada using CSA-C390. Apart from a few exceptions, all three-phase low-voltage motors imported into the USA or Canada must comply with the legal efficiency requirements. The law demands minimum efficiency levels for motors with a voltage of 230 and 460 V at 60 Hz, in the output range of 1 to 200 HP (0.75 to 150 kW) with 2, 4 and 6 poles. Explosion-proof motors must also be included.

The EPACT efficiency requirements exclude, for example:

- Motors whose frame size-output classification does not correspond with the standard series according to NEMA MG1-12.
- Flange-mounting motors
- Brake motors
- Converter-fed motors
- Motors with design letter C and higher

Overview (continued)

EPACT lays down that the nominal efficiency at full load and a "CC" number (Compliance Certification) must be included on the rating plate. The "CC" number is issued by the US Department of Energy (DOE). The following information is stamped on the rating plate of EPACT motors which must be marked by law:

- Nominal efficiency
- Design letter
- Code letter
- CONT
- CC No. CC 032A (Siemens) and NEMA MG1-12.

At a glance: EPACT/CSA for North America

- Status
Minimum efficiencies required by law
- Covers
2-, 4- and 6-pole 60 Hz squirrel-cage motors from 1 to 200 HP (0.75 to 150 kW) for 230 V and/or 460 V 60 Hz
- Required marking
Efficiency η_{rated} on the motor rating plate

Motors with increased output and compact construction (1LE1)

Motors with increased output and compact construction can be used to advantage in confined spaces. For a slightly longer overall length, the output is at least as high as that of the next larger shaft height. These compact motors are also optimized for efficiency. They are available in EFF1 and EFF2 and therefore reduce the operating costs.

Benefits

There is considerable potential in our new 1LE1/1PC1 series of low-voltage motors. As a consistent further development of our existing motors, the 1LE1/1PC1 motors offer numerous advantages:

Greater efficiency

Instead of cast-aluminum rotors, the new copper technology is used in the EFF1 motors. The motors are therefore considerably more compact. EFF2 and EFF1 motors are based on the same housing. For changeover to the higher efficiency class – from EFF2 to EFF1 – reconstruction of the machine is no longer necessary. Savings are achieved in time and costs. And what is more: You can save a considerable amount of energy with EFF1 motors because they have power losses of up to 40 % less than EFF2 motors. The energy saving potential and life cycle costs of the new motors can be calculated with our SinaSave™ software. You can download the SinaSave program in the Internet using the following link: <http://www.siemens.com/energysaving>. For more information, see catalog part 11 "Appendix", "Energy-saving program SinaSave". Our 1LE1 motors also impress customers with their extremely long life and their weight-optimized design has a positive effect on the stability of the equipment unit.

Motors without fan cover and external fan (1LE1 with order code F90)

Forced-air cooled motors with surface cooling without fan cover and external fan are mainly used for driving fans.

Standard motors with reduced output without fan cover and external fan (1PC1)

Self-cooled motors with surface cooling without fan cover and external fan are suitable for the following operating conditions:

- Types of duty with adequate cooling times (e.g. temporary duty for positioning drives)
- Environmental conditions that demand compact installation space (e.g. in motors with a stopping function)

Conditions under which an external fan has an adverse effect (e.g. simple cleaning in the food industry, textile industry)

Motors delivered ex-stock with shorter delivery time – General Line 1LE1

The most popular basic versions of the 1LE1 motor series can be supplied ex-stock and are termed the "General Line".

A so-called "Sector version" will be available soon for some of the motors available from stock. These include a located bearing at the drive end (DE), PTC thermistor and screwed-on feet for the IM B35 type of construction.

The normal delivery time for General Line motors is 1 to 2 days from the time of clarification of the order at the factory until delivery from the factory. To determine the time of arrival at the customer site, the appropriate shipping time must be added.

More application

The motors are approved and certified for worldwide use and meet high quality standards (confirmed, for example, by CSA ¹⁾, UL ²⁾, and CQC ³⁾).

Improved design

The new, optimized housing in modern EMC design has an attractive appearance and enhances functionality. The rotatable, accessible connection boxes, integral eyebolts, screwed-on feet and reinforced bearing plates ensure this.

Greater output

For the same shaft height, our high-performance motors offer an additional complete rated output level. The best is: We are also consistently implementing energy efficiency improvements here, too. The motors are offered – based on the categories of CEMEP – in high efficiency and improved efficiency versions.

More flexibility

The optimized architecture of the motors makes installation easier in general. Encoders, brakes and separately driven fans can be retrofitted easily. Connection boxes and feet for flexible mounting can be selected. Smaller inventories make stockkeeping easier and motor suppliers can respond to customer requirements more quickly. Optimized manufacturing processes support fast availability. All motors up to 460 V can be operated either directly on line or converter-fed – without the need for any additional measures.

1) Canadian Standard Association

2) Underwriters Laboratories Inc.

3) China Quality Certification

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Orientation

Application

As soon as the range of motors and options is complete, it will be possible to use the 1LE1/1PC1 motors from Siemens in all areas and sectors of industry due to their numerous options. They are suitable both for special environmental conditions such as those that predominate in the chemical or petrochemical industries as well as for most climatic requirements such as those of offshore applications. Their large range of mains voltages enables them to be used all over the world.

The wide field of implementation includes the following applications:

- Pumps
- Fans
- Compressors
- Conveyor systems such as cranes, belts and lifting gear
- High-bay warehouses
- Packaging machines
- Automation and Drives

Technical specifications

Technical data at a glance

This table lists the most important technical data. For more information and details, see catalog part 0 "Introduction".

| | |
|--|--|
| Type of motor | IEC Squirrel-Cage Motors 1LE1/1PC1 |
| Connection types | Star connection/delta connection You can establish the connection type used from the Order No. supplements in the selection and ordering data for the required motor. |
| Number of poles | 2, 4, 6, 8 |
| Frame sizes | 100 L to 160 L |
| Rated output | 0.75 ... 22 kW (motor series 1LE1)/0.3 ... 9 kW (motor series 1PC1) |
| Frequencies | 50 Hz and 60 Hz |
| Versions | Self-ventilated 1LE1 energy-saving motors with: <ul style="list-style-type: none"> • Improved efficiency (EFF2) • High efficiency (EFF1) Self-ventilated 1LE1 motors with increased output and: <ul style="list-style-type: none"> • Improved efficiency (EFF2) • High efficiency (EFF1) Forced-air-cooled 1LE1 motors without external fan and fan cover with: <ul style="list-style-type: none"> • Improved efficiency (EFF2) • High efficiency (EFF1) Self-cooled 1PC1 motors without external fan and fan cover with: <ul style="list-style-type: none"> • Improved efficiency • High efficiency |
| Marking | EU/CEMPEP efficiency classification, EFF1: 2-, 4-pole, EFF2: 2-, 4-pole US Energy Policy Act EPACT: 2-, 4-, 6-pole |
| Rated speed (synchronous speed) | 750 ... 3000 rpm |
| Rated torque | 9.9 ... 150 Nm (motor series 1LE1)/4.05 ... 60 Nm (motor series 1PC1) |
| Insulation of the stator winding according to EN 60034-1 (IEC 60034-1) | Temperature class 155 (F), used acc. to temperature class 130 (B) (also for motors with increased output) DURIGNIT IR 2000 insulation system |
| Degree of protection according to EN 60034-5 (IEC 60034-5) | IP55 as standard |
| Cooling according to EN 60034-6 (IEC 60034-6) | Self-ventilated (motor series 1LE1) frame sizes 100 L to 160 L (IC 411), Forced-air-cooled (motor series 1LE1 with order code F90) frame sizes 100 L to 160 L (IC 416) Self-cooled (motor series 1PC1) frame sizes 100 L to 160 L (IC 410) |
| Admissible coolant temperature and site altitude | -20 °C ... +40 °C as standard, site altitude up to 1000 m above sea level. See "Coolant temperature and site altitude" in catalog part 0 "Introduction". |
| Standard voltages according to EN 60038 (IEC 60038) | 50 Hz: 230 V, 400 V, 500 V, 690 V The voltage to be used can be found in the selection and ordering data for the required motor. |
| Type of construction according to EN 60034-7 (IEC 60034-7) | Without flange: IM B3, IM B6, IM B7, IM B8, IM V5 without protective cover, IM V6, IM V5 with protective cover With flange: IM B5, IM V1 without protective cover, IM V1 with protective cover, IM V3, IM B35 With standard flange and special flange (next larger flange): IM B14, IM V19, IM V18 without protective cover, IM V18 with protective cover, IM B34 |
| Paint finish Suitability of paint finish for climate group according to IEC 60721, Part 2-1 | Standard: Color RAL 7030 stone gray See "Paint finish" in catalog part 0 "Introduction". |
| Vibration quantity level according to EN 60034-14 (IEC 60034-14) | Level A (normal – without special vibration requirements) Optionally: Level B (with special vibration requirements) See "Balance and vibration quantity" in catalog part 0 "Introduction". |
| Shaft extension according to DIN 748 (IEC 60072) | Balance type: Half-key balancing as standard See "Balance and vibration quantity" in catalog part 0 "Introduction". |
| Sound pressure level according to DIN EN ISO 1680 (tolerance +3 dB) | The sound pressure level is listed in the selection and ordering data for the required motor. |
| Weights | The weight is listed in the selection and ordering data for the required motor. |
| Modular mounting concept | Rotary pulse encoder, brake, separately driven fan or prepared for mountings |
| Consistent series concept | <ul style="list-style-type: none"> • Cast housing feet, screw-mounted feet available as an option and retrofittable • Connection box obliquely partitioned and rotatable through 4 x 90° • Bearings at DE and NDE are of identical design, reinforced bearings available as an option |
| Options | See the selection and ordering data for "Special versions" |

Selection and ordering data

Preliminary selection of the motor according to motor type/series, speed or number of poles, frame size, rated output, rated torque, rated speed and rated current

General Line motors with shorter delivery time

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|--|------------------------|--------------|---------------|--------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Aluminum series 1LE1 (motors with external fan) | | | | | | |
| 3000, 2-pole | 100 L ... 160 L | 3 ... 18.5 | 2835 ... 2935 | 10 ... 60 | 6 ... 34 | 1/8 ... 1/11 |
| 1500, 4-pole | 100 L ... 160 L | 2.2 ... 15 | 1425 ... 1460 | 14.8 ... 98 | 4.85 ... 29.5 | 1/12 ... 1/15 |
| 1000, 6-pole | 100 L ... 160 L | 1.5 ... 11 | 930 ... 970 | 15.3 ... 110 | 3.95 ... 23.5 | 1/16 ... 1/17 |

Self-ventilated energy-saving motors with improved efficiency (Improved Efficiency EFF2)

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|--|------------------------|--------------|---------------|--------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Aluminum series 1LE1 (motors with external fan) | | | | | | |
| 3000, 2-pole | 100 L ... 160 L | 3 ... 18.5 | 2835 ... 2935 | 10 ... 60 | 6 ... 34 | 1/18 ... 1/19 |
| 1500, 4-pole | 100 L ... 160 L | 2.2 ... 15 | 1425 ... 1460 | 14.8 ... 98 | 4.85 ... 29.5 | 1/18 ... 1/19 |
| 1000, 6-pole | 100 L ... 160 L | 1.5 ... 11 | 930 ... 970 | 15.3 ... 110 | 3.95 ... 23.5 | 1/18 ... 1/19 |
| 750, 8-pole | 100 L ... 160 L | 0.75 ... 7.5 | 700 ... 720 | 10.4 ... 100 | 2.65 ... 18.6 | 1/18 ... 1/19 |

Self-ventilated energy-saving motors with high efficiency (High Efficiency EFF1)

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|--|------------------------|--------------|---------------|--------------|------------------------|---|
| rpm | | kW/HP | rpm | Nm | A | |
| Aluminum series 1LE1 (motors with external fan) | | | | | | |
| For use according to CEMEP | | | | | | |
| 3000, 2-pole | 100 L ... 160 L | 3 ... 18.5 | 2905 ... 2955 | 9.9 ... 60 | 5.9 ... 33 | 1/22 ... 1/23 |
| 1500, 4-pole | 100 L ... 160 L | 2.2 ... 15 | 1455 ... 1475 | 14 ... 97 | 4.55 ... 27.5 | 1/22 ... 1/23 |
| 1000, 6-pole | 100 L ... 160 L | 1.5 ... 11 | 965 ... 975 | 15 ... 108 | 3.5 ... 22 | 1/22 ... 1/23 |
| 750, 8-pole | 100 L ... 160 L | 0.75 ... 7.5 | 720 ... 735 | 9.9 ... 98 | 2.75 ... 17.4 | 1/22 ... 1/23 |
| For use in the North American market according to EPACT | | | | | | |
| 3000, 2-pole | 100 L ... 160 L | 4 ... 25 | 3520 ... 3565 | 8.1 ... 50 | 5.2 ... 29 | 1/26 ... 1/27 |
| 1500, 4-pole | 100 L ... 160 L | 3 ... 20 | 1760 ... 1780 | 12 ... 80 | 4.05 ... 24.5 | 1/26 ... 1/27 |
| 1000, 6-pole | 100 L ... 160 L | 2 ... 15 | 1170 ... 1180 | 12 ... 89 | 3.15 ... 19.6 | 1/26 ... 1/27 |

Self-ventilated motors with increased output and improved efficiency (Improved Efficiency EFF2)

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|--|------------------------|--------------|---------------|--------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Aluminum series 1LE1 (motors with external fan) | | | | | | |
| 3000, 2-pole | 100 L ... 160 L | 4 ... 22 | 2850 ... 2930 | 13.3 ... 72 | 7.9 ... 39.5 | 1/30 ... 1/31 |
| 1500, 4-pole | 100 L ... 160 L | 4 ... 18.5 | 1430 ... 1460 | 26.8 ... 121 | 8.5 ... 35 | 1/30 ... 1/31 |
| 1000, 6-pole | 100 L ... 160 L | 2.2 ... 15 | 930 ... 965 | 22.5 ... 148 | 5.3 ... 33 | 1/30 ... 1/31 |

Self-ventilated motors with increased output and high efficiency (High Efficiency EFF1)

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|--|------------------------|--------------|---------------|--------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Aluminum series 1LE1 (motors with external fan) | | | | | | |
| 3000, 2-pole | 100 L ... 160 L | 4 ... 22 | 2905 ... 2955 | 13 ... 71 | 7.6 ... 38.5 | 1/34 ... 1/35 |
| 1500, 4-pole | 100 L ... 160 L | 4 ... 18.5 | 1460 ... 1475 | 26 ... 120 | 8.2 ... 34 | 1/34 ... 1/35 |
| 1000, 6-pole | 100 L ... 160 L | 2.2 ... 15 | 960 ... 975 | 22 ... 147 | 4.95 ... 29.5 | 1/34 ... 1/35 |

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Orientation

Selection and ordering data (continued)

Forced-air cooled motors without external fan and fan cover with improved efficiency (Improved Efficiency EFF2)

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|---|------------------------|--------------|---------------|--------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Aluminum series 1LE1 (motors without external fan and fan cover) | | | | | | |
| 3000, 2-pole | 100 L ... 160 L | 3 ... 18.5 | 2835 ... 2935 | 10 ... 60 | 6 ... 34 | 1/38 ... 1/39 |
| 1500, 4-pole | 100 L ... 160 L | 2.2 ... 15 | 1425 ... 1460 | 14.8 ... 98 | 4.85 ... 29.5 | 1/38 ... 1/39 |
| 1000, 6-pole | 100 L ... 160 L | 1.5 ... 11 | 930 ... 970 | 15.3 ... 110 | 3.95 ... 23.5 | 1/38 ... 1/39 |
| 750, 8-pole | 100 L ... 160 L | 0.75 ... 7.5 | 700 ... 720 | 10.4 ... 100 | 2.65 ... 18.6 | 1/38 ... 1/39 |

Forced-air cooled motors without external fan and fan cover with high efficiency (High Efficiency EFF1)

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|---|------------------------|--------------|---------------|--------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Aluminum series 1LE1 (motors without external fan and fan cover) | | | | | | |
| 3000, 2-pole | 100 L ... 160 L | 3 ... 18.5 | 2905 ... 2955 | 9.9 ... 60 | 5.9 ... 33 | 1/42 ... 1/43 |
| 1500, 4-pole | 100 L ... 160 L | 2.2 ... 15 | 1455 ... 1475 | 14 ... 97 | 4.55 ... 27.5 | 1/42 ... 1/43 |
| 1000, 6-pole | 100 L ... 160 L | 1.5 ... 11 | 965 ... 975 | 15 ... 108 | 3.5 ... 22 | 1/42 ... 1/43 |
| 750, 8-pole | 100 L ... 160 L | 0.75 ... 7.5 | 720 ... 735 | 9.9 ... 98 | 2.75 ... 17.4 | 1/42 ... 1/43 |

Self-cooled motors without external fan and fan cover with improved efficiency

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|---|------------------------|--------------|---------------|--------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Aluminum series 1PC1 (motors without external fan and fan cover) | | | | | | |
| 3000, 2-pole | 100 L ... 160 L | 1.2 ... 7.4 | 2830 ... 2935 | 4.05 ... 24 | 2.3 ... 12.9 | 1/46 ... 1/47 |
| 1500, 4-pole | 100 L ... 160 L | 0.88 ... 6 | 1420 ... 1460 | 5.92 ... 39 | 1.8 ... 10.9 | 1/46 ... 1/47 |
| 1000, 6-pole | 100 L ... 160 L | 0.6 ... 4.4 | 930 ... 970 | 6.12 ... 43 | 1.4 ... 8.9 | 1/46 ... 1/47 |
| 750, 8-pole | 100 L ... 160 L | 0.3 ... 3 | 695 ... 730 | 4.05 ... 24 | 0.97 ... 6.8 | 1/46 ... 1/47 |

Self-cooled motors without external fan and fan cover with high efficiency

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|---|------------------------|--------------|---------------|--------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Aluminum series 1PC1 (motors without external fan and fan cover) | | | | | | |
| 3000, 2-pole | 100 L ... 160 L | 1.4 ... 9 | 2920 ... 2960 | 4.6 ... 29 | 2.6 ... 15.2 | 1/50 ... 1/51 |
| 1500, 4-pole | 100 L ... 160 L | 1.1 ... 6.2 | 1460 ... 1480 | 7.2 ... 40 | 2.2 ... 11.4 | 1/50 ... 1/51 |
| 1000, 6-pole | 100 L ... 160 L | 0.85 ... 6.5 | 960 ... 975 | 8.5 ... 64 | 1.92 ... 13.2 | 1/50 ... 1/51 |
| 750, 8-pole | 100 L ... 160 L | 0.37 ... 4.6 | 720 ... 730 | 4.8 ... 60 | 1.28 ... 10.8 | 1/50 ... 1/51 |

More information

For further information, please get in touch with your local Siemens contact.

At <http://www.siemens.com/automation/partner> you can find details of Siemens contact partners worldwide responsible for particular technologies.

You can obtain in most cases a contact partner for

- technical support
- spare parts/repairs
- service
- training
- sales or
- technical support/engineering

The selection procedure starts with:

- a country
- a product or
- a sector.

By further specifying the remaining criteria you will find exactly the right contact partner with his/her respective expertise.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

General Line motors with shorter delivery time

Selection and ordering data

| Rated output at | | Frame size | Operating values at rated output | | | | | | | Order No. | Price | Weight |
|--|--------------------------|------------|----------------------------------|--------------------------|-------------------------------------|------------------------------|------------------------------|--------------------------------|-------------------------------|---------------------------|-----------|--------|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class according to CEMEP | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | EFF2 | η_{rated} % | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | | m kg | |
| Motor version: temperature class 155 (F), IP55 degree of protection, used acc. to temperature class 130 (B) | | | | | | | | | | | | |
| 2-pole – 3000 rpm at 50 Hz, 3600 rpm at 60 Hz | | | | | | | | | | | | |
| 230 VΔ/400 VY, 50 Hz; 460 VY, 60 Hz | | | | | | | | | | | | |
| • Without flange: IM B3, IM B6, IM B7, IM B8, IM V5 without protective cover, IM V6 ¹⁾ | | | | | | | | | | | | |
| - Without motor protection | | | | | | | | | | | | |
| 3 | 3.45 | 100 L | 2835 | 10 | EFF2 | 82.6 | 83.2 | 0.87 | 6 | 1LE1002-1AA42-2AA0 | 20 | |
| 4 | 4.6 | 112 M | 2930 | 13 | EFF2 | 84.8 | 84.4 | 0.86 | 7.9 | 1LE1002-1BA22-2AA0 | 25 | |
| 5.5 | 6.3 | 132 S | 2905 | 18 | EFF2 | 86 | 86.6 | 0.89 | 10.4 | 1LE1002-1CA02-2AA0 | 35 | |
| 7.5 | 8.6 | 132 S | 2925 | 24 | EFF2 | 87.6 | 88.7 | 0.88 | 14 | 1LE1002-1CA12-2AA0 | 40 | |
| • With flange: IM B5, IM V1 without protective cover, IM V3 ²⁾ | | | | | | | | | | | | |
| - Without motor protection | | | | | | | | | | | | |
| 3 | 3.45 | 100 L | 2835 | 10 | EFF2 | 82.6 | 83.2 | 0.87 | 6 | 1LE1002-1AA42-2FA0 | 21 | |
| 4 | 4.6 | 112 M | 2930 | 13 | EFF2 | 84.8 | 84.4 | 0.86 | 7.9 | 1LE1002-1BA22-2FA0 | 26 | |
| 5.5 | 6.3 | 132 S | 2905 | 18 | EFF2 | 86 | 86.6 | 0.89 | 10.4 | 1LE1002-1CA02-2FA0 | 40 | |
| 7.5 | 8.6 | 132 S | 2925 | 24 | EFF2 | 87.6 | 88.7 | 0.88 | 14 | 1LE1002-1CA12-2FA0 | 45 | |
| - With motor protection with PTC thermistors with 3 embedded temperature sensors for tripping | | | | | | | | | | | | |
| 3 | 3.45 | 100 L | 2835 | 10 | EFF2 | 82.6 | 83.2 | 0.87 | 6 | 1LE1002-1AA42-2FB0 | 21 | |
| • With standard flange: IM B14, IM V18 without protective cover, IM V19 ³⁾ | | | | | | | | | | | | |
| - Without motor protection | | | | | | | | | | | | |
| 3 | 3.45 | 100 L | 2835 | 10 | EFF2 | 82.6 | 83.3 | 0.87 | 6 | 1LE1002-1AA42-2KA0 | 22 | |
| 4 | 4.6 | 112 M | 2930 | 13 | EFF2 | 84.8 | 84.4 | 0.86 | 7.9 | 1LE1002-1BA22-2KA0 | 27 | |

These motors are standard painted with special finish color RAL 7030 (stone gray).

Additional options like protective cover and condensation drainage holes are not possible.

(Connection box on top, cast feet, only basic versions possible, non-drive end (NDE) cannot be modified)

1) Only the type of construction IM B3 will be stamped on the rating plate.

2) Only the type of construction IM B5 will be stamped on the rating plate.

3) Only the type of construction IM B14 will be stamped on the rating plate.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

General Line motors with shorter delivery time

Selection and ordering data (continued)

| Order No. | Locked-rotor torque | Locked-rotor current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | | Flange size according to DIN EN 50347 |
|--|--|------------------------------|------------------|--------------|-------------------------|---|-------------------------------|---------------------------------------|
| | with direct starting as multiple of rated torque | as multiple of rated current | torque | | | Measuring-surface sound pressure level at 50 Hz | Sound pressure level at 50 Hz | |
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | L_{pFA} dB(A) | L_{WA} dB(A) | |
| Motor version: temperature class 155 (F), IP55 degree of protection, used acc. to temperature class 130 (B) | | | | | | | | |
| 2-pole – 3000 rpm at 50 Hz, 3600 rpm at 60 Hz | | | | | | | | |
| 230 VΔ/400 VY, 50 Hz; 460 VY, 60 Hz | | | | | | | | |
| • Without flange: IM B3, IM B6, IM B7, IM B8, IM V5 without protective cover, IM V6 ¹⁾ | | | | | | | | |
| - Without motor protection | | | | | | | | |
| 1LE1002-1AA42-2AA0 | 3.2 | 6.2 | 2.9 | 16 | 0.0034 | 67 | 79 | |
| 1LE1002-1BA22-2AA0 | 2.7 | 7.3 | 3.7 | 16 | 0.0067 | 69 | 81 | |
| 1LE1002-1CA02-2AA0 | 2 | 5.6 | 2.6 | 16 | 0.01267 | 68 | 80 | |
| 1LE1002-1CA12-2AA0 | 2.2 | 6.4 | 3 | 16 | 0.01601 | 68 | 80 | |
| • With flange: IM B5, IM V1 without protective cover, IM V3 ²⁾ | | | | | | | | |
| - Without motor protection | | | | | | | | |
| 1LE1002-1AA42-2FA0 | 3.2 | 6.2 | 2.9 | 16 | 0.0034 | 67 | 79 | FF 215 |
| 1LE1002-1BA22-2FA0 | 2.7 | 7.3 | 3.7 | 16 | 0.0067 | 69 | 81 | FF 215 |
| 1LE1002-1CA02-2FA0 | 2 | 5.6 | 2.6 | 16 | 0.01267 | 68 | 80 | FF 265 |
| 1LE1002-1CA12-2FA0 | 2.2 | 6.4 | 3 | 16 | 0.01601 | 68 | 80 | FF 265 |
| - With motor protection with PTC thermistors with 3 embedded temperature sensors for tripping | | | | | | | | |
| 1LE1002-1AA42-2FB0 | 3.2 | 6.2 | 2.9 | 16 | 0.0034 | 67 | 79 | FF 215 |
| • With standard flange: IM B14, IM V18 without protective cover, IM V19 ³⁾ | | | | | | | | |
| - Without motor protection | | | | | | | | |
| 1LE1002-1AA42-2KA0 | 3.2 | 6.2 | 2.9 | 16 | 0.0034 | 67 | 79 | FT 130 |
| 1LE1002-1BA22-2KA0 | 2.7 | 7.3 | 3.7 | 16 | 0.0067 | 69 | 81 | FT 130 |

These motors are standard painted with special finish color RAL 7030 (stone gray).

Additional options like protective cover and condensation drainage holes are not possible.

(Connection box on top, cast feet, only basic versions possible, non-drive end (NDE) cannot be modified)

1) Only the type of construction IM B3 will be stamped on the rating plate.
 2) Only the type of construction IM B5 will be stamped on the rating plate.
 3) Only the type of construction IM B14 will be stamped on the rating plate.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

General Line motors with shorter delivery time

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output | | | | | | | Order No. | Price | Weight |
|--|-------------------|------------|----------------------------------|-----------------------|-------------------------------------|------------------------------|------------------------------|--------------------------------|-------------------------------|--------------------|-----------|--------|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class according to CEMEP | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | EFF2 | η_{rated} % | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | | m kg | |
| Motor version: temperature class 155 (F), IP55 degree of protection, used acc. to temperature class 130 (B) | | | | | | | | | | | | |
| 2-pole – 3000 rpm at 50 Hz, 3600 rpm at 60 Hz | | | | | | | | | | | | |
| 400 VΔ/690 VY, 50 Hz; 460 VΔ, 60 Hz | | | | | | | | | | | | |
| • Without flange: IM B3, IM B6, IM B7, IM B8, IM V5 without protective cover, IM V6 ¹⁾ | | | | | | | | | | | | |
| - Without motor protection | | | | | | | | | | | | |
| 3 | 3.45 | 100 L | 2835 | 10 | EFF2 | 82.6 | 83.2 | 0.87 | 6 | 1LE1002-1AA43-4AA0 | 20 | |
| 4 | 4.6 | 112 M | 2930 | 13 | EFF2 | 84.8 | 84.4 | 0.86 | 7.9 | 1LE1002-1BA23-4AA0 | 25 | |
| 5.5 | 6.3 | 132 S | 2905 | 18 | EFF2 | 86 | 86.6 | 0.89 | 10.4 | 1LE1002-1CA03-4AA0 | 35 | |
| 7.5 | 8.6 | 132 S | 2925 | 24 | EFF2 | 87.6 | 88.7 | 0.88 | 14 | 1LE1002-1CA13-4AA0 | 40 | |
| 11 | 12.6 | 160 M | 2920 | 36 | EFF2 | 88.4 | 88.5 | 0.85 | 21 | 1LE1002-1DA23-4AA0 | 60 | |
| 15 | 17.3 | 160 M | 2930 | 49 | EFF2 | 89.5 | 89.7 | 0.84 | 29 | 1LE1002-1DA33-4AA0 | 68 | |
| 18.5 | 21.3 | 160 L | 2935 | 60 | EFF2 | 90.9 | 91 | 0.86 | 34 | 1LE1002-1DA43-4AA0 | 78 | |
| - With motor protection with PTC thermistors with 3 embedded temperature sensors for tripping | | | | | | | | | | | | |
| 3 | 3.45 | 100 L | 2835 | 10 | EFF2 | 82.6 | 83.2 | 0.87 | 6 | 1LE1002-1AA43-4AB0 | 20 | |
| 4 | 4.6 | 112 M | 2930 | 13 | EFF2 | 84.8 | 84.4 | 0.86 | 7.9 | 1LE1002-1BA23-4AB0 | 25 | |
| 5.5 | 6.3 | 132 S | 2905 | 18 | EFF2 | 86 | 86.6 | 0.89 | 10.4 | 1LE1002-1CA03-4AB0 | 35 | |
| 7.5 | 8.6 | 132 S | 2925 | 24 | EFF2 | 87.6 | 88.7 | 0.88 | 14 | 1LE1002-1CA13-4AB0 | 40 | |
| 11 | 12.6 | 160 M | 2920 | 36 | EFF2 | 88.4 | 88.5 | 0.85 | 21 | 1LE1002-1DA23-4AB0 | 60 | |
| 15 | 17.3 | 160 M | 2930 | 49 | EFF2 | 89.5 | 89.7 | 0.84 | 29 | 1LE1002-1DA33-4AB0 | 68 | |
| 18.5 | 21.3 | 160 L | 2935 | 60 | EFF2 | 90.9 | 91 | 0.86 | 34 | 1LE1002-1DA43-4AB0 | 78 | |
| • With flange: IM B5, IM V1 without protective cover, IM V3 ²⁾ | | | | | | | | | | | | |
| - Without motor protection | | | | | | | | | | | | |
| 3 | 3.45 | 100 L | 2835 | 10 | EFF2 | 82.6 | 83.2 | 0.87 | 6 | 1LE1002-1AA43-4FA0 | 21 | |
| 4 | 4.6 | 112 M | 2930 | 13 | EFF2 | 84.8 | 84.4 | 0.86 | 7.9 | 1LE1002-1BA23-4FA0 | 26 | |
| 5.5 | 6.3 | 132 S | 2905 | 18 | EFF2 | 86 | 86.6 | 0.89 | 10.4 | 1LE1002-1CA03-4FA0 | 40 | |
| 7.5 | 8.6 | 132 S | 2925 | 24 | EFF2 | 87.6 | 88.7 | 0.88 | 14 | 1LE1002-1CA13-4FA0 | 45 | |
| 11 | 12.6 | 160 M | 2920 | 36 | EFF2 | 88.4 | 88.5 | 0.85 | 21 | 1LE1002-1DA23-4FA0 | 69 | |
| 15 | 17.3 | 160 M | 2930 | 49 | EFF2 | 89.5 | 89.7 | 0.84 | 29 | 1LE1002-1DA33-4FA0 | 77 | |
| 18.5 | 21.3 | 160 L | 2935 | 60 | EFF2 | 90.9 | 91 | 0.86 | 34 | 1LE1002-1DA43-4FA0 | 87 | |
| - With motor protection with PTC thermistors with 3 embedded temperature sensors for tripping | | | | | | | | | | | | |
| 4 | 4.6 | 112 M | 2930 | 13 | EFF2 | 84.8 | 84.4 | 0.86 | 7.9 | 1LE1002-1BA23-4FB0 | 26 | |
| 5.5 | 6.3 | 132 S | 2905 | 18 | EFF2 | 86 | 86.6 | 0.89 | 10.4 | 1LE1002-1CA03-4FB0 | 40 | |
| 7.5 | 8.6 | 132 S | 2925 | 24 | EFF2 | 87.6 | 88.7 | 0.88 | 14 | 1LE1002-1CA13-4FB0 | 45 | |
| 11 | 12.6 | 160 M | 2920 | 36 | EFF2 | 88.4 | 88.5 | 0.85 | 21 | 1LE1002-1DA23-4FB0 | 69 | |
| 15 | 17.3 | 160 M | 2930 | 49 | EFF2 | 89.5 | 89.7 | 0.84 | 29 | 1LE1002-1DA33-4FB0 | 77 | |
| 18.5 | 21.3 | 160 L | 2935 | 60 | EFF2 | 90.9 | 91 | 0.86 | 34 | 1LE1002-1DA43-4FB0 | 87 | |

These motors are standard painted with special finish color RAL 7030 (stone gray).

Additional options like protective cover and condensation drainage holes are not possible.

(Connection box on top, cast feet, only basic versions possible, non-drive end (NDE) cannot be modified)

¹⁾ Only the type of construction IM B3 will be stamped on the rating plate.

²⁾ Only the type of construction IM B5 will be stamped on the rating plate.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

General Line motors with shorter delivery time
Selection and ordering data (continued)

| Order No. | Locked-rotor torque | Locked-rotor current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | | Flange size according to DIN EN 50347 |
|--|--|------------------------------|------------------|--------------|-------------------------|---|-------------------------------|---------------------------------------|
| | with direct starting as multiple of rated torque | as multiple of rated current | torque | | | Measuring-surface sound pressure level at 50 Hz | Sound pressure level at 50 Hz | |
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | L_{pFA} dB(A) | L_{WA} dB(A) | |
| Motor version: temperature class 155 (F), IP55 degree of protection, used acc. to temperature class 130 (B) | | | | | | | | |
| 2-pole – 3000 rpm at 50 Hz, 3600 rpm at 60 Hz | | | | | | | | |
| 400 VΔ/690 VY, 50 Hz; 460 VΔ, 60 Hz | | | | | | | | |
| • Without flange: IM B3, IM B6, IM B7, IM B8, IM V5 without protective cover, IM V6 ¹⁾ | | | | | | | | |
| - Without motor protection | | | | | | | | |
| 1LE1002-1AA43-4AA0 | 3.2 | 6.2 | 2.9 | 16 | 0.0034 | 67 | 79 | |
| 1LE1002-1BA23-4AA0 | 2.7 | 7.3 | 3.7 | 16 | 0.0067 | 69 | 81 | |
| 1LE1002-1CA03-4AA0 | 2 | 5.6 | 2.6 | 16 | 0.01267 | 68 | 80 | |
| 1LE1002-1CA13-4AA0 | 2.2 | 6.4 | 3 | 16 | 0.01601 | 68 | 80 | |
| 1LE1002-1DA23-4AA0 | 2.1 | 6.1 | 2.7 | 16 | 0.02971 | 70 | 82 | |
| 1LE1002-1DA33-4AA0 | 2.5 | 6.1 | 3.2 | 16 | 0.03619 | 70 | 82 | |
| 1LE1002-1DA43-4AA0 | 2.5 | 7 | 3.2 | 16 | 0.04395 | 70 | 82 | |
| - With motor protection with PTC thermistors with 3 embedded temperature sensors for tripping | | | | | | | | |
| 1LE1002-1AA43-4AB0 | 3.2 | 6.2 | 2.9 | 16 | 0.0034 | 67 | 79 | |
| 1LE1002-1BA23-4AB0 | 2.7 | 7.3 | 3.7 | 16 | 0.0067 | 69 | 81 | |
| 1LE1002-1CA03-4AB0 | 2 | 5.6 | 2.6 | 16 | 0.01267 | 68 | 80 | |
| 1LE1002-1CA13-4AB0 | 2.2 | 6.4 | 3 | 16 | 0.01601 | 68 | 80 | |
| 1LE1002-1DA23-4AB0 | 2.1 | 6.1 | 2.7 | 16 | 0.02971 | 70 | 82 | |
| 1LE1002-1DA33-4AB0 | 2.5 | 6.1 | 3.2 | 16 | 0.03619 | 70 | 82 | |
| 1LE1002-1DA43-4AB0 | 2.5 | 7 | 3.2 | 16 | 0.04395 | 70 | 82 | |
| • With flange: IM B5, IM V1 without protective cover, IM V3 ²⁾ | | | | | | | | |
| - Without motor protection | | | | | | | | |
| 1LE1002-1AA43-4FA0 | 3.2 | 6.2 | 2.9 | 16 | 0.0034 | 67 | 79 | FF 215 |
| 1LE1002-1BA23-4FA0 | 2.7 | 7.3 | 3.7 | 16 | 0.0067 | 69 | 81 | FF 215 |
| 1LE1002-1CA03-4FA0 | 2 | 5.6 | 2.6 | 16 | 0.01267 | 68 | 80 | FF 265 |
| 1LE1002-1CA13-4FA0 | 2.2 | 6.4 | 3 | 16 | 0.01601 | 68 | 80 | FF 265 |
| 1LE1002-1DA23-4FA0 | 2.1 | 6.1 | 2.7 | 16 | 0.02971 | 70 | 82 | FF 300 |
| 1LE1002-1DA33-4FA0 | 2.5 | 6.1 | 3.2 | 16 | 0.03619 | 70 | 82 | FF 300 |
| 1LE1002-1DA43-4FA0 | 2.5 | 7 | 3.2 | 16 | 0.04395 | 70 | 82 | FF 300 |
| - With motor protection with PTC thermistors with 3 embedded temperature sensors for tripping | | | | | | | | |
| 1LE1002-1BA23-4FB0 | 2.7 | 7.3 | 3.7 | 16 | 0.0067 | 69 | 81 | FF 215 |
| 1LE1002-1CA03-4FB0 | 2 | 5.6 | 2.6 | 16 | 0.01267 | 68 | 80 | FF 265 |
| 1LE1002-1CA13-4FB0 | 2.2 | 6.4 | 3 | 16 | 0.01601 | 68 | 80 | FF 265 |
| 1LE1002-1DA23-4FB0 | 2.1 | 6.1 | 2.7 | 16 | 0.02971 | 70 | 82 | FF 300 |
| 1LE1002-1DA33-4FB0 | 2.5 | 6.1 | 3.2 | 16 | 0.03619 | 70 | 82 | FF 300 |
| 1LE1002-1DA43-4FB0 | 2.5 | 7 | 3.2 | 16 | 0.04395 | 70 | 82 | FF 300 |

These motors are standard painted with special finish color RAL 7030 (stone gray).

Additional options like protective cover and condensation drainage holes are not possible.

(Connection box on top, cast feet, only basic versions possible, non-drive end (NDE) cannot be modified)

¹⁾ Only the type of construction IM B3 will be stamped on the rating plate.

²⁾ Only the type of construction IM B5 will be stamped on the rating plate.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

General Line motors with shorter delivery time

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output | | | | | | | Order No. | Price | Weight |
|--|--------------------------|------------|----------------------------------|--------------------------|-------------------------------------|------------------------------|------------------------------|--------------------------------|-------------------------------|--------------------|-----------|--------|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class according to CEMEP | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | EFF2 | η_{rated} % | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | | m kg | |
| Motor version: temperature class 155 (F), IP55 degree of protection, used acc. to temperature class 130 (B) | | | | | | | | | | | | |
| 4-pole – 1500 rpm at 50 Hz, 1800 rpm at 60 Hz | | | | | | | | | | | | |
| 230 VΔ/400 VY, 50 Hz; 460 VY, 60 Hz | | | | | | | | | | | | |
| • Without flange: IM B3, IM B6, IM B7, IM B8, IM V5 without protective cover, IM V6 ¹⁾ | | | | | | | | | | | | |
| - Without motor protection | | | | | | | | | | | | |
| 2.2 | 2.55 | 100 L | 1425 | 14.8 | EFF2 | 81 | 84 | 0.81 | 4.85 | 1LE1002-1AB42-2AA0 | 18 | |
| 3 | 3.45 | 100 L | 1425 | 20.2 | EFF2 | 82.8 | 83.6 | 0.85 | 6.2 | 1LE1002-1AB52-2AA0 | 22 | |
| 4 | 4.6 | 112 M | 1435 | 27 | EFF2 | 84.2 | 85.1 | 0.84 | 8.2 | 1LE1002-1BB22-2AA0 | 27 | |
| 5.5 | 6.3 | 132 S | 1450 | 36 | EFF2 | 86 | 86.5 | 0.83 | 11.2 | 1LE1002-1CB02-2AA0 | 38 | |
| 7.5 | 8.6 | 132 M | 1450 | 49 | EFF2 | 87 | 87.4 | 0.83 | 15 | 1LE1002-1CB22-2AA0 | 44 | |
| 11 | 12.6 | 160 M | 1460 | 72 | EFF2 | 88.4 | 88.1 | 0.82 | 22 | 1LE1002-1DB22-2AA0 | 62 | |
| 15 | 17.3 | 160 L | 1460 | 98 | EFF2 | 89.4 | 89.7 | 0.82 | 29.5 | 1LE1002-1DB42-2AA0 | 73 | |
| - With motor protection with PTC thermistors with 3 embedded temperature sensors for tripping | | | | | | | | | | | | |
| 2.2 | 2.55 | 100 L | 1425 | 14.8 | EFF2 | 81 | 84 | 0.81 | 4.85 | 1LE1002-1AB42-2AB0 | 18 | |
| • With flange: IM B5, IM V1 without protective cover, IM V3 ²⁾ | | | | | | | | | | | | |
| - Without motor protection | | | | | | | | | | | | |
| 2.2 | 2.55 | 100 L | 1425 | 14.8 | EFF2 | 81 | 84 | 0.81 | 4.85 | 1LE1002-1AB42-2FA0 | 19 | |
| 3 | 3.45 | 100 L | 1425 | 20.2 | EFF2 | 82.8 | 83.6 | 0.85 | 6.2 | 1LE1002-1AB52-2FA0 | 23 | |
| 4 | 4.6 | 112 M | 1435 | 27 | EFF2 | 84.2 | 85.1 | 0.84 | 8.2 | 1LE1002-1BB22-2FA0 | 28 | |
| 5.5 | 6.3 | 132 S | 1450 | 36 | EFF2 | 86 | 86.5 | 0.83 | 11.2 | 1LE1002-1CB02-2FA0 | 43 | |
| 7.5 | 8.6 | 132 M | 1450 | 49 | EFF2 | 87 | 87.4 | 0.83 | 15 | 1LE1002-1CB22-2FA0 | 49 | |
| 11 | 12.6 | 160 M | 1460 | 72 | EFF2 | 88.4 | 88.1 | 0.82 | 22 | 1LE1002-1DB22-2FA0 | 71 | |
| 15 | 17.3 | 160 L | 1460 | 98 | EFF2 | 89.4 | 89.7 | 0.82 | 29.5 | 1LE1002-1DB42-2FA0 | 82 | |
| - With motor protection with PTC thermistors with 3 embedded temperature sensors for tripping | | | | | | | | | | | | |
| 2.2 | 2.55 | 100 L | 1425 | 14.8 | EFF2 | 81 | 84 | 0.81 | 4.85 | 1LE1002-1AB42-2FB0 | 19 | |
| 3 | 3.45 | 100 L | 1425 | 20.2 | EFF2 | 82.8 | 83.6 | 0.85 | 6.2 | 1LE1002-1AB52-2FB0 | 23 | |
| 4 | 4.6 | 112 M | 1435 | 27 | EFF2 | 84.2 | 85.1 | 0.84 | 8.2 | 1LE1002-1BB22-2FB0 | 28 | |
| • With standard flange: IM B14, IM V18 without protective cover, IM V19 ³⁾ | | | | | | | | | | | | |
| - Without motor protection | | | | | | | | | | | | |
| 2.2 | 2.55 | 100 L | 1425 | 14.8 | EFF2 | 81 | 84 | 0.81 | 4.85 | 1LE1002-1AB42-2KA0 | 20 | |
| 3 | 3.45 | 100 L | 1425 | 20.2 | EFF2 | 82.8 | 83.6 | 0.85 | 6.2 | 1LE1002-1AB52-2KA0 | 24 | |
| 4 | 4.6 | 112 M | 1435 | 27 | EFF2 | 84.2 | 85.1 | 0.84 | 8.2 | 1LE1002-1BB22-2KA0 | 29 | |

These motors are standard painted with special finish color RAL 7030 (stone gray).

Additional options like protective cover and condensation drainage holes are not possible.

(Connection box on top, cast feet, only basic versions possible, non-drive end (NDE) cannot be modified)

1) Only the type of construction IM B3 will be stamped on the rating plate.

2) Only the type of construction IM B5 will be stamped on the rating plate.

3) Only the type of construction IM B14 will be stamped on the rating plate.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

General Line motors with shorter delivery time

Selection and ordering data (continued)

| Order No. | Locked-rotor torque | Locked-rotor current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | | Flange size according to DIN EN 50347 |
|--|--|------------------------------|------------------|--------------|-------------------|---|-------------------------------|---------------------------------------|
| | with direct starting as multiple of rated torque | as multiple of rated current | torque | | | Measuring-surface sound pressure level at 50 Hz | Sound pressure level at 50 Hz | |
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | | | L_{pFA} dB(A) | L_{WA} dB(A) | |
| Motor version: temperature class 155 (F), IP55 degree of protection, used acc. to temperature class 130 (B) | | | | | | | | |
| 4-pole – 1500 rpm at 50 Hz, 1800 rpm at 60 Hz | | | | | | | | |
| 230 VΔ/400 VY, 50 Hz; 460 VY, 60 Hz | | | | | | | | |
| • Without flange: IM B3, IM B6, IM B7, IM B8, IM V5 without protective cover, IM V6 ¹⁾ | | | | | | | | |
| - Without motor protection | | | | | | | | |
| 1LE1002-1AB42-2AA0 | 2.3 | 5.1 | 2.7 | 16 | 0.0059 | 60 | 72 | |
| 1LE1002-1AB52-2AA0 | 2.4 | 5.4 | 2.6 | 16 | 0.0078 | 60 | 72 | |
| 1LE1002-1BB22-2AA0 | 2.2 | 5.3 | 2.6 | 16 | 0.0102 | 58 | 70 | |
| 1LE1002-1CB02-2AA0 | 2.3 | 6.2 | 2.7 | 16 | 0.0186 | 64 | 76 | |
| 1LE1002-1CB22-2AA0 | 2.5 | 6.6 | 2.9 | 16 | 0.02371 | 64 | 76 | |
| 1LE1002-1DB22-2AA0 | 2.3 | 6.4 | 3.1 | 16 | 0.04395 | 65 | 77 | |
| 1LE1002-1DB42-2AA0 | 2.5 | 7 | 3.4 | 16 | 0.05616 | 65 | 77 | |
| - With motor protection with PTC thermistors with 3 embedded temperature sensors for tripping | | | | | | | | |
| 1LE1002-1AB42-2AB0 | 2.3 | 5.1 | 2.7 | 16 | 0.0059 | 63 | 75 | |
| • With flange: IM B5, IM V1 without protective cover, IM V3 ²⁾ | | | | | | | | |
| - Without motor protection | | | | | | | | |
| 1LE1002-1AB42-2FA0 | 2.3 | 5.1 | 2.7 | 16 | 0.0059 | 60 | 72 | FF 215 |
| 1LE1002-1AB52-2FA0 | 2.4 | 5.4 | 2.6 | 16 | 0.0078 | 60 | 72 | FF 215 |
| 1LE1002-1BB22-2FA0 | 2.2 | 5.3 | 2.6 | 16 | 0.0102 | 58 | 70 | FF 215 |
| 1LE1002-1CB02-2FA0 | 2.3 | 6.2 | 2.7 | 16 | 0.0186 | 64 | 76 | FF 265 |
| 1LE1002-1CB22-2FA0 | 2.5 | 6.6 | 2.9 | 16 | 0.02371 | 64 | 76 | FF 265 |
| 1LE1002-1DB22-2FA0 | 2.3 | 6.4 | 3.1 | 16 | 0.04395 | 65 | 77 | FF 300 |
| 1LE1002-1DB42-2FA0 | 2.5 | 7 | 3.4 | 16 | 0.05616 | 65 | 77 | FF 300 |
| - With motor protection with PTC thermistors with 3 embedded temperature sensors for tripping | | | | | | | | |
| 1LE1002-1AB42-2FB0 | 2.3 | 5.1 | 2.7 | 16 | 0.0059 | 60 | 72 | FF 215 |
| 1LE1002-1AB52-2FB0 | 2.4 | 5.4 | 2.6 | 16 | 0.0078 | 60 | 72 | FF 215 |
| 1LE1002-1BB22-2FB0 | 2.2 | 5.3 | 2.6 | 16 | 0.0102 | 58 | 70 | FF 215 |
| • With standard flange: IM B14, IM V18 without protective cover, IM V19 ³⁾ | | | | | | | | |
| - Without motor protection | | | | | | | | |
| 1LE1002-1AB42-2KA0 | 2.3 | 5.1 | 2.7 | 16 | 0.0059 | 60 | 72 | FT 130 |
| 1LE1002-1AB52-2KA0 | 2.4 | 5.4 | 2.6 | 16 | 0.0078 | 63 | 75 | FT 130 |
| 1LE1002-1BB22-2KA0 | 2.2 | 5.3 | 2.6 | 16 | 0.0102 | 58 | 70 | FT 130 |

These motors are standard painted with special finish color RAL 7030 (stone gray).

Additional options like protective cover and condensation drainage holes are not possible.

(Connection box on top, cast feet, only basic versions possible, non-drive end (NDE) cannot be modified)

- 1) Only the type of construction IM B3 will be stamped on the rating plate.
- 2) Only the type of construction IM B5 will be stamped on the rating plate.
- 3) Only the type of construction IM B14 will be stamped on the rating plate.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

General Line motors with shorter delivery time

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output | | | | | | | Order No. | Price | Weight |
|--|--------------------------|------------|----------------------------------|--------------------------|-------------------------------------|------------------------------|------------------------------|--------------------------------|-------------------------------|--------------------|-----------|--------|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class according to CEMEP | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | EFF2 | η_{rated} % | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | | m kg | |
| Motor version: temperature class 155 (F), IP55 degree of protection, used acc. to temperature class 130 (B) | | | | | | | | | | | | |
| 4-pole – 1500 rpm at 50 Hz, 1800 rpm at 60 Hz | | | | | | | | | | | | |
| 400 VΔ/690 VY, 50 Hz; 460 VΔ, 60 Hz | | | | | | | | | | | | |
| • Without flange: IM B3, IM B6, IM B7, IM B8, IM V5 without protective cover, IM V6 ¹⁾ | | | | | | | | | | | | |
| - Without motor protection | | | | | | | | | | | | |
| 2.2 | 2.55 | 100 L | 1425 | 14.8 | EFF2 | 81 | 84 | 0.81 | 4.85 | 1LE1002-1AB43-4AA0 | 18 | |
| 3 | 3.45 | 100 L | 1425 | 20.2 | EFF2 | 82.8 | 83.6 | 0.85 | 6.2 | 1LE1002-1AB53-4AA0 | 22 | |
| 4 | 4.6 | 112 M | 1435 | 27 | EFF2 | 84.2 | 85.1 | 0.84 | 8.2 | 1LE1002-1BB23-4AA0 | 27 | |
| 5.5 | 6.3 | 132 S | 1450 | 36 | EFF2 | 86 | 86.5 | 0.83 | 11.2 | 1LE1002-1CB03-4AA0 | 38 | |
| 7.5 | 8.6 | 132 M | 1450 | 49 | EFF2 | 87 | 87.4 | 0.83 | 15 | 1LE1002-1CB23-4AA0 | 44 | |
| 11 | 12.6 | 160 M | 1460 | 72 | EFF2 | 88.4 | 88.1 | 0.82 | 22 | 1LE1002-1DB23-4AA0 | 62 | |
| 15 | 17.3 | 160 L | 1460 | 98 | EFF2 | 89.4 | 89.7 | 0.82 | 29.5 | 1LE1002-1DB43-4AA0 | 73 | |
| - With motor protection with PTC thermistors with 3 embedded temperature sensors for tripping | | | | | | | | | | | | |
| 2.2 | 2.55 | 100 L | 1425 | 14.8 | EFF2 | 81 | 84 | 0.81 | 4.85 | 1LE1002-1AB43-4AB0 | 18 | |
| 3 | 3.45 | 100 L | 1425 | 20.2 | EFF2 | 82.8 | 83.6 | 0.85 | 6.2 | 1LE1002-1AB53-4AB0 | 22 | |
| 4 | 4.6 | 112 M | 1435 | 27 | EFF2 | 84.2 | 85.1 | 0.84 | 8.2 | 1LE1002-1BB23-4AB0 | 27 | |
| 5.5 | 6.3 | 132 S | 1450 | 36 | EFF2 | 86 | 86.5 | 0.83 | 11.2 | 1LE1002-1CB03-4AB0 | 38 | |
| 7.5 | 8.6 | 132 M | 1450 | 49 | EFF2 | 87 | 87.4 | 0.83 | 15 | 1LE1002-1CB23-4AB0 | 44 | |
| 11 | 12.6 | 160 M | 1460 | 72 | EFF2 | 88.4 | 88.1 | 0.82 | 22 | 1LE1002-1DB23-4AB0 | 62 | |
| 15 | 17.3 | 160 L | 1460 | 98 | EFF2 | 89.4 | 89.7 | 0.82 | 29.5 | 1LE1002-1DB43-4AB0 | 73 | |
| • With flange: IM B5, IM V1 without protective cover, IM V3 ²⁾ | | | | | | | | | | | | |
| - Without motor protection | | | | | | | | | | | | |
| 2.2 | 2.55 | 100 L | 1425 | 14.8 | EFF2 | 81 | 84 | 0.81 | 4.85 | 1LE1002-1AB43-4FA0 | 19 | |
| 3 | 3.45 | 100 L | 1425 | 20.2 | EFF2 | 82.8 | 83.6 | 0.85 | 6.2 | 1LE1002-1AB53-4FA0 | 23 | |
| 4 | 4.6 | 112 M | 1435 | 27 | EFF2 | 84.2 | 85.1 | 0.84 | 8.2 | 1LE1002-1BB23-4FA0 | 28 | |
| 5.5 | 6.3 | 132 S | 1450 | 36 | EFF2 | 86 | 86.5 | 0.83 | 11.2 | 1LE1002-1CB03-4FA0 | 43 | |
| 7.5 | 8.6 | 132 M | 1450 | 49 | EFF2 | 87 | 87.4 | 0.83 | 15 | 1LE1002-1CB23-4FA0 | 49 | |
| 11 | 12.6 | 160 M | 1460 | 72 | EFF2 | 88.4 | 88.1 | 0.82 | 22 | 1LE1002-1DB23-4FA0 | 71 | |
| 15 | 17.3 | 160 L | 1460 | 98 | EFF2 | 89.4 | 89.7 | 0.82 | 29.5 | 1LE1002-1DB43-4FA0 | 82 | |
| - With motor protection with PTC thermistors with 3 embedded temperature sensors for tripping | | | | | | | | | | | | |
| 4 | 4.6 | 112 M | 1435 | 27 | EFF2 | 84.2 | 85.1 | 0.84 | 8.2 | 1LE1002-1BB23-4FB0 | 28 | |
| 5.5 | 6.3 | 132 S | 1450 | 36 | EFF2 | 86 | 86.5 | 0.83 | 11.2 | 1LE1002-1CB03-4FB0 | 43 | |
| 7.5 | 8.6 | 132 M | 1450 | 49 | EFF2 | 87 | 87.4 | 0.83 | 15 | 1LE1002-1CB23-4FB0 | 49 | |
| 11 | 12.6 | 160 M | 1460 | 72 | EFF2 | 88.4 | 88.1 | 0.82 | 22 | 1LE1002-1DB23-4FB0 | 71 | |
| 15 | 17.3 | 160 L | 1460 | 98 | EFF2 | 89.4 | 89.7 | 0.82 | 29.5 | 1LE1002-1DB43-4FB0 | 82 | |
| • With flange: IM B35 | | | | | | | | | | | | |
| - Without motor protection | | | | | | | | | | | | |
| 5.5 | 6.3 | 132 S | 1450 | 36 | EFF2 | 86 | 86.5 | 0.83 | 11.2 | 1LE1002-1CB03-4JA0 | 43 | |
| 7.5 | 8.6 | 132 M | 1450 | 49 | EFF2 | 87 | 87.4 | 0.83 | 15 | 1LE1002-1CB23-4JA0 | 49 | |
| 11 | 12.6 | 160 M | 1460 | 72 | EFF2 | 88.4 | 88.1 | 0.82 | 22 | 1LE1002-1DB23-4JA0 | 71 | |
| 15 | 17.3 | 160 L | 1460 | 98 | EFF2 | 89.4 | 89.7 | 0.82 | 29.5 | 1LE1002-1DB43-4JA0 | 82 | |

These motors are standard painted with special finish color RAL 7030 (stone gray).

Additional options like protective cover and condensation drainage holes are not possible.

(Connection box on top, cast feet, only basic versions possible, non-drive end (NDE) cannot be modified)

¹⁾ Only the type of construction IM B3 will be stamped on the rating plate.

²⁾ Only the type of construction IM B5 will be stamped on the rating plate.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

General Line motors with shorter delivery time
Selection and ordering data (continued)

| Order No. | Locked-rotor torque | Locked-rotor current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | | Flange size according to DIN EN 50347 |
|--|--|------------------------------|------------------|--------------|-------------------------|---|-------------------------------|---------------------------------------|
| | with direct starting as multiple of rated torque | as multiple of rated current | torque | | | Measuring-surface sound pressure level at 50 Hz | Sound pressure level at 50 Hz | |
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | L_{pFA} dB(A) | L_{WA} dB(A) | |
| Motor version: temperature class 155 (F), IP55 degree of protection, used acc. to temperature class 130 (B) | | | | | | | | |
| 4-pole – 1500 rpm at 50 Hz, 1800 rpm at 60 Hz | | | | | | | | |
| 400 VΔ/690 VY, 50 Hz; 460 VΔ, 60 Hz | | | | | | | | |
| • Without flange: IM B3, IM B6, IM B7, IM B8, IM V5 without protective cover, IM V6 ¹⁾ | | | | | | | | |
| - Without motor protection | | | | | | | | |
| 1LE1002-1AB43-4AA0 | 2.3 | 5.1 | 2.7 | 16 | 0.0059 | 60 | 72 | |
| 1LE1002-1AB53-4AA0 | 2.4 | 5.4 | 2.6 | 16 | 0.0078 | 60 | 72 | |
| 1LE1002-1BB23-4AA0 | 2.2 | 5.3 | 2.6 | 16 | 0.0102 | 58 | 70 | |
| 1LE1002-1CB03-4AA0 | 2.3 | 6.2 | 2.7 | 16 | 0.0186 | 64 | 76 | |
| 1LE1002-1CB23-4AA0 | 2.5 | 6.6 | 2.9 | 16 | 0.02371 | 64 | 76 | |
| 1LE1002-1DB23-4AA0 | 2.3 | 6.4 | 3.1 | 16 | 0.04395 | 65 | 77 | |
| 1LE1002-1DB43-4AA0 | 2.5 | 7 | 3.4 | 16 | 0.05616 | 65 | 77 | |
| - With motor protection with PTC thermistors with 3 embedded temperature sensors for tripping | | | | | | | | |
| 1LE1002-1AB43-4AB0 | 2.3 | 5.1 | 2.7 | 16 | 0.0059 | 60 | 72 | |
| 1LE1002-1AB53-4AB0 | 2.4 | 5.4 | 2.6 | 16 | 0.0078 | 60 | 72 | |
| 1LE1002-1BB23-4AB0 | 2.2 | 5.3 | 2.6 | 16 | 0.0102 | 58 | 70 | |
| 1LE1002-1CB03-4AB0 | 2.3 | 6.2 | 2.7 | 16 | 0.0186 | 64 | 76 | |
| 1LE1002-1CB23-4AB0 | 2.5 | 6.6 | 2.9 | 16 | 0.02371 | 64 | 76 | |
| 1LE1002-1DB23-4AB0 | 2.3 | 6.4 | 3.1 | 16 | 0.04395 | 65 | 77 | |
| 1LE1002-1DB43-4AB0 | 2.5 | 7 | 3.4 | 16 | 0.05616 | 65 | 77 | |
| • With flange: IM B5, IM V1 without protective cover, IM V3 ²⁾ | | | | | | | | |
| - Without motor protection | | | | | | | | |
| 1LE1002-1AB43-4FA0 | 2.3 | 5.1 | 2.7 | 16 | 0.0059 | 60 | 72 | FF 215 |
| 1LE1002-1AB53-4FA0 | 2.4 | 5.4 | 2.6 | 16 | 0.0078 | 60 | 72 | FF 215 |
| 1LE1002-1BB23-4FA0 | 2.2 | 5.3 | 2.6 | 16 | 0.0102 | 58 | 70 | FF 215 |
| 1LE1002-1CB03-4FA0 | 2.3 | 6.2 | 2.7 | 16 | 0.0186 | 64 | 76 | FF 265 |
| 1LE1002-1CB23-4FA0 | 2.5 | 6.6 | 2.9 | 16 | 0.02371 | 64 | 76 | FF 265 |
| 1LE1002-1DB23-4FA0 | 2.3 | 6.4 | 3.1 | 16 | 0.04395 | 65 | 77 | FF 300 |
| 1LE1002-1DB43-4FA0 | 2.5 | 7 | 3.4 | 16 | 0.05616 | 65 | 77 | FF 300 |
| - With motor protection with PTC thermistors with 3 embedded temperature sensors for tripping | | | | | | | | |
| 1LE1002-1BB23-4FB0 | 2.2 | 5.3 | 2.6 | 16 | 0.0102 | 58 | 70 | FF 215 |
| 1LE1002-1CB03-4FB0 | 2.3 | 6.2 | 2.7 | 16 | 0.0186 | 64 | 76 | FF 265 |
| 1LE1002-1CB23-4FB0 | 2.5 | 6.6 | 2.9 | 16 | 0.02371 | 64 | 76 | FF 265 |
| 1LE1002-1DB23-4FB0 | 2.3 | 6.4 | 3.1 | 16 | 0.04395 | 65 | 77 | FF 300 |
| 1LE1002-1DB43-4FB0 | 2.5 | 7 | 3.4 | 16 | 0.05616 | 65 | 77 | FF 300 |
| • With flange: IM B35 | | | | | | | | |
| - Without motor protection | | | | | | | | |
| 1LE1002-1CB03-4JA0 | 2.3 | 6.2 | 2.7 | 16 | 0.0186 | 64 | 76 | FF 265 |
| 1LE1002-1CB23-4JA0 | 2.5 | 6.6 | 2.9 | 16 | 0.02371 | 64 | 76 | FF 265 |
| 1LE1002-1DB23-4JA0 | 2.3 | 6.4 | 3.1 | 16 | 0.04395 | 65 | 77 | FF 300 |
| 1LE1002-1DB43-4JA0 | 2.5 | 7 | 3.4 | 16 | 0.05616 | 65 | 77 | FF 300 |

These motors are standard painted with special finish color RAL 7030 (stone gray).

Additional options like protective cover and condensation drainage holes are not possible.

(Connection box on top, cast feet, only basic versions possible, non-drive end (NDE) cannot be modified)

¹⁾ Only the type of construction IM B3 will be stamped on the rating plate.


²⁾ Only the type of construction IM B5 will be stamped on the rating plate.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

General Line motors with shorter delivery time

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output | | | | | | | Order No. | Price | Weight |
|--|-------------------|------------|----------------------------------|-----------------------|---|------------------------------|------------------------------|--------------------------------|-------------------------------|---------------------------|-----------|--------|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class according to CEMEP | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm |  | η_{rated} % | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | | m kg | |
| Motor version: temperature class 155 (F), IP55 degree of protection, used acc. to temperature class 130 (B) | | | | | | | | | | | | |
| 6-pole – 1000 rpm at 50 Hz, 1200 rpm at 60 Hz | | | | | | | | | | | | |
| 230 VΔ/400 VY, 50 Hz; 460 VY, 60 Hz | | | | | | | | | | | | |
| • Without flange: IM B3, IM B6, IM B7, IM B8, IM V5 without protective cover, IM V6 ¹⁾ | | | | | | | | | | | | |
| - Without motor protection | | | | | | | | | | | | |
| 1.5 | 1.75 | 100 L | 940 | 15.3 | | 74 | 72.6 | 0.74 | 3.95 | 1LE1002-1AC42-2AA0 | 19 | |
| 2.2 | 2.55 | 112 M | 930 | 23 | | 78 | 78.1 | 0.77 | 5.3 | 1LE1002-1BC22-2AA0 | 25 | |
| 3 | 3.45 | 132 S | 955 | 30 | | 80 | 79.4 | 0.74 | 7.3 | 1LE1002-1CC02-2AA0 | 34 | |
| 4 | 4.6 | 132 M | 950 | 40 | | 83 | 83.4 | 0.76 | 9.2 | 1LE1002-1CC22-2AA0 | 39 | |
| 5.5 | 6.3 | 132 M | 950 | 55 | | 85 | 85.3 | 0.75 | 12.4 | 1LE1002-1CC32-2AA0 | 48 | |
| • With flange: IM B5, IM V1 without protective cover, IM V3 ²⁾ | | | | | | | | | | | | |
| - Without motor protection | | | | | | | | | | | | |
| 1.5 | 1.75 | 100 L | 940 | 15.3 | | 74 | 72.6 | 0.74 | 3.95 | 1LE1002-1AC42-2FA0 | 20 | |
| 2.2 | 2.55 | 112 M | 930 | 23 | | 78 | 78.1 | 0.77 | 5.3 | 1LE1002-1BC22-2FA0 | 26 | |
| 3 | 3.45 | 132 S | 955 | 30 | | 80 | 79.4 | 0.74 | 7.3 | 1LE1002-1CC02-2FA0 | 39 | |
| 4 | 4.6 | 132 M | 950 | 40 | | 83 | 83.4 | 0.76 | 9.2 | 1LE1002-1CC22-2FA0 | 44 | |
| - With motor protection with PTC thermistors with 3 embedded temperature sensors for tripping | | | | | | | | | | | | |
| 1.5 | 1.75 | 100 L | 940 | 15.3 | | 74 | 72.6 | 0.74 | 3.95 | 1LE1002-1AC42-2FB0 | 20 | |
| 2.2 | 2.55 | 112 M | 930 | 23 | | 78 | 78.1 | 0.77 | 5.3 | 1LE1002-1BC22-2FB0 | 26 | |
| 3 | 3.45 | 132 S | 955 | 30 | | 80 | 79.4 | 0.74 | 7.3 | 1LE1002-1CC02-2FB0 | 39 | |
| • With standard flange: IM B14, IM V18 without protective cover, IM V19 ³⁾ | | | | | | | | | | | | |
| - Without motor protection | | | | | | | | | | | | |
| 1.5 | 1.75 | 100 L | 940 | 15.3 | | 74 | 72.6 | 0.74 | 3.95 | 1LE1002-1AC42-2KA0 | 21 | |
| 2.2 | 2.55 | 112 M | 930 | 23 | | 78 | 78.1 | 0.77 | 5.3 | 1LE1002-1BC22-2KA0 | 27 | |
| 400 VΔ/690 VY, 50 Hz; 460 VΔ, 60 Hz | | | | | | | | | | | | |
| • Without flange: IM B3, IM B6, IM B7, IM B8, IM V5 without protective cover, IM V6 ¹⁾ | | | | | | | | | | | | |
| - Without motor protection | | | | | | | | | | | | |
| 3 | 3.45 | 132 S | 955 | 30 | | 80 | 79.4 | 0.74 | 7.3 | 1LE1002-1CC03-4AA0 | 34 | |
| 4 | 4.6 | 132 M | 950 | 40 | | 83 | 83.4 | 0.76 | 9.2 | 1LE1002-1CC23-4AA0 | 39 | |
| 5.5 | 6.3 | 132 M | 950 | 55 | | 85 | 85.3 | 0.75 | 12.4 | 1LE1002-1CC33-4AA0 | 48 | |
| 7.5 | 8.6 | 160 M | 970 | 75 | | 86 | 85.4 | 0.73 | 17.2 | 1LE1002-1DC23-4AA0 | 72 | |
| 11 | 12.6 | 160 L | 965 | 110 | | 87.6 | 87.9 | 0.77 | 23.5 | 1LE1002-1DC43-4AA0 | 92 | |
| - With motor protection with PTC thermistors with 3 embedded temperature sensors for tripping | | | | | | | | | | | | |
| 3 | 3.45 | 132 S | 955 | 30 | | 80 | 79.4 | 0.74 | 7.3 | 1LE1002-1CC03-4AB0 | 34 | |
| 4 | 4.6 | 132 M | 950 | 40 | | 83 | 83.4 | 0.76 | 9.2 | 1LE1002-1CC23-4AB0 | 39 | |
| 5.5 | 6.3 | 132 M | 950 | 55 | | 85 | 85.3 | 0.75 | 12.4 | 1LE1002-1CC33-4AB0 | 48 | |
| 7.5 | 8.6 | 160 M | 970 | 75 | | 86 | 86.5 | 0.73 | 17.2 | 1LE1002-1DC23-4AB0 | 72 | |
| 11 | 12.6 | 160 L | 965 | 110 | | 87.6 | 87.9 | 0.77 | 23.5 | 1LE1002-1DC43-4AB0 | 92 | |
| • With flange: IM B5, IM V1 without protective cover, IM V3 ²⁾ | | | | | | | | | | | | |
| - Without motor protection | | | | | | | | | | | | |
| 3 | 3.45 | 132 S | 955 | 30 | | 80 | 79.4 | 0.74 | 7.3 | 1LE1002-1CC03-4FA0 | 39 | |
| 4 | 4.6 | 132 M | 950 | 40 | | 83 | 83.4 | 0.76 | 9.2 | 1LE1002-1CC23-4FA0 | 44 | |
| 5.5 | 6.3 | 132 M | 950 | 55 | | 85 | 85.3 | 0.75 | 12.4 | 1LE1002-1CC33-4FA0 | 53 | |
| 7.5 | 8.6 | 160 M | 970 | 75 | | 86 | 85.4 | 0.73 | 17.2 | 1LE1002-1DC23-4FA0 | 81 | |
| 11 | 12.6 | 160 L | 965 | 110 | | 87.6 | 87.9 | 0.77 | 23.5 | 1LE1002-1DC43-4FA0 | 101 | |
| - With motor protection with PTC thermistors with 3 embedded temperature sensors for tripping | | | | | | | | | | | | |
| 4 | 4.6 | 132 M | 950 | 40 | | 83 | 83.4 | 0.76 | 9.2 | 1LE1002-1CC23-4FB0 | 44 | |
| 5.5 | 6.3 | 132 M | 950 | 55 | | 85 | 85.3 | 0.75 | 12.4 | 1LE1002-1CC33-4FB0 | 53 | |
| 7.5 | 8.6 | 160 M | 970 | 75 | | 86 | 85.4 | 0.73 | 17.2 | 1LE1002-1DC23-4FB0 | 81 | |
| 11 | 12.6 | 160 L | 965 | 110 | | 87.6 | 87.9 | 0.77 | 23.5 | 1LE1002-1DC43-4FB0 | 101 | |

These motors are standard painted with special finish color RAL 7030 (stone gray).

Additional options like protective cover and condensation drainage holes are not possible.

(Connection box on top, cast feet, only basic versions possible, non-drive end (NDE) cannot be modified)

¹⁾ Only the type of construction IM B3 will be stamped on the rating plate.

²⁾ Only the type of construction IM B5 will be stamped on the rating plate.

³⁾ Only the type of construction IM B14 will be stamped on the rating plate.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

General Line motors with shorter delivery time

Selection and ordering data (continued)

| Order No. | Locked-rotor torque | Locked-rotor current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | | Flange size according to DIN EN 50347 |
|--|--|------------------------------|-----------------------------|--------------|-------------------------|---|-------------------------------|---------------------------------------|
| | with direct starting as multiple of rated torque | as multiple of rated current | as multiple of rated torque | | | Measuring-surface sound pressure level at 50 Hz | Sound pressure level at 50 Hz | |
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | L_{pFA} dB(A) | L_{WA} dB(A) | |
| Motor version: temperature class 155 (F), IP55 degree of protection, used acc. to temperature class 130 (B) | | | | | | | | |
| 6-pole – 1000 rpm at 50 Hz, 1200 rpm at 60 Hz | | | | | | | | |
| 230 VΔ/400 VY, 50 Hz; 460 VY, 60 Hz | | | | | | | | |
| • Without flange: IM B3, IM B6, IM B7, IM B8, IM V5 without protective cover, IM V6 ¹⁾ | | | | | | | | |
| - Without motor protection | | | | | | | | |
| 1LE1002-1AC42-2AA0 | 2 | 4 | 2.2 | 16 | 0.0065 | 59 | 71 | |
| 1LE1002-1BC22-2AA0 | 2.1 | 4.1 | 2.4 | 16 | 0.0065 | 57 | 69 | |
| 1LE1002-1CC02-2AA0 | 2 | 4.6 | 2.6 | 16 | 0.0167 | 63 | 75 | |
| 1LE1002-1CC22-2AA0 | 2.1 | 4.7 | 2.5 | 16 | 0.02116 | 63 | 75 | |
| 1LE1002-1CC32-2AA0 | 2.5 | 5.2 | 2.8 | 16 | 0.02734 | 63 | 75 | |
| • With flange: IM B5, IM V1 without protective cover, IM V3 ²⁾ | | | | | | | | |
| - Without motor protection | | | | | | | | |
| 1LE1002-1AC42-2FA0 | 2 | 4 | 2.2 | 16 | 0.0065 | 59 | 71 | FF 215 |
| 1LE1002-1BC22-2FA0 | 2.3 | 4.1 | 2.5 | 16 | 0.0092 | 57 | 69 | FF 215 |
| 1LE1002-1CC02-2FA0 | 2 | 4.6 | 2.6 | 16 | 0.0167 | 63 | 75 | FF 265 |
| 1LE1002-1CC22-2FA0 | 2.1 | 4.7 | 2.5 | 16 | 0.02116 | 63 | 75 | FF 265 |
| - With motor protection with PTC thermistors with 3 embedded temperature sensors for tripping | | | | | | | | |
| 1LE1002-1AC42-2FB0 | 2 | 4 | 2.2 | 16 | 0.0065 | 59 | 71 | FF 215 |
| 1LE1002-1BC22-2FB0 | 2.3 | 4.1 | 2.5 | 16 | 0.0092 | 68 | 80 | FF 215 |
| 1LE1002-1CC02-2FB0 | 2 | 4.6 | 2.6 | 16 | 0.0167 | 63 | 75 | FF 265 |
| • With standard flange: IM B14, IM V18 without protective cover, IM V19 ³⁾ | | | | | | | | |
| - Without motor protection | | | | | | | | |
| 1LE1002-1AC42-2KA0 | 2 | 4 | 2.2 | 16 | 0.0065 | 59 | 71 | FT 130 |
| 1LE1002-1BC22-2KA0 | 2.3 | 4.1 | 2.5 | 16 | 0.0092 | 68 | 80 | FT 130 |
| 400 VΔ/690 VY, 50 Hz; 460 VΔ, 60 Hz | | | | | | | | |
| • Without flange: IM B3, IM B6, IM B7, IM B8, IM V5 without protective cover, IM V6 ¹⁾ | | | | | | | | |
| - Without motor protection | | | | | | | | |
| 1LE1002-1CC03-4AA0 | 2 | 4.6 | 2.6 | 16 | 0.017 | 63 | 75 | |
| 1LE1002-1CC23-4AA0 | 2.1 | 4.7 | 2.5 | 16 | 0.02116 | 63 | 75 | |
| 1LE1002-1CC33-4AA0 | 2.5 | 5.2 | 2.8 | 16 | 0.02734 | 63 | 75 | |
| 1LE1002-1DC23-4AA0 | 2.1 | 5.5 | 2.9 | 16 | 0.04993 | 68 | 80 | |
| 1LE1002-1DC43-4AA0 | 1.9 | 5.9 | 2.7 | 16 | 0.0678 | 68 | 80 | |
| - With motor protection with PTC thermistors with 3 embedded temperature sensors for tripping | | | | | | | | |
| 1LE1002-1CC03-4AB0 | 2 | 4.6 | 2.6 | 16 | 0.0167 | 63 | 75 | |
| 1LE1002-1CC23-4AB0 | 2.1 | 4.7 | 2.5 | 16 | 0.02116 | 63 | 75 | |
| 1LE1002-1CC33-4AB0 | 2.5 | 5.2 | 2.8 | 16 | 0.02734 | 63 | 75 | |
| 1LE1002-1DC23-4AB0 | 2.1 | 5.5 | 2.9 | 16 | 0.04993 | 68 | 80 | |
| 1LE1002-1DC43-4AB0 | 1.9 | 5.9 | 2.7 | 16 | 0.0678 | 68 | 80 | |
| • With flange: IM B5, IM V1 without protective cover, IM V3 ²⁾ | | | | | | | | |
| - Without motor protection | | | | | | | | |
| 1LE1002-1CC03-4FA0 | 2 | 4.6 | 2.6 | 16 | 0.0167 | 63 | 75 | FF 265 |
| 1LE1002-1CC23-4FA0 | 2.1 | 4.7 | 2.5 | 16 | 0.02116 | 63 | 75 | FF 265 |
| 1LE1002-1CC33-4FA0 | 2.5 | 5.2 | 2.8 | 16 | 0.02734 | 63 | 75 | FF 265 |
| 1LE1002-1DC23-4FA0 | 2.1 | 5.5 | 2.9 | 16 | 0.04993 | 68 | 80 | FF 300 |
| 1LE1002-1DC43-4FA0 | 1.9 | 5.9 | 2.7 | 16 | 0.0678 | 68 | 80 | FF 300 |
| - With motor protection with PTC thermistors with 3 embedded temperature sensors for tripping | | | | | | | | |
| 1LE1002-1CC23-4FB0 | 2.1 | 4.7 | 2.5 | 16 | 0.02116 | 63 | 75 | FF 265 |
| 1LE1002-1CC33-4FB0 | 2.5 | 5.2 | 2.8 | 16 | 0.02734 | 63 | 75 | FF 265 |
| 1LE1002-1DC23-4FB0 | 2.1 | 5.5 | 2.9 | 16 | 0.04993 | 68 | 80 | FF 300 |
| 1LE1002-1DC43-4FB0 | 1.9 | 5.9 | 2.7 | 16 | 0.0678 | 68 | 80 | FF 300 |

These motors are standard painted with special finish color RAL 7030 (stone gray).

Additional options like protective cover and condensation drainage holes are not possible.

(Connection box on top, cast feet, only basic versions possible, non-drive end (NDE) cannot be modified)


- 1) Only the type of construction IM B3 will be stamped on the rating plate.
- 2) Only the type of construction IM B5 will be stamped on the rating plate.
- 3) Only the type of construction IM B14 will be stamped on the rating plate.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Self-ventilated energy-saving motors
with improved efficiency

Selection and ordering data

| Rated output at | | Frame size | Operating values at rated output | | | | | | | Order No. | Price | Weight |
|--|--------------------------|------------|----------------------------------|--------------------------|---|------------------------------|------------------------------|--------------------------------|-------------------------------|---|----------------------------|---|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class according to CEMEP | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm |  | η_{rated} % | η_{rated} % | $\cos\varphi_{\text{rated}}$ | I_{rated} A | For Order No. supplements for voltage, type of construction, motor protection and connection box, see table from Page 1/20. | IM B3 type of construction | IM B3 type of construction approx. m kg |
| Motor version: temperature class 155 (F), IP55 degree of protection, used acc. to temperature class 130 (B) | | | | | | | | | | | | |
| 2-pole – 3000 rpm at 50 Hz, 3600 rpm at 60 Hz | | | | | | | | | | | | |
| 3 | 3.45 | 100 L | 2835 | 10 | EFF2 | 82.6 | 83.2 | 0.87 | 6 | 1LE1002-1AA4Q-QQQQ | | 20 |
| 4 | 4.6 | 112 M | 2930 | 13 | EFF2 | 84.8 | 84.4 | 0.86 | 7.9 | 1LE1002-1BA2Q-QQQQ | | 25 |
| 5.5 | 6.3 | 132 S | 2905 | 18 | EFF2 | 86 | 86.6 | 0.89 | 10.4 | 1LE1002-1CA0Q-QQQQ | | 35 |
| 7.5 | 8.6 | 132 S | 2925 | 24 | EFF2 | 87.6 | 88.7 | 0.88 | 14 | 1LE1002-1CA1Q-QQQQ | | 40 |
| 11 | 12.6 | 160 M | 2920 | 36 | EFF2 | 88.4 | 88.5 | 0.85 | 21 | 1LE1002-1DA2Q-QQQQ | | 60 |
| 15 | 17.3 | 160 M | 2930 | 49 | EFF2 | 89.5 | 89.7 | 0.84 | 29 | 1LE1002-1DA3Q-QQQQ | | 68 |
| 18.5 | 21.3 | 160 L | 2935 | 60 | EFF2 | 90.9 | 91 | 0.86 | 34 | 1LE1002-1DA4Q-QQQQ | | 78 |
| 4-pole – 1500 rpm at 50 Hz, 1800 rpm at 60 Hz | | | | | | | | | | | | |
| 2.2 | 2.55 | 100 L | 1425 | 14.8 | EFF2 | 81 | 84 | 0.81 | 4.85 | 1LE1002-1AB4Q-QQQQ | | 18 |
| 3 | 3.45 | 100 L | 1425 | 20.2 | EFF2 | 82.8 | 83.6 | 0.85 | 6.2 | 1LE1002-1AB5Q-QQQQ | | 22 |
| 4 | 4.6 | 112 M | 1435 | 27 | EFF2 | 84.2 | 85.1 | 0.84 | 8.2 | 1LE1002-1BB2Q-QQQQ | | 27 |
| 5.5 | 6.3 | 132 S | 1450 | 36 | EFF2 | 86 | 86.5 | 0.83 | 11.2 | 1LE1002-1CB0Q-QQQQ | | 38 |
| 7.5 | 8.6 | 132 M | 1450 | 49 | EFF2 | 87 | 87.4 | 0.83 | 15 | 1LE1002-1CB2Q-QQQQ | | 44 |
| 11 | 12.6 | 160 M | 1460 | 72 | EFF2 | 88.4 | 88.1 | 0.82 | 22 | 1LE1002-1DB2Q-QQQQ | | 62 |
| 15 | 17.3 | 160 L | 1460 | 98 | EFF2 | 89.4 | 89.7 | 0.82 | 29.5 | 1LE1002-1DB4Q-QQQQ | | 73 |
| 6-pole – 1000 rpm at 50 Hz, 1200 rpm at 60 Hz | | | | | | | | | | | | |
| 1.5 | 1.75 | 100 L | 940 | 15.3 | | 74 | 72.6 | 0.74 | 3.95 | 1LE1002-1AC4Q-QQQQ | | 19 |
| 2.2 | 2.55 | 112 M | 930 | 23 | | 78 | 78.1 | 0.77 | 5.3 | 1LE1002-1BC2Q-QQQQ | | 25 |
| 3 | 3.45 | 132 S | 955 | 30 | | 80 | 79.4 | 0.74 | 7.3 | 1LE1002-1CC0Q-QQQQ | | 34 |
| 4 | 4.6 | 132 M | 950 | 40 | | 83 | 83.4 | 0.76 | 9.2 | 1LE1002-1CC2Q-QQQQ | | 39 |
| 5.5 | 6.3 | 132 M | 950 | 55 | | 85 | 85.3 | 0.75 | 12.4 | 1LE1002-1CC3Q-QQQQ | | 48 |
| 7.5 | 8.6 | 160 M | 970 | 75 | | 86 | 85.4 | 0.73 | 17.2 | 1LE1002-1DC2Q-QQQQ | | 72 |
| 11 | 12.6 | 160 L | 965 | 110 | | 87.6 | 87.9 | 0.77 | 23.5 | 1LE1002-1DC4Q-QQQQ | | 92 |
| 8-pole – 750 rpm at 50 Hz, 900 rpm at 60 Hz | | | | | | | | | | | | |
| 0.75 | 0.86 | 100 L | 705 | 10.4 | | 65.4 | 60.2 | 0.62 | 2.65 | 1LE1002-1AD4Q-QQQQ | | 17 |
| 1.1 | 1.3 | 100 L | 705 | 15.1 | | 68.3 | 67.6 | 0.63 | 3.7 | 1LE1002-1AD5Q-QQQQ | | 22 |
| 1.5 | 1.75 | 112 M | 700 | 20 | | 75.9 | 72.8 | 0.68 | 4.2 | 1LE1002-1BD2Q-QQQQ | | 25 |
| 2.2 | 2.55 | 132 S | 715 | 29 | | 81 | 80.4 | 0.66 | 5.9 | 1LE1002-1CD0Q-QQQQ | | 37 |
| 3 | 3.45 | 132 M | 710 | 40 | | 81.6 | 81.4 | 0.68 | 7.8 | 1LE1002-1CD2Q-QQQQ | | 44 |
| 4 | 4.6 | 160 M | 720 | 53 | | 80 | 78.7 | 0.69 | 10.4 | 1LE1002-1DD2Q-QQQQ | | 60 |
| 5.5 | 6.3 | 160 M | 720 | 73 | | 83.5 | 83.9 | 0.70 | 13.6 | 1LE1002-1DD3Q-QQQQ | | 72 |
| 7.5 | 8.6 | 160 L | 715 | 100 | | 83.5 | 84.7 | 0.70 | 18.6 | 1LE1002-1DD4Q-QQQQ | | 91 |

Note:

The 2-, 4-, and 6-pole motors listed above can be delivered ex stock with shorter delivery time.
These motors can be selected from defined versions (voltages, types of construction, motor protection and position of the connection box) in section "General Line motors with shorter delivery time" on Pages 1/8 to 1/17.

Order No. supplements, see from Page 1/20.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Self-ventilated energy-saving motors
with improved efficiency

Selection and ordering data (continued)

| Order No. | Locked-rotor torque | Locked-rotor current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | |
|--|-----------------------------|------------------------------|------------------|--------------|-------------------------|---|-------------------------------|
| | with direct starting torque | as multiple of rated current | torque | | | Measuring-surface sound pressure level at 50 Hz | Sound pressure level at 50 Hz |
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | L_{pFA} dB(A) | L_{WA} dB(A) |
| Motor version: temperature class 155 (F), IP55 degree of protection, used acc. to temperature class 130 (B) | | | | | | | |
| 2-pole – 3000 rpm at 50 Hz, 3600 rpm at 60 Hz | | | | | | | |
| 1LE1002-1AA4Q-QQQQ | 3.2 | 6.2 | 2.9 | 16 | 0.0034 | 67 | 79 |
| 1LE1002-1BA2Q-QQQQ | 2.7 | 7.3 | 3.7 | 16 | 0.0067 | 69 | 81 |
| 1LE1002-1CA0Q-QQQQ | 2 | 5.6 | 2.6 | 16 | 0.01267 | 68 | 80 |
| 1LE1002-1CA1Q-QQQQ | 2.2 | 6.4 | 3 | 16 | 0.01601 | 68 | 80 |
| 1LE1002-1DA2Q-QQQQ | 2.1 | 6.1 | 2.7 | 16 | 0.02971 | 70 | 82 |
| 1LE1002-1DA3Q-QQQQ | 2.5 | 6.1 | 3.2 | 16 | 0.03619 | 70 | 82 |
| 1LE1002-1DA4Q-QQQQ | 2.5 | 7 | 3.2 | 16 | 0.04395 | 70 | 82 |
| 4-pole – 1500 rpm at 50 Hz, 1800 rpm at 60 Hz | | | | | | | |
| 1LE1002-1AB4Q-QQQQ | 2.3 | 5.1 | 2.7 | 16 | 0.0059 | 60 | 72 |
| 1LE1002-1AB5Q-QQQQ | 2.4 | 5.4 | 2.6 | 16 | 0.0078 | 60 | 72 |
| 1LE1002-1BB2Q-QQQQ | 2.2 | 5.3 | 2.6 | 16 | 0.0102 | 58 | 70 |
| 1LE1002-1CB0Q-QQQQ | 2.3 | 6.2 | 2.7 | 16 | 0.0186 | 64 | 76 |
| 1LE1002-1CB2Q-QQQQ | 2.5 | 6.6 | 2.9 | 16 | 0.02371 | 64 | 76 |
| 1LE1002-1DB2Q-QQQQ | 2.3 | 6.4 | 3.1 | 16 | 0.04395 | 65 | 77 |
| 1LE1002-1DB4Q-QQQQ | 2.5 | 7 | 3.4 | 16 | 0.05616 | 65 | 77 |
| 6-pole – 1000 rpm at 50 Hz, 1200 rpm at 60 Hz | | | | | | | |
| 1LE1002-1AC4Q-QQQQ | 2 | 4 | 2.2 | 16 | 0.0065 | 61 | 73 |
| 1LE1002-1BC2Q-QQQQ | 2.3 | 4.1 | 2.5 | 16 | 0.0092 | 68 | 80 |
| 1LE1002-1CC0Q-QQQQ | 2 | 4.6 | 2.6 | 16 | 0.0167 | 63 | 75 |
| 1LE1002-1CC2Q-QQQQ | 2.1 | 4.7 | 2.5 | 16 | 0.02116 | 63 | 75 |
| 1LE1002-1CC3Q-QQQQ | 2.5 | 5.2 | 2.8 | 16 | 0.02734 | 63 | 75 |
| 1LE1002-1DC2Q-QQQQ | 2.1 | 5.5 | 2.9 | 16 | 0.04993 | 68 | 80 |
| 1LE1002-1DC4Q-QQQQ | 1.9 | 5.9 | 2.7 | 16 | 0.0678 | 68 | 80 |
| 8-pole – 750 rpm at 50 Hz, 900 rpm at 60 Hz | | | | | | | |
| 1LE1002-1AD4Q-QQQQ | 1.9 | 3 | 2.2 | 16 | 0.0056 | 60 | 72 |
| 1LE1002-1AD5Q-QQQQ | 2 | 3.2 | 2.3 | 16 | 0.0078 | 60 | 72 |
| 1LE1002-1BD2Q-QQQQ | 1.9 | 3.4 | 2.1 | 16 | 0.0094 | 63 | 75 |
| 1LE1002-1CD0Q-QQQQ | 1.7 | 3.9 | 2.4 | 13 | 0.0186 | 63 | 75 |
| 1LE1002-1CD2Q-QQQQ | 1.8 | 3.9 | 2.2 | 13 | 0.02372 | 63 | 75 |
| 1LE1002-1DD2Q-QQQQ | 1.7 | 3.8 | 2.3 | 13 | 0.0439 | 63 | 75 |
| 1LE1002-1DD3Q-QQQQ | 1.6 | 4 | 2.2 | 13 | 0.0562 | 63 | 75 |
| 1LE1002-1DD4Q-QQQQ | 1.7 | 3.8 | 2.2 | 13 | 0.0772 | 63 | 75 |

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Self-ventilated energy-saving motors
with improved efficiency

Selection and ordering data (continued)

Order No. supplements

| Motor type | Frame size | Positions 12 and 13: Voltages (voltage codes) | | | | | | | |
|----------------------|------------|--|---------------|-----------|-----------|--|--|--------------------------------|--------------------------------|
| | | Standard voltages | | | | Further voltages | | | |
| | | 50 Hz | | | | 50 Hz | | | |
| | | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 220 VΔ/380 VY | 380 VΔ/660 VY | 415 VY | 415 VΔ |
| | | <u>60 Hz</u> | | | | <u>Rated voltage range</u> | | | |
| | | 460 VY | 460 VΔ | | | (210 ... 230 VΔ/ 360 ... 400 VY) ¹⁾ | (360 ... 400 VΔ/ 625 ... 695 VY) ¹⁾ | (395 ... 435 VY) ¹⁾ | (395 ... 435 VΔ) ¹⁾ |
| | | see "Selection and ordering data" for outputs at 60 Hz | | | | | | | |
| | | 22 | 34 | 27 | 40 | 21 | 33 | 23 | 35 |
| 1LE1002-1A...-□-□... | 100 L | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1B...-□-□... | 112 M | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1C...-□-□... | 132 S/M | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1D...-□-□... | 160 M/L | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ |

- Without additional charge
✓ With additional charge

Order other voltages with voltage code **9** in position 12, code **0** in position 13 and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages", Page 1/54).

| Motor type | Frame size | Position 14: Types of construction (type letter) | | | | | | | | | | | | |
|----------------------|------------|--|------------------------|------------------------|------------------------|------------------------|--|---|------------------------------------|--------------------------|--|---|------------------------|--------|
| | | Without flange | | | | | | | With flange (acc. to DIN EN 50347) | | | | | |
| | | IM B3 ₂₎₃₎ | IM B6 ₃₎ | IM B7 ₃₎ | IM B8 ₃₎ | IM V6 ₃₎ | IM V5 without protective cover ₃₎ | IM V5 with protective cover ₃₎₄₎₅₎ | Flange size | IM B5 ₃₎₆₎ | IM V1 without protective cover ₃₎ | IM V1 with protective cover ₃₎₄₎₅₎ | IM V3 ₃₎ | IM B35 |
| | | A | T | U | V | D | C | C | F | G | G | H | J | |
| | | Order No. supplement -Z with order code | | | | | | | | | | | | |
| | | - | - | - | - | - | - | -Z H00 | - | - | -Z H00 | - | - | |
| 1LE1002-1A...-□-□... | 100 L | □ | □ | □ | □ | □ | □ | ✓ | FF 215 | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1B...-□-□... | 112 M | □ | □ | □ | □ | □ | □ | ✓ | FF 215 | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1C...-□-□... | 132 S/M | □ | □ | □ | □ | □ | □ | ✓ | FF 265 | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1D...-□-□... | 160 M/L | □ | □ | □ | □ | □ | □ | ✓ | FF 300 | ✓ | ✓ | ✓ | ✓ | ✓ |

| Motor type | Frame size | Position 14: Types of construction (type letter) | | | | | | | | | | | | |
|----------------------|------------|--|---------------------------|-------------------------|---|--|----------|---|---------------------------|-------------------------|---|--|-----------|---|
| | | With standard flange (acc. to DIN EN 50347) | | | | | | With standard flange (next larger standard flange acc. to DIN EN 50347) | | | | | | |
| | | Flange size | IM B14 ₃₎₇₎ | IM V19 ₃₎ | IM V18 without protective cover ₃₎ | IM V18 with protective cover ₃₎₄₎₅₎ | IM B34 | Flange size | IM B14 ₃₎₇₎ | IM V19 ₃₎ | IM V18 without protective cover ₃₎ | IM V18 with protective cover ₃₎₄₎₅₎ | IM B34 | |
| | | | K | L | M | M | N | | K | L | M | M | N | |
| | | Order No. supplement -Z with order code | | | | | | | | | | | | |
| | | | - | - | - | -Z H00 | - | | -Z | -Z | -Z | -Z H00 | -Z | |
| 1LE1002-1A...-□-□... | 100 L | FT 130 | ✓ | ✓ | ✓ | ✓ | ✓ | FT 165 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1B...-□-□... | 112 M | FT 130 | ✓ | ✓ | ✓ | ✓ | ✓ | FT 165 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1C...-□-□... | 132 S/M | FT 165 | ✓ | ✓ | ✓ | ✓ | ✓ | FT 215 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1D...-□-□... | 160 M/L | FT 215 | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - | - | - |

- Standard version
✓ With additional charge

¹⁾ A rated voltage range is also specified on the rating plate.

²⁾ The types of construction IM B6/7/8, IM V6 and IM V5 without protective cover/with protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard, the type of construction IM B3 is then stamped on the rating plate. With type of construction IM V5 with protective cover, the protective cover has to be additionally ordered with order code **H00**. The protective cover is not stamped on the rating plate.

³⁾ The type of construction is stamped on the rating plate. When ordering with condensation drainage holes (order code **H03**), it is absolutely necessary to specify the type of construction for the exact position of the condensation drainage holes during manufacture.

⁴⁾ Option second shaft extension (order code **L05**) not possible.

⁵⁾ In combination with an encoder, it is not necessary to order the protective cover (order code **H00**), as this is delivered as a protection for the encoder as standard. In this case, the protective cover is standard design (without additional charge).

⁶⁾ The types of construction IM V3 and IM V1 without protective cover/with protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard, the type of construction IM B5 is then stamped on the rating plate. With type of construction IM V1 with protective cover, the protective cover has to be additionally ordered with order code **H00**. The protective cover is not stamped on the rating plate.

⁷⁾ The types of construction IM V19 and IM V18 without protective cover/with protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard, the type of construction IM B14 is then stamped on the rating plate. With type of construction IM V18 with protective cover, the protective cover has to be additionally ordered with order code **H00**. The protective cover is not stamped on the rating plate.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Self-ventilated energy-saving motors
with improved efficiency

Selection and ordering data (continued)

| Motor type | Frame size | Position 15: Motor protection (motor protection letter) | | | | | |
|--------------------|------------|---|--|--|---|------------------------------|--|
| | | Without motor protection | Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ¹⁾ | Motor protection with PTC thermistors with 6 embedded temperature sensors for alarm and tripping ¹⁾ | Motor temperature detection with embedded temperature sensor KTY 84-130 ¹⁾ | NTC thermistors for tripping | Temperature detectors for tripping ¹⁾ |
| Order code | | A | B | C | F | Z Q2A | Z Q3A |
| 1LE1002-1A...-...□ | 100 L | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1B...-...□ | 112 M | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1C...-...□ | 132 S/M | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1D...-...□ | 160 M/L | □ | ✓ | ✓ | ✓ | ✓ | ✓ |

- Standard version
✓ With additional charge

| Motortyp | Frame size | Position 16: Connection box (connection box code) | | | |
|--------------------|------------|---|-------------------------------------|-------------------------------------|-------------------------------------|
| | | Connection box top ²⁾ | Connection box on RHS ³⁾ | Connection box on LHS ³⁾ | Connection box bottom ³⁾ |
| | | 4 | 5 | 6 | 7 |
| 1LE1002-1A...-...□ | 100 L | □ | ✓ | ✓ | ✓ |
| 1LE1002-1B...-...□ | 112 M | □ | ✓ | ✓ | ✓ |
| 1LE1002-1C...-...□ | 132 S/M | □ | ✓ | ✓ | ✓ |
| 1LE1002-1D...-...□ | 160 M/L | □ | ✓ | ✓ | ✓ |

- Standard version
✓ With additional charge

¹⁾ Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended.
²⁾ With type of construction, cast feet as standard. Screwed-on feet are available with order code **H01**, see "Special versions".
³⁾ With type of construction, screwed-on feet as standard.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Self-ventilated energy-saving motors
with high efficiency

Selection and ordering data

| Rated output at | | Frame size | Operating values at rated output | | | | | | | Order No. | Price | Weight |
|--|--------------------------|------------|----------------------------------|--------------------------|---|------------------------------|------------------------------|--------------------------------|-------------------------------|---|----------------------------|---|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class according to CEMEP | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm |  | η_{rated} % | η_{rated} % | $\cos\varphi_{\text{rated}}$ | I_{rated} A | For Order No. supplements for voltage, type of construction, motor protection and connection box, see table from Page 1/24. | IM B3 type of construction | IM B3 type of construction approx. m kg |
| Motor version: temperature class 155 (F), IP55 degree of protection, used acc. to temperature class 130 (B) | | | | | | | | | | | | |
| For use according to CEMEP | | | | | | | | | | | | |
| 2-pole – 3000 rpm at 50 Hz, 3600 rpm at 60 Hz | | | | | | | | | | | | |
| 3 | 3.45 | 100 L | 2905 | 9.9 | EFF1 | 86.7 | 87.5 | 0.84 | 5.9 | 1LE1001-1AA4Q-QQQQ | | 21 |
| 4 | 4.6 | 112 M | 2950 | 13 | EFF1 | 88 | 88.5 | 0.86 | 7.4 | 1LE1001-1BA2Q-QQQQ | | 27 |
| 5.5 | 6.3 | 132 S | 2950 | 18 | EFF1 | 89.5 | 90.6 | 0.87 | 10.2 | 1LE1001-1CA0Q-QQQQ | | 39 |
| 7.5 | 8.6 | 132 S | 2950 | 24 | EFF1 | 90 | 91 | 0.87 | 13.8 | 1LE1001-1CA1Q-QQQQ | | 43 |
| 11 | 12.6 | 160 M | 2955 | 36 | EFF1 | 90.8 | 91 | 0.87 | 20 | 1LE1001-1DA2Q-QQQQ | | 67 |
| 15 | 17.3 | 160 M | 2955 | 48 | EFF1 | 91.4 | 91.5 | 0.88 | 27 | 1LE1001-1DA3Q-QQQQ | | 75 |
| 18.5 | 21.3 | 160 L | 2955 | 60 | EFF1 | 92 | 92.5 | 0.88 | 33 | 1LE1001-1DA4Q-QQQQ | | 84 |
| 4-pole – 1500 rpm at 50 Hz, 1800 rpm at 60 Hz | | | | | | | | | | | | |
| 2.2 | 2.55 | 100 L | 1455 | 14 | EFF1 | 86.4 | 87 | 0.81 | 4.55 | 1LE1001-1AB4Q-QQQQ | | 21 |
| 3 | 3.45 | 100 L | 1455 | 20 | EFF1 | 87.4 | 88 | 0.82 | 6 | 1LE1001-1AB5Q-QQQQ | | 25 |
| 4 | 4.6 | 112 M | 1460 | 26 | EFF1 | 88.3 | 88.5 | 0.81 | 8.1 | 1LE1001-1BB2Q-QQQQ | | 29 |
| 5.5 | 6.3 | 132 S | 1465 | 36 | EFF1 | 89.2 | 89.5 | 0.80 | 11.2 | 1LE1001-1CB0Q-QQQQ | | 42 |
| 7.5 | 8.6 | 132 M | 1465 | 49 | EFF1 | 90.1 | 91 | 0.83 | 14.4 | 1LE1001-1CB2Q-QQQQ | | 49 |
| 11 | 12.6 | 160 M | 1470 | 71 | EFF1 | 91.2 | 91.8 | 0.85 | 20.5 | 1LE1001-1DB2Q-QQQQ | | 71 |
| 15 | 17.3 | 160 L | 1475 | 97 | EFF1 | 92 | 92.4 | 0.85 | 27.5 | 1LE1001-1DB4Q-QQQQ | | 83 |
| 6-pole – 1000 rpm at 50 Hz, 1200 rpm at 60 Hz | | | | | | | | | | | | |
| 1.5 | 1.75 | 100 L | 970 | 15 | | 84.5 | 84.5 | 0.73 | 3.5 | 1LE1001-1AC4Q-QQQQ | | 25 |
| 2.2 | 2.55 | 112 M | 965 | 22 | | 85 | 85 | 0.75 | 5 | 1LE1001-1BC2Q-QQQQ | | 29 |
| 3 | 3.45 | 132 S | 970 | 30 | | 85 | 85 | 0.74 | 6.9 | 1LE1001-1CC0Q-QQQQ | | 38 |
| 4 | 4.6 | 132 M | 970 | 39 | | 86 | 86 | 0.78 | 8.6 | 1LE1001-1CC2Q-QQQQ | | 43 |
| 5.5 | 6.3 | 132 M | 970 | 54 | | 88 | 88 | 0.77 | 11.8 | 1LE1001-1CC3Q-QQQQ | | 52 |
| 7.5 | 8.6 | 160 M | 975 | 73 | | 89 | 89 | 0.77 | 15.8 | 1LE1001-1DC2Q-QQQQ | | 77 |
| 11 | 12.6 | 160 L | 975 | 108 | | 89.5 | 89 | 0.80 | 22 | 1LE1001-1DC4Q-QQQQ | | 93 |
| 8-pole – 750 rpm at 50 Hz, 900 rpm at 60 Hz | | | | | | | | | | | | |
| 0.75 | 0.86 | 100 L | 725 | 9.9 | | 68 | 65 | 0.58 | 2.75 | 1LE1001-1AD4Q-QQQQ | | 21 |
| 1.1 | 1.3 | 100 L | 725 | 14 | | 68 | 64.5 | 0.58 | 4.05 | 1LE1001-1AD5Q-QQQQ | | 25 |
| 1.5 | 1.75 | 112 M | 720 | 20 | | 77 | 75.5 | 0.67 | 4.2 | 1LE1001-1BD2Q-QQQQ | | 29 |
| 2.2 | 2.55 | 132 S | 725 | 29 | | 77.5 | 76.7 | 0.63 | 6.5 | 1LE1001-1CD0Q-QQQQ | | 41 |
| 3 | 3.45 | 132 M | 730 | 40 | | 84 | 82 | 0.65 | 7.9 | 1LE1001-1CD2Q-QQQQ | | 49 |
| 4 | 4.6 | 160 M | 730 | 52 | | 87 | 88 | 0.69 | 9.6 | 1LE1001-1DD2Q-QQQQ | | 69 |
| 5.5 | 6.3 | 160 M | 735 | 72 | | 87.5 | 89 | 0.69 | 13.2 | 1LE1001-1DD3Q-QQQQ | | 82 |
| 7.5 | 8.6 | 160 L | 730 | 98 | | 88 | 89 | 0.72 | 17 | 1LE1001-1DD4Q-QQQQ | | 94 |

Order No. supplements, see from Page 1/24.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Self-ventilated energy-saving motors
with high efficiency

Selection and ordering data (continued)

| Order No. | Locked-rotor torque | Locked-rotor current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | |
|--|-----------------------------|------------------------------|------------------|--------------|-------------------------|---|-------------------------------|
| | with direct starting torque | as multiple of rated current | torque | | | Measuring-surface sound pressure level at 50 Hz | Sound pressure level at 50 Hz |
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | L_{pFA} dB(A) | L_{WA} dB(A) |
| Motor version: temperature class 155 (F), IP55 degree of protection, used acc. to temperature class 130 (B) | | | | | | | |
| For use according to CEMEP | | | | | | | |
| 2-pole – 3000 rpm at 50 Hz, 3600 rpm at 60 Hz | | | | | | | |
| 1LE1001-1AA4Q-QQQQ | 2.3 | 7 | 3.3 | 16 | 0.0044 | 67 | 79 |
| 1LE1001-1BA2Q-QQQQ | 2.4 | 7.4 | 3.3 | 16 | 0.0092 | 69 | 81 |
| 1LE1001-1CA0Q-QQQQ | 1.8 | 6.7 | 2.9 | 16 | 0.02012 | 68 | 80 |
| 1LE1001-1CA1Q-QQQQ | 2.2 | 7.5 | 3.1 | 16 | 0.02353 | 68 | 80 |
| 1LE1001-1DA2Q-QQQQ | 2.1 | 7.4 | 3.2 | 16 | 0.04471 | 70 | 82 |
| 1LE1001-1DA3Q-QQQQ | 2.4 | 7.6 | 3.4 | 16 | 0.05277 | 70 | 82 |
| 1LE1001-1DA4Q-QQQQ | 2.9 | 7.9 | 3.6 | 16 | 0.06085 | 70 | 82 |
| 4-pole – 1500 rpm at 50 Hz, 1800 rpm at 60 Hz | | | | | | | |
| 1LE1001-1AB4Q-QQQQ | 2.1 | 6.9 | 3.3 | 16 | 0.0086 | 60 | 72 |
| 1LE1001-1AB5Q-QQQQ | 2 | 6.9 | 3.1 | 16 | 0.0109 | 60 | 72 |
| 1LE1001-1BB2Q-QQQQ | 2.5 | 7.1 | 3.2 | 16 | 0.014 | 58 | 70 |
| 1LE1001-1CB0Q-QQQQ | 2.3 | 6.9 | 2.9 | 16 | 0.02698 | 64 | 76 |
| 1LE1001-1CB2Q-QQQQ | 2.3 | 6.9 | 2.9 | 16 | 0.03353 | 64 | 76 |
| 1LE1001-1DB2Q-QQQQ | 2.2 | 6.7 | 2.8 | 16 | 0.06495 | 65 | 77 |
| 1LE1001-1DB4Q-QQQQ | 2.5 | 7.3 | 3 | 16 | 0.08281 | 65 | 77 |
| 6-pole – 1000 rpm at 50 Hz, 1200 rpm at 60 Hz | | | | | | | |
| 1LE1001-1AC4Q-QQQQ | 2 | 6.2 | 2.9 | 16 | 0.0113 | 59 | 71 |
| 1LE1001-1BC2Q-QQQQ | 2.1 | 6 | 3.1 | 16 | 0.0139 | 57 | 69 |
| 1LE1001-1CC0Q-QQQQ | 1.6 | 5.6 | 2.6 | 13 | 0.02371 | 63 | 75 |
| 1LE1001-1CC2Q-QQQQ | 1.6 | 5.6 | 2.5 | 13 | 0.02918 | 63 | 75 |
| 1LE1001-1CC3Q-QQQQ | 1.9 | 6.1 | 2.8 | 16 | 0.03673 | 63 | 75 |
| 1LE1001-1DC2Q-QQQQ | 1.8 | 6.3 | 2.8 | 16 | 0.0754 | 67 | 79 |
| 1LE1001-1DC4Q-QQQQ | 1.7 | 6.2 | 2.7 | 16 | 0.0975 | 67 | 79 |
| 8-pole – 750 rpm at 50 Hz, 900 rpm at 60 Hz | | | | | | | |
| 1LE1001-1AD4Q-QQQQ | 1.6 | 4 | 2.8 | 13 | 0.0086 | 60 | 72 |
| 1LE1001-1AD5Q-QQQQ | 1.8 | 4 | 2.8 | 13 | 0.0109 | 60 | 72 |
| 1LE1001-1BD2Q-QQQQ | 1.4 | 4.2 | 2.4 | 13 | 0.014 | 63 | 75 |
| 1LE1001-1CD0Q-QQQQ | 1.4 | 3.6 | 1.8 | 10 | 0.02698 | 63 | 75 |
| 1LE1001-1CD2Q-QQQQ | 1.4 | 5 | 2.4 | 10 | 0.03463 | 63 | 75 |
| 1LE1001-1DD2Q-QQQQ | 1.8 | 4.3 | 2 | 13 | 0.0649 | 63 | 75 |
| 1LE1001-1DD3Q-QQQQ | 2.1 | 4.4 | 2.1 | 13 | 0.0828 | 63 | 75 |
| 1LE1001-1DD4Q-QQQQ | 1.9 | 4.5 | 2.1 | 13 | 0.0982 | 63 | 75 |

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Self-ventilated energy-saving motors
with high efficiency

Selection and ordering data (continued)

Order No. supplements

| Motor type | Frame size | Positions 12 and 13: Voltages (voltage codes) | | | | | | | |
|----------------------|------------|--|---------------|-----------|-----------|---|---|--------------------------------|--------------------------------|
| | | Standard voltages | | | | Further voltages | | | |
| | | 50 Hz | | | | 50 Hz | | | |
| | | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 220 VΔ/380 VY | 380 VΔ/660 VY | 415 VY | 415 VΔ |
| | | <u>60 Hz</u> | | | | <u>Rated voltage range</u> | | | |
| | | 460 VY | 460 VΔ | | | (210 ... 230 VΔ/ 360 ... 400 VY) ¹⁾ | (360 ... 400 VΔ/ 625 ... 695 VY) ¹⁾ | (395 ... 435 VY) ¹⁾ | (395 ... 435 VΔ) ¹⁾ |
| | | see "Selection and ordering data" for outputs at 60 Hz | | | | | | | |
| | | 22 | 34 | 27 | 40 | 21 | 33 | 23 | 35 |
| 1LE1001-1A...-□-□... | 100 L | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ |
| 1LE1001-1B...-□-□... | 112 M | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ |
| 1LE1001-1C...-□-□... | 132 S/M | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ |
| 1LE1001-1D...-□-□... | 160 M/L | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ |

○ Without additional charge
✓ With additional charge

Order other voltages with voltage code **9** in position 12, code **0** in position 13 and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages", Page 1/54).

| Motor type | Frame size | Position 14: Types of construction (type letter) | | | | | | | | | | | | |
|----------------------|------------|--|---------------------|---------------------|---------------------|---------------------|--|---|------------------------------------|-----------------------|--|---|---------------------|--------|
| | | Without flange | | | | | | | With flange (acc. to DIN EN 50347) | | | | | |
| | | IM B3 ₂₎₃₎ | IM B6 ₃₎ | IM B7 ₃₎ | IM B8 ₃₎ | IM V6 ₃₎ | IM V5 without protective cover ₃₎ | IM V5 with protective cover ₃₎₄₎₅₎ | Flange size | IM B5 ₃₎₆₎ | IM V1 without protective cover ₃₎ | IM V1 with protective cover ₃₎₄₎₅₎ | IM V3 ₃₎ | IM B35 |
| | | A | T | U | V | D | C | C | F | G | G | H | J | |
| | | Order No. supplement -Z with order code | | | | | | | | | | | | |
| | | - | - | - | - | - | - | -Z H00 | - | - | -Z H00 | - | - | |
| 1LE1001-1A...-□-□... | 100 L | □ | □ | □ | □ | □ | □ | ✓ | FF 215 | ✓ | ✓ | ✓ | ✓ | |
| 1LE1001-1B...-□-□... | 112 M | □ | □ | □ | □ | □ | □ | ✓ | FF 215 | ✓ | ✓ | ✓ | ✓ | |
| 1LE1001-1C...-□-□... | 132 S/M | □ | □ | □ | □ | □ | □ | ✓ | FF 265 | ✓ | ✓ | ✓ | ✓ | |
| 1LE1001-1D...-□-□... | 160 M/L | □ | □ | □ | □ | □ | □ | ✓ | FF 300 | ✓ | ✓ | ✓ | ✓ | |

| Motor type | Frame size | Position 14: Types of construction (type letter) | | | | | | | | | | | |
|----------------------|------------|--|------------------------|----------------------|---|--|---|-------------|------------------------|----------------------|---|--|------------|
| | | With standard flange (acc. to DIN EN 50347) | | | | | With standard flange (next larger standard flange acc. to DIN EN 50347) | | | | | | |
| | | Flange size | IM B14 ₃₎₇₎ | IM V19 ₃₎ | IM V18 without protective cover ₃₎ | IM V18 with protective cover ₃₎₄₎₅₎ | IM B34 | Flange size | IM B14 ₃₎₇₎ | IM V19 ₃₎ | IM V18 without protective cover ₃₎ | IM V18 with protective cover ₃₎₄₎₅₎ | IM B34 |
| | | | K | L | M | M | N | | K | L | M | M | N |
| | | Order No. supplement -Z with order code | | | | | | | | | | | |
| | | | - | - | - | -Z H00 | - | | -Z | -Z | -Z | -Z H00 | -Z |
| | | | P01 | P01 | P01 | P01 | P01 | | P01 | P01 | P01 | P01 | P01 |
| 1LE1001-1A...-□-□... | 100 L | FT 130 | ✓ | ✓ | ✓ | ✓ | ✓ | FT 165 | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1001-1B...-□-□... | 112 M | FT 130 | ✓ | ✓ | ✓ | ✓ | ✓ | FT 165 | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1001-1C...-□-□... | 132 S/M | FT 165 | ✓ | ✓ | ✓ | ✓ | ✓ | FT 215 | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1001-1D...-□-□... | 160 M/L | FT 215 | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - | - |

□ Standard version
✓ With additional charge

¹⁾ A rated voltage range is also specified on the rating plate.

²⁾ The types of construction IM B6/7/8, IM V6 and IM V5 without protective cover/with protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard, the type of construction IM B3 is then stamped on the rating plate. With type of construction IM V5 with protective cover, the protective cover has to be additionally ordered with order code **H00**. The protective cover is not stamped on the rating plate.

³⁾ The type of construction is stamped on the rating plate. When ordering with condensation drainage holes (order code **H03**), it is absolutely necessary to specify the type of construction for the exact position of the condensation drainage holes during manufacture.

⁴⁾ Option second shaft extension (order code **L05**) not possible.

⁵⁾ In combination with an encoder, it is not necessary to order the protective cover (order code **H00**), as this is delivered as a protection for the encoder as standard. In this case, the protective cover is standard design (without additional charge).

⁶⁾ The types of construction IM V3 and IM V1 without protective cover/with protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard, the type of construction IM B5 is then stamped on the rating plate. With type of construction IM V1 with protective cover, the protective cover has to be additionally ordered with order code **H00**. The protective cover is not stamped on the rating plate.

⁷⁾ The types of construction IM V19 and IM V18 without protective cover/with protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard, the type of construction IM B14 is then stamped on the rating plate. With type of construction IM V18 with protective cover, the protective cover has to be additionally ordered with order code **H00**. The protective cover is not stamped on the rating plate.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Self-ventilated energy-saving motors
with high efficiency

Selection and ordering data (continued)

| Motor type | Frame size | Position 15: Motor protection (motor protection letter) | | | | | |
|--------------------|------------|---|--|--|---|------------------------------|--|
| | | Without motor protection | Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ¹⁾ | Motor protection with PTC thermistors with 6 embedded temperature sensors for alarm and tripping ¹⁾ | Motor temperature detection with embedded temperature sensor KTY 84-130 ¹⁾ | NTC thermistors for tripping | Temperature detectors for tripping ¹⁾ |
| Order code | | A | B | C | F | Z Q2A | Z Q3A |
| 1LE1001-1A...-...□ | 100 L | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1001-1B...-...□ | 112 M | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1001-1C...-...□ | 132 S/M | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1001-1D...-...□ | 160 M/L | □ | ✓ | ✓ | ✓ | ✓ | ✓ |

- Standard version
✓ With additional charge

| Motor type | Frame size | Position 16: Connection box (connection box code) | | | |
|--------------------|------------|---|-------------------------------------|-------------------------------------|-------------------------------------|
| | | Connection box top ²⁾ | Connection box on RHS ³⁾ | Connection box on LHS ³⁾ | Connection box bottom ³⁾ |
| | | 4 | 5 | 6 | 7 |
| 1LE1001-1A...-...□ | 100 L | □ | ✓ | ✓ | ✓ |
| 1LE1001-1B...-...□ | 112 M | □ | ✓ | ✓ | ✓ |
| 1LE1001-1C...-...□ | 132 S/M | □ | ✓ | ✓ | ✓ |
| 1LE1001-1D...-...□ | 160 M/L | □ | ✓ | ✓ | ✓ |

- Standard version
✓ With additional charge

¹⁾ Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended.
²⁾ With type of construction, cast feet as standard. Screwed-on feet are available with order code **H01**, see "Special versions".
³⁾ With type of construction, screwed-on feet as standard.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Self-ventilated energy-saving motors
with high efficiency

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output | | | | | | Order No. | Price | Weight |
|--|-------------------|------------|----------------------------------|-----------------------|-------------------------|-----------------------------|--------------------------------|--|----------------------------|---|--------|
| 50 Hz | 60 Hz | | Rated speed at 60 Hz | Rated torque at 60 Hz | EPACT with CC-No. CCxxx | Nominal efficiency at 60 Hz | Power factor at 60 Hz 4/4-load | Rated current at 460 V, 60 Hz | | | |
| P_{rated} kW | P_{rated} HP | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | For Order No. supplements for voltage, type of construction, motor protection and connection box, see from Page 1/28 | IM B3 type of construction | IM B3 type of construction approx. m kg | |
| Motor version: temperature class 155 (F), IP55 degree of protection, used acc. to temperature class 130 (B) | | | | | | | | | | | |
| For use in the North American market according to EPACT | | | | | | | | | | | |
| 2-pole – 3600 rpm at 60 Hz | | | | | | | | | | | |
| 3 | 4 | 100 L | 3520 | 8.1 | A. S. | 86.5 | 0.83 | 5.2 | 1LE1001-1AA4Q-Q000Q | 21 | |
| 4 | 5 | 112 M | 3565 | 9.9 | A. S. | 87.5 | 0.84 | 6.3 | 1LE1001-1BA2Q-Q000Q | 27 | |
| 5.5 | 7.5 | 132 S | 3560 | 15 | A. S. | 89.5 | 0.86 | 9 | 1LE1001-1CA0Q-Q000Q | 39 | |
| 7.5 | 10 | 132 S | 3560 | 20 | A. S. | 90.2 | 0.87 | 12 | 1LE1001-1CA1Q-Q000Q | 43 | |
| 11 | 15 | 160 M | 3560 | 30 | A. S. | 90.2 | 0.86 | 17.8 | 1LE1001-1DA2Q-Q000Q | 67 | |
| 15 | 20 | 160 M | 3565 | 40 | A. S. | 91 | 0.87 | 24 | 1LE1001-1DA3Q-Q000Q | 75 | |
| 18.5 | 25 | 160 L | 3565 | 50 | A. S. | 91.7 | 0.87 | 29 | 1LE1001-1DA4Q-Q000Q | 84 | |
| 4-pole – 1800 rpm at 60 Hz | | | | | | | | | | | |
| 2.2 | 3 | 100 L | 1760 | 12 | A. S. | 87.5 | 0.78 | 4.05 | 1LE1001-1AB4Q-Q000Q | 21 | |
| 3 | 4 | 100 L | 1765 | 16 | A. S. | 87.5 | 0.79 | 5.4 | 1LE1001-1AB5Q-Q000Q | 25 | |
| 4 | 5 | 112 M | 1770 | 20 | A. S. | 88.5 | 0.77 | 6.8 | 1LE1001-1BB2Q-Q000Q | 29 | |
| 5.5 | 7.5 | 132 S | 1770 | 30 | A. S. | 89.5 | 0.78 | 9.9 | 1LE1001-1CB0Q-Q000Q | 42 | |
| 7.5 | 10 | 132 M | 1770 | 40 | A. S. | 89.5 | 0.82 | 12.8 | 1LE1001-1CB2Q-Q000Q | 49 | |
| 11 | 15 | 160 M | 1775 | 59 | A. S. | 91 | 0.84 | 18.1 | 1LE1001-1DB2Q-Q000Q | 71 | |
| 15 | 20 | 160 L | 1780 | 80 | A. S. | 91.7 | 0.84 | 24.5 | 1LE1001-1DB4Q-Q000Q | 83 | |
| 6-pole – 1200 rpm at 60 Hz | | | | | | | | | | | |
| 1.5 | 2 | 100 L | 1175 | 12 | A. S. | 86.5 | 0.69 | 3.15 | 1LE1001-1AC4Q-Q000Q | 25 | |
| 2.2 | 3 | 112 M | 1170 | 18 | A. S. | 87.5 | 0.73 | 4.3 | 1LE1001-1BC2Q-Q000Q | 29 | |
| 3 | 4 | 132 S | 1175 | 24 | A. S. | 87.5 | 0.7 | 6.1 | 1LE1001-1CC0Q-Q000Q | 38 | |
| 4 | 5 | 132 M | 1180 | 30 | A. S. | 87.5 | 0.73 | 7.3 | 1LE1001-1CC2Q-Q000Q | 43 | |
| 5.5 | 7.5 | 132 M | 1175 | 45 | A. S. | 89.5 | 0.74 | 10.4 | 1LE1001-1CC3Q-Q000Q | 52 | |
| 7.5 | 10 | 160 M | 1180 | 61 | A. S. | 89.5 | 0.74 | 14.2 | 1LE1001-1DC2Q-Q000Q | 77 | |
| 11 | 15 | 160 L | 1180 | 89 | A. S. | 90.2 | 0.78 | 19.6 | 1LE1001-1DC4Q-Q000Q | 93 | |

A. S. Available soon

Order No. supplements, see from Page 1/28.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Self-ventilated energy-saving motors
with high efficiency

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breaddown torque torque | Torque class | Moment of inertia | Noise at rated output | |
|--|--|--|----------------------------|--------------|-------------------------|---|---|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring-surface sound pressure level at 60 Hz $L_{p(A)}$ | Sound pressure level at 60 Hz L_{WA} |
| Motor version: temperature class 155 (F), IP55 degree of protection, used acc. to temperature class 130 (B) | | | | | | | |
| For use in the North American market according to EPACT | | | | | | | |
| 2-pole – 3600 rpm at 60 Hz | | | | | | | |
| 1LE1001-1AA4Q-□□□□ | 2.56 | 7.3 | 3.83 | 16 | 0.0044 | 71 | 83 |
| 1LE1001-1BA2Q-□□□□ | 2.9 | 7.8 | 4 | 16 | 0.0092 | 73 | 85 |
| 1LE1001-1CA0Q-□□□□ | 2.04 | 6.9 | 3.3 | 16 | 0.02012 | 72 | 84 |
| 1LE1001-1CA1Q-□□□□ | 2.3 | 7.4 | 3.56 | 16 | 0.02353 | 72 | 84 |
| 1LE1001-1DA2Q-□□□□ | 2.38 | 7.4 | 3.63 | 16 | 0.04471 | 77 | 89 |
| 1LE1001-1DA3Q-□□□□ | 2.76 | 7.6 | 3.91 | 16 | 0.05277 | 77 | 89 |
| 1LE1001-1DA4Q-□□□□ | 3.31 | 7.9 | 4.1 | 16 | 0.06085 | 77 | 89 |
| 4-pole – 1800 rpm at 60 Hz | | | | | | | |
| 1LE1001-1AB4Q-□□□□ | 2.45 | 7.3 | 3.85 | 16 | 0.0086 | 62 | 74 |
| 1LE1001-1AB5Q-□□□□ | 2.38 | 7.5 | 3.68 | 16 | 0.0109 | 62 | 74 |
| 1LE1001-1BB2Q-□□□□ | 3 | 7.5 | 4 | 16 | 0.014 | 62 | 74 |
| 1LE1001-1CB0Q-□□□□ | 2.61 | 7.3 | 3.29 | 16 | 0.02698 | 68 | 80 |
| 1LE1001-1CB2Q-□□□□ | 2.7 | 7.1 | 3.407 | 16 | 0.03353 | 68 | 80 |
| 1LE1001-1DB2Q-□□□□ | 2.65 | 7 | 3.22 | 16 | 0.06495 | 69 | 81 |
| 1LE1001-1DB4Q-□□□□ | 2.79 | 7.7 | 3.37 | 16 | 0.08281 | 69 | 81 |
| 6-pole – 1200 rpm at 60 Hz | | | | | | | |
| 1LE1001-1AC4Q-□□□□ | 2.33 | 6.4 | 3.38 | 16 | 0.0113 | 62 | 74 |
| 1LE1001-1BC2Q-□□□□ | 2.3 | 6.5 | 3.4 | 16 | 0.0139 | 60 | 72 |
| 1LE1001-1CC0Q-□□□□ | 1.75 | 5.8 | 3.03 | 13 | 0.02371 | 67 | 79 |
| 1LE1001-1CC2Q-□□□□ | 2.08 | 5.8 | 3.166 | 13 | 0.02918 | 67 | 79 |
| 1LE1001-1CC3Q-□□□□ | 2.04 | 6.3 | 3.17 | 16 | 0.03673 | 67 | 79 |
| 1LE1001-1DC2Q-□□□□ | 1.95 | 6.3 | 3.213 | 16 | 0.0754 | 70 | 82 |
| 1LE1001-1DC4Q-□□□□ | 1.834 | 6.2 | 2.98 | 16 | 0.0975 | 70 | 82 |

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Self-ventilated energy-saving motors
with high efficiency

Selection and ordering data (continued)

Order No. supplements

| Motor type | Frame size | Positions 12 and 13: Voltages (voltage codes) | |
|--|------------|---|--------|
| | | 22 | 34 |
| Standard voltages | | | |
| 60 Hz | | | |
| | | 460 VY | 460 VΔ |
| see "Selection and ordering data" for outputs at 60 Hz | | | |
| 1LE1001-1A...-□-□... | 100 L | ○ | ○ |
| 1LE1001-1B...-□-□... | 112 M | ○ | ○ |
| 1LE1001-1C...-□-□... | 132 S/M | ○ | ○ |
| 1LE1001-1D...-□-□... | 160 M/L | ○ | ○ |

- Without additional charge
✓ With additional charge

Order other voltages with voltage code **9** in position 12, code **0** in position 13 and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages", Page 1/54).

| Motor type | Frame size | Position 14: Type of construction (type letter) | | | | | | | | | | | | |
|--------------------|------------|---|-------------|-------------|-------------|-------------|---|--|------------------------------------|----------------|---|--|-------------|--------|
| | | With flange | | | | | | | With flange (acc. to DIN EN 50347) | | | | | |
| | | IM B3 1) 2) | IM B6 2) | IM B7 2) | IM B8 2) | IM V6 2) | IM V5 without protective cover 2) | IM V5 with protective cover 2) 3) 4) | Flange size | IM B5 2) 5) | IM V1 without protective cover 2) | IM V1 with protective cover 2) 3) 4) | IM V3 2) | IM B35 |
| | | A | T | U | V | D | C | C | F | G | G | H | J | |
| | | Order No. supplement -Z with order code | | | | | | | | | | | | |
| | | - | - | - | - | - | - | -Z H00 | - | - | -Z H00 | - | - | |
| 1LE1001-1A...-□... | 100 L | □ | □ | □ | □ | □ | □ | ✓ | FF 215 | ✓ | ✓ | ✓ | ✓ | |
| 1LE1001-1B...-□... | 112 M | □ | □ | □ | □ | □ | □ | ✓ | FF 215 | ✓ | ✓ | ✓ | ✓ | |
| 1LE1001-1C...-□... | 132 S/M | □ | □ | □ | □ | □ | □ | ✓ | FF 265 | ✓ | ✓ | ✓ | ✓ | |
| 1LE1001-1D...-□... | 160 M/L | □ | □ | □ | □ | □ | □ | ✓ | FF 300 | ✓ | ✓ | ✓ | ✓ | |

| Motor type | Frame size | Position 14: Type of construction (type letter) | | | | | | | | | | | |
|--------------------|------------|---|-----------------|--------------|--|---|--|----------------|-----------------|------------------|--|---|--------|
| | | With standard flange (acc. to DIN EN 50347) | | | | | With standard flange (next larger standard flange acc. to DIN EN 50347) | | | | | | |
| | | Flange size | IM B14 2) 6) | IM V19 2) | IM V18 without protective cover 2) | IM V18 with pro- tective cover 2) 3) 4) | IM B34 | Flange size | IM B14 2) 6) | IM V19 2) | IM V18 without protective cover 2) | IM V18 with protective cover 2) 3) 4) | IM B34 |
| | | K | L | M | M | N | K | L | M | M | N | N | |
| | | Order No. supplement -Z with order code | | | | | | | | | | | |
| | | - | - | - | -Z H00 | - | -Z | -Z | -Z | -Z H00 P01 | -Z | -Z | |
| 1LE1001-1A...-□... | 100 L | FT 130 | ✓ | ✓ | ✓ | ✓ | FT 165 | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LE1001-1B...-□... | 112 M | FT 130 | ✓ | ✓ | ✓ | ✓ | FT 165 | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LE1001-1C...-□... | 132 S/M | FT 165 | ✓ | ✓ | ✓ | ✓ | FT 215 | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LE1001-1D...-□... | 160 M/L | FT 215 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - | - | |

- Standard version
✓ With additional charge

- The types of construction IM B6/7/8, IM V6 and IM V5 without protective cover/with protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard, the type of construction IM B3 is then stamped on the rating plate. With type of construction IM V5 with protective cover, the protective cover has to be additionally ordered with order code **H00**. The protective cover is not stamped on the rating plate.
- The type of construction is stamped on the rating plate. When ordering with condensation drainage holes (order code **H03**), it is absolutely necessary to specify the type of construction for the exact position of the condensation drainage holes during manufacture.
- Option second shaft extension (order code **L05**) not possible
- In combination with an encoder, it is not necessary to order the protective cover (order code **H00**), as this is delivered as a protection for the encoder as standard. In this case, the protective cover is standard design (without additional charge).
- The types of construction IM V3 and IM V1 without protective cover/with protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard, the type of construction IM B5 is then stamped on the rating plate. With type of construction IM V1 with protective cover, the protective cover has to be additionally ordered with order code **H00**. The protective cover is not stamped on the rating plate.
- The types of construction IM V19 and IM V18 without protective cover/with protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard, the type of construction IM B14 is then stamped on the rating plate. With type of construction IM V18 with protective cover, the protective cover has to be additionally ordered with order code **H00**. The protective cover is not stamped on the rating plate.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Self-ventilated energy-saving motors
with high efficiency

Selection and ordering data (continued)

| Motor type | Frame size | Position 15: Motor protection (motor protection letter) | | | | | |
|--------------------|------------|---|--|--|---|------------------------------|--|
| | | Without motor protection | Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ¹⁾ | Motor protection with PTC thermistors with 6 embedded temperature sensors for alarm and tripping ¹⁾ | Motor temperature detection with embedded temperature sensor KTY 84-130 ¹⁾ | NTC thermistors for tripping | Temperature detectors for tripping ¹⁾ |
| Order code | | A | B | C | F | Z Q2A | Z Q3A |
| 1LE1001-1A...-...□ | 100 L | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1001-1B...-...□ | 112 M | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1001-1C...-...□ | 132 S/M | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1001-1D...-...□ | 160 M/L | □ | ✓ | ✓ | ✓ | ✓ | ✓ |

- Standard version
✓ With additional charge

| Motor type | Frame size | Position 16: Connection box (connection box code) | | | |
|--------------------|------------|---|-------------------------------------|-------------------------------------|-------------------------------------|
| | | Connection box top ²⁾ | Connection box on RHS ³⁾ | Connection box on LHS ³⁾ | Connection box bottom ³⁾ |
| | | 4 | 5 | 6 | 7 |
| 1LE1001-1A...-...□ | 100 L | □ | ✓ | ✓ | ✓ |
| 1LE1001-1B...-...□ | 112 M | □ | ✓ | ✓ | ✓ |
| 1LE1001-1C...-...□ | 132 S/M | □ | ✓ | ✓ | ✓ |
| 1LE1001-1D...-...□ | 160 M/L | □ | ✓ | ✓ | ✓ |

- Standard version
✓ With additional charge


¹⁾ Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended.
²⁾ With type of construction, cast feet as standard. Screwed-on feet are available with order code **H01**, see "Special versions".
³⁾ With type of construction, screwed-on feet as standard.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Self-ventilated motors with increased output and improved efficiency

Selection and ordering data

| Rated output at | | Frame size | Operating values at rated output | | | | | | | | Order No. | Price | Weight |
|---|--------------------------|------------|----------------------------------|--------------------------|---|------------------------------|------------------------------|--------------------------------|-------------------------------|---|----------------------------|--|--------|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class according to CEMEP | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm |  | η_{rated} % | η_{rated} % | $\cos\varphi_{\text{rated}}$ | I_{rated} A | For Order No. supplements for voltage, type of construction, motor protection and connection box, see table from Page 1/32. | IM B3 type of construction | IM B3 type of construction approx. m kg | |
| Motor version: temperature class 155 (F), IP55 degree of protection, with increased output, used acc. to temperature class 130 (B) ¹⁾ | | | | | | | | | | | | | |
| 2-pole – 3000 rpm at 50 Hz, 3600 rpm at 60 Hz | | | | | | | | | | | | | |
| 4 | 4.6 | 100 L | 2850 | 13.3 | EFF2 | 85.6 | 86.2 | 0.85 | 7.9 | 1LE1002-1AA6Q-QQQQ | | 25 | |
| 5.5 | 6.3 | 112 M | 2935 | 18 | EFF2 | 87 | 85.5 | 0.86 | 10.6 | 1LE1002-1BA6Q-QQQQ | | 31 | |
| 11 | 12.6 | 132 M | 2920 | 36 | EFF2 | 90 | 90.7 | 0.90 | 19.6 | 1LE1002-1CA6Q-QQQQ | | 53 | |
| 22 | 24.5 | 160 L | 2930 | 72 | EFF2 | 91.6 | 91.4 | 0.88 | 39.5 | 1LE1002-1DA6Q-QQQQ | | 85 | |
| 4-pole – 1500 rpm at 50 Hz, 1800 rpm at 60 Hz | | | | | | | | | | | | | |
| 4 | 4.6 | 100 L | 1430 | 26.8 | EFF2 | 84.2 | 85.1 | 0.81 | 8.5 | 1LE1002-1AB6Q-QQQQ | | 27 | |
| 5.5 | 6.3 | 112 M | 1420 | 37 | EFF2 | 85.7 | 86.5 | 0.81 | 11 | 1LE1002-1BB6Q-QQQQ | | 33 | |
| 11 | 12.6 | 132 M | 1450 | 72 | EFF2 | 88.8 | 89.3 | 0.84 | 21.5 | 1LE1002-1CB6Q-QQQQ | | 58 | |
| 18.5 | 21.3 | 160 L | 1460 | 121 | EFF2 | 90 | 90.2 | 0.85 | 35 | 1LE1002-1DB6Q-QQQQ | | 85 | |
| 6-pole – 1000 rpm at 50 Hz, 1200 rpm at 60 Hz | | | | | | | | | | | | | |
| 2.2 | 2.55 | 100 L | 930 | 22.5 | | 76 | 77.3 | 0.78 | 5.3 | 1LE1002-1AC6Q-QQQQ | | 24 | |
| 3 | 3.45 | 112 M | 945 | 30 | | 79 | 78.2 | 0.72 | 7.6 | 1LE1002-1BC6Q-QQQQ | | 32 | |
| 7.5 | 8.6 | 132 M | 950 | 75 | | 85.5 | 85.7 | 0.74 | 17.2 | 1LE1002-1CC6Q-QQQQ | | 54 | |
| 15 | 17.3 | 160 L | 965 | 148 | | 88 | 88 | 0.75 | 33 | 1LE1002-1DC6Q-QQQQ | | 109 | |

Order No. supplements, see from Page 1/32.

¹⁾ For Order No. 1LE1002-1CC6Q-QQQQ use acc. to temperature class 155 (F).

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Self-ventilated motors with increased output
and improved efficiency

Selection and ordering data (continued)

| Order No. | Locked-rotor torque | Locked-rotor current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | |
|---|-----------------------------|------------------------------|------------------|--------------|-------------------------|---|-------------------------------|
| | with direct starting torque | as multiple of rated current | torque | | | Measuring-surface sound pressure level at 50 Hz | Sound pressure level at 50 Hz |
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | L_{pFA} dB(A) | L_{WA} dB(A) |
| Motor version: temperature class 155 (F), IP55 degree of protection, with increased output, used acc. to temperature class 130 (B) | | | | | | | |
| 2-pole – 3000 rpm at 50 Hz, 3600 rpm at 60 Hz | | | | | | | |
| 1LE1002-1AA6□-□□□□ | 4.5 | 7 | 4.1 | 16 | 0.0044 | 67 | 79 |
| 1LE1002-1BA6□-□□□□ | 2.9 | 7.5 | 3.8 | 16 | 0.0085 | 69 | 81 |
| 1LE1002-1CA6□-□□□□ | 2.8 | 7.5 | 3.7 | 16 | 0.02233 | 68 | 80 |
| 1LE1002-1DA6□-□□□□ | 2.6 | 7.5 | 3.4 | 16 | 0.04913 | 70 | 82 |
| 4-pole – 1500 rpm at 50 Hz, 1800 rpm at 60 Hz | | | | | | | |
| 1LE1002-1AB6□-□□□□ | 2.9 | 5.8 | 3.1 | 16 | 0.01 | 60 | 72 |
| 1LE1002-1BB6□-□□□□ | 3 | 5.8 | 3.1 | 16 | 0.0124 | 58 | 70 |
| 1LE1002-1CB6□-□□□□ | 2.5 | 7.2 | 3 | 16 | 0.03259 | 64 | 76 |
| 1LE1002-1DB6□-□□□□ | 2.7 | 7.2 | 3.2 | 16 | 0.06843 | 65 | 77 |
| 6-pole – 1000 rpm at 50 Hz, 1200 rpm at 60 Hz | | | | | | | |
| 1LE1002-1AC6□-□□□□ | 2 | 4 | 2.2 | 16 | 0.0084 | 59 | 71 |
| 1LE1002-1BC6□-□□□□ | 2.9 | 4.6 | 3 | 16 | 0.0128 | 57 | 69 |
| 1LE1002-1CC6□-□□□□ | 2.4 | 5.3 | 3 | 16 | 0.032 | 63 | 75 |
| 1LE1002-1DC6□-□□□□ | 2.9 | 6 | 3.4 | 16 | 0.0936 | 67 | 79 |

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Self-ventilated motors with increased output and improved efficiency

Selection and ordering data (continued)

Order No. supplements

| Motor type | Frame size | Positions 12 and 13: Voltages (voltage codes) | | | | | | | |
|----------------------|------------|--|---------------|-----------|-----------|---|---|--------------------------------|--------------------------------|
| | | Standard voltages | | | | Further voltages | | | |
| | | 50 Hz | | | | 50 Hz | | | |
| | | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 220 VΔ/380 VY | 380 VΔ/660 VY | 415 VY | 415 VΔ |
| | | <u>60 Hz</u> | | | | <u>Rated voltage range</u> | | | |
| | | 460 VY | 460 VΔ | | | (210 ... 230 VΔ/ 360 ... 400 VY) ¹⁾ | (360 ... 400 VΔ/ 625 ... 695 VY) ¹⁾ | (395 ... 435 VY) ¹⁾ | (395 ... 435 VΔ) ¹⁾ |
| | | see "Selection and ordering data" for outputs at 60 Hz | | | | | | | |
| | | 22 | 34 | 27 | 40 | 21 | 33 | 23 | 35 |
| 1LE1002-1A...-□-□... | 100 L | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1B...-□-□... | 112 M | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1C...-□-□... | 132 M | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1D...-□-□... | 160 L | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ |

○ Without additional charge
✓ With additional charge

Order other voltages with voltage code **9** in position 12, code **0** in position 13 and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages", Page 1/54).

| Motor type | Frame size | Position 14: Types of construction (type letter) | | | | | | | | | | | | |
|----------------------|------------|--|------------------------|------------------------|------------------------|------------------------|--|---|----------------|--------------------------|--|---|------------------------|--------|
| | | Without flange | | | | | | With flange (acc. to DIN EN 50347) | | | | | | |
| | | IM B3 ₂₎₃₎ | IM B6 ₃₎ | IM B7 ₃₎ | IM B8 ₃₎ | IM V6 ₃₎ | IM V5 without protective cover ₃₎ | IM V5 with protective cover ₃₎₄₎₅₎ | Flange size | IM B5 ₃₎₆₎ | IM V1 without protective cover ₃₎ | IM V1 with protective cover ₃₎₄₎₅₎ | IM V3 ₃₎ | IM B35 |
| | | A | T | U | V | D | C | C | F | G | G | H | J | |
| | | Order No. supplement -Z with order code | | | | | | | | | | | | |
| | | - | - | - | - | - | - | -Z H00 | - | - | -Z H00 | - | - | |
| 1LE1002-1A...-□-□... | 100 L | □ | □ | □ | □ | □ | □ | ✓ | FF 215 | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1B...-□-□... | 112 M | □ | □ | □ | □ | □ | □ | ✓ | FF 215 | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1C...-□-□... | 132 M | □ | □ | □ | □ | □ | □ | ✓ | FF 265 | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1D...-□-□... | 160 L | □ | □ | □ | □ | □ | □ | ✓ | FF 300 | ✓ | ✓ | ✓ | ✓ | ✓ |

| Motor type | Frame size | Position 14: Types of construction (type letter) | | | | | | | | | | | | |
|----------------------|------------|--|---------------------------|-------------------------|---|--|---|----------------|---------------------------|-------------------------|---|--|-------------------|---|
| | | With standard flange (acc. to DIN EN 50347) | | | | | With standard flange (next larger standard flange acc. to DIN EN 50347) | | | | | | | |
| | | Flange size | IM B14 ₃₎₇₎ | IM V19 ₃₎ | IM V18 without protective cover ₃₎ | IM V18 with protective cover ₃₎₄₎₅₎ | IM B34 | Flange size | IM B14 ₃₎₇₎ | IM V19 ₃₎ | IM V18 without protective cover ₃₎ | IM V18 with protective cover ₃₎₄₎₅₎ | IM B34 | |
| | | | K | L | M | M | N | | K | L | M | M | N | |
| | | Order No. supplement -Z with order code | | | | | | | | | | | | |
| | | | - | - | - | -Z H00 | - | -Z | -Z | -Z | -Z H00 | -Z P01 | -Z P01 | |
| 1LE1002-1A...-□-□... | 100 L | FT 130 | ✓ | ✓ | ✓ | ✓ | ✓ | FT 165 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1B...-□-□... | 112 M | FT 130 | ✓ | ✓ | ✓ | ✓ | ✓ | FT 165 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1C...-□-□... | 132 S/M | FT 165 | ✓ | ✓ | ✓ | ✓ | ✓ | FT 215 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1D...-□-□... | 160 M/L | FT 215 | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - | - | - |

□ Standard version
✓ With additional charge

¹⁾ A rated voltage range is also specified on the rating plate.

²⁾ The types of construction IM B6/7/8, IM V6 and IM V5 without protective cover/with protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard, the type of construction IM B3 is then stamped on the rating plate. With type of construction IM V5 with protective cover, the protective cover has to be additionally ordered with order code **H00**. The protective cover is not stamped on the rating plate.

³⁾ The type of construction is stamped on the rating plate. When ordering with condensation drainage holes (order code **H03**), it is absolutely necessary to specify the type of construction for the exact position of the condensation drainage holes during manufacture.

⁴⁾ Option second shaft extension (order code **L05**) not possible.

⁵⁾ In combination with an encoder, it is not necessary to order the protective cover (order code **H00**), as this is delivered as a protection for the encoder as standard. In this case, the protective cover is standard design (without additional charge).

⁶⁾ The types of construction IM V3 and IM V1 without protective cover/with protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard, the type of construction IM B5 is then stamped on the rating plate. With type of construction IM V1 with protective cover, the protective cover has to be additionally ordered with order code **H00**. The protective cover is not stamped on the rating plate.

⁷⁾ The types of construction IM V19 and IM V18 without protective cover/with protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard, the type of construction IM B14 is then stamped on the rating plate. With type of construction IM V18 with protective cover, the protective cover has to be additionally ordered with order code **H00**. The protective cover is not stamped on the rating plate.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Self-ventilated motors with increased output
and improved efficiency

Selection and ordering data (continued)

| Motor type | Frame size | Position 15: Motor protection (motor protection letter) | | | | | |
|--------------------|------------|---|--|--|---|------------------------------|--|
| | | Without motor protection | Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ¹⁾ | Motor protection with PTC thermistors with 6 embedded temperature sensors for alarm and tripping ¹⁾ | Motor temperature detection with embedded temperature sensor KTY 84-130 ¹⁾ | NTC thermistors for tripping | Temperature detectors for tripping ¹⁾ |
| Order code | | A | B | C | F | Z Q2A | Z Q3A |
| 1LE1002-1A...-...□ | 100 L | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1B...-...□ | 112 M | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1C...-...□ | 132 M | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1D...-...□ | 160 L | □ | ✓ | ✓ | ✓ | ✓ | ✓ |

- Standard version
✓ With additional charge

| Motor type | Frame size | Position 16: Connection box (connection box code) | | | |
|--------------------|------------|---|-------------------------------------|-------------------------------------|-------------------------------------|
| | | Connection box top ²⁾ | Connection box on RHS ²⁾ | Connection box on LHS ²⁾ | Connection box bottom ²⁾ |
| | | 4 | 5 | 6 | 7 |
| 1LE1002-1A...-...□ | 100 L | □ | ✓ | ✓ | ✓ |
| 1LE1002-1B...-...□ | 112 M | □ | ✓ | ✓ | ✓ |
| 1LE1002-1C...-...□ | 132 M | □ | ✓ | ✓ | ✓ |
| 1LE1002-1D...-...□ | 160 L | □ | ✓ | ✓ | ✓ |

- Standard version
✓ With additional charge

¹⁾ Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended.


²⁾ With type of construction, screwed-on feet as standard.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Self-ventilated motors with increased output and high efficiency

Selection and ordering data

| Rated output at | | Frame size | Operating values at rated output | | | | | | | Order No. | Price | Weight |
|---|--------------------------|------------|----------------------------------|--------------------------|---|------------------------------|------------------------------|--------------------------------|-------------------------------|---|----------------------------|--|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class according to CEMEP | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm |  | η_{rated} % | η_{rated} % | $\cos\varphi_{\text{rated}}$ | I_{rated} A | For Order No. supplements for voltage, type of construction, motor protection and connection box, see table from Page 1/36. | IM B3 type of construction | IM B3 type of construction approx. m kg |
| Motor version: temperature class 155 (F), IP55 degree of protection, with increased output, used acc. to temperature class 130 (B) | | | | | | | | | | | | |
| 2-pole – 3000 rpm at 50 Hz, 3600 rpm at 60 Hz | | | | | | | | | | | | |
| 4 | 4.6 | 100 L | 2905 | 13 | EFF1 | 88 | 89 | 0.86 | 7.6 | 1LE1001-1AA6Q-QQQQ | | 26 |
| 5.5 | 6.3 | 112 M | 2950 | 18 | EFF1 | 89 | 88.5 | 0.89 | 10 | 1LE1001-1BA6Q-QQQQ | | 34 |
| 11 | 12.6 | 132 M | 2955 | 36 | EFF1 | 91.5 | 92.5 | 0.89 | 19.4 | 1LE1001-1CA6Q-QQQQ | | 57 |
| 22 | 25.3 | 160 L | 2955 | 71 | EFF1 | 92.8 | 93.5 | 0.89 | 38.5 | 1LE1001-1DA6Q-QQQQ | | 94 |
| 4-pole – 1500 rpm at 50 Hz, 1800 rpm at 60 Hz | | | | | | | | | | | | |
| 4 | 4.6 | 100 L | 1460 | 26 | EFF1 | 88.3 | 88.3 | 0.8 | 8.2 | 1LE1001-1AB6Q-QQQQ | | 30 |
| 5.5 | 6.3 | 112 M | 1460 | 36 | EFF1 | 89.2 | 89.2 | 0.81 | 11 | 1LE1001-1BB6Q-QQQQ | | 34 |
| 11 | 12.6 | 132 M | 1465 | 72 | EFF1 | 91 | 91.0 | 0.84 | 21 | 1LE1001-1CB6Q-QQQQ | | 64 |
| 18.5 | 21.3 | 160 L | 1475 | 120 | EFF1 | 92.4 | 92.4 | 0.85 | 34 | 1LE1001-1DB6Q-QQQQ | | 100 |
| 6-pole – 1000 rpm at 50 Hz, 1200 rpm at 60 Hz | | | | | | | | | | | | |
| 2.2 | 2.55 | 100 L | 965 | 22 | | 84.5 | 85.6 | 0.76 | 4.95 | 1LE1001-1AC6Q-QQQQ | | 30 |
| 3 | 3.45 | 112 M | 960 | 30 | | 84.5 | 84.7 | 0.79 | 6.5 | 1LE1001-1BC6Q-QQQQ | | 34 |
| 7.5 | 8.6 | 132 M | 970 | 74 | | 88.5 | 88.5 | 0.77 | 15.4 | 1LE1001-1CC6Q-QQQQ | | 64 |
| 15 | 17.3 | 160 L | 975 | 147 | | 90.6 | 91 | 0.81 | 29.5 | 1LE1001-1DC6Q-QQQQ | | 115 |

Order No. supplements, see from Page 1/36.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Self-ventilated motors with increased output
and high efficiency

Selection and ordering data (continued)

| Order No. | Locked-rotor torque | Locked-rotor current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | |
|---|-----------------------------|------------------------------|------------------|--------------|-------------------------|---|-------------------------------|
| | with direct starting torque | as multiple of rated current | torque | | | Measuring-surface sound pressure level at 50 Hz | Sound pressure level at 50 Hz |
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | L_{pFA} dB(A) | L_{WA} dB(A) |
| Motor version: temperature class 155 (F), IP55 degree of protection, with increased output, used acc. to temperature class 130 (B) | | | | | | | |
| 2-pole – 3000 rpm at 50 Hz, 3600 rpm at 60 Hz | | | | | | | |
| 1LE1001-1AA6□-□□□□ | 2.5 | 7.6 | 3.5 | 16 | 0.0054 | 67 | 79 |
| 1LE1001-1BA6□-□□□□ | 2.2 | 7.7 | 3.3 | 16 | 0.0119 | 73 | 85 |
| 1LE1001-1CA6□-□□□□ | 2.5 | 7.9 | 3.2 | 16 | 0.03143 | 68 | 80 |
| 1LE1001-1DA6□-□□□□ | 3.1 | 8.4 | 3.7 | 16 | 0.06764 | 70 | 82 |
| 4-pole – 1500 rpm at 50 Hz, 1800 rpm at 60 Hz | | | | | | | |
| 1LE1001-1AB6□-□□□□ | 2.2 | 7.5 | 3.5 | 16 | 0.0137 | 60 | 72 |
| 1LE1001-1BB6□-□□□□ | 2.5 | 7.1 | 3.1 | 16 | 0.0166 | 58 | 70 |
| 1LE1001-1CB6□-□□□□ | 2.9 | 7.7 | 3.1 | 16 | 0.04571 | 64 | 76 |
| 1LE1001-1DB6□-□□□□ | 2.8 | 7.7 | 3.3 | 16 | 0.09854 | 65 | 77 |
| 6-pole – 1000 rpm at 50 Hz, 1200 rpm at 60 Hz | | | | | | | |
| 1LE1001-1AC6□-□□□□ | 1.9 | 5.7 | 2.9 | 16 | 0.0137 | 59 | 71 |
| 1LE1001-1BC6□-□□□□ | 2.1 | 6 | 3.1 | 16 | 0.0166 | 57 | 69 |
| 1LE1001-1CC6□-□□□□ | 2.1 | 6.5 | 3 | 16 | 0.04572 | 63 | 75 |
| 1LE1001-1DC6□-□□□□ | 1.9 | 6.5 | 2.9 | 16 | 0.1208 | 67 | 79 |

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Self-ventilated motors with increased output and high efficiency

Selection and ordering data (continued)

Order No. supplements

| Motor type | Frame size | Positions 12 and 13: Voltages (voltage codes) | | | | | | | |
|----------------------|------------|--|---------------|-----------|-----------|--|--|--------------------------------|--------------------------------|
| | | Standard voltages | | | | Further voltages | | | |
| | | 50 Hz | | | | 50 Hz | | | |
| | | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 220 VΔ/380 VY | 380 VΔ/660 VY | 415 VY | 415 VΔ |
| | | 60 Hz | | | | Rated voltage range | | | |
| | | 460 VY | 460 VΔ | | | (210 ... 230 VΔ/ 360 ... 400 VY) ¹⁾ | (360 ... 400 VΔ/ 625 ... 695 VY) ¹⁾ | (395 ... 435 VY) ¹⁾ | (395 ... 435 VΔ) ¹⁾ |
| | | see "Selection and ordering data" for outputs at 60 Hz | | | | | | | |
| | | 22 | 34 | 27 | 40 | 21 | 33 | 23 | 35 |
| 1LE1001-1A...-□-□... | 100 L | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ |
| 1LE1001-1B...-□-□... | 112 M | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ |
| 1LE1001-1C...-□-□... | 132 M | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ |
| 1LE1001-1D...-□-□... | 160 L | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ |

- Without additional charge
 ✓ With additional charge

Order other voltages with voltage code **9** in position 12, code **0** in position 13 and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages", Page 1/54).

| Motor type | Frame size | Position 14: Types of construction (type letter) | | | | | | | | | | | | |
|-------------------|------------|--|---------------------|---------------------|---------------------|---------------------|--|---|---------------|-----------------------|--|---|---------------------|--------|
| | | Without flange | | | | | | With flange (acc. to DIN EN 50347) | | | | | | |
| | | IM B3 ₂₎₃₎ | IM B6 ₃₎ | IM B7 ₃₎ | IM B8 ₃₎ | IM V6 ₃₎ | IM V5 without protective cover ₃₎ | IM V5 with protective cover ₃₎₄₎₅₎ | Flange size | IM B5 ₃₎₆₎ | IM V1 without protective cover ₃₎ | IM V1 with protective cover ₃₎₄₎₅₎ | IM V3 ₃₎ | IM B35 |
| | | A | T | U | V | D | C | C | F | G | G | H | J | |
| | | Order No. supplement -Z with order code | | | | | | | | | | | | |
| | | - | - | - | - | - | - | -Z H00 | - | - | -Z H00 | - | - | |
| 1LE1001-1A...-□.. | 100 L | □ | □ | □ | □ | □ | □ | ✓ | FF 215 | ✓ | ✓ | ✓ | ✓ | |
| 1LE1001-1B...-□.. | 112 M | □ | □ | □ | □ | □ | □ | ✓ | FF 215 | ✓ | ✓ | ✓ | ✓ | |
| 1LE1001-1C...-□.. | 132 M | □ | □ | □ | □ | □ | □ | ✓ | FF 265 | ✓ | ✓ | ✓ | ✓ | |
| 1LE1001-1D...-□.. | 160 L | □ | □ | □ | □ | □ | □ | ✓ | FF 300 | ✓ | ✓ | ✓ | ✓ | |

| Motor type | Frame size | Position 14: Types of construction (type letter) | | | | | | | | | | | |
|-------------------|------------|--|------------------------|----------------------|---|--|---|---------------|------------------------|----------------------|---|--|--------|
| | | With standard flange (acc. to DIN EN 50347) | | | | | With standard flange (next larger standard flange acc. to DIN EN 50347) | | | | | | |
| | | Flange size | IM B14 ₃₎₇₎ | IM V19 ₃₎ | IM V18 without protective cover ₃₎ | IM V18 with protective cover ₃₎₄₎₅₎ | IM B34 | Flange size | IM B14 ₃₎₇₎ | IM V19 ₃₎ | IM V18 without protective cover ₃₎ | IM V18 with protective cover ₃₎₄₎₅₎ | IM B34 |
| | | | K | L | M | N | | K | L | M | M | N | |
| | | Order No. supplement -Z with order code | | | | | | | | | | | |
| | | | - | - | - | -Z H00 | - | -Z | -Z | -Z | -Z H00 | -Z | |
| | | | P01 | P01 | P01 | P01 | | P01 | P01 | P01 | P01 | P01 | |
| 1LE1001-1A...-□.. | 100 L | FT 130 | ✓ | ✓ | ✓ | ✓ | ✓ | FT 165 | ✓ | ✓ | ✓ | ✓ | |
| 1LE1001-1B...-□.. | 112 M | FT 130 | ✓ | ✓ | ✓ | ✓ | ✓ | FT 165 | ✓ | ✓ | ✓ | ✓ | |
| 1LE1001-1C...-□.. | 132 S/M | FT 165 | ✓ | ✓ | ✓ | ✓ | ✓ | FT 215 | ✓ | ✓ | ✓ | ✓ | |
| 1LE1001-1D...-□.. | 160 M/L | FT 215 | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - | |

- Standard version
 ✓ With additional charge

¹⁾ A rated voltage range is also specified on the rating plate.

²⁾ The types of construction IM B6/7/8, IM V6 and IM V5 without protective cover/with protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard, the type of construction IM B3 is then stamped on the rating plate. With type of construction IM V5 with protective cover, the protective cover has to be additionally ordered with order code **H00**. The protective cover is not stamped on the rating plate.

³⁾ The type of construction is stamped on the rating plate. When ordering with condensation drainage holes (order code **H03**), it is absolutely necessary to specify the type of construction for the exact position of the condensation drainage holes during manufacture.

⁴⁾ Option second shaft extension (order code **L05**) not possible.

⁵⁾ In combination with an encoder, it is not necessary to order the protective cover (order code **H00**), as this is delivered as a protection for the encoder as standard. In this case, the protective cover is standard design (without additional charge).

⁶⁾ The types of construction IM V3 and IM V1 without protective cover/with protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard, the type of construction IM B5 is then stamped on the rating plate. With type of construction IM V1 with protective cover, the protective cover has to be additionally ordered with order code **H00**. The protective cover is not stamped on the rating plate.

⁷⁾ The types of construction IM V19 and IM V18 without protective cover/with protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard, the type of construction IM B14 is then stamped on the rating plate. With type of construction IM V18 with protective cover, the protective cover has to be additionally ordered with order code **H00**. The protective cover is not stamped on the rating plate.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Self-ventilated motors with increased output
and high efficiency

Selection and ordering data (continued)

| Motor type | Frame size | Position 15: Motor protection (motor protection letter) | | | | | |
|--------------------|------------|---|--|--|---|------------------------------|--|
| | | Without motor protection | Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ¹⁾ | Motor protection with PTC thermistors with 6 embedded temperature sensors for alarm and tripping ¹⁾ | Motor temperature detection with embedded temperature sensor KTY 84-130 ¹⁾ | NTC thermistors for tripping | Temperature detectors for tripping ¹⁾ |
| Order code | | A | B | C | F | Z Q2A | Z Q3A |
| 1LE1001-1A...-...□ | 100 L | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1001-1B...-...□ | 112 M | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1001-1C...-...□ | 132 M | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1001-1D...-...□ | 160 L | □ | ✓ | ✓ | ✓ | ✓ | ✓ |

- Standard version
✓ With additional charge

| Motor type | Frame size | Position 16: Connection box (connection box code) | | | |
|--------------------|------------|---|-------------------------------------|-------------------------------------|-------------------------------------|
| | | Connection box top ²⁾ | Connection box on RHS ²⁾ | Connection box on LHS ²⁾ | Connection box bottom ²⁾ |
| | | 4 | 5 | 6 | 7 |
| 1LE1001-1A...-...□ | 100 L | □ | ✓ | ✓ | ✓ |
| 1LE1001-1B...-...□ | 112 M | □ | ✓ | ✓ | ✓ |
| 1LE1001-1C...-...□ | 132 M | □ | ✓ | ✓ | ✓ |
| 1LE1001-1D...-...□ | 160 L | □ | ✓ | ✓ | ✓ |

- Standard version
✓ With additional charge

¹⁾ Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended.


²⁾ With type of construction, screwed-on feet as standard.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Forced-air cooled motors without external fan and fan cover with improved efficiency

Selection and ordering data

| Rated output at | | Frame size | Operating values at rated output | | | | | | | Order No. with -Z and order code | Price | Weight |
|--|--------------------------|------------|----------------------------------|--------------------------|---|------------------------------|------------------------------|--------------------------------|-------------------------------|---|----------------------------|--|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class according to CEMEP | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm |  | η_{rated} % | η_{rated} % | $\cos\varphi_{\text{rated}}$ | I_{rated} A | For Order No. supplements for voltage, type of construction, motor protection and connection box, see table from Page 1/40. | IM B3 type of construction | IM B3 type of construction approx. m kg |
| Motor version: temperature class 155 (F), IP55 degree of protection, used acc. to temperature class 130 (B) | | | | | | | | | | | | |
| 2-pole – 3000 rpm at 50 Hz, 3600 rpm at 60 Hz | | | | | | | | | | | | |
| 3 | 3.45 | 100 L | 2835 | 10 | EFF2 | 82.6 | 83.2 | 0.87 | 6 | 1LE1002-1AA4Q-0000-Z F90 | | 20 |
| 4 | 4.6 | 112 M | 2930 | 13 | EFF2 | 84.8 | 84.4 | 0.86 | 7.9 | 1LE1002-1BA2Q-0000-Z F90 | | 25 |
| 5.5 | 6.3 | 132 S | 2905 | 18 | EFF2 | 86 | 86.6 | 0.89 | 10.4 | 1LE1002-1CA0Q-0000-Z F90 | | 35 |
| 7.5 | 8.6 | 132 S | 2925 | 24 | EFF2 | 87.6 | 88.7 | 0.88 | 14 | 1LE1002-1CA1Q-0000-Z F90 | | 40 |
| 11 | 12.6 | 160 M | 2920 | 36 | EFF2 | 88.4 | 88.5 | 0.85 | 21 | 1LE1002-1DA2Q-0000-Z F90 | | 60 |
| 15 | 17.3 | 160 M | 2930 | 49 | EFF2 | 89.5 | 89.7 | 0.84 | 29 | 1LE1002-1DA3Q-0000-Z F90 | | 68 |
| 18.5 | 21.3 | 160 L | 2935 | 60 | EFF2 | 90.9 | 91 | 0.86 | 34 | 1LE1002-1DA4Q-0000-Z F90 | | 78 |
| 4-pole – 1500 rpm at 50 Hz, 1800 rpm at 60 Hz | | | | | | | | | | | | |
| 2.2 | 2.55 | 100 L | 1425 | 14.8 | EFF2 | 81 | 84 | 0.81 | 4.85 | 1LE1002-1AB4Q-0000-Z F90 | | 18 |
| 3 | 3.45 | 100 L | 1425 | 20.2 | EFF2 | 82.8 | 83.6 | 0.85 | 6.2 | 1LE1002-1AB5Q-0000-Z F90 | | 22 |
| 4 | 4.6 | 112 M | 1435 | 27 | EFF2 | 84.2 | 85.1 | 0.84 | 8.2 | 1LE1002-1BB2Q-0000-Z F90 | | 27 |
| 5.5 | 6.3 | 132 S | 1450 | 36 | EFF2 | 86 | 86.5 | 0.83 | 11.2 | 1LE1002-1CB0Q-0000-Z F90 | | 38 |
| 7.5 | 8.6 | 132 M | 1450 | 49 | EFF2 | 87 | 87.4 | 0.83 | 15 | 1LE1002-1CB2Q-0000-Z F90 | | 44 |
| 11 | 12.6 | 160 M | 1460 | 72 | EFF2 | 88.4 | 88.1 | 0.82 | 22 | 1LE1002-1DB2Q-0000-Z F90 | | 62 |
| 15 | 17.3 | 160 L | 1460 | 98 | EFF2 | 89.4 | 89.7 | 0.82 | 29.5 | 1LE1002-1DB4Q-0000-Z F90 | | 73 |
| 6-pole – 1000 rpm at 50 Hz, 1200 rpm at 60 Hz | | | | | | | | | | | | |
| 1.5 | 1.75 | 100 L | 940 | 15.3 | | 74 | 72.6 | 0.74 | 3.95 | 1LE1002-1AC4Q-0000-Z F90 | | 19 |
| 2.2 | 2.55 | 112 M | 930 | 23 | | 78 | 78.1 | 0.77 | 5.3 | 1LE1002-1BC2Q-0000-Z F90 | | 25 |
| 3 | 3.45 | 132 S | 955 | 30 | | 80 | 79.4 | 0.74 | 7.3 | 1LE1002-1CC0Q-0000-Z F90 | | 34 |
| 4 | 4.6 | 132 M | 950 | 40 | | 83 | 83.4 | 0.76 | 9.2 | 1LE1002-1CC2Q-0000-Z F90 | | 39 |
| 5.5 | 6.3 | 132 M | 950 | 55 | | 85 | 85.3 | 0.75 | 12.4 | 1LE1002-1CC3Q-0000-Z F90 | | 48 |
| 7.5 | 8.6 | 160 M | 970 | 75 | | 86 | 85.4 | 0.73 | 17.2 | 1LE1002-1DC2Q-0000-Z F90 | | 72 |
| 11 | 12.6 | 160 L | 965 | 110 | | 87.6 | 87.9 | 0.77 | 23.5 | 1LE1002-1DC4Q-0000-Z F90 | | 92 |
| 8-pole – 750 rpm at 50 Hz, 900 rpm at 60 Hz | | | | | | | | | | | | |
| 0.75 | 0.86 | 100 L | 705 | 10.4 | | 65.4 | 60.2 | 0.62 | 2.65 | 1LE1002-1AD4Q-0000-Z F90 | | 17 |
| 1.1 | 1.3 | 100 L | 705 | 15.1 | | 68.3 | 67.6 | 0.63 | 3.71 | 1LE1002-1AD5Q-0000-Z F90 | | 22 |
| 1.5 | 1.75 | 112 M | 700 | 20 | | 75.9 | 72.8 | 0.68 | 4.2 | 1LE1002-1BD2Q-0000-Z F90 | | 25 |
| 2.2 | 2.55 | 132 S | 715 | 29 | | 81 | 80 | 0.66 | 5.9 | 1LE1002-1CD0Q-0000-Z F90 | | 37 |
| 3 | 3.45 | 132 M | 710 | 40 | | 81.6 | 81 | 0.68 | 7.8 | 1LE1002-1CD2Q-0000-Z F90 | | 44 |
| 4 | 4.6 | 160 M | 720 | 53 | | 80 | 78.7 | 0.69 | 10.4 | 1LE1002-1DD2Q-0000-Z F90 | | 60 |
| 5.5 | 6.3 | 160 M | 720 | 73 | | 83.5 | 83.9 | 0.70 | 13.6 | 1LE1002-1DD3Q-0000-Z F90 | | 72 |
| 7.5 | 8.6 | 160 L | 715 | 100 | | 83.5 | 84.7 | 0.70 | 18.6 | 1LE1002-1DD4Q-0000-Z F90 | | 91 |

Order No. supplements, see from Page 1/40.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Forced-air cooled motors without external fan and fan cover with improved efficiency

Selection and ordering data (continued)

| Order No. with -Z and order code | Locked-rotor torque | Locked-rotor current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | |
|--|--|------------------------------|------------------|--------------|-------------------------|---|-------------------------------|
| | with direct starting as multiple of rated torque | as multiple of rated current | torque | | | Measuring-surface sound pressure level at 50 Hz | Sound pressure level at 50 Hz |
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | L_{pA} dB(A) | L_{WA} dB(A) |
| Motor version: temperature class 155 (F), IP55 degree of protection, used acc. to temperature class 130 (B) | | | | | | | |
| 2-pole – 3000 rpm at 50 Hz, 3600 rpm at 60 Hz | | | | | | | |
| 1LE1002-1AA4Q-QQQQ-Z F90 | 3.2 | 6.2 | 2.9 | 16 | 0.0034 | 67 | 79 |
| 1LE1002-1BA2Q-QQQQ-Z F90 | 2.7 | 7.3 | 3.7 | 16 | 0.0067 | 69 | 81 |
| 1LE1002-1CA0Q-QQQQ-Z F90 | 2 | 5.6 | 2.6 | 16 | 0.01267 | 68 | 80 |
| 1LE1002-1CA1Q-QQQQ-Z F90 | 2.2 | 6.4 | 3 | 16 | 0.01601 | 68 | 80 |
| 1LE1002-1DA2Q-QQQQ-Z F90 | 2.1 | 6.1 | 2.7 | 16 | 0.02971 | 70 | 82 |
| 1LE1002-1DA3Q-QQQQ-Z F90 | 2.5 | 6.1 | 3.2 | 16 | 0.03619 | 70 | 82 |
| 1LE1002-1DA4Q-QQQQ-Z F90 | 2.5 | 7 | 3.2 | 16 | 0.04395 | 70 | 82 |
| 4-pole – 1500 rpm at 50 Hz, 1800 rpm at 60 Hz | | | | | | | |
| 1LE1002-1AB4Q-QQQQ-Z F90 | 2.3 | 5.1 | 2.7 | 16 | 0.0059 | 60 | 72 |
| 1LE1002-1AB5Q-QQQQ-Z F90 | 2.4 | 5.4 | 2.6 | 16 | 0.0078 | 60 | 72 |
| 1LE1002-1BB2Q-QQQQ-Z F90 | 2.2 | 5.3 | 2.6 | 16 | 0.0102 | 58 | 70 |
| 1LE1002-1CB0Q-QQQQ-Z F90 | 2.3 | 6.2 | 2.7 | 16 | 0.0186 | 64 | 76 |
| 1LE1002-1CB2Q-QQQQ-Z F90 | 2.5 | 6.6 | 2.9 | 16 | 0.02371 | 64 | 76 |
| 1LE1002-1DB2Q-QQQQ-Z F90 | 2.3 | 6.4 | 3.1 | 16 | 0.04395 | 65 | 77 |
| 1LE1002-1DB4Q-QQQQ-Z F90 | 2.5 | 7 | 3.4 | 16 | 0.05616 | 65 | 77 |
| 6-pole – 1000 rpm at 50 Hz, 1200 rpm at 60 Hz | | | | | | | |
| 1LE1002-1AC4Q-QQQQ-Z F90 | 2 | 4 | 2.2 | 16 | 0.0065 | 59 | 71 |
| 1LE1002-1BC2Q-QQQQ-Z F90 | 2.3 | 4.1 | 2.5 | 16 | 0.0092 | 57 | 69 |
| 1LE1002-1CC0Q-QQQQ-Z F90 | 2 | 4.6 | 2.6 | 16 | 0.0167 | 63 | 75 |
| 1LE1002-1CC2Q-QQQQ-Z F90 | 2.1 | 4.7 | 2.5 | 16 | 0.02116 | 63 | 75 |
| 1LE1002-1CC3Q-QQQQ-Z F90 | 2.5 | 5.2 | 2.8 | 16 | 0.02734 | 63 | 75 |
| 1LE1002-1DC2Q-QQQQ-Z F90 | 2.1 | 5.5 | 2.9 | 16 | 0.04993 | 68 | 80 |
| 1LE1002-1DC4Q-QQQQ-Z F90 | 1.9 | 5.9 | 2.7 | 16 | 0.0678 | 68 | 80 |
| 8-pole – 750 rpm at 50 Hz, 900 rpm at 60 Hz | | | | | | | |
| 1LE1002-1AD4Q-QQQQ-Z F90 | 1.9 | 3 | 2.2 | 16 | 0.0056 | 60 | 72 |
| 1LE1002-1AD5Q-QQQQ-Z F90 | 2 | 3.2 | 2.3 | 16 | 0.0078 | 60 | 72 |
| 1LE1002-1BD2Q-QQQQ-Z F90 | 1.9 | 3.4 | 2.1 | 16 | 0.0094 | 63 | 75 |
| 1LE1002-1CD0Q-QQQQ-Z F90 | 1.7 | 3.9 | 2.4 | 13 | 0.0186 | 63 | 75 |
| 1LE1002-1CD2Q-QQQQ-Z F90 | 1.8 | 3.9 | 2.2 | 13 | 0.02372 | 63 | 75 |
| 1LE1002-1DD2Q-QQQQ-Z F90 | 1.7 | 3.8 | 2.3 | 13 | 0.0439 | 63 | 75 |
| 1LE1002-1DD3Q-QQQQ-Z F90 | 1.6 | 4 | 2.2 | 13 | 0.0562 | 63 | 75 |
| 1LE1002-1DD4Q-QQQQ-Z F90 | 1.7 | 3.8 | 2.2 | 13 | 0.0772 | 63 | 75 |

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Forced-air cooled motors without external fan and fan cover with improved efficiency

Selection and ordering data (continued)

Order No. supplements

| Motor type | Frame size | Positions 12 and 13: Voltages (voltage codes) | | | | | Further voltages | | | |
|-------------------------------|------------|--|---------------|---------------|-----------|-----------|---|---------------|-----------|--------|
| | | Standard voltages | | | | | 50 Hz | | | |
| | | 50 Hz | 400 VΔ/400 VY | 460 VΔ/460 VY | 500 VY | 500 VΔ | 220 VΔ/380 VY | 380 VΔ/660 VY | 415 VY | 415 VΔ |
| | | 60 Hz | 460 VY | 460 VΔ | | | Rated voltage range | | | |
| | | | | | | | (210 ... 230 VΔ/360 ... 400 VY) ¹⁾ (360 ... 400 VΔ/625 ... 695 VY) ¹⁾ (395 ... 435 VY) ¹⁾ (395 ... 435 VΔ) ¹⁾ | | | |
| | | see "Selection and ordering data" for outputs at 60 Hz | | | | | | | | |
| | | 22 | 34 | 27 | 40 | 21 | 33 | 23 | 35 | |
| 1LE1002-1A...-□-□...-Z F90 | 100 L | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ | |
| 1LE1002-1B...-□-□...-Z F90 | 112 M | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ | |
| 1LE1002-1C...-□-□...-Z F90 | 132 S/M | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ | |
| 1LE1002-1D...-□-□...-Z F90 | 160 M/L | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ | |

- Without additional charge
✓ With additional charge

Order other voltages with voltage code **9** in position 12, code **0** in position 13 and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages", Page 1/54).

| Motor type | Frame size | Position 14: Types of construction (type letter) | | | | | | | | | | |
|-------------------------------|------------|--|-------------|-------------|-------------|-------------|---|----------------|------------------------------------|---|-------------|----------|
| | | Without flange | | | | | | | With flange (acc. to DIN EN 50347) | | | |
| | | IM B3 2)3) | IM B6 3) | IM B7 3) | IM B8 3) | IM V6 3) | IM V5 without protective cover ³⁾ | Flange size | IM B5 3)4) | IM V1 without protective cover ³⁾ | IM V3 3) | IM B35 |
| | | A | T | U | V | D | C | | F | G | H | J |
| | | Order No. supplement -Z with order code | | | | | | | | | | |
| 1LE1002-1A...-□-□...-Z F90 | 100 L | □ | □ | □ | □ | □ | □ | FF 215 | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1B...-□-□...-Z F90 | 112 M | □ | □ | □ | □ | □ | □ | FF 215 | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1C...-□-□...-Z F90 | 132 S/M | □ | □ | □ | □ | □ | □ | FF 265 | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1D...-□-□...-Z F90 | 160 M/L | □ | □ | □ | □ | □ | □ | FF 300 | ✓ | ✓ | ✓ | ✓ |

| Motor type | Frame size | Position 14: Types of construction (type letter) | | | | | | | | | |
|-------------------------------|------------|--|----------------|--------------|--|------------|---|----------------|--------------|--|------------|
| | | With standard flange (acc. to DIN EN 50347) | | | | | With standard flange (next larger standard flange acc. to DIN EN 50347) | | | | |
| | | Flange size | IM B14 3)5) | IM V19 3) | IM V18 without protective cover ³⁾ | IM B34 | Flange size | IM B14 3)5) | IM V19 3) | IM V18 without protective cover ³⁾ | IM B34 |
| | | | K | L | M | N | | K | L | M | N |
| | | Order No. supplement -Z with order code | | | | | | | | | |
| | | | - | - | - | - | | -Z | -Z | -Z | -Z |
| | | | P01 | P01 | P01 | P01 | | P01 | P01 | P01 | P01 |
| 1LE1002-1A...-□-□...-Z F90 | 100 L | FT 130 | ✓ | ✓ | ✓ | ✓ | FT 165 | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1B...-□-□...-Z F90 | 112 M | FT 130 | ✓ | ✓ | ✓ | ✓ | FT 165 | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1C...-□-□...-Z F90 | 132 S/M | FT 165 | ✓ | ✓ | ✓ | ✓ | FT 215 | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1D...-□-□...-Z F90 | 160 M/L | FT 215 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - |

- Standard version
✓ With additional charge

- 1) A rated voltage range is also specified on the rating plate.
2) The types of construction IM B6/7/8, IM V6 and IM V5 without protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard, the type of construction IM B3 is then stamped on the rating plate.
3) The type of construction is stamped on the rating plate. When ordering with condensation drainage holes (order code **H03**), it is absolutely necessary to specify the type of construction for the exact position of the condensation drainage holes during manufacture.

- 4) The types of construction IM V3 and IM V1 without protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard, the type of construction IM B5 is then stamped on the rating plate.
5) The types of construction IM V19 and IM V18 without protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard, the type of construction IM B14 is then stamped on the rating plate.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Forced-air cooled motors without external fan and fan cover with improved efficiency

Selection and ordering data (continued)

| Motor type | Frame size | Position 15: Motor protection (motor protection letter) | | | | | |
|-----------------------------|------------|---|--|--|---|------------------------------|--|
| | | Without motor protection | Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ¹⁾ | Motor protection with PTC thermistors with 6 embedded temperature sensors for alarm and tripping ¹⁾ | Motor temperature detection with embedded temperature sensor KTY 84-130 ¹⁾ | NTC thermistors for tripping | Temperature detectors for tripping ¹⁾ |
| Order code | | A | B | C | F | Z Q2A | Z Q3A |
| 1LE1002-1A...-...Q-Z F90 | 100 L | ☐ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1B...-...Q-Z F90 | 112 M | ☐ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1C...-...Q-Z F90 | 132 S/M | ☐ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LE1002-1D...-...Q-Z F90 | 160 M/L | ☐ | ✓ | ✓ | ✓ | ✓ | ✓ |

- ☐ Standard version
 ✓ With additional charge

| Motor type | Frame size | Position 16: Connection box (connection box code) | | | |
|-----------------------------|------------|---|-------------------------------------|-------------------------------------|-------------------------------------|
| | | Connection box top ²⁾ | Connection box on RHS ³⁾ | Connection box on LHS ³⁾ | Connection box bottom ³⁾ |
| | | 4 | 5 | 6 | 7 |
| 1LE1002-1A...-...Q-Z F90 | 100 L | ☐ | ✓ | ✓ | ✓ |
| 1LE1002-1B...-...Q-Z F90 | 112 M | ☐ | ✓ | ✓ | ✓ |
| 1LE1002-1C...-...Q-Z F90 | 132 S/M | ☐ | ✓ | ✓ | ✓ |
| 1LE1002-1D...-...Q-Z F90 | 160 M/L | ☐ | ✓ | ✓ | ✓ |

- ☐ Standard version
 ✓ With additional charge

¹⁾ Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended.

²⁾ With type of construction, cast feet as standard. Screwed-on feet are available with order code **H01**, see "Special versions".


³⁾ With type of construction, screwed-on feet as standard.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Forced-air cooled motors without external fan and fan cover with high efficiency

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output | | | | | | | Order No. with -Z and order code | Price | Weight |
|--|-------------------|------------|----------------------------------|-----------------------|---|------------------------------|------------------------------|--------------------------------|-------------------------------|---|----------------------------|---|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class according to CEMEP | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm |  | η_{rated} % | η_{rated} % | $\cos\varphi_{rated}$ | I_{rated} A | For Order No. supplements for voltage, type of construction, motor protection and connection box, see table from Page 1/44. | IM B3 type of construction | IM B3 type of construction approx. m kg |
| Motor version: temperature class 155 (F), IP55 degree of protection, used acc. to temperature class 130 (B) | | | | | | | | | | | | |
| 2-pole – 3000 rpm at 50 Hz, 3600 rpm at 60 Hz | | | | | | | | | | | | |
| 3 | 3.45 | 100 L | 2905 | 9.9 | EFF1 | 86.7 | 87.5 | 0.84 | 5.9 | 1LE1001-1AA4Q-0000-Z F90 | | 21 |
| 4 | 4.6 | 112 M | 2950 | 13 | EFF1 | 88 | 88.5 | 0.86 | 7.4 | 1LE1001-1BA2Q-0000-Z F90 | | 27 |
| 5.5 | 6.3 | 132 S | 2950 | 18 | EFF1 | 89.5 | 90.6 | 0.87 | 10.2 | 1LE1001-1CA0Q-0000-Z F90 | | 39 |
| 7.5 | 8.6 | 132 S | 2950 | 24 | EFF1 | 90 | 91 | 0.87 | 13.8 | 1LE1001-1CA1Q-0000-Z F90 | | 43 |
| 11 | 12.6 | 160 M | 2955 | 36 | EFF1 | 90.8 | 91 | 0.87 | 20 | 1LE1001-1DA2Q-0000-Z F90 | | 67 |
| 15 | 17.3 | 160 M | 2955 | 48 | EFF1 | 91.4 | 91.5 | 0.88 | 27 | 1LE1001-1DA3Q-0000-Z F90 | | 75 |
| 18.5 | 21.3 | 160 L | 2955 | 60 | EFF1 | 92 | 92.5 | 0.88 | 33 | 1LE1001-1DA4Q-0000-Z F90 | | 84 |
| 4-pole – 1500 rpm at 50 Hz, 1800 rpm at 60 Hz | | | | | | | | | | | | |
| 2.2 | 2.55 | 100 L | 1455 | 14 | EFF1 | 86.4 | 87 | 0.81 | 4.55 | 1LE1001-1AB4Q-0000-Z F90 | | 21 |
| 3 | 3.45 | 100 L | 1455 | 20 | EFF1 | 87.4 | 88 | 0.82 | 6 | 1LE1001-1AB5Q-0000-Z F90 | | 25 |
| 4 | 4.6 | 112 M | 1460 | 26 | EFF1 | 88.3 | 88.5 | 0.81 | 8.1 | 1LE1001-1BB2Q-0000-Z F90 | | 29 |
| 5.5 | 6.3 | 132 S | 1465 | 36 | EFF1 | 89.2 | 89.5 | 0.80 | 11.2 | 1LE1001-1CB0Q-0000-Z F90 | | 42 |
| 7.5 | 8.6 | 132 M | 1465 | 49 | EFF1 | 90.1 | 91 | 0.83 | 14.4 | 1LE1001-1CB2Q-0000-Z F90 | | 49 |
| 11 | 12.6 | 160 M | 1470 | 71 | EFF1 | 91.2 | 91.8 | 0.85 | 20.5 | 1LE1001-1DB2Q-0000-Z F90 | | 71 |
| 15 | 17.3 | 160 L | 1475 | 97 | EFF1 | 92 | 92.4 | 0.85 | 27.5 | 1LE1001-1DB4Q-0000-Z F90 | | 83 |
| 6-pole – 1000 rpm at 50 Hz, 1200 rpm at 60 Hz | | | | | | | | | | | | |
| 1.5 | 1.75 | 100 L | 970 | 15 | | 84.5 | 84.5 | 0.73 | 3.5 | 1LE1001-1AC4Q-0000-Z F90 | | 25 |
| 2.2 | 2.55 | 112 M | 965 | 22 | | 85 | 85 | 0.75 | 5 | 1LE1001-1BC2Q-0000-Z F90 | | 29 |
| 3 | 3.45 | 132 S | 970 | 30 | | 85 | 85 | 0.74 | 6.9 | 1LE1001-1CC0Q-0000-Z F90 | | 38 |
| 4 | 4.6 | 132 M | 970 | 39 | | 86 | 86 | 0.78 | 8.6 | 1LE1001-1CC2Q-0000-Z F90 | | 43 |
| 5.5 | 6.3 | 132 M | 970 | 54 | | 88 | 88 | 0.77 | 11.8 | 1LE1001-1CC3Q-0000-Z F90 | | 52 |
| 7.5 | 8.6 | 160 M | 975 | 73 | | 89 | 89 | 0.77 | 15.8 | 1LE1001-1DC2Q-0000-Z F90 | | 77 |
| 11 | 12.6 | 160 L | 975 | 108 | | 89.5 | 89 | 0.80 | 22 | 1LE1001-1DC4Q-0000-Z F90 | | 93 |
| 8-pole – 750 rpm at 50 Hz, 900 rpm at 60 Hz | | | | | | | | | | | | |
| 0.75 | 0.86 | 100 L | 725 | 9.9 | | 68 | 65 | 0.58 | 2.75 | 1LE1001-1AD4Q-0000-Z F90 | | 21 |
| 1.1 | 1.3 | 110 L | 725 | 14 | | 68 | 64.5 | 0.58 | 4.05 | 1LE1001-1AD5Q-0000-Z F90 | | 25 |
| 1.5 | 1.75 | 112 M | 720 | 20 | | 77 | 75.5 | 0.67 | 4.2 | 1LE1001-1BD2Q-0000-Z F90 | | 29 |
| 2.2 | 2.55 | 132 S | 725 | 29 | | 77.5 | 76.7 | 0.63 | 6.5 | 1LE1001-1CD0Q-0000-Z F90 | | 41 |
| 3 | 3.45 | 132 M | 730 | 40 | | 84 | 82 | 0.65 | 7.9 | 1LE1001-1CD2Q-0000-Z F90 | | 49 |
| 4 | 4.6 | 160 M | 730 | 52 | | 87 | 88 | 0.69 | 9.6 | 1LE1001-1DD2Q-0000-Z F90 | | 69 |
| 5.5 | 6.3 | 160 M | 735 | 72 | | 87.5 | 89 | 0.69 | 13.2 | 1LE1001-1DD3Q-0000-Z F90 | | 82 |
| 7.5 | 8.6 | 160 L | 730 | 98 | | 88 | 89 | 0.72 | 17 | 1LE1001-1DD4Q-0000-Z F90 | | 94 |

Order No. supplements, see from Page 1/44.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Forced-air cooled motors without external fan and fan cover with high efficiency

Selection and ordering data (continued)

| Order No. with -Z and order code | Locked-rotor torque | Locked-rotor current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | |
|--|--|------------------------------|------------------|--------------|-------------------------|---|-------------------------------|
| | with direct starting as multiple of rated torque | as multiple of rated current | torque | | | Measuring-surface sound pressure level at 50 Hz | Sound pressure level at 50 Hz |
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | L_{pA} dB(A) | L_{WA} dB(A) |
| Motor version: temperature class 155 (F), IP55 degree of protection, used acc. to temperature class 130 (B) | | | | | | | |
| 2-pole – 3000 rpm at 50 Hz, 3600 rpm at 60 Hz | | | | | | | |
| 1LE1001-1AA4Q-QQQQ-Z F90 | 2.3 | 7 | 3.3 | 16 | 0.0044 | 67 | 79 |
| 1LE1001-1BA2Q-QQQQ-Z F90 | 2.4 | 7.4 | 3.3 | 16 | 0.0092 | 69 | 81 |
| 1LE1001-1CA0Q-QQQQ-Z F90 | 1.8 | 6.7 | 2.9 | 16 | 0.02012 | 68 | 80 |
| 1LE1001-1CA1Q-QQQQ-Z F90 | 2.2 | 7.5 | 3.1 | 16 | 0.02353 | 68 | 80 |
| 1LE1001-1DA2Q-QQQQ-Z F90 | 2.1 | 7.4 | 3.2 | 16 | 0.04471 | 70 | 82 |
| 1LE1001-1DA3Q-QQQQ-Z F90 | 2.4 | 7.6 | 3.4 | 16 | 0.05277 | 70 | 82 |
| 1LE1001-1DA4Q-QQQQ-Z F90 | 2.9 | 7.9 | 3.6 | 16 | 0.06085 | 70 | 82 |
| 4-pole – 1500 rpm at 50 Hz, 1800 rpm at 60 Hz | | | | | | | |
| 1LE1001-1AB4Q-QQQQ-Z F90 | 2.1 | 6.9 | 3.3 | 16 | 0.0086 | 60 | 72 |
| 1LE1001-1AB5Q-QQQQ-Z F90 | 2 | 6.9 | 3.1 | 16 | 0.0109 | 60 | 72 |
| 1LE1001-1BB2Q-QQQQ-Z F90 | 2.5 | 7.1 | 3.2 | 16 | 0.014 | 58 | 70 |
| 1LE1001-1CB0Q-QQQQ-Z F90 | 2.3 | 6.9 | 2.9 | 16 | 0.02698 | 64 | 76 |
| 1LE1001-1CB2Q-QQQQ-Z F90 | 2.3 | 6.9 | 2.9 | 16 | 0.03353 | 64 | 76 |
| 1LE1001-1DB2Q-QQQQ-Z F90 | 2.2 | 6.7 | 2.8 | 16 | 0.06495 | 65 | 77 |
| 1LE1001-1DB4Q-QQQQ-Z F90 | 2.5 | 7.3 | 3 | 16 | 0.08281 | 65 | 77 |
| 6-pole – 1000 rpm at 50 Hz, 1200 rpm at 60 Hz | | | | | | | |
| 1LE1001-1AC4Q-QQQQ-Z F90 | 2 | 6.2 | 2.9 | 16 | 0.0113 | 59 | 71 |
| 1LE1001-1BC2Q-QQQQ-Z F90 | 2.1 | 6 | 3.1 | 16 | 0.0139 | 57 | 69 |
| 1LE1001-1CC0Q-QQQQ-Z F90 | 1.6 | 5.6 | 2.6 | 13 | 0.02371 | 63 | 75 |
| 1LE1001-1CC2Q-QQQQ-Z F90 | 1.6 | 5.6 | 2.5 | 13 | 0.02918 | 63 | 75 |
| 1LE1001-1CC3Q-QQQQ-Z F90 | 1.9 | 6.1 | 2.8 | 16 | 0.03673 | 63 | 75 |
| 1LE1001-1DC2Q-QQQQ-Z F90 | 1.8 | 6.3 | 2.8 | 16 | 0.0754 | 67 | 79 |
| 1LE1001-1DC4Q-QQQQ-Z F90 | 1.7 | 6.2 | 2.7 | 16 | 0.0975 | 67 | 79 |
| 8-pole – 750 rpm at 50 Hz, 900 rpm at 60 Hz | | | | | | | |
| 1LE1001-1AD4Q-QQQQ-Z F90 | 1.6 | 4 | 2.8 | 13 | 0.0086 | 60 | 72 |
| 1LE1001-1AD5Q-QQQQ-Z F90 | 1.8 | 4 | 2.8 | 13 | 0.0109 | 60 | 72 |
| 1LE1001-1BD2Q-QQQQ-Z F90 | 1.4 | 4.2 | 2.4 | 13 | 0.014 | 63 | 75 |
| 1LE1001-1CD0Q-QQQQ-Z F90 | 1.4 | 3.6 | 1.8 | 10 | 0.02698 | 63 | 75 |
| 1LE1001-1CD2Q-QQQQ-Z F90 | 1.4 | 5 | 2.4 | 10 | 0.03463 | 63 | 75 |
| 1LE1001-1DD2Q-QQQQ-Z F90 | 1.8 | 4.3 | 2 | 13 | 0.0649 | 63 | 75 |
| 1LE1001-1DD3Q-QQQQ-Z F90 | 2.1 | 4.4 | 2.1 | 13 | 0.0828 | 63 | 75 |
| 1LE1001-1DD4Q-QQQQ-Z F90 | 1.9 | 4.5 | 2.1 | 13 | 0.0982 | 63 | 75 |

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Forced-air cooled motors without external fan and fan cover with high efficiency

Selection and ordering data (continued)

Order No. supplements

| Motor type | Frame size | Positions 12 and 13: Voltages (voltage codes) | | | | | Further voltages | | | | |
|-----------------------------|------------|--|---------------|---------------|-----------|-----------|---|---|--------------------------------|--------------------------------|--|
| | | Standard voltages | | | | | 50 Hz | | | | |
| | | 50 Hz | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 220 VΔ/380 VY | 380 VΔ/660 VY | 415 VY | 415 VΔ | |
| | | 60 Hz | 460 VY | 460 VΔ | | | Rated voltage range | | | | |
| | | | | | | | (210 ... 230 VΔ/ 360 ... 400 VY) ¹⁾ | (360 ... 400 VΔ/ 625 ... 695 VY) ¹⁾ | (395 ... 435 VY) ¹⁾ | (395 ... 435 VΔ) ¹⁾ | |
| | | see "Selection and ordering data" for outputs at 60 Hz | | | | | | | | | |
| | | 22 | 34 | 27 | 40 | 21 | 33 | 23 | 35 | | |
| 1LE1001-1A...-□...-Z F90 | 100 L | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ | | |
| 1LE1001-1B...-□...-Z F90 | 112 M | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ | | |
| 1LE1001-1C...-□...-Z F90 | 132 S/M | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ | | |
| 1LE1001-1D...-□...-Z F90 | 160 M/L | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ | | |

- Without additional charge
✓ With additional charge

Order other voltages with voltage code **9** in position 12, code **0** in position 13 and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages", Page 1/54).

| Motor type | Frame size | Position 14: Types of construction (type letter) | | | | | | | | | | |
|-----------------------------|------------|--|---------------------|---------------------|---------------------|---------------------|--|------------------------------------|-----------------------|--|---------------------|--------|
| | | Without flange | | | | | | With flange (acc. to DIN EN 50347) | | | | |
| | | IM B3 ²⁾³⁾ | IM B6 ³⁾ | IM B7 ³⁾ | IM B8 ³⁾ | IM V6 ³⁾ | IM V5 without protective cover ³⁾ | Flange size | IM B5 ³⁾⁴⁾ | IM V1 without protective cover ³⁾ | IM V3 ³⁾ | IM B35 |
| | | A | T | U | V | D | C | F | G | H | J | |
| | | Order No. supplement -Z with order code | | | | | | | | | | |
| | | - | - | - | - | - | - | - | - | - | - | - |
| 1LE1001-1A...-□...-Z F90 | 100 L | □ | □ | □ | □ | □ | □ | FF 215 | ✓ | ✓ | ✓ | ✓ |
| 1LE1001-1B...-□...-Z F90 | 112 M | □ | □ | □ | □ | □ | □ | FF 215 | ✓ | ✓ | ✓ | ✓ |
| 1LE1001-1C...-□...-Z F90 | 132 S/M | □ | □ | □ | □ | □ | □ | FF 265 | ✓ | ✓ | ✓ | ✓ |
| 1LE1001-1D...-□...-Z F90 | 160 M/L | □ | □ | □ | □ | □ | □ | FF 300 | ✓ | ✓ | ✓ | ✓ |

| Motor type | Frame size | Position 14: Types of construction (type letter) | | | | | | | | | | |
|-----------------------------|------------|--|------------------------|----------------------|---|---|-------------|------------------------|----------------------|---|--------|-----|
| | | With standard flange (acc. to DIN EN 50347) | | | | With standard flange (next larger standard flange acc. to DIN EN 50347) | | | | | | |
| | | Flange size ³⁾ | IM B14 ³⁾⁵⁾ | IM V19 ³⁾ | IM V18 without protective cover ³⁾ | IM B34 | Flange size | IM B14 ³⁾⁵⁾ | IM V19 ³⁾ | IM V18 without protective cover ³⁾ | IM B34 | |
| | | K | L | M | N | K | L | M | N | | | |
| | | Order No. supplement -Z with order code | | | | | | | | | | |
| | | - | - | - | - | -Z | -Z | -Z | -Z | P01 | P01 | P01 |
| 1LE1001-1A...-□...-Z F90 | 100 L | FT 130 | ✓ | ✓ | ✓ | ✓ | FT 165 | ✓ | ✓ | ✓ | ✓ | |
| 1LE1001-1B...-□...-Z F90 | 112 M | FT 130 | ✓ | ✓ | ✓ | ✓ | FT 165 | ✓ | ✓ | ✓ | ✓ | |
| 1LE1001-1C...-□...-Z F90 | 132 S/M | FT 165 | ✓ | ✓ | ✓ | ✓ | FT 215 | ✓ | ✓ | ✓ | ✓ | |
| 1LE1001-1D...-□...-Z F90 | 160 M/L | FT 215 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - | |

- Standard version
✓ With extra price

- 1) A rated voltage range is also specified on the rating plate.
2) The types of construction IM B6/7/8, IM V6 and IM V5 without protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard, the type of construction IM B3 is then stamped on the rating plate.
3) The type of construction is stamped on the rating plate. When ordering with condensation drainage holes (order code **H03**), it is absolutely necessary to specify the type of construction for the exact position of the condensation drainage holes during manufacture.

- 4) The types of construction IM V3 and IM V1 without protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard, the type of construction IM B5 is then stamped on the rating plate.
5) The types of construction IM V19 and IM V18 without protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard, the type of construction IM B14 is then stamped on the rating plate.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Forced-air cooled motors without external fan and fan cover with high efficiency

Selection and ordering data (continued)

| Motor type | Frame size | Position 15: Motor protection (motor protection letter) | | | | | |
|--------------------------|------------|---|--|--|---|-------------------------------------|--|
| | | Without motor protection | Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ¹⁾ | Motor protection with PTC thermistors with 6 embedded temperature sensors for alarm and tripping ¹⁾ | Motor temperature detection with embedded temperature sensor KTY 84-130 ¹⁾ | NTC thermistors for tripping | Temperature detectors for tripping ¹⁾ |
| Order code | | A | B | C | F | Z Q2A | Z Q3A |
| 1LE1001-1A...-Q-Z F90 | 100 L | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 1LE1001-1B...-Q-Z F90 | 112 M | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 1LE1001-1C...-Q-Z F90 | 132 S/M | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 1LE1001-1D...-Q-Z F90 | 160 M/L | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

- Standard version
 With additional charge

| Motor type | Frame size | Position 16: Connection box (connection box code) | | | |
|---------------------------|------------|---|-------------------------------------|-------------------------------------|-------------------------------------|
| | | Connection box top ²⁾ | Connection box on RHS ³⁾ | Connection box on LHS ³⁾ | Connection box bottom ³⁾ |
| | | 4 | 5 | 6 | 7 |
| 1LE1001-1A ...-Q-Z F90 | 100 L | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 1LE1001-1B ...-Q-Z F90 | 112 M | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 1LE1001-1C ...-Q-Z F90 | 132 S/M | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 1LE1001-1D ...-Q-Z F90 | 160 M/L | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

- Standard version
 With additional charge

¹⁾ Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended.

²⁾ With type of construction, cast feet as standard. Screwed-on feet are available with order code **H01**, see "Special versions".

³⁾ With type of construction, screwed-on feet as standard.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Self-cooled motors without external fan and fan cover with improved efficiency

Selection and ordering data

| Rated output at | | Frame size | Operating values at rated output | | | | | | | Order No. | Price | Weight |
|--|--------------------------|------------|----------------------------------|--------------------------|-------------------------------------|------------------------------|------------------------------|--------------------------------|--|----------------------------|---|--------|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class according to CEMEP | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | For Order No. supplements for voltage, type of construction, motor protection and connection box, see from Page 1/48 | IM B3 type of construction | IM B3 type of construction approx. m kg | |
| Motor version: temperature class 155 (F), IP55 degree of protection, used acc. to temperature class 130 (B) | | | | | | | | | | | | |
| 2-pole – 3000 rpm at 50 Hz, 3600 rpm at 60 Hz | | | | | | | | | | | | |
| 1.2 | | 100 L | 2830 | 4.05 | | 81.4 | | 0.92 | 2.3 | 1PC1002-1AA4Q-0000 | 20 | |
| 1.6 | | 112 M | 2925 | 5.2 | | 83.6 | | 0.93 | 2.95 | 1PC1002-1BA2Q-0000 | 25 | |
| 2.2 | | 132 S | 2910 | 7.24 | | 84 | | 0.94 | 4 | 1PC1002-1CA0Q-0000 | 35 | |
| 3 | | 132 S | 2920 | 9.8 | | 87 | | 0.93 | 5.35 | 1PC1002-1CA1Q-0000 | 40 | |
| 4.4 | | 160 M | 2830 | 15 | | 89.6 | | 0.9 | 7.9 | 1PC1002-1DA2Q-0000 | 60 | |
| 6 | | 160 M | 2935 | 20 | | 90 | | 0.91 | 10.6 | 1PC1002-1DA3Q-0000 | 68 | |
| 7.4 | | 160 L | 2930 | 24 | | 90.6 | | 0.92 | 12.9 | 1PC1002-1DA4Q-0000 | 78 | |
| 4-pole – 1500 rpm at 50 Hz, 1800 rpm at 60 Hz | | | | | | | | | | | | |
| 0.88 | | 100 L | 1420 | 5.92 | | 80.7 | | 0.88 | 1.8 | 1PC1002-1AB4Q-0000 | 18 | |
| 1.2 | | 100 L | 1420 | 8.06 | | 83 | | 0.89 | 2.35 | 1PC1002-1AB5Q-0000 | 22 | |
| 1.6 | | 112 M | 1430 | 11 | | 83.7 | | 0.89 | 3.1 | 1PC1002-1BB2Q-0000 | 27 | |
| 2.2 | | 132 S | 1450 | 14.53 | | 85.8 | | 0.89 | 4.15 | 1PC1002-1CB0Q-0000 | 38 | |
| 3 | | 132 M | 1450 | 19.8 | | 87.2 | | 0.89 | 5.58 | 1PC1002-1CB2Q-0000 | 44 | |
| 4.4 | | 160 M | 1460 | 29 | | 88 | | 0.88 | 8.2 | 1PC1002-1DB2Q-0000 | 62 | |
| 6 | | 160 L | 1460 | 39 | | 89.5 | | 0.89 | 10.9 | 1PC1002-1DB4Q-0000 | 73 | |
| 6-pole – 1000 rpm at 50 Hz, 1200 rpm at 60 Hz | | | | | | | | | | | | |
| 0.6 | | 100 L | 935 | 6.12 | | 76.1 | | 0.81 | 1.4 | 1PC1002-1AC4Q-0000 | 19 | |
| 0.88 | | 112 M | 930 | 9 | | 79 | | 0.82 | 1.96 | 1PC1002-1BC2Q-0000 | 25 | |
| 1.2 | | 132 S | 950 | 12 | | 80.7 | | 0.83 | 2.58 | 1PC1002-1CC0Q-0000 | 34 | |
| 1.6 | | 132 M | 950 | 16 | | 83.2 | | 0.83 | 3.35 | 1PC1002-1CC2Q-0000 | 39 | |
| 2.2 | | 132 M | 950 | 22.13 | | 85.1 | | 0.83 | 4.5 | 1PC1002-1CC3Q-0000 | 48 | |
| 3 | | 160 M | 970 | 30 | | 86.5 | | 0.81 | 6.2 | 1PC1002-1DC2Q-0000 | 72 | |
| 4.4 | | 160 L | 970 | 43 | | 88 | | 0.81 | 8.9 | 1PC1002-1DC4Q-0000 | 92 | |
| 8-pole – 750 rpm at 50 Hz, 900 rpm at 60 Hz | | | | | | | | | | | | |
| 0.3 | | 100 L | 710 | 4.05 | | 66.3 | | 0.67 | 0.97 | 1PC1002-1AD4Q-0000 | 17 | |
| 0.44 | | 100 L | 705 | 6 | | 71 | | 0.69 | 1.3 | 1PC1002-1AD5Q-0000 | 22 | |
| 0.6 | | 112 M | 695 | 8.2 | | 75.2 | | 0.72 | 1.6 | 1PC1002-1BD2Q-0000 | 25 | |
| 0.88 | | 132 S | 720 | 11.66 | | 80.6 | | 0.71 | 2.2 | 1PC1002-1CD0Q-0000 | 37 | |
| 1.2 | | 132 M | 720 | 16 | | 81.5 | | 0.72 | 2.95 | 1PC1002-1CD2Q-0000 | 44 | |
| 1.6 | | 160 M | 730 | 21 | | 82 | | 0.74 | 3.8 | 1PC1002-1DD2Q-0000 | 60 | |
| 2.2 | | 160 M | 730 | 29 | | 85 | | 0.74 | 5.1 | 1PC1002-1DD3Q-0000 | 72 | |
| 3 | | 160 L | 730 | 39 | | 86 | | 0.74 | 6.8 | 1PC1002-1DD4Q-0000 | 91 | |

Order No. supplements, see from Page 1/48.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Self-cooled motors without external fan and fan cover with improved efficiency

Selection and ordering data (continued)

| Order No. | Locked-rotor torque | Locked-rotor current | Breaddown torque | Torque class | Moment of inertia | Noise at rated output | |
|--|-----------------------------|------------------------------|------------------|--------------|-------------------------|---|-------------------------------|
| | with direct starting torque | as multiple of rated current | torque | | | Measuring-surface sound pressure level at 50 Hz | Sound pressure level at 50 Hz |
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | $L_{p(A)}$ dB(A) | L_{WA} dB(A) |
| Motor version: temperature class 155 (F), IP55 degree of protection, used acc. to temperature class 130 (B) | | | | | | | |
| 2-pole – 3000 rpm at 50 Hz, 3600 rpm at 60 Hz | | | | | | | |
| 1PC1002-1AA4□-□□□□ | 3 | 6 | 3 | 16 | 0.0034 | 67 | 79 |
| 1PC1002-1BA2□-□□□□ | 2.3 | 7.2 | 3 | 13 | 0.0067 | 69 | 81 |
| 1PC1002-1CA0□-□□□□ | 1.7 | 5.3 | 2.3 | 10 | 0.0127 | 62 | 74 |
| 1PC1002-1CA1□-□□□□ | 2 | 6.3 | 2.8 | 13 | 0.0160 | 62 | 74 |
| 1PC1002-1DA2□-□□□□ | 2.1 | 6.3 | 2.9 | 13 | 0.0297 | 60 | 72 |
| 1PC1002-1DA3□-□□□□ | 2.5 | 7 | 3.1 | 16 | 0.0362 | 60 | 72 |
| 1PC1002-1DA4□-□□□□ | 2.5 | 7 | 3.1 | 16 | 0.0439 | 60 | 72 |
| 4-pole – 1500 rpm at 50 Hz, 1800 rpm at 60 Hz | | | | | | | |
| 1PC1002-1AB4□-□□□□ | 2 | 5.1 | 2.2 | 13 | 0.0059 | 60 | 72 |
| 1PC1002-1AB5□-□□□□ | 2.2 | 5.4 | 2.4 | 13 | 0.0078 | 60 | 72 |
| 1PC1002-1BB2□-□□□□ | 1.9 | 5.4 | 2.2 | 13 | 0.0102 | 58 | 70 |
| 1PC1002-1CB0□-□□□□ | 2.2 | 5.7 | 2.6 | 13 | 0.0186 | 64 | 76 |
| 1PC1002-1CB2□-□□□□ | 2.4 | 6.4 | 2.7 | 16 | 0.0237 | 64 | 76 |
| 1PC1002-1DB2□-□□□□ | 2.1 | 7 | 2.8 | 13 | 0.0439 | 64 | 76 |
| 1PC1002-1DB4□-□□□□ | 2.4 | 7.5 | 3 | 16 | 0.0562 | 64 | 76 |
| 6-pole – 1000 rpm at 50 Hz, 1200 rpm at 60 Hz | | | | | | | |
| 1PC1002-1AC4□-□□□□ | 1.8 | 4.1 | 2 | 10 | 0.0065 | 59 | 71 |
| 1PC1002-1BC2□-□□□□ | 2.1 | 4.2 | 2.2 | 13 | 0.0092 | 55 | 67 |
| 1PC1002-1CC0□-□□□□ | 1.7 | 4.5 | 2.2 | 10 | 0.0167 | 63 | 75 |
| 1PC1002-1CC2□-□□□□ | 1.9 | 4.6 | 2.2 | 13 | 0.0212 | 63 | 75 |
| 1PC1002-1CC3□-□□□□ | 2.2 | 5 | 2.5 | 13 | 0.0274 | 63 | 75 |
| 1PC1002-1DC2□-□□□□ | 2.1 | 6 | 2.7 | 13 | 0.0563 | 67 | 79 |
| 1PC1002-1DC4□-□□□□ | 2.1 | 6.4 | 2.8 | 13 | 0.0780 | 67 | 79 |
| 8-pole – 750 rpm at 50 Hz, 900 rpm at 60 Hz | | | | | | | |
| 1PC1002-1AD4□-□□□□ | 1.8 | 3.3 | 2.2 | 10 | 0.0056 | 60 | 72 |
| 1PC1002-1AD5□-□□□□ | 1.8 | 3.4 | 2.2 | 10 | 0.0078 | 60 | 72 |
| 1PC1002-1BD2□-□□□□ | 1.7 | 3.3 | 1.9 | 10 | 0.0094 | 63 | 75 |
| 1PC1002-1CD0□-□□□□ | 1.6 | 4.2 | 2.3 | 10 | 0.0186 | 63 | 75 |
| 1PC1002-1CD2□-□□□□ | 1.7 | 4.2 | 2.3 | 10 | 0.0237 | 63 | 75 |
| 1PC1002-1DD2□-□□□□ | 1.7 | 4.9 | 2.3 | 10 | 0.0439 | 63 | 75 |
| 1PC1002-1DD3□-□□□□ | 1.5 | 5 | 2.3 | 10 | 0.0562 | 63 | 75 |
| 1PC1002-1DD4□-□□□□ | 1.8 | 5.4 | 2.5 | 10 | 0.0772 | 63 | 75 |

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Self-cooled motors without external fan and fan cover with improved efficiency

Selection and ordering data (continued)

Order No. supplements

| Motor type | Frame size | Positions 12 and 13: Voltages (voltage codes) | | | | | | | |
|--------------------|------------|--|---------------|-----------|-----------|---|---|------------------|------------------|
| | | Standard voltages | | | | Further voltages | | | |
| | | 50 Hz | | | | 50 Hz | | | |
| | | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 220 VΔ/380 VY | 380 VΔ/660 VY | 415 VY | 415 VΔ |
| | | 60 Hz | | | | Rated voltage range | | | |
| | | 460 VY | 460 VΔ | | | (210 ... 230 VΔ/ 360 ... 400 VY) ¹⁾ | (360 ... 400 VΔ/ 625 ... 695 VY) ¹⁾ | (395 ... 435 VY) | (395 ... 435 VΔ) |
| | | see "Selection and ordering data" for outputs at 60 Hz | | | | | | | |
| | | 22 | 34 | 27 | 40 | 21 | 33 | 23 | 35 |
| 1PC1002-1A...-□... | 100 L | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ |
| 1PC1002-1B...-□... | 112 M | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ |
| 1PC1002-1C...-□... | 132 S/M | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ |
| 1PC1002-1D...-□... | 160 M/L | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ |

- Without additional charge
✓ With additional charge

Order other voltages with voltage code **9** in position 12, code **0** in position 13 and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages", Page 1/54).

| Motor type | Frame size | Position 14: Type of construction (type letter) | | | | | | | | | | |
|-------------------|------------|---|------------------------|------------------------|------------------------|------------------------|---|------------------------------------|--------------------------|---|------------------------|----------|
| | | With flange | | | | | | With flange (acc. to DIN EN 50347) | | | | |
| | | IM B3 ²⁾³⁾ | IM B6 ³⁾ | IM B7 ³⁾ | IM B8 ³⁾ | IM V6 ³⁾ | IM V5 without protective cover ³⁾ | Flange size | IM B5 ³⁾⁴⁾ | IM V1 without protective cover ³⁾ | IM V3 ³⁾ | IM B35 |
| | | A | T | U | V | D | C | | F | G | H | J |
| | | Order No. supplement -Z with order code | | | | | | | | | | |
| 1PC1002-1A...-□.. | 100 L | □ | □ | □ | □ | □ | □ | FF 215 | ✓ | ✓ | ✓ | ✓ |
| 1PC1002-1B...-□.. | 112 M | □ | □ | □ | □ | □ | □ | FF 215 | ✓ | ✓ | ✓ | ✓ |
| 1PC1002-1C...-□.. | 132 S/M | □ | □ | □ | □ | □ | □ | FF 265 | ✓ | ✓ | ✓ | ✓ |
| 1PC1002-1D...-□.. | 160 M/L | □ | □ | □ | □ | □ | □ | FF 300 | ✓ | ✓ | ✓ | ✓ |

| Motor type | Frame size | Position 14: Type of construction (type letter) | | | | | | | | | |
|-------------------|------------|---|---------------------------|-------------------------|--|------------|---|---------------------------|-------------------------|--|------------|
| | | With standard flange (acc. to DIN EN 50347) | | | | | With standard flange (next larger standard flange acc. to DIN EN 50347) | | | | |
| | | Flange size | IM B14 ³⁾⁵⁾ | IM V19 ³⁾ | IM V18 without protective cover ³⁾ | IM B34 | Flange size | IM B14 ³⁾⁵⁾ | IM V19 ³⁾ | IM V18 without protective cover ³⁾ | IM B34 |
| | | | K | L | M | N | | K | L | M | N |
| | | Order No. supplement -Z with order code | | | | | | | | | |
| | | | - | - | - | - | | -Z | -Z | -Z | -Z |
| | | | P01 | P01 | P01 | P01 | | P01 | P01 | P01 | P01 |
| 1PC1002-1A...-□.. | 100 L | FT 130 | ✓ | ✓ | ✓ | ✓ | FT 165 | ✓ | ✓ | ✓ | ✓ |
| 1PC1002-1B...-□.. | 112 M | FT 130 | ✓ | ✓ | ✓ | ✓ | FT 165 | ✓ | ✓ | ✓ | ✓ |
| 1PC1002-1C...-□.. | 132 S/M | FT 165 | ✓ | ✓ | ✓ | ✓ | FT 215 | ✓ | ✓ | ✓ | ✓ |
| 1PC1002-1D...-□.. | 160 M/L | FT 215 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - |

- Standard version
✓ With additional charge

- A rated voltage range is also specified on the rating plate.
- The types of construction IM B6/7/8, IM V6 and IM V5 without protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard, the type of construction IM B3 is then stamped on the rating plate.
- The type of construction is stamped on the rating plate. When ordering with condensation drainage holes (order code **H03**), it is absolutely necessary to specify the type of construction for the exact position of the condensation drainage holes during manufacture.

- The types of construction IM V3 and IM V1 without protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard, the type of construction IM B5 is then stamped on the rating plate.
- The types of construction IM V19 and IM V18 without protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard, the type of construction IM B14 is then stamped on the rating plate.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Self-cooled motors without external fan and fan cover with improved efficiency

Selection and ordering data (continued)

| Motor type | Frame size | Position 15: Motor protection (motor protection letter) | | | | | |
|--------------------|------------|---|--|--|---|------------------------------|--|
| | | Without motor protection | Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ¹⁾ | Motor protection with PTC thermistors with 6 embedded temperature sensors for alarm and tripping ¹⁾ | Motor temperature detection with embedded temperature sensor KTY 84-130 ¹⁾ | NTC thermistors for tripping | Temperature detectors for tripping ¹⁾ |
| | Order code | A | B | C | F | Z Q2A | Z Q3A |
| 1PC1002-1A...-...□ | 100 L | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1PC1002-1B...-...□ | 112 M | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1PC1002-1C...-...□ | 132 S/M | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1PC1002-1D...-...□ | 160 M/L | □ | ✓ | ✓ | ✓ | ✓ | ✓ |

- Standard version
 ✓ With additional charge

| Motor type | Frame size | Position 16: Connection box (connection box code) | | | |
|--------------------|------------|---|-------------------------------------|-------------------------------------|-------------------------------------|
| | | Connection box top ²⁾ | Connection box on RHS ³⁾ | Connection box on LHS ³⁾ | Connection box bottom ³⁾ |
| | | 4 | 5 | 6 | 7 |
| 1PC1002-1A...-...□ | 100 L | □ | ✓ | ✓ | ✓ |
| 1PC1002-1B...-...□ | 112 M | □ | ✓ | ✓ | ✓ |
| 1PC1002-1C...-...□ | 132 S/M | □ | ✓ | ✓ | ✓ |
| 1PC1002-1D...-...□ | 160 M/L | □ | ✓ | ✓ | ✓ |

- Standard version
 ✓ With additional charge

¹⁾ Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended.
²⁾ With type of construction, cast feet as standard. Screwed-on feet are available with order code **H01**, see "Special versions".
³⁾ With type of construction, screwed-on feet as standard.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Self-cooled motors without external fan and fan cover with high efficiency

Selection and ordering data

| Rated output at | | Frame size | Operating values at rated output | | | | | | | Order No. | Price | Weight |
|--|--------------------------|------------|----------------------------------|--------------------------|-------------------------------------|------------------------------|--------------------------------|--------------------------------|--|----------------------------|---|--------|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class according to CEMEP | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{\text{rated}}$ % | I_{rated} A | For Order No. supplements for voltage, type of construction, motor protection and connection box, see from Page 1/52 | IM B3 type of construction | IM B3 type of construction approx. m kg | |
| Motor version: temperature class 155 (F), IP55 degree of protection, used acc. to temperature class 130 (B) | | | | | | | | | | | | |
| 2-pole – 3000 rpm at 50 Hz, 3600 rpm at 60 Hz | | | | | | | | | | | | |
| 1.4 | | 100 L | 2920 | 4.6 | | 87.5 | | 0.88 | 2.6 | 1PC1001-1AA4Q-0000 | 21 | |
| 1.6 | | 112 M | 2955 | 5.2 | | 82 | | 0.9 | 3.15 | 1PC1001-1BA2Q-0000 | 27 | |
| 3.1 | | 132 S | 2955 | 10 | | 91 | | 0.89 | 5.5 | 1PC1001-1CA0Q-0000 | 39 | |
| 4.3 | | 132 S | 2955 | 14 | | 91.5 | | 0.9 | 7.5 | 1PC1001-1CA1Q-0000 | 43 | |
| 6.3 | | 160 M | 2955 | 20 | | 94.5 | | 0.89 | 10.8 | 1PC1001-1DA2Q-0000 | 67 | |
| 6.5 | | 160 M | 2960 | 21 | | 91.5 | | 0.9 | 11.4 | 1PC1001-1DA3Q-0000 | 75 | |
| 9 | | 160 L | 2960 | 29 | | 93.5 | | 0.91 | 15.2 | 1PC1001-1DA4Q-0000 | 84 | |
| 4-pole – 1500 rpm at 50 Hz, 1800 rpm at 60 Hz | | | | | | | | | | | | |
| 1.1 | | 100 L | 1460 | 7.2 | | 86 | | 0.83 | 2.2 | 1PC1001-1AB4Q-0000 | 21 | |
| 1.5 | | 100 L | 1460 | 9.8 | | 86 | | 0.84 | 3 | 1PC1001-1AB5Q-0000 | 25 | |
| 2 | | 112 M | 1460 | 13 | | 88.5 | | 0.83 | 3.95 | 1PC1001-1BB2Q-0000 | 29 | |
| 2.6 | | 132 S | 1465 | 17 | | 89.5 | | 0.83 | 5.1 | 1PC1001-1CB0Q-0000 | 42 | |
| 4 | | 132 M | 1465 | 26 | | 89.5 | | 0.84 | 7.7 | 1PC1001-1CB2Q-0000 | 49 | |
| 6 | | 160 M | 1470 | 39 | | 91 | | 0.87 | 11 | 1PC1001-1DB2Q-0000 | 71 | |
| 6.2 | | 160 L | 1480 | 40 | | 91.5 | | 0.86 | 11.4 | 1PC1001-1DB4Q-0000 | 83 | |
| 6-pole – 1000 rpm at 50 Hz, 1200 rpm at 60 Hz | | | | | | | | | | | | |
| 0.85 | | 100 L | 960 | 8.5 | | 85 | | 0.75 | 1.92 | 1PC1001-1AC4Q-0000 | 25 | |
| 1.2 | | 112 M | 960 | 12 | | 83.5 | | 0.75 | 2.75 | 1PC1001-1BC2Q-0000 | 29 | |
| 1.5 | | 132 S | 970 | 15 | | 86.5 | | 0.77 | 3.25 | 1PC1001-1CC0Q-0000 | 38 | |
| 2.5 | | 132 M | 970 | 25 | | 87 | | 0.79 | 5.3 | 1PC1001-1CC2Q-0000 | 43 | |
| 2.7 | | 132 M | 975 | 26 | | 88 | | 0.77 | 5.8 | 1PC1001-1CC3Q-0000 | 52 | |
| 5 | | 160 M | 975 | 49 | | 89 | | 0.77 | 10.6 | 1PC1001-1DC2Q-0000 | 77 | |
| 6.5 | | 160 L | 975 | 64 | | 89.5 | | 0.8 | 13.2 | 1PC1001-1DC4Q-0000 | 93 | |
| 8-pole – 750 rpm at 50 Hz, 900 rpm at 60 Hz | | | | | | | | | | | | |
| 0.37 | | 100 L | 730 | 4.8 | | 72.5 | | 0.58 | 1.28 | 1PC1001-1AD4Q-0000 | 21 | |
| 0.55 | | 100 L | 720 | 7.3 | | 73 | | 0.62 | 1.76 | 1PC1001-1AD5Q-0000 | 25 | |
| 0.75 | | 112 M | 720 | 9.9 | | 77.5 | | 0.66 | 2.1 | 1PC1001-1BD2Q-0000 | 29 | |
| 1.1 | | 132 S | 730 | 14 | | 82.5 | | 0.65 | 2.95 | 1PC1001-1CD0Q-0000 | 41 | |
| 1.5 | | 132 M | 730 | 20 | | 84 | | 0.68 | 3.8 | 1PC1001-1CD2Q-0000 | 49 | |
| 2.4 | | 160 M | 730 | 31 | | 88.5 | | 0.7 | 5.6 | 1PC1001-1DD2Q-0000 | 69 | |
| 3.3 | | 160 M | 730 | 43 | | 88 | | 0.7 | 7.7 | 1PC1001-1DD3Q-0000 | 82 | |
| 4.6 | | 160 L | 730 | 60 | | 88 | | 0.7 | 10.8 | 1PC1001-1DD4Q-0000 | 94 | |

Order No. supplements, see from Page 1/52.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Self-cooled motors without external fan and fan cover with high efficiency

Selection and ordering data (continued)

| Order No. | Locked-rotor torque | Locked-rotor current | Breaddown torque | Torque class | Moment of inertia | Noise at rated output | |
|--|-----------------------------|------------------------------|------------------|--------------|-------------------------|---|-------------------------------|
| | with direct starting torque | as multiple of rated current | torque | | | Measuring-surface sound pressure level at 50 Hz | Sound pressure level at 50 Hz |
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | L_{pFA} dB(A) | L_{WA} dB(A) |
| Motor version: temperature class 155 (F), IP55 degree of protection, used acc. to temperature class 130 (B) | | | | | | | |
| 2-pole – 3000 rpm at 50 Hz, 3600 rpm at 60 Hz | | | | | | | |
| 1PC1001-1AA4Q-QQQQ | 2.1 | 8.3 | 3.6 | 13 | 0.0044 | 67 | 79 |
| 1PC1001-1BA2Q-QQQQ | 2.5 | 9.5 | 3.5 | 16 | 0.0092 | 69 | 81 |
| 1PC1001-1CA0Q-QQQQ | 1.9 | 7.1 | 2.9 | 13 | 0.0201 | 62 | 74 |
| 1PC1001-1CA1Q-QQQQ | 1.9 | 7.6 | 2.9 | 13 | 0.0235 | 62 | 74 |
| 1PC1001-1DA2Q-QQQQ | 1.8 | 7.1 | 3 | 10 | 0.0447 | 60 | 72 |
| 1PC1001-1DA3Q-QQQQ | 2.3 | 8.7 | 3.3 | 13 | 0.0528 | 60 | 72 |
| 1PC1001-1DA4Q-QQQQ | 2.4 | 8.7 | 3.2 | 16 | 0.0608 | 60 | 72 |
| 4-pole – 1500 rpm at 50 Hz, 1800 rpm at 60 Hz | | | | | | | |
| 1PC1001-1AB4Q-QQQQ | 2.1 | 7.6 | 3.3 | 13 | 0.0086 | 60 | 72 |
| 1PC1001-1AB5Q-QQQQ | 2.2 | 7.8 | 3.5 | 13 | 0.0109 | 60 | 72 |
| 1PC1001-1BB2Q-QQQQ | 2.3 | 7.4 | 3.1 | 13 | 0.0140 | 58 | 70 |
| 1PC1001-1CB0Q-QQQQ | 2.2 | 7.5 | 2.8 | 13 | 0.0270 | 64 | 76 |
| 1PC1001-1CB2Q-QQQQ | 2.1 | 7.3 | 2.9 | 13 | 0.0335 | 64 | 76 |
| 1PC1001-1DB2Q-QQQQ | 1.8 | 6 | 2.5 | 10 | 0.0649 | 64 | 76 |
| 1PC1001-1DB4Q-QQQQ | 2.6 | 8.6 | 3.5 | 16 | 0.0828 | 64 | 76 |
| 6-pole – 1000 rpm at 50 Hz, 1200 rpm at 60 Hz | | | | | | | |
| 1PC1001-1AC4Q-QQQQ | 1.7 | 5.5 | 2.6 | 10 | 0.0113 | 59 | 71 |
| 1PC1001-1BC2Q-QQQQ | 1.7 | 5.7 | 2.7 | 10 | 0.0139 | 55 | 67 |
| 1PC1001-1CC0Q-QQQQ | 1.4 | 5.5 | 2.4 | 7 | 0.0237 | 63 | 75 |
| 1PC1001-1CC2Q-QQQQ | 1.4 | 5.4 | 2.3 | 7 | 0.0292 | 63 | 75 |
| 1PC1001-1CC3Q-QQQQ | 1.9 | 6.8 | 3 | 13 | 0.0367 | 63 | 75 |
| 1PC1001-1DC2Q-QQQQ | 1.6 | 6 | 2.6 | 10 | 0.0754 | 67 | 79 |
| 1PC1001-1DC4Q-QQQQ | 1.6 | 6 | 2.6 | 10 | 0.0975 | 67 | 79 |
| 8-pole – 750 rpm at 50 Hz, 900 rpm at 60 Hz | | | | | | | |
| 1PC1001-1AD4Q-QQQQ | 1.5 | 4.5 | 2.7 | 10 | 0.0086 | 60 | 72 |
| 1PC1001-1AD5Q-QQQQ | 1.6 | 4.4 | 2.5 | 10 | 0.0109 | 60 | 72 |
| 1PC1001-1BD2Q-QQQQ | 1.3 | 4.4 | 2.4 | 7 | 0.0140 | 63 | 75 |
| 1PC1001-1CD0Q-QQQQ | 1.2 | 4.5 | 2.1 | 7 | 0.0270 | 63 | 75 |
| 1PC1001-1CD2Q-QQQQ | 1.2 | 4.7 | 2.3 | 7 | 0.0346 | 63 | 75 |
| 1PC1001-1DD2Q-QQQQ | 1.6 | 4.4 | 1.8 | 10 | 0.0649 | 63 | 75 |
| 1PC1001-1DD3Q-QQQQ | 1.6 | 4.6 | 1.8 | 10 | 0.0828 | 63 | 75 |
| 1PC1001-1DD4Q-QQQQ | 1.5 | 4.5 | 1.8 | 10 | 0.0982 | 63 | 75 |

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Self-cooled motors without external fan and fan cover with high efficiency

Selection and ordering data (continued)

Order No. supplements

| Motor type | Frame size | Positions 12 and 13: Voltages (voltage codes) | | | | | | | |
|---------------------|------------|--|---------------|-----------|-----------|---|---|--------------------------------|--------------------------------|
| | | Standard voltages | | | | Further voltages | | | |
| | | 50 Hz | | | | 50 Hz | | | |
| | | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 220 VΔ/380 VY | 380 VΔ/660 VY | 415 VY | 415 VΔ |
| | | 60 Hz | | | | Rated voltage range | | | |
| | | 460 VY | 460 VΔ | | | (210 ... 230 VΔ/ 360 ... 400 VY) ¹⁾ | (360 ... 400 VΔ/ 625 ... 695 VY) ¹⁾ | (395 ... 435 VY) ¹⁾ | (395 ... 435 VΔ) ¹⁾ |
| | | see "Selection and ordering data" for outputs at 60 Hz | | | | | | | |
| | | 22 | 34 | 27 | 40 | 21 | 33 | 23 | 35 |
| 1PC1001-1A...-□...- | 100 L | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ |
| 1PC1001-1B...-□...- | 112 M | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ |
| 1PC1001-1C...-□...- | 132 S/M | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ |
| 1PC1001-1D...-□...- | 160 M/L | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ |

- Without additional charge
✓ With additional charge

Order other voltages with voltage code **9** in position 12, code **0** in position 13 and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages", Page 1/54).

| Motor type | Frame size | Position 14: Type of construction (type letter) | | | | | | | | | | |
|---------------------|------------|---|---------------------|---------------------|---------------------|---------------------|--|------------------------------------|-----------------------|--|---------------------|----------|
| | | With flange | | | | | | With flange (acc. to DIN EN 50347) | | | | |
| | | IM B3 ²⁾³⁾ | IM B6 ³⁾ | IM B7 ³⁾ | IM B8 ³⁾ | IM V6 ³⁾ | IM V5 without protective cover ³⁾ | Flange size | IM B5 ³⁾⁴⁾ | IM V1 without protective cover ³⁾ | IM V3 ³⁾ | IM B35 |
| | | A | T | U | V | D | C | | F | G | H | J |
| | | Order No. supplement -Z with order code | | | | | | | | | | |
| 1PC1001-1A...-□...- | 100 L | □ | □ | □ | □ | □ | □ | FF 215 | ✓ | ✓ | ✓ | ✓ |
| 1PC1001-1B...-□...- | 112 M | □ | □ | □ | □ | □ | □ | FF 215 | ✓ | ✓ | ✓ | ✓ |
| 1PC1001-1C...-□...- | 132 S/M | □ | □ | □ | □ | □ | □ | FF 265 | ✓ | ✓ | ✓ | ✓ |
| 1PC1001-1D...-□...- | 160 M/L | □ | □ | □ | □ | □ | □ | FF 300 | ✓ | ✓ | ✓ | ✓ |

| Motor type | Frame size | Position 14: Type of construction (type letter) | | | | | | | | | |
|---------------------|------------|---|------------------------|----------------------|---|------------|---|------------------------|----------------------|---|------------|
| | | With standard flange (acc. to DIN EN 50347) | | | | | With standard flange (next larger standard flange acc. to DIN EN 50347) | | | | |
| | | Flange size | IM B14 ³⁾⁵⁾ | IM V19 ³⁾ | IM V18 without protective cover ³⁾ | IM B34 | Flange size | IM B14 ³⁾⁵⁾ | IM V19 ³⁾ | IM V18 without protective cover ³⁾ | IM B34 |
| | | | K | L | M | N | | K | L | M | N |
| | | Order No. supplement -Z with order code | | | | | | | | | |
| | | | - | - | - | - | | -Z | -Z | -Z | -Z |
| | | | P01 | P01 | P01 | P01 | | P01 | P01 | P01 | P01 |
| 1PC1001-1A...-□...- | 100 L | FT 130 | ✓ | ✓ | ✓ | ✓ | FT 165 | ✓ | ✓ | ✓ | ✓ |
| 1PC1001-1B...-□...- | 112 M | FT 130 | ✓ | ✓ | ✓ | ✓ | FT 165 | ✓ | ✓ | ✓ | ✓ |
| 1PC1001-1C...-□...- | 132 S/M | FT 165 | ✓ | ✓ | ✓ | ✓ | FT 215 | ✓ | ✓ | ✓ | ✓ |
| 1PC1001-1D...-□...- | 160 M/L | FT 215 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - |

- Standard version
✓ With additional charge

- A rated voltage range is also specified on the rating plate.
- The types of construction IM B6/7/8, IM V6 and IM V5 without protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard, the type of construction IM B3 is then stamped on the rating plate.
- The type of construction is stamped on the rating plate. When ordering with condensation drainage holes (order code **H03**), it is absolutely necessary to specify the type of construction for the exact position of the condensation drainage holes during manufacture.

- The types of construction IM V3 and IM V1 without protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard, the type of construction IM B5 is then stamped on the rating plate.
- The types of construction IM V19 and IM V18 without protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard, the type of construction IM B14 is then stamped on the rating plate.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Self-cooled motors without external fan and fan cover with high efficiency

Selection and ordering data (continued)

| Motor type | Frame size | Position 15: Motor protection (motor protection letter) | | | | | |
|--------------------|------------|---|--|--|---|------------------------------|--|
| | | Without motor protection | Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ¹⁾ | Motor protection with PTC thermistors with 6 embedded temperature sensors for alarm and tripping ¹⁾ | Motor temperature detection with embedded temperature sensor KTY 84-130 ¹⁾ | NTC thermistors for tripping | Temperature detectors for tripping ¹⁾ |
| | Order code | A | B | C | F | Z Q2A | Z Q3A |
| 1PC1001-1A...-...□ | 100 L | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1PC1001-1B...-...□ | 112 M | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1PC1001-1C...-...□ | 132 S/M | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1PC1001-1D...-...□ | 160 M/L | □ | ✓ | ✓ | ✓ | ✓ | ✓ |

- Standard version
 ✓ With additional charge

| Motor type | Frame size | Position 16: Connection box (connection box code) | | | |
|--------------------|------------|---|-------------------------------------|-------------------------------------|-------------------------------------|
| | | Connection box top ²⁾ | Connection box on RHS ³⁾ | Connection box on LHS ³⁾ | Connection box bottom ³⁾ |
| | | 4 | 5 | 6 | 7 |
| 1PC1001-1A...-...□ | 100 L | □ | ✓ | ✓ | ✓ |
| 1PC1001-1B...-...□ | 112 M | □ | ✓ | ✓ | ✓ |
| 1PC1001-1C...-...□ | 132 S/M | □ | ✓ | ✓ | ✓ |
| 1PC1001-1D...-...□ | 160 M/L | □ | ✓ | ✓ | ✓ |

- Standard version
 ✓ With additional charge

¹⁾ Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended.
²⁾ With type of construction, cast feet as standard. Screwed-on feet are available with order code **H01**, see "Special versions".
³⁾ With type of construction, screwed-on feet as standard.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Special versions

Selection and ordering data

Voltages

Additional order codes for other voltages or voltage codes
(without **-Z** supplement)

Not possible for General Line motors with shorter delivery time.

For some non-standard voltages at 50 or 60 Hz, order codes are specified. They are ordered by specifying the code digit **9** for voltage in the 12th position and **0** in the 13th position of the Order No. and the appropriate order code.

| Special versions | Voltage code 12th / 13th position of the Order No. | Additional identi- fication code with order code and plain text if required | Motor type frame size | | | | | | | | | | |
|--|--|---|-----------------------|----|----|----|----|-----|-----|-----------------------------|-----|---|---|
| | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | | |
| Self-ventilated energy-saving motors with improved efficiency Self-ventilated energy-saving motors with high efficiency Self-ventilated motors with increased output and improved efficiency Self-ventilated motors with increased output and high efficiency Forced-air cooled motors without external fan and fan cover with improved efficiency Forced-air cooled motors without external fan and fan cover with high efficiency Self-cooled motors without external fan and fan cover with improved efficiency Self-cooled motors without external fan and fan cover with high efficiency | | | | | | | | | | | | | |
| | | | | | | | | | | 1LE1/1PC1 (Aluminum) | | | |
| Voltage at 60 Hz | | | | | | | | | | | | | |
| 220 VΔ/380 VY; 50 Hz output | 9 | 0 | M2A | | | | | | | ✓ | ✓ | ✓ | ✓ |
| 220 VΔ/380 VY; 60 Hz output | 9 | 0 | M1A | | | | | | | ✓ | ✓ | ✓ | ✓ |
| 380 VΔ/660 VY; 50 Hz output | 9 | 0 | M2B | | | | | | | ✓ | ✓ | ✓ | ✓ |
| 380 VΔ/660 VY; 60 Hz output | 9 | 0 | M1B | | | | | | | ✓ | ✓ | ✓ | ✓ |
| 440 VY; 50 Hz output | 9 | 0 | M2C | | | | | | | ✓ | ✓ | ✓ | ✓ |
| 440 VY; 60 Hz output | 9 | 0 | M1C | | | | | | | ✓ | ✓ | ✓ | ✓ |
| 440 VΔ; 50 Hz output | 9 | 0 | M2D | | | | | | | ✓ | ✓ | ✓ | ✓ |
| 440 VΔ; 60 Hz output | 9 | 0 | M1D | | | | | | | ✓ | ✓ | ✓ | ✓ |
| 460 VY; 50 Hz output | 9 | 0 | M2E | | | | | | | ✓ | ✓ | ✓ | ✓ |
| 460 VY; 60 Hz output | 9 | 0 | M1E | | | | | | | ○ | ○ | ○ | ○ |
| 460 VΔ; 50 Hz output | 9 | 0 | M2F | | | | | | | ✓ | ✓ | ✓ | ✓ |
| 460 VΔ; 60 Hz output | 9 | 0 | M1F | | | | | | | ○ | ○ | ○ | ○ |
| 575 VY; 50 Hz output | 9 | 0 | M2G | | | | | | | ✓ | ✓ | ✓ | ✓ |
| 575 VY; 60 Hz output | 9 | 0 | M1G | | | | | | | ✓ | ✓ | ✓ | ✓ |
| 575 VΔ; 50 Hz output | 9 | 0 | M2H | | | | | | | ✓ | ✓ | ✓ | ✓ |
| 575 VΔ; 60 Hz output | 9 | 0 | M1H | | | | | | | ✓ | ✓ | ✓ | ✓ |
| Non-standard voltages and / or frequencies | | | | | | | | | | | | | |
| Non-standard winding for volt- ages between 200 V and 690 V (voltages outside this range are available on request) ¹⁾ | 9 | 0 | M1Y | | | | | | | ✓ | ✓ | ✓ | ✓ |

- Without additional charge
✓ With additional charge

¹⁾ Plain text must be specified in the order: voltage, frequency, circuit, required rated output in kW.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Special versions

Options

Options or order codes (supplement **-Z** is required)

Not possible for General Line motors with shorter delivery time.

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | |
|---|---|-----------------------|----|----|----|----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 |
| Self-ventilated energy-saving motors with improved efficiency | | | | | | | | | | |
| Self-ventilated energy-saving motors with high efficiency | | | | | | | | | | |
| Self-ventilated motors with increased output and improved efficiency | | | | | | | | | | |
| Self-ventilated motors with increased output and high efficiency | | | | | | | | | | |
| 1LE1 (Aluminum) | | | | | | | | | | |
| Motor connection and connection box | | | | | | | | | | |
| One cable gland, metal | R15 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from DE | R10 | | | | | | ○ | ○ | ○ | ○ |
| Rotation of the connection box through 90°, entry from NDE | R11 | | | | | | ○ | ○ | ○ | ○ |
| Rotation of the connection box through 180° | R12 | | | | | | ○ | ○ | ○ | ○ |
| Larger connection box | R50 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Reduction piece for M cable gland in accordance with British standard, both cable entries mounted | R30 | | | | | | ✓ | ✓ | ✓ | ✓ |
| External earthing | H04 | | | | | | ✓ | ✓ | ✓ | ✓ |
| 3 cables protruding, 0.5 m long ²⁾³⁾ | R20 | | | | | | ✓ | ✓ | ✓ | ✓ |
| 3 cables protruding, 1.5 m long ²⁾³⁾ | R21 | | | | | | ✓ | ✓ | ✓ | ✓ |
| 6 cables protruding, 0.5 m long ²⁾ | R22 | | | | | | ✓ | ✓ | ✓ | ✓ |
| 6 cables protruding, 1.5 m long ²⁾ | R23 | | | | | | ✓ | ✓ | ✓ | ✓ |
| 6 cables protruding, 3 m long ²⁾ | R24 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Connection box on NDE ⁴⁾ | H08 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Windings and insulation | | | | | | | | | | |
| Temperature class 155 (F), used acc. to 155 (F), with service factor (SF) | N01 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), with increased output | N02 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), with increased coolant temperature | N03 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Temperature class 180 (H) at rated power and max. CT 60 °C ⁵⁾ | N11 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Increased air humidity/temperature with 30 to 60 g water per m ³ of air | N20 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 % | N05 | | | | | | ✓ | ✓ | ✓ | ✓ |

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 |
| Self-ventilated energy-saving motors with improved efficiency Self-ventilated energy-saving motors with high efficiency Self-ventilated motors with increased output and improved efficiency Self-ventilated motors with increased output and high efficiency | | | | | | | | | | |
| 1LE1 (Aluminum) | | | | | | | | | | |
| Windings and insulation (continued) | | | | | | | | | | |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 % | N06 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 % | N07 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 % | N08 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Increased air humidity/temperature with 60 to 100 g water per m ³ of air | N21 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), other requirements | Y52 • and identification code | | | | | | ✓ | ✓ | ✓ | ✓ |
| Colors and paint finish | | | | | | | | | | |
| Special finish in RAL 7030 stone gray | | | | | | | □ | □ | □ | □ |
| Special finish in other standard RAL colors : RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005, Page 0/101 | Y54 • and special finish RAL.... | | | | | | ✓ | ✓ | ✓ | ✓ |
| Special finish in special RAL colors: for RAL colors, see "Special finish in special RAL colors", Page 0/101 | Y51 • and special finish RAL.... | | | | | | ✓ | ✓ | ✓ | ✓ |
| Special finish sea air resistant | S03 | | | | | | O. R. | O. R. | O. R. | O. R. |
| Unpainted (only cast iron parts primed) | S00 | | | | | | ○ | ○ | ○ | ○ |
| Unpainted, only primed | S01 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Modular technology – Basic versions ⁶⁾ | | | | | | | | | | |
| Mounting of separately driven fan | F70 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Mounting of brake ⁷⁾ | F01 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Mounting of 1XP8012-10 (HTL) rotary pulse encoder ⁸⁾ | G01 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Mounting of 1XP8012-20 (TTL) rotary pulse encoder ⁸⁾ | G02 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Modular technology – Additional versions | | | | | | | | | | |
| Brake supply voltage 24 V DC | F10 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Brake supply voltage 230 V AC, 50/60 Hz | F11 | | | | | | ○ | ○ | ○ | ○ |
| Brake supply voltage 400 V AC, 50/60 Hz | F12 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Mechanical manual brake release with lever (no locking) | F50 | | | | | | ✓ | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 1/59.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-----|-----|-----|------------------------|---|---|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | | |
| Self-ventilated energy-saving motors with improved efficiency Self-ventilated energy-saving motors with high efficiency Self-ventilated motors with increased output and improved efficiency Self-ventilated motors with increased output and high efficiency | | | | | | | | | | | | |
| | | | | | | | | | | 1LE1 (Aluminum) | | |
| Special technology ⁶⁾ | | | | | | | | | | | | |
| Mounting of LL 861 900 220 rotary pulse encoder ⁸⁾ | G04 | | | | | | | | ✓ | ✓ | ✓ | ✓ |
| Mounting of HOG 9 D 1024 I rotary pulse encoder ⁸⁾ | G05 | | | | | | | | ✓ | ✓ | ✓ | ✓ |
| Mounting of HOG 10 D 1024 I rotary pulse encoder ⁸⁾ | G06 | | | | | | | | ✓ | ✓ | ✓ | ✓ |
| Mechanical design and degrees of protection | | | | | | | | | | | | |
| Protective cover for types of construction ⁸⁾ | H00 | | | | | | | | ✓ | ✓ | ✓ | ✓ |
| Screwed-on feet (instead of cast) | H01 | | | | | | | | ✓ | ✓ | ✓ | ✓ |
| Radial seal on DE for flange-mounting motors with oil resistance to 0.1 bar ⁹⁾ | H23 | | | | | | | | ✓ | ✓ | ✓ | ✓ |
| Low-noise version for 2-pole motors with clockwise direction of rotation | F77 | | | | | | | | – | – | ✓ | ✓ |
| Low-noise version for 2-pole motors with counter-clockwise direction of rotation | F78 | | | | | | | | – | – | ✓ | ✓ |
| IP65 degree of protection ¹⁰⁾ | H20 | | | | | | | | ✓ | ✓ | ✓ | ✓ |
| IP56 degree of protection (non-heavy-sea) ¹¹⁾ | H22 | | | | | | | | ✓ | ✓ | ✓ | ✓ |
| Vibration-proof version | H02 | | | | | | | | ✓ | ✓ | ✓ | ✓ |
| Condensation drainage holes ¹²⁾ | H03 | | | | | | | | ✓ | ✓ | ✓ | ✓ |
| Non-rusting screws (externally) | H07 | | | | | | | | ✓ | ✓ | ✓ | ✓ |
| Prepared for mountings, only center hole ¹³⁾ | G40 | | | | | | | | ✓ | ✓ | ✓ | ✓ |
| Prepared for mountings with D12 shaft ¹³⁾ | G41 | | | | | | | | ✓ | ✓ | ✓ | ✓ |
| Prepared for mountings with D16 shaft ¹³⁾ | G42 | | | | | | | | ✓ | ✓ | ✓ | ✓ |
| Protective cover for encoder (loosely enclosed – only for mountings acc. to order codes G40, G41 and G42) | G43 | | | | | | | | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature and site altitude | | | | | | | | | | | | |
| Coolant temperature –40 °C to +40 °C ¹⁴⁾ | D03 | | | | | | | | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature –30 °C to +40 °C ¹⁴⁾ | D04 | | | | | | | | ✓ | ✓ | ✓ | ✓ |
| Designs in accordance with standards and specifications | | | | | | | | | | | | |
| Electrical according to NEMA MG1-12 ¹⁵⁾ | D30 | | | | | | | | ✓ | ✓ | ✓ | ✓ |
| Design according to UL with "Recognition Mark" ¹⁶⁾ | D31 | | | | | | | | ✓ | ✓ | ✓ | ✓ |
| Canadian regulations (CSA) ¹⁷⁾ | D40 | | | | | | | | ✓ | ✓ | ✓ | ✓ |
| PSE Mark Japan ¹⁸⁾ | D46 | | | | | | | | ✓ | ✓ | ✓ | – |

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 |
| Self-ventilated energy-saving motors with improved efficiency Self-ventilated energy-saving motors with high efficiency Self-ventilated motors with increased output and improved efficiency Self-ventilated motors with increased output and high efficiency | | | | | | | | | | |
| 1LE1 (Aluminum) | | | | | | | | | | |
| Bearings and lubrication | | | | | | | | | | |
| Measuring nipple for SPM shock pulse measurement for bearing inspection ¹⁹⁾ | Q01 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Bearing design for increased cantilever forces | L22 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Special bearing for DE and NDE, bearing size 63 | L25 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Regreasing device ¹⁹⁾ | L23 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Located bearing at DE | L20 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Located bearing at NDE | L21 | | | | | | ✓ | ✓ | ✓ | □ |
| Balance and vibration quantity | | | | | | | | | | |
| Vibration quantity A | | | | | | | □ | □ | □ | □ |
| Vibration quantity B | L00 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Half-key balancing (standard) | | | | | | | □ | □ | □ | □ |
| Full-key balancing | L02 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Balancing without key | L01 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Shaft and rotor | | | | | | | | | | |
| Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors | L08 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Second standard shaft extension | L05 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Shaft extension with standard dimensions, without featherkey way | L04 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Concentricity of shaft extension in accordance with DIN 42955 Tolerance R | L07 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Standard shaft made of non-rusting steel | L06 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Non-standard cylindrical shaft extension ²⁰⁾ | Y55 • and identification code | | | | | | ✓ | ✓ | ✓ | ✓ |
| Heating and ventilation | | | | | | | | | | |
| Fan cover for textile industry | F75 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Metal external fan ²¹⁾ | F76 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 230 V | Q02 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 115 V | Q03 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Sheet metal fan cover | F74 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Rating plate and extra rating plates | | | | | | | | | | |
| Second rating plate, loose | M10 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Nirosta rating plate | M11 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate or rating plate with deviating rating plate data | Y80 • and identification code | | | | | | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate with identification codes | Y82 • and identification code | | | | | | ✓ | ✓ | ✓ | ✓ |
| Additional information on rating plate and on package label (max. of 20 characters) | Y84 • and identification code | | | | | | ✓ | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 1/59.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-----|-----|------------------------|---------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 |
| Self-ventilated energy-saving motors with improved efficiency Self-ventilated energy-saving motors with high efficiency Self-ventilated motors with increased output and improved efficiency Self-ventilated motors with increased output and high efficiency | | | | | | | | | | |
| | | | | | | | | | 1LE1 (Aluminum) | |
| Packaging, safety notes, documentation and test certificates | | | | | | | | | | |
| Without safety and commissioning note. Customer's declaration of renouncement required. | B00 | | | | | | | | | ○ ○ ○ ○ |
| With one safety and start-up guide per box pallet | B01 | | | | | | | | | ○ ○ ○ ○ |
| Acceptance test certificate 3.1 in accordance with EN 10204 | B02 | | | | | | | | | ✓ ✓ ✓ ✓ |
| Printed operating instructions English/German enclosed | B04 | | | | | | | | | ✓ ✓ ✓ ✓ |
| Type test with heat run for horizontal motors, with acceptance | B83 | | | | | | | | | ✓ ✓ ✓ ✓ |
| Wire-lattice pallet | B99 | | | | | | | | | ○ ○ ○ ○ |
| Connected in star for dispatch | M01 | | | | | | | | | ✓ ✓ ✓ ✓ |
| Connected in delta for dispatch | M02 | | | | | | | | | ✓ ✓ ✓ ✓ |

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- R. Available on request
- ✓ With additional charge

- 1) Not possible in combination with order code **R15** "One cable gland, metal".
- 2) In combination with motor protection (position 15 of the Order No.) or with option anti-condensation heater request required.
- 3) Not possible in combination with voltage code **22** or **34**.
- 4) Not possible in combination with the following order codes: **N01, N02, N03, N05, N06, N07, N08, N11**.
Use according to temperature class 155 (F) possible only.
- 5) Cannot be used for motors in UL version (order code **D31**). The grease lifetime specified in catalog part 0 "Introduction" refers to CT 40 °C. When the coolant temperature rises by 10 K, the grease lifetime or relubrication interval is halved.
- 6) A second shaft extension is not possible. Please inquire for mounted brakes.
- 7) When quoting or ordering, it is necessary to provide the brake supply voltage for order codes **F10, F11** and **F12**.
- 8) All encoders are supplied with a protective cover as standard. The protective cover is not supplied with the combination rotary pulse encoder with separately driven fan, as, in this case, the rotary pulse encoder is installed under the fan cover.
- 9) Not possible for type of construction IM V3.
- 10) Not possible in combination with rotary pulse encoder HOG 9 D 1024 (order code **G05**) and/or brake 2LM8 (order code **F01**).
- 11) Not possible in combination with brake 2LM8 – order code **F01**.
- 12) Supplied with the condensation drainage holes sealed at the drive end (DE) and non-drive end (NDE) (IP55, IP56, IP65). If condensation drainage holes are required for motors with IM B6, IM B7 or IM B8 type of construction (feet located on side or top), it is necessary to order the motors in their respective type of construction and order code **H03**, so that the condensation drainage holes can be mounted in the correct positional arrangement.
- 13) Motors that are prepared for additional mountings (order codes **G40, G41, G42**) are supplied without protective cover as standard. If a protective cover is requested as cover or as mechanical protection for mounting provided by the customer, it can be ordered with order code **G43**.
Not possible in combination with order code **L00**, vibration quantity level B.
- 14) In connection with mountings, the respective technical data must be observed; request required.
- 15) 1LE1 motors in EFF1 version without additional charge (standard version).
- 16) Possible up to 600 V max. The rated voltage is indicated on the rating plate without voltage range.
- 17) The rated voltage is indicated on the rating plate without voltage range.
- 18) "Small power motors" with a rated output of up to 3 kW which are exported to Japan must bear the PSE marking.
- 19) Not possible when brake is mounted.
- 20) When motors are ordered that have a longer or shorter shaft extension than normal, the required position and length of the featherkey way must be specified in a sketch. It must be ensured that only featherkeys in accordance with DIN 6885, Form A are permitted to be used. The featherkey way is positioned centrally on the shaft extension. The length is defined by the manufacturer normatively. Not valid for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The featherkeys are supplied in every case. For order codes **Y55** and **L05**:
- Dimensions D and DA ≤ internal diameter of roller bearing (see dimension tables under "Dimensions")
- Dimensions E and EA ≤ 2 x length E (normal) of the shaft extension
For an explanation of the order codes, see catalog part 0 "Introduction".
- 21) For 1LE1 motors with metal external fan, converter-fed operation is permitted. The metal external fan is not possible in combination with the low-noise version – order code **F77** or **F78**.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Special versions

Options or order codes (supplement **-Z** is required)

Not possible for General Line motors with shorter delivery time.

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | |
|---|---|-----------------------|----|----|----|----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 |
| Forced-air cooled motors without external fan and fan cover with improved efficiency | | | | | | | | | | |
| Forced-air cooled motors without external fan and fan cover with high efficiency | | | | | | | | | | |
| Self-cooled motors without external fan and fan cover with improved efficiency | | | | | | | | | | |
| Self-cooled motors without external fan and fan cover with high efficiency | | | | | | | | | | |
| 1LE1/1PC1 (Aluminum) | | | | | | | | | | |
| Motor connection and connection box | | | | | | | | | | |
| One cable gland, metal | R15 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from DE | R10 | | | | | | ○ | ○ | ○ | ○ |
| Rotation of the connection box through 90°, entry from NDE | R11 | | | | | | ○ | ○ | ○ | ○ |
| Rotation of the connection box through 180° | R12 | | | | | | ○ | ○ | ○ | ○ |
| Larger connection box | R50 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Reduction piece for M cable gland in accordance with British standard, both cable entries mounted ¹⁾ | R30 | | | | | | ✓ | ✓ | ✓ | ✓ |
| External earthing | H04 | | | | | | ✓ | ✓ | ✓ | ✓ |
| 3 cables protruding, 0.5 m long ²⁾³⁾ | R20 | | | | | | ✓ | ✓ | ✓ | ✓ |
| 3 cables protruding, 1.5 m long ²⁾³⁾ | R21 | | | | | | ✓ | ✓ | ✓ | ✓ |
| 6 cables protruding, 0.5 m long ²⁾ | R22 | | | | | | ✓ | ✓ | ✓ | ✓ |
| 6 cables protruding, 1.5 m long ²⁾ | R23 | | | | | | ✓ | ✓ | ✓ | ✓ |
| 6 cables protruding, 3 m long ²⁾ | R24 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Connection box on NDE ⁴⁾ | H08 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Windings and insulation | | | | | | | | | | |
| Temperature class 155 (F), used acc. to 155 (F), with service factor (SF) | N01 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), with increased output | N02 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), with increased coolant temperature | N03 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Temperature class 180 (H) at rated power and max. CT 60 °C ⁵⁾ | N11 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Increased air humidity/temperature with 30 to 60 g water per m ³ of air | N20 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 % | N05 | | | | | | ✓ | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 1/63.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 |
| Forced-air cooled motors without external fan and fan cover with improved efficiency | | | | | | | | | | |
| Forced-air cooled motors without external fan and fan cover with high efficiency | | | | | | | | | | |
| Self-cooled motors without external fan and fan cover with improved efficiency | | | | | | | | | | |
| Self-cooled motors without external fan and fan cover with high efficiency | | | | | | | | | | |
| 1LE1/1PC1 (Aluminum) | | | | | | | | | | |
| Windings and insulation (continued) | | | | | | | | | | |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 % | N06 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 % | N07 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 % | N08 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Increased air humidity/temperature with 60 to 100 g water per m ³ of air | N21 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), other requirements | Y52 • and identification code | | | | | | ✓ | ✓ | ✓ | ✓ |
| Colors and paint finish | | | | | | | | | | |
| Special finish in RAL 7030 stone gray | | | | | | | □ | □ | □ | □ |
| Special finish in other standard RAL colors : RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005, Page 0/101 | Y54 • and special finish RAL.... | | | | | | ✓ | ✓ | ✓ | ✓ |
| Special finish in special-RAL colors: for RAL colors, see "Special finish in special RAL colors", Page 0/101 | Y51 • and special finish RAL.... | | | | | | ✓ | ✓ | ✓ | ✓ |
| Special finish sea air resistant | S03 | | | | | | O. R. | O. R. | O. R. | O. R. |
| Unpainted (only cast iron parts primed) | S00 | | | | | | ○ | ○ | ○ | ○ |
| Unpainted, only primed | S01 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Mechanical design and degree of protection | | | | | | | | | | |
| Screwed-on feet (instead of cast) | H01 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Radial seal on DE for flange-mounting motors with oil resistance to 0.1 bar ⁶⁾ | H23 | | | | | | ✓ | ✓ | ✓ | ✓ |
| IP65 degree of protection | H20 | | | | | | ✓ | ✓ | ✓ | ✓ |
| IP56 degree of protection (non-heavy-sea) | H22 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Vibration-proof version | H02 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Condensation drainage holes ⁷⁾ | H03 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Non-rusting screws (externally) | H07 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature and site altitude | | | | | | | | | | |
| Coolant temperature -40 °C to +40 °C | D03 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature -30 °C to +40 °C | D04 | | | | | | ✓ | ✓ | ✓ | ✓ |

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 |
| Forced-air cooled motors without external fan and fan cover with improved efficiency | | | | | | | | | | |
| Forced-air cooled motors without external fan and fan cover with high efficiency | | | | | | | | | | |
| Self-cooled motors without external fan and fan cover with improved efficiency | | | | | | | | | | |
| Self-cooled motors without external fan and fan cover with high efficiency | | | | | | | | | | |
| 1LE1/1PC1 (Aluminum) | | | | | | | | | | |
| Designs in accordance with standards and specifications | | | | | | | | | | |
| Electrical according to NEMA MG1-12 ⁸⁾ | D30 | | | | | | | | | |
| Design according to UL with "Recognition Mark" ⁹⁾ | D31 | | | | | | | | | |
| Canadian regulations (CSA) ¹⁰⁾ | D40 | | | | | | | | | |
| PSE Mark Japan ¹¹⁾ | D46 | | | | | | | | | - |
| Bearings and lubrication | | | | | | | | | | |
| Measuring nipple for SPM shock pulse measurement for bearing inspection | Q01 | | | | | | | | | |
| Bearing design for increased cantilever forces | L22 | | | | | | | | | |
| Special bearing for DE and NDE, bearing size 63 | L25 | | | | | | | | | |
| Regreasing device | L23 | | | | | | | | | |
| Located bearing at DE | L20 | | | | | | | | | |
| Located bearing at NDE | L21 | | | | | | | | | □ |
| Balance and vibration quantity | | | | | | | | | | |
| Vibration quantity A | | | | | | | | | | □ |
| Vibration quantity B | L00 | | | | | | | | | |
| Half-key balancing (standard) | | | | | | | | | | □ |
| Full-key balancing | L02 | | | | | | | | | |
| Balancing without key | L01 | | | | | | | | | |
| Shaft and rotor | | | | | | | | | | |
| Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors | L08 | | | | | | | | | |
| Shaft extension with standard dimensions, without featherkey way | L04 | | | | | | | | | |
| Concentricity of shaft extension in accordance with DIN 42955 Tolerance R | L07 | | | | | | | | | |
| Standard shaft made of non-rusting steel | L06 | | | | | | | | | |
| Non-standard cylindrical shaft extension ¹²⁾ | Y55 • and identification code | | | | | | | | | |
| Heating and ventilation | | | | | | | | | | |
| Anti-condensation heaters for 230 V | Q02 | | | | | | | | | |
| Anti-condensation heaters for 115 V | Q03 | | | | | | | | | |

For legend and footnotes, see Page 1/63.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | |
|---|---|-----------------------|----|----|----|----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 |
| Forced-air cooled motors without external fan and fan cover with improved efficiency | | | | | | | | | | |
| Forced-air cooled motors without external fan and fan cover with high efficiency | | | | | | | | | | |
| Self-cooled motors without external fan and fan cover with improved efficiency | | | | | | | | | | |
| Self-cooled motors without external fan and fan cover with high efficiency | | | | | | | | | | |
| 1LE1/1PC1 (Aluminum) | | | | | | | | | | |
| Rating plate and extra rating plates | | | | | | | | | | |
| Second rating plate, loose | M10 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Nirosta rating plate | M11 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate or rating plate with deviating rating plate data | Y80 • and identification code | | | | | | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate with identification codes | Y82 • and identification code | | | | | | ✓ | ✓ | ✓ | ✓ |
| Additional information on rating plate and on package label (max. of 20 characters) | Y84 • and identification code | | | | | | ✓ | ✓ | ✓ | ✓ |
| Packaging, safety notes, documentation and test certificates | | | | | | | | | | |
| Without safety and commissioning note. Customer's declaration of renouncement required. | B00 | | | | | | ○ | ○ | ○ | ○ |
| With one safety and start-up guide per box pallet | B01 | | | | | | ○ | ○ | ○ | ○ |
| Acceptance test certificate 3.1 in accordance with EN 10204 | B02 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Printed operating instructions English/German enclosed | B04 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for horizontal motors, with acceptance | B83 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Wire-lattice pallet | B99 | | | | | | ○ | ○ | ○ | ○ |
| Connected in star for dispatch | M01 | | | | | | ✓ | ✓ | ✓ | ✓ |
| Connected in delta for dispatch | M02 | | | | | | ✓ | ✓ | ✓ | ✓ |

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- R. Available on request
- ✓ With additional charge

- 1) Not possible in combination with order code **R15** "One cable gland, metal".
- 2) In combination with motor protection (position 15 of the Order No.) or with option anti-condensation heater request required.
- 3) Not possible in combination with voltage code **22** or **34**.
- 4) Not possible in combination with the following order codes: **N01, N02, N03, N05, N06, N07, N08, N11**. Use according to temperature class 155 (F) possible only.
- 5) Cannot be used for motors in UL version (order code **D31**). The grease lifetime specified in catalog part 0 "Introduction" refers to CT 40 °C. When the coolant temperature rises by 10 K, the grease lifetime or relubrication interval is halved.
- 6) Not possible for type of construction IM V3.
- 7) Supplied with the condensation drainage holes sealed at the drive end (DE) and non-drive end (NDE) (IP55, IP56, IP65). If condensation drainage holes are required for motors with IM B6, IM B7 or IM B8 type of construction (feet located on side or top), it is necessary to order the motors in their respective type of construction and order code **H03**, so that the condensation drainage holes can be mounted in the correct positional arrangement.
- 8) 1LE1 motors in EFF1 version without additional charge (standard version).
- 9) Possible up to 600 V max. The rated voltage is indicated on the rating plate without voltage range.
- 10) The rated voltage is indicated on the rating plate without voltage range.
- 11) "Small power motors" with a rated output of up to 3 kW which are exported to Japan must bear the PSE marking.
- 12) When motors are ordered that have a longer or shorter shaft extension than normal, the required position and length of the featherkey way must be specified in a sketch. It must be ensured that only featherkeys in accordance with DIN 6885, Form A are permitted to be used. The featherkey way is positioned centrally on the shaft extension. The length is defined by the manufacturer normatively. Not valid for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The featherkeys are supplied in every case. For order code **Y55**:
 - Dimensions D and DA ≤ internal diameter of roller bearing (see dimension tables under "Dimensions")
 - Dimensions E and EA ≤ 2 x length E (normal) of the shaft extension
 For an explanation of the order codes, see catalog part 0 "Introduction".

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Accessories

Overview

Couplings

The motor from Siemens is connected to the machine or gear unit through a coupling. Flender is an important coupling manufacturer with a wide range of products. For standard applications, Siemens recommends that elastic couplings of Flender types N-Eupex and Rupex or torsionally rigid couplings of types Arpex and Zapex are used. For special applications, Fludex and Elpex couplings are recommended.

Source of supply:
Siemens contact partner – ordering from Catalog Siemens MD 10.1 “FLENDER Standard Couplings”

or

A. Friedr. Flender AG
Kupplungswerk Mussum
Industriepark Bocholt
Schlavenhorst 100
46395 Bocholt, Germany
Tel. +49 (0) 2871-92 2185
Fax +49 (0) 2871-92 2579

<http://www.flender.com>
e-mail: couplings@flender.com

Mounting of encoder

In the case of mounting by the customer.

Baumer Hübner GmbH
Planufer 92b
10967 Berlin, Germany
Tel. +49 (0) 30-690 03-0
Fax +49 (0) 30-690 03-104

<http://www.baumerhuebner.com>
e-mail: info@baumerhuebner.com

Leine & Linde (Deutschland) GmbH
Bahnhofstraße 36
73430 Aalen, Germany
Tel. +49 (0) 7361-78 093-0
Fax +49 (0) 7361-78 093-11

<http://www.leinelinde.com>
e-mail: info@leinelinde.se

More information

Spare motors and repair parts

- Supply commitment for spare motors and repair parts following delivery of the motor
 - For up to 5 years, in the event of total motor failure, Siemens will supply a comparable motor with regard to the mounting dimensions and functions (the type series may vary).
 - Repair parts will be supplied for up to 5 years.
 - For up to 10 years, Siemens will provide information and will, if necessary, supply documentation for repair parts.
- When repair parts are ordered, the following details must be provided:
 - Designation and part number
 - Order No. and factory number of the motor
- For bearing types, see the „Orientation”, “Technical data”, Page 0/124.
- For standard components, a supply commitment does not apply.
- Support – Hotline
In Germany
Tel.: 01 80 – 5 05 04 48

You will find telephone numbers for other countries on our Internet site:

<http://www.siemens.com/automation/service&support>

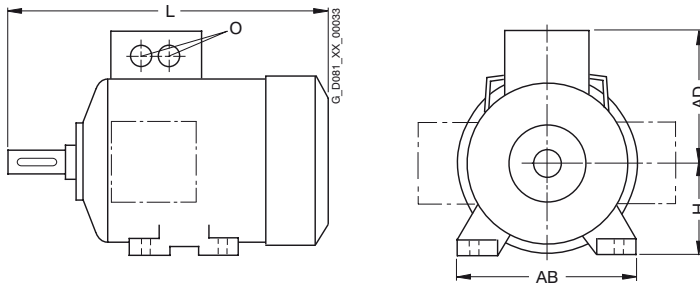
IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Dimensions

Overview

Overall dimensions



| Frame size | Type | Number of poles | Dimensions | | | | |
|------------|---|-----------------|---------------------|-----|-----|-----|---------------|
| | | | L | AD | H | AB | O |
| 100 L | General Line motors with shorter delivery time | | 395.5 ¹⁾ | 166 | 100 | 196 | 2 x M32 x 1.5 |
| | Self-ventilated energy-saving motors with improved/high efficiency | | 395.5 ¹⁾ | 166 | 100 | 196 | 2 x M32 x 1.5 |
| | Self-ventilated motors with increased output and improved/high efficiency | | 430.5 ¹⁾ | 166 | 100 | 196 | 2 x M32 x 1.5 |
| | Forced-air-cooled motors without external fan and fan cover with improved/high efficiency | | 321.5 | 166 | 100 | 196 | 2 x M32 x 1.5 |
| | Self-cooled motors without external fan and fan cover with improved/high efficiency | | 321.5 | 166 | 100 | 196 | 2 x M32 x 1.5 |
| 112 M | General Line motors with shorter delivery time | | 389 ¹⁾ | 177 | 112 | 226 | 2 x M32 x 1.5 |
| | Self-ventilated energy-saving motors with improved/high efficiency | | 389 ¹⁾ | 177 | 112 | 226 | 2 x M32 x 1.5 |
| | Self-ventilated motors with increased output and improved/high efficiency | | 414 ¹⁾ | 177 | 112 | 226 | 2 x M32 x 1.5 |
| | Forced-air-cooled motors without external fan and fan cover with improved/high efficiency | | 311 | 177 | 112 | 226 | 2 x M32 x 1.5 |
| | Self-cooled motors without external fan and fan cover with improved/high efficiency | | 311 | 177 | 112 | 226 | 2 x M32 x 1.5 |

| Frame size | Type | Number of poles | Dimensions | | | | |
|-----------------|---|-----------------|-------------------|-------|-----|-----|---------------|
| | | | L | AD | H | AB | O |
| 132 S/ 132 M | General Line motors with shorter delivery time | | 465 ¹⁾ | 202 | 132 | 256 | 2 x M32 x 1.5 |
| | Self-ventilated energy-saving motors with improved/high efficiency | | 465 ¹⁾ | 202 | 132 | 256 | 2 x M32 x 1.5 |
| | Self-ventilated motors with increased output and improved/high efficiency | | 515 ¹⁾ | 202 | 132 | 256 | 2 x M32 x 1.5 |
| | Forced-air-cooled motors without external fan and fan cover with improved/high efficiency | | 380.5 | 202 | 132 | 256 | 2 x M32 x 1.5 |
| | Self-cooled motors without external fan and fan cover with improved/high efficiency | | 380.5 | 202 | 132 | 256 | 2 x M32 x 1.5 |
| 160 M/ 160 L | General Line motors with shorter delivery time | | 604 ¹⁾ | 236.5 | 160 | 300 | 2 x M40 x 1.5 |
| | Self-ventilated energy-saving motors with improved/high efficiency | | 604 ¹⁾ | 236.5 | 160 | 300 | 2 x M40 x 1.5 |
| | Self-ventilated motors with increased output and improved/high efficiency | | 664 ¹⁾ | 236.5 | 160 | 300 | 2 x M40 x 1.5 |
| | Forced-air-cooled motors without external fan and fan cover with improved/high efficiency | | 510 | 236.5 | 160 | 300 | 2 x M40 x 1.5 |
| | Self-cooled motors without external fan and fan cover with improved/high efficiency | | 510 | 236.5 | 160 | 300 | 2 x M40 x 1.5 |

¹⁾ The length is specified as far as the tip of the fan cover.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Dimensions

Overview (continued)

Notes on the dimensions

■ Dimension drawings according to DIN EN 50347 and IEC 60072.

■ Fits

The shaft extensions specified in the dimension tables (DIN 748) and centering spigot diameters (DIN EN 50347) are machined with the following fits:

| Dimension designation | ISO fit DIN ISO 286-2 | |
|-----------------------|-----------------------|-----|
| D, DA | up to 30 | j6 |
| | over 30 to 50 | k6 |
| | over 50 | m6 |
| N | up to 250 | j6 |
| | over 250 | h6 |
| F, FA | | h9 |
| K | | H17 |
| S | Flange (FF) | H17 |

The drilled holes of couplings and belt pulleys should have an ISO fit of at least H7.

■ Dimension tolerances

For the following dimensions, the admissible deviations are given below:

| Dimension designation | Dimensions | Admissible deviation |
|-----------------------|------------|----------------------|
| H | up to 250 | -0.5 |
| | over 250 | -1.0 |
| E, EA | | -0.5 |

Keyways and feather keyways (dimensions GA, GC, F and FA) are made in compliance with DIN 6885 Part 1.

■ All dimensions are specified in mm.

More information

SD configurator

SD configurator (on DVD of the interactive catalog CA01 "Products for Automation and Drives")



The interactive Catalog CA 01 contains over 100 000 products with approximately 5 million potential drive system product variants.

The **SD configurator** has been developed to facilitate selection of the correct motor and/or converter from the wide spectrum of A&D SD products. It is integrated as a "selection aid" in this catalog.

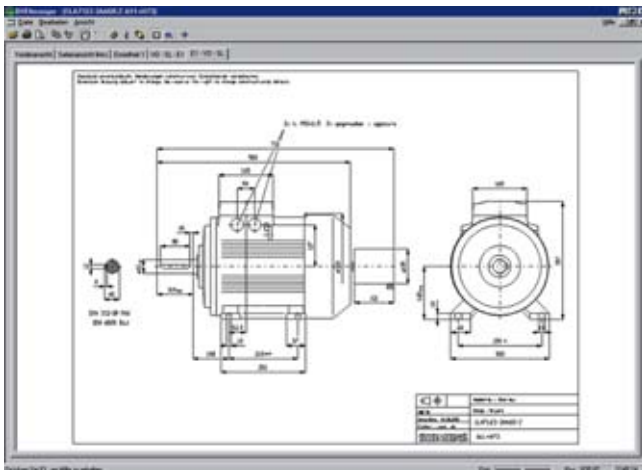
The **SD configurator** makes it easier to find the right drive solution. It supplies the correct order number as well as the corresponding documentation.

It can display operating instructions, factory test certificate, terminal box documentation, etc. and generates data sheets, dimension drawings and a start-up calculation for the relevant products.

Dimension sheet generator

(part of the SD configurator)

A dimension drawing can be created in the SD configurator for every configurable motor. A dimension drawing can be requested for every other motor.



It is also easy to assign a suitable converter to the selected motor.

The extensive help function not only explains the program functions, it also contains extensive technical background material.

SD configurator product range:

Low-voltage motors (energy-saving motors) with corresponding documentation and dimension drawings, low-voltage converters of the MICROMASTER 4 product series, SINAMICS G110 and SINAMICS G120 inverter chassis units as well as SINAMICS G120D distributed frequency inverters, and SIMATIC ET 200S FC and SIMATIC ET 200pro FC frequency converters for distributed I/O.

The interactive CA 01 catalog can be ordered from your local Siemens sales representative or on the Internet at <http://www.siemens.com/automation/CA01>

Links to tips, tricks and downloads for functional or content updates can be found at this address.

Order No. for CA 01, English International:
DVD: **E86060-D4001-A510-C7-7600**

Note: The SD configurator offline tool within CA 01 can be updated for the new 1LE1 motor series online over the Internet.

When a complete Order No. is entered with or without order codes, a dimension drawing can be called up under the "Documentation" tab.

These dimension drawings can be presented in different views and sections and printed.

The corresponding dimension sheets can be exported, saved and processed further in DXF format (interchange/import format for CAD systems) or as bitmap graphics.

The SD configurator has been integrated into the CA 01 electronic catalog as a selection aid (for further information, see above).

The interactive CA 01 catalog can be ordered from your local Siemens sales representative or on the Internet at <http://www.siemens.com/automation/CA01>.

At this address, you will also find links to Tips & Tricks and to downloads for function or content updates.

Order No. for CA 01, English International
DVD: **E86060-D4001-A510-C7-7600**

Note: The SD configurator offline tool within CA01 can be updated for the new 1LE1 motor series online over the Internet.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

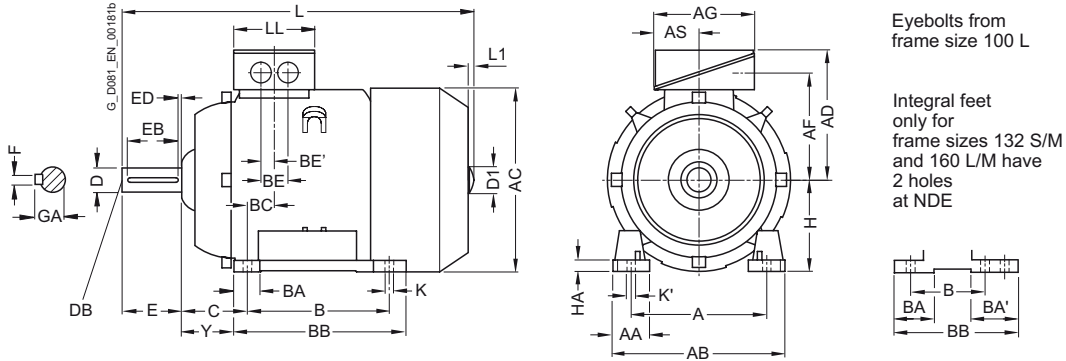
Dimensions

Dimensional drawings

Aluminum series 1LE1, frame sizes 100 to 160 – General Line motors with shorter delivery time

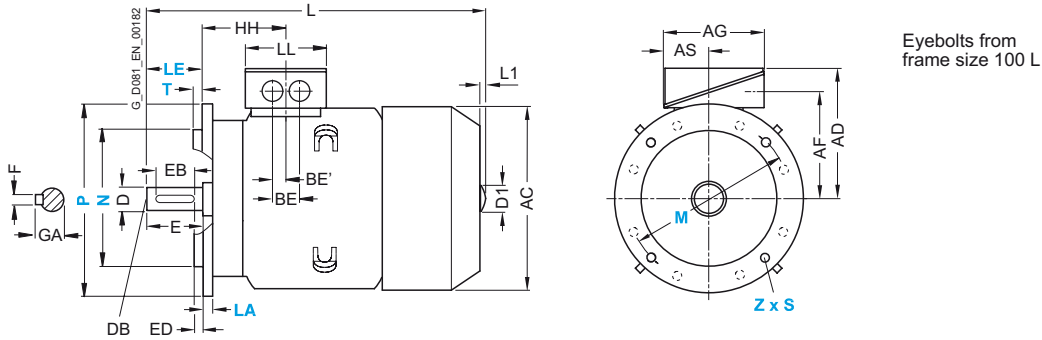
Type of construction IM B3

1



Types of construction IM B5 and IM V1

For flange dimensions, see Page 1/76 (Z = the number of retaining holes)



| For motor | | Dimension designation acc. to IEC | | | | | | | | | | | | | | | | | | |
|------------|-----------------|-----------------------------------|----|-----|-----|-------|-------|-----|------|-----|------|-----|-----|------|----|------|-----|-----|----|-----------------|
| Frame size | Number of poles | A | AA | AB | AC | AD | AF | AG | AS | B* | BA | BA' | BB | BC | BE | BE' | C | H | HA | Y ¹⁾ |
| 100 L | 2, 4, 6, 8 | 160 | 42 | 196 | 198 | 166 | 125.5 | 135 | 63.5 | 140 | 37.5 | - | 176 | 33.5 | 50 | 25 | 63 | 100 | 12 | 45 |
| 112 M | 2, 4, 6, 8 | 190 | 46 | 226 | 222 | 177 | 136.5 | 135 | 63.5 | 140 | 35.4 | - | 176 | 26 | 50 | 25 | 70 | 112 | 12 | 52 |
| 132 S | 2, 4, 6, 8 | 216 | 53 | 256 | 262 | 202 | 159.5 | 155 | 70.5 | 140 | 38 | 76 | 218 | 26.5 | 48 | 24 | 89 | 132 | 15 | 69 |
| 132 M | 2, 4, 6, 8 | 216 | 53 | 256 | 262 | 202 | 159.5 | 155 | 70.5 | 178 | 38 | 76 | 218 | 26.5 | 48 | 24 | 89 | 132 | 15 | 69 |
| 160 M | 2, 4, 6, 8 | 254 | 60 | 300 | 314 | 236.5 | 190 | 175 | 77.5 | 210 | 44 | 89 | 300 | 47 | 57 | 28.5 | 108 | 160 | 18 | 85 |
| 160 L | 2, 4, 6, 8 | 254 | 60 | 300 | 314 | 236.5 | 190 | 175 | 77.5 | 254 | 44 | 89 | 300 | 47 | 57 | 28.5 | 108 | 160 | 18 | 85 |

* This dimension is assigned in DIN EN 50347 to the frame size listed.
 1) Additional information: not a standard dimension acc. to DIN 50347.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

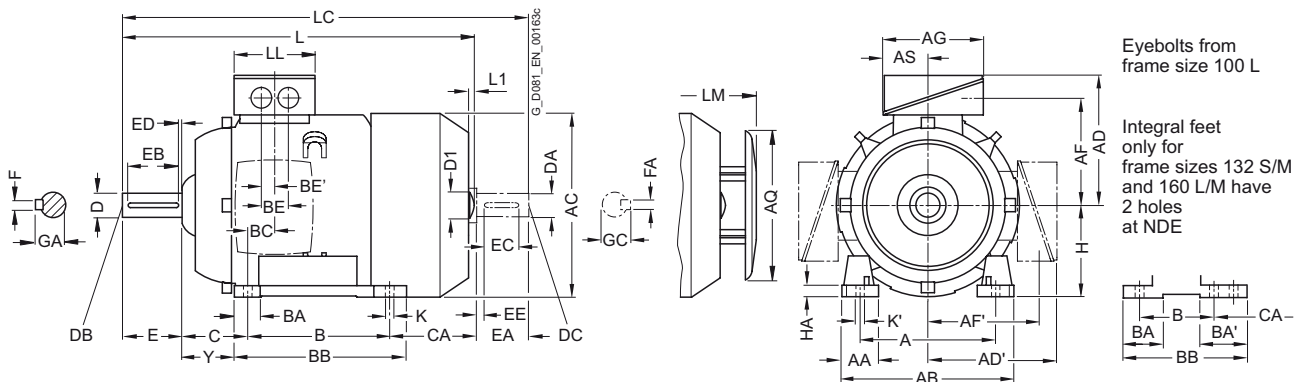
Dimensions

Dimensional drawings (continued)

Aluminum series 1LE1, frame sizes 100 to 160 – self-ventilated motors with improved/high efficiency

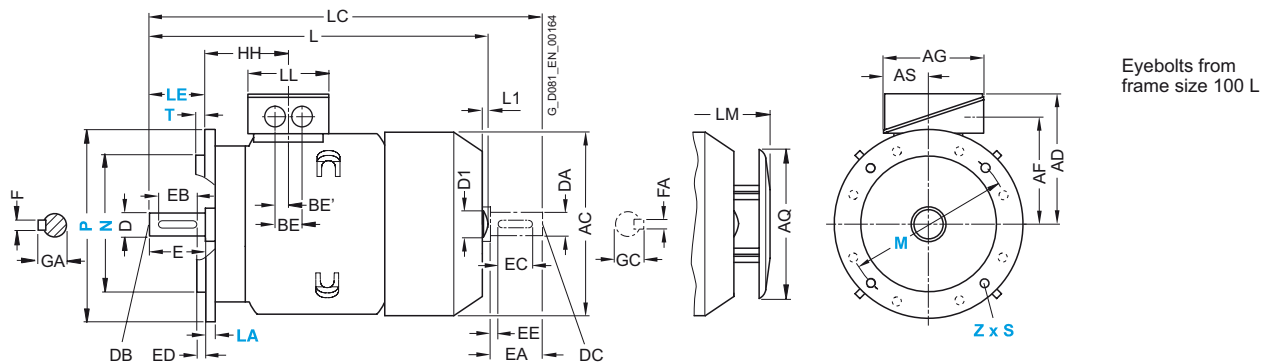
Type of construction IM B3

1



Types of construction IM B5 and IM V1

For flange dimensions, see Page 1/76 (Z = the number of retaining holes)



| For motor | Frame size | Number of poles | Dimension designation acc. to IEC | | | | | | | | | | | | | | | | | | | | | | |
|-----------|------------|-----------------|-----------------------------------|----|-----|-----|-------|-------|-------|-------|-----|-----|------|-----|------|------------------|-------------------|------|----|------|-----|---------------------|-----|----|-----------------|
| | | | A | AA | AB | AC | AD | AD' | AF | AF' | AG | AQ | AS | B* | BA | BA' | BB | BC | BE | BE' | C | CA* | H | HA | Y ¹⁾ |
| 100 L | 2, 4, 6, 8 | | 160 | 42 | 196 | 198 | 166 | 166 | 125.5 | 125.5 | 135 | 195 | 63.5 | 140 | 37.5 | - | 176 | 33.5 | 50 | 25 | 63 | 141 | 100 | 12 | 45 |
| 112 M | 2, 4, 6, 8 | | 190 | 46 | 226 | 222 | 177 | 177 | 136.5 | 136.5 | 135 | 195 | 63.5 | 140 | 35.4 | - | 176 | 26 | 50 | 25 | 70 | 129.7 | 112 | 12 | 52 |
| 132 S | 2, 4, 6, 8 | | 216 | 53 | 256 | 262 | 202 | 202 | 159.5 | 159.5 | 155 | 260 | 70.5 | 140 | 38 | 76 ²⁾ | 218 ³⁾ | 26.5 | 48 | 24 | 89 | 128.5 ⁴⁾ | 132 | 15 | 69 |
| 132 M | 2, 4, 6, 8 | | 216 | 53 | 256 | 262 | 202 | 202 | 159.5 | 159.5 | 155 | 260 | 70.5 | 178 | 38 | 76 | 218 | 26.5 | 48 | 24 | 89 | 128.5 ⁴⁾ | 132 | 15 | 69 |
| 160 M | 2, 4, 6, 8 | | 254 | 60 | 300 | 314 | 236.5 | 236.5 | 190 | 190 | 175 | 260 | 77.5 | 210 | 44 | 89 ⁵⁾ | 300 ⁶⁾ | 47 | 57 | 28.5 | 108 | 148 ⁷⁾ | 160 | 18 | 85 |
| 160 L | 2, 4, 6, 8 | | 254 | 60 | 300 | 314 | 236.5 | 236.5 | 190 | 190 | 175 | 260 | 77.5 | 254 | 44 | 89 | 300 | 47 | 57 | 28.5 | 108 | 148 ⁷⁾ | 160 | 18 | 85 |

* This dimension is assigned in DIN EN 50347 to the frame size listed.
 1) Additional information: not a standard dimension acc. to DIN 50347.
 2) With screwed-on feet, dimension BA' is 38 mm.
 3) With screwed-on feet, dimension BB is 180 mm.

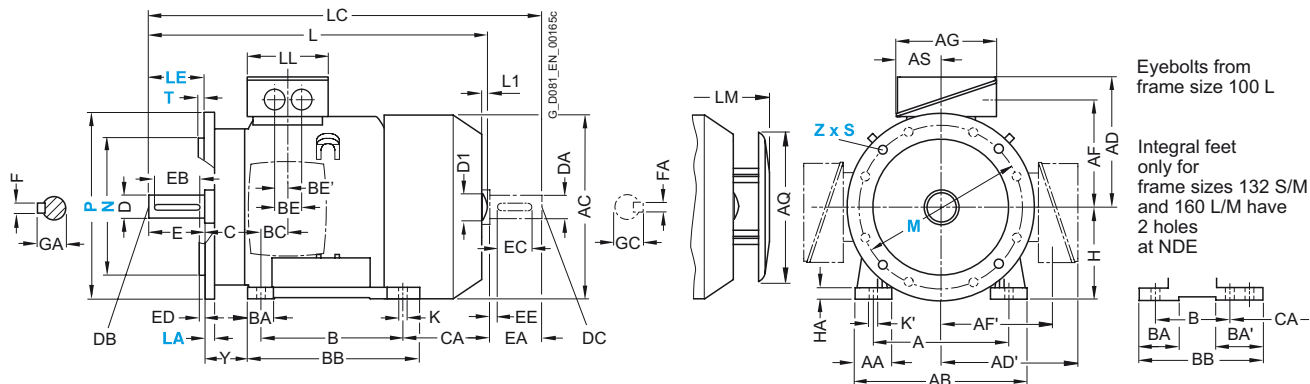
4) With screwed-on feet, dimension CA is 166.5 mm.
 5) With screwed-on feet, dimension BA' is 44 mm.
 6) With screwed-on feet, dimension BB is 256 mm.
 7) With screwed-on feet, dimension CA is 192 mm.

Dimensional drawings (continued)

Aluminum series 1LE1, frame sizes 100 to 160 – self-ventilated motors with improved/high efficiency

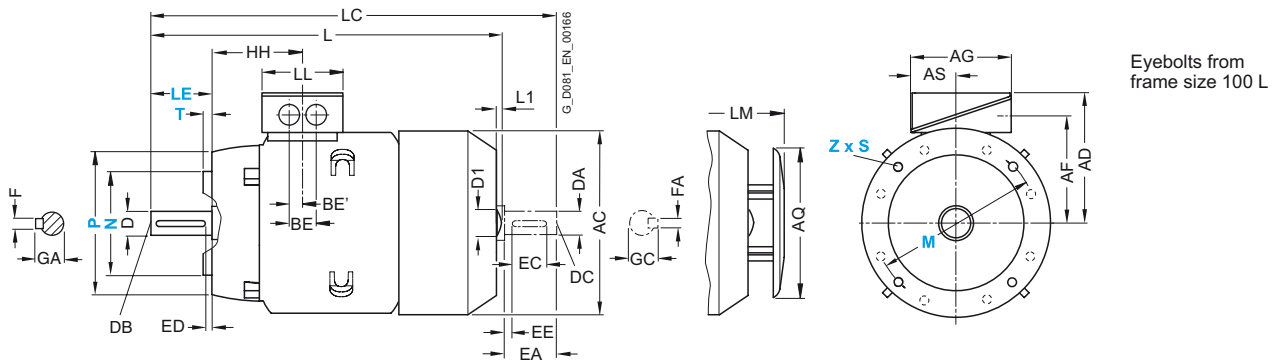
Type of construction IM B35

For flange dimensions, see Page 1/76 (Z = the number of retaining holes)



Type of construction IM B14

For flange dimensions, see Page 1/76 (Z = the number of retaining holes)



| For motor Frame size | Number of poles | Dimension designation acc. to IEC | | | | | | | | | DE shaft extension | | | | | NDE shaft extension | | | | | | | | |
|-------------------------|-----------------|-----------------------------------|----|----|-----------------|-----|----|-------|-----|-------|--------------------|-----|-----|----|----|---------------------|----|----|-----|-----|----|----|----|----|
| | | HH | K | K' | L ¹⁾ | L1 | D1 | LC | LL | LM | D | DB | E | EB | ED | F | GA | DA | DC | EA | EC | EE | FA | GC |
| 100 L | 2, 4, 6, 8 | 96.5 | 12 | 16 | 395.5 | 7 | 32 | 454 | 112 | 428.5 | 28 | M10 | 60 | 50 | 5 | 8 | 31 | 24 | M8 | 50 | 40 | 5 | 8 | 27 |
| 112 M | 2, 4, 6, 8 | 96 | 12 | 16 | 389 | 7 | 32 | 450 | 112 | 422 | 28 | M10 | 60 | 50 | 5 | 8 | 31 | 24 | M8 | 50 | 40 | 5 | 8 | 27 |
| 132 S | 2, 4, 6, 8 | 115.5 | 12 | 16 | 465 | 8.5 | 39 | 535.5 | 130 | 500.5 | 38 | M12 | 80 | 70 | 5 | 10 | 41 | 28 | M10 | 60 | 50 | 5 | 8 | 31 |
| 132 M | 2, 4, 6, 8 | 115.5 | 12 | 16 | 465 | 8.5 | 39 | 535.5 | 130 | 500.5 | 38 | M12 | 80 | 70 | 5 | 10 | 41 | 28 | M10 | 60 | 50 | 5 | 8 | 31 |
| 160 M | 2, 4, 6, 8 | 155 | 15 | 19 | 604 | 10 | 45 | 730 | 145 | 638 | 42 | M16 | 110 | 90 | 10 | 12 | 45 | 42 | M16 | 110 | 90 | 10 | 12 | 45 |
| 160 L | 2, 4, 6, 8 | 155 | 15 | 19 | 604 | 10 | 45 | 730 | 145 | 638 | 42 | M16 | 110 | 90 | 10 | 12 | 45 | 42 | M16 | 110 | 90 | 10 | 12 | 45 |

¹⁾ The length is specified as far as the tip of the fan cover.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

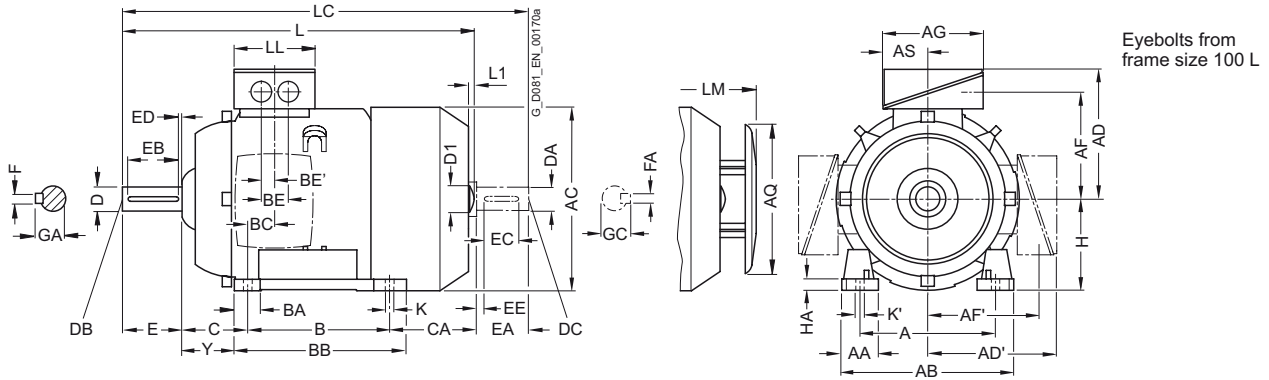
Dimensions

Dimensional drawings (continued)

Aluminum series 1LE1, frame sizes 100 to 160 – self-ventilated motors with increased output and improved/high efficiency

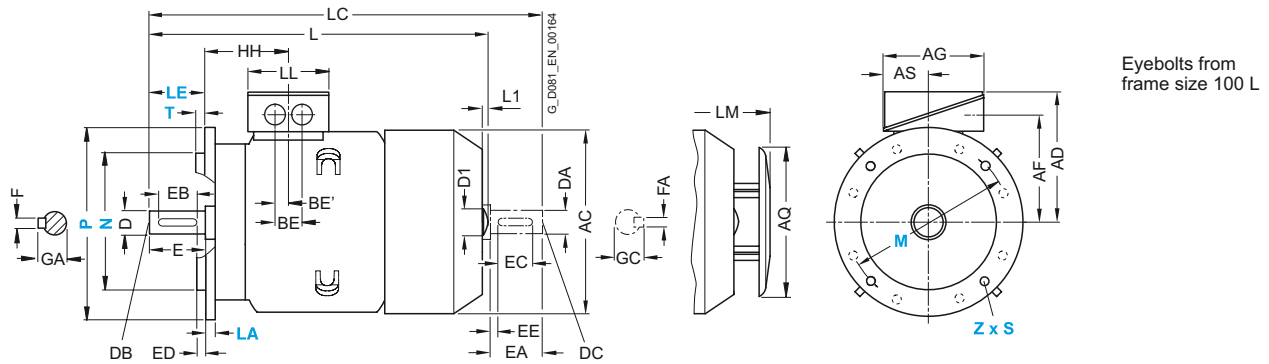
Type of construction IM B3

1



Type of construction IM B5 and IM V1

For flange dimensions, see Page 1/76 (Z = the number of retaining holes)



| For motor | Frame size | Number of poles | Dimension designation acc. to IEC | | | | | | | | | | | | | | | | | | | | | | |
|-----------|------------|-----------------|-----------------------------------|----|-----|-----|-------|-------|-------|-------|-----|-----|------|-----|------|-----|-----|------|----|------|-----|-------|-----|----|-----------------|
| | | | A | AA | AB | AC | AD | AD' | AF | AF' | AG | AQ | AS | B* | BA | BA' | BB | BC | BE | BE' | C | CA* | H | HA | Y ¹⁾ |
| 100 L | 2, 4, 6, 8 | | 160 | 42 | 196 | 198 | 166 | 166 | 125.5 | 125.5 | 135 | 195 | 63.5 | 140 | 37.5 | - | 176 | 33.5 | 50 | 25 | 63 | 176 | 100 | 12 | 45 |
| 112 M | 2, 4, 6, 8 | | 190 | 46 | 226 | 222 | 177 | 177 | 136.5 | 136.5 | 135 | 195 | 63.5 | 140 | 35.4 | - | 176 | 26 | 50 | 25 | 70 | 155 | 112 | 12 | 52 |
| 132 M | 2, 4, 6, 8 | | 216 | 53 | 256 | 262 | 202 | 202 | 159.5 | 159.5 | 155 | 260 | 70.5 | 178 | 38 | - | 218 | 26.5 | 48 | 24 | 89 | 178.5 | 132 | 15 | 69 |
| 160 L | 2, 4, 6, 8 | | 254 | 60 | 300 | 314 | 236.5 | 236.5 | 190 | 190 | 175 | 260 | 77.5 | 254 | 44 | - | 300 | 47 | 57 | 28.5 | 108 | 208 | 160 | 18 | 85 |

* This dimension is assigned in DIN EN 50347 to the frame size listed.
 1) Additional information: not a standard dimension acc. to DIN 50347.

IEC Squirrel-Cage Motors New Generation 1LE1/1PC1

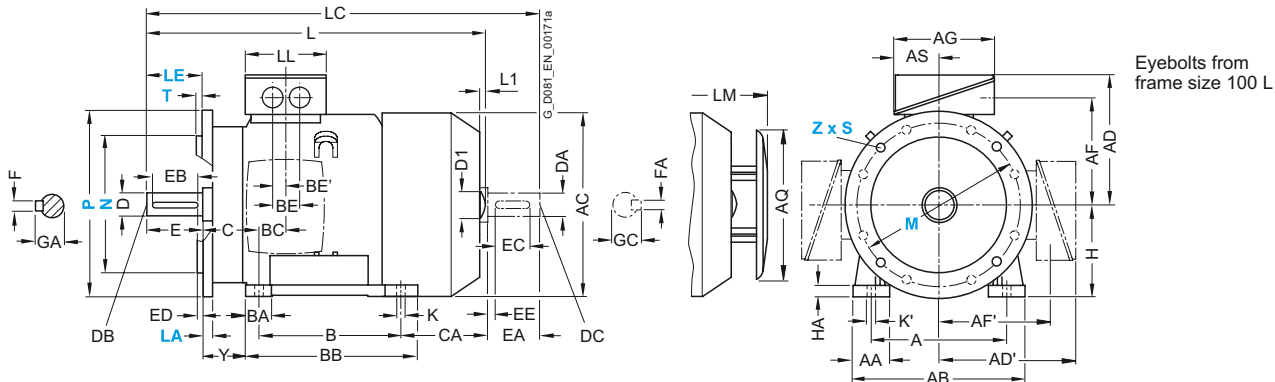
Dimensions

Dimensional drawings (continued)

Aluminum series 1LE1, frame sizes 100 to 160 – self-ventilated motors with increased output and improved/high efficiency

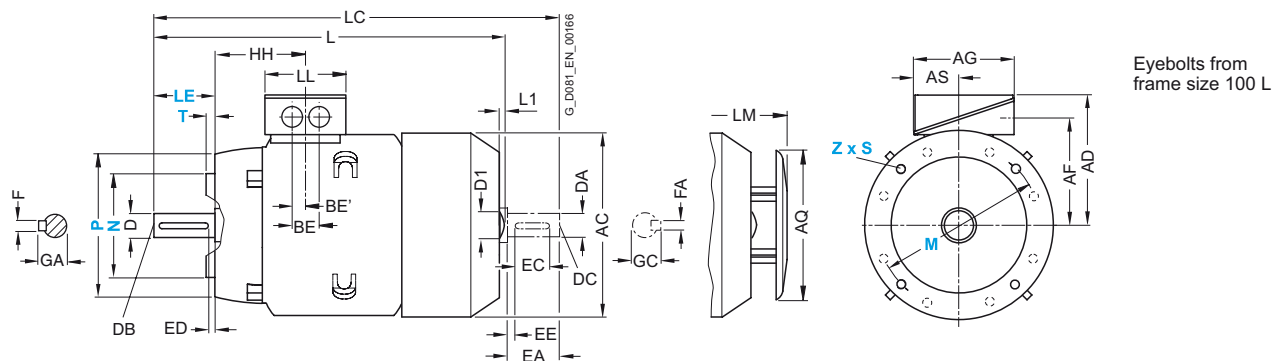
Type of construction IM B35

For flange dimensions, see Page 1/76 (Z = the number of retaining holes)



Type of construction IM B14

For flange dimensions, see Page 1/76 (Z = the number of retaining holes)



| For motor Frame size | Number of poles | Dimension designation acc. to IEC | | | | | | | DE shaft extension | | | | | NDE shaft extension | | | | | | | | | | |
|-------------------------|-----------------|-----------------------------------|----|----|-----------------|-----|----|-------|--------------------|-------|----|-----|-----|---------------------|----|----|----|----|-----|-----|----|----|----|----|
| | | HH | K | K' | L ¹⁾ | L1 | D1 | LC | LL | LM | D | DB | E | EB | ED | F | GA | DA | DC | EA | EC | EE | FA | GC |
| 100 L | 2, 4, 6, 8 | 96.5 | 12 | 16 | 430.5 | 7 | 32 | 489 | 112 | 463.5 | 28 | M10 | 60 | 50 | 5 | 8 | 31 | 24 | M8 | 50 | 40 | 5 | 8 | 27 |
| 112 M | 2, 4, 6, 8 | 96 | 12 | 16 | 414 | 7 | 32 | 475 | 112 | 447 | 28 | M10 | 60 | 50 | 5 | 8 | 31 | 24 | M8 | 50 | 40 | 5 | 8 | 27 |
| 132 M | 2, 4, 6, 8 | 115.5 | 12 | 16 | 515 | 8.5 | 39 | 585.5 | 130 | 550.5 | 38 | M12 | 80 | 70 | 5 | 10 | 41 | 28 | M10 | 60 | 50 | 5 | 8 | 31 |
| 160 L | 2, 4, 6, 8 | 155 | 15 | 19 | 664 | 10 | 45 | 790 | 145 | 698 | 42 | M16 | 110 | 90 | 10 | 12 | 45 | 42 | M16 | 110 | 90 | 10 | 12 | 45 |

¹⁾ The length is specified as far as the tip of the fan cover.

IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

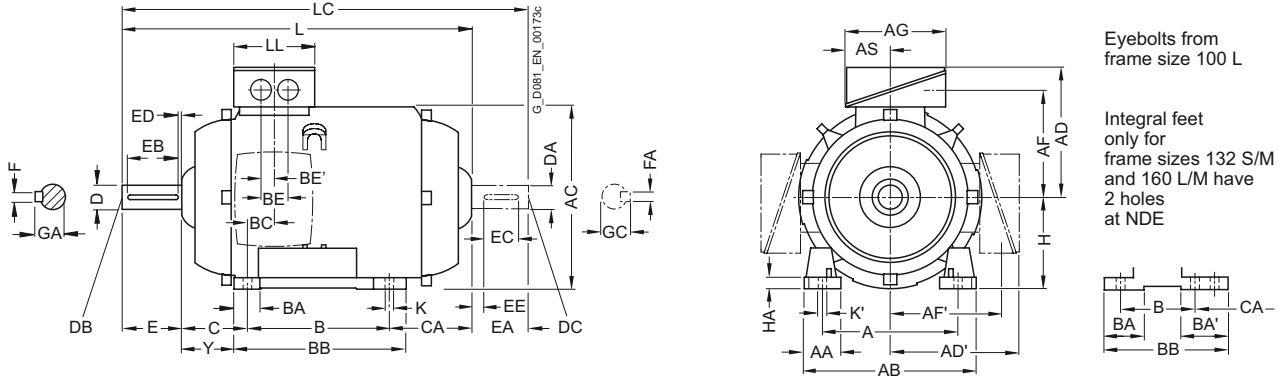
Dimensions

Dimensional drawings (continued)

Aluminum series 1LE1, frame sizes 100 to 160 – forced-air cooled motors with improved/high efficiency
 Aluminum series 1PC1, frame sizes 100 to 160 – self-cooled motors with improved/high efficiency

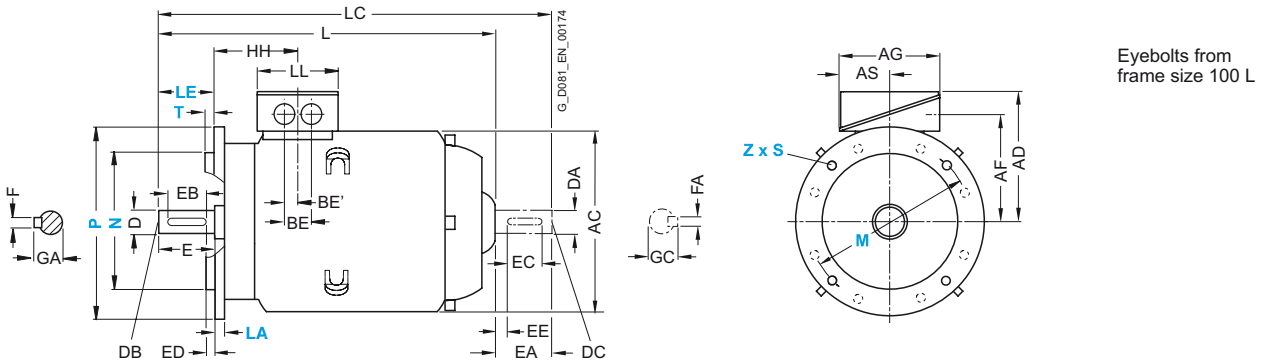
Type of construction IM B3

1



Type of construction IM B5 and IM V1

For flange dimensions, see Page 1/76 (Z = the number of retaining holes)



| For motor | Frame size | Number of poles | Dimension designation acc. to IEC | | | | | | | | | | | | | | | | | | | | | |
|-----------|------------|-----------------|-----------------------------------|----|-----|-----|-------|-------|-------|-------|-----|------|-----|------|------------------|-------------------|------|----|------|-----|-----|-----|----|-----------------|
| | | | A | AA | AB | AC | AD | AD' | AF | AF' | AG | AS | B* | BA | BA' | BB | BC | BE | BE' | C | CA* | H | HA | Y ¹⁾ |
| 100 L | 2, 4, 6, 8 | | 160 | 42 | 196 | 197 | 166 | 166 | 125.5 | 125.5 | 135 | 63.5 | 140 | 37.5 | - | 176 | 33.5 | 50 | 25 | 63 | - | 100 | 12 | 45 |
| 112 M | 2, 4, 6, 8 | | 190 | 46 | 226 | 221 | 177 | 177 | 136.5 | 136.5 | 135 | 63.5 | 140 | 35.4 | - | 176 | 26 | 50 | 25 | 70 | - | 112 | 12 | 52 |
| 132 S | 2, 4, 6, 8 | | 216 | 53 | 256 | 261 | 202 | 202 | 159.5 | 159.5 | 155 | 70.5 | 140 | 38 | 76 ²⁾ | 218 ³⁾ | 26.5 | 48 | 24 | 89 | - | 132 | 15 | 69 |
| 132 M | 2, 4, 6, 8 | | 216 | 53 | 256 | 261 | 202 | 202 | 159.5 | 159.5 | 155 | 70.5 | 178 | 38 | 76 | 218 | 26.5 | 48 | 24 | 89 | - | 132 | 15 | 69 |
| 160 M | 2, 4, 6, 8 | | 254 | 60 | 300 | 314 | 236.5 | 236.5 | 190 | 190 | 175 | 77.5 | 210 | 44 | 89 ⁴⁾ | 300 ⁵⁾ | 47 | 57 | 28.5 | 108 | - | 160 | 18 | 85 |
| 160 L | 2, 4, 6, 8 | | 254 | 60 | 300 | 314 | 236.5 | 236.5 | 190 | 190 | 175 | 77.5 | 254 | 44 | 89 | 300 | 47 | 57 | 28.5 | 108 | - | 160 | 18 | 85 |

* This dimension is assigned in DIN EN 50347 to the frame size listed.
 1) Additional information: not a standard dimension acc. to DIN 50347.
 2) With screwed-on feet, dimension BA' is 38 mm.

3) With screwed-on feet, dimension BB is 180 mm.
 4) With screwed-on feet, dimension BA' is 44 mm.
 5) With screwed-on feet, dimension BB is 256 mm.

IEC Squirrel-Cage Motors New Generation 1LE1/1PC1

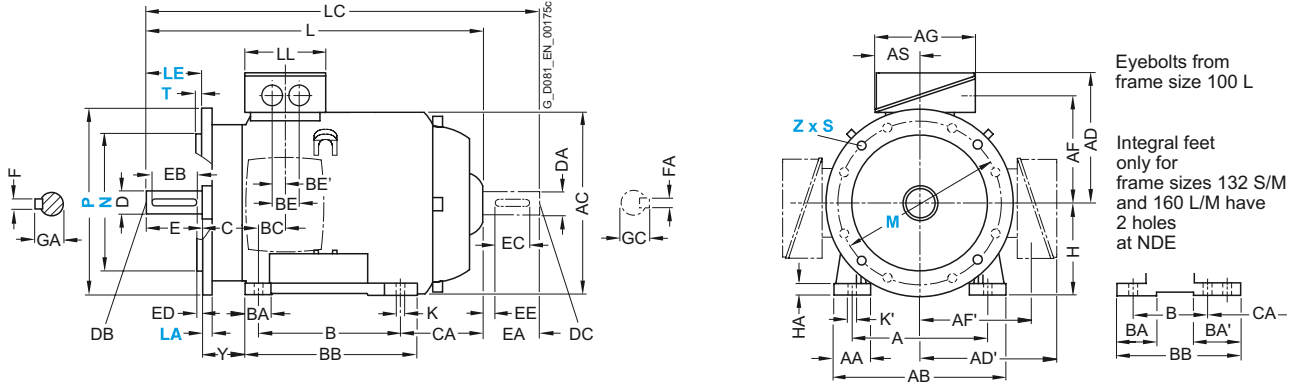
Dimensions

Dimensional drawings (continued)

Aluminum series 1LE1, frame sizes 100 to 160 – forced-air cooled motors with improved/high efficiency
Aluminum series 1PC1, frame sizes 100 to 160 – self-cooled motors with improved/high efficiency

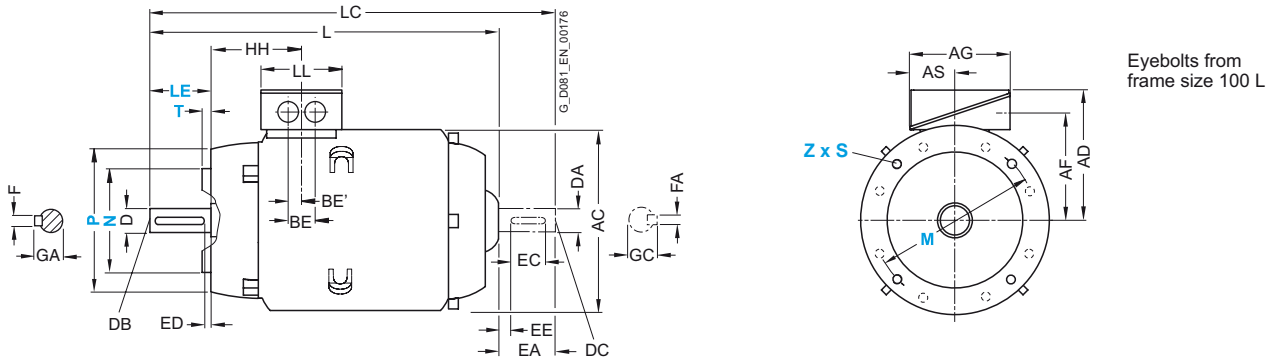
Type of construction IM B35

For flange dimensions, see Page 1/76 (Z = the number of retaining holes)



Type of construction IM B14

For flange dimensions, see Page 1/76 (Z = the number of retaining holes)



| For motor | Frame size | Number of poles | Dimension designation acc. to IEC | | | | | | | DE shaft extension | | | | | NDE shaft extension | | | | | | | |
|-----------|------------|-----------------|-----------------------------------|----|----|-------|----|-----|----|--------------------|-----|----|----|----|---------------------|----|----|----|----|----|----|----|
| | | | HH | K | K' | L | LC | LL | D | DB | E | EB | ED | F | GA | DA | DC | EA | EC | EE | FA | GC |
| 100 L | 2, 4, 6, 8 | | 96.5 | 12 | 16 | 321.5 | - | 112 | 28 | M10 | 60 | 50 | 5 | 8 | 31 | - | - | - | - | - | - | - |
| 112 M | 2, 4, 6, 8 | | 96 | 12 | 16 | 311 | - | 112 | 28 | M10 | 60 | 50 | 5 | 8 | 31 | - | - | - | - | - | - | - |
| 132 S | 2, 4, 6, 8 | | 115.5 | 12 | 16 | 380.5 | - | 130 | 38 | M12 | 80 | 70 | 5 | 10 | 41 | - | - | - | - | - | - | - |
| 132 M | 2, 4, 6, 8 | | 115.5 | 12 | 16 | 380.5 | - | 130 | 38 | M12 | 80 | 70 | 5 | 10 | 41 | - | - | - | - | - | - | - |
| 160 M | 2, 4, 6, 8 | | 155 | 15 | 19 | 510 | - | 145 | 42 | M16 | 110 | 90 | 10 | 12 | 45 | - | - | - | - | - | - | - |
| 160 L | 2, 4, 6, 8 | | 155 | 15 | 19 | 510 | - | 145 | 42 | M16 | 110 | 90 | 10 | 12 | 45 | - | - | - | - | - | - | - |

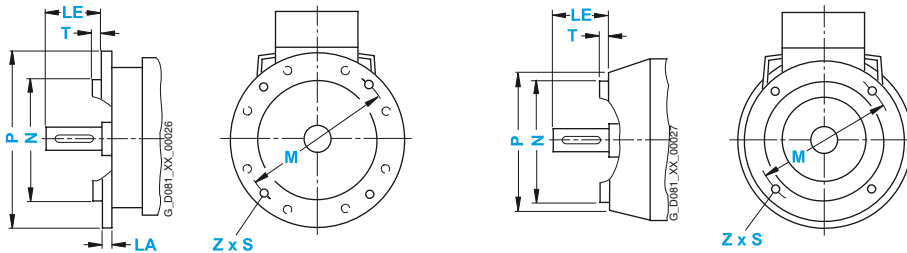
IEC Squirrel-Cage Motors

New Generation 1LE1/1PC1

Dimensions

Dimensional drawings (continued)

Flange dimensions



In DIN EN 50347, flanges FF with through holes and flanges FT with tapped holes are assigned to frame sizes. The designation of flange A and C according to DIN 42948 (invalid since 09/2003) are also listed for information purposes. See the table below. (Z = the number of retaining holes)

| Frame size | Type of construction | Flange type | Flange with | | Dimension designation acc. to IEC | | | | | | | | |
|---------------------|--------------------------------|--|----------------------|----------------------|-----------------------------------|----|-----|-----|-----|-----|------|-----|---|
| | | | Through holes (FF/A) | Tapped holes (FT/C) | LA | LE | M | N | P | S | T | Z | |
| 100 L | IM B5, IM B35, IM V1, IM V3 | Flange | FF 215 | Acc. to DIN EN 50347 | A 250 | 11 | 60 | 215 | 180 | 250 | 14.5 | 4 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 130 | Acc. to DIN 42948 | C 160 | – | 60 | 130 | 110 | 160 | M8 | 3.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange (next larger standard flange) | FT 165 | | C 200 | – | 60 | 165 | 130 | 200 | M10 | 3.5 | 4 |
| 112 M | IM B5, IM B35, IM V1, IM V3 | Flange | FF 215 | | A 250 | 11 | 60 | 215 | 180 | 250 | 14.5 | 4 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 130 | | C 160 | – | 60 | 130 | 110 | 160 | M8 | 3.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange (next larger standard flange) | FT 165 | | C 200 | – | 60 | 165 | 130 | 200 | M10 | 3.5 | 4 |
| 132 S, 132 M | IM B5, IM B35, IM V1, IM V3 | Flange | FF 265 | | A 300 | 12 | 80 | 265 | 230 | 300 | 14.5 | 4 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 165 | | C 200 | – | 80 | 165 | 130 | 200 | M10 | 3.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange (next larger standard flange) | FT 215 | | C 250 | – | 80 | 215 | 180 | 250 | M12 | 4 | 4 |
| 160 M, 160 L | IM B5, IM B35, IM V1, IM V3 | Flansch | FF 300 | | A 350 | 13 | 110 | 300 | 250 | 350 | 18.5 | 5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Normflansch | FT 215 | | C 250 | – | 110 | 215 | 180 | 250 | M12 | 4 | 4 |

Standard motors up to frame size 315 L



| | | | |
|-------------|--|--------------|---|
| 2/2 | Orientation | 2/48 | Self-ventilated energy-saving motors with high efficiency, Cast-iron series 1LG6 |
| 2/2 | Overview | 2/48 | Selection and ordering data |
| 2/4 | Benefits | | |
| 2/4 | Application | | |
| 2/5 | Integration | | |
| 2/7 | Technical specifications | | |
| 2/8 | Selection and ordering data | | |
| 2/9 | More information | | |
| 2/10 | Self-ventilated energy-saving motors with improved efficiency, Aluminum series 1LA7 and 1LA5 | 2/58 | Self-cooled motors without external fan, Aluminum series 1LP7 and 1LP5 |
| 2/10 | Selection and ordering data | 2/58 | Selection and ordering data |
| 2/22 | Self-ventilated energy-saving motors with high efficiency, Aluminum series 1LA9 | 2/62 | Self-cooled motors without external fan, Cast-iron series 1LP4 |
| 2/22 | Selection and ordering data | 2/62 | Selection and ordering data |
| 2/34 | Self-ventilated motors with increased output, Aluminum series 1LA9 | 2/66 | Special versions |
| 2/34 | Selection and ordering data | 2/66 | Overview |
| | | 2/67 | Selection and ordering data |
| | | 2/67 | • Voltages |
| | | 2/76 | • Types of construction |
| | | 2/78 | • Options |
| 2/38 | Self-ventilated energy-saving motors with improved efficiency, Cast-iron series 1LA6 and 1LG4 | 2/120 | Accessories |
| 2/38 | Selection and ordering data | 2/120 | Overview |
| | | 2/121 | More information |
| 2/46 | Self-ventilated motors with increased output, Cast-iron series 1LG4 | 2/122 | Dimensions |
| 2/46 | Selection and ordering data | 2/122 | Overview |
| | | 2/123 | More information |
| | | 2/124 | Dimensional drawings |

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Orientation

Overview



Standard motors from Siemens are characterised by their flexibility, ruggedness and energy efficiency. In general, all motors are suitable for converter-fed operation with mains voltages of up to 460 V + 10 %. The motors are designed to fulfill the requirements of the European and International markets with an output range from 0.06 to 200 kW.

Standard motors for use worldwide

IEC motors for the European and International market

The standard motors comply both electrically and mechanically with the applicable IEC/EN standards. For exporting to China, CCC certified motors (China Compulsory Certification) can be supplied.

IEC motors for the North American market

Motors are also available to the NEMA specification (National Electrical Manufacturers Association), with UL approval (Underwriters Laboratories Inc.) and CSA certification (Canadian Standard Association) for exporting to NAFTA states (USA, Canada and Mexico). The mechanical design of all motors is compliant only to IEC/EN, not to NEMA dimensions.

NEMA motors for the North American market

Low-voltage motors are manufactured to the NEMA standard for compliance with the local specifications of the NAFTA markets (USA, Canada and Mexico). This includes motors designed in accordance with the US act, EPACT (specified minimum efficiency levels), as well as motors with NEMA premium efficiency levels. The NEMA motor series provide the highest operating reliability for maximum service life.

Further information regarding NEMA motors is available on the Internet:

<http://www.sea.siemens.com/motors>

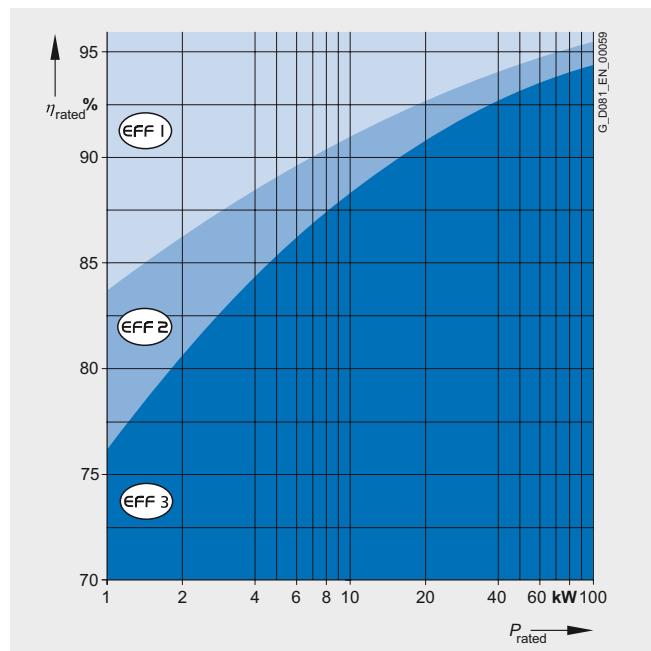
Classified energy-saving motors for an efficient energy balance

Depending on requirements, energy-saving motors are available for an efficient energy balance – for EU requirements in accordance with CEMEP (European Committee of Manufacturers of Electrical Machines and Power Electronics) and for the North American market in accordance with EPACT (US Energy Policy Act).

Efficiency requirements according to CEMEP

CEMEP classifies efficiency levels for 2-pole and 4-pole motors with outputs of 1.1 to 90 kW. Three efficiency classes are defined:

- **EFF1** (High Efficiency motors – referred to below as “Motors with high efficiency”)
- **EFF2** (Improved Efficiency motors – referred to below as “Motors with improved efficiency”)
- **EFF3** (Conventional Efficiency motors)



At a glance: EU/CEMEP for Europe

- Status
Voluntary compliance with efficiency classification
- Covers
2-pole, 4-pole squirrel-cage motors from 1.1 to 90 kW (at 400 V and 50 Hz)
- Required marking
Efficiency class on the motor rating plate
 η_N , $\eta_{3/4}$ load and efficiency class in the documentation

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Orientation

Overview (continued)

Efficiency requirements according to EPACT

In 1997, an act was passed in the US to define minimum efficiencies for low-voltage three-phase motors (EPACT).

An act is in force in Canada that is largely identical, although it is based on different verification methods. The efficiency is verified for these motors for the USA using IEEE 112, Test Method B and for Canada using CSA-C390. Apart from a few exceptions, all three-phase low-voltage motors imported into the USA or Canada must comply with the legal efficiency requirements. The law demands minimum efficiency levels for motors with a voltage of 230 and 460 V at 60 Hz, in the output range of 1 to 200 HP (0.75 to 150 kW) with 2, 4 and 6 poles. Explosion-proof motors must also be included.

The EPACT efficiency requirements exclude, for example:

- Motors whose frame size output classification does not correspond with the standard series according to NEMA MG1-12.
- Flange-mounting motors
- Brake motors
- Converter-fed motors
- Motors with design letter C and higher

EPACT lays down that the nominal efficiency at full load and a "CC" number (Compliance Certification) must be included on the rating plate. The "CC" number is issued by the US Department of Energy (DOE). The following information is stamped on the rating plate of EPACT motors which must be marked by law:

- Nominal efficiency
- Design letter
- Code letter
- CONT
- CC No. CC 032A (Siemens) and NEMA MG1-12.

At a glance: EPACT/CSA for North America

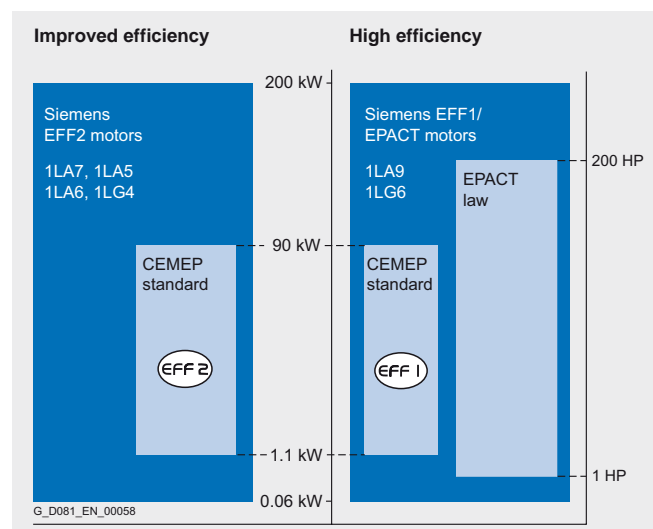
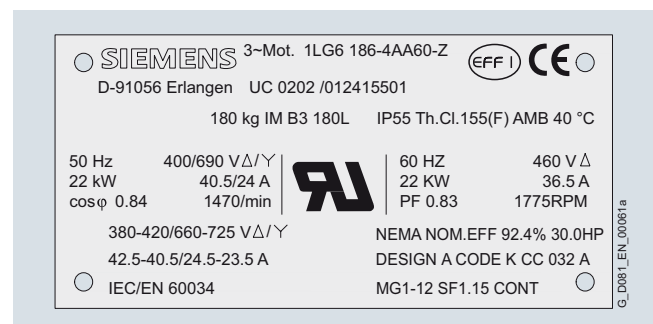
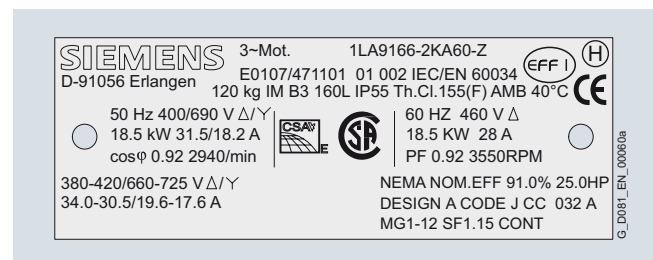
- Status
Minimum efficiencies required by law
- Covers
2-, 4- and 6-pole 60 Hz squirrel-cage motors from 1 to 200 HP (0.75 to 150 kW) for 230 V and/or 460 V 60 Hz
- Required marking
Efficiency η_N on the motor rating plate

Energy-saving motors from Siemens according to CEMEP or EPACT

The product range of standard motors exclusively comprises motors in the EU efficiency classes EFF1 "High Efficiency" or EFF2 "Improved Efficiency". The active parts of the motor have been optimized so that the requirements of the CEMEP efficiency classes EFF1 and EFF2 are fulfilled. The procedure for determining the efficiency is based on the summation of losses in accordance with IEC 60034-2. With these energy-saving motors a significant reduction in energy costs can be achieved as compared to conventional motors according to EFF3.

EPACT motors from Siemens are available CC certified, marked with the number CC032A on the rating plate and optionally also according to UL with the recognition mark. Siemens offers motors with the CSA Energy Efficiency Verification Mark specially for the Canadian market.

At a glance: Energy-saving motors from Siemens according to CEMEP EFF1/EFF2, EPACT and CSA



IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Orientation

Overview (continued)

Standard motors with increased output and compact construction

Standard motors with increased output and compact construction can be used to advantage in confined spaces. For a slightly longer overall length, the output is at least as high as that of the next largest shaft height. These compact motors are also optimised for efficiency and therefore reduce the operating costs.

Standard motors with reduced output without external fan

Self-cooled motors with surface cooling without external fan are suitable for the following operating conditions:

- Types of duty with adequate cooling times (e.g. temporary duty for positioning drives)
- Environmental conditions that demand compact installation space (e.g. in motors with a stopping function)
- Conditions under which an external fan has an adverse effect (e.g. simple cleaning in the food industry, textile industry)

Standard motors that can be supplied from stock with an extremely short delivery time

The most commonly used basic versions of standard motor series 1LA7, 1LA5 and 1LG4 can be supplied from stock – some of these are already marked with “CCC” (China Compulsory Certification) for export to China. Apart from these, a so-called “Sector version” is available for some of the motors available from stock. These include a located bearing at the drive end (DE), PTC thermistor and screwed on feet for the IM B35 type of construction.

The normal delivery time for motors from stock is 1 to 2 days from the time of clarification of the order at the factory until delivery from the factory. To determine the time of arrival at the customer site, the appropriate shipping time must be added.

2

Benefits

Standard motors from Siemens offer the user numerous advantages:

- The motors are approved and certified for worldwide use and meet high quality standards (confirmed, for example, by CSA ¹⁾, UL ²⁾, EXAM ³⁾, PTB ⁴⁾, CQC ⁵⁾)
- The ruggedness and lack of complexity of the components guarantee an extremely long service life
- Complete product spectrum for energy-saving motors according to EU/CEMEP and EPACT
- Extremely easy selection of energy-saving motors due to the efficiency classification (EFF1/EFF2)
- Energy-saving motors in motor series 1LA9 and 1LG6 meet both the EFF1 and EPACT efficiency levels.
- Reduction in operating costs thanks to a high degree of efficiency with EFF1
- Higher motor service life thanks to lower winding temperature in EFF1 and EPACT motors with rated load and supply
- Reduced environmental impact due to CO₂ reduction
- High overload reserves under continuous duty (SF 1.15 for motor series 1LA9/1LG6)
- Suitable for universal applications worldwide
- Standard motors with increased output and extremely compact construction
- Short delivery times for motors from stock
- The module mounting concept supports rapid modification by the customer
- A fast and comprehensive service is provided by factories and modification partners distributed throughout the world

Application

The numerous available options enable standard motors from Siemens to be used in every area of industry and every sector. They are suitable both for special environmental conditions such as those that predominate in the chemical or petrochemical industry as well as for most climatic requirements such as those of offshore applications. Their large range of mains voltages enables them to be used all over the world.

The wide field of implementation includes the following applications:

- Pumps
- Fans
- Compressors
- Conveyor systems such as cranes, belts and lifting gear
- High-bay warehouses
- Packaging machines
- Automation and Drives

¹⁾ Canadian Standard Association

²⁾ Underwriters Laboratories Inc.

³⁾ EXAM BBG Prüf und Zertifier GmbH (previously BVS = Bergbau Versuchsstrecke)

⁴⁾ Physikalisch-Technische Bundesanstalt

⁵⁾ China Quality Certification

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Orientation

Integration

MICROMASTER 411/ COMBIMASTER 411 distributed drive solutions

The MICROMASTER 411/COMBIMASTER 411 series is included in Catalog DA 51.3 which contains the complete product spectrum with ordering data, technical details and explanations.

Application

MICROMASTER 411 and COMBIMASTER 411 are the ideal solution for distributed drive applications that require a high degree of protection. The devices are designed for a wide drive range – for simple individual applications for pumps and fans through to multiple drives for conveyor systems in networked control systems. The ECOFAST versions of the MICROMASTER 411/COMBIMASTER 411 frequency converter series contain plug-in cables for the power supply, communications interface and motor connections. They support fast and problem-free replacement in time-critical applications and are completely compatible with the ECOFAST technology systems. They are based on the universal MICROMASTER 420 converter series and are characterised by customer-oriented performance and ease of use.

Structure

The modular structure allows MICROMASTER 411/COMBIMASTER 411 products and their accessories to be individually selected, e.g. electromechanical brake control module or PROFIBUS module.

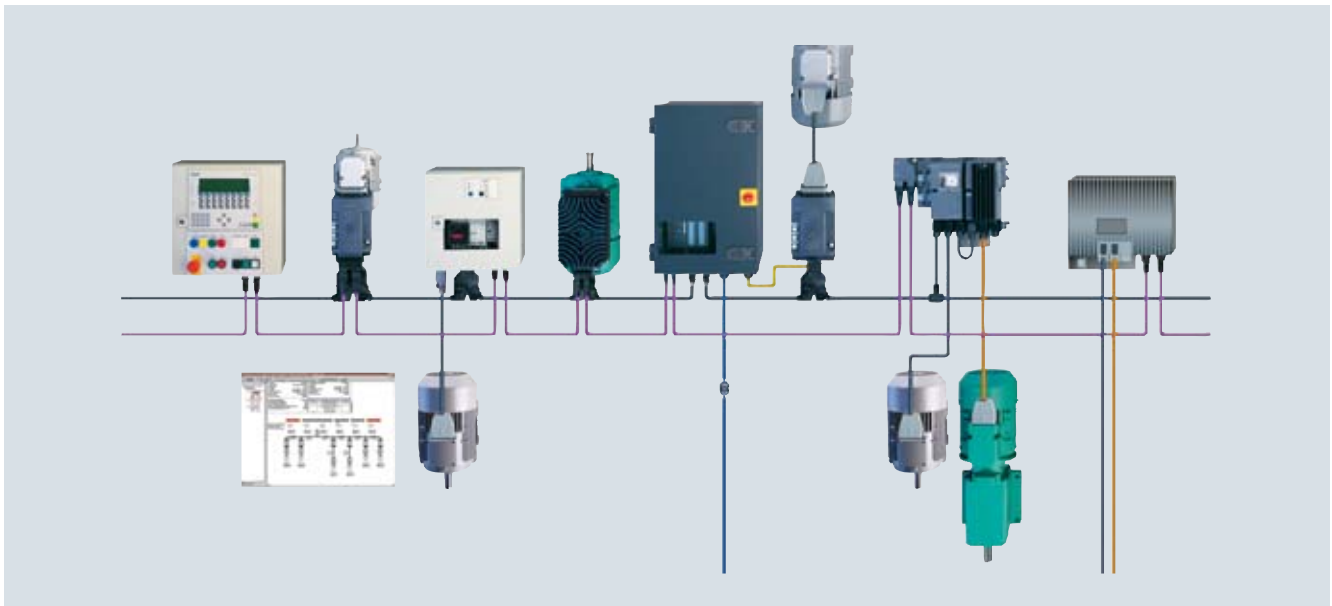
Main features:

- Output range: 0.37 to 3.0 kW, 400 V, 3AC
- IP66 degree of protection (MICROMASTER 411), self-cooling
- Electrical isolation between the electronics and the connection terminals
- Parameter sets for fast startup and cost savings
- Modular structure with numerous accessories
- Operation without operator panel possible (using jumpers and/or control potentiometer)
- Integrated control potentiometer accessible from outside.

Accessories (overview):

- Basic Operator Panel (BOP) for parameterising the converter
- Plain text Advanced Operator Panel (AOP) for MICROMASTER 411 and COMBIMASTER 411 with multiple-language display
- PROFIBUS module
- AS-Interface module
- DeviceNet module
- REM module (dynamic brake and control module for electro-mechanical brake)
- EM module (electromechanical brake control module)
- PC connection kit
- Mounting kits for installing the operator panels
- PC startup programs

ECOFAST system



ECOFAST is a system which permits extensive decentralisation and a modular structure for installation elements on the component level.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Orientation

Integration (continued)

Advantages

The main advantages of the ECOFAST motor connector over a terminal strip are as follows:

- Fast assembly of I/O devices (e.g. motor starters) from the ECOFAST system
- Reduction of assembly and repair times at the end user
- No wiring errors due to connector technology
- Replacement of motor without intervention in the electronics

Main features of the ECOFAST motor connector (with separate MICROMASTER 411 frequency converter)

The motor connector is mounted in the factory and replaces the connection box with terminal board. The connector is mounted towards the non-drive end (NDE). It comprises an angled motor connection casing that can be rotated by 4 x 90°. A 10-pole (+ earth) male insert is used in the housing. In the plug-in connector, the winding connections are connected and optionally the power supply for the brake and the signal leads for the temperature sensors.

The ECOFAST motor connector is compatible with the products of the ECOFAST field device system. Further information can be found in Catalog IK PI.

The mounting dimensions of this casing match those of standard industrial connectors, so it is possible to use a complete series of different standard inserts (such as Han E, ES, ESS from Harting). The motor circuit (star or delta connection) is selected in the mating connector for motor connection. The relevant jumpers are inserted by the customer in the mating connector. As a casing for the mating connector, all standard sleeve casings with lengthwise locking, frame size 10B (e.g. from Harting) can be used.

Only one sensor (temperature sensor or PTC thermistor) can be connected.

Maximum admissible mains voltage on motor connector: ≤500 V

Availability of the ECOFAST motor connector

The ECOFAST motor connector can be supplied for the following motor versions with the exception of the explosion-proof motors:

- Frame sizes 56 M to 132 M
- Output range 0.06 to 5.5 kW (7.5 kW on request)
- Direct on-line starting: Voltage code 1 for 230 VΔ/400 VY, 50 Hz
- Star-delta starting: Voltage code **9** with order code **L1U** 400 VΔ, 50 Hz

More information

Further information is available in the Catalogs IK PI and DA 51.3 "MICROMASTER 411/COMBIMASTER 411 distributed drive solutions" as well as on the Internet at:

<http://www.siemens.com/ecofast>

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Orientation

Technical specifications

The following table lists the most important technical specifications. For further information and details, see catalog part 0 "Introduction".

Technical specifications at a glance

| Type of motor | IEC squirrel-cage motor |
|--|---|
| Connection types | Star connection/delta connection You can establish the connection type used from the Order No. supplements in the selection and ordering data for the required motor. |
| Number of poles | 2, 4, 6, 8, pole-changing for constant load torque (pole-changing for fans, see catalog part 7 "Fan motors") |
| Rated speed (synchronous speed) | 750 ... 3000 rpm |
| Rated output | 0.06 ... 200 kW |
| Rated torque | 0.25 ... 1700 Nm |
| Insulation of the stator winding to EN 60034-1 (IEC 60034-1) | Temperature class 155 (F), used acc. to temperature class 130 (B) DURIGNIT IR 2000 insulation system |
| Degree of protection according to EN 60034-5 (IEC 60034-5) | IP55 as standard |
| Cooling according to EN 60034-6 (IEC 60034-6) | Self-ventilated (motor series 1LA, 1LG) Frame sizes 63 to 315 (IC 411), Frame size 56 (IC 410) Self-cooled (motor series 1LP) Frame sizes 63 to 315 (IC 410) |
| Admissible coolant temperature and site altitude | -20 °C ... +40 °C as standard, site altitude 1000 mm above sea level. See "Coolant temperature and site altitude" in catalog part 0 "Introduction". |
| Standard voltages according to EN 60038 (IEC 60038) | 50 Hz: 230 V, 400 V, 500 V, 690 V The voltage used can be found in the selection and ordering data for the required motor. |
| Type of construction according to EN 60034-7 (IEC 60034-7): | Without flange: IM B3, IM B6, IM B7, IM B8, IM V5 without protective cover, IM V6, IM V5 with protective cover With flange: IM B5, IM V1 without protective cover, IM V1 with protective cover, IM V3, IM B35 With standard flange: IM B14, IM V19, IM V18 without protective cover, IM V18 with protective cover, IM B34 With special flange: IM B14, IM V19, IM V18 without protective cover, IM V18 with protective cover, IM B34 |
| Paint finish Suitability of paint finish for climate group according to IEC 60721, Part 2-1 | Standard: Color RAL 7030 stone gray Climate group "worldwide" with special finish Climate group "moderate" with standard finish See "Paint finish" in catalog part 0 "Introduction". |
| Vibration quantity level according to EN 60034-14 (IEC 60034-14) | Level A (standard – without special vibration requirements) Level B (with special vibration requirements) See "Balance and vibration quantity" in catalog part 0 "Introduction". |
| Shaft extension according to DIN 748 (IEC 60072) | Balance type: Half-key balancing See "Balance and vibration quantity" in catalog part 0 "Introduction". |
| Sound pressure level to DIN EN ISO 1680 (tolerance +3dB) | The sound pressure level is listed in the selection and ordering data for the required motor. |
| Weights | The weight is listed in the selection and ordering data for the required motor. |
| Mechanical limit speeds | The limit speed for the required motor can be found on Page 5/6. |
| Packaging weights and dimensions | See "Packing weights and packing dimensions" in catalog part 0 "Introduction". |
| Rating plates | Fixed to the motor See "Rating plate" in catalog part 0 "Introduction". |
| Connection and connection boxes | See "Connection, circuit and connection box" in catalog part 0 "Introduction". |
| Bearing design | See "Bearings" in catalog part 0 "Introduction". |
| Cantilever forces | See "Admissible cantilever forces" in catalog part 0 "Introduction". |
| Options | See the selection and ordering data for "Special versions" |

General note

All the data listed in the catalog is applicable for a 50 Hz line supply. With converter-fed operation, the reduction factors for constant torque and drives for fans, pumps and compressors must be observed. Noise values for motors operating with a converter at frequencies other than 50 Hz are available on request.

Mechanical limit speeds

When the motor is operated at its rated frequency, it is important to note that the maximum speeds are limited by the limits for the roller bearings, critical rotor speed and rigidity of the rotating parts.

Ventilation/noise generation (converter-fed operation)

The fan noise can increase at speeds that are higher than the rated speed of self-ventilated motors. To increase motor utilization at low speeds it is recommended that forced-ventilated motors are used.

Mechanical stress and grease lifetime (converter-fed operation)

High speeds that exceed the rated speed and the resulting increased vibrations alter the mechanical running smoothness and the bearings are subjected to increased mechanical stress. This reduces the grease lifetime and the bearing lifetime. More detailed information on request.

2

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Orientation

Selection and ordering data

Preliminary selection of the motor according to motor type/series, speed or number of poles, frame size, rated output, rated torque, rated speed and rated current

Self-ventilated energy-saving motors with improved efficiency

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|--|------------------------|--------------|---------------|--------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Aluminum series 1LA7 and 1LA5 (motors with external fan) | | | | | | |
| 3000, 2-pole | 56 M ... 225 M | 0.09 ... 45 | 2830 ... 2960 | 0.30 ... 145 | 0.26 ... 78 | 2/10 ... 2/11 |
| 1500, 4-pole | 56 M ... 225 M | 0.06 ... 45 | 1350 ... 1470 | 0.42 ... 292 | 0.2 ... 80 | 2/12 ... 2/13 |
| 1000, 6-pole | 63 M ... 225 M | 0.09 ... 30 | 850 ... 978 | 1 ... 293 | 0.44 ... 61 | 2/14 ... 2/15 |
| 750, 8-pole | 71 M ... 225 M | 0.09 ... 22 | 630 ... 724 | 1.4 ... 290 | 0.36 ... 44.5 | 2/16 ... 2/17 |
| 1500/3000, 4/2-pole | 63 M ... 200 L | 0.1 ... 26 | 1330 ... 1465 | 0.72 ... 169 | 0.41 ... 48.5 | 2/18 ... 2/19 |
| 750/1500, 8/4-pole | 90 S ... 200 L | 0.35 ... 17 | 675 ... 730 | 5.1 ... 223 | 1.19 ... 40.5 | 2/20 ... 2/21 |
| Cast-iron series 1LA6 and 1LG4 (motors with external fan) | | | | | | |
| 3000, 2-pole | 100 L ... 315 L | 3 ... 200 | 2890 ... 2982 | 9.9 ... 641 | 6.1 ... 325 | 2/38 ... 2/39 |
| 1500, 4-pole | 100 L ... 315 L | 2.2 ... 200 | 1420 ... 1496 | 15 ... 1285 | 4.7 ... 340 | 2/40 ... 2/41 |
| 1000, 6-pole | 100 L ... 315 L | 1.5 ... 160 | 925 ... 988 | 15 ... 1547 | 3.9 ... 285 | 2/42 ... 2/43 |
| 750, 8-pole | 100 L ... 315 L | 0.75 ... 132 | 679 ... 738 | 11 ... 1708 | 2.15 ... 245 | 2/44 ... 2/45 |

Self-ventilated energy-saving motors with high efficiency

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|--|------------------------|--------------|---------------|--------------|------------------------|---|
| rpm | | kW/HP | rpm | Nm | A | |
| Aluminum series 1LA9 (motors with external fan) | | | | | | |
| For use according to CEMEP | | | | | | |
| 3000, 2-pole | 56 M ... 200 L | 0.09 ... 37 | 2830 ... 2950 | 0.3 ... 120 | 0.24 ... 64 | 2/22 ... 2/23 |
| 1500, 4-pole | 56 M ... 200 L | 0.06 ... 30 | 1380 ... 1465 | 0.42 ... 196 | 0.22 ... 53 | 2/24 ... 2/25 |
| 1000, 6-pole | 90 S ... 200 L | 0.75 ... 22 | 925 ... 975 | 7.7 ... 215 | 2 ... 45 | 2/26 ... 2/27 |
| For use in the North American market according to EPACT | | | | | | |
| 3600, 2-pole | 56 M ... 200 L | 0.12 ... 50 | 3440 ... 3555 | 0.25 ... 100 | 0.23 ... 57 | 2/28 ... 2/29 |
| 1800, 4-pole | 56 M ... 200 L | 0.08 ... 40 | 1715 ... 1770 | 0.33 ... 161 | 0.18 ... 47 | 2/30 ... 2/31 |
| 1200, 6-pole | 90 S ... 200 L | 1 ... 30 | 1140 ... 1175 | 6.2 ... 182 | 1.78 ... 40 | 2/32 ... 2/33 |
| Cast-iron series 1LG6 (motors with external fan) | | | | | | |
| For use according to CEMEP | | | | | | |
| 3000, 2-pole | 180 M ... 315 L | 22 ... 200 | 2955 ... 2982 | 71 ... 641 | 38.5 ... 320 | 2/48 ... 2/49 |
| 1500, 4-pole | 180 M ... 315 L | 18.5 ... 200 | 1470 ... 1490 | 120 ... 1282 | 34.5 ... 340 | 2/48 ... 2/49 |
| 1000, 6-pole | 180 M ... 315 L | 15 ... 160 | 975 ... 990 | 147 ... 1543 | 29.5 ... 280 | 2/50 ... 2/51 |
| 750, 8-pole | 180 M ... 315 L | 11 ... 132 | 725 ... 740 | 145 ... 1704 | 23.5 ... 240 | 2/50 ... 2/51 |
| For use in the North American market according to EPACT | | | | | | |
| 3600, 2-pole | 180 M ... 315 L | 30 ... 300 | 3560 ... 3591 | 60 ... 595 | 34 ... 320 | 2/52 ... 2/53 |
| 1800, 4-pole | 180 M ... 315 L | 25 ... 300 | 1775 ... 1792 | 100 ... 1193 | 31 ... 335 | 2/54 ... 2/55 |
| 1200, 6-pole | 180 M ... 315 L | 20 ... 200 | 1178 ... 1192 | 121 ... 1195 | 25.5 ... 235 | 2/56 ... 2/57 |

Self-ventilated motors with increased output

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|---|------------------------|--------------|---------------|--------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Aluminum series 1LA9 (motors with external fan) | | | | | | |
| 3000, 2-pole | 56 M ... 200 L | 0.2 ... 53 | 2830 ... 2944 | 0.67 ... 172 | 0.51 ... 95 | 2/34 ... 2/35 |
| 1500, 4-pole | 56 M ... 200 L | 0.14 ... 43 | 1384 ... 1465 | 0.97 ... 280 | 0.44 ... 80 | 2/36 ... 2/37 |
| Cast-iron series 1LG4 (motors with external fan) | | | | | | |
| 3000, 2-pole | 180 M ... 280 M | 30 ... 110 | 2950 ... 2975 | 97 ... 353 | 54 ... 184 | 2/46 ... 2/47 |
| 1500, 4-pole | 180 L ... 280 M | 30 ... 110 | 1465 ... 1488 | 196 ... 706 | 59 ... 198 | 2/46 ... 2/47 |
| 1000, 6-pole | 180 L ... 280 M | 18.5 ... 75 | 970 ... 985 | 182 ... 727 | 37.5 ... 136 | 2/46 ... 2/47 |
| 750, 8-pole | 180 L ... 280 M | 15 ... 55 | 720 ... 735 | 199 ... 715 | 34 ... 106 | 2/46 ... 2/47 |

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Orientation

Selection and ordering data (continued)

Self-cooled motors without external fan

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|--|------------------------|---------------|---|--------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Aluminum series 1LP7 and 1LP5 (motors without external fan) | | | | | | |
| 3000, 2-pole | 63 M ... 200 L | 0.12 ... 16.5 | The electrical data can be calculated and supplied on receipt of order. | | | 2/58 |
| 1500, 4-pole | 63 M ... 200 L | 0.07 ... 12 | | | | 2/59 |
| 1000, 6-pole | 63 M ... 200 L | 0.045 ... 8.5 | | | | 2/60 |
| 750, 8-pole | 63 M ... 200 L | 0.045 ... 7.5 | | | | 2/61 |
| Cast-iron series 1LP4 (motors with external fan) | | | | | | |
| 3000, 2-pole | 180 M ... 315 L | 7.3 ... 67 | 2945 ... 2984 | 24 ... 214 | 0.068 ... 2.09 | 2/62 |
| 1500, 4-pole | 180 M ... 315 L | 6.2 ... 67 | 1465 ... 1488 | 40 ... 430 | 0.099 ... 3.46 | 2/63 |
| 1000, 6-pole | 180 L ... 315 L | 5 ... 44 | 970 ... 990 | 49 ... 424 | 0.175 ... 4.02 | 2/64 |
| 750, 8-pole | 180 L ... 315 L | 3.7 ... 37 | 725 ... 740 | 49 ... 477 | 0.169 ... 3.95 | 2/65 |

More information

For more information, please contact your local Siemens contact – see “Siemens Contacts Worldwide” in the Appendix.

2

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with improved efficiency – Aluminum series 1LA7/1LA5

Selection and ordering data

| Rated output at | | Frame size | Operating values at rated output | | | | | | | Order No. | Price | Weight |
|---|-------------------|------------|----------------------------------|-----------------------|-------------------------------------|------------------------------|------------------------------|--------------------------------|-------------------------------|-----------------|-----------|--------|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class according to CEMEP | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | EFF2 | η_{rated} % | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | Phase-out model | m kg | |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | |
| 0.09 | 0.11 | 56 M | 2830 | 0.3 | | 63 | 62 | 0.81 | 0.26 | 1LA7 050-2AA□□ | 3 | |
| 0.12 | 0.14 | 56 M | 2800 | 0.41 | | 65 | 64 | 0.83 | 0.32 | 1LA7 053-2AA□□ | 3 | |
| 0.18 | 0.21 | 63 M | 2820 | 0.61 | | 64 | 63 | 0.79 | 0.51 | 1LA7 060-2AA□□ | 3.5 | |
| 0.25 | 0.29 | 63 M | 2830 | 0.84 | | 65 | 65 | 0.80 | 0.69 | 1LA7 063-2AA□□ | 4.1 | |
| 0.37 | 0.43 | 71 M | 2740 | 1.3 | | 66 | 65 | 0.82 | 1 | 1LA7 070-2AA□□ | 5 | |
| 0.55 | 0.63 | 71 M | 2800 | 1.9 | | 71 | 70 | 0.82 | 1.36 | 1LA7 073-2AA□□ | 6 | |
| 0.75 | 0.86 | 80 M | 2855 | 2.5 | | 73 | 72 | 0.86 | 1.73 | 1LA7 080-2AA□□ | 9 | |
| 1.1 | 1.3 | 80 M | 2845 | 3.7 | EFF2 | 77 | 77 | 0.87 | 2.4 | 1LA7 083-2AA□□ | 11 | |
| 1.5 | 1.75 | 90 S | 2860 | 5 | EFF2 | 79 | 80 | 0.85 | 3.25 | 1LA7 090-2AA□□ | 12.9 | |
| 2.2 | 2.55 | 90 L | 2880 | 7.3 | EFF2 | 82 | 82 | 0.85 | 4.55 | 1LA7 096-2AA□□ | 15.7 | |
| 3 | 3.45 | 100 L | 2890 | 9.9 | EFF2 | 84 | 84 | 0.85 | 6.1 | 1LA7 106-2AA□□ | 22 | |
| 4 | 4.6 | 112 M | 2905 | 13 | EFF2 | 86 | 86 | 0.86 | 7.8 | 1LA7 113-2AA□□ | 29 | |
| 5.5 | 6.3 | 132 S | 2925 | 18 | EFF2 | 86.5 | 86.5 | 0.89 | 10.4 | 1LA7 130-2AA□□ | 39 | |
| 7.5 | 8.6 | 132 S | 2930 | 24 | EFF2 | 88 | 88 | 0.89 | 13.8 | 1LA7 131-2AA□□ | 48 | |
| 11 | 12.6 | 160 M | 2930 | 36 | EFF2 | 89.5 | 89.5 | 0.88 | 20 | 1LA7 163-2AA□□ | 68 | |
| 15 | 17.3 | 160 M | 2930 | 49 | EFF2 | 90 | 90.2 | 0.9 | 26.5 | 1LA7 164-2AA□□ | 77 | |
| 18.5 | 21.3 | 160 L | 2940 | 60 | EFF2 | 91 | 91.2 | 0.91 | 32 | 1LA7 166-2AA□□ | 86 | |
| 22 | 24.5 | 180 M | 2940 | 71 | EFF2 | 91.7 | 91.7 | 0.88 | 39.5 ¹⁾ | 1LA5 183-2AA□□ | 113 | |
| 30 | 33.5 | 200 L | 2945 | 97 | EFF2 | 92.3 | 92.3 | 0.89 | 53 | 1LA5 206-2AA□□ | 159 | |
| 37 | 41.5 | 200 L | 2945 | 120 | EFF2 | 92.8 | 92.8 | 0.89 | 65 ¹⁾ | 1LA5 207-2AA□□ | 179 | |
| 45 | 51 | 225 M | 2960 | 145 | EFF2 | 93.6 | 93.6 | 0.89 | 78 ¹⁾ | 1LA5 223-2AA□□ | 209 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | | | Final position: Type of construction code | | | | | | | |
|--------------------|------------------------------------|---------------|--------|--------|--------|--------|--|---|---|--------|---|----------------------|---|---------------------|
| | 50 Hz | | | 60 Hz | | | Without flange | | With flange | | | With standard flange | | With special flange |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 460 VY | 460 VΔ | IM B3/6/7/8, IM V6, IM V5 without protective cover | IM B5, IM V1 without protective cover ²⁾ | IM V1 with protective cover ²⁾³⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover | |
| 1 | 6 | 3 | 5 | 1 | 6 | 0 | 1 | 4 | 6 | 2 | 7 | 3 | | |
| 1LA7 05 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | – | ✓ | ✓ | ✓ | ✓ | |
| 1LA7 06 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA7 07 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA7 08 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA7 09 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA7 10 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA7 11 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA7 13 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA7 16 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA5 18 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | ✓ | – | – | – | |
| 1LA5 20 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | ✓ | – | – | – | |
| 1LA5 22 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | ✓ | – | – | – | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ For connection to 230 V, parallel supply cables are necessary (see catalog part 0 "Introduction", "Connection, circuit and connection box").

²⁾ 1LA5 183-... to 1LA5 223-... motors (motor series 1LA5, frame size 180 M to 225 M) can be supplied with two additional eyebolts; specify supplement **-Z** and order code **K32**.

³⁾ The "Second shaft extension" option, order code **K16** is not possible.

⁴⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with improved efficiency – Aluminum series 1LA7/1LA5

Selection and ordering data (continued)

| Order No. | Locked-rotor torque | Locked-rotor current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | |
|---|-----------------------------|------------------------------|------------------|--------------|-------------------------|---|-------------------------------|
| | with direct starting torque | as multiple of rated current | torque | | | Measuring surface sound pressure level at 50 Hz | Sound pressure level at 50 Hz |
| ▶ Phase-out model | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | L_{pFA} dB(A) | L_{WA} dB(A) |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | |
| 1LA7 050-2AA□□ | 2 | 3.7 | 2.3 | 16 | 0.00015 | 41 | 52 |
| 1LA7 053-2AA□□ | 2.1 | 3.7 | 2.4 | 16 | 0.00015 | 41 | 52 |
| 1LA7 060-2AA□□ | 2 | 3.7 | 2.2 | 16 | 0.00018 | 49 | 60 |
| 1LA7 063-2AA□□ | 2 | 4 | 2.2 | 16 | 0.00022 | 49 | 60 |
| 1LA7 070-2AA□□ | 2.3 | 3.5 | 2.3 | 16 | 0.00029 | 52 | 63 |
| 1LA7 073-2AA□□ | 2.5 | 4.3 | 2.6 | 16 | 0.00041 | 52 | 63 |
| 1LA7 080-2AA□□ | 2.3 | 5.6 | 2.4 | 16 | 0.00079 | 56 | 67 |
| 1LA7 083-2AA□□ | 2.6 | 6.1 | 2.7 | 16 | 0.001 | 56 | 67 |
| 1LA7 090-2AA□□ | 2.4 | 5.5 | 2.7 | 16 | 0.0014 | 62 | 74 |
| 1LA7 096-2AA□□ | 2.8 | 6.3 | 3.1 | 16 | 0.0018 | 62 | 74 |
| ▶ 1LA7 106-2AA□□ | 2.8 | 6.8 | 3 | 16 | 0.0035 | 62 | 74 |
| ▶ 1LA7 113-2AA□□ | 2.6 | 7.2 | 2.9 | 16 | 0.0059 | 63 | 75 |
| ▶ 1LA7 130-2AA□□ | 2 | 5.9 | 2.8 | 16 | 0.015 | 68 | 80 |
| ▶ 1LA7 131-2AA□□ | 2.3 | 6.9 | 3 | 16 | 0.019 | 68 | 80 |
| ▶ 1LA7 163-2AA□□ | 2.1 | 6.5 | 2.9 | 16 | 0.034 | 70 | 82 |
| ▶ 1LA7 164-2AA□□ | 2.2 | 6.6 | 3 | 16 | 0.043 | 70 | 82 |
| ▶ 1LA7 166-2AA□□ | 2.4 | 7 | 3.1 | 16 | 0.051 | 70 | 82 |
| 1LA5 183-2AA□□ | 2.5 | 6.9 | 3.2 | 16 | 0.077 | 70 | 83 |
| 1LA5 206-2AA□□ | 2.4 | 7.2 | 2.8 | 16 | 0.14 | 71 | 84 |
| 1LA5 207-2AA□□ | 2.4 | 7.7 | 2.8 | 16 | 0.16 | 71 | 84 |
| 1LA5 223-2AA□□ | 2.8 | 7.7 | 3.4 | 16 | 0.2 | 71 | 84 |

- ▶ The Order No. for 1LA7 motors marked with this symbol are phase-out models.

1LE1 motors are the successors.

For additional information see catalog part 1 "New Generation 1LE1/1PC1" under "Self-ventilated energy-saving motors with improved efficiency" Pages 1/18 to 1/21 or under "General Line motors with shorter delivery time" (defined versions - voltages, types of construction, motor protection and location of the connection boxes) Pages 1/8 to 1/17.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with improved efficiency – Aluminum series 1LA7/1LA5

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output | | | | | | | Order No. | Price | Weight |
|---|-------------------|------------|----------------------------------|-----------------------|-------------------------------------|------------------------------|------------------------------|--------------------------------|-------------------------------|-----------------------|----------------|--------|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class according to CEMEP | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | EFF2 | η_{rated} % | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | ► Phase-out model | <i>m</i> kg | |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | |
| 0.06 | 0.07 | 56 M | 1350 | 0.42 | | 56 | 55 | 0.77 | 0.2 | 1LA7 050-4AB□□ | 3 | |
| 0.09 | 0.11 | 56 M | 1350 | 0.64 | | 58 | 57 | 0.77 | 0.29 | 1LA7 053-4AB□□ | 3 | |
| 0.12 | 0.14 | 63 M | 1350 | 0.85 | | 55 | 54 | 0.75 | 0.42 | 1LA7 060-4AB□□ | 3.5 | |
| 0.18 | 0.21 | 63 M | 1350 | 1.3 | | 59 | 60 | 0.76 | 0.58 | 1LA7 063-4AB□□ | 4.1 | |
| 0.25 | 0.29 | 71 M | 1350 | 1.8 | | 60 | 60 | 0.78 | 0.77 | 1LA7 070-4AB□□ | 4.8 | |
| 0.37 | 0.43 | 71 M | 1370 | 2.6 | | 65 | 65 | 0.78 | 1.06 | 1LA7 073-4AB□□ | 6 | |
| 0.55 | 0.63 | 80 M | 1395 | 3.8 | | 67 | 67 | 0.81 | 1.46 | 1LA7 080-4AA□□ | 9 | |
| 0.75 | 0.86 | 80 M | 1395 | 5.1 | | 72 | 72 | 0.8 | 1.91 | 1LA7 083-4AA□□ | 10 | |
| 1.1 | 1.3 | 90 S | 1415 | 7.4 | | 77 | 77 | 0.81 | 2.55 | 1LA7 090-4AA□□ | 13 | |
| 1.5 | 1.75 | 90 L | 1420 | 10 | EFF2 | 79 | 79 | 0.81 | 3.4 | 1LA7 096-4AA□□ | 15.6 | |
| 2.2 | 2.55 | 100 L | 1420 | 15 | EFF2 | 82 | 82.5 | 0.82 | 4.7 | ► 1LA7 106-4AA□□ | 21 | |
| 3 | 3.45 | 100 L | 1420 | 20 | EFF2 | 83 | 83.5 | 0.82 | 6.4 | ► 1LA7 107-4AA□□ | 24 | |
| 4 | 4.6 | 112 M | 1440 | 27 | EFF2 | 85 | 85.5 | 0.83 | 8.2 | ► 1LA7 113-4AA□□ | 31 | |
| 5.5 | 6.3 | 132 S | 1455 | 36 | EFF2 | 86 | 86 | 0.81 | 11.4 | ► 1LA7 130-4AA□□ | 41 | |
| 7.5 | 8.6 | 132 M | 1455 | 49 | EFF2 | 87 | 87.5 | 0.82 | 15.2 | ► 1LA7 133-4AA□□ | 49 | |
| 11 | 12.6 | 160 M | 1460 | 72 | EFF2 | 88.5 | 89 | 0.84 | 21.5 | ► 1LA7 163-4AA□□ | 73 | |
| 15 | 17.3 | 160 L | 1460 | 98 | EFF2 | 90 | 90.2 | 0.84 | 28.5 | ► 1LA7 166-4AA□□ | 85 | |
| 18.5 | 21.3 | 180 M | 1460 | 121 | EFF2 | 90.5 | 90.5 | 0.83 | 35.5 ¹⁾ | 1LA5 183-4AA□□ | 113 | |
| 22 | 25.3 | 180 L | 1460 | 144 | EFF2 | 91.2 | 91.2 | 0.84 | 41.5 ¹⁾ | 1LA5 186-4AA□□ | 123 | |
| 30 | 34.5 | 200 L | 1465 | 196 | EFF2 | 91.8 | 91.8 | 0.86 | 55 | 1LA5 207-4AA□□ | 157 | |
| 37 | 42.5 | 225 NO | 1470 | 240 | EFF2 | 92.9 | 92.9 | 0.87 | 66 ¹⁾ | 1LA5 220-4AA□□ | 206 | |
| 45 | 52 | 225 M | 1470 | 292 | EFF2 | 93.4 | 93.4 | 0.87 | 80 ¹⁾ | 1LA5 223-4AA□□ | 232 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | | | Final position: Type of construction code | | | | | | |
|---------------------------|------------------------------------|---------------|----------|----------|----------|----------|--|---|---|----------------------|---|---------------------|---|
| | 50 Hz | | | 60 Hz | | | Without flange | With flange | | With standard flange | | With special flange | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 460 VY | 460 VΔ | IM B3/6/7/8, IM V6, IM V5 without protective cover | IM B5, IM V1 without protective cover ²⁾ | IM V1 with protective cover ²⁾³⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 3 | 5 | 1 | 6 | 0 | 1 | 4 | 6 | 2 | 7 | 3 |
| 1LA7 05 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | – | ✓ | ✓ | ✓ | ✓ |
| 1LA7 06 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 07 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 08 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 09 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 10 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 11 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 13 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 16 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA5 18 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | ✓ | – | – | – |
| 1LA5 20 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | ✓ | – | – | – |
| 1LA5 22 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ For connection to 230 V, parallel supply cables are necessary (see catalog part 0 "Introduction", "Connection, circuit and connection box").
²⁾ 1LA5 183... to 1LA5 223-... motors (motor series 1LA5, frame size 180 M to 225 M) can be supplied with two additional eyebolts; specify supplement **-Z** and order code **K32**.

³⁾ The "Second shaft extension" option, order code **K16** is not possible.
⁴⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with improved efficiency – Aluminum series 1LA7/1LA5

Selection and ordering data (continued)

| Order No. | Locked-rotor torque | Locked-rotor current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | |
|---|--|------------------------------|------------------|--------------|-------------------------|--|--|
| | with direct starting as multiple of rated torque | as multiple of rated current | torque | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz $L_{p(A)}$ dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | | | | |
| ▶ Phase-out model | | | | | | | |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | |
| 1LA7 050-4AB□□ | 1.9 | 2.6 | 1.9 | 13 | 0.00027 | 42 | 53 |
| 1LA7 053-4AB□□ | 1.9 | 2.6 | 1.9 | 13 | 0.00027 | 42 | 53 |
| 1LA7 060-4AB□□ | 1.9 | 2.8 | 2 | 13 | 0.00029 | 42 | 53 |
| 1LA7 063-4AB□□ | 1.9 | 3 | 1.9 | 13 | 0.00037 | 42 | 53 |
| 1LA7 070-4AB□□ | 1.9 | 3 | 1.9 | 13 | 0.00052 | 44 | 55 |
| 1LA7 073-4AB□□ | 1.9 | 3.3 | 2.1 | 13 | 0.00077 | 44 | 55 |
| 1LA7 080-4AA□□ | 2.2 | 3.9 | 2.2 | 16 | 0.0014 | 47 | 58 |
| 1LA7 083-4AA□□ | 2.3 | 4.2 | 2.3 | 16 | 0.0017 | 47 | 58 |
| 1LA7 090-4AA□□ | 2.3 | 4.6 | 2.4 | 16 | 0.0024 | 50 | 62 |
| 1LA7 096-4AA□□ | 2.4 | 5.3 | 2.6 | 16 | 0.0033 | 50 | 62 |
| ▶ 1LA7 106-4AA□□ | 2.5 | 5.6 | 2.8 | 16 | 0.0047 | 56 | 68 |
| ▶ 1LA7 107-4AA□□ | 2.7 | 5.6 | 3 | 16 | 0.0055 | 56 | 68 |
| ▶ 1LA7 113-4AA□□ | 2.7 | 6 | 3 | 16 | 0.012 | 53 | 65 |
| ▶ 1LA7 130-4AA□□ | 2.5 | 6.3 | 3.1 | 16 | 0.018 | 62 | 74 |
| ▶ 1LA7 133-4AA□□ | 2.7 | 6.7 | 3.2 | 16 | 0.023 | 62 | 74 |
| ▶ 1LA7 163-4AA□□ | 2.2 | 6.2 | 2.7 | 16 | 0.043 | 66 | 78 |
| ▶ 1LA7 166-4AA□□ | 2.6 | 6.5 | 3 | 16 | 0.055 | 66 | 78 |
| 1LA5 183-4AA□□ | 2.3 | 7.5 | 3 | 16 | 0.13 | 63 | 76 |
| 1LA5 186-4AA□□ | 2.3 | 7.5 | 3 | 16 | 0.15 | 63 | 76 |
| 1LA5 207-4AA□□ | 2.6 | 7 | 3.2 | 16 | 0.24 | 65 | 78 |
| 1LA5 220-4AA□□ | 2.8 | 7 | 3.2 | 16 | 0.32 | 65 | 78 |
| 1LA5 223-4AA□□ | 2.8 | 7.7 | 3.3 | 16 | 0.36 | 65 | 78 |

- ▶ The Order No. for 1LA7 motors marked with this symbol are phase-out models.
1LE1 motors are the successors.
For additional information see catalog part 1 "New Generation 1LE1/1PC1" under "Self-ventilated energy-saving motors with improved efficiency" Pages 1/18 to 1/21 or under "General Line motors with shorter delivery time" (defined versions - voltages, types of construction, motor protection and location of the connection boxes) Pages 1/8 to 1/17.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with improved efficiency – Aluminum series 1LA7/1LA5

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output | | | | | | Order No. | Price | Weight |
|---|-------------------|------------|----------------------------------|-----------------------|-------------------------------------|------------------------------|------------------------------|--------------------------------|-------------------|-----------|--------|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class according to CEMEP | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | ► Phase-out model | m kg | |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | |
| 0.09 | 0.1 | 63 M | 850 | 1 | 45 | 41.5 | 0.66 | 0.44 | 1LA7 063-6AB□□ | 4.1 | |
| 0.18 | 0.21 | 71 M | 850 | 2 | 53 | 54.5 | 0.68 | 0.72 | 1LA7 070-6AA□□ | 5 | |
| 0.25 | 0.29 | 71 M | 830 | 2.8 | 60 | 58.5 | 0.76 | 0.79 | 1LA7 073-6AA□□ | 6.3 | |
| 0.37 | 0.43 | 80 M | 920 | 3.8 | 62 | 60.5 | 0.72 | 1.2 | 1LA7 080-6AA□□ | 9 | |
| 0.55 | 0.63 | 80 M | 910 | 5.8 | 67 | 66.5 | 0.74 | 1.6 | 1LA7 083-6AA□□ | 10 | |
| 0.75 | 0.86 | 90 S | 915 | 7.8 | 69 | 69 | 0.76 | 2.05 | 1LA7 090-6AA□□ | 12.5 | |
| 1.1 | 1.3 | 90 L | 915 | 11 | 72 | 72 | 0.77 | 2.85 | 1LA7 096-6AA□□ | 15.7 | |
| 1.5 | 1.75 | 100 L | 925 | 15 | 74 | 74 | 0.75 | 3.9 | ► 1LA7 106-6AA□□ | 21 | |
| 2.2 | 2.55 | 112 M | 940 | 22 | 78 | 78.5 | 0.78 | 5.2 | ► 1LA7 113-6AA□□ | 26 | |
| 3 | 3.45 | 132 S | 950 | 30 | 79 | 79.5 | 0.76 | 7.2 | ► 1LA7 130-6AA□□ | 38 | |
| 4 | 4.6 | 132 M | 950 | 40 | 80.5 | 80.5 | 0.76 | 9.4 | ► 1LA7 133-6AA□□ | 44 | |
| 5.5 | 6.3 | 132 M | 950 | 55 | 83 | 83 | 0.76 | 12.6 | ► 1LA7 134-6AA□□ | 52 | |
| 7.5 | 8.6 | 160 M | 960 | 75 | 86 | 86 | 0.74 | 17 | ► 1LA7 163-6AA□□ | 74 | |
| 11 | 12.6 | 160 L | 960 | 109 | 87.5 | 87.5 | 0.74 | 24.5 | ► 1LA7 166-6AA□□ | 95 | |
| 15 | 18 | 180 L | 970 | 148 | 89.5 | 89.5 | 0.77 | 31.5 | 1LA5 186-6AA□□ | 126 | |
| 18.5 | 22 | 200 L | 975 | 181 | 90.2 | 90.2 | 0.77 | 38.5 | 1LA5 206-6AA□□ | 161 | |
| 22 | 26.5 | 200 L | 975 | 215 | 90.8 | 90.8 | 0.77 | 45.5 | 1LA5 207-6AA□□ | 183 | |
| 30 | 36 | 225 M | 978 | 293 | 91.8 | 91.8 | 0.77 | 61 ¹⁾ | 1LA5 223-6AA□□ | 214 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | | Final position: Type of construction code | | | | | | | |
|--------------------|------------------------------------|---------------|----------|----------|--|--|---|---|----------------------|---|---------------------|---|----------|
| | 50 Hz | | 60 Hz | | | Without flange | With flange | | With standard flange | | With special flange | | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 460 VY (see "Introduction" for outputs at 60 Hz) | IM B3/6/7/8, IM V6, IM V5 without protective cover | IM B5, IM V1 without protective cover ²⁾ | IM V1 with protective cover ²⁾³⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover | |
| | 1 | 6 | 3 | 5 | 1 | 6 | 0 | 1 | 4 | 6 | 2 | 7 | 3 |
| 1LA7 05 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | – | ✓ | ✓ | ✓ | ✓ |
| 1LA7 06 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 07 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 08 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 09 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 10 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 11 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 13 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 16 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA5 18 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | ✓ | – | – | – |
| 1LA5 20 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | ✓ | – | – | – |
| 1LA5 22 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ For connection to 230 V, parallel supply cables are necessary (see catalog part 0 "Introduction", "Connection, circuit and connection box").
²⁾ 1LA5 183-... to 1LA5 223-... motors (motor series 1LA5, frame size 180 M to 225 M) can be supplied with two additional eyebolts; specify supplement **-Z** and order code **K32**.

³⁾ The "Second shaft extension" option, order code **K16** is not possible.
⁴⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with improved efficiency – Aluminum series 1LA7/1LA5

Selection and ordering data (continued)

| Order No. | Locked-rotor torque | Locked-rotor current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | |
|---|--|------------------------------|------------------|--------------|-------------------------|--|--|
| | with direct starting as multiple of rated torque | as multiple of rated current | torque | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz $L_{p(A)}$ dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | | | | |
| ▶ Phase-out model | | | | | | | |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | |
| 1LA7 063-6AB□□ | 1.8 | 2 | 1.9 | 13 | 0.00037 | 39 | 50 |
| 1LA7 070-6AA□□ | 2.1 | 2.3 | 1.9 | 16 | 0.00055 | 39 | 50 |
| 1LA7 073-6AA□□ | 2.2 | 2.7 | 2 | 16 | 0.0008 | 39 | 50 |
| 1LA7 080-6AA□□ | 1.9 | 3.1 | 2.1 | 16 | 0.0014 | 40 | 51 |
| 1LA7 083-6AA□□ | 2.1 | 3.4 | 2.2 | 16 | 0.0017 | 40 | 51 |
| 1LA7 090-6AA□□ | 2.2 | 3.7 | 2.2 | 16 | 0.0024 | 43 | 55 |
| 1LA7 096-6AA□□ | 2.3 | 3.8 | 2.3 | 16 | 0.0033 | 43 | 55 |
| ▶ 1LA7 106-6AA□□ | 2.3 | 4 | 2.3 | 16 | 0.0047 | 47 | 59 |
| ▶ 1LA7 113-6AA□□ | 2.2 | 4.6 | 2.5 | 16 | 0.0091 | 52 | 64 |
| ▶ 1LA7 130-6AA□□ | 1.9 | 4.2 | 2.2 | 16 | 0.015 | 63 | 75 |
| ▶ 1LA7 133-6AA□□ | 2.1 | 4.5 | 2.4 | 16 | 0.019 | 63 | 75 |
| ▶ 1LA7 134-6AA□□ | 2.3 | 5 | 2.6 | 16 | 0.025 | 63 | 75 |
| ▶ 1LA7 163-6AA□□ | 2.1 | 4.6 | 2.5 | 16 | 0.044 | 66 | 78 |
| ▶ 1LA7 166-6AA□□ | 2.3 | 4.8 | 2.6 | 16 | 0.063 | 66 | 78 |
| 1LA5 186-6AA□□ | 2 | 5.2 | 2.4 | 16 | 0.15 | 66 | 78 |
| 1LA5 206-6AA□□ | 2.7 | 5.5 | 2.8 | 16 | 0.24 | 66 | 78 |
| 1LA5 207-6AA□□ | 2.8 | 5.5 | 2.9 | 16 | 0.28 | 66 | 78 |
| 1LA5 223-6AA□□ | 2.8 | 5.7 | 2.9 | 16 | 0.36 | 66 | 78 |

- ▶ The Order No. for 1LA7 motors marked with this symbol are phase-out models.

1LE1 motors are the successors.

For additional information see catalog part 1 "New Generation 1LE1/1PC1" under "Self-ventilated energy-saving motors with improved efficiency" Pages 1/18 to 1/21 or under "General Line motors with shorter delivery time" (defined versions - voltages, types of construction, motor protection and location of the connection boxes) Pages 1/8 to 1/17.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with improved efficiency – Aluminum series 1LA7/1LA5

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output | | | | | | Order No. | Price | Weight |
|---|-------------------|------------|----------------------------------|-----------------------|-------------------------------------|------------------------------|------------------------------|--------------------------------|-------------------|----------------|--------|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class according to CEMEP | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | ► Phase-out model | <i>m</i> kg | |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | |
| 0.09 | 0.1 | 71 M | 630 | 1.4 | 53 | 54.5 | 0.68 | 0.36 | 1LA7 070-8AB□□ | 6.3 | |
| 0.12 | 0.14 | 71 M | 645 | 1.8 | 53 | 49.5 | 0.64 | 0.51 | 1LA7 073-8AB□□ | 6.3 | |
| 0.18 | 0.21 | 80 M | 675 | 2.5 | 51 | 49.5 | 0.68 | 0.75 | 1LA7 080-8AB□□ | 9 | |
| 0.25 | 0.29 | 80 M | 685 | 3.5 | 55 | 50.5 | 0.64 | 1.02 | 1LA7 083-8AB□□ | 10 | |
| 0.37 | 0.43 | 90 S | 675 | 5.2 | 63 | 62 | 0.75 | 1.14 | 1LA7 090-8AB□□ | 10.5 | |
| 0.55 | 0.63 | 90 L | 675 | 7.8 | 66 | 65 | 0.76 | 1.58 | 1LA7 096-8AB□□ | 13.2 | |
| 0.75 | 0.86 | 100 L | 680 | 11 | 66 | 65 | 0.76 | 2.15 | ► 1LA7 106-8AB□□ | 19 | |
| 1.1 | 1.3 | 100 L | 680 | 15 | 72 | 72 | 0.76 | 2.9 | ► 1LA7 107-8AB□□ | 22 | |
| 1.5 | 1.75 | 112 M | 705 | 20 | 74 | 74 | 0.76 | 3.85 | ► 1LA7 113-8AB□□ | 24 | |
| 2.2 | 2.55 | 132 S | 700 | 30 | 75 | 75 | 0.74 | 5.7 | ► 1LA7 130-8AB□□ | 38 | |
| 3 | 3.45 | 132 M | 700 | 41 | 77 | 77.5 | 0.74 | 7.6 | ► 1LA7 133-8AB□□ | 44 | |
| 4 | 4.6 | 160 M | 715 | 53 | 80 | 80 | 0.72 | 10 | ► 1LA7 163-8AB□□ | 64 | |
| 5.5 | 6.3 | 160 M | 710 | 74 | 83.5 | 83.5 | 0.73 | 13 | ► 1LA7 164-8AB□□ | 74 | |
| 7.5 | 8.6 | 160 L | 715 | 100 | 85.5 | 85.5 | 0.72 | 17.6 | ► 1LA7 166-8AB□□ | 94 | |
| 11 | 13.2 | 180 L | 725 | 145 | 87 | 87 | 0.75 | 24.5 | 1LA5 186-8AB□□ | 128 | |
| 15 | 18 | 200 L | 725 | 198 | 87.5 | 87.5 | 0.78 | 31.5 | 1LA5 207-8AB□□ | 176 | |
| 18.5 | 22 | 225 NO | 725 | 244 | 89.2 | 89.2 | 0.79 | 38 | 1LA5 220-8AB□□ | 184 | |
| 22 | 26.5 | 225 M | 725 | 290 | 90.6 | 90.6 | 0.79 | 44.5 | 1LA5 223-8AB□□ | 214 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | | Final position: Type of construction code | | | | | | | |
|--------------------|------------------------------------|---------------|----------|----------|--|--|---|--|----------------------|---|---------------------|---|----------|
| | 50 Hz | | 60 Hz | | | Without flange | With flange | | With standard flange | | With special flange | | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 460 VY (see "Introduction" for outputs at 60 Hz) | IM B3/6/7/8, IM V6, IM V5 without protective cover | IM B5, IM V1 without protective cover ¹⁾ | IM V1 with protective cover ^{1) 2)} | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover | |
| | 1 | 6 | 3 | 5 | 1 | 6 | 0 | 1 | 4 | 6 | 2 | 7 | 3 |
| 1LA7 05 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | – | ✓ | ✓ | ✓ | ✓ |
| 1LA7 06 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 07 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 08 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 09 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 10 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 11 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 13 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 16 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA5 18 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | ✓ | – | – | – |
| 1LA5 20 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | ✓ | – | – | – |
| 1LA5 22 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ 1LA5 183-... to 1LA5 223-... motors (motor series 1LA5, frame size 180 M to 225 M) can be supplied with two additional eyebolts; specify supplement **-Z** and order code **K32**.

²⁾ The "Second shaft extension" option, order code **K16** is not possible.

³⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with improved efficiency – Aluminum series 1LA7/1LA5

Selection and ordering data (continued)

| Order No. | Locked-rotor torque | Locked-rotor current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | |
|---|--|------------------------------|------------------|--------------|-------------------------|--|--|
| | with direct starting as multiple of rated torque | as multiple of rated current | torque | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz $L_{p(A)}$ dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | | | | |
| ▶ Phase-out model | | | | | | | |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | |
| 1LA7 070-8AB□□ | 1.9 | 2.2 | 1.7 | 13 | 0.0008 | 36 | 47 |
| 1LA7 073-8AB□□ | 2.2 | 2.2 | 2 | 13 | 0.0008 | 36 | 47 |
| 1LA7 080-8AB□□ | 1.7 | 2.3 | 1.9 | 13 | 0.0014 | 41 | 52 |
| 1LA7 083-8AB□□ | 2 | 2.6 | 2.2 | 13 | 0.0017 | 41 | 52 |
| 1LA7 090-8AB□□ | 1.6 | 2.9 | 1.8 | 13 | 0.0023 | 41 | 53 |
| 1LA7 096-8AB□□ | 1.7 | 3 | 1.9 | 13 | 0.0031 | 41 | 53 |
| ▶ 1LA7 106-8AB□□ | 1.6 | 3 | 1.9 | 13 | 0.0051 | 45 | 57 |
| ▶ 1LA7 107-8AB□□ | 1.8 | 3.3 | 2.1 | 13 | 0.0063 | 45 | 57 |
| ▶ 1LA7 113-8AB□□ | 1.8 | 3.7 | 2.1 | 13 | 0.013 | 49 | 61 |
| ▶ 1LA7 130-8AB□□ | 1.9 | 3.9 | 2.3 | 13 | 0.014 | 53 | 65 |
| ▶ 1LA7 133-8AB□□ | 2.1 | 4.1 | 2.4 | 13 | 0.019 | 53 | 65 |
| ▶ 1LA7 163-8AB□□ | 2.2 | 4.5 | 2.6 | 13 | 0.036 | 63 | 75 |
| ▶ 1LA7 164-8AB□□ | 2.3 | 4.7 | 2.7 | 13 | 0.046 | 63 | 75 |
| ▶ 1LA7 166-8AB□□ | 2.7 | 5.3 | 3 | 13 | 0.064 | 63 | 75 |
| 1LA5 186-8AB□□ | 2 | 5 | 2.2 | 13 | 0.21 | 60 | 73 |
| 1LA5 207-8AB□□ | 2.1 | 5 | 2.2 | 13 | 0.37 | 58 | 71 |
| 1LA5 220-8AB□□ | 2.1 | 4.5 | 2.2 | 13 | 0.37 | 58 | 71 |
| 1LA5 223-8AB□□ | 2.2 | 4.8 | 2.3 | 13 | 0.45 | 58 | 71 |

- ▶ The Order No. for 1LA7 motors marked with this symbol are phase-out models.
1LE1 motors are the successors.
For additional information see catalog part 1 "New Generation 1LE1/1PC1" under "Self-ventilated energy-saving motors with improved efficiency" Pages 1/18 to 1/21.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with improved efficiency – Aluminum series 1LA7/1LA5

Selection and ordering data (continued)

| Rated output at 50 Hz, 1500 rpm | | Frame size | | Rated speed at 50 Hz, 1500 rpm | | Rated torque at 50 Hz, 1500 rpm | | Efficiency at 50 Hz 4/4-load | | Power factor at 50 Hz 4/4-load | | Rated current at 400 V, 50 Hz | | Order No. | Price | Weight motor |
|--|----------|------------|--|--------------------------------|----------|---------------------------------|----------|------------------------------|----------|--------------------------------|----------|-------------------------------|----------|-----------------------|-------|--------------|
| 1500 rpm | 3000 rpm | | | 1500 rpm | 3000 rpm | 1500 rpm | 3000 rpm | 1500 rpm | 3000 rpm | 1500 rpm | 3000 rpm | 1500 rpm | 3000 rpm | | | |
| P_{rated} kW | kW | FS | | n_{rated} rpm | rpm | T_{rated} Nm | Nm | η_{rated} % | % | $\cos\phi_{rated}$ | | I_{rated} A | A | | | m kg |
| 4/2-pole, 1500/3000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, double pole-changing for constant load torque with one winding connected in Dahlander circuit | | | | | | | | | | | | | | | | |
| 0.1 | 0.15 | 63 M | | 1330 | 2650 | 0.72 | 0.54 | 45 | 52 | 0.79 | 0.82 | 0.41 | 0.51 | 1LA7 060-0AAQQ | | 3.5 |
| 0.15 | 0.2 | 63 M | | 1330 | 2750 | 1.1 | 0.7 | 45 | 57 | 0.71 | 0.73 | 0.68 | 0.7 | 1LA7 063-0AAQQ | | 4.1 |
| 0.21 | 0.28 | 71 M | | 1375 | 2770 | 1.5 | 0.97 | 59 | 48 | 0.73 | 0.76 | 0.7 | 1.1 | 1LA7 070-0AAQQ | | 4.8 |
| 0.3 | 0.43 | 71 M | | 1390 | 2780 | 2.1 | 1.5 | 64 | 58 | 0.76 | 0.82 | 0.89 | 1.3 | 1LA7 073-0AAQQ | | 7 |
| 0.48 | 0.6 | 80 M | | 1390 | 2810 | 3.3 | 2 | 66 | 64 | 0.82 | 0.84 | 1.25 | 1.6 | 1LA7 080-0AAQQ | | 9 |
| 0.7 | 0.85 | 80 M | | 1390 | 2810 | 4.8 | 2.9 | 69 | 70 | 0.84 | 0.83 | 1.75 | 2.1 | 1LA7 083-0AAQQ | | 10 |
| 1.1 | 1.4 | 90 S | | 1390 | 2810 | 7.6 | 4.8 | 69 | 66 | 0.85 | 0.85 | 2.7 | 3.6 | 1LA7 090-0AAQQ | | 13 |
| 1.5 | 1.9 | 90 L | | 1410 | 2860 | 10 | 6.4 | 74 | 72 | 0.86 | 0.85 | 3.4 | 4.5 | 1LA7 096-0AAQQ | | 15.6 |
| 2 | 2.4 | 100 L | | 1410 | 2870 | 14 | 8 | 81 | 75 | 0.84 | 0.84 | 4.25 | 5.5 | 1LA7 106-0AAQQ | | 21 |
| 2.6 | 3.1 | 100 L | | 1400 | 2850 | 18 | 10 | 79 | 74 | 0.86 | 0.8 | 5.5 | 7.6 | 1LA7 107-0AAQQ | | 24 |
| 3.7 | 4.4 | 112 M | | 1420 | 2885 | 25 | 15 | 79 | 76 | 0.85 | 0.8 | 8 | 10.5 | 1LA7 113-0AAQQ | | 31 |
| 4.7 | 5.9 | 132 S | | 1450 | 2920 | 31 | 19 | 83 | 80 | 0.84 | 0.85 | 9.7 | 12.5 | 1LA7 130-0AAQQ | | 41 |
| 6.5 | 8 | 132 M | | 1450 | 2930 | 43 | 26 | 82 | 82.5 | 0.84 | 0.84 | 13.6 | 16.7 | 1LA7 133-0AAQQ | | 50 |
| 9.3 | 11.5 | 160 M | | 1455 | 2930 | 61 | 37 | 86.5 | 80 | 0.85 | 0.89 | 18.3 | 23.4 | 1LA7 163-0AAQQ | | 74 |
| 13 | 17 | 160 L | | 1455 | 2930 | 85 | 55 | 87.5 | 87 | 0.84 | 0.88 | 25.6 | 32 | 1LA7 166-0AAQQ | | 92 |
| 15 | 18 | 180 M | | 1470 | 2950 | 97 | 58 | 90 | 86.5 | 0.83 | 0.8 | 29 | 37.5 | 1LA5 183-0AAQQ | | 113 |
| 18 | 21.5 | 180 L | | 1465 | 2950 | 117 | 70 | 90 | 87 | 0.84 | 0.85 | 34.5 | 42 | 1LA5 186-0AAQQ | | 123 |
| 26 | 31 | 200 L | | 1465 | 2940 | 169 | 101 | 90.9 | 86.5 | 0.86 | 0.85 | 48.5 | 61 | 1LA5 207-0AAQQ | | 157 |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | |
|---|------------------------------------|--------------------------|--------------------------|--------------------------|--|---|---|-------------------------------------|---|-------------------------------------|---|---------------------|
| | 50 Hz, direct online starting | | | | Without flange | | With flange | | | With standard flange | | With special flange |
| | 230 V | 400 V | 500 V | 690 V | IM B3, IM B6/7/8, IM V6/5 without protective cover | IM B5, IM V1 without protective cover ¹⁾ | IM V1 with protective cover ¹⁾²⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover | |
| 1 | 6 | 5 | 0 | 0 | 1 | 4 | 6 | 2 | 7 | 3 | | |
| 1LA7 06 <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 1LA7 07 <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 1LA7 08 <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 1LA7 09 <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 1LA7 10 <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 1LA7 11 <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 1LA7 13 <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 1LA7 16 <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 1LA5 18 <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> ³⁾ | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 1LA5 20 <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> ³⁾ | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

- Standard version
- Without additional charge
- With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ 1LA5 183-... to 1LA5 207-... motors (motor series 1LA5, frame size 180 M to 200 L) can be supplied with two additional eyebolts; specify supplement **-Z** and order code **K32**.

²⁾ The "Second shaft extension" option, order code **K16** is not possible.

³⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with improved efficiency – Aluminum series 1LA7/1LA5

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting 1500 rpm T_{LR}/T_{rated} | Locked-rotor torque as multiple of torque 3000 rpm T_{LR}/T_{rated} | Locked-rotor current 1500 rpm I_{LR}/I_{rated} | Locked-rotor current 3000 rpm I_{LR}/I_{rated} | Breakdown torque 1500 rpm T_B/T_{rated} | Breakdown torque 3000 rpm T_B/T_{rated} | Torque class CL | Moment of inertia J kgm ² |
|--|---|--|---|---|--|--|--------------------|--|
| 4/2-pole, 1500/3000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, double pole-changing for constant load torque with one winding connected in Dahlander circuit | | | | | | | | |
| 1LA7 060-0AA□□ | 1.8 | 1.8 | 2.7 | 2.9 | 1.8 | 1.8 | 10 | 0.00029 |
| 1LA7 063-0AA□□ | 2 | 2 | 3 | 3.3 | 2 | 2 | 10 | 0.0004 |
| 1LA7 070-0AA□□ | 1.6 | 1.6 | 3 | 3.1 | 1.8 | 1.8 | 10 | 0.00052 |
| 1LA7 073-0AA□□ | 1.8 | 1.8 | 3.7 | 3.8 | 2 | 2 | 10 | 0.00076 |
| 1LA7 080-0AA□□ | 1.7 | 1.7 | 3.9 | 4 | 2 | 2 | 10 | 0.0014 |
| 1LA7 083-0AA□□ | 1.8 | 1.8 | 4.3 | 4.3 | 2.1 | 2.1 | 10 | 0.0017 |
| 1LA7 090-0AA□□ | 1.6 | 1.8 | 4.2 | 4.3 | 1.9 | 2 | 13 | 0.0024 |
| 1LA7 096-0AA□□ | 1.9 | 1.9 | 4.9 | 5.3 | 2 | 2.1 | 13 | 0.0033 |
| 1LA7 106-0AA□□ | 1.8 | 1.8 | 5 | 5.5 | 2 | 2.1 | 13 | 0.0048 |
| 1LA7 107-0AA□□ | 2.3 | 2.4 | 5.6 | 5.6 | 2.4 | 2.4 | 13 | 0.0055 |
| 1LA7 113-0AA□□ | 2 | 2.2 | 5.6 | 5.8 | 2.2 | 2.3 | 13 | 0.011 |
| 1LA7 130-0AA□□ | 1.7 | 1.6 | 6.3 | 6.5 | 2.2 | 2.2 | 10 | 0.018 |
| 1LA7 133-0AA□□ | 2 | 2.1 | 6.9 | 7.5 | 2.5 | 2.6 | 10 | 0.023 |
| 1LA7 163-0AA□□ | 2 | 1.8 | 6.7 | 7.4 | 2.6 | 2.4 | 10 | 0.043 |
| 1LA7 166-0AA□□ | 2.5 | 2.8 | 7.6 | 8.5 | 3 | 3 | 10 | 0.06 |
| 1LA5 183-0AA□□ | 2.1 | 2.2 | 6.7 | 7.5 | 2.7 | 3.2 | 13 | 0.13 |
| 1LA5 186-0AA□□ | 2 | 2.2 | 6.4 | 7.3 | 2.6 | 3.1 | 13 | 0.15 |
| 1LA5 207-0AA□□ | 2.6 | 2.6 | 6.7 | 7.5 | 2.8 | 3.3 | 13 | 0.24 |

See catalog part "Fan motors" for pole-changing motors for quadratic load torque for driving fans.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with improved efficiency – Aluminum series 1LA7/1LA5

Selection and ordering data (continued)

| Rated output at 50 Hz, 750 rpm | | Frame size | Rated speed at 50 Hz, 750 rpm | | Rated torque at 50 Hz, 750 rpm | | Efficiency at 50 Hz 4/4-load | | Power factor at 50 Hz 4/4-load | | Rated current at 400 V, 50 Hz | | Order No. | Price | Weight motor |
|---|----------|------------|-------------------------------|----------|--------------------------------|-----|------------------------------|------|--------------------------------|-------------------------|-------------------------------|----------|-----------------------|-------|--------------|
| P_{rated} kW | 1500 rpm | FS | n_{rated} rpm | 1500 rpm | T_{rated} Nm | Nm | η_{rated} % | % | $\cos\phi_{\text{rated}}$ | I_{rated} A | 750 rpm | 1500 rpm | | | |
| 8/4-pole, 750/1500 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, double pole-changing for constant load torque with one winding connected in Dahlander circuit | | | | | | | | | | | | | | | |
| 0.35 | 0.5 | 90 S | 675 | 1365 | 5.1 | 3.6 | 60 | 65 | 0.71 | 0.79 | 1.19 | 1.41 | 1LA7 090-0ABQQ | | 11 |
| 0.5 | 0.7 | 90 L | 675 | 1380 | 7.1 | 4.9 | 63 | 62 | 0.72 | 0.78 | 1.6 | 2.1 | 1LA7 096-0ABQQ | | 13.2 |
| 0.7 | 1.1 | 100 L | 690 | 1380 | 9.8 | 7.7 | 65 | 61 | 0.74 | 0.8 | 2.1 | 3.25 | 1LA7 106-0ABQQ | | 20 |
| 0.9 | 1.5 | 100 L | 690 | 1380 | 13 | 10 | 69 | 67 | 0.70 | 0.8 | 2.7 | 4.0 | 1LA7 107-0ABQQ | | 22 |
| 1.4 | 1.9 | 112 M | 690 | 1410 | 19 | 13 | 69 | 70 | 0.73 | 0.75 | 4 | 5.2 | 1LA7 113-0ABQQ | | 25 |
| 1.8 | 3.6 | 132 S | 720 | 1430 | 24 | 24 | 72 | 80 | 0.57 | 0.9 | 6.3 | 7.2 | 1LA7 130-0ABQQ | | 41 |
| 2.5 | 5 | 132 M | 720 | 1430 | 33 | 33 | 73 | 80 | 0.6 | 0.9 | 8.2 | 10 | 1LA7 133-0ABQQ | | 49 |
| 3.5 | 7 | 160 M | 725 | 1450 | 46 | 46 | 77 | 81.5 | 0.56 | 0.89 | 11.7 | 13.9 | 1LA7 163-0ABQQ | | 73 |
| 5.6 | 11 | 160 L | 725 | 1450 | 74 | 72 | 78 | 83 | 0.56 | 0.89 | 18.5 | 21.5 | 1LA7 166-0ABQQ | | 91 |
| 11 | 18 | 180 L | 725 | 1455 | 144 | 118 | 83.5 | 83.5 | 0.69 | 0.87 | 27.5 | 35 | 1LA5 186-0ABQQ | | 123 |
| 17 | 27 | 200 L | 730 | 1465 | 223 | 177 | 89 | 89.5 | 0.68 | 0.86 | 40.5 | 50.5 | 1LA5 207-0ABQQ | | 157 |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | |
|---|------------------------------------|--------------------------|--------------------------|--------------------------|--|---|--|-------------------------------------|---|-------------------------------------|---|
| | 50 Hz, direct online starting | | | | Without flange | With flange | | | With standard flange | | With special flange |
| | 230 V | 400 V | 500 V | 690 V | IM B3, IM B6/7/8, IM V6/5 without protective cover | IM B5, IM V1 without protective cover ¹⁾ | IM V1 with protective cover ^{1) 2)} | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 5 | 0 | 0 | 1 | 4 | 6 | 2 | 7 | 3 |
| 1LA7 06 <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 1LA7 07 <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 1LA7 08 <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 1LA7 09 <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 1LA7 10 <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 1LA7 11 <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 1LA7 13 <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 1LA7 16 <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 1LA5 18 <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> ³⁾ | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1LA5 20 <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> ³⁾ | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- Standard version
- Without additional charge
- With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ 1LA5 183-... to 1LA5 207-... motors (motor series 1LA5, frame size 180 M to 200 L) can be supplied with two additional eyebolts; specify supplement **-Z** and order code **K32**.

²⁾ The "Second shaft extension" option, order code **K16** is not possible.

³⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with improved efficiency – Aluminum series 1LA7/1LA5

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting at 750 rpm T_{LR}/T_{rated} | Locked-rotor torque as multiple of current at 1500 rpm T_{LR}/T_{rated} | Locked-rotor current at 750 rpm I_{LR}/I_{rated} | Locked-rotor current at 1500 rpm I_{LR}/I_{rated} | Breakdown torque at 750 rpm T_B/T_{rated} | Breakdown torque at 1500 rpm T_B/T_{rated} | Torque class CL | Moment of inertia J kgm ² |
|---|---|--|---|--|--|---|--------------------|--|
| 8/4-pole, 750/1500 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, double pole-changing for constant load torque with one winding connected in Dahlander circuit | | | | | | | | |
| 1LA7 090-0AB□□ | 1.3 | 1.3 | 2.5 | 3.2 | 1.6 | 1.6 | 10 | 0.0023 |
| 1LA7 096-0AB□□ | 1.4 | 1.5 | 3 | 3.5 | 1.7 | 1.8 | 10 | 0.0031 |
| 1LA7 106-0AB□□ | 1.7 | 1.6 | 3.3 | 3.5 | 2 | 1.9 | 10 | 0.0051 |
| 1LA7 107-0AB□□ | 1.8 | 1.6 | 3.5 | 3.6 | 2 | 1.9 | 10 | 0.0063 |
| 1LA7 113-0AB□□ | 1.4 | 1.5 | 3.6 | 4.4 | 1.7 | 1.8 | 10 | 0.013 |
| 1LA7 130-0AB□□ | 2 | 1.3 | 4.3 | 5.4 | 2.3 | 1.8 | 10 | 0.018 |
| 1LA7 133-0AB□□ | 2 | 1.3 | 4.3 | 5.4 | 2.3 | 1.8 | 10 | 0.023 |
| 1LA7 163-0AB□□ | 2 | 1.4 | 4 | 5.4 | 2.3 | 1.8 | 10 | 0.043 |
| 1LA7 166-0AB□□ | 2.2 | 1.7 | 4.2 | 5.9 | 2.4 | 2 | 10 | 0.06 |
| 1LA5 186-0AB□□ | 1.9 | 2 | 5.2 | 6.2 | 2.2 | 2.2 | 13 | 0.21 |
| 1LA5 207-0AB□□ | 2.4 | 2.3 | 5.4 | 6.6 | 2.5 | 2.5 | 13 | 0.37 |


See catalog part "Fan motors" for pole-changing motors for quadratic load torque for driving fans.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with high efficiency – Aluminum series 1LA9

Selection and ordering data

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | | | Order No. | Price | Weight IM B3 type of construction approx. m kg |
|--|------------|----------------------------------|-----------------------|---|------------------------------|------------------------------|--------------------------------|-------------------------------|---|-------|--|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class according to CEMEP | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | | | |
| P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm |  | η_{rated} % | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | For Order No. supplements for voltage and type of construction, see table below | | |
| 2-pole, 3000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, for use according to CEMEP | | | | | | | | | | | |
| 0.09 | 56 M | 2830 | 0.3 | | 70 | 70 | 0.76 | 0.24 | 1LA9 050-2KAQQ | 3 | |
| 0.12 | 56 M | 2830 | 0.4 | | 70 | 70 | 0.81 | 0.31 | 1LA9 053-2KAQQ | 3.8 | |
| 0.18 | 63 M | 2840 | 0.61 | | 70 | 70 | 0.78 | 0.48 | 1LA9 060-2KAQQ | 4.1 | |
| 0.25 | 63 M | 2840 | 0.84 | | 72 | 72 | 0.8 | 0.63 | 1LA9 063-2KAQQ | 5.1 | |
| 0.37 | 71 M | 2840 | 1.2 | | 74 | 74 | 0.77 | 0.94 | 1LA9 070-2KAQQ | 6 | |
| 0.55 | 71 M | 2835 | 1.9 | | 75 | 75 | 0.75 | 1.42 | 1LA9 073-2KAQQ | 7.2 | |
| 0.75 | 80 M | 2870 | 2.5 | | 80 | 80 | 0.82 | 1.66 | 1LA9 080-2KAQQ | 9.8 | |
| 1.1 | 80 M | 2860 | 3.7 | EFF1 | 84 | 84 | 0.89 | 2.1 | 1LA9 083-2KAQQ | 12.3 | |
| 1.5 | 90 S | 2890 | 5 | EFF1 | 85 | 85 | 0.87 | 2.95 | 1LA9 090-2KAQQ | 15 | |
| 2.2 | 90 L | 2890 | 7.3 | EFF1 | 86.5 | 86.5 | 0.87 | 4.2 | 1LA9 096-2KAQQ | 18.6 | |
| 3 | 100 L | 2890 | 9.9 | EFF1 | 87 | 87 | 0.88 | 5.7 | 1LA9 106-2KAQQ | 24 | |
| 4 | 112 M | 2905 | 13 | EFF1 | 88.5 | 88.5 | 0.89 | 7.3 | 1LA9 113-2KAQQ | 35 | |
| 5.5 | 132 S | 2930 | 18 | EFF1 | 89.5 | 89.5 | 0.9 | 9.9 | 1LA9 130-2KAQQ | 43 | |
| 7.5 | 132 S | 2930 | 24 | EFF1 | 90.5 | 90.5 | 0.92 | 13 | 1LA9 131-2KAQQ | 56 | |
| 11 | 160 M | 2945 | 36 | EFF1 | 91 | 91 | 0.9 | 19.4 | 1LA9 163-2KAQQ | 73 | |
| 15 | 160 M | 2945 | 49 | EFF1 | 91.5 | 91.5 | 0.9 | 26.5 | 1LA9 164-2KAQQ | 82 | |
| 18.5 | 160 L | 2940 | 60 | EFF1 | 92.3 | 92.5 | 0.92 | 31.5 | 1LA9 166-2KAQQ | 102 | |
| 22 | 180 M | 2945 | 71 | EFF1 | 93 | 93.2 | 0.89 | 38.5 ¹⁾ | 1LA9 183-2WAQQ | 131 | |
| 30 | 200 L | 2950 | 97 | EFF1 | 93.5 | 93.5 | 0.89 | 52 | 1LA9 206-2WAQQ | 185 | |
| 37 | 200 L | 2950 | 120 | EFF1 | 94 | 94.1 | 0.89 | 64 ¹⁾ | 1LA9 207-2WAQQ | 214 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | |
|---------------------------|------------------------------------|---------------|--------|--------|--|---------------------------------------|---|--------|---|--------|---|--|
| | 50 Hz | | | | Without flange | With flange | | | With standard flange | | With special flange | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6, IM V5 without protective cover | IM B5, IM V1 without protective cover | IM V1 with protective cover ²⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover | |
| | 1 | 6 | 3 | 5 | 0 | 1 | 4 | 6 | 2 | 7 | 3 | |
| 1LA9 05 □□ | ○ | ○ | ○ | – | □ | ✓ | – | – | ✓ | ✓ | ✓ | |
| 1LA9 06 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA9 07 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA9 08 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA9 09 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA9 10 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA9 11 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA9 13 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA9 16 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA9 18 □□ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | ✓ | – | – | – | |
| 1LA9 20 □□ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | ✓ | – | – | – | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ For connection to 230 V, parallel supply cables are necessary (see catalog part 0 "Introduction", "Connection, circuit and connection box").

²⁾ The "Second shaft extension" option, order code **K16** is not possible.

³⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with high efficiency – Aluminum series 1LA9

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | Noise at rated output | |
|--|--|--|----------------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz L_{pFA} dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| 2-pole, 3000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, for use according to CEMEP | | | | | | | |
| 1LA9 050-2KA□□ | 3.6 | 4.5 | 3 | 16 | 0.00015 | 41 | 52 |
| 1LA9 053-2KA□□ | 3.2 | 4.3 | 2.8 | 16 | 0.0002 | 41 | 52 |
| 1LA9 060-2KA□□ | 2.8 | 4.8 | 3.1 | 16 | 0.00022 | 49 | 60 |
| 1LA9 063-2KA□□ | 2.5 | 4.9 | 2.5 | 16 | 0.00026 | 49 | 60 |
| 1LA9 070-2KA□□ | 3.3 | 6.5 | 3.1 | 16 | 0.00041 | 52 | 63 |
| 1LA9 073-2KA□□ | 3.6 | 6.3 | 2.9 | 16 | 0.0005 | 52 | 63 |
| 1LA9 080-2KA□□ | 4.4 | 8.3 | 3.2 | 16 | 0.001 | 56 | 67 |
| 1LA9 083-2KA□□ | 3.8 | 7 | 3.2 | 16 | 0.0013 | 56 | 67 |
| 1LA9 090-2KA□□ | 4.1 | 7 | 3.5 | 16 | 0.0018 | 60 | 72 |
| 1LA9 096-2KA□□ | 4.1 | 7 | 3.5 | 16 | 0.0022 | 60 | 72 |
| 1LA9 106-2KA□□ | 3.4 | 7 | 3.2 | 16 | 0.0044 | 62 | 74 |
| 1LA9 113-2KA□□ | 2.8 | 7 | 3.2 | 16 | 0.0077 | 63 | 75 |
| 1LA9 130-2KA□□ | 2.7 | 7 | 3.2 | 16 | 0.019 | 68 | 80 |
| 1LA9 131-2KA□□ | 2.8 | 7 | 3.1 | 16 | 0.024 | 68 | 80 |
| 1LA9 163-2KA□□ | 2.5 | 7 | 3.1 | 16 | 0.044 | 70 | 82 |
| 1LA9 164-2KA□□ | 2.5 | 7 | 3.1 | 16 | 0.051 | 70 | 82 |
| 1LA9 166-2KA□□ | 2.4 | 7 | 3.1 | 16 | 0.065 | 70 | 82 |
| 1LA9 183-2WA□□ | 2.6 | 7.2 | 3.3 | 16 | 0.09 | 70 | 83 |
| 1LA9 206-2WA□□ | 2.5 | 7 | 3.2 | 16 | 0.16 | 71 | 84 |
| 1LA9 207-2WA□□ | 2.7 | 7 | 3.3 | 16 | 0.2 | 71 | 84 |


The motors can also be used for 60 Hz according to EPACT, see Pages 2/28 to 2/33.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with high efficiency – Aluminum series 1LA9

Selection and ordering data (continued)

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | | | Order No. | Price | Weight IM B3 type of construction approx. m kg |
|--|------------|----------------------------------|--------------------------|---|------------------------------|------------------------------|--------------------------------|-------------------------------|---|-------|--|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class according to CEMEP | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | | | |
| P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm |  | η_{rated} % | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | For Order No. supplements for voltage and type of construction, see table below | | |
| 4-pole, 1500 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, for use according to CEMEP | | | | | | | | | | | |
| 0.06 | 56 M | 1380 | 0.42 | | 61 | 61 | 0.66 | 0.22 | 1LA9 050-4KAQQ | 3 | |
| 0.09 | 56 M | 1390 | 0.62 | | 62 | 62 | 0.68 | 0.31 | 1LA9 053-4KAQQ | 3.8 | |
| 0.12 | 63 M | 1395 | 0.82 | | 66 | 66 | 0.65 | 0.41 | 1LA9 060-4KAQQ | 4.1 | |
| 0.18 | 63 M | 1395 | 1.3 | | 65 | 65 | 0.68 | 0.59 | 1LA9 063-4KAQQ | 5.1 | |
| 0.25 | 71 M | 1410 | 1.7 | | 70 | 70 | 0.64 | 0.81 | 1LA9 070-4KAQQ | 6 | |
| 0.37 | 71 M | 1385 | 2.6 | | 71 | 71 | 0.73 | 1.04 | 1LA9 073-4KAQQ | 7.2 | |
| 0.55 | 80 M | 1410 | 3.7 | | 77 | 77 | 0.78 | 1.32 | 1LA9 080-4KAQQ | 9.8 | |
| 0.75 | 80 M | 1400 | 5.1 | | 81 | 81 | 0.75 | 1.78 | 1LA9 083-4KAQQ | 12.3 | |
| 1.1 | 90 S | 1440 | 7.3 | EFF1 | 84 | 84 | 0.77 | 2.45 | 1LA9 090-4KAQQ | 15 | |
| 1.5 | 90 L | 1440 | 9.9 | EFF1 | 85 | 85 | 0.77 | 3.3 | 1LA9 096-4KAQQ | 18 | |
| 2.2 | 100 L | 1435 | 15 | EFF1 | 86.5 | 86.5 | 0.82 | 4.5 | 1LA9 106-4KAQQ | 25 | |
| 3 | 100 L | 1435 | 20 | EFF1 | 87.5 | 87.7 | 0.81 | 6.1 | 1LA9 107-4KAQQ | 30 | |
| 4 | 112 M | 1440 | 27 | EFF1 | 88.5 | 89 | 0.81 | 8.1 | 1LA9 113-4KAQQ | 37 | |
| 5.5 | 132 S | 1455 | 36 | EFF1 | 89.5 | 89.5 | 0.84 | 10.6 | 1LA9 130-4KAQQ | 45 | |
| 7.5 | 132 M | 1455 | 49 | EFF1 | 90.3 | 90.5 | 0.84 | 14.2 | 1LA9 133-4KAQQ | 60 | |
| 11 | 160 M | 1460 | 72 | EFF1 | 91.5 | 92 | 0.85 | 20.5 | 1LA9 163-4KAQQ | 81 | |
| 15 | 160 L | 1460 | 98 | EFF1 | 92 | 92.3 | 0.86 | 27.5 | 1LA9 166-4KAQQ | 107 | |
| 18.5 | 180 M | 1465 | 121 | EFF1 | 92.5 | 93 | 0.84 | 34.5 ¹⁾ | 1LA9 183-4WAQQ | 126 | |
| 22 | 180 L | 1465 | 143 | EFF1 | 93 | 93.4 | 0.84 | 40.5 ¹⁾ | 1LA9 186-4WAQQ | 146 | |
| 30 | 200 L | 1465 | 196 | EFF1 | 93.5 | 94 | 0.87 | 53 | 1LA9 207-4WAQQ | 199 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code 50 Hz | | | | Final position: Type of construction code | | | | | | | |
|---|---|-----------------------|-----------------------|-----------------------|--|---------------------------------------|---|-------------------------------------|---|-------------------------------------|---|--|
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | Without flange | With flange | | | With standard flange | | With special flange | |
| | | | | | IM B3/6/7/8, IM V6, IM V5 without protective cover | IM B5, IM V1 without protective cover | IM V1 with protective cover ²⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover | |
| | 1 | 6 | 3 | 5 | 0 | 1 | 4 | 6 | 2 | 7 | 3 | |
| 1LA9 05 <input type="checkbox"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | – | <input type="checkbox"/> | <input checked="" type="checkbox"/> | – | – | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 1LA9 06 <input type="checkbox"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | – | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 1LA9 07 <input type="checkbox"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | – | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 1LA9 08 <input type="checkbox"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | – | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 1LA9 09 <input type="checkbox"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | – | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 1LA9 10 <input type="checkbox"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 1LA9 11 <input type="checkbox"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 1LA9 13 <input type="checkbox"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 1LA9 16 <input type="checkbox"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 1LA9 18 <input type="checkbox"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | – | – | – | |
| 1LA9 20 <input type="checkbox"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | – | – | – | |

- Standard version
- Without additional charge
- With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ For connection to 230 V, parallel supply cables are necessary (see catalog part 0 "Introduction", "Connection, circuit and connection box").

²⁾ The "Second shaft extension" option, order code **K16** is not possible.

³⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with high efficiency – Aluminum series 1LA9

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | Noise at rated output | |
|--|---|---|----------------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz L_{pFA} dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| 4-pole, 1500 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, for use according to CEMEP | | | | | | | |
| 1LA9 050-4KA□□ | 2.7 | 3.1 | 2.8 | 16 | 0.00027 | 42 | 53 |
| 1LA9 053-4KA□□ | 2.8 | 3.2 | 2.8 | 16 | 0.00035 | 42 | 53 |
| 1LA9 060-4KA□□ | 2.7 | 3.5 | 2.6 | 16 | 0.00037 | 42 | 53 |
| 1LA9 063-4KA□□ | 3 | 3.6 | 2.5 | 16 | 0.00045 | 42 | 53 |
| 1LA9 070-4KA□□ | 3.6 | 4.3 | 3.1 | 16 | 0.00076 | 44 | 55 |
| 1LA9 073-4KA□□ | 3.3 | 4.2 | 3 | 16 | 0.00095 | 44 | 55 |
| 1LA9 080-4KA□□ | 3.4 | 5.6 | 2.9 | 16 | 0.0017 | 47 | 58 |
| 1LA9 083-4KA□□ | 4 | 5.8 | 3.5 | 16 | 0.0024 | 47 | 58 |
| 1LA9 090-4KA□□ | 3.1 | 6.4 | 3.2 | 16 | 0.0033 | 48 | 60 |
| 1LA9 096-4KA□□ | 3.6 | 6.7 | 3.4 | 16 | 0.004 | 48 | 60 |
| 1LA9 106-4KA□□ | 3.4 | 7 | 3.6 | 16 | 0.0062 | 53 | 65 |
| 1LA9 107-4KA□□ | 3.8 | 7 | 3.9 | 16 | 0.0077 | 53 | 65 |
| 1LA9 113-4KA□□ | 3.2 | 6.9 | 3.2 | 16 | 0.014 | 53 | 65 |
| 1LA9 130-4KA□□ | 3.2 | 7 | 3.6 | 16 | 0.023 | 62 | 74 |
| 1LA9 133-4KA□□ | 3.4 | 7 | 3.6 | 16 | 0.029 | 62 | 74 |
| 1LA9 163-4KA□□ | 2.6 | 6.9 | 3.2 | 16 | 0.055 | 66 | 78 |
| 1LA9 166-4KA□□ | 2.8 | 7 | 3.3 | 16 | 0.072 | 66 | 78 |
| 1LA9 183-4WA□□ | 2.8 | 7 | 3.2 | 16 | 0.15 | 63 | 76 |
| 1LA9 186-4WA□□ | 3.1 | 7.3 | 3.4 | 16 | 0.19 | 63 | 76 |
| 1LA9 207-4WA□□ | 3 | 7 | 3.2 | 16 | 0.32 | 65 | 78 |

The motors can also be used for 60 Hz according to EPACT, see Pages 2/28 to 2/33.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with high efficiency – Aluminum series 1LA9

Selection and ordering data (continued)

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | | Rated current at 400 V, 50 Hz | Order No. | Price | Weight IM B3 type of construction approx. m kg |
|--|------------|----------------------------------|-----------------------|-------------------------------------|------------------------------|------------------------------|--------------------------------|---|-----------|-------|--|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class according to CEMEP | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | | | | |
| P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | For Order No. supplements for voltage and type of construction, see table below | | | |
| 6-pole, 1000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, for use according to CEMEP | | | | | | | | | | | |
| 0.75 | 90 S | 925 | 7.7 | 75.5 | 75.5 | 0.72 | 2 | 1LA9 090-6KAQQ | | 15.7 | |
| 1.1 | 90 L | 940 | 11 | 82 | 82 | 0.7 | 2.75 | 1LA9 096-6KAQQ | | 19 | |
| 1.5 | 100 L | 935 | 15 | 85 | 85 | 0.73 | 3.6 | 1LA9 106-6KAQQ | | 25 | |
| 2.2 | 112 M | 955 | 22 | 84 | 84 | 0.7 | 5.4 | 1LA9 113-6KAQQ | | 37 | |
| 4 | 132 M | 950 | 40 | 84 | 84 | 0.81 | 8.5 | 1LA9 133-6KAQQ | | 49 | |
| 5.5 | 132 M | 960 | 55 | 86 | 86 | 0.77 | 12 | 1LA9 134-6KAQQ | | 64 | |
| 7.5 | 160 M | 965 | 74 | 88 | 88 | 0.72 | 17 | 1LA9 163-6KAQQ | | 98 | |
| 11 | 160 L | 960 | 109 | 88.5 | 88.5 | 0.78 | 23 | 1LA9 166-6KAQQ | | 105 | |
| 15 | 180 L | 970 | 148 | 91 | 91 | 0.75 | 31.5 | 1LA9 186-6WAQQ | | 144 | |
| 18.5 | 200 L | 975 | 181 | 91 | 91 | 0.77 | 38 | 1LA9 206-6WAQQ | | 186 | |
| 22 | 200 L | 975 | 215 | 91.5 | 91.5 | 0.77 | 45 | 1LA9 207-6WAQQ | | 217 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | |
|---------------------------|------------------------------------|---------------|--------|--------|--|---------------------------------------|---|--------|---|--------|---|
| | 50 Hz | | | | Without flange | With flange | | | With standard flange | | With special flange |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6, IM V5 without protective cover | IM B5, IM V1 without protective cover | IM V1 with protective cover ¹⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| 1 | 6 | 3 | 5 | 0 | 1 | 4 | 6 | 2 | 7 | 3 | |
| 1LA9 05 □□ | ○ | ○ | ○ | – | □ | ✓ | – | – | ✓ | ✓ | ✓ |
| 1LA9 06 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 07 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 08 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 09 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 10 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 11 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 13 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 16 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 18 □□ | ○ | ○ | ○ | ○ | □ | ✓ ²⁾ | ✓ | ✓ | – | – | – |
| 1LA9 20 □□ | ○ | ○ | ○ | ○ | □ | ✓ ²⁾ | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ The "Second shaft extension" option, order code **K16** is not possible.

²⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with high efficiency – Aluminum series 1LA9

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | Noise at rated output | |
|--|--|--|----------------------------|--------------|-------------------------|--|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz $L_{p(A)}$ dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| 6-pole, 1000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, for use according to CEMEP | | | | | | | |
| 1LA9 090-6KA□□ | 3 | 4.4 | 2.5 | 16 | 0.0033 | 43 | 55 |
| 1LA9 096-6KA□□ | 3.7 | 5.7 | 3.2 | 16 | 0.005 | 43 | 55 |
| 1LA9 106-6KA□□ | 3.5 | 6.2 | 3.4 | 16 | 0.0065 | 47 | 59 |
| 1LA9 113-6KA□□ | 2.9 | 6.2 | 3 | 16 | 0.014 | 52 | 64 |
| 1LA9 133-6KA□□ | 3 | 6.3 | 2.7 | 16 | 0.025 | 63 | 75 |
| 1LA9 134-6KA□□ | 3.7 | 7.3 | 3.6 | 16 | 0.03 | 63 | 75 |
| 1LA9 163-6KA□□ | 2.4 | 5.5 | 2.5 | 16 | 0.063 | 66 | 78 |
| 1LA9 166-6KA□□ | 3.1 | 6.9 | 3.2 | 16 | 0.072 | 66 | 78 |
| 1LA9 186-6WA□□ | 2.2 | 6.5 | 2.5 | 16 | 0.19 | 66 | 78 |
| 1LA9 206-6WA□□ | 2.8 | 6.2 | 2.5 | 16 | 0.28 | 66 | 78 |
| 1LA9 207-6WA□□ | 2.8 | 6.2 | 2.5 | 16 | 0.36 | 66 | 78 |

The motors can also be used for 60 Hz according to EPACT, see Pages 2/28 to 2/33.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with high efficiency – Aluminum series 1LA9

Selection and ordering data (continued)

| Rated output at 60 Hz | Frame size | Operating values at rated output | | | | Nominal efficiency at 60 Hz | Power factor at 60 Hz 4/4-load | Rated current at 460 V, 60 Hz | Order No. | Price | Weight IM B3 type of construction approx. |
|---|------------|----------------------------------|--------------------------|---------------------------|----------------------------|-----------------------------|--------------------------------|-------------------------------|-----------|-----------|---|
| | | Rated speed at 60 Hz | Rated torque at 60 Hz | EPACT with CC No. CC 032A | EPACT with CC No. CC 032A | | | | | | |
| P_{rated} HP | FS | n_{rated} rpm | T_{rated} Nm | | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | | | m kg | |
| 2-pole, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, for use in the North American market according to EPACT | | | | | | | | | | | |
| 0.12 | 56 M | 3440 | 0.25 | No | 70 | 0.74 | 0.23 | 1LA9 050-2KA00 | | 3 | |
| 0.16 | 56 M | 3440 | 0.33 | No | 71 | 0.76 | 0.28 | 1LA9 053-2KA00 | | 3.8 | |
| 0.25 | 63 M | 3440 | 0.53 | No | 71 | 0.79 | 0.4 | 1LA9 060-2KA00 | | 4.1 | |
| 0.33 | 63 M | 3460 | 0.69 | No | 72 | 0.76 | 0.56 | 1LA9 063-2KA00 | | 5.1 | |
| 0.5 | 71 M | 3445 | 1 | No | 72 | 0.75 | 0.86 | 1LA9 070-2KA00 | | 6 | |
| 0.75 | 71 M | 3445 | 1.6 | No | 73 | 0.73 | 1.3 | 1LA9 073-2KA00 | | 7.2 | |
| 1 | 80 M | 3485 | 2 | Yes | 75.5 | 0.82 | 1.52 | 1LA9 080-2KA00 | | 9.8 | |
| 1.5 | 80 M | 3480 | 3.1 | Yes | 82.5 | 0.88 | 1.9 | 1LA9 083-2KA00 | | 12.3 | |
| 2 | 90 S | 3510 | 4.1 | Yes | 84 | 0.86 | 2.6 | 1LA9 090-2KA00 | | 15 | |
| 3 | 90 L | 3510 | 6.1 | Yes | 85.5 | 0.85 | 3.8 | 1LA9 096-2KA00 | | 18.6 | |
| 4 | 100 L | 3510 | 8.1 | No | 86.5 | 0.87 | 5 | 1LA9 106-2KA00 | | 24 | |
| 5 | 112 M | 3540 | 10 | Yes | 87.5 | 0.88 | 6 | 1LA9 113-2KA00 | | 35 | |
| 7.5 | 132 S | 3540 | 15 | Yes | 88.5 | 0.9 | 8.7 | 1LA9 130-2KA00 | | 43 | |
| 10 | 132 S | 3540 | 20 | Yes | 89.5 | 0.92 | 11.4 | 1LA9 131-2KA00 | | 56 | |
| 15 | 160 M | 3555 | 30 | Yes | 90.2 | 0.9 | 17 | 1LA9 163-2KA00 | | 73 | |
| 20 | 160 M | 3555 | 40 | Yes | 90.2 | 0.9 | 23.2 | 1LA9 164-2KA00 | | 82 | |
| 25 | 160 L | 3550 | 50 | Yes | 91 | 0.92 | 27.7 | 1LA9 166-2KA00 | | 102 | |
| 30 | 180 M | 3545 | 60 | Yes | 91 | 0.86 | 36 | 1LA9 183-2WA00 | | 131 | |
| 40 | 200 L | 3555 | 80 | Yes | 91.7 | 0.88 | 46.5 | 1LA9 206-2WA00 | | 185 | |
| 50 | 200 L | 3555 | 100 | Yes | 92.4 | 0.88 | 57 | 1LA9 207-2WA00 | | 214 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | Final position: Type of construction code | | | | | | |
|---------------------------|------------------------------------|--------|--|---|---|--------|---|--------|---------------------|
| | 60 Hz | | Without flange | | With flange | | With standard flange | | With special flange |
| | 460 VY | 460 VΔ | IM B3/6/7/8, IM V6, IM V5 without protective cover | IM B5, IM V1 without protective cover IM V3 | IM V1 with protective cover ¹⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | |
| 1 | 6 | 0 | 1 | 4 | 6 | 2 | 7 | 3 | |
| 1LA9 05 □□ | ○ | ○ | □ | ✓ | – | – | ✓ | ✓ | ✓ |
| 1LA9 06 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 07 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 08 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 09 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 10 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 11 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 13 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 16 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 18 □□ | ○ | ○ | □ | ✓ ²⁾ | ✓ | ✓ | – | – | – |
| 1LA9 20 □□ | ○ | ○ | □ | ✓ ²⁾ | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ The "Second shaft extension" option, order code **K16** is not possible.

²⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with high efficiency – Aluminum series 1LA9

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | Noise at rated output | |
|---|---|---|----------------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 60 Hz L_{pFA} dB(A) | Sound pressure level at 60 Hz L_{WA} dB(A) |
| 2-pole, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, for use in the North American market according to EPACT | | | | | | | |
| 1LA9 050-2KA□□ | 3.6 | 5.5 | 3.8 | 16 | 0.00015 | 45 | 56 |
| 1LA9 053-2KA□□ | 3.2 | 5.4 | 3.4 | 16 | 0.0002 | 45 | 56 |
| 1LA9 060-2KA□□ | 2.8 | 4.9 | 3.3 | 16 | 0.00022 | 53 | 64 |
| 1LA9 063-2KA□□ | 2.5 | 5 | 2.7 | 16 | 0.00026 | 53 | 64 |
| 1LA9 070-2KA□□ | 3.3 | 7.5 | 3.4 | 16 | 0.00041 | 56 | 67 |
| 1LA9 073-2KA□□ | 3.4 | 7.2 | 3.7 | 16 | 0.0005 | 56 | 67 |
| 1LA9 080-2KA□□ | 4.4 | 9.6 | 4.4 | 16 | 0.001 | 60 | 71 |
| 1LA9 083-2KA□□ | 3.8 | 8.6 | 3.2 | 16 | 0.0013 | 60 | 71 |
| 1LA9 090-2KA□□ | 4.1 | 8.6 | 4.1 | 16 | 0.0018 | 64 | 76 |
| 1LA9 096-2KA□□ | 4.1 | 8.5 | 5.1 | 16 | 0.0022 | 64 | 76 |
| 1LA9 106-2KA□□ | 3.4 | 8.6 | 3.7 | 16 | 0.0044 | 66 | 78 |
| 1LA9 113-2KA□□ | 2.8 | 9.2 | 4 | 16 | 0.0077 | 67 | 79 |
| 1LA9 130-2KA□□ | 2.7 | 8.5 | 3.8 | 16 | 0.019 | 72 | 84 |
| 1LA9 131-2KA□□ | 2.8 | 8.3 | 3.7 | 16 | 0.024 | 72 | 84 |
| 1LA9 163-2KA□□ | 2.5 | 8.5 | 3.7 | 16 | 0.044 | 74 | 86 |
| 1LA9 164-2KA□□ | 2.5 | 8.5 | 3.7 | 16 | 0.051 | 74 | 86 |
| 1LA9 166-2KA□□ | 2.4 | 8.5 | 3.5 | 16 | 0.065 | 74 | 86 |
| 1LA9 183-2WA□□ | 2.6 | 8.6 | 3.5 | 16 | 0.09 | 74 | 87 |
| 1LA9 206-2WA□□ | 2.5 | 8.4 | 3.6 | 16 | 0.16 | 75 | 88 |
| 1LA9 207-2WA□□ | 2.7 | 8.4 | 3.7 | 16 | 0.2 | 75 | 88 |

The motors can also be used for 50 Hz according to CEMEP, see Pages 2/22 to 2/27.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with high efficiency – Aluminum series 1LA9

Selection and ordering data (continued)

| Rated output at 60 Hz | Frame size | Operating values at rated output | | | | | Power factor at 60 Hz 4/4-load | Rated current at 460 V, 60 Hz | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight IM B3 type of construction approx. m kg |
|---|------------|----------------------------------|--------------------------|---------------------------|-----------------------------|---------------------------|--------------------------------|-------------------------------|--|-------|---|
| | | Rated speed at 60 Hz | Rated torque at 60 Hz | EPACT with CC No. CC 032A | Nominal efficiency at 60 Hz | | | | | | |
| P_{rated} HP | FS | n_{rated} rpm | T_{rated} Nm | | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | | | | |
| 4-pole, 1800 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, for use in the North American market according to EPACT | | | | | | | | | | | |
| 0.08 | 56 M | 1715 | 0.33 | No | 63 | 0.65 | 0.18 | 1LA9 050-4KA00 | | 3 | |
| 0.12 | 56 M | 1725 | 0.5 | No | 64 | 0.6 | 0.29 | 1LA9 053-4KA00 | | 3.8 | |
| 0.16 | 63 M | 1710 | 0.66 | No | 68 | 0.6 | 0.37 | 1LA9 060-4KA00 | | 4.1 | |
| 0.25 | 63 M | 1705 | 1.1 | No | 66 | 0.63 | 0.54 | 1LA9 063-4KA00 | | 5.1 | |
| 0.33 | 71 M | 1730 | 1.4 | No | 69 | 0.6 | 0.76 | 1LA9 070-4KA00 | | 6 | |
| 0.5 | 71 M | 1725 | 2.1 | No | 70 | 0.68 | 0.98 | 1LA9 073-4KA00 | | 7.2 | |
| 0.75 | 80 M | 1725 | 3.1 | No | 75.5 | 0.74 | 1.24 | 1LA9 080-4KA00 | | 9.8 | |
| 1 | 80 M | 1720 | 4.1 | Yes | 82.5 | 0.75 | 1.59 | 1LA9 083-4KA00 | | 12.3 | |
| 1.5 | 90 S | 1755 | 6.1 | Yes | 84 | 0.76 | 2.15 | 1LA9 090-4KA00 | | 15 | |
| 2 | 90 L | 1755 | 8.1 | Yes | 84 | 0.76 | 2.95 | 1LA9 096-4KA00 | | 18 | |
| 3 | 100 L | 1750 | 12 | No | 87.5 | 0.79 | 4 | 1LA9 106-4KA00 | | 25 | |
| 4 | 100 L | 1750 | 16 | No | 87.5 | 0.79 | 5.5 | 1LA9 107-4KA00 | | 30 | |
| 5 | 112 M | 1755 | 20 | Yes | 87.5 | 0.79 | 6.7 | 1LA9 113-4KA00 | | 37 | |
| 7.5 | 132 S | 1760 | 30 | Yes | 89.5 | 0.81 | 9.5 | 1LA9 130-4KA00 | | 45 | |
| 10 | 132 M | 1760 | 40 | Yes | 89.5 | 0.82 | 12.8 | 1LA9 133-4KA00 | | 60 | |
| 15 | 160 M | 1765 | 61 | Yes | 91 | 0.85 | 17.9 | 1LA9 163-4KA00 | | 81 | |
| 20 | 160 L | 1765 | 81 | Yes | 91 | 0.85 | 24.5 | 1LA9 166-4KA00 | | 107 | |
| 25 | 180 M | 1770 | 101 | Yes | 92.4 | 0.83 | 30.5 | 1LA9 183-4WA00 | | 126 | |
| 30 | 180 L | 1770 | 121 | Yes | 92.4 | 0.83 | 36 | 1LA9 186-4WA00 | | 146 | |
| 40 | 200 L | 1770 | 161 | Yes | 93 | 0.86 | 47 | 1LA9 207-4WA00 | | 199 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | Final position: Type of construction code | | | | | | |
|---------------------------|------------------------------------|----------|--|---------------------------------------|---|----------------------|---|---------------------|---|
| | 60 Hz | 460 VΔ | Without flange | With flange | | With standard flange | | With special flange | |
| | 460 VY | 460 VΔ | IM B3/6/7/8, IM V6, IM V5 without protective cover | IM B5, IM V1 without protective cover | IM V1 with protective cover ¹⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 0 | 1 | 4 | 6 | 2 | 7 | 3 |
| 1LA9 05 □□ | ○ | ○ | □ | ✓ | – | – | ✓ | ✓ | ✓ |
| 1LA9 06 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 07 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 08 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 09 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 10 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 11 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 13 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 16 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 18 □□ | ○ | ○ | □ | ✓ ²⁾ | ✓ | ✓ | – | – | – |
| 1LA9 20 □□ | ○ | ○ | □ | ✓ ²⁾ | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ The "Second shaft extension" option, order code **K16** is not possible.

²⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with high efficiency – Aluminum series 1LA9

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | Noise at rated output | |
|---|---|---|-------------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 60 Hz L_{pFA} dB(A) | Sound pressure level at 60 Hz L_{WA} dB(A) |
| 4-pole, 1800 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, for use in the North American market according to EPACT | | | | | | | |
| 1LA9 050-4KA□□ | 2.7 | 3.4 | 3 | 16 | 0.00027 | 46 | 57 |
| 1LA9 053-4KA□□ | 2.8 | 3.5 | 3 | 16 | 0.00035 | 46 | 57 |
| 1LA9 060-4KA□□ | 2.7 | 3.9 | 2.8 | 16 | 0.00037 | 46 | 57 |
| 1LA9 063-4KA□□ | 3 | 3.6 | 3.1 | 16 | 0.00045 | 46 | 57 |
| 1LA9 070-4KA□□ | 3.6 | 4.9 | 3.4 | 16 | 0.00076 | 48 | 59 |
| 1LA9 073-4KA□□ | 3.3 | 4.9 | 3.4 | 16 | 0.00095 | 48 | 59 |
| 1LA9 080-4KA□□ | 3.4 | 6.8 | 3.6 | 16 | 0.0017 | 51 | 62 |
| 1LA9 083-4KA□□ | 4 | 7.3 | 3.9 | 16 | 0.0024 | 51 | 62 |
| 1LA9 090-4KA□□ | 3.1 | 7.7 | 3.9 | 16 | 0.0033 | 52 | 64 |
| 1LA9 096-4KA□□ | 3.6 | 8.1 | 4.2 | 16 | 0.004 | 52 | 64 |
| 1LA9 106-4KA□□ | 3.4 | 8.4 | 4.3 | 16 | 0.0062 | 57 | 69 |
| 1LA9 107-4KA□□ | 3.8 | 8.7 | 4.6 | 16 | 0.0077 | 57 | 69 |
| 1LA9 113-4KA□□ | 3.2 | 8.6 | 3.9 | 16 | 0.014 | 57 | 69 |
| 1LA9 130-4KA□□ | 3.2 | 8.7 | 4.1 | 16 | 0.023 | 66 | 78 |
| 1LA9 133-4KA□□ | 3.4 | 8.7 | 4.1 | 16 | 0.029 | 66 | 78 |
| 1LA9 163-4KA□□ | 2.6 | 8.1 | 3.2 | 16 | 0.055 | 70 | 82 |
| 1LA9 166-4KA□□ | 2.8 | 8.5 | 3.5 | 16 | 0.072 | 70 | 82 |
| 1LA9 183-4WA□□ | 2.8 | 8.4 | 3.6 | 16 | 0.15 | 67 | 80 |
| 1LA9 186-4WA□□ | 3.1 | 8.8 | 3.9 | 16 | 0.19 | 67 | 80 |
| 1LA9 207-4WA□□ | 3 | 8.3 | 3.6 | 16 | 0.32 | 69 | 82 |

The motors can also be used for 50 Hz according to CEMEP, see Pages 2/22 to 2/27.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with high efficiency – Aluminum series 1LA9

Selection and ordering data (continued)

| Rated output at 60 Hz | Frame size | Operating values at rated output | | | | | Power factor at 60 Hz 4/4-load | Rated current at 460 V, 60 Hz | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight IM B3 type of construction approx. <i>m</i> kg |
|---|------------|----------------------------------|--------------------------|---------------------------|-----------------------------|---------------------------|--------------------------------|-------------------------------|--|-------|--|
| | | Rated speed at 60 Hz | Rated torque at 60 Hz | EPACT with CC No. CC 032A | Nominal efficiency at 60 Hz | | | | | | |
| P_{rated} HP | FS | n_{rated} rpm | T_{rated} Nm | | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | | | | |
| 6-pole, 1200 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, for use in the North American market according to EPACT | | | | | | | | | | | |
| 1 | 90 S | 1140 | 6.2 | Yes | 80 | 0.66 | 1.78 | 1LA9 090-6KA□□ | | 15.7 | |
| 1.5 | 90 L | 1150 | 9.3 | Yes | 85.5 | 0.64 | 2.55 | 1LA9 096-6KA□□ | | 19 | |
| 2 | 100 L | 1150 | 12 | No | 86.5 | 0.70 | 3.1 | 1LA9 106-6KA□□ | | 25 | |
| 3 | 112 M | 1160 | 18 | Yes | 87.5 | 0.66 | 4.8 | 1LA9 113-6KA□□ | | 37 | |
| 5 | 132 M | 1160 | 31 | Yes | 87.5 | 0.77 | 6.9 | 1LA9 133-6KA□□ | | 49 | |
| 7.5 | 132 M | 1160 | 46 | Yes | 89.5 | 0.73 | 10.6 | 1LA9 134-6KA□□ | | 64 | |
| 10 | 160 M | 1165 | 61 | Yes | 89.5 | 0.7 | 15 | 1LA9 163-6KA□□ | | 98 | |
| 15 | 160 L | 1165 | 92 | Yes | 90.2 | 0.77 | 19 | 1LA9 166-6KA□□ | | 105 | |
| 20 | 180 L | 1175 | 121 | Yes | 90.2 | 0.75 | 28 | 1LA9 186-6WA□□ | | 144 | |
| 25 | 200 L | 1175 | 152 | Yes | 91.7 | 0.75 | 34 | 1LA9 206-6WA□□ | | 186 | |
| 30 | 200 L | 1175 | 182 | Yes | 91.7 | 0.75 | 40 | 1LA9 207-6WA□□ | | 217 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | Final position: Type of construction code | | | | | | |
|---------------------------|------------------------------------|----------|--|---------------------------------------|---|----------|---|----------|---|
| | 60 Hz | 460 VΔ | Without flange | With flange | | IM B35 | With standard flange | | With special flange |
| | 460 VY | 460 VΔ | IM B3/6/7/8, IM V6, IM V5 without protective cover | IM B5, IM V1 without protective cover | IM V1 with protective cover ¹⁾ | IM V3 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 0 | 1 | 4 | 6 | 2 | 7 | 3 |
| 1LA9 05 □□ | ○ | ○ | □ | ✓ | – | – | ✓ | ✓ | ✓ |
| 1LA9 06 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 07 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 08 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 09 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 10 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 11 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 13 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 16 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 18 □□ | ○ | ○ | □ | ✓ ²⁾ | ✓ | ✓ | – | – | – |
| 1LA9 20 □□ | ○ | ○ | □ | ✓ ²⁾ | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ The "Second shaft extension" option, order code **K16** is not possible.

²⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with high efficiency – Aluminum series 1LA9

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | Noise at rated output | |
|---|--|--|----------------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 60 Hz L_{pFA} dB(A) | Sound pressure level at 60 Hz L_{WA} dB(A) |
| 6-pole, 1200 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, for use in the North American market according to EPACT | | | | | | | |
| 1LA9 090-6KA□□ | 3 | 5.6 | 3 | 16 | 0.0033 | 47 | 59 |
| 1LA9 096-6KA□□ | 3.7 | 6.4 | 3.7 | 16 | 0.005 | 47 | 59 |
| 1LA9 106-6KA□□ | 3.5 | 7.2 | 3.8 | 16 | 0.0065 | 51 | 63 |
| 1LA9 113-6KA□□ | 2.9 | 7.5 | 3.7 | 16 | 0.014 | 56 | 68 |
| 1LA9 133-6KA□□ | 3 | 7.9 | 3.6 | 16 | 0.025 | 67 | 79 |
| 1LA9 134-6KA□□ | 3.7 | 8.4 | 4.3 | 16 | 0.03 | 67 | 79 |
| 1LA9 163-6KA□□ | 2.4 | 6.4 | 2.8 | 16 | 0.063 | 70 | 82 |
| 1LA9 166-6KA□□ | 3.1 | 8.3 | 3.8 | 16 | 0.072 | 70 | 82 |
| 1LA9 186-6WA□□ | 2.8 | 7.1 | 2.8 | 16 | 0.19 | 70 | 82 |
| 1LA9 206-6WA□□ | 2.8 | 7.1 | 2.8 | 16 | 0.28 | 70 | 82 |
| 1LA9 207-6WA□□ | 2.8 | 7.2 | 2.8 | 16 | 0.36 | 70 | 82 |

The motors can also be used for 50 Hz according to CEMEP, see Pages 2/22 to 2/27.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated motors with increased output –
Aluminum series 1LA9

Selection and ordering data

| Rated output at | | Frame size | Operating values at rated output | | | | | | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight IM B3 type of construction approx. <i>m</i> kg |
|---|-------------------|------------|----------------------------------|-----------------------|------------------------------|------------------------------|------------------|------------------|--------------------------------|-------------------------------|--|-------|--|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | $\cos\phi$ rated | I_{rated} | | | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi$ rated | I_{rated} A | | | | | |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, with increased output, used as temperature class 155 (F) | | | | | | | | | | | | | |
| 0.2 | 0.23 | 56 M | 2830 | 0.67 | 69 | 69 | 0.82 | 0.51 | 1LA9 053-2LA00 | | 3.8 | | |
| 0.33 | 0.38 | 63 M | 2775 | 1.1 | 68 | 67.5 | 0.8 | 0.88 | 1LA9 060-2LA00 | | 4.1 | | |
| 0.45 | 0.52 | 63 M | 2720 | 1.6 | 68 | 67.5 | 0.84 | 1.14 | 1LA9 063-2LA00 | | 5.1 | | |
| 0.65 | 0.75 | 71 M | 2720 | 2.3 | 72 | 72 | 0.83 | 1.56 | 1LA9 070-2LA00 | | 6 | | |
| 0.94 | 1.08 | 71 M | 2735 | 3.3 | 73 | 73 | 0.82 | 2.25 | 1LA9 073-2LA00 | | 7.2 | | |
| 1.45 | 1.67 | 80 M | 2820 | 4.9 | 76 | 76 | 0.83 | 3.3 | 1LA9 080-2LA00 | | 9.8 | | |
| 1.75 | 2.01 | 80 M | 2840 | 5.9 | 77 | 77.5 | 0.82 | 4 | 1LA9 083-2LA00 | | 12.3 | | |
| 2.9 | 3.34 | 90 S | 2825 | 9.8 | 81 | 81 | 0.82 | 6.3 | 1LA9 090-2LA00 | | 15 | | |
| 3.8 | 4.37 | 90 L | 2810 | 13 | 81 | 81 | 0.85 | 8 | 1LA9 096-2LA00 | | 18.6 | | |
| 4.4 | 5.06 | 100 L | 2880 | 15 | 82 | 82 | 0.83 | 9.3 | 1LA9 106-2LA00 | | 24 | | |
| 6.5 | 7.48 | 112 M | 2900 | 21 | 85 | 85 | 0.83 | 13.2 | 1LA9 113-2LA00 | | 35 | | |
| 9 | 10.35 | 132 S | 2895 | 29 | 87 | 87 | 0.9 | 16.6 | 1LA9 130-2LA00 | | 43 | | |
| 12 | 13.8 | 132 S | 2905 | 39 | 87 | 87 | 0.89 | 22.5 | 1LA9 131-2LA00 | | 56 | | |
| 18 | 20.7 | 160 M | 2910 | 59 | 89 | 89 | 0.87 | 33.5 | 1LA9 163-2LA00 | | 73 | | |
| 21 | 24.15 | 160 M | 2910 | 68 | 90 | 90 | 0.91 | 37 | 1LA9 164-2LA00 | | 82 | | |
| 26 | 29.9 | 160 L | 2920 | 85 | 91 | 91 | 0.91 | 45.5 | 1LA9 166-2LA00 | | 102 | | |
| 33 | 37.95 | 180 M | 2940 | 107 | 92 | 92 | 0.86 | 60 | 1LA9 183-2AA00 | | 131 | | |
| 44 | 50.6 | 200 L | 2945 | 143 | 92 | 92 | 0.86 | 80 | 1LA9 206-2AA00 | | 182 | | |
| 53 | 60.95 | 200 L | 2945 | 172 | 92.5 | 92.5 | 0.87 | 95 | 1LA9 207-2AA00 | | 211 | | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | | | Final position: Type of construction code | | | | | | | | | |
|---------------------------|------------------------------------|---------------|--------|--------|--------|--------|--|---|---|--------|---|-------------|---|----------------------|--|---------------------|
| | 50 Hz | | | | | | 60 Hz | | Without flange | | | With flange | | With standard flange | | With special flange |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 460 VY | 460 VΔ | IM B3/6/7/8, IM V6, IM V5 without protective cover | IM B5, IM V1 without protective cover IM V3 | IM V1 with protective cover ¹⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover | | | |
| 1 | 6 | 3 | 5 | 1 | 6 | 0 | 1 | 4 | 6 | 2 | 7 | 3 | | | | |
| 1LA9 05 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | – | – | ✓ | ✓ | ✓ | | | |
| 1LA9 06 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 1LA9 07 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 1LA9 08 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 1LA9 09 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 1LA9 10 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 1LA9 11 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 1LA9 13 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 1LA9 16 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 1LA9 18 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ²⁾ | ✓ | ✓ | – | – | – | | | |
| 1LA9 20 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ²⁾ | ✓ | ✓ | – | – | – | | | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see “Special versions” in the “Selection and ordering data” under “Voltages”).

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see “Special versions” in the “Selection and ordering data” under “Types of construction”).

¹⁾ The “Second shaft extension” option, order code **K16** is not possible.

²⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated motors with increased output –
Aluminum series 1LA9

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | Noise at rated output | |
|---|---|---|----------------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz L_{pFA} dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, with increased output, used as temperature class 155 (F) | | | | | | | |
| 1LA9 053-2LA□□ | 2.1 | 4.5 | 2.3 | 16 | 0.0002 | 41 | 52 |
| 1LA9 060-2LA□□ | 2.3 | 4.4 | 2.2 | 16 | 0.00022 | 49 | 60 |
| 1LA9 063-2LA□□ | 2.2 | 4.2 | 2.3 | 16 | 0.00026 | 49 | 60 |
| 1LA9 070-2LA□□ | 2.4 | 4.5 | 2.5 | 16 | 0.00041 | 52 | 63 |
| 1LA9 073-2LA□□ | 2.5 | 4.8 | 2.4 | 16 | 0.0005 | 52 | 63 |
| 1LA9 080-2LA□□ | 3.1 | 6.7 | 3.1 | 16 | 0.001 | 56 | 67 |
| 1LA9 083-2LA□□ | 3.7 | 7.4 | 3.5 | 16 | 0.0013 | 56 | 67 |
| 1LA9 090-2LA□□ | 3.2 | 6.5 | 3 | 16 | 0.0018 | 60 | 72 |
| 1LA9 096-2LA□□ | 3.1 | 6.5 | 2.7 | 16 | 0.0022 | 60 | 72 |
| 1LA9 106-2LA□□ | 3 | 7.8 | 3.2 | 16 | 0.0044 | 62 | 74 |
| 1LA9 113-2LA□□ | 3 | 8.6 | 3.8 | 16 | 0.0077 | 63 | 75 |
| 1LA9 130-2LA□□ | 2 | 6.4 | 2.6 | 16 | 0.019 | 68 | 80 |
| 1LA9 131-2LA□□ | 3 | 7.4 | 3.2 | 16 | 0.024 | 68 | 80 |
| 1LA9 163-2LA□□ | 2.2 | 7 | 3.1 | 16 | 0.044 | 70 | 82 |
| 1LA9 164-2LA□□ | 2 | 6.9 | 2.7 | 16 | 0.051 | 70 | 82 |
| 1LA9 166-2LA□□ | 2.2 | 7.7 | 3.2 | 16 | 0.065 | 70 | 82 |
| 1LA9 183-2AA□□ | 2.5 | 7.4 | 3.3 | 16 | 0.09 | 70 | 83 |
| 1LA9 206-2AA□□ | 2.4 | 7.8 | 3.2 | 16 | 0.16 | 71 | 84 |
| 1LA9 207-2AA□□ | 2.6 | 8.2 | 3.3 | 16 | 0.2 | 71 | 84 |

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated motors with increased output –
Aluminum series 1LA9

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output | | | | | | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight IM B3 type of construction approx. m kg |
|--|-------------------|------------|----------------------------------|-----------------------|------------------------------|------------------------------|------------------|----------------|--------------------------------|-------------------------------|--|-------|---|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | $\cos\phi$ rated | I rated | | | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi$ rated | I rated A | | | | | |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, with increased output, used as temperature class 155 (F) | | | | | | | | | | | | | |
| 0.14 | 0.16 | 56 M | 1385 | 0.97 | 62 | 60.5 | 0.74 | 0.44 | 1LA9 053-4LA00 | | | 3.8 | |
| 0.21 | 0.24 | 63 M | 1335 | 1.5 | 60 | 58.5 | 0.77 | 0.66 | 1LA9 060-4LA00 | | | 4.1 | |
| 0.29 | 0.33 | 63 M | 1330 | 2.1 | 60 | 58.5 | 0.71 | 0.98 | 1LA9 063-4LA00 | | | 5.1 | |
| 0.45 | 0.52 | 71 M | 1340 | 3.2 | 64 | 63 | 0.71 | 1.42 | 1LA9 070-4LA00 | | | 6 | |
| 0.6 | 0.69 | 71 M | 1340 | 4.3 | 70 | 70 | 0.75 | 1.64 | 1LA9 073-4LA00 | | | 7.2 | |
| 0.9 | 1.04 | 80 M | 1340 | 6.4 | 70 | 70 | 0.81 | 2.3 | 1LA9 080-4LA00 | | | 9.8 | |
| 1.25 | 1.44 | 80 M | 1340 | 8.9 | 70 | 70 | 0.83 | 3.1 | 1LA9 083-4LA00 | | | 12.3 | |
| 1.8 | 2.07 | 90 S | 1380 | 12 | 77 | 77.5 | 0.83 | 4.05 | 1LA9 090-4LA00 | | | 15 | |
| 2.5 | 2.88 | 90 L | 1390 | 17 | 76 | 76 | 0.81 | 5.9 | 1LA9 096-4LA00 | | | 18 | |
| 4 | 4.6 | 100 L | 1410 | 27 | 77 | 77.5 | 0.81 | 9.3 | 1LA9 107-4LA00 | | | 25 | |
| 5.5 | 6.33 | 112 M | 1440 | 36 | 82 | 82 | 0.8 | 12.2 | 1LA9 113-4LA00 | | | 37 | |
| 8.6 | 9.89 | 132 S | 1440 | 57 | 84 | 84 | 0.83 | 17.8 | 1LA9 130-4LA00 | | | 45 | |
| 11 | 12.65 | 132 M | 1450 | 72 | 86 | 86 | 0.82 | 22.5 | 1LA9 133-4LA00 | | | 60 | |
| 17 | 19.55 | 160 M | 1455 | 112 | 88 | 88 | 0.84 | 33 | 1LA9 163-4LA00 | | | 81 | |
| 22 | 25.3 | 160 L | 1455 | 144 | 88 | 88 | 0.82 | 44 | 1LA9 166-4LA00 | | | 107 | |
| 26 | 30 | 180 M | 1460 | 170 | 90.5 | 90.5 | 0.83 | 50 | 1LA9 183-4AA00 | | | 126 | |
| 32 | 38 | 180 L | 1465 | 209 | 91.3 | 91.3 | 0.84 | 60 | 1LA9 186-4AA00 | | | 146 | |
| 43 | 49.6 | 200 L | 1465 | 280 | 91.7 | 91.7 | 0.85 | 80 | 1LA9 207-4AA00 | | | 196 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | | | |
|---------------------------|------------------------------------|---------------|----------|----------|---|----------|---|--|--|--------------------------------|-------------|---|----------------------|---|
| | 50 Hz | | | | 60 Hz | | | | Without flange | | With flange | | With standard flange | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 460 VY | 460 VΔ | (see "Introduction" for outputs at 60 Hz) | IM B3/6/7/8, IM V6, IM V5 without protective cover | IM B5, IM V1 without protective cover 1) | IM V1 with protective cover 1) | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 3 | 5 | 1 | 6 | 0 | 1 | 4 | 6 | 2 | 7 | 3 | |
| 1LA9 05 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | – | – | ✓ | ✓ | ✓ | |
| 1LA9 06 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA9 07 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA9 08 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA9 09 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA9 10 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA9 11 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA9 13 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA9 16 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA9 18 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ²⁾ | ✓ | ✓ | – | – | – | |
| 1LA9 20 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ²⁾ | ✓ | ✓ | – | – | – | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ The "Second shaft extension" option, order code **K16** is not possible.

²⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated motors with increased output –
Aluminum series 1LA9

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | Noise at rated output | |
|---|---|---|----------------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz L_{pFA} dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, with increased output, used as temperature class 155 (F) | | | | | | | |
| 1LA9 053-4LA□□ | 2.3 | 3.5 | 2.2 | 16 | 0.00035 | 42 | 53 |
| 1LA9 060-4LA□□ | 2.1 | 2.9 | 2.1 | 16 | 0.00037 | 42 | 53 |
| 1LA9 063-4LA□□ | 2.3 | 2.9 | 2.3 | 16 | 0.00045 | 42 | 53 |
| 1LA9 070-4LA□□ | 2.3 | 3.4 | 2.3 | 16 | 0.00076 | 44 | 55 |
| 1LA9 073-4LA□□ | 2.3 | 3.6 | 2.3 | 16 | 0.00095 | 44 | 55 |
| 1LA9 080-4LA□□ | 2.3 | 4.1 | 2.4 | 16 | 0.0017 | 47 | 58 |
| 1LA9 083-4LA□□ | 2.7 | 4.5 | 2.4 | 16 | 0.0024 | 47 | 58 |
| 1LA9 090-4LA□□ | 2.4 | 5.1 | 2.4 | 16 | 0.0033 | 48 | 60 |
| 1LA9 096-4LA□□ | 2.5 | 5.1 | 2.3 | 16 | 0.004 | 48 | 60 |
| 1LA9 107-4LA□□ | 2.7 | 6 | 3 | 16 | 0.0062 | 53 | 65 |
| 1LA9 113-4LA□□ | 3 | 6.8 | 3 | 16 | 0.014 | 53 | 65 |
| 1LA9 130-4LA□□ | 2.3 | 6.8 | 2.7 | 16 | 0.023 | 62 | 74 |
| 1LA9 133-4LA□□ | 2.8 | 7.4 | 3.1 | 16 | 0.029 | 62 | 74 |
| 1LA9 163-4LA□□ | 2.9 | 7.5 | 2.8 | 16 | 0.055 | 66 | 78 |
| 1LA9 166-4LA□□ | 3.1 | 8.3 | 3.4 | 16 | 0.072 | 66 | 78 |
| 1LA9 183-4AA□□ | 2.4 | 7.5 | 3.2 | 16 | 0.15 | 63 | 76 |
| 1LA9 186-4AA□□ | 2.5 | 7.9 | 3.4 | 16 | 0.19 | 63 | 76 |
| 1LA9 207-4AA□□ | 2.7 | 7.8 | 3.5 | 16 | 0.32 | 65 | 78 |

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with improved efficiency – Cast-iron series 1LA6/1LG4

Selection and ordering data

| Rated output at | | Frame size | Operating values at rated output | | | | | | | Rated current at 400 V, 50 Hz | Order No. | Price | Weight IM B3 type of construction approx. m kg |
|---|----------------|------------|----------------------------------|-----------------------|-------------------------------------|------------------------------|------------------------------|--------------------------------|--------------------|---|-----------|-------|--|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class according to CEMEP | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | | | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | EFF2 | η_{rated} % | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | For Order No. supplements for voltage and type of construction, see table below | | | |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | | |
| 3 | 3.45 | 100 L | 2890 | 9.9 | EFF2 | 84 | 84 | 0.85 | 6.1 | 1LA6 106-2AA□□ | | 34 | |
| 4 | 4.6 | 112 M | 2905 | 13 | EFF2 | 86 | 86 | 0.86 | 7.8 | 1LA6 113-2AA□□ | | 43 | |
| 5.5 | 6.3 | 132 S | 2925 | 18 | EFF2 | 86.5 | 86.5 | 0.89 | 10.4 | 1LA6 130-2AA□□ | | 53 | |
| 7.5 | 8.6 | 132 S | 2930 | 24 | EFF2 | 88 | 88 | 0.89 | 13.8 | 1LA6 131-2AA□□ | | 58 | |
| 11 | 12.6 | 160 M | 2940 | 36 | EFF2 | 89.5 | 89.5 | 0.88 | 20 | 1LA6 163-2AA□□ | | 96 | |
| 15 | 17.3 | 160 M | 2940 | 49 | EFF2 | 90 | 90.2 | 0.9 | 26.5 | 1LA6 164-2AA□□ | | 105 | |
| 18.5 | 21.3 | 160 L | 2940 | 60 | EFF2 | 91 | 91.2 | 0.91 | 32 | 1LA6 166-2AA□□ | | 115 | |
| 22 | 24.5 | 180 M | 2945 | 71 | EFF 2 | 91.6 | 91.6 | 0.86 | 40.5 ¹⁾ | 1LG4 183-2AA□□ | | 145 | |
| 30 | 33.5 | 200 L | 2950 | 97 | EFF 2 | 91.8 | 91.9 | 0.88 | 54 ¹⁾ | 1LG4 206-2AA□□ | | 205 | |
| 37 | 41.5 | 200 L | 2955 | 120 | EFF 2 | 92.9 | 93.2 | 0.89 | 65 ¹⁾ | 1LG4 207-2AA□□ | | 225 | |
| 45 | 51 | 225 M | 2960 | 145 | EFF 2 | 93.6 | 93.9 | 0.88 | 79 ¹⁾ | 1LG4 223-2AA□□ | | 285 | |
| 55 | 62 | 250 M | 2970 | 177 | EFF 2 | 93.6 | 93.8 | 0.88 | 96 | 1LG4 253-2AB□□ | | 375 | |
| 75 | 84 | 280 S | 2975 | 241 | EFF 2 | 94.5 | 94.3 | 0.88 | 130 ¹⁾ | 1LG4 280-2AB□□ | | 500 | |
| 90 | 101 | 280 M | 2975 | 289 | EFF 2 | 95.1 | 95.2 | 0.89 | 154 ¹⁾ | 1LG4 283-2AB□□ | | 540 | |
| 110 | 123 | 315 S | 2982 | 352 | | 94.6 | 93.8 | 0.88 | 190 ¹⁾ | 1LG4 310-2AB□□ | | 720 | |
| 132 | 148 | 315 M | 2982 | 423 | | 95.1 | 94.8 | 0.9 | 225 ¹⁾ | 1LG4 313-2AB□□ | | 775 | |
| 160 | 180 | 315 L | 2982 | 512 | | 95.5 | 95.3 | 0.91 | 265 ²⁾ | 1LG4 316-2AB□□ | | 900 | |
| 200 | 224 | 315 L | 2982 | 641 | | 95.9 | 95.8 | 0.92 | 325 ²⁾ | 1LG4 317-2AB□□ | | 1015 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | | | Final position: Type of construction code | | | | | | | |
|----------------------------|------------------------------------|---------------|----------|----------|----------|----------|--|---|--|---|----------------------|---|---------------------|---|
| | 50 Hz | | | 60 Hz | | | Without flange | With flange | | | With standard flange | | With special flange | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 460 VY | 460 VΔ | IM B3/6/7/8, IM V6, IM V5 without protective cover ³⁾ | IM B5, IM V1 without protective cover IM V3 ⁴⁾ | IM V1 without protective cover ⁴⁾ | IM V1 with protective cover ⁴⁾⁵⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 3 | 5 | 1 | 6 | 0 | 1 | 8 | 4 | 6 | 2 | 7 | 3 |
| 1LA6 10 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 11 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 13 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 16 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LG4 18 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 20 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 22 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 25 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 28 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 310 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 313 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 316 □□ | – | ○ | – | ○ | – | ○ | □ ⁷⁾ | – | ✓ ⁸⁾ | ✓ ⁸⁾ | ✓ | – | – | – |
| 1LG4 317 □□ | – | ○ | – | ○ | – | ○ | □ ⁷⁾ | – | ✓ ⁸⁾ | ✓ ⁸⁾ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

For footnotes, see Page 2/39 bottom.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with improved efficiency – Cast-iron series 1LA6/1LG4

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | Noise at rated output | |
|---|--|--|----------------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz L_{pFA} dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | |
| 1LA6 106-2AA□□ | 2.8 | 6.8 | 3 | 16 | 0.0035 | 62 | 74 |
| 1LA6 113-2AA□□ | 2.6 | 7.2 | 2.9 | 16 | 0.0059 | 63 | 75 |
| 1LA6 130-2AA□□ | 2 | 5.9 | 2.8 | 16 | 0.015 | 68 | 80 |
| 1LA6 131-2AA□□ | 2.3 | 6.9 | 3 | 16 | 0.019 | 68 | 80 |
| 1LA6 163-2AA□□ | 2.1 | 6.5 | 2.9 | 16 | 0.034 | 70 | 82 |
| 1LA6 164-2AA□□ | 2.2 | 6.6 | 3 | 16 | 0.043 | 70 | 82 |
| 1LA6 166-2AA□□ | 2.4 | 7 | 3.1 | 16 | 0.051 | 70 | 82 |
| 1LG4 183-2AA□□ | 2.5 | 6.4 | 3.4 | 16 | 0.068 | 67 | 80 |
| 1LG4 206-2AA□□ | 2.3 | 6.5 | 3 | 16 | 0.13 | 73 | 86 |
| 1LG4 207-2AA□□ | 2.5 | 7.2 | 3.3 | 16 | 0.15 | 73 | 86 |
| 1LG4 223-2AA□□ | 2.4 | 6.7 | 3.1 | 16 | 0.22 | 73 | 86 |
| 1LG4 253-2AB□□ | 2.1 | 6.7 | 3.1 | 13 | 0.4 | 75 | 88 |
| 1LG4 280-2AB□□ | 2.5 | 7.5 | 3.1 | 13 | 0.72 | 74 | 87 |
| 1LG4 283-2AB□□ | 2.6 | 7.2 | 3.1 | 13 | 0.83 | 74 | 87 |
| 1LG4 310-2AB□□ | 2.4 | 7.2 | 3.1 | 13 | 1.2 | 80 | 94 |
| 1LG4 313-2AB□□ | 2.4 | 6.9 | 3 | 13 | 1.4 | 80 | 94 |
| 1LG4 316-2AB□□ | 2.4 | 7 | 3 | 13 | 1.6 | 80 | 94 |
| 1LG4 317-2AB□□ | 2.3 | 6.7 | 2.9 | 13 | 2.1 | 80 | 94 |

- 1) For connection to 230 V, parallel supply cables are necessary (see catalog part 0 "Introduction", "Connection, circuit and connection box").
- 2) For connection to 400 V, parallel supply cables are necessary (see catalog part 0 "Introduction", "Connection, circuit and connection box").
- 3) If motors 1LG4 183-... to 1LG4 318-... (motor series 1LG4 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.
- 4) 1LG4 220-... to 1LG4 318-... motors (motor series 1LG4 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be rotated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.
- 5) The "Second shaft extension" option, order code **K16** is not possible.
- 6) Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.
- 7) Type of construction IM V6 and IM V5 without protective cover is only possible using type of construction code **9** and order code **M1E** or **M1D**.
- 8) 2-pole motors in 60 Hz version available on request.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with improved efficiency – Cast-iron series 1LA6/1LG4

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output | | | | | | | Order No. | Price | Weight |
|---|-------------------|------------|----------------------------------|-----------------------|-------------------------------------|------------------------------|------------------------------|--------------------------------|-------------------------------|-----------------------|-----------|--------|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class according to CEMEP | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | EFF2 | η_{rated} % | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | | m kg | |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | |
| 2.2 | 2.55 | 100 L | 1420 | 15 | EFF2 | 82 | 82.5 | 0.82 | 4.7 | 1LA6 106-4AA□□ | 33 | |
| 3 | 3.45 | 100 L | 1420 | 20 | EFF2 | 83 | 83.5 | 0.82 | 6.4 | 1LA6 107-4AA□□ | 36 | |
| 4 | 4.6 | 112 M | 1440 | 27 | EFF2 | 85 | 85.5 | 0.83 | 8.2 | 1LA6 113-4AA□□ | 45 | |
| 5.5 | 6.3 | 132 S | 1455 | 36 | EFF2 | 86 | 86 | 0.81 | 11.4 | 1LA6 130-4AA□□ | 55 | |
| 7.5 | 8.6 | 132 M | 1455 | 49 | EFF2 | 87 | 87.5 | 0.82 | 15.2 | 1LA6 133-4AA□□ | 62 | |
| 11 | 12.6 | 160 M | 1460 | 72 | EFF2 | 88.5 | 89 | 0.84 | 21.5 | 1LA6 163-4AA□□ | 100 | |
| 15 | 17.3 | 160 L | 1460 | 98 | EFF2 | 90 | 90.2 | 0.84 | 28.5 | 1LA6 166-4AA□□ | 114 | |
| 18.5 | 21.3 | 180 M | 1465 | 121 | EFF 2 | 90.4 | 90.8 | 0.84 | 35 ¹⁾ | 1LG4 183-4AA□□ | 140 | |
| 22 | 25.3 | 180 L | 1465 | 143 | EFF 2 | 91 | 91.5 | 0.84 | 41.5 ¹⁾ | 1LG4 186-4AA□□ | 155 | |
| 30 | 34.5 | 200 L | 1465 | 196 | EFF 2 | 91.6 | 92 | 0.85 | 56 ¹⁾ | 1LG4 207-4AA□□ | 205 | |
| 37 | 42.5 | 225 S | 1475 | 240 | EFF 2 | 92.2 | 92.6 | 0.85 | 68 ¹⁾ | 1LG4 220-4AA□□ | 265 | |
| 45 | 52 | 225 M | 1475 | 291 | EFF 2 | 93.1 | 93.6 | 0.86 | 81 ¹⁾ | 1LG4 223-4AA□□ | 300 | |
| 55 | 63 | 250 M | 1480 | 355 | EFF 2 | 93.5 | 93.8 | 0.85 | 100 | 1LG4 253-4AA□□ | 390 | |
| 75 | 86 | 280 S | 1485 | 482 | EFF 2 | 94.2 | 94.1 | 0.85 | 136 ¹⁾ | 1LG4 280-4AA□□ | 535 | |
| 90 | 104 | 280 M | 1485 | 579 | EFF 2 | 94.6 | 94.6 | 0.86 | 160 ¹⁾ | 1LG4 283-4AA□□ | 580 | |
| 110 | 127 | 315 S | 1488 | 706 | | 94.6 | 94.6 | 0.85 | 198 ¹⁾ | 1LG4 310-4AA□□ | 730 | |
| 132 | 152 | 315 M | 1488 | 847 | | 95.2 | 95.2 | 0.85 | 235 ¹⁾ | 1LG4 313-4AA□□ | 810 | |
| 160 | 184 | 315 L | 1486 | 1028 | | 95.7 | 95.8 | 0.86 | 280 ²⁾ | 1LG4 316-4AA□□ | 955 | |
| 200 | 230 | 315 L | 1486 | 1285 | | 95.9 | 96.2 | 0.88 | 340 ²⁾ | 1LG4 317-4AA□□ | 1060 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | | | Final position: Type of construction code | | | | | | | |
|------------------------------|------------------------------------|---------------|----------|----------|----------|----------|---|--|-----------------------------------|----------------------------------|----------|---|----------|---|
| | 50 Hz | | 60 Hz | | | | Without flange | With flange | | With standard flange | | With special flange | | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 460 VY | 460 VΔ | IM B3/6/7/8, IM V6, IM V5 without protective cover 3) | IM B5, IM V1 without protective cover 4) | IM V1 without protective cover 4) | IM V1 with protective cover 4)5) | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 3 | 5 | 1 | 6 | 0 | 1 | 8 | 4 | 6 | 2 | 7 | 3 |
| 1LA6 10 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 11 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 13 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 16 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LG4 18 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 20 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 22 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 25 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 28 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 310 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 313 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 316 □□ | – | ○ | – | ○ | – | ○ | □ ⁷⁾ | – | ✓ | ✓ | ✓ | – | – | – |
| 1LG4 317 □□ | – | ○ | – | ○ | – | ○ | □ ⁷⁾ | – | ✓ | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see “Special versions” in the “Selection and ordering data” under “Voltages”).

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see “Special versions” in the “Selection and ordering data” under “Types of construction”).

For footnotes, see Page 2/41 bottom.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with improved efficiency – Cast-iron series 1LA6/1LG4

Selection and ordering data (continued)

| Order No. | Locked-rotor torque | Locked-rotor current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | |
|---|-----------------------------|------------------------------|------------------|--------------|-------------------------|--|--|
| | with direct starting torque | as multiple of rated current | torque | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz $L_{p(A)}$ dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | | | | |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | |
| 1LA6 106-4AA□□ | 2.5 | 5.6 | 2.8 | 16 | 0.0047 | 53 | 65 |
| 1LA6 107-4AA□□ | 2.7 | 5.6 | 3 | 16 | 0.0055 | 53 | 65 |
| 1LA6 113-4AA□□ | 2.7 | 6 | 3 | 16 | 0.012 | 53 | 65 |
| 1LA6 130-4AA□□ | 2.5 | 6.3 | 3.1 | 16 | 0.018 | 62 | 74 |
| 1LA6 133-4AA□□ | 2.7 | 6.7 | 3.2 | 16 | 0.023 | 62 | 74 |
| 1LA6 163-4AA□□ | 2.2 | 6.2 | 2.7 | 16 | 0.043 | 66 | 78 |
| 1LA6 166-4AA□□ | 2.6 | 6.5 | 3 | 16 | 0.055 | 66 | 78 |
| 1LG4 183-4AA□□ | 2.4 | 6.7 | 3.1 | 16 | 0.099 | 65 | 78 |
| 1LG4 186-4AA□□ | 2.5 | 6.9 | 3.2 | 16 | 0.12 | 65 | 78 |
| 1LG4 207-4AA□□ | 2.5 | 6.7 | 3.4 | 16 | 0.19 | 66 | 79 |
| 1LG4 220-4AA□□ | 2.3 | 6.7 | 3.1 | 16 | 0.37 | 66 | 79 |
| 1LG4 223-4AA□□ | 2.6 | 7.2 | 3.2 | 16 | 0.45 | 66 | 79 |
| 1LG4 253-4AA□□ | 2.4 | 6.1 | 2.8 | 16 | 0.69 | 65 | 78 |
| 1LG4 280-4AA□□ | 2.5 | 7.1 | 3 | 16 | 1.2 | 70 | 84 |
| 1LG4 283-4AA□□ | 2.5 | 7.4 | 3 | 16 | 1.4 | 70 | 84 |
| 1LG4 310-4AA□□ | 2.5 | 6.4 | 2.8 | 16 | 1.9 | 70 | 84 |
| 1LG4 313-4AA□□ | 2.7 | 6.8 | 2.9 | 16 | 2.3 | 71 | 85 |
| 1LG4 316-4AA□□ | 2.7 | 6.8 | 2.8 | 16 | 2.9 | 71 | 85 |
| 1LG4 317-4AA□□ | 2.6 | 6.5 | 2.8 | 16 | 3.5 | 71 | 85 |

- 1) For connection to 230 V, parallel supply cables are necessary (see catalog part 0 "Introduction", "Connection, circuit and connection box").
- 2) For connection to 400 V, parallel supply cables are necessary (see catalog part 0 "Introduction", "Connection, circuit and connection box").
- 3) If motors 1LG4 183-... to 1LG4 318-... (motor series 1LG4 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.
- 4) 1LG4 220-... to 1LG4 318-... motors (motor series 1LG4 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be rotated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.
- 5) The "Second shaft extension" option, order code **K16** is not possible.
- 6) Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.
- 7) Type of construction IM V6 and IM V5 without protective cover is only possible using type of construction code **9** and order code **M1E** or **M1D**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with improved efficiency – Cast-iron series 1LA6/1LG4

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output | | | | | | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight IM B3 type of construction approx. m kg |
|---|-------------------|------------|----------------------------------|-----------------------|-------------------------------------|------------------------------|------------------------------|-------------------|--------------------------------|-------------------------------|--|-------|---|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class according to CEMEP | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | | | | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | | | | | |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | | |
| 1.5 | 1.75 | 100 L | 925 | 15 | 74 | 74 | 0.75 | 3.9 | 1LA6 106-6AA□□ | | | 33 | |
| 2.2 | 2.55 | 112 M | 940 | 22 | 78 | 78.5 | 0.78 | 5.2 | 1LA6 113-6AA□□ | | | 40 | |
| 3 | 3.45 | 132 S | 950 | 30 | 79 | 79.5 | 0.76 | 7.2 | 1LA6 130-6AA□□ | | | 50 | |
| 4 | 4.6 | 132 M | 950 | 40 | 80.5 | 80.5 | 0.76 | 9.4 | 1LA6 133-6AA□□ | | | 57 | |
| 5.5 | 6.3 | 132 M | 950 | 55 | 83 | 83 | 0.76 | 12.6 | 1LA6 134-6AA□□ | | | 66 | |
| 7.5 | 8.6 | 160 M | 960 | 75 | 86 | 86 | 0.74 | 17 | 1LA6 163-6AA□□ | | | 103 | |
| 11 | 12.6 | 160 L | 960 | 109 | 87.5 | 87.5 | 0.74 | 24.5 | 1LA6 166-6AA□□ | | | 122 | |
| 15 | 18 | 180 L | 965 | 148 | 88.9 | 90.3 | 0.83 | 29.5 | 1LG4 186-6AA□□ | | | 150 | |
| 18.5 | 22 | 200 L | 975 | 181 | 89.8 | 90.2 | 0.81 | 36.5 | 1LG4 206-6AA□□ | | | 195 | |
| 22 | 26.5 | 200 L | 975 | 215 | 90.3 | 91 | 0.81 | 43.5 | 1LG4 207-6AA□□ | | | 205 | |
| 30 | 36 | 225 M | 978 | 293 | 91.8 | 92.8 | 0.83 | 57 ¹⁾ | 1LG4 223-6AA□□ | | | 280 | |
| 37 | 44.5 | 250 M | 980 | 361 | 92.3 | 93 | 0.83 | 70 | 1LG4 253-6AA□□ | | | 370 | |
| 45 | 54 | 280 S | 985 | 436 | 92.4 | 93.1 | 0.85 | 83 | 1LG4 280-6AA□□ | | | 475 | |
| 55 | 66 | 280 M | 985 | 533 | 92.7 | 93.3 | 0.86 | 100 | 1LG4 283-6AA□□ | | | 510 | |
| 75 | 90 | 315 S | 988 | 725 | 93.5 | 93.7 | 0.84 | 138 | 1LG4 310-6AA□□ | | | 685 | |
| 90 | 108 | 315 M | 988 | 870 | 93.9 | 94.2 | 0.84 | 164 ¹⁾ | 1LG4 313-6AA□□ | | | 750 | |
| 110 | 132 | 315 L | 988 | 1063 | 94.3 | 94.6 | 0.86 | 196 | 1LG4 316-6AA□□ | | | 890 | |
| 132 | 158 | 315 L | 988 | 1276 | 94.8 | 95 | 0.86 | 235 | 1LG4 317-6AA□□ | | | 980 | |
| 160 | 192 | 315 L | 988 | 1547 | 95 | 95.1 | 0.86 | 285 ²⁾ | 1LG4 318-6AA□□ | | | 1180 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | | | Final position: Type of construction code | | | | | | | |
|--------------------------|------------------------------------|---------------|----------|----------|----------|----------|--|---|--|---|----------------------|---|---------------------|---|
| | 50 Hz | | 60 Hz | | | | Without flange | With flange | | | With standard flange | | With special flange | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 460 VY | 460 VΔ | IM B3/6/7/8, IM V6, IM V5 without protective cover ³⁾ | IM B5, IM V1 without protective cover ⁴⁾ | IM V1 without protective cover ⁴⁾ | IM V1 with protective cover ⁴⁾⁵⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 3 | 5 | 1 | 6 | 0 | 1 | 8 | 4 | 6 | 2 | 7 | 3 |
| 1LA6 10 - ... □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 11 - ... □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 13 - ... □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 16 - ... □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LG4 18 - ... □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | - | ✓ | ✓ | - | - | - |
| 1LG4 20 - ... □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | - | ✓ | ✓ | - | - | - |
| 1LG4 22 - ... □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | - | ✓ | ✓ | - | - | - |
| 1LG4 25 - ... □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | - | ✓ | ✓ | - | - | - |
| 1LG4 28 - ... □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | - | ✓ | ✓ | - | - | - |
| 1LG4 310 - ... □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | - | ✓ | ✓ | - | - | - |
| 1LG4 313 - ... □□ | | | | | | | | | | | | | | |
| 1LG4 316 - ... □□ | - | ○ | - | ○ | - | ○ | □ ⁷⁾ | - | ✓ | ✓ | ✓ | - | - | - |
| 1LG4 317 - ... □□ | | | | | | | | | | | | | | |
| 1LG4 318 - ... □□ | | | | | | | | | | | | | | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

For footnotes, see Page 2/43 bottom.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with improved efficiency – Cast-iron series 1LA6/1LG4

Selection and ordering data (continued)

| Order No. | Locked-rotor torque | Locked-rotor current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | |
|---|-----------------------------|------------------------------|------------------|--------------|-------------------------|---|-------------------------------|
| | with direct starting torque | as multiple of rated current | torque | | | Measuring surface sound pressure level at 50 Hz | Sound pressure level at 50 Hz |
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | L_{pA} dB(A) | L_{WA} dB(A) |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | |
| 1LA6 106-6AA□□ | 2.3 | 4 | 2.3 | 16 | 0.0047 | 47 | 59 |
| 1LA6 113-6AA□□ | 2.2 | 4.6 | 2.5 | 16 | 0.0091 | 52 | 64 |
| 1LA6 130-6AA□□ | 1.9 | 4.2 | 2.2 | 16 | 0.015 | 63 | 75 |
| 1LA6 133-6AA□□ | 2.1 | 4.5 | 2.4 | 16 | 0.019 | 63 | 75 |
| 1LA6 134-6AA□□ | 2.3 | 5 | 2.6 | 16 | 0.025 | 63 | 75 |
| 1LA6 163-6AA□□ | 2.1 | 4.6 | 2.5 | 16 | 0.044 | 66 | 78 |
| 1LA6 166-6AA□□ | 2.3 | 4.8 | 2.6 | 16 | 0.063 | 66 | 78 |
| 1LG4 186-6AA□□ | 2.3 | 5.3 | 2.5 | 16 | 0.18 | 57 | 73 |
| 1LG4 206-6AA□□ | 2.5 | 5.6 | 2.5 | 16 | 0.24 | 58 | 73 |
| 1LG4 207-6AA□□ | 2.6 | 5.7 | 2.5 | 16 | 0.29 | 58 | 73 |
| 1LG4 223-6AA□□ | 2.7 | 5.6 | 2.5 | 16 | 0.49 | 59 | 73 |
| 1LG4 253-6AA□□ | 2.7 | 6 | 2.3 | 16 | 0.76 | 60 | 75 |
| 1LG4 280-6AA□□ | 2.4 | 6.1 | 2.4 | 16 | 1.1 | 61 | 75 |
| 1LG4 283-6AA□□ | 2.5 | 6.3 | 2.5 | 16 | 1.4 | 61 | 75 |
| 1LG4 310-6AA□□ | 2.5 | 6.5 | 2.8 | 16 | 2.1 | 63 | 77 |
| 1LG4 313-6AA□□ | 2.6 | 6.8 | 2.9 | 16 | 2.5 | 63 | 77 |
| 1LG4 316-6AA□□ | 2.5 | 6.8 | 2.9 | 16 | 3.2 | 64 | 78 |
| 1LG4 317-6AA□□ | 3.1 | 7.3 | 3 | 16 | 4 | 64 | 78 |
| 1LG4 318-6AA□□ | 3 | 7.5 | 3 | 16 | 4.7 | 65 | 79 |

- 1) For connection to 230 V, parallel supply cables are necessary (see catalog part 0 "Introduction", "Connection, circuit and connection box").
- 2) For connection to 400 V, parallel supply cables are necessary (see catalog part 0 "Introduction", "Connection, circuit and connection box").
- 3) If motors 1LG4 183-... to 1LG4 318-... (motor series 1LG4 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.
- 4) 1LG4 220-... to 1LG4 318-... motors (motor series 1LG4 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be rotated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.
- 5) The "Second shaft extension" option, order code **K16** is not possible.
- 6) Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.
- 7) Type of construction IM V6 and IM V5 without protective cover is only possible using type of construction code **9** and order code **M1E** or **M1D**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with improved efficiency – Cast-iron series 1LA6/1LG4

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output | | | | | | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | Order No. supplements for voltage and type of construction, see table below | Price | Weight IM B3 type of construction approx. m kg |
|---|----------------|------------|----------------------------------|-----------------------|-------------------------------------|------------------------------|------------------------------|---------------|--------------------------------|-------------------------------|---|-------|--|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class according to CEMEP | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | | | | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | | | | | |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | | |
| 0.75 | 0.86 | 100 L | 680 | 11 | 66 | 65 | 0.76 | 2.15 | 1LA6 106-8ABQQ | | | 29 | |
| 1.1 | 1.3 | 100 L | 680 | 15 | 72 | 72 | 0.76 | 2.9 | 1LA6 107-8ABQQ | | | 32 | |
| 1.5 | 1.75 | 112 M | 705 | 20 | 74 | 74 | 0.76 | 3.85 | 1LA6 113-8ABQQ | | | 39 | |
| 2.2 | 2.55 | 132 S | 700 | 30 | 75 | 75 | 0.74 | 5.7 | 1LA6 130-8ABQQ | | | 50 | |
| 3 | 3.45 | 132 M | 700 | 41 | 77 | 77.5 | 0.74 | 7.6 | 1LA6 133-8ABQQ | | | 57 | |
| 4 | 4.6 | 160 M | 715 | 53 | 80 | 80 | 0.72 | 10 | 1LA6 163-8ABQQ | | | 91 | |
| 5.5 | 6.3 | 160 M | 710 | 74 | 83.5 | 83.5 | 0.73 | 13 | 1LA6 164-8ABQQ | | | 102 | |
| 7.5 | 8.6 | 160 L | 715 | 100 | 85.5 | 85.5 | 0.72 | 17.6 | 1LA6 166-8ABQQ | | | 122 | |
| 11 | 13.2 | 180 L | 725 | 145 | 87.5 | 88.3 | 0.73 | 25 | 1LG4 186-8ABQQ | | | 150 | |
| 15 | 18 | 200 L | 725 | 198 | 87.7 | 88.4 | 0.76 | 32.5 | 1LG4 207-8ABQQ | | | 205 | |
| 18.5 | 22 | 225 S | 730 | 242 | 89.4 | 90.4 | 0.78 | 38.5 | 1LG4 220-8ABQQ | | | 270 | |
| 22 | 26.5 | 225 M | 730 | 288 | 89.7 | 90.7 | 0.79 | 45 | 1LG4 223-8ABQQ | | | 290 | |
| 30 | 36 | 250 M | 730 | 392 | 91.4 | 92.2 | 0.81 | 58 | 1LG4 253-8ABQQ | | | 385 | |
| 37 | 44.5 | 280 S | 735 | 481 | 92 | 92.8 | 0.81 | 72 | 1LG4 280-8ABQQ | | | 475 | |
| 45 | 54 | 280 M | 735 | 585 | 92.4 | 93.3 | 0.81 | 87 | 1LG4 283-8ABQQ | | | 515 | |
| 55 | 66 | 315 S | 740 | 710 | 93 | 93.4 | 0.81 | 106 | 1LG4 310-8ABQQ | | | 680 | |
| 75 | 90 | 315 M | 738 | 971 | 93.3 | 94 | 0.83 | 140 | 1LG4 313-8ABQQ | | | 745 | |
| 90 | 108 | 315 L | 738 | 1165 | 93.4 | 94 | 0.83 | 168 | 1LG4 316-8ABQQ | | | 865 | |
| 110 | 132 | 315 L | 738 | 1423 | 94 | 94.4 | 0.83 | 205 | 1LG4 317-8ABQQ | | | 1020 | |
| 132 | 158 | 315 L | 738 | 1708 | 94.2 | 94.6 | 0.83 | 245 | 1LG4 318-8ABQQ | | | 1100 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | | | Final position: Type of construction code | | | | | | | |
|---------------------------------------|------------------------------------|---------------|----------|----------|----------|----------|---|--|-----------------------------------|----------------------------------|----------------------|---|---------------------|---|
| | 50 Hz | | | 60 Hz | | | Without flange | With flange | | | With standard flange | | With special flange | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 460 VY | 460 VΔ | IM B3/6/7/8, IM V6, IM V5 without protective cover 1) | IM B5, IM V1 without protective cover 2) | IM V1 without protective cover 2) | IM V1 with protective cover 2)3) | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 3 | 5 | 1 | 6 | 0 | 1 | 8 | 4 | 6 | 2 | 7 | 3 |
| 1LA6 10 - QQ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 11 - QQ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 13 - QQ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 16 - QQ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LG4 18 - QQ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | - | ✓ | ✓ | - | - | - |
| 1LG4 20 - QQ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | - | ✓ | ✓ | - | - | - |
| 1LG4 22 - QQ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | - | ✓ | ✓ | - | - | - |
| 1LG4 25 - QQ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | - | ✓ | ✓ | - | - | - |
| 1LG4 28 - QQ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | - | ✓ | ✓ | - | - | - |
| 1LG4 310 - QQ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | - | ✓ | ✓ | - | - | - |
| 1LG4 313 - QQ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | - | ✓ | ✓ | - | - | - |
| 1LG4 316 - QQ | - | ○ | - | ○ | - | ○ | □ ⁵⁾ | - | ✓ | ✓ | ✓ | - | - | - |
| 1LG4 317 - QQ | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1LG4 318 - QQ | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

For footnotes, see Page 2/45 bottom.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with improved efficiency – Cast-iron series 1LA6/1LG4

Selection and ordering data (continued)

| Order No. | Locked-rotor torque | Locked-rotor current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | |
|---|-----------------------------|------------------------------|------------------|--------------|-------------------------|--|--|
| | with direct starting torque | as multiple of rated current | torque | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz $L_{p(A)}$ dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | | | | |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | |
| 1LA6 106-8AB□□ | 1.6 | 3 | 1.9 | 13 | 0.0051 | 45 | 57 |
| 1LA6 107-8AB□□ | 1.8 | 3.3 | 2.1 | 13 | 0.0063 | 45 | 57 |
| 1LA6 113-8AB□□ | 1.8 | 3.7 | 2.1 | 13 | 0.013 | 49 | 61 |
| 1LA6 130-8AB□□ | 1.9 | 3.9 | 2.3 | 13 | 0.014 | 53 | 65 |
| 1LA6 133-8AB□□ | 2.1 | 4.1 | 2.4 | 13 | 0.019 | 53 | 65 |
| 1LA6 163-8AB□□ | 2.2 | 4.5 | 2.6 | 13 | 0.036 | 63 | 75 |
| 1LA6 164-8AB□□ | 2.3 | 4.7 | 2.7 | 13 | 0.046 | 63 | 75 |
| 1LA6 166-8AB□□ | 2.7 | 5.3 | 3 | 13 | 0.064 | 63 | 75 |
| 1LG4 186-8AB□□ | 1.7 | 4.2 | 2.1 | 13 | 0.17 | 66 | 79 |
| 1LG4 207-8AB□□ | 2.2 | 4.9 | 2.6 | 13 | 0.29 | 67 | 70 |
| 1LG4 220-8AB□□ | 2.3 | 5.5 | 2.7 | 13 | 0.48 | 57 | 70 |
| 1LG4 223-8AB□□ | 2.3 | 5.6 | 2.8 | 13 | 0.55 | 54 | 73 |
| 1LG4 253-8AB□□ | 2.3 | 5.5 | 2.6 | 13 | 0.84 | 55 | 73 |
| 1LG4 280-8AB□□ | 2.2 | 5 | 2.1 | 13 | 1.1 | 56 | 74 |
| 1LG4 283-8AB□□ | 2.2 | 5.1 | 2.1 | 13 | 1.4 | 58 | 74 |
| 1LG4 310-8AB□□ | 2.2 | 5.8 | 2.6 | 13 | 2.1 | 64 | 78 |
| 1LG4 313-8AB□□ | 2.2 | 5.7 | 2.6 | 13 | 2.5 | 64 | 78 |
| 1LG4 316-8AB□□ | 2.2 | 5.8 | 2.7 | 13 | 3.1 | 64 | 78 |
| 1LG4 317-8AB□□ | 2.4 | 6.1 | 2.8 | 13 | 3.9 | 64 | 78 |
| 1LG4 318-8AB□□ | 2.5 | 6.5 | 2.9 | 13 | 4.5 | 64 | 78 |

2

- 1) If motors 1LG4 183-... to 1LG4 318-... (motor series 1LG4 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.
- 2) 1LG4 220-... to 1LG4 318-... motors (motor series 1LG4 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be rotated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

- 3) The "Second shaft extension" option, order code **K16** is not possible.
- 4) Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.
- 5) Type of construction IM V6 and IM V5 without protective cover is only possible using type of construction code **9** and order code **M1E** or **M1D**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated motors with increased output –
Cast-iron series 1LG4

Selection and ordering data

| Rated output at | | Frame size | Operating values at rated output | | | | | | Order No. | Price | Weight IM B3 type of construction approx. m kg |
|--|-------------------|------------|----------------------------------|-----------------------|------------------------------|------------------------------|--------------------------------|-------------------------------|---|-------|---|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | For Order No. supplements for voltage and type of construction, see table below | | |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, with increased output, used acc. to temperature class 130 (B) | | | | | | | | | | | |
| 30 | 33.5 | 180 L | 2950 | 97 | 92.8 | 92.9 | 0.86 | 54 ¹⁾ | 1LG4 188-2AA□□ | 175 | |
| 45 | 51 | 200 L | 2955 | 145 | 93.6 | 93.7 | 0.89 | 78 ¹⁾ | 1LG4 208-2AA□□ | 255 | |
| 55 | 62 | 225 M | 2960 | 177 | 94.8 | 95 | 0.89 | 94 ¹⁾ | 1LG4 228-2AA□□ | 335 | |
| 75 | 84 | 250 M | 2970 | 241 | 94.5 | 94.5 | 0.88 | 130 ¹⁾ | 1LG4 258-2AA□□ | 420 | |
| 110 | 123 | 280 M | 2975 | 353 | 95.5 | 95.6 | 0.9 | 184 ¹⁾ | 1LG4 288-2AB□□ | 630 | |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, with increased output, used acc. to temperature class 130 (B) | | | | | | | | | | | |
| 30 | 34.5 | 180 L | 1465 | 196 | 91.7 | 91.9 | 0.8 | 59 ¹⁾ | 1LG4 188-4AA□□ | 180 | |
| 37 | 42.5 | 200 L | 1465 | 241 | 92.5 | 92.8 | 0.83 | 70 ¹⁾ | 1LG4 208-4AA□□ | 230 | |
| 55 | 63 | 225 M | 1475 | 356 | 93.4 | 93.9 | 0.86 | 99 ¹⁾ | 1LG4 228-4AA□□ | 330 | |
| 75 | 86 | 250 M | 1482 | 483 | 94.3 | 94.4 | 0.85 | 136 ¹⁾ | 1LG4 258-4AA□□ | 460 | |
| 110 | 127 | 280 M | 1488 | 706 | 95.2 | 94.9 | 0.84 | 198 ¹⁾ | 1LG4 288-4AA□□ | 680 | |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, with increased output, used acc. to temperature class 130 (B) | | | | | | | | | | | |
| 18.5 | 22 | 180 L | 970 | 182 | 89.6 | 90.3 | 0.8 | 37.5 ¹⁾ | 1LG4 188-6AA□□ | 175 | |
| 30 | 36 | 200 L | 975 | 294 | 90.9 | 91.3 | 0.8 | 60 ¹⁾ | 1LG4 208-6AA□□ | 245 | |
| 37 | 44.5 | 225 M | 978 | 361 | 92.2 | 93 | 0.83 | 70 ¹⁾ | 1LG4 228-6AA□□ | 325 | |
| 45 | 54 | 250 M | 982 | 438 | 93.3 | 93.8 | 0.83 | 84 | 1LG4 258-6AA□□ | 405 | |
| 75 | 90 | 280 M | 985 | 727 | 93.8 | 94.3 | 0.85 | 136 ¹⁾ | 1LG4 288-6AA□□ | 570 | |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, with increased output, used acc. to temperature class 130 (B) | | | | | | | | | | | |
| 15 | 18 | 180 L | 720 | 199 | 87.8 | 88.5 | 0.73 | 34 ¹⁾ | 1LG4 188-8AB□□ | 165 | |
| 18.5 | 22 | 200 L | 725 | 244 | 88.3 | 89.2 | 0.78 | 39 | 1LG4 208-8AB□□ | 230 | |
| 30 | 36 | 225 M | 730 | 392 | 90.4 | 91.2 | 0.79 | 61 ¹⁾ | 1LG4 228-8AB□□ | 340 | |
| 37 | 44.5 | 250 M | 730 | 484 | 91.9 | 92.8 | 0.82 | 71 | 1LG4 258-8AB□□ | 430 | |
| 55 | 66 | 280 M | 735 | 715 | 92.9 | 93.7 | 0.81 | 106 | 1LG4 288-8AB□□ | 565 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | | |
|---------------------------|------------------------------------|---------------|----------|----------|---|----------|--|---|---|----------|---|---|----------|
| | 50 Hz | | 60 Hz | | Without flange | | With flange | | With standard flange | | With special flange | | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 460 VY | 460 VΔ | IM B3/6/7/8, IM V6, IM V5 without protective cover ²⁾ | IM B5, IM V1 without protective cover ³⁾⁴⁾ | IM V1 with protective cover ³⁾⁴⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B14, IM V19, IM V18 without protective cover | |
| | 1 | 6 | 3 | 5 | 1 | 6 | 0 | 1 | 4 | 6 | 2 | 7 | 3 |
| 1LG4 18 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | - | - | - |
| 1LG4 20 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | - | - | - |
| 1LG4 22 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | - | - | - |
| 1LG4 25 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | - | - | - |
| 1LG4 28 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | - | - | - |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

- 1) For connection to 230 V, parallel supply cables are necessary (see catalog part 0 "Introduction", "Connection, circuit and connection box").
- 2) If motors 1LG4 188-... to 1LG4 288-... (motor series 1LG4 frame sizes 180 L to 280 M) in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.

- 3) 1LG4 220-... to 1LG4 288-... motors (motor series 1LG4 frame sizes 225 M to 280 M) are supplied with two screw-in eyebolts in accordance with IM B 5, whereby one can be rotated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.
- 4) The "Second shaft extension" option, order code **K16** is not possible.
- 5) Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated motors with increased output –
Cast-iron series 1LG4

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | Noise at rated output | |
|--|--|--|----------------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz L_{pFA} dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, with increased output, used acc. to temperature class 130 (B) | | | | | | | |
| 1LG4 188-2AA□□ | 2.4 | 7.1 | 3.4 | 16 | 0.09 | 71 | 84 |
| 1LG4 208-2AA□□ | 2.5 | 6.9 | 3.2 | 16 | 0.18 | 73 | 86 |
| 1LG4 228-2AA□□ | 2.6 | 7.3 | 3.2 | 16 | 0.27 | 73 | 86 |
| 1LG4 258-2AA□□ | 2.4 | 7.1 | 3.1 | 16 | 0.48 | 74 | 87 |
| 1LG4 288-2AB□□ | 2.5 | 7 | 3 | 13 | 1 | 74 | 87 |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, with increased output, used acc. to temperature class 130 (B) | | | | | | | |
| 1LG4 188-4AA□□ | 2.6 | 6.3 | 2.9 | 16 | 0.14 | 65 | 78 |
| 1LG4 208-4AA□□ | 2.6 | 6.5 | 3 | 16 | 0.23 | 66 | 79 |
| 1LG4 228-4AA□□ | 2.5 | 6.5 | 2.7 | 16 | 0.49 | 66 | 79 |
| 1LG4 258-4AA□□ | 2.5 | 7 | 3 | 16 | 0.86 | 68 | 81 |
| 1LG4 288-4AA□□ | 2.8 | 7.9 | 3.3 | 16 | 1.71 | 70 | 84 |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, with increased output, used acc. to temperature class 130 (B) | | | | | | | |
| 1LG4 188-6AA□□ | 2.3 | 4.9 | 2.4 | 16 | 0.2 | 60 | 73 |
| 1LG4 208-6AA□□ | 2.6 | 5.8 | 2.6 | 16 | 0.36 | 61 | 74 |
| 1LG4 228-6AA□□ | 2.5 | 5.9 | 2.8 | 16 | 0.62 | 61 | 74 |
| 1LG4 258-6AA□□ | 2.7 | 6.3 | 2.3 | 16 | 0.93 | 61 | 74 |
| 1LG4 288-6AA□□ | 3 | 6.8 | 2.8 | 16 | 1.65 | 61 | 74 |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, with increased output, used acc. to temperature class 130 (B) | | | | | | | |
| 1LG4 188-8AB□□ | 2 | 4.5 | 2.4 | 13 | 0.21 | 69 | 82 |
| 1LG4 208-8AB□□ | 2.4 | 5.2 | 2.6 | 13 | 0.37 | 58 | 71 |
| 1LG4 228-8AB□□ | 2.6 | 5.6 | 2.8 | 13 | 0.66 | 61 | 74 |
| 1LG4 258-8AB□□ | 2.4 | 5.6 | 2.6 | 13 | 1.06 | 55 | 68 |
| 1LG4 288-8AB□□ | 2.4 | 5.6 | 2.3 | 13 | 1.63 | 58 | 71 |

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with high efficiency – Cast-iron series 1LG6

Selection and ordering data

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | | | Order No. | Price | Weight IM B3 type of construction approx. m kg |
|--|------------|----------------------------------|-----------------------|-------------------------------------|------------------------------|------------------------------|--------------------------------|-------------------------------|---|-------|--|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class according to CEMEP | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | | | |
| P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | EFF I | η_{rated} % | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | For Order No. supplements for voltage and type of construction, see table below | | |
| 2-pole, 3000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, for use according to CEMEP | | | | | | | | | | | |
| 22 | 180 M | 2955 | 71 | EFF 1 | 94.1 | 94.5 | 0.88 | 38.5 ¹⁾ | 1LG6 183-2AA00 | 180 | |
| 30 | 200 L | 2960 | 97 | EFF 1 | 93.5 | 93.4 | 0.88 | 53 ¹⁾ | 1LG6 206-2AA00 | 225 | |
| 37 | 200 L | 2960 | 119 | EFF 1 | 94.1 | 94 | 0.89 | 64 ¹⁾ | 1LG6 207-2AA00 | 255 | |
| 45 | 225 M | 2965 | 145 | EFF 1 | 94.9 | 95.1 | 0.89 | 77 ¹⁾ | 1LG6 223-2AA00 | 330 | |
| 55 | 250 M | 2975 | 177 | EFF 1 | 95.3 | 95.3 | 0.9 | 93 | 1LG6 253-2AA00 | 420 | |
| 75 | 280 S | 2975 | 241 | EFF 1 | 95.2 | 95.2 | 0.89 | 128 ¹⁾ | 1LG6 280-2AB00 | 530 | |
| 90 | 280 M | 2978 | 289 | EFF 1 | 95.6 | 95.7 | 0.9 | 150 ¹⁾ | 1LG6 283-2AB00 | 615 | |
| 110 | 315 S | 2982 | 352 | EFF 1 | 95.8 | 95.7 | 0.91 | 182 ¹⁾ | 1LG6 310-2AB00 | 790 | |
| 132 | 315 M | 2982 | 423 | EFF 1 | 96 | 95.9 | 0.91 | 220 ¹⁾ | 1LG6 313-2AB00 | 915 | |
| 160 | 315 L | 2982 | 512 | EFF 1 | 96.4 | 96.4 | 0.92 | 260 | 1LG6 316-2AB00 | 1055 | |
| 200 | 315 L | 2982 | 641 | EFF 1 | 96.5 | 96.5 | 0.93 | 320 | 1LG6 317-2AB00 | 1245 | |
| 4-pole, 1500 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, for use according to CEMEP | | | | | | | | | | | |
| 18.5 | 180 M | 1470 | 120 | EFF 1 | 92.6 | 93.2 | 0.83 | 34.5 ¹⁾ | 1LG6 183-4AA00 | 155 | |
| 22 | 180 L | 1470 | 143 | EFF 1 | 93.2 | 93.5 | 0.84 | 40.5 ¹⁾ | 1LG6 186-4AA00 | 180 | |
| 30 | 200 L | 1470 | 195 | EFF 1 | 93.3 | 93.4 | 0.85 | 55 ¹⁾ | 1LG6 207-4AA00 | 225 | |
| 37 | 225 S | 1480 | 239 | EFF 1 | 94 | 94.4 | 0.85 | 67 ¹⁾ | 1LG6 220-4AA00 | 290 | |
| 45 | 225 M | 1480 | 290 | EFF 1 | 94.5 | 94.7 | 0.85 | 81 ¹⁾ | 1LG6 223-4AA00 | 330 | |
| 55 | 250 M | 1485 | 354 | EFF 1 | 95.1 | 95.3 | 0.87 | 96 | 1LG6 253-4AA00 | 460 | |
| 75 | 280 S | 1485 | 482 | EFF 1 | 95.1 | 95.2 | 0.87 | 130 ¹⁾ | 1LG6 280-4AA00 | 575 | |
| 90 | 280 M | 1486 | 578 | EFF 1 | 95.4 | 95.5 | 0.86 | 158 ¹⁾ | 1LG6 283-4AA00 | 675 | |
| 110 | 315 S | 1488 | 706 | EFF 1 | 95.9 | 96 | 0.87 | 190 ¹⁾ | 1LG6 310-4AA00 | 810 | |
| 132 | 315 M | 1488 | 847 | EFF 1 | 96.1 | 96.2 | 0.88 | 225 ¹⁾ | 1LG6 313-4AA00 | 965 | |
| 160 | 315 L | 1490 | 1026 | EFF 1 | 96.3 | 96.4 | 0.88 | 275 ²⁾ | 1LG6 316-4AA00 | 1105 | |
| 200 | 315 L | 1490 | 1282 | EFF 1 | 96.4 | 96.5 | 0.88 | 340 ²⁾ | 1LG6 317-4AA00 | 1305 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | |
|-------------------|------------------------------------|---------------|--------|--------|--|---|--|---|----------------------|---|---------------------|---|
| | 50 Hz | | | | Without flange | With flange | | | With standard flange | | With special flange | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6, IM V5 without protective cover ³⁾ | IM B5, IM V1 without protective cover ⁴⁾ IM V3 ⁴⁾⁵⁾ | IM V1 without protective cover ⁴⁾ | IM V1 with protective cover ⁴⁾⁶⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 3 | 5 | 0 | 1 | 8 | 4 | 6 | 2 | 7 | 3 |
| 1LG6 18 - ... □□ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | ✓ | - | - | - |
| 1LG6 20 - ... □□ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | ✓ | - | - | - |
| 1LG6 22 - ... □□ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | ✓ | - | - | - |
| 1LG6 25 - ... □□ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | ✓ | - | - | - |
| 1LG6 28 - ... □□ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | ✓ | - | - | - |
| 1LG6 310 - ... □□ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | ✓ | - | - | - |
| 1LG6 313 - ... □□ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | ✓ | - | - | - |
| 1LG6 316 - ... □□ | - | ○ | - | ○ | □ ⁷⁾ | - | ✓ ⁸⁾ | ✓ ⁸⁾ | ✓ | - | - | - |
| 1LG6 317 - ... □□ | - | - | - | - | - | - | - | - | - | - | - | - |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

For footnotes, see Page 2/49 bottom.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with high efficiency – Cast-iron series 1LG6

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | Noise at rated output | |
|--|--|--|----------------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz L_{pFA} dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| 2-pole, 3000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, for use according to CEMEP | | | | | | | |
| 1LG6 183-2AA□□ | 2.5 | 7.2 | 3.4 | 16 | 0.086 | 67 | 80 |
| 1LG6 206-2AA□□ | 2.4 | 7 | 3.3 | 16 | 0.15 | 71 | 84 |
| 1LG6 207-2AA□□ | 2.5 | 7.2 | 3.3 | 16 | 0.18 | 71 | 84 |
| 1LG6 223-2AA□□ | 2.5 | 7.3 | 3.2 | 16 | 0.27 | 71 | 84 |
| 1LG6 253-2AA□□ | 2.4 | 6.8 | 3 | 16 | 0.47 | 71 | 84 |
| 1LG6 280-2AB□□ | 2.5 | 7 | 3 | 13 | 0.83 | 73 | 86 |
| 1LG6 283-2AB□□ | 2.6 | 7.6 | 3.1 | 13 | 1 | 73 | 86 |
| 1LG6 310-2AB□□ | 2.4 | 6.9 | 2.8 | 13 | 1.4 | 76 | 89 |
| 1LG6 313-2AB□□ | 2.6 | 7.1 | 2.9 | 13 | 1.6 | 76 | 89 |
| 1LG6 316-2AB□□ | 2.5 | 7.1 | 2.9 | 13 | 2.1 | 76 | 89 |
| 1LG6 317-2AB□□ | 2.5 | 6.9 | 2.8 | 13 | 2.5 | 76 | 89 |
| 4-pole, 1500 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, for use according to CEMEP | | | | | | | |
| 1LG6 183-4AA□□ | 2.5 | 6.4 | 3 | 16 | 0.12 | 60 | 73 |
| 1LG6 186-4AA□□ | 2.5 | 6.7 | 3.1 | 16 | 0.14 | 60 | 73 |
| 1LG6 207-4AA□□ | 2.6 | 6.7 | 3.3 | 16 | 0.23 | 62 | 75 |
| 1LG6 220-4AA□□ | 2.7 | 6.8 | 3 | 16 | 0.4 | 60 | 73 |
| 1LG6 223-4AA□□ | 2.8 | 6.9 | 3 | 16 | 0.49 | 60 | 73 |
| 1LG6 253-4AA□□ | 2.6 | 7.5 | 3 | 16 | 0.86 | 65 | 78 |
| 1LG6 280-4AA□□ | 2.5 | 6.8 | 2.9 | 16 | 1.4 | 67 | 80 |
| 1LG6 283-4AA□□ | 2.7 | 7.5 | 3.1 | 16 | 1.7 | 68 | 82 |
| 1LG6 310-4AA□□ | 2.7 | 7.1 | 2.9 | 16 | 2.3 | 68 | 82 |
| 1LG6 313-4AA□□ | 2.7 | 7.3 | 2.9 | 16 | 2.9 | 69 | 83 |
| 1LG6 316-4AA□□ | 3 | 7.4 | 3 | 16 | 3.5 | 69 | 83 |
| 1LG6 317-4AA□□ | 3.2 | 7.6 | 3 | 16 | 4.2 | 69 | 83 |

The motors can also be used for 60 Hz according to EPACT, see Pages 2/52 to 2/57.

- 1) For connection to 230 V, parallel supply cables are necessary (see catalog part 0 "Introduction", "Connection, circuit and connection box").
- 2) For connection to 400 V, parallel supply cables are necessary (see catalog part 0 "Introduction", "Connection, circuit and connection box").
- 3) If motors 1LG6 183-... to 1LG6 317-... (motor series 1LG6 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.
- 4) 1LG6 220-... to 1LG6 317-... motors (motor series 1LG6 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be rotated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.
- 5) Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.
- 6) The "Second shaft extension" option, order code **K16** is not possible.
- 7) Type of construction IM V6 and IM V5 without protective cover is only possible using type of construction code **9** and order code **M1E** or **M1D**.
- 8) 2-pole motors in 60 Hz version available on request.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with high efficiency – Cast-iron series 1LG6

Selection and ordering data (continued)

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | Order No. | Price | Weight IM B3 type of construction approx. m kg |
|--|------------|----------------------------------|-----------------------|-------------------------------------|------------------------------|------------------------------|------------------------------|--------------------------------|---|-----------|-------|--|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class according to CEMEP | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Efficiency at 50 Hz 2/4-load | | | | | |
| P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | For Order No. supplements for voltage and type of construction, see table below | | | |
| 6-pole, 1000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, for use according to CEMEP | | | | | | | | | | | | |
| 15 | 180 L | 975 | 147 | | 90.9 | 91.7 | 0.81 | 29.5 | 1LG6 186-6AAQQ | | 175 | |
| 18.5 | 200 L | 978 | 181 | | 91.2 | 91.8 | 0.81 | 36 | 1LG6 206-6AAQQ | | 210 | |
| 22 | 200 L | 978 | 215 | | 91.9 | 92.5 | 0.82 | 42 | 1LG6 207-6AAQQ | | 240 | |
| 30 | 225 M | 980 | 292 | | 93.2 | 93.7 | 0.83 | 56 ¹⁾ | 1LG6 223-6AAQQ | | 325 | |
| 37 | 250 M | 985 | 359 | | 93.7 | 94.1 | 0.83 | 69 | 1LG6 253-6AAQQ | | 405 | |
| 45 | 280 S | 988 | 435 | | 94.4 | 94.6 | 0.85 | 81 | 1LG6 280-6AAQQ | | 520 | |
| 55 | 280 M | 988 | 532 | | 94.6 | 94.8 | 0.85 | 99 | 1LG6 283-6AAQQ | | 570 | |
| 75 | 315 S | 990 | 723 | | 95 | 95 | 0.83 | 138 | 1LG6 310-6AAQQ | | 760 | |
| 90 | 315 M | 990 | 868 | | 95.3 | 95.4 | 0.85 | 160 ¹⁾ | 1LG6 313-6AAQQ | | 935 | |
| 110 | 315 L | 990 | 1061 | | 95.6 | 95.7 | 0.85 | 196 | 1LG6 316-6AAQQ | | 1010 | |
| 132 | 315 L | 990 | 1273 | | 95.8 | 95.8 | 0.85 | 235 | 1LG6 317-6AAQQ | | 1180 | |
| 160 | 315 L | 990 | 1543 | | 95.8 | 95.9 | 0.86 | 280 ²⁾ | 1LG6 318-6AAQQ | | 1245 | |
| 8-pole, 750 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, for use according to CEMEP | | | | | | | | | | | | |
| 11 | 180 L | 725 | 145 | | 88.7 | 89.6 | 0.76 | 23.5 | 1LG6 186-8ABQQ | | 165 | |
| 15 | 200 L | 725 | 198 | | 89.3 | 89.8 | 0.8 | 30.5 | 1LG6 207-8ABQQ | | 235 | |
| 18.5 | 225 S | 730 | 242 | | 91.1 | 91.8 | 0.81 | 36 | 1LG6 220-8ABQQ | | 295 | |
| 22 | 225 M | 730 | 288 | | 91.6 | 92.1 | 0.81 | 43 | 1LG6 223-8ABQQ | | 335 | |
| 30 | 250 M | 735 | 390 | | 92.8 | 93.3 | 0.82 | 57 | 1LG6 253-8ABQQ | | 435 | |
| 37 | 280 S | 738 | 479 | | 93.1 | 93.3 | 0.81 | 71 | 1LG6 280-8ABQQ | | 510 | |
| 45 | 280 M | 738 | 582 | | 93.7 | 94 | 0.81 | 86 | 1LG6 283-8ABQQ | | 560 | |
| 55 | 315 S | 740 | 710 | | 94.3 | 94.4 | 0.82 | 102 | 1LG6 310-8ABQQ | | 750 | |
| 75 | 315 M | 740 | 968 | | 94.5 | 94.7 | 0.83 | 138 | 1LG6 313-8ABQQ | | 840 | |
| 90 | 315 L | 740 | 1161 | | 94.7 | 95.1 | 0.84 | 164 | 1LG6 316-8ABQQ | | 1005 | |
| 110 | 315 L | 740 | 1420 | | 94.8 | 95.1 | 0.84 | 200 | 1LG6 317-8ABQQ | | 1100 | |
| 132 | 315 L | 740 | 1704 | | 94.9 | 95.2 | 0.84 | 240 | 1LG6 318-8ABQQ | | 1270 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | |
|----------------------------|------------------------------------|---------------|--------|--------|--|--|--|--|----------------------|---|--------|---|
| | 50 Hz | | | | Without flange | With flange | | | With standard flange | With special flange | | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6, IM V5 without protective cover ³⁾ | IM B5, IM V1 without protective cover IM V3 ^{4) 5)} | IM V1 without protective cover ⁴⁾ | IM V1 with protective cover ^{4) 6)} | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 3 | 5 | 0 | 1 | 8 | 4 | 6 | 2 | 7 | 3 |
| 1LG6 18 - . . . QQ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 20 - . . . QQ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 22 - . . . QQ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 25 - . . . QQ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 28 - . . . QQ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 310 - . . . QQ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 313 - . . . QQ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 316 - . . . QQ | – | ○ | – | ○ | □ ⁷⁾ | – | ✓ | ✓ | ✓ | – | – | – |
| 1LG6 317 - . . . QQ | – | ○ | – | ○ | □ ⁷⁾ | – | ✓ | ✓ | ✓ | – | – | – |
| 1LG6 318 - . . . QQ | – | ○ | – | ○ | □ ⁷⁾ | – | ✓ | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

For footnotes, see Page 2/51 bottom.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with high efficiency – Cast-iron series 1LG6

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | Noise at rated output | |
|--|--|--|----------------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz L_{pFA} dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| 6-pole, 1000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, for use according to CEMEP | | | | | | | |
| 1LG6 186-6AA□□ | 2.4 | 5.5 | 2.5 | 16 | 0.2 | 56 | 69 |
| 1LG6 206-6AA□□ | 2.4 | 5.6 | 2.4 | 16 | 0.29 | 59 | 72 |
| 1LG6 207-6AA□□ | 2.4 | 5.6 | 2.4 | 16 | 0.36 | 59 | 72 |
| 1LG6 223-6AA□□ | 2.8 | 6.5 | 2.9 | 16 | 0.63 | 59 | 72 |
| 1LG6 253-6AA□□ | 2.9 | 6.8 | 2.5 | 16 | 0.93 | 59 | 72 |
| 1LG6 280-6AA□□ | 3 | 6.8 | 2.7 | 16 | 1.4 | 58 | 71 |
| 1LG6 283-6AA□□ | 3.3 | 7.3 | 2.9 | 16 | 1.6 | 58 | 71 |
| 1LG6 310-6AA□□ | 2.8 | 7.3 | 3 | 16 | 2.5 | 61 | 74 |
| 1LG6 313-6AA□□ | 2.7 | 7.3 | 2.9 | 16 | 3.2 | 61 | 74 |
| 1LG6 316-6AA□□ | 2.9 | 7.4 | 2.9 | 16 | 4 | 61 | 74 |
| 1LG6 317-6AA□□ | 3.1 | 7.8 | 3.1 | 16 | 4.7 | 61 | 74 |
| 1LG6 318-6AA□□ | 3.2 | 7.8 | 3.1 | 16 | 5.4 | 64 | 77 |
| 8-pole, 750 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, for use according to CEMEP | | | | | | | |
| 1LG6 186-8AB□□ | 1.7 | 4.6 | 2.2 | 13 | 0.21 | 62 | 75 |
| 1LG6 207-8AB□□ | 2.3 | 5.3 | 2.6 | 13 | 0.37 | 62 | 75 |
| 1LG6 220-8AB□□ | 2.3 | 5.6 | 2.6 | 13 | 0.55 | 54 | 67 |
| 1LG6 223-8AB□□ | 2.4 | 5.8 | 2.8 | 13 | 0.66 | 58 | 71 |
| 1LG6 253-8AB□□ | 2.5 | 6 | 2.8 | 13 | 1.1 | 57 | 70 |
| 1LG6 280-8AB□□ | 2.3 | 5.7 | 2.3 | 13 | 1.4 | 58 | 71 |
| 1LG6 283-8AB□□ | 2.6 | 6.1 | 2.5 | 13 | 1.6 | 58 | 71 |
| 1LG6 310-8AB□□ | 2.5 | 6.3 | 2.9 | 13 | 2.5 | 61 | 75 |
| 1LG6 313-8AB□□ | 2.5 | 6.7 | 2.9 | 13 | 3.1 | 60 | 74 |
| 1LG6 316-8AB□□ | 2.4 | 6.3 | 2.8 | 13 | 3.9 | 64 | 77 |
| 1LG6 317-8AB□□ | 2.4 | 6.4 | 2.6 | 13 | 4.5 | 64 | 77 |
| 1LG6 318-8AB□□ | 2.5 | 6.7 | 2.9 | 13 | 5.3 | 64 | 77 |

The motors can also be used for 60 Hz according to EPACT, see Pages 2/52 to 2/57.

- 1) For connection to 230 V, parallel supply cables are necessary (see catalog part 0 "Introduction", "Connection, circuit and connection box").
- 2) For connection to 400 V, parallel supply cables are necessary (see catalog part 0 "Introduction", "Connection, circuit and connection box").
- 3) If motors 1LG6 183-... to 1LG6 318-... (motor series 1LG6 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.
- 4) 1LG6 220-... to 1LG6 318-... motors (motor series 1LG6 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be rotated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.
- 5) Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.
- 6) The "Second shaft extension" option, order code **K16** is not possible.
- 7) Type of construction IM V6 and IM V5 without protective cover is only possible using type of construction code **9** and order code **M1E** or **M1D**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with high efficiency – Cast-iron series 1LG6

Selection and ordering data (continued)

| Rated output at 60 Hz | Frame size | Operating values at rated output | | | | | | Order No. | Price | Weight IM B3 type of construction approx. m kg |
|---|------------|----------------------------------|--------------------------|---------------------------|-----------------------------|--------------------------------|-------------------------------|---|-------|--|
| | | Rated speed at 60 Hz | Rated torque at 60 Hz | EPACT with CC No. CC 032A | Nominal efficiency at 60 Hz | Power factor at 60 Hz 4/4-load | Rated current at 460 V, 60 Hz | | | |
| P_{rated} HP | FS | n_{rated} rpm | T_{rated} Nm | | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | For Order No. supplements for voltage and type of construction, see table below | | |
| 2-pole, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, for use in the North American market according to EPACT | | | | | | | | | | |
| 30 | 180 M | 3560 | 60 | Yes | 93 | 0.88 | 34 | 1LG6 183-2AA□□ | | 180 |
| 40 | 200 L | 3565 | 80 | Yes | 91.7 | 0.88 | 46 | 1LG6 206-2AA□□ | | 225 |
| 50 | 200 L | 3565 | 100 | Yes | 92.4 | 0.89 | 57 | 1LG6 207-2AA□□ | | 255 |
| 60 | 225 M | 3570 | 120 | Yes | 93.6 | 0.89 | 67 | 1LG6 223-2AA□□ | | 330 |
| 75 | 225 M | 3570 | 150 | Yes | 94.5 | 0.9 | 83 | 1LG6 228-2AA□□ ¹⁾ | | 390 |
| 75 | 250 M | 3578 | 149 | No | 93.6 | 0.89 | 84 | 1LG6 253-2AA□□ | | 420 |
| 100 | 250 M | 3580 | 199 | Yes | 94.1 | 0.89 | 112 | 1LG6 258-2AA□□ ¹⁾ | | 470 |
| 100 | 280 S | 3580 | 199 | No | 95 | 0.89 | 110 | 1LG6 280-2AB□□ | | 530 |
| 125 | 280 M | 3580 | 249 | Yes | 95 | 0.9 | 136 | 1LG6 283-2AB□□ | | 615 |
| 150 | 280 M | 3580 | 299 | Yes | 95 | 0.9 | 164 | 1LG6 288-2AA□□ ¹⁾ | | 660 |
| 150 | 315 S | 3585 | 298 | Yes | 94.5 | 0.91 | 164 | 1LG6 310-2AB□□ | | 790 |
| 175 | 315 M | 3586 | 348 | Yes | 95 | 0.91 | 190 | 1LG6 313-2AB□□ | | 915 |
| 200 | 315 L | 3588 | 397 | Yes | 95.4 | 0.91 | 215 | 1LG6 316-2AB□□ | | 1055 |
| 250 | 315 L | 3588 | 496 | No | 95.4 | 0.93 | 265 | 1LG6 317-2AB□□ | | 1245 |
| 300 | 315 L | 3591 | 595 | No | 95.4 | 0.92 | 320 | 1LG6 318-2AA□□ ¹⁾ | | 1330 |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | Final position: Type of construction | | | | | | With standard flange | | With special flange |
|----------------------------|------------------------------------|---|--|---|--|---|----------|---|----------------------|---|---------------------|
| | 60 Hz | | Without flange | With flange | | | | | | | |
| | 460 VY | 460 VA (see "Introduction" for outputs at 60 Hz) | IM B3/6/7/8, IM V6, IM V5 without protective cover ²⁾ | IM B5, IM V1 without protective cover ³⁾⁴⁾ | IM V1 without protective cover ³⁾⁵⁾ | IM V1 with protective cover ³⁾⁵⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover | |
| | 1 | 6 | 0 | 1 | 8 | 4 | 6 | 2 | 7 | 3 | |
| 1LG6 18 - . . . □□ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – | |
| 1LG6 20 - . . . □□ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – | |
| 1LG6 22 - . . . □□ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – | |
| 1LG6 25 - . . . □□ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – | |
| 1LG6 28 - . . . □□ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – | |
| 1LG6 310 - . . . □□ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – | |
| 1LG6 313 - . . . □□ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – | |
| 1LG6 316 - . . . □□ | – | ○ | □ ⁶⁾ | – | ✓ ⁷⁾ | ✓ ⁷⁾ | ✓ | – | – | – | |
| 1LG6 317 - . . . □□ | – | ○ | □ ⁶⁾ | – | ✓ ⁷⁾ | ✓ ⁷⁾ | ✓ | – | – | – | |
| 1LG6 318 - . . . □□ | – | ○ | □ ⁶⁾ | – | ✓ ⁷⁾ | ✓ ⁷⁾ | ✓ | – | – | – | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

- 1) Only 60 Hz data according to EPACT on the rating plate.
- 2) If motors 1LG6 183-... to 1LG6 318-... (motor series 1LG6 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.
- 3) 1LG6 220-... to 1LG6 318-... motors (motor series 1LG6 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be rotated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

- 4) Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.
- 5) The "Second shaft extension" option, order code **K16** is not possible.
- 6) Type of construction IM V6 and IM V5 without protective cover is only possible using type of construction code **9** and order code **M1E** or **M1D**.
- 7) 2-pole motors in 60 Hz version available on request.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with high efficiency – Cast-iron series 1LG6

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | Noise at rated output | |
|---|---|---|----------------------------|--------------|-------------------------|--|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 60 Hz $L_{p(A)}$ dB(A) | Sound pressure level at 60 Hz L_{WA} dB(A) |
| 2-pole, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, for use in the North American market according to EPACT | | | | | | | |
| 1LG6 183-2AA□□ | 2.7 | 7.9 | 3.7 | 16 | 0.086 | 72 | 85 |
| 1LG6 206-2AA□□ | 2.7 | 7.8 | 3.7 | 16 | 0.15 | 75 | 88 |
| 1LG6 207-2AA□□ | 2.8 | 7.8 | 3.7 | 16 | 0.18 | 75 | 88 |
| 1LG6 223-2AA□□ | 2.8 | 8.3 | 3.6 | 16 | 0.27 | 74 | 87 |
| 1LG6 228-2AA□□ | 3.3 | 8.7 | 3.7 | 16 | 0.32 | 74 | 87 |
| 1LG6 253-2AA□□ | 2.7 | 7.5 | 3.2 | 16 | 0.47 | 75 | 88 |
| 1LG6 258-2AA□□ | 2.8 | 8.4 | 3.5 | 16 | 0.57 | 79 | 92 |
| 1LG6 280-2AB□□ | 2.8 | 7.9 | 3.4 | 13 | 0.83 | 77 | 90 |
| 1LG6 283-2AB□□ | 2.9 | 8.3 | 3.4 | 13 | 1 | 77 | 90 |
| 1LG6 288-2AA□□ | 3.1 | 8.5 | 3.6 | 16 | 1.16 | 77 | 90 |
| 1LG6 310-2AB□□ | 2.6 | 7.5 | 3.1 | 13 | 1.4 | 81 | 94 |
| 1LG6 313-2AB□□ | 3 | 8.3 | 3.3 | 13 | 1.6 | 81 | 94 |
| 1LG6 316-2AB□□ | 3 | 8.4 | 3.5 | 13 | 2.1 | 81 | 94 |
| 1LG6 317-2AB□□ | 3.2 | 8.6 | 3.4 | 13 | 2.5 | 81 | 94 |
| 1LG6 318-2AA□□ | 4.1 | 10 | 3.9 | 16 | 2.74 | 83 | 96 |

The motors can also be used for 50 Hz according to CEMEP, see Pages 2/48 to 2/51.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with high efficiency – Cast-iron series 1LG6

Selection and ordering data (continued)

| Rated output at 60 Hz | Frame size | Operating values at rated output | | | | | Power factor at 60 Hz 4/4-load | Rated current at 460 V, 60 Hz | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight IM B3 type of construction approx. m kg |
|---|------------|----------------------------------|--------------------------|----------------------------|-----------------------------|---------------------------|--------------------------------|------------------------------------|--|-------|---|
| | | Rated speed at 60 Hz | Rated torque at 60 Hz | EPACT with CC No. CC 032A | Nominal efficiency at 60 Hz | EPACT with CC No. CC 032A | | | | | |
| P_{rated} HP | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | | | | | |
| 4-pole, 1800 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, for use in the North American market according to EPACT | | | | | | | | | | | |
| 25 | 180 M | 1775 | 100 | Yes | 92.4 | 0.82 | 31 | 1LG6 183-4AA□□ | | 155 | |
| 30 | 180 L | 1775 | 120 | Yes | 92.4 | 0.83 | 36.5 | 1LG6 186-4AA□□ | | 180 | |
| 40 | 200 L | 1775 | 160 | Yes | 93 | 0.84 | 48 | 1LG6 207-4AA□□ | | 225 | |
| 50 | 225 S | 1785 | 199 | No | 93.6 | 0.84 | 60 | 1LG6 220-4AA□□ | | 290 | |
| 60 | 225 M | 1785 | 239 | Yes | 94.1 | 0.85 | 70 | 1LG6 223-4AA□□ | | 330 | |
| 75 | 225 M | 1785 | 299 | Yes | 94.1 | 0.85 | 88 | 1LG6 228-4AA□□¹⁾ | | 355 | |
| 75 | 250 M | 1790 | 298 | No | 94.5 | 0.86 | 86 | 1LG6 253-4AA□□ | | 460 | |
| 100 | 250 M | 1788 | 398 | Yes | 94.5 | 0.86 | 116 | 1LG6 258-4AA□□¹⁾ | | 495 | |
| 100 | 280 S | 1788 | 398 | No | 94.5 | 0.86 | 114 | 1LG6 280-4AA□□ | | 575 | |
| 125 | 280 M | 1790 | 497 | Yes | 95 | 0.86 | 144 | 1LG6 283-4AA□□ | | 675 | |
| 150 | 280 M | 1788 | 598 | Yes | 95 | 0.86 | 172 | 1LG6 288-4AA□□¹⁾ | | 710 | |
| 150 | 315 S | 1791 | 596 | Yes | 95 | 0.87 | 170 | 1LG6 310-4AA□□ | | 810 | |
| 175 | 315 M | 1791 | 696 | Yes | 95.4 | 0.87 | 198 | 1LG6 313-4AA□□ | | 965 | |
| 200 | 315 L | 1792 | 795 | Yes | 95.4 | 0.87 | 225 | 1LG6 316-4AA□□ | | 1105 | |
| 250 | 315 L | 1792 | 994 | No | 95.8 | 0.87 | 280 | 1LG6 317-4AA□□ | | 1305 | |
| 300 | 315 L | 1792 | 1193 | No | 95.8 | 0.87 | 335 | 1LG6 318-4AA□□¹⁾ | | 1345 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | Final position: Type of construction code | | | | | | | |
|-----------------------|------------------------------------|--|--|---|--|---|----------|---|----------|---|
| | 60 Hz | 460 VΔ (see "Introduction" for outputs at 60 Hz) | Without flange | With flange | | With standard flange | | With special flange | | |
| | | | IM B3/6/7/8, IM V6, IM V5 without protective cover ²⁾ | IM B5, IM V1 without protective cover ³⁾⁴⁾ | IM V1 without protective cover ³⁾ | IM V1 with protective cover ³⁾⁵⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 0 | 1 | 8 | 4 | 6 | 2 | 7 | 3 |
| 1LG6 18-...□□ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 20-...□□ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 22-...□□ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 25-...□□ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 28-...□□ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 310-...□□ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 313-...□□ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 316-...□□ | – | ○ | □ ⁶⁾ | – | ✓ | ✓ | ✓ | – | – | – |
| 1LG6 317-...□□ | – | ○ | □ | – | – | – | – | – | – | – |
| 1LG6 318-...□□ | – | ○ | □ | – | – | – | – | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

- 1) Only 60 Hz data according to EPACT on the rating plate.
- 2) If motors 1LG6 183-... to 1LG6 318-... (motor series 1LG6 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.
- 3) 1LG6 220-... to 1LG6 318-... motors (motor series 1LG6 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be rotated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

- 4) Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.
- 5) The "Second shaft extension" option, order code **K16** is not possible.
- 6) Type of construction IM V6 and IM V5 without protective cover is only possible using type of construction code **9** and order code **M1E** or **M1D**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with high efficiency – Cast-iron series 1LG6

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | Noise at rated output | |
|---|---|---|----------------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 60 Hz L_{pFA} dB(A) | Sound pressure level at 60 Hz L_{WA} dB(A) |
| 4-pole, 1800 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, for use in the North American market according to EPACT | | | | | | | |
| 1LG6 183-4AA□□ | 2.9 | 7.1 | 3.3 | 16 | 0.12 | 65 | 78 |
| 1LG6 186-4AA□□ | 2.8 | 7.4 | 3.4 | 16 | 0.14 | 65 | 78 |
| 1LG6 207-4AA□□ | 3 | 7.7 | 3.7 | 16 | 0.23 | 66 | 79 |
| 1LG6 220-4AA□□ | 3.1 | 7.5 | 3.4 | 16 | 0.4 | 65 | 78 |
| 1LG6 223-4AA□□ | 3.3 | 7.9 | 3.5 | 16 | 0.49 | 65 | 78 |
| 1LG6 228-4AA□□ | 3 | 7.8 | 3.3 | 16 | 0.66 | 64 | 78 |
| 1LG6 253-4AA□□ | 2.9 | 8.2 | 3.4 | 16 | 0.86 | 68 | 81 |
| 1LG6 258-4AA□□ | 3 | 8.1 | 3.3 | 16 | 0.99 | 72 | 86 |
| 1LG6 280-4AA□□ | 2.9 | 7.6 | 3.2 | 16 | 1.4 | 71 | 84 |
| 1LG6 283-4AA□□ | 3 | 8.2 | 3.4 | 16 | 1.7 | 71 | 84 |
| 1LG6 288-4AA□□ | 3.1 | 8.4 | 3.5 | 16 | 1.88 | 71 | 85 |
| 1LG6 310-4AA□□ | 3.1 | 7.8 | 3.2 | 16 | 2.3 | 75 | 88 |
| 1LG6 313-4AA□□ | 3.2 | 8.4 | 3.3 | 16 | 2.9 | 75 | 88 |
| 1LG6 316-4AA□□ | 3.7 | 9 | 3.6 | 16 | 3.5 | 75 | 88 |
| 1LG6 317-4AA□□ | 4 | 9.1 | 3.7 | 16 | 4.2 | 75 | 88 |
| 1LG6 318-4AA□□ | 4 | 9.3 | 3.7 | 16 | 4.5 | 81 | 94 |

The motors can also be used for 50 Hz according to CEMEP, see Pages 2/48 to 2/51.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with high efficiency – Cast-iron series 1LG6

Selection and ordering data (continued)

| Rated output at 60 Hz | Frame size | Operating values at rated output | | | | Nominal efficiency at 60 Hz | Power factor at 60 Hz 4/4-load | Rated current at 460 V, 60 Hz | Order No. | Price | Weight |
|---|------------|----------------------------------|--------------------------|---------------------------|----------------------------|-----------------------------|--------------------------------|---|-----------|---|--------|
| P_{rated} HP | FS | n_{rated} rpm | T_{rated} Nm | EPACT with CC No. CC 032A | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | For Order No. supplements for voltage and type of construction, see table below | | IM B3 type of construction approx. m kg | |
| 6-pole, 1200 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, for use in the North American market according to EPACT | | | | | | | | | | | |
| 20 | 180 L | 1178 | 121 | Yes | 91 | 0.8 | 25.5 | 1LG6 186-6AA□□ | | 175 | |
| 25 | 200 L | 1180 | 151 | Yes | 91.7 | 0.79 | 32.5 | 1LG6 206-6AA□□ | | 210 | |
| 30 | 200 L | 1180 | 181 | Yes | 91.7 | 0.8 | 38.5 | 1LG6 207-6AA□□ | | 240 | |
| 40 | 225 M | 1184 | 241 | Yes | 93 | 0.82 | 49 | 1LG6 223-6AA□□ | | 325 | |
| 50 | 225 M | 1184 | 301 | Yes | 93 | 0.83 | 61 | 1LG6 228-6AA□□ ¹⁾ | | 355 | |
| 50 | 250 M | 1186 | 300 | No | 93 | 0.82 | 61 | 1LG6 253-6AA□□ | | 405 | |
| 60 | 250 M | 1186 | 361 | Yes | 93.6 | 0.82 | 73 | 1LG6 258-6AA□□ ¹⁾ | | 435 | |
| 60 | 280 S | 1190 | 359 | No | 94.1 | 0.83 | 72 | 1LG6 280-6AA□□ | | 520 | |
| 75 | 280 M | 1190 | 449 | No | 94.5 | 0.83 | 89 | 1LG6 283-6AA□□ | | 570 | |
| 100 | 280 M | 1190 | 599 | Yes | 94.5 | 0.84 | 118 | 1LG6 288-6AA□□ ¹⁾ | | 615 | |
| 100 | 315 S | 1191 | 598 | Yes | 94.5 | 0.82 | 120 | 1LG6 310-6AA□□ | | 760 | |
| 125 | 315 M | 1191 | 747 | Yes | 94.5 | 0.84 | 148 | 1LG6 313-6AA□□ | | 935 | |
| 150 | 315 L | 1192 | 896 | Yes | 95 | 0.84 | 176 | 1LG6 316-6AA□□ | | 1010 | |
| 175 | 315 L | 1192 | 1046 | Yes | 95 | 0.84 | 205 | 1LG6 317-6AA□□ | | 1180 | |
| 200 | 315 L | 1192 | 1195 | Yes | 95.4 | 0.84 | 235 | 1LG6 318-6AA□□ | | 1245 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | Final position: Type of construction code | | | | | | | |
|----------------------------|------------------------------------|---|--|--|---|--|----------------------|---|---------------------|---|
| | 60 Hz | | Without flange | With flange | | | With standard flange | | With special flange | |
| | 460 VY | 460 VA (see "Introduction" for outputs at 60 Hz) | IM B3/6/7/8, IM V6, IM V5 without protective cover ²⁾ | IM B5, IM V1 without protective cover ^{3) 4)} | IM V1 without protective cover ^{3) 5)} | IM V1 with protective cover ^{3) 5)} | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 0 | 1 | 8 | 4 | 6 | 2 | 7 | 3 |
| 1LG6 18 - . . . □□ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 20 - . . . □□ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 22 - . . . □□ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 25 - . . . □□ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 28 - . . . □□ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 310 - . . . □□ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 313 - . . . □□ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 316 - . . . □□ | – | ○ | □ ⁶⁾ | – | ✓ | ✓ | ✓ | – | – | – |
| 1LG6 317 - . . . □□ | – | ○ | □ ⁶⁾ | – | ✓ | ✓ | ✓ | – | – | – |
| 1LG6 318 - . . . □□ | – | ○ | □ ⁶⁾ | – | ✓ | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

- 1) Only 60 Hz data according to EPACT on the rating plate.
- 2) If motors 1LG6 183-... to 1LG6 318-... (motor series 1LG6 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.
- 3) 1LG6 220-... to 1LG6 318-... motors (motor series 1LG6 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be rotated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

- 4) Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.
- 5) The "Second shaft extension" option, order code **K16** is not possible.
- 6) Type of construction IM V6 and IM V5 without protective cover is only possible using type of construction code **9** and order code **M1E** or **M1D**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with high efficiency – Cast-iron series 1LG6

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | Noise at rated output | |
|---|---|---|----------------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 60 Hz L_{pFA} dB(A) | Sound pressure level at 60 Hz L_{WA} dB(A) |
| 6-pole, 1200 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, for use in the North American market according to EPACT | | | | | | | |
| 1LG6 186-6AA□□ | 2.9 | 6.5 | 3 | 16 | 0.2 | 57 | 70 |
| 1LG6 206-6AA□□ | 2.9 | 6.5 | 2.7 | 16 | 0.29 | 65 | 78 |
| 1LG6 207-6AA□□ | 2.9 | 6.4 | 2.7 | 16 | 0.36 | 65 | 78 |
| 1LG6 223-6AA□□ | 3.4 | 7.2 | 3.4 | 16 | 0.63 | 62 | 75 |
| 1LG6 228-6AA□□ | 3.2 | 7.6 | 3.4 | 16 | 0.76 | 61 | 74 |
| 1LG6 253-6AA□□ | 3.4 | 7.4 | 2.9 | 16 | 0.93 | 63 | 76 |
| 1LG6 258-6AA□□ | 3.4 | 7.4 | 2.9 | 16 | 1.07 | 65 | 79 |
| 1LG6 280-6AA□□ | 3.6 | 7.7 | 3.1 | 16 | 1.4 | 62 | 75 |
| 1LG6 283-6AA□□ | 3.9 | 8.3 | 3.3 | 16 | 1.6 | 62 | 75 |
| 1LG6 288-6AA□□ | 4 | 8.4 | 3.3 | 16 | 1.94 | 64 | 78 |
| 1LG6 310-6AA□□ | 3.3 | 8.4 | 3.4 | 16 | 2.5 | 66 | 79 |
| 1LG6 313-6AA□□ | 3 | 7.9 | 3.1 | 16 | 3.2 | 66 | 79 |
| 1LG6 316-6AA□□ | 3.3 | 8.5 | 3.3 | 16 | 4 | 66 | 79 |
| 1LG6 317-6AA□□ | 3.6 | 8.9 | 3.6 | 16 | 4.7 | 66 | 79 |
| 1LG6 318-6AA□□ | 4 | 9.4 | 4 | 16 | 5.4 | 69 | 82 |

The motors can also be used for 50 Hz according to CEMEP, see Pages 2/48 to 2/51.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-cooled motors without external fan
Aluminum series 1LP7/1LP5

Selection and ordering data

| Rated output with | | Frame size | Order No. | Price | Weight |
|---|-----------------------------------|------------|---|-------|---|
| 50 Hz P_{rated} kW | 60 Hz P_{rated} kW | FS | For Order No. supplements for voltage and type of construction, see table below | | For IM B3 type of construction approx. m kg |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 130 (B), IP55 degree of protection, with reduced output | | | | | |
| 0.12 | 0.14 | 63 M | 1LP7 060-2AA□□ | | 3.4 |
| 0.16 | 0.18 | 63 M | 1LP7 063-2AA□□ | | 3.9 |
| 0.19 | 0.22 | 71 M | 1LP7 070-2AA□□ | | 4.9 |
| 0.27 | 0.3 | 71 M | 1LP7 073-2AA□□ | | 6.4 |
| 0.35 | 0.40 | 80 M | 1LP7 080-2AA□□ | | 8.0 |
| 0.55 | 0.6 | 80 M | 1LP7 083-2AA□□ | | 9.6 |
| 0.82 | 0.95 | 90 S | 1LP7 090-2AA□□ | | 12.5 |
| 1.1 | 1.25 | 90 L | 1LP7 096-2AA□□ | | 15.2 |
| 1.3 | 1.5 | 100 L | ▶ 1LP7 106-2AA□□ | | 22.3 |
| 1.8 | 2.1 | 112 M | ▶ 1LP7 113-2AA□□ | | 29.0 |
| 2.5 | 2.9 | 132 S | ▶ 1LP7 130-2AA□□ | | 42.0 |
| 3.4 | 3.9 | 132 S | ▶ 1LP7 131-2AA□□ | | 51.0 |
| 5 | 5.7 | 160 M | ▶ 1LP7 163-2AA□□ | | 70.0 |
| 6 | 6.9 | 160 M | ▶ 1LP7 164-2AA□□ | | 82.0 |
| 7 | 8 | 160 L | ▶ 1LP7 166-2AA□□ | | 99.0 |
| 10 | 11.5 | 180 M | 1LP5 183-2AA□□ | | 112.0 |
| 13.5 | 15.5 | 200 L | 1LP5 206-2AA□□ | | 160.0 |
| 16.5 | 19 | 200 L | 1LP5 207-2AA□□ | | 182.0 |

The rated outputs and weights may change slightly after they have been checked.

Further electrical data can be calculated and supplied on receipt of order.

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | | |
|-----------------------------|------------------------------------|---------------|----------|----------|---|-------------|--|---|----------|---------------------|---|----------|---|
| | 50 Hz | | 60 Hz | | Without flange | With flange | | With standard flange | | With special flange | | | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 460 VY | 460 VΔ | IM B3/6/7/8, IM V6, IM V5 without protective cover | IM B5, IM V1 without protective cover ¹⁾ | IM V3 | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 3 | 5 | 1 | 6 | 0 | 1 | 6 | 2 | 7 | 3 | |
| 1LP7 06 . - . . . □□ | ○ | ○ | ○ | - | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LP7 07 . - . . . □□ | ○ | ○ | ○ | - | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LP7 08 . - . . . □□ | ○ | ○ | ○ | - | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LP7 09 . - . . . □□ | ○ | ○ | ○ | - | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LP7 10 . - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LP7 11 . - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LP7 13 . - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LP7 16 . - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LP5 18 . - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ²⁾ | ✓ | - | - | - | |
| 1LP5 20 . - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ²⁾ | ✓ | - | - | - | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

▶ The Order No. for 1LP7 motors marked with this symbol are phase-out models.
1PC1 motors are the successors.
For additional information see catalog part 1 "New Generation 1LE1/1PC1" under "Self-cooled motors without external fan and fan cover with improved efficiency" Pages 1/46 to 1/49.

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

1) 1LP5 183-... to 1LP5 207-... motors (motor series 1LA5, frame sizes 180 M to 200 L) can be supplied with two additional eyebolts; specify supplement **-Z** and order code **K32**.

2) Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-cooled motors without external fan
Aluminum series 1LP7/1LP5

Selection and ordering data (continued)

| Rated output with | | Frame size | Order No. | Price | Weight |
|---|----------------------------|------------|---|-------|---|
| 50 Hz P_{rated} kW | 60 Hz P_{rated} kW | FS | For Order No. supplements for voltage and type of construction, see table below | | For IM B3 type of construction approx. m kg |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, with reduced output | | | | | |
| 0.07 | 0.08 | 63 M | 1LP7 060-4AB□□ | | 3.4 |
| 0.12 | 0.14 | 63 M | 1LP7 063-4AB□□ | | 3.9 |
| 0.13 | 0.15 | 71 M | 1LP7 070-4AB□□ | | 4.7 |
| 0.19 | 0.22 | 71 M | 1LP7 073-4AB□□ | | 5.8 |
| 0.22 | 0.25 | 80 M | 1LP7 080-4AA□□ | | 7.8 |
| 0.38 | 0.45 | 80 M | 1LP7 083-4AA□□ | | 9.1 |
| 0.55 | 0.63 | 90 S | 1LP7 090-4AA□□ | | 11.9 |
| 0.65 | 0.75 | 90 L | 1LP7 096-4AA□□ | | 15.1 |
| 0.88 | 1.00 | 100 L | ▶ 1LP7 106-4AA□□ | | 23.0 |
| 1.2 | 1.4 | 100 L | ▶ 1LP7 107-4AA□□ | | 25.0 |
| 1.6 | 1.85 | 112 M | ▶ 1LP7 113-4AA□□ | | 30.0 |
| 2.5 | 2.9 | 132 S | ▶ 1LP7 130-4AA□□ | | 44.0 |
| 3.1 | 3.6 | 132 M | ▶ 1LP7 133-4AA□□ | | 54.0 |
| 4.8 | 5.5 | 160 M | ▶ 1LP7 163-4AA□□ | | 74.0 |
| 5.4 | 6.2 | 160 L | ▶ 1LP7 166-4AA□□ | | 90.0 |
| 7.5 | 8.5 | 180 M | 1LP5 183-4AA□□ | | 109.0 |
| 9 | 10.5 | 180 L | 1LP5 186-4AA□□ | | 122.0 |
| 12 | 14 | 200 L | 1LP5 207-4AA□□ | | 165.0 |

The rated outputs and weights may change slightly after they have been checked.

Further electrical data can be calculated and supplied on receipt of order.

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | |
|--------------------|------------------------------------|---------------|--------|--------|---|-------------|--|---|--------|---|---|---|
| | 50 Hz | | 60 Hz | | Without flange | With flange | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | With special flange | | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 460 VY | 460 VΔ | IM B3/6/7/8, IM V6, IM V5 without protective cover | IM B5, IM V1 without protective cover ¹⁾ | IM V3 | IM B14, IM V19, IM V18 without protective cover | IM B14, IM V19, IM V18 without protective cover | |
| | 1 | 6 | 3 | 5 | 1 | 6 | 0 | 1 | 6 | 2 | 7 | 3 |
| 1LP7 06 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LP7 07 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LP7 08 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LP7 09 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LP7 10 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LP7 11 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LP7 13 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LP7 16 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LP5 18 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ²⁾ | ✓ | – | – | – |
| 1LP5 20 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ²⁾ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

▶ The Order No. for 1LP7 motors marked with this symbol are phase-out models.
1PC1 motors are the successors.
For additional information see catalog part 1 "New Generation 1LE1/1PC1" under "Self-cooled motors without external fan and fan cover with improved efficiency" Pages 1/46 to 1/49.

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

1) 1LP5 183-... to 1LP5 207-... motors (motor series 1LA5, frame sizes 180 M to 200 L) can be supplied with two additional eyebolts; specify supplement **-Z** and order code **K32**.

2) Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-cooled motors without external fan
Aluminum series 1LP7/1LP5

Selection and ordering data (continued)

| Rated output with | | Frame size | Order No. | Price | Weight |
|---|----------------------------|------------|---|-------|--|
| | | | For Order No. supplements for voltage and type of construction, see table below | | For IM B3 type of construction approx. |
| 50 Hz P_{rated} kW | 60 Hz P_{rated} kW | FS | | | m kg |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, with reduced output | | | | | |
| 0.045 | 0.05 | 63 M | 1LP7 063-6AA□□ | | 4.0 |
| 0.09 | 0.105 | 71 M | 1LP7 070-6AA□□ | | 6.1 |
| 0.13 | 0.15 | 71 M | 1LP7 073-6AA□□ | | 6.1 |
| 0.18 | 0.2 | 80 M | 1LP7 080-6AA□□ | | 7.3 |
| 0.27 | 0.3 | 80 M | 1LP7 083-6AA□□ | | 9.1 |
| 0.37 | 0.4 | 90 S | 1LP7 090-6AA□□ | | 12.1 |
| 0.5 | 0.57 | 90 L | 1LP7 096-6AA□□ | | 15.2 |
| 0.7 | 0.8 | 100 L | ▶ 1LP7 106-6AA□□ | | 23.3 |
| 1.0 | 1.15 | 112 M | ▶ 1LP7 113-6AA□□ | | 26.0 |
| 1.7 | 1.9 | 132 S | ▶ 1LP7 130-6AA□□ | | 40.0 |
| 2 | 2.3 | 132 M | ▶ 1LP7 133-6AA□□ | | 45.0 |
| 2.3 | 2.65 | 132 M | ▶ 1LP7 134-6AA□□ | | 52.0 |
| 3.3 | 3.8 | 160 M | ▶ 1LP7 163-6AA□□ | | 74.0 |
| 4 | 4.6 | 160 L | ▶ 1LP7 166-6AA□□ | | 99.0 |
| 6.5 | 7.5 | 180 L | 1LP5 186-6AA□□ | | 122.0 |
| 8.5 | 10 | 200 L | 1LP5 207-6AA□□ | | 165.0 |

The rated outputs and weights may change slightly after they have been checked.

Further electrical data can be calculated and supplied on receipt of order.

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | 60 Hz | | Final position: Type of construction code | | | | | | |
|-----------------------------|------------------------------------|---------------|---------------|----------|----------|---|---|--|--|----------|---|---------------------|---|
| | 50 Hz | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 460 VY | 460 VΔ | Without flange | With flange | IM B35 | With standard flange | With special flange | |
| | | | | | | (see "Introduction" for outputs at 60 Hz) | | IM B3/6/7/8, IM V6, IM V5 without protective cover | IM B5, IM V1 without protective cover ¹⁾ IM V3 | | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 3 | 5 | 1 | 6 | 0 | 1 | 6 | 2 | 7 | 3 | |
| 1LP7 06 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LP7 07 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LP7 08 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LP7 09 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LP7 10 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LP7 11 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LP7 13 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LP7 16 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LP5 18 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ²⁾ | ✓ | – | – | – | |
| 1LP5 20 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ²⁾ | ✓ | – | – | – | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

▶ The Order No. for 1LP7 motors marked with this symbol are phase-out models.

1PC1 motors are the successors.

For additional information see catalog part 1 "New Generation 1LE1/1PC1" under "Self-cooled motors without external fan and fan cover with improved efficiency" Pages 1/46 to 1/49.

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ 1LP5 183-... to 1LP5 207-... motors (motor series 1LA5, frame sizes 180 M to 200 L) can be supplied with two additional eyebolts; specify supplement **-Z** and order code **K32**.

²⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-cooled motors without external fan
Aluminum series 1LP7/1LP5

Selection and ordering data (continued)

| Rated output with | | Frame size | Order No. | Price | Weight |
|---|----------------------------|------------|---|-------|---|
| 50 Hz P_{rated} kW | 60 Hz P_{rated} kW | FS | For Order No. supplements for voltage and type of construction, see table below | | For IM B3 type of construction approx. m kg |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, with reduced output | | | | | |
| 0.045 | 0.05 | 71 M | 1LP7 070-8AB□□ | | 6.1 |
| 0.06 | 0.07 | 71 M | 1LP7 073-8AB□□ | | 6.1 |
| 0.09 | 0.105 | 80 M | 1LP7 080-8AB□□ | | 7.3 |
| 0.13 | 0.15 | 80 M | 1LP7 083-8AB□□ | | 9.1 |
| 0.25 | 0.29 | 90 S | 1LP7 090-8AB□□ | | 10.2 |
| 0.35 | 0.4 | 90 L | 1LP7 096-8AB□□ | | 12.8 |
| 0.45 | 0.5 | 100 L | ▶ 1LP7 106-8AB□□ | | 19.4 |
| 0.65 | 0.75 | 100 L | ▶ 1LP7 107-8AB□□ | | 21.3 |
| 0.8 | 0.9 | 112 M | ▶ 1LP7 113-8AB□□ | | 23.3 |
| 1.2 | 1.4 | 132 S | ▶ 1LP7 130-8AB□□ | | 40.0 |
| 1.45 | 1.7 | 132 M | ▶ 1LP7 133-8AB□□ | | 48.0 |
| 1.8 | 2.1 | 160 M | ▶ 1LP7 163-8AB□□ | | 59.0 |
| 2.4 | 2.8 | 160 L | ▶ 1LP7 164-8AB□□ | | 68.0 |
| 3 | 3.45 | 160 L | ▶ 1LP7 166-8AB□□ | | 88.0 |
| 5.5 | 6.5 | 180 L | 1LP5 186-8AB□□ | | 122.0 |
| 7.5 | 9 | 200 L | 1LP5 207-8AB□□ | | 180.0 |

The rated outputs and weights may change slightly after they have been checked.

Further electrical data can be calculated and supplied on receipt of order.

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | | | Final position: Type of construction code | | | | | |
|--------------------|------------------------------------|---------------|----------|----------|----------|----------|--|---|----------|---|----------|---|
| | 50 Hz | | 60 Hz | | | | Without flange | With flange | | With standard flange | | With special flange |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 460 VY | 460 VΔ | IM B3/6/7/8, IM V6, IM V5 without protective cover | IM B5, IM V1 without protective cover ¹⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 3 | 5 | 1 | 6 | 0 | 1 | 6 | 2 | 7 | 3 |
| 1LP7 06 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LP7 07 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LP7 08 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LP7 09 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LP7 10 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LP7 11 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LP7 13 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LP7 16 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LP5 18 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ²⁾ | ✓ | – | – | – |
| 1LP5 20 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ²⁾ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

▶ The Order No. for 1LP7 motors marked with this symbol are phase-out models.

1PC1 motors are the successors.

For additional information see catalog part 1 "New Generation 1LE1/1PC1" under "Self-cooled motors without external fan and fan cover with improved efficiency" Pages 1/46 to 1/49.

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ 1LP5 183-... to 1LP5 207-... motors (motor series 1LA5, frame sizes 180 M to 200 L) can be supplied with two additional eyebolts; specify supplement **-Z** and order code **K32**.

²⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-cooled motors without external fan
Cast-iron series 1LP4

Selection and ordering data

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | Rated current at 50 Hz 400 V | Locked-rotor torque with direct starting torque | Locked-rotor current starting as multiple current | Break-down torque | Torque class | Moment of inertia | Order No. | Price | Weight |
|---|------------|----------------------------------|--------------------------|------------------------------|--------------------------------|------------------------------|----------------------------------|---|---|-------------------|--------------------------|---|-----------|---|--------|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | | | | | | | | | |
| P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | $T_{\text{LR}}/T_{\text{rated}}$ | $I_{\text{LR}}/I_{\text{rated}}$ | $T_{\text{B}}/T_{\text{rated}}$ | CL | J kg m ² | For Order No. supplements for voltage and type of construction, see table below | | IM B3 type of construction approx. m kg | |
| 2-pole, 3000 rpm at 50 Hz, temperature class 155 (F), used acc. to temperature class 130 (B), IP55 degree of protection, with reduced output | | | | | | | | | | | | | | | |
| 7.3 | 180 M | 2945 | 24 | 91.0 | 0.89 | 13 | 2.4 | 6.5 | 3.4 | 16 | 0.068 | 1LP4 183-2FA□□ | | 140 | |
| 10 | 200 L | 2950 | 32 | 90.9 | 0.89 | 17.8 | 2.3 | 6.4 | 2.9 | 16 | 0.129 | 1LP4 206-2FA□□ | | 195 | |
| 12.5 | 200 L | 2955 | 40 | 91.9 | 0.90 | 22 | 2.5 | 7.1 | 3.2 | 16 | 0.153 | 1LP4 207-2FA□□ | | 215 | |
| 15 | 225 M | 2960 | 48 | 93.2 | 0.90 | 26 | 2.3 | 6.7 | 3.0 | 16 | 0.217 | 1LP4 223-2FA□□ | | 275 | |
| 18.5 | 250 M | 2970 | 59 | 92.6 | 0.89 | 32.5 | 2.0 | 6.6 | 3.0 | 13 | 0.403 | 1LP4 253-2FB□□ | | 360 | |
| 25 | 280 S | 2975 | 80 | 93.8 | 0.90 | 42.5 | 2.5 | 7.6 | 3.0 | 13 | 0.715 | 1LP4 280-2FB□□ | | 480 | |
| 30 | 280 M | 2975 | 96 | 94.4 | 0.90 | 51 | 2.6 | 7.2 | 2.9 | 13 | 0.832 | 1LP4 283-2FB□□ | | 520 | |
| 37 | 315 S | 2984 | 118 | 94.5 | 0.90 | 63 | 2.3 | 7.3 | 3.0 | 13 | 1.19 | 1LP4 310-2FB□□ | | 700 | |
| 44 | 315 M | 2982 | 141 | 94.0 | 0.91 | 74 | 2.3 | 6.8 | 2.8 | 13 | 1.39 | 1LP4 313-2FB□□ | | 755 | |
| 53 | 315 L | 2982 | 170 | 94.6 | 0.91 | 89 | 2.3 | 6.9 | 2.9 | 13 | 1.62 | 1LP4 316-2FB□□ | | 880 | |
| 67 | 315 L | 2984 | 214 | 95.1 | 0.92 | 110 | 2.1 | 6.5 | 2.8 | 13 | 2.09 | 1LP4 317-2FB□□ | | 995 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | | |
|----------------------------|------------------------------------|------------------------|----------|----------------|---|----------------|--|---|--|----------------------|---|---------------------|---|
| | 50 Hz | | | | 60 Hz | | Without flange | With flange | | With standard flange | | With special flange | |
| | 230 V Δ /400 VY | 400 V Δ /690 VY | 500 VY | 500 V Δ | 460 VY | 460 V Δ | IM B3/6/7/8, IM V6, IM V5 without protective cover ¹⁾ | IM B5, IM V1 without protective cover ²⁾ | IM V1 without protective cover ²⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 3 | 5 | 1 | 6 | 0 | 1 | 8 | 6 | 2 | 7 | 3 |
| 1LP4 18 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | - | - | - |
| 1LP4 20 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | - | - | - |
| 1LP4 22 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | - | - | - |
| 1LP4 25 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | - | - | - |
| 1LP4 28 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | - | - | - |
| 1LP4 310 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | - | - | - |
| 1LP4 313 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | - | - | - |
| 1LP4 316 - . . . □□ | - | ○ | - | ○ | - | ○ | □ ³⁾ | - | ✓ ⁴⁾ | ✓ | - | - | - |
| 1LP4 317 - . . . □□ | - | ○ | - | ○ | - | ○ | □ ³⁾ | - | ✓ ⁴⁾ | ✓ | - | - | - |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

- 1) If motors 1LP4 183-... to 1LP4 317-... (motor series 1LP4 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.
- 2) 1LP4 220-... to 1LP4 317-... motors (motor series 1LP4 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be rotated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

- 3) Type of construction IM V6 and IM V5 without protective cover is only possible using type of construction code **9** and order code **M1E** or **M1D**.
- 4) 2-pole motors in 60 Hz version available on request.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-cooled motors without external fan
Cast-iron series 1LP4

Selection and ordering data (continued)

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | Locked-rotor torque with direct starting torque | Locked-rotor current starting as multiple current | Break-down torque | Torque class | Moment of inertia | Order No. | Price | Weight |
|---|------------|----------------------------------|-----------------------|------------------------------|--------------------------------|------------------------------|---|---|-------------------|--------------|--------------------------|-----------------------|-----------|--------|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | | | | | | | | |
| P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kg m ² | | m kg | |
| 4-pole, 1500 rpm at 50 Hz, temperature class 155 (F), used acc. to temperature class 130 (B), IP55 degree of protection, with reduced output | | | | | | | | | | | | | | |
| 6.2 | 180 M | 1465 | 40 | 90.6 | 0.87 | 11.4 | 2.1 | 6.6 | 3.0 | 16 | 0.099 | 1LP4 183-4FA□□ | 135 | |
| 7.3 | 180 L | 1470 | 47 | 91.2 | 0.87 | 13.2 | 2.1 | 6.9 | 3.1 | 16 | 0.117 | 1LP4 186-4FA□□ | 150 | |
| 10 | 200 L | 1465 | 65 | 90.5 | 0.88 | 18.2 | 2.3 | 6.6 | 3.2 | 16 | 0.191 | 1LP4 207-4FA□□ | 195 | |
| 12.5 | 225 S | 1475 | 81 | 92.2 | 0.86 | 23 | 2.3 | 6.6 | 3.0 | 16 | 0.374 | 1LP4 220-4FA□□ | 255 | |
| 15 | 225 M | 1475 | 97 | 93.1 | 0.87 | 26.5 | 2.4 | 7.1 | 3.1 | 16 | 0.447 | 1LP4 223-4FA□□ | 290 | |
| 18.5 | 250 M | 1480 | 119 | 93.5 | 0.87 | 33 | 2.2 | 6.0 | 2.6 | 16 | 0.688 | 1LP4 253-4FA□□ | 375 | |
| 25 | 280 S | 1485 | 161 | 93.9 | 0.87 | 44 | 2.4 | 7.0 | 2.9 | 16 | 1.19 | 1LP4 280-4FA□□ | 515 | |
| 30 | 280 M | 1485 | 193 | 94.4 | 0.88 | 52 | 2.4 | 7.2 | 2.9 | 16 | 1.39 | 1LP4 283-4FA□□ | 560 | |
| 37 | 315 S | 1488 | 237 | 94.4 | 0.87 | 65 | 2.2 | 6.2 | 2.6 | 16 | 1.94 | 1LP4 310-4FA□□ | 710 | |
| 44 | 315 M | 1488 | 282 | 95.2 | 0.87 | 77 | 2.4 | 6.7 | 2.7 | 16 | 2.31 | 1LP4 313-4FA□□ | 790 | |
| 53 | 315 L | 1488 | 340 | 95.5 | 0.87 | 92 | 2.5 | 6.7 | 2.7 | 16 | 2.88 | 1LP4 316-4FA□□ | 935 | |
| 67 | 315 L | 1488 | 430 | 95.7 | 0.88 | 114 | 2.3 | 6.2 | 2.6 | 16 | 3.46 | 1LP4 317-4FA□□ | 1040 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | 60 Hz | | Final position: Type of construction code | | | | | | |
|----------------------------|------------------------------------|---------------|--------|--------|--------|--------|--|---|--|----------------------|---|---------------------|---|
| | 50 Hz | | | | | | Without flange | With flange | | With standard flange | | With special flange | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 460 VY | 460 VΔ | IM B3/6/7/8, IM V6, IM V5 without protective cover ¹⁾ | IM B5, IM V1 without protective cover ²⁾ | IM V1 without protective cover ²⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 3 | 5 | 1 | 6 | 0 | 1 | 8 | 6 | 2 | 7 | 3 |
| 1LP4 18 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | - | - | - |
| 1LP4 20 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | - | - | - |
| 1LP4 22 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | - | - | - |
| 1LP4 25 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | - | - | - |
| 1LP4 28 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | - | - | - |
| 1LP4 310 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | - | - | - |
| 1LP4 313 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | - | - | - |
| 1LP4 316 - . . . □□ | - | ○ | - | ○ | - | ○ | □ ³⁾ | - | ✓ | ✓ | - | - | - |
| 1LP4 317 - . . . □□ | - | ○ | - | ○ | - | ○ | □ ³⁾ | - | ✓ | ✓ | - | - | - |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

- 1) If motors 1LP4 183... to 1LP4 317... (motor series 1LP4 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.
- 2) 1LP4 220... to 1LP4 317... motors (motor series 1LP4 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be rotated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

- 3) Type of construction IM V6 and IM V5 without protective cover is only possible using type of construction code **9** and order code **M1E** or **M1D**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-cooled motors without external fan
Cast-iron series 1LP4

Selection and ordering data (continued)

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | Rated current at 50 Hz 400 V | Locked-rotor torque with direct starting torque | Locked-rotor current starting as multiple of rated current | Break-down torque | Torque class | Moment of inertia | Order No. | Price | Weight |
|---|------------|----------------------------------|--------------------------|------------------------------|--------------------------------|------------------------------|----------------------------------|---|--|-------------------|--------------------------|---|-----------|---|--------|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | | | | | | | | | |
| P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\varphi_{\text{rated}}$ | I_{rated} A | $T_{\text{LR}}/T_{\text{rated}}$ | $I_{\text{LR}}/I_{\text{rated}}$ | $T_{\text{B}}/T_{\text{rated}}$ | CL | J kg m ² | For Order No. supplements for voltage and type of construction, see table below | | IM B3 type of construction approx. m kg | |
| 6-pole, 1000 rpm at 50 Hz, temperature class 155 (F), used acc. to temperature class 130 (B), IP55 degree of protection, with reduced output | | | | | | | | | | | | | | | |
| 5 | 180 L | 970 | 49 | 89.4 | 0.83 | 10 | 2.1 | 5.3 | 2.4 | 16 | 0.175 | 1LP4 186-6FA□□ | | 145 | |
| 6.2 | 200 L | 975 | 61 | 90.4 | 0.83 | 12 | 2.2 | 5.7 | 2.4 | 16 | 0.238 | 1LP4 206-6FA□□ | | 185 | |
| 7.3 | 200 L | 975 | 71 | 90.8 | 0.82 | 14.2 | 2.3 | 5.8 | 2.4 | 16 | 0.287 | 1LP4 207-6FA□□ | | 195 | |
| 10 | 225 M | 980 | 97 | 92.1 | 0.84 | 18.6 | 2.3 | 5.5 | 2.4 | 16 | 0.492 | 1LP4 223-6FA□□ | | 270 | |
| 12.5 | 250 M | 982 | 122 | 92.5 | 0.84 | 23 | 2.3 | 5.8 | 2.2 | 16 | 0.762 | 1LP4 253-6FA□□ | | 355 | |
| 15 | 280 S | 986 | 145 | 92.5 | 0.86 | 27 | 2.1 | 6.0 | 2.3 | 16 | 1.12 | 1LP4 280-6FA□□ | | 455 | |
| 18.5 | 280 M | 986 | 179 | 92.9 | 0.86 | 33.5 | 2.1 | 6.0 | 2.4 | 16 | 1.37 | 1LP4 283-6FA□□ | | 490 | |
| 25 | 315 S | 990 | 241 | 93.9 | 0.87 | 44 | 2.2 | 6.6 | 2.7 | 16 | 2.10 | 1LP4 310-6FA□□ | | 665 | |
| 30 | 315 M | 988 | 290 | 94.2 | 0.86 | 53 | 2.3 | 6.8 | 2.8 | 16 | 2.50 | 1LP4 313-6FA□□ | | 730 | |
| 37 | 315 L | 988 | 358 | 94.5 | 0.87 | 65 | 2.2 | 6.6 | 2.7 | 16 | 3.20 | 1LP4 316-6FA□□ | | 870 | |
| 44 | 315 L | 990 | 424 | 94.9 | 0.87 | 77 | 2.7 | 7.2 | 2.9 | 16 | 4.02 | 1LP4 317-6FA□□ | | 960 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | | |
|----------------------------|------------------------------------|------------------------|--------|----------------|---|----------------|--|---|--|--------|---|--------|---|
| | 50 Hz | | | | 60 Hz | | Without flange | | With flange | | With standard flange | | With special flange |
| | 230 V Δ /400 VY | 400 V Δ /690 VY | 500 VY | 500 V Δ | 460 VY | 460 V Δ | IM B3/6/7/8, IM V6, IM V5 without protective cover ¹⁾ | IM B5, IM V1 without protective cover ²⁾ | IM V1 without protective cover ²⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 3 | 5 | 1 | 6 | 0 | 1 | 8 | 6 | 2 | 7 | 3 |
| 1LP4 18 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | - | - | - |
| 1LP4 20 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | - | - | - |
| 1LP4 22 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | - | - | - |
| 1LP4 25 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | - | - | - |
| 1LP4 28 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | - | - | - |
| 1LP4 310 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | - | - | - |
| 1LP4 313 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | - | - | - |
| 1LP4 316 - . . . □□ | - | ○ | - | ○ | - | ○ | □ ³⁾ | - | ✓ | ✓ | - | - | - |
| 1LP4 317 - . . . □□ | - | ○ | - | ○ | - | ○ | □ ³⁾ | - | ✓ | ✓ | - | - | - |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ If motors 1LP4 183... to 1LP4 317... (motor series 1LP4 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.

²⁾ 1LP4 220... to 1LP4 317... motors (motor series 1LP4 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be rotated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

³⁾ Type of construction IM V6 and IM V5 without protective cover is only possible using type of construction code **9** and order code **M1E** or **M1D**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-cooled motors without external fan
Cast-iron series 1LP4

Selection and ordering data (continued)

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | Rated current at 50 Hz 400 V | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Break-down torque | Torque class | Moment of inertia | Order No. | Price | Weight |
|--|------------|----------------------------------|-----------------------|------------------------------|--------------------------------|------------------------------|------------------------------|---|---|-------------------|--------------------------|---|-----------|---|--------|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | | | | | | | | | |
| P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kg m ² | For Order No. supplements for voltage and type of construction, see table below | | IM B3 type of construction approx. m kg | |
| 8-pole, 750 rpm at 50 Hz, temperature class 155 (F), used acc. to temperature class 130 (B), IP55 degree of protection, with reduced output | | | | | | | | | | | | | | | |
| 3.7 | 180 L | 725 | 49 | 88.4 | 0.76 | 10 | 1.5 | 4.4 | 2.0 | 13 | 0.169 | 1LP4 186-8FB□□ | | 145 | |
| 5 | 200 L | 730 | 65 | 88.3 | 0.78 | 10.4 | 2.0 | 5.1 | 2.5 | 13 | 0.290 | 1LP4 207-8FB□□ | | 195 | |
| 6.2 | 225 S | 735 | 81 | 89.8 | 0.80 | 12.4 | 2.1 | 5.6 | 2.6 | 13 | 0.482 | 1LP4 220-8FB□□ | | 260 | |
| 7.3 | 225 M | 735 | 95 | 90.2 | 0.81 | 14.4 | 2.1 | 5.7 | 2.7 | 13 | 0.551 | 1LP4 223-8FB□□ | | 280 | |
| 10 | 250 M | 735 | 130 | 91.6 | 0.82 | 19.2 | 2.0 | 5.4 | 2.5 | 13 | 0.837 | 1LP4 253-8FB□□ | | 370 | |
| 12.5 | 280 S | 735 | 162 | 92.3 | 0.82 | 24 | 1.9 | 4.9 | 2.1 | 13 | 1.11 | 1LP4 280-8FB□□ | | 455 | |
| 15 | 280 M | 735 | 195 | 92.6 | 0.81 | 29 | 1.9 | 5.0 | 2.0 | 13 | 1.35 | 1LP4 283-8FB□□ | | 495 | |
| 18.5 | 315 S | 740 | 239 | 93.2 | 0.83 | 34.5 | 2.0 | 5.8 | 2.5 | 13 | 2.08 | 1LP4 310-8FB□□ | | 660 | |
| 25 | 315 M | 738 | 323 | 93.5 | 0.84 | 46 | 2.0 | 5.7 | 2.5 | 13 | 2.48 | 1LP4 313-8FB□□ | | 725 | |
| 30 | 315 L | 740 | 387 | 93.6 | 0.84 | 55 | 2.0 | 5.8 | 2.6 | 13 | 3.14 | 1LP4 316-8FB□□ | | 845 | |
| 37 | 315 L | 740 | 477 | 94.1 | 0.84 | 68 | 2.2 | 6.0 | 2.7 | 13 | 3.95 | 1LP4 317-8FB□□ | | 1000 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | | |
|----------------------------|------------------------------------|---------------|----------|----------|---|----------|--|---|--|----------------------|---|---------------------|---|
| | 50 Hz | | | | 60 Hz | | Without flange | With flange | | With standard flange | | With special flange | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 460 VY | 460 VΔ | IM B3/6/7/8, IM V6, IM V5 without protective cover ¹⁾ | IM B5, IM V1 without protective cover ²⁾ | IM V1 without protective cover ²⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 3 | 5 | 1 | 6 | 0 | 1 | 8 | 6 | 2 | 7 | 3 |
| 1LP4 18 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | - | - | - |
| 1LP4 20 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | - | - | - |
| 1LP4 22 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | - | - | - |
| 1LP4 25 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | - | - | - |
| 1LP4 28 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | - | - | - |
| 1LP4 310 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | - | - | - |
| 1LP4 313 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | - | ✓ | - | - | - |
| 1LP4 316 - . . . □□ | - | ○ | - | ○ | - | ○ | □ ³⁾ | - | ✓ | ✓ | - | - | - |
| 1LP4 317 - . . . □□ | - | ○ | - | ○ | - | ○ | □ ³⁾ | - | ✓ | ✓ | - | - | - |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ If motors 1LP4 183-... to 1LP4 317-... (motor series 1LP4 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.

²⁾ 1LP4 220-... to 1LP4 317-... motors (motor series 1LP4 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be rotated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

³⁾ Type of construction IM V6 and IM V5 without protective cover is only possible using type of construction code **9** and order code **M1E** or **M1D**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

Overview

| Category | Explanation |
|--|---|
| Voltages | For standard voltages, see the corresponding Order No. supplements in the selection and ordering data. For other voltages with voltage code 9 and the required order code, see "Special versions", "Selection and ordering data". For further information and details, see catalog part 0 "Introduction". |
| Types of construction | For standard construction types, see the corresponding Order No. supplements in the selection and ordering data. For other types of construction using type of construction code 9 and the required order code, see "Special versions", "Selection and ordering data". For further information and details, see catalog part 0 "Introduction". |
| Motor protection | For an overview of the relevant order codes, see "Special versions", "Selection and ordering data". |
| Motor connection and connection box | For further information and details, see catalog part 0 "Introduction". |
| Windings and insulation | |
| Colors and paint finish | |
| Modular technology – Basic versions | |
| Modular technology – Combinations of basic versions | |
| Modular technology – Additional versions | |
| Special technology | |
| Mechanical design and degrees of protection | |
| Coolant temperature and site altitude | |
| Designs in accordance with standards and specifications | |
| Bearings and lubrication | |
| Balance and vibration quantity | |
| Shaft and rotor | |
| Heating and ventilation | |
| Rating plate and extra rating plates | |
| Packaging, safety notes, documentation and test certificates | |
| Design for Zones 1, 2, 21 and 22 according to ATEX | See catalog part 4 "Explosion-proof motors" |
| Ship version | See catalog part 10 "Marine motors" |

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

Selection and ordering data

Voltages

Additional order codes for other voltages or voltage codes
(without **-Z** supplement)

For some non-standard voltages at 50 or 60 Hz, order codes are specified. They are ordered by specifying the code digit **9** for voltage in the 11th position of the Order No. and the appropriate order code.

| Special versions | Voltage code 11th position of the Order No. | Additional identifica- tion code with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | |
|---|---|---|----------------------------|----|----|----|----|-----|-----|----------------------------|-----|-----|-----|-----|-----|-----|
| | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 |
| Self-ventilated energy-saving motors with improved efficiency – Aluminum series 1LA7 and 1LA5 | | | | | | | | | | | | | | | | |
| | | | 1LA7 (aluminum) | | | | | | | 1LA5 (aluminum) | | | | | | |
| Voltage at 50 Hz | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY (440 VY at 60 Hz) (210 ... 230 VΔ/360 ... 400 VY); 50 Hz output ¹⁾ | 9 | L1R | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 230 VΔ (220 ... 240 VΔ); 50 Hz output ¹⁾ | 9 | L1E | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 380 VΔ/660 VY (440 VΔ at 60 Hz) (360 ... 400 VΔ/625 ... 695 VY); 50 Hz output ¹⁾ | 9 | L1L | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 415 VY (395 ... 435 VY); 50 Hz output ¹⁾ | 9 | L1C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 415 VΔ (395 ... 435 VΔ); 50 Hz output ¹⁾ | 9 | L1D | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 400 VY (380 ... 420 VY); 50 Hz output ¹⁾ | 9 | L1A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 400 VΔ (380 ... 420 VΔ); 50 Hz output ¹⁾ | 9 | L1B | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 400 VΔ (460 VΔ at 60 Hz) (380 ... 420 VΔ); 50 Hz output ¹⁾ | 9 | L1U | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Voltage at 60 Hz | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY; 50 Hz output | 9 | L2A | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 220 VΔ/380 VY; 60 Hz output | 9 | L2B | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 380 VΔ/660 VY; 50 Hz output | 9 | L2C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 380 VΔ/660 VY; 60 Hz output | 9 | L2D | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VY; 50 Hz output | 9 | L2Q | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VY; 60 Hz output | 9 | L2W | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VΔ; 50 Hz output | 9 | L2R | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VΔ; 60 Hz output | 9 | L2X | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VY; 50 Hz output | 9 | L2S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VY; 60 Hz output | 9 | L2E | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 460 VΔ; 50 Hz output | 9 | L2T | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VΔ; 60 Hz output | 9 | L2F | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 575 VY; 50 Hz output | 9 | L2U | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 VY; 60 Hz output | 9 | L2L | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 VΔ; 50 Hz output | 9 | L2V | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 VΔ; 60 Hz output | 9 | L2M | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Voltage changeover at 60 Hz | | | | | | | | | | | | | | | | |
| 230 VYY/460 VY 60 Hz; 50 Hz output, 9 main terminals and electrical design to NEMA ³⁾ | 9 | L3E | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - |
| 230 VYY/460 VY 60 Hz; 60 Hz output, 9 main terminals and electrical design to NEMA ³⁾ | 9 | L3F | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - |
| 230 VΔΔ/460 VΔ 60 Hz; 50 Hz output, 12 main terminals and electrical design to NEMA | 9 | L3G | - | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - |
| 230 VΔΔ/460 VΔ 60 Hz; 60 Hz output, 12 main terminals and electrical design to NEMA | 9 | L3H | - | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - |
| Non-standard voltages and/or frequencies | | | | | | | | | | | | | | | | |
| Non-standard winding for vol- tages between 200 and 690 V (voltages outside this range are available on request) ²⁾ | 9 | L1Y • | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 2/68.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Voltage code 11th position of the Order No. | Additional identifica- tion code with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|---|---|------------------------|----|----|----|----|-----|-----|-----|------------------------------|-----|-----|-----|-----|-----|-----|
| | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated energy-saving motors with improved efficiency in pole-changing version – Aluminum series 1LA7 and 1LA5 | | | | | | | | | | | | | | | | | |
| | | | 1LA7 (aluminum) | | | | | | | | 1LA5 (alu- minum) | | | | | | |
| Voltage 60 Hz | | | | | | | | | | | | | | | | | |
| 220 V; 50 Hz output | 9 | L4A | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 220 V; 60 Hz output | 9 | L4B | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 380 V; 50 Hz output | 9 | L4C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 380 V; 60 Hz output | 9 | L4D | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 V; 50 Hz output | 9 | L4G | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 V; 60 Hz output | 9 | L4E | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 V; 50 Hz output | 9 | L4J | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 V; 60 Hz output | 9 | L4H | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 V; 50 Hz output | 9 | L4N | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 V; 60 Hz output | 9 | L4M | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard voltage and/or frequencies | | | | | | | | | | | | | | | | | |
| Non-standard winding for vol- tages between 200 and 690 V (voltages outside this range are available on request) ²⁾ | 9 | L1Y • | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard winding for Y/Δ starting at low speed ²⁾ | 9 | L3Y • | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

- Without additional charge
- ✓ With additional charge
- Not possible
- This order code only determines the price of the version –
Additional plain text is required.

¹⁾ With order codes **L1A, L1B, L1C, L1D, L1E, L1L, L1R** and **L1U**, a rated voltage range is also specified on the rating plate.

²⁾ Plain text must be specified in the order: Voltage, frequency, circuit, required rated output in kW.

³⁾ When ordered with option brake (order code **G26**) only 6 motor connection terminals are possible for frame size 56 to 90.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Voltage code 11th position of the Order No. | Additional identifica- tion code with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | |
|---|---|---|------------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 |
| Self-ventilated energy-saving motors with high efficiency – Aluminum series 1LA9 | | | | | | | | | | | | | | | | |
| | | | 1LA9 (aluminum) | | | | | | | | | | | | | |
| Voltage at 50 Hz | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY (440 VY at 60 Hz) (210 ... 230 VΔ/360 ... 400 VY); 50 Hz output ¹⁾ | 9 | L1R | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 230 VΔ (220 ... 240 VΔ); 50 Hz output ¹⁾ | 9 | L1E | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 380 VΔ/660 VY (440 VΔ at 60 Hz) (360 ... 400 VΔ/625 ... 695 VY); 50 Hz output ¹⁾ | 9 | L1L | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 415 VY (395 ... 435 VY); 50 Hz output ¹⁾ | 9 | L1C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 415 VΔ (395 ... 435 VΔ); 50 Hz output ¹⁾ | 9 | L1D | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 400 VY (380 ... 420 VY); 50 Hz output ¹⁾ | 9 | L1A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 400 VΔ (380 ... 420 VΔ); 50 Hz output ¹⁾ | 9 | L1B | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 400 VΔ (460 VΔ at 60 Hz) (380 ... 420 VΔ); 50 Hz output ¹⁾ | 9 | L1U | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Voltage at 60 Hz | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY; 50 Hz output | 9 | L2A | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 220 VΔ/380 VY; 60 Hz output | 9 | L2B | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 380 VΔ/660 VY; 50 Hz output | 9 | L2C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 380 VΔ/660 VY; 60 Hz output | 9 | L2D | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VY; 50 Hz output | 9 | L2Q | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VY; 60 Hz output | 9 | L2W | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VΔ; 50 Hz output | 9 | L2R | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VΔ; 60 Hz output | 9 | L2X | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VY; 50 Hz output | 9 | L2S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VY; 60 Hz output | 9 | L2E | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 460 VΔ; 50 Hz output | 9 | L2T | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VΔ; 60 Hz output | 9 | L2F | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 575 VY; 50 Hz output | 9 | L2U | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 VY; 60 Hz output | 9 | L2L | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 VΔ; 50 Hz output | 9 | L2V | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 VΔ; 60 Hz output | 9 | L2M | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Voltage changeover at 60 Hz | | | | | | | | | | | | | | | | |
| 230 VYY/460 VY 60 Hz; 50 Hz output, 9 main terminals and electrical design to NEMA | 9 | L3E | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 230 VYY/460 VY 60 Hz; 60 Hz output, 9 main terminals and electrical design to NEMA | 9 | L3F | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 230 VΔΔ/460 VΔ 60 Hz; 50 Hz output, 12 main terminals and electrical design to NEMA | 9 | L3G | - | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 230 VΔΔ/460 VΔ 60 Hz; 60 Hz output, 12 main terminals and electrical design to NEMA | 9 | L3H | - | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard voltage and/or frequencies | | | | | | | | | | | | | | | | |
| Non-standard winding for vol- tages between 200 and 690 V (voltages outside this range are available on request) ²⁾ | 9 | L1Y • | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Voltage code | 11th position of the Order No. | Additional identification code with order code and plain text if required | Motor type frame size | | | | | | | | | | | | |
|--|--------------|--------------------------------|---|------------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 |
| Self-ventilated motors with increased output – Aluminum series 1LA9 | | | | | | | | | | | | | | | | |
| | | | | 1LA9 (aluminum) | | | | | | | | | | | | |
| Voltage at 50 Hz | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY (440 VY at 60 Hz) (210 ... 230 VΔ/360 ... 400 VY); 50 Hz output ¹⁾ | 9 | | L1R | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 230 VΔ (220 ... 240 VΔ); 50 Hz output ¹⁾ | 9 | | L1E | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 380 VΔ/660 VY (440 VΔ at 60 Hz) (360 ... 400 VΔ/625 ... 695 VY); 50 Hz output ¹⁾ | 9 | | L1L | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 415 VY (395 ... 435 VY); 50 Hz output ¹⁾ | 9 | | L1C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 415 VΔ (395 ... 435 VΔ); 50 Hz output ¹⁾ | 9 | | L1D | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 400 VY (380 ... 420 VY); 50 Hz output ¹⁾ | 9 | | L1A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 400 VΔ (380 ... 420 VΔ); 50 Hz output ¹⁾ | 9 | | L1B | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 400 VΔ (460 VΔ at 60 Hz) (380 ... 420 VΔ); 50 Hz output ¹⁾ | 9 | | L1U | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Voltage at 60 Hz | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY; 50 Hz output | 9 | | L2A | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 220 VΔ/380 VY; 60 Hz output | 9 | | L2B | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 380 VΔ/660 VY; 50 Hz output | 9 | | L2C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 380 VΔ/660 VY; 60 Hz output | 9 | | L2D | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VY; 50 Hz output | 9 | | L2Q | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VY; 60 Hz output | 9 | | L2W | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VΔ; 50 Hz output | 9 | | L2R | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VΔ; 60 Hz output | 9 | | L2X | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VY; 50 Hz output | 9 | | L2S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VY; 60 Hz output | 9 | | L2E | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 460 VΔ; 50 Hz output | 9 | | L2T | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VΔ; 60 Hz output | 9 | | L2F | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 575 VY; 50 Hz output | 9 | | L2U | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 VY; 60 Hz output | 9 | | L2L | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 VΔ; 50 Hz output | 9 | | L2V | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 VΔ; 60 Hz output | 9 | | L2M | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Voltage changeover at 60 Hz | | | | | | | | | | | | | | | | |
| 230 VYY/460 VY 60 Hz; 50 Hz output, 9 main terminals and electrical design to NEMA | 9 | | L3E | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 230 VYY/460 VY 60 Hz; 60 Hz output, 9 main terminals and electrical design to NEMA | 9 | | L3F | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 230 VΔΔ/460 VΔ 60 Hz; 50 Hz output, 12 main terminals and electrical design to NEMA | 9 | | L3G | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 230 VΔΔ/460 VΔ 60 Hz; 60 Hz output, 12 main terminals and electrical design to NEMA | 9 | | L3H | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard voltage and/or frequencies | | | | | | | | | | | | | | | | |
| Non-standard winding for voltages between 200 and 690 V (voltages outside this range are available on request) ²⁾ | 9 | | L1Y • | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

- Without additional charge
- ✓ With additional charge
- Not possible
- This order code only determines the price of the version – Additional plain text is required.

¹⁾ With order codes **L1A**, **L1B**, **L1C**, **L1D**, **L1E**, **L1L**, **L1R** and **L1U**, a rated voltage range is also specified on the rating plate.

²⁾ Plain text must be specified in the order: Voltage, frequency, circuit, required rated output in kW.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Voltage code code 11th position of the Order No. | Additional identifica- tion code with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | | | | |
|--|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------|----------|---|---|
| | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 S/M | 315 L | | |
| Self-ventilated motors with increased output – Cast-iron series 1LG4 | | | | | | | | | | | | | | | | | | | | |
| 1LG4 (cast-iron) | | | | | | | | | | | | | | | | | | | | |
| Voltage at 50 Hz | | | | | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY (440 VY at 60 Hz) (210 ... 230 VΔ/360 ... 400 VY); 50 Hz output ¹⁾ | 9 | L1R | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 230 VΔ (220 ... 240 VΔ); 50 Hz output ¹⁾ | 9 | L1E | | | | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ |
| 380 VΔ/660 VY (440 VΔ at 60 Hz) (360 ... 400 VΔ/625 ... 695 VY); 50 Hz output ¹⁾ | 9 | L1L | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 415 VY (395 ... 435 VY); 50 Hz output ¹⁾ | 9 | L1C | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 415 VΔ (395 ... 435 VΔ); 50 Hz output ¹⁾ | 9 | L1D | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 400 VY (380 ... 420 VY); 50 Hz output ¹⁾ | 9 | L1A | | | | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ |
| 400 VΔ (380 ... 420 VΔ); 50 Hz output ¹⁾ | 9 | L1B | | | | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ |
| 400 VΔ (460 VΔ at 60 Hz) (380 ... 420 VΔ); 50 Hz output ¹⁾ | 9 | L1U | | | | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ |
| Voltage at 60 Hz | | | | | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY; 50 Hz output | 9 | L2A | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 220 VΔ/380 VY; 60 Hz output | 9 | L2B | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 380 VΔ/660 VY; 50 Hz output | 9 | L2C | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 380 VΔ/660 VY; 60 Hz output | 9 | L2D | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VY; 50 Hz output | 9 | L2Q | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VY; 60 Hz output | 9 | L2W | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VΔ; 50 Hz output | 9 | L2R | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VΔ; 60 Hz output | 9 | L2X | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VY; 50 Hz output | 9 | L2S | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VY; 60 Hz output | 9 | L2E | | | | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ |
| 460 VΔ; 50 Hz output | 9 | L2T | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VΔ; 60 Hz output | 9 | L2F | | | | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ |
| 575 VY; 50 Hz output | 9 | L2U | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 VY; 60 Hz output | 9 | L2L | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 VΔ; 50 Hz output | 9 | L2V | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 VΔ; 60 Hz output | 9 | L2M | | | | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ |
| Non-standard voltage and/or frequencies | | | | | | | | | | | | | | | | | | | | |
| Non-standard winding for vol- tages between 200 and 690 V (other voltages are available on request) ²⁾ | 9 | L1Y | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |

- Without additional charge
✓ With additional charge
– Not possible

¹⁾ With order codes **L1A, L1B, L1C, L1D, L1E, L1L, L1R** and **L1U**, a rated voltage range is also specified on the rating plate.

²⁾ Plain text must be specified in the order: Voltage, frequency, circuit, required rated output in kW.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Voltage code 11th position of the Order No. | Additional identifica- tion code with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|---|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------------------------|
| | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 S/M |
| Self-ventilated energy-saving motors with high efficiency – Cast-iron series 1LG6 | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | 1LG6 (cast-iron) |
| Voltage at 50 Hz | | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY (440 VY at 60 Hz) (210 ... 230 VΔ/360 ... 400 VY); 50 Hz output ¹⁾ | 9 | L1R | | | | | | | | | | | | | | ✓ | – |
| 230 VΔ (220 ... 240 VΔ); 50 Hz output ¹⁾ | 9 | L1E | | | | | | | | | | | | | | ○ | – |
| 380 VΔ/660 VY (440 VΔ at 60 Hz) (360 ... 400 VΔ/625 ... 695 VY); 50 Hz output ¹⁾ | 9 | L1L | | | | | | | | | | | | | | ✓ | ✓ |
| 415 VY (395 ... 435 VY); 50 Hz output ¹⁾ | 9 | L1C | | | | | | | | | | | | | | ✓ | – |
| 415 VΔ (395 ... 435 VΔ); 50 Hz output ¹⁾ | 9 | L1D | | | | | | | | | | | | | | ✓ | ✓ |
| 400 VY (380 ... 420 VY); 50 Hz output ¹⁾ | 9 | L1A | | | | | | | | | | | | | | ○ | – |
| 400 VΔ (380 ... 420 VΔ); 50 Hz output ¹⁾ | 9 | L1B | | | | | | | | | | | | | | ○ | ○ |
| 400 VΔ (460 VΔ at 60 Hz) (380 ... 420 VΔ); 50 Hz output ¹⁾ | 9 | L1U | | | | | | | | | | | | | | ○ | ○ |
| Voltage at 60 Hz | | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY; 50 Hz output | 9 | L2A | | | | | | | | | | | | | | ✓ | – |
| 220 VΔ/380 VY; 60 Hz output | 9 | L2B | | | | | | | | | | | | | | ✓ | – |
| 380 VΔ/660 VY; 50 Hz output | 9 | L2C | | | | | | | | | | | | | | ✓ | ✓ |
| 380 VΔ/660 VY; 60 Hz output | 9 | L2D | | | | | | | | | | | | | | ✓ | ✓ |
| 440 VY; 50 Hz output | 9 | L2Q | | | | | | | | | | | | | | ✓ | – |
| 440 VY; 60 Hz output | 9 | L2W | | | | | | | | | | | | | | ✓ | – |
| 440 VΔ; 50 Hz output | 9 | L2R | | | | | | | | | | | | | | ✓ | ✓ |
| 440 VΔ; 60 Hz output | 9 | L2X | | | | | | | | | | | | | | ✓ | ✓ |
| 460 VY; 50 Hz output | 9 | L2S | | | | | | | | | | | | | | ✓ | – |
| 460 VY; 60 Hz output | 9 | L2E | | | | | | | | | | | | | | ○ | – |
| 460 VΔ; 50 Hz output | 9 | L2T | | | | | | | | | | | | | | ✓ | ✓ |
| 460 VΔ; 60 Hz output | 9 | L2F | | | | | | | | | | | | | | ○ | ○ |
| 575 VY; 50 Hz output | 9 | L2U | | | | | | | | | | | | | | ✓ | – |
| 575 VY; 60 Hz output | 9 | L2L | | | | | | | | | | | | | | ✓ | – |
| 575 VΔ; 50 Hz output | 9 | L2V | | | | | | | | | | | | | | ✓ | ✓ |
| 575 VΔ; 60 Hz output | 9 | L2M | | | | | | | | | | | | | | ○ | ○ |
| Non-standard voltage and/or frequencies | | | | | | | | | | | | | | | | | |
| Non-standard winding for vol- tages between 200 and 690 V (voltages outside this range are available on request) ²⁾ | 9 | L1Y | | | | | | | | | | | | | | ✓ | ✓ |

- Without additional charge
 ✓ With additional charge
 – Not possible

¹⁾ With order codes **L1A, L1B, L1C, L1D, L1E, L1L, L1R** and **L1U**, a rated voltage range is also specified on the rating plate.

²⁾ Plain text must be specified in the order: Voltage, frequency, circuit, required rated output in kW.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Voltage code 11th position of the Order No. | Additional identifica- tion code with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | |
|---|---|---|------------------------|----|----|----|----|-----|-----|-----|-----|-----|------------------------------|-----|-----|-----|
| | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 |
| Self-cooled motors without external fan – Aluminum series 1LP7 and 1LP5 | | | | | | | | | | | | | | | | |
| | | | 1LP7 (aluminum) | | | | | | | | | | 1LP5 (alu- minum) | | | |
| Voltage at 50 Hz | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY (440 VY at 60 Hz) (210 ... 230 VΔ/360 ... 400 VY); 50 Hz output ¹⁾ | 9 | L1R | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 230 VΔ (220 ... 240 VΔ); 50 Hz output ¹⁾ | 9 | L1E | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 380 VΔ/660 VY (440 VΔ at 60 Hz) (360 ... 400 VΔ/625 ... 695 VY); 50 Hz output ¹⁾ | 9 | L1L | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 415 VY (395 ... 435 VY); 50 Hz output ¹⁾ | 9 | L1C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 415 VΔ (395 ... 435 VΔ); 50 Hz output ¹⁾ | 9 | L1D | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 400 VY (380 ... 420 VY); 50 Hz output ¹⁾ | 9 | L1A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 400 VΔ (380 ... 420 VΔ); 50 Hz output ¹⁾ | 9 | L1B | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 400 VΔ (460 VΔ at 60 Hz) (380 ... 420 VΔ); 50 Hz output ¹⁾ | 9 | L1U | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Voltage at 60 Hz | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY; 50 Hz output | 9 | L2A | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 220 VΔ/380 VY; 60 Hz output | 9 | L2B | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 380 VΔ/660 VY; 50 Hz output | 9 | L2C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 380 VΔ/660 VY; 60 Hz output | 9 | L2D | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VY; 50 Hz output | 9 | L2Q | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VY; 60 Hz output | 9 | L2W | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VΔ; 50 Hz output | 9 | L2R | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VΔ; 60 Hz output | 9 | L2X | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VY; 50 Hz output | 9 | L2S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VY; 60 Hz output | 9 | L2E | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 460 VΔ; 50 Hz output | 9 | L2T | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VΔ; 60 Hz output | 9 | L2F | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 575 VY; 50 Hz output | 9 | L2U | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 VY; 60 Hz output | 9 | L2L | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 VΔ; 50 Hz output | 9 | L2V | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 VΔ; 60 Hz output | 9 | L2M | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Voltage changeover at 60 Hz | | | | | | | | | | | | | | | | |
| 230 VYY/460 VY 60 Hz; 50 Hz output, 9 main terminals and electrical design to NEMA | 9 | L3E | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 230 VYY/460 VY 60 Hz; 60 Hz output, 9 main terminals and electrical design to NEMA | 9 | L3F | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 230 VΔΔ/460 VΔ 60 Hz; 50 Hz output, 12 main terminals and electrical design to NEMA | 9 | L3G | ○ | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 230 VΔΔ/460 VΔ 60 Hz; 60 Hz output, 12 main terminals and electrical design to NEMA | 9 | L3H | ○ | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard voltage and/or frequencies | | | | | | | | | | | | | | | | |
| Non-standard winding for vol- tages between 200 and 690 V (voltages outside this range are available on request) ²⁾ | 9 | L1Y • | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 2/75.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Voltage code code 11th position of the Order No. | Additional identifica- tion code with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|---|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-------------------------|-----|-----|-----|-----|------------|
| | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 S/M |
| Self-cooled motors without external fan – Cast-iron series 1LP4 | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | 1LP4 (cast-iron) | | | | | |
| Voltage at 50 Hz | | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY (440 VY at 60 Hz) (210 ... 230 VΔ/360 ... 400 VY); 50 Hz output ¹⁾ | 9 | L1R | | | | | | | | | | | | | | ✓ | ✓ |
| 230 VΔ (220 ... 240 VΔ); 50 Hz output ¹⁾ | 9 | L1E | | | | | | | | | | | | | | ○ | ○ |
| 380 VΔ/660 VY (440 VΔ at 60 Hz) (360 ... 400 VΔ/625 ... 695 VY); 50 Hz output ¹⁾ | 9 | L1L | | | | | | | | | | | | | | ✓ | ✓ |
| 415 VY (395 ... 435 VY); 50 Hz output ¹⁾ | 9 | L1C | | | | | | | | | | | | | | ✓ | ✓ |
| 415 VΔ (395 ... 435 VΔ); 50 Hz output ¹⁾ | 9 | L1D | | | | | | | | | | | | | | ✓ | ✓ |
| 400 VY (380 ... 420 VY); 50 Hz output ¹⁾ | 9 | L1A | | | | | | | | | | | | | | ○ | ○ |
| 400 VΔ (380 ... 420 VΔ); 50 Hz output ¹⁾ | 9 | L1B | | | | | | | | | | | | | | ○ | ○ |
| 400 VΔ (460 VΔ at 60 Hz) (380 ... 420 VΔ); 50 Hz output ¹⁾ | 9 | L1U | | | | | | | | | | | | | | ○ | ○ |
| Voltage at 60 Hz | | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY; 50 Hz output | 9 | L2A | | | | | | | | | | | | | | ✓ | ✓ |
| 220 VΔ/380 VY; 60 Hz output | 9 | L2B | | | | | | | | | | | | | | ✓ | ✓ |
| 380 VΔ/660 VY; 50 Hz output | 9 | L2C | | | | | | | | | | | | | | ✓ | ✓ |
| 380 VΔ/660 VY; 60 Hz output | 9 | L2D | | | | | | | | | | | | | | ✓ | ✓ |
| 440 VY; 50 Hz output | 9 | L2Q | | | | | | | | | | | | | | ✓ | ✓ |
| 440 VY; 60 Hz output | 9 | L2W | | | | | | | | | | | | | | ✓ | ✓ |
| 440 VΔ; 50 Hz output | 9 | L2R | | | | | | | | | | | | | | ✓ | ✓ |
| 440 VΔ; 60 Hz output | 9 | L2X | | | | | | | | | | | | | | ✓ | ✓ |
| 460 VY; 50 Hz output | 9 | L2S | | | | | | | | | | | | | | ✓ | ✓ |
| 460 VY; 60 Hz output | 9 | L2E | | | | | | | | | | | | | | ○ | ○ |
| 460 VΔ; 50 Hz output | 9 | L2T | | | | | | | | | | | | | | ✓ | ✓ |
| 460 VΔ; 60 Hz output | 9 | L2F | | | | | | | | | | | | | | ○ | ○ |
| 575 VY; 50 Hz output | 9 | L2U | | | | | | | | | | | | | | ✓ | ✓ |
| 575 VY; 60 Hz output | 9 | L2L | | | | | | | | | | | | | | ✓ | ✓ |
| 575 VΔ; 50 Hz output | 9 | L2V | | | | | | | | | | | | | | ✓ | ✓ |
| 575 VΔ; 60 Hz output | 9 | L2M | | | | | | | | | | | | | | ○ | ○ |
| Non-standard voltage and/or frequencies | | | | | | | | | | | | | | | | | |
| Non-standard winding for vol- tages between 200 and 690 V (voltages outside this range are available on request) ²⁾ | 9 | L1Y • | | | | | | | | | | | | | | ✓ | ✓ |

- Without additional charge
- ✓ With additional charge
- Not possible
- This order code only determines the price of the version –
Additional plain text is required.

¹⁾ With order codes **L1A, L1B, L1C, L1D, L1E, L1L, L1R** and **L1U**, a rated voltage range is also specified on the rating plate.

²⁾ Plain text must be specified in the order: Voltage, frequency, circuit, required rated output in kW.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

Types of construction

Additional order codes for other types of construction or type of construction codes (without **-Z** supplement)

Order codes have been defined for some special types of construction. They are ordered by specifying the code digit **9** for the type of construction in the 12th position of the Order No. and the appropriate order code.

| Special versions | Type of construction code 12th position of the Order No. | Additional identification code with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|--|---|------------------------|----|----|----|----|-----|-----|-----|-----|------------------------|-----|-----|-----|-----|-----|
| | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated energy-saving motors with improved efficiency – Aluminum series 1LA7 and 1LA5 | | | | | | | | | | | | | | | | | |
| | | | 1LA7 (aluminum) | | | | | | | | | 1LA5 (aluminum) | | | | | |
| Without flange | | | | | | | | | | | | | | | | | |
| IM V5 with protective cover ¹⁾ | 9 | M1F | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| With flange | | | | | | | | | | | | | | | | | |
| IM V3 ²⁾ | 9 | M1G | - | - | - | - | - | - | - | - | - | - | ✓ | ✓ | ✓ | - | |
| With standard flange | | | | | | | | | | | | | | | | | |
| IM V18 with protective cover ¹⁾ | 9 | M2A | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - | - | |
| With special flange | | | | | | | | | | | | | | | | | |
| IM V18 with protective cover ¹⁾ | 9 | M2B | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - | - | |
| IM B34 | 9 | M2C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - | - | |
| Self-ventilated energy-saving motors with high efficiency – Aluminum series 1LA9 | | | | | | | | | | | | | | | | | |
| Self-ventilated motors with increased output – Aluminum series 1LA9 | | | | | | | | | | | | | | | | | |
| | | | 1LA9 (aluminum) | | | | | | | | | | | | | | |
| Without flange | | | | | | | | | | | | | | | | | |
| IM V5 with protective cover ¹⁾ | 9 | M1F | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| With flange | | | | | | | | | | | | | | | | | |
| IM V3 | 9 | M1G | - | - | - | - | - | - | - | - | - | - | ✓ | ✓ | - | - | |
| With standard flange | | | | | | | | | | | | | | | | | |
| IM V18 with protective cover ¹⁾ | 9 | M2A | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - | - | |
| With special flange | | | | | | | | | | | | | | | | | |
| IM V18 with protective cover ¹⁾ | 9 | M2B | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - | - | |
| IM B34 | 9 | M2C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - | - | |

- ✓ With additional charge
 - Not possible

¹⁾ The "Second shaft extension" option, order code **K16** is not possible.

²⁾ For frame sizes 180 M to 225 M, the 1LA5 motors can be supplied with two additional eyebolts; state identification code **-Z** and order code **K32**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| | Type of construction code 12th position of the Order No. | Additional identification code with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | | | |
|---|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-------------------------|-----|-----|-------------------------|---------|-----------------|----------------|
| | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 S/M | 315 L 2-pole | 4-, 6-, 8-pole |
| Self-ventilated energy-saving motors with improved efficiency – Cast-iron series 1LA6 and 1LG4 | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 1LA6 (cast-iron) | | | 1LG4 (cast-iron) | | | |
| Without flange | | | | | | | | | | | | | | | | | | | |
| IM V5 without protective cover ¹⁾ | 9 | M1D | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ✓ ²⁾ | ○ |
| IM V6 ¹⁾ | 9 | M1E | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ✓ ²⁾ | ○ |
| IM V5 with protective cover ^{1) 3)} | 9 | M1F | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ ²⁾ | ✓ |
| With flange | | | | | | | | | | | | | | | | | | | |
| IM V3 ⁴⁾ | 9 | M1G | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| With standard flange | | | | | | | | | | | | | | | | | | | |
| IM V18 with protective cover ³⁾ | 9 | M2A | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – | – | – | – | – | – | – | – |
| With special flange | | | | | | | | | | | | | | | | | | | |
| IM V18 with protective cover ³⁾ | 9 | M2B | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – | – | – | – | – | – | – | – |
| IM B34 | 9 | M2C | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Self-ventilated motors with increased output – Cast-iron series 1LG4 | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 1LG4 (cast-iron) | | | | | | |
| Without flange | | | | | | | | | | | | | | | | | | | |
| IM V5 with protective cover ^{1) 3)} | 9 | M1F | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| With flange | | | | | | | | | | | | | | | | | | | |
| IM V3 ⁴⁾ | 9 | M1G | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Self-ventilated energy-saving motors with high efficiency – Cast-iron series 1LG6 | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 1LG6 (cast-iron) | | | | | | |
| Without flange | | | | | | | | | | | | | | | | | | | |
| IM V5 without protective cover ¹⁾ | 9 | M1D | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ✓ ²⁾ | ○ |
| IM V6 ¹⁾ | 9 | M1E | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ✓ ²⁾ | ○ |
| IM V5 with protective cover ^{1) 3)} | 9 | M1F | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ ²⁾ | ✓ |
| With flange | | | | | | | | | | | | | | | | | | | |
| IM V3 ⁴⁾ | 9 | M1G | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Self-cooled motors without external fan – Aluminum series 1LP7 and 1LP5 | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 1LP7 (aluminum) | | | 1LP5 (aluminum) | | | |
| With flange | | | | | | | | | | | | | | | | | | | |
| IM V3 ⁵⁾ | 9 | M1G | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Special flange | | | | | | | | | | | | | | | | | | | |
| IM B34 | 9 | M2C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – |
| Self-cooled motors without external fan – Cast-iron series 1LP4 | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 1LP4 (cast-iron) | | | | | | |
| Without flange | | | | | | | | | | | | | | | | | | | |
| IM V5 without protective cover ¹⁾ | 9 | M1D | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ✓ ²⁾ | ○ |
| IM V6 ¹⁾ | 9 | M1E | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ✓ ²⁾ | ○ |
| With flange | | | | | | | | | | | | | | | | | | | |
| IM V3 ⁴⁾ | 9 | M1G | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |

- Without additional charge
- ✓ With additional charge
- Not possible

¹⁾ If motors of frame sizes 180 M to 315 L are mounted on the wall, it is recommended that the motor feet are supported.

²⁾ 60 Hz version is possible on request.

³⁾ The "Second shaft extension" option, order code **K16** is not possible.

⁴⁾ 1LG4/1LG6/1LP4 motors of frame sizes 225 S to 315 L are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be rotated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

⁵⁾ For frame sizes 180 M to 200 L, the 1LA5 motors can be supplied with two additional eyebolts; state identification code **-Z** and order code **K32**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

Options

Options or order codes (supplement **-Z** is required)

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|---|------------------------|----|----|----|----|-----|------------------------|-----|-----|-----|-----|-----|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated energy-saving motors with improved efficiency – Aluminum series 1LA7 and 1LA5 | | | | | | | | | | | | | | | | |
| | | 1LA7 (aluminum) | | | | | | 1LA5 (aluminum) | | | | | | | | |
| Motor protection | | | | | | | | | | | | | | | | |
| Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ¹⁾ | A11 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor protection with PTC thermistors with 6 embedded temperature sensors for tripping and alarm ¹⁾ | A12 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor temperature detection with embedded temperature sensor KTY 84-130 ¹⁾ | A23 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor temperature detection with embedded temperature sensors 2 x KTY 84-130 ¹⁾ | A25 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature detectors for tripping ¹⁾ | A31 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 3 PT 100 resistance thermometers ¹⁾ | A60 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor connection and connection box | | | | | | | | | | | | | | | | |
| ECOFAST motor plug Han-Drive 10e for 230 VΔ/400 VY ²⁾ | G55 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – |
| ECOFAST motor plug EMC Han-Drive 10e for 230 VΔ/400 VY ³⁾ | G56 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – |
| Connection box on RHS | K09 | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on LHS | K10 | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| One cable gland, metal | K54 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Cable gland, maximum configuration | K55 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from DE | K83 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from NDE | K84 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of connection box through 180° | K85 | ✓ | ✓ | ✓ | ✓ | ✓ | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Next larger connection box | L00 | – | – | – | – | – | – | – | – | – | – | – | – | ✓ | ✓ | ✓ |
| External earthing | L13 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 3 cables protruding, 0.5 m long ⁴⁾⁵⁾ | L44 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | O. R. | O. R. | O. R. |
| 3 cables protruding, 1.5 m long ⁴⁾⁵⁾ | L45 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | O. R. | O. R. | O. R. |
| 6 cables protruding, 0.5 m long ⁴⁾ | L47 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | O. R. | O. R. | O. R. |
| 6 cables protruding, 1.5 m long ⁴⁾ | L48 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 6 cables protruding, 3 m long ⁴⁾ | L49 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on NDE | M64 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Terminal strip for main and auxiliary terminals | M69 | – | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – | – | – | – |

For legend, see Page 2/82, for footnotes, see Page 2/83.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | |
|--|--|------------------------|-------|-------|-------|-------|-------|------------------------|-------|-------|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 |
| Self-ventilated energy-saving motors with improved efficiency – Aluminum series 1LA7 and 1LA5 | | | | | | | | | | | | | | | |
| | | 1LA7 (aluminum) | | | | | | 1LA5 (aluminum) | | | | | | | |
| Windings and insulation | | | | | | | | | | | | | | | |
| Temperature class 155 (F), used acc. to 155 (F), with service factor (SF) | C11 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), with increased output | C12 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), with increased coolant temperature | C13 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 180 (H) at rated output and max. CT 60 °C ⁶⁾ | C18 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Increased air humidity/temperature with 30 to 60 g water per m ³ of air | C19 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 % ⁷⁾ | C22 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 % ⁷⁾ | C23 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 % ⁷⁾ | C24 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 % | C25 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Increased air humidity/temperature with 60 to 100 g water per m ³ of air | C26 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), with increased coolant temperature and/or site altitude | Y50 • and specified output, CT ... °C or SA m above sea level | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), other requirements | Y52 • and specified output, CT ... °C or SA m above sea level | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Colors and paint finish | | | | | | | | | | | | | | | |
| Special finish in RAL 7030 stone gray | | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y54 • and special finish RAL | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" on Page 0/19 | Y51 • and special finish RAL | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Sea air resistant special finish | M94 | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |

For legend, see Page 2/82, for footnotes, see Page 2/83.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | | |
|--|--|------------------------|-------|----|----|----|-----|------------------------|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 | |
| Self-ventilated energy-saving motors with improved efficiency – Aluminum series 1LA7 and 1LA5 | | | | | | | | | | | | | | | | | |
| | | 1LA7 (aluminum) | | | | | | 1LA5 (aluminum) | | | | | | | | | |
| Colors and paint finish (continued) | | | | | | | | | | | | | | | | | |
| Unpainted (only cast iron parts primed) | K23 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | |
| Unpainted, only primed | K24 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Modular technology – Basic versions ⁸⁾ | | | | | | | | | | | | | | | | | |
| Mounting of separately driven fan | G17 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Mounting of brake ⁹⁾ | G26 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Mounting of 1XP8 001-1 (HTL) rotary pulse encoder | H57 | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Mounting of 1XP8 001-2 (TTL) rotary pulse encoder | H58 | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Modular technology – Combinations of basic versions ⁸⁾ | | | | | | | | | | | | | | | | | |
| Mounting of separately driven fan and 1XP8 001-1 rotary pulse encoder | H61 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Mounting of brake and 1XP8 001-1 rotary pulse encoder ⁹⁾ | H62 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Mounting of brake and separately driven fan ⁹⁾ | H63 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Mounting of brake, separately driven fan and 1XP8 001-1 rotary pulse encoder ⁹⁾ | H64 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Mounting of separately driven fan and 1XP8 001-2 rotary pulse encoder | H97 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Mounting of brake and 1XP8 001-2 rotary pulse encoder ⁹⁾ | H98 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Mounting of brake, separately driven fan and 1XP8 001-2 rotary pulse encoder ⁹⁾ | H99 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Modular technology – Additional versions | | | | | | | | | | | | | | | | | |
| Brake supply voltage 24 V DC | C00 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Brake supply voltage 400 V AC | C01 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Brake supply voltage 180 V DC, for operation on MICROMASTER 411-ECOFAS ¹⁰⁾ | C02 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – | |
| Mechanical manual brake release with lever (no locking) | K82 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Special technology ⁸⁾ | | | | | | | | | | | | | | | | | |
| Prepared for mounting MMI ¹¹⁾ | H15 | O. R. | O. R. | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – | |
| Mounting of LL 861 900 220 rotary pulse encoder | H70 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Mounting of HOG 9 D 1024 I rotary pulse encoder | H72 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Mounting of HOG 10 D 1024 I rotary pulse encoder | H73 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Prepared for mounting LL 861 900 220 | H78 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Prepared for mounting HOG 9 D 1024 I | H79 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Prepared for mounting HOG 10 D 1024 I | H80 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |

For legend, see Page 2/82, for footnotes, see Page 2/83.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|--|------------------------|----|----|----|----|-----|------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated energy-saving motors with improved efficiency – Aluminum series 1LA7 and 1LA5 | | | | | | | | | | | | | | | | |
| | | 1LA7 (aluminum) | | | | | | 1LA5 (aluminum) | | | | | | | | |
| Mechanical design and degrees of protection | | | | | | | | | | | | | | | | |
| Drive-end seal for flange-mounting motors, oil resistant to 0.1 bar ¹²⁾ | K17 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With two additional eyebolts for IM V1/IM V3 | K32 | – | – | – | – | – | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| Low-noise version for 2-pole motors with clockwise direction of rotation ¹⁰⁾ | K37 | – | – | – | – | – | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| Low-noise version for 2-pole motors with counter-clockwise direction of rotation ¹⁰⁾ | K38 | – | – | – | – | – | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| IP65 degree of protection ¹³⁾ | K50 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| IP56 degree of protection (non-heavy-sea) ¹⁴⁾ | K52 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Vibration-proof version | L03 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Condensation drainage holes ¹⁵⁾ | L12 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-rusting screws (externally) | M27 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mechanical protection for encoder ¹⁶⁾ | M68 | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature and site altitude | | | | | | | | | | | | | | | | |
| Coolant temperature –40 to +40 °C | D03 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature –30 to +40 °C | D04 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Designs in accordance with standards and specifications | | | | | | | | | | | | | | | | |
| CCC China Compulsory Certification ¹⁷⁾ | D01 | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – | – | – | – | – |
| Electrical according to NEMA MG1-12 | D30 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Design according to UL with "Recognition Mark" ¹⁸⁾ | D31 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Canadian regulations (CSA) ¹⁹⁾ | D40 | ✓ | ✓ | ✓ | ✓ | ✓ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| PSE Mark Japan ²⁰⁾ | D46 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – |
| VIK version (includes Zone 2 for mains-fed operation, without Ex nA II on rating plate) ²¹⁾ | K30 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – |
| Bearings and lubrication | | | | | | | | | | | | | | | | |
| Measuring nipple for SPM shock pulse measurement for bearing inspection ²²⁾ | G50 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bearing design for increased cantilever forces | K20 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Regreasing device ²²⁾ | K40 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Located bearing DE | K94 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Located bearing NDE | L04 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | □ | □ | □ | □ | □ |
| Balance and vibration quantity | | | | | | | | | | | | | | | | |
| Vibration quantity A | | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Vibration quantity B | K02 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Full key balancing | L68 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Balancing without key | M37 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|--|------------------------|----|----|----|----|-----|-----|-----|-----|------------------------|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated energy-saving motors with improved efficiency – Aluminum series 1LA7 and 1LA5 | | | | | | | | | | | | | | | | |
| | | 1LA7 (aluminum) | | | | | | | | | 1LA5 (aluminum) | | | | | |
| Shaft and rotor | | | | | | | | | | | | | | | | |
| Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors ²³⁾ | K04 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second standard shaft extension | K16 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft extension with standard dimensions without featherkey way | K42 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Concentricity of shaft extension in accordance with DIN 42955 Tolerance R | L39 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Standard shaft made of non-rusting steel | M65 | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard cylindrical shaft extension ²⁴⁾ | Y55 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Heating and ventilation | | | | | | | | | | | | | | | | |
| Fan cover for textile industry | H17 | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Metal external fan ²⁵⁾ | K35 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 230 V | K45 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 115 V | K46 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rating plate and extra rating plates | | | | | | | | | | | | | | | | |
| Second lubricating plate, supplied loose | B06 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second rating plate, loose | K31 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate or rating plate with deviating rating plate data | Y80 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate with identification codes | Y82 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Additional information on rating plate and on package label (maximum of 20 characters) | Y84 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Packaging, safety notes and test certificates | | | | | | | | | | | | | | | | |
| Without safety and commissioning note. Customer's declaration of renouncement required. | B00 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| With one safety and startup guide per box pallet | B01 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | – | – | – | – |
| Acceptance test certificate 3.1 according to EN 10204 | B02 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Operating instructions German/English in print | B23 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, with acceptance | F83 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Wire-lattice pallet | L99 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | – | – | – | – |
| Connected in star for dispatch | M32 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connected in delta for dispatch | M33 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- . R. On request
- ✓ With additional charge
- Not possible

For footnotes, see Page 2/83.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions
2

- 1) Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended.
- 2) Not possible for pole-changing motors. Only one sensor (temperature sensor or PTC thermistor) can be connected. Only possibilities are voltage code **1** with voltage of 230 V Δ /400 VY and special voltage with voltage code **9** and order code **L1U** (400 V Δ). The following order codes cannot be used in combination with the ECOFAST plugs, order code **G55**: **A12, C02, C18, D31, D40, G50, H15, H17, H62, H63, H64, H98, H99, K04, K15, K16, K34, K35, K40, K45, K46, K52, K54, K82, L03, L44, L45, L47, L48, L49, L51, L52.**
- 3) Not possible for pole-changing motors. Only one sensor (temperature sensor or PTC thermistor) can be connected. Only possibilities are voltage code **1** with voltage of 230 V Δ /400 VY and special voltage with voltage code **9** and order code **L1U** (400 V Δ). The following order codes cannot be used in combination with the ECOFAST plugs, order code **G56**: **A12, A23, A31, C00, C18, D31, D40, G50, H15, H17, K04, K15, K16, K34, K35, K40, K45, K46, K52, K54, K82, L03, L44, L45, L47, L48, L49, L51, L52.** The following order codes can only be used in combination with the ECOFAST plugs, order code **G56** only with order code **C01** (AC 400 V) or **C02** (DC 180 V): **G26, H62, H63, H64, H98, H99.**
- 4) In combination with the PTC thermistor option or anti-condensation heating option, please inquire before ordering.
- 5) Not possible for pole-changing motors and/or for voltage codes **1** or **6**.
- 6) Cannot be used for motors in UL version (order code **D31**). Cannot be used for motors according to CSA approval (order code **D40**) for motor series 1LA5 frame size 180 to 225. The grease lifetime specified in catalog part 0 "Introduction" refers to CT 40 °C. When the coolant temperature rises by 10 K, the grease lifetime or relubrication interval is halved.
- 7) No derating in combination with the following order codes: **L2A, L2C, L2Q, L2R, L2S, L2T, L2U, L2V, L3E** and **L3G.**)
- 8) A second shaft extension is not possible. Please inquire for mounted brakes. The order codes listed cannot be combined within the various technologies nor with each other within the same technology system. This applies for:
 - Modular technology
 - Basic versions of "Modular technology"
 - Combination of special versions "Special technology"
- 9) The standard brake supply voltage is 230 V AC, 50/60 Hz. Other brake supply voltages are possible with order codes **C00, C01** and **C02**.
- 10) Not possible in motors in a pole-changing version.
- 11) Converter mounting is possible, if the MICROMASTER DA 51.3 type is specified for 230 V Δ /400 VY.
- 12) Not possible for type of construction IM V3.
- 13) Not possible in combination with rotary pulse encoder HOG 9 D 10241 (order code **H72, H79**) and/or brake 2LM8 (used for motors up to and including frame size 225, order code **G26**).
- 14) Not possible in combination with brake 2LM8 (used for motors up to and including frame size 225, order code **G26**).
- 15) Supplied with the condensation drainage holes sealed at the drive end DE and non-drive end NDE (IP55, IP56, IP65). If condensation drainage holes are required in motors of the IM B6, IM B7 or IM B8 type of construction (feet located on side or top), it is necessary to relocate the bearing plates at the drive end (DE) and non-drive end (NDE) so that the condensation drainage holes situated between the feet on delivery are underneath.
- 16) Not necessary when a rotary pulse encoder is combined with a separately driven fan, because in this case the rotary pulse encoder is installed under the fan cowl.
- 17) CCC certification is required for
 - 2-pole motors ≤ 2.2 kW
 - 4-pole motors ≤ 1.1 kW
 - 6-pole motors ≤ 0.75 kW
 - 8-pole motors ≤ 0.55 kW
 The order code **D01** for frame sizes 100 and 112 is only valid for pole-changing motors 1LA7.
- 18) Possible up to 600 V max. The rated voltage is indicated on the rating plate without voltage range.
- 19) The rated voltage is indicated on the rating plate without voltage range.
- 20) "Small power motors" with a rated output of up to 3 kW which are exported to Japan must bear the PSE marking.
- 21) Not possible for pole-changing motors.
- 22) Not possible when brake is mounted.
- 23) Can be combined with deep-groove bearings of series 60.., 62.. and 63... Not possible in combination with parallel roller bearings (e.g. bearings for increased cantilever forces, order code **K20**), brake mounting or encoder mounting.
- 24) When motors are ordered that have a longer or shorter shaft extension than normal, the required position and length of the featherkey way must be specified in a sketch. It must be ensured that only featherkeys in accordance with DIN 6885, Form A are permitted to be used. The featherkey way is positioned centrally on the shaft extension. The length is defined by the manufacturer normatively. Not valid for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The featherkeys are supplied in every case. For order codes **Y55** and **K16**:
 - Dimensions D and DA \leq internal diameter of roller bearing (see dimension tables under "Dimensions")
 - Dimensions E and EA $\leq 2 \times$ length E (normal) of the shaft extension
 For an explanation of the order codes, see catalog part 0 "Introduction".
- 25) For 1LA5/6/7/9 motors and 1LG with metal external fan, converter-fed operation is permitted. The metal external fan is not possible in combination with the low-noise version – order code **K37** or **K38**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

Options or order codes (supplement **-Z** is required)

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated energy-saving motors with high efficiency – Aluminum series 1LA9 | | | | | | | | | | | | | | | | |
| 1LA9 (aluminum) | | | | | | | | | | | | | | | | |
| Motor protection | | | | | | | | | | | | | | | | |
| Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ¹⁾ | A11 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor protection with PTC thermistors with 6 embedded temperature sensors for tripping and alarm ¹⁾ | A12 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor temperature detection with embedded temperature sensor KTY 84-130 ¹⁾ | A23 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor temperature detection with embedded temperature sensors 2 x KTY 84-130 ¹⁾ | A25 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature detectors for tripping ¹⁾ | A31 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 3 PT 100 resistance thermometers ¹⁾ | A60 | - | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor connection and connection box | | | | | | | | | | | | | | | | |
| ECOFAST motor plug Han-Drive 10e for 230 VΔ/400 VY ²⁾ | G55 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - | - |
| ECOFAST motor plug EMC Han-Drive 10e for 230 VΔ/400VY ³⁾ | G56 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - | - |
| Connection box on RHS | K09 | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on LHS | K10 | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| One cable gland, metal | K54 | - | - | - | - | - | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - | - |
| Cable gland, maximum configuration | K55 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from DE | K83 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from NDE | K84 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of connection box through 180° | K85 | ✓ | ✓ | ✓ | ✓ | ✓ | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Next larger connection box | L00 | - | - | - | - | - | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| External earthing | L13 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 3 cables protruding, 0,5 m long ⁴⁾⁵⁾ | L44 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | O. R. | O. R. | O. R. |
| 3 cables protruding, 1,5 m long ⁴⁾⁵⁾ | L45 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | O. R. | O. R. | O. R. |
| 6 cables protruding, 0,5 m long ⁴⁾ | L47 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | O. R. | O. R. | O. R. |
| 6 cables protruding, 1,5 m long ⁴⁾ | L48 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 6 cables protruding, 3 m long ⁴⁾ | L49 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on NDE | M64 | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Windings and insulation | | | | | | | | | | | | | | | | |
| Temperature class 155 (F), used acc. to 155 (F), with service factor (SF) | C11 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), with increased output | C12 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), with increased coolant temperature | C13 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Increased air humidity/temperature with 30 to 60 g water per m ³ of air | C19 | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 % ⁶⁾ | C22 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 2/87.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|---|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated energy-saving motors with high efficiency – Aluminum series 1LA9 | | | | | | | | | | | | | | | | |
| 1LA9 (aluminum) | | | | | | | | | | | | | | | | |
| Windings and insulation (continued) | | | | | | | | | | | | | | | | |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 % ⁶⁾ | C23 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 % ⁶⁾ | C24 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 % | C25 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Increased air humidity/temperature with 60 to 100 g water per m ³ of air | C26 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), with increased coolant temperature and/or site altitude | Y50 • and specified output, CT... °C or SA m above sea level | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), other requirements | Y52 • and specified output, CT... °C or SA m above sea level | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Colors and paint finish | | | | | | | | | | | | | | | | |
| Special finish in RAL 7030 stone gray | | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y54 • and special finish RAL | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" on Page 0/19 | Y51 • and special finish RAL | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Sea air resistant special finish | M94 | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Unpainted (only cast iron parts primed) | K23 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Unpainted, only primed | K24 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mechanical design and degrees of protection | | | | | | | | | | | | | | | | |
| Drive-end seal for flange-mounting motors, oil-resistant to 0,1 bar Not possible for IM V3 type of construction. | K17 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Low-noise version for 2-pole motors with clockwise direction of rotation | K37 | – | – | – | – | – | – | – | – | – | – | – | – | ✓ | ✓ | ✓ |
| Low-noise version for 2-pole motors with counter-clockwise direction of rotation | K38 | – | – | – | – | – | – | – | – | – | – | – | – | ✓ | ✓ | ✓ |
| IP65 degree of protection | K50 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| IP56 degree of protection (non-heavy-sea) | K52 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Vibration-proof version | L03 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Condensation drainage holes ⁷⁾ | L12 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-rusting screws (externally) | M27 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 2/87.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|---|-----------------------|----|----|----|----|-----|-----|------------------|-----|-----|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated energy-saving motors with high efficiency – Aluminum series 1LA9 | | | | | | | | | | | | | | | | |
| 1LA9 (aluminum) | | | | | | | | | | | | | | | | |
| Coolant temperature and site altitude | | | | | | | | | | | | | | | | |
| Coolant temperature –40 to +40 °C | D03 | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | | | | |
| Coolant temperature –30 to +40 °C | D04 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Designs in accordance with standards and specifications | | | | | | | | | | | | | | | | |
| CCC China Compulsory Certification ⁸⁾ | D01 | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – | – | – | – | – |
| Electrical according to NEMA MG1-12 ⁹⁾ | D30 | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Design according to UL with "Recognition Mark" ¹⁰⁾ | D31 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Certified for Korea according to KS C4202 ¹¹⁾ | D33 | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Canadian regulations (CSA) ¹²⁾ | D40 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| PSE Mark Japan ¹³⁾ | D46 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – | – |
| VIK version (includes Zone 2 for mains-fed operation, without Ex nA II on rating plate) | K30 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – |
| Bearings and lubrication | | | | | | | | | | | | | | | | |
| Measuring nipple for SPM shock pulse measurement for bearing inspection | G50 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bearing design for increased cantilever forces | K20 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Regreasing device | K40 | – | – | – | – | – | ✓ | ✓ | ✓ ¹⁴⁾ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Located bearing DE | K94 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Located bearing NDE | L04 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | □ | □ | □ | □ | □ | □ |
| Balance and vibration quantity | | | | | | | | | | | | | | | | |
| Vibration quantity A | | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Vibration quantity B | K02 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Full key balancing | L68 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Balancing without key | M37 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft and rotor | | | | | | | | | | | | | | | | |
| Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors ¹⁵⁾ | K04 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second standard shaft extension | K16 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft extension with normal dimensions without featherkey way | K42 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Concentricity of shaft extension in accordance with DIN 42955 Tolerance R | L39 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard cylindrical shaft extension ¹⁶⁾ | Y55 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Heating and ventilation | | | | | | | | | | | | | | | | |
| Fan cover for textile industry | H17 | – | – | – | – | – | – | ✓ | ✓ | – | – | – | – | – | – | – |
| Metal external fan ¹⁷⁾ | K35 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 230 V | K45 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 115 V | K46 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rating plate and extra rating plates | | | | | | | | | | | | | | | | |
| Second lubricating plate, supplied loose | B06 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second rating plate, loose | K31 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate or rating plate with deviating rating plate data | Y80 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate with identification codes | Y82 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Additional information on rating plate and on package label (maximum of 20 characters) | Y84 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 2/87.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|---|------------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated energy-saving motors with high efficiency – Aluminum series 1LA9 | | | | | | | | | | | | | | | | |
| | | 1LA9 (aluminum) | | | | | | | | | | | | | | |
| Packaging, safety notes, documentation and test certificates | | | | | | | | | | | | | | | | |
| Without safety and commissioning note. Customer's declaration of renouncement required. | B00 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| With one safety and startup guide per box pallet | B01 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | – |
| Acceptance test certificate 3.1 according to EN 10204 | B02 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Operating instructions German/English in print | B23 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, with acceptance | F83 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Wire-lattice pallet | L99 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | – |
| Connected in star for dispatch | M32 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connected in delta for dispatch | M33 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- . R. Possible on request
- ✓ With additional charge
- Not possible

- 1) Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended.
- 2) Only one sensor (temperature sensor or PTC thermistor) can be connected. Only possibilities are voltage code **1** with voltage of 230 VΔ/400 VY and special voltage with voltage code **9** and order code **L1U** (400 VΔ). The following order codes cannot be used in combination with the ECOFAST plugs, order code **G55: A12, C02, C18, D31, D40, G26, G50, H15, H17, H62, H63, H64, H98, H99, K04, K15, K16, K34, K35, K40, K45, K46, K52, K54, K82, L03, L44, L45, L47, L48, L49, L51, L52.**
- 3) Only one sensor (temperature sensor or PTC thermistor) can be connected. Only possibilities are voltage code **1** with voltage of 230 VΔ/400 VY and special voltage with voltage code **9** and order code **L1U** (400 VΔ). The following order codes cannot be used in combination with the ECOFAST plugs, order codes **G56: A12, A23, A31, D31, D40, G50, H17, K04, K15, K16, K34, K35, K40, K45, K46, K52, K54, L03, L44, L45, L47, L48, L49, L51, L52.**
- 4) In combination with the PTC thermistor option or anti-condensation heating option, please inquire before ordering.
- 5) Not possible for voltage code **1** or **6**.
- 6) No derating in combination with the following order codes: **L2A, L2C, L2Q, L2R, L2S, L2T, L2U, L2V, L3E** and **L3G**.
- 7) Supplied with the condensation drainage holes sealed at the drive end DE and non-drive end NDE for IP55, IP56 and IP65 degrees of protection. If condensation drainage holes are required in motors of the IM B6, IM B7 or IM B8 type of construction (feet located on side or top), it is necessary to relocate the bearing plates at the drive end (DE) and non-drive end (NDE) so that the condensation drainage holes situated between the feet on delivery are underneath.
- 8) CCC certification is required for
 - 2-pole motors ≤2.2 kW
 - 4-pole motors ≤1.1 kW
 - 6-pole motors ≤0.75 kW
 - 8-pole motors ≤0.55 kW
- 9) Possible up to 600 V max. For EPACT version or UL standard version (no order code necessary). The rated voltage is indicated on the rating plate without voltage range.
- 10) Possible up to 600 V max. The rated voltage is indicated on the rating plate without voltage range.
- 11) For Korea are certified:
 - 2-pole motors ≤0.75 kW
 - 4-pole motors ≤0.75 kW
 - 6-pole motors ≤0.75 kW
- 12) The rated voltage is indicated on the rating plate without voltage range.
- 13) "Small power motors" with a rated output of up to 3 kW which are exported to Japan must bear the PSE marking.
- 14) Not possible for 1LA9 134-6. □□.
- 15) Can be combined with deep-groove bearings of series 60... 62... and 63... Not possible in combination with parallel roller bearings (e.g. bearings for increased cantilever forces, order code **K20**), brake mounting or encoder mounting.
- 16) When motors are ordered that have a longer or shorter shaft extension than normal, the required position and length of the featherkey way must be specified in a sketch. It must be ensured that only featherkeys in accordance with DIN 6885, Form A are permitted to be used. The featherkey way is positioned centrally on the shaft extension. The length is defined by the manufacturer normatively. Not valid for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The featherkeys are supplied in every case. For order codes **Y55** and **K16**:
 - Dimensions D and DA ≤ internal diameter of roller bearing (see dimension tables under "Dimensions")
 - Dimensions E and EA ≤2 x length E (normal) of the shaft extension (for an explanation of the order codes, see catalog part 0 "Introduction").
- 17) For 1LA5/6/7/9 motors and 1LG with metal external fan, converter-fed operation is permitted. The metal external fan is already included (standard version) in combination with the low-noise version.



IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

Options or order codes (supplement **-Z** is required)

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors with increased output – Aluminum series 1LA9 | | | | | | | | | | | | | | | | |
| 1LA9 (aluminum) | | | | | | | | | | | | | | | | |
| Motor protection | | | | | | | | | | | | | | | | |
| Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ¹⁾ | A11 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor protection with PTC thermistors with 6 embedded temperature sensors for tripping and alarm ¹⁾ | A12 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor temperature detection with embedded temperature sensor KTY 84-130 ¹⁾ | A23 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor temperature detection with embedded temperature sensors 2 x KTY 84-130 ¹⁾ | A25 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature detectors for tripping ¹⁾ | A31 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 3 PT 100 resistance thermometers ¹⁾ | A60 | – | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor connection and connection box | | | | | | | | | | | | | | | | |
| ECOFAST motor plug Han-Drive 10e for 230 VΔ/400 VY ²⁾ | G55 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – | – |
| Connection box on RHS | K09 | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on LHS | K10 | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| One cable gland, metal | K54 | – | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – |
| Cable gland, maximum configuration | K55 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from DE | K83 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from NDE | K84 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of connection box through 180° | K85 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ○ | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ |
| Next larger connection box | L00 | – | – | – | – | – | – | – | – | – | – | – | – | ✓ | ✓ | ✓ |
| External earthing | L13 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 3 cables protruding, 0.5 m long ³⁾⁴⁾ | L44 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | O. R. | O. R. | – |
| 3 cables protruding, 1.5 m long ³⁾⁴⁾ | L45 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | O. R. | O. R. | – |
| 6 cables protruding, 0.5 m long ³⁾ | L47 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | O. R. | O. R. | – |
| 6 cables protruding, 1.5 m long ³⁾ | L48 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 6 cables protruding, 3 m long ³⁾ | L49 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on NDE | M64 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Windings and insulation | | | | | | | | | | | | | | | | |
| Increased air humidity/temperature with 30 to 60 g water per m ³ of air | C19 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Increased air humidity/temperature with 60 to 100 g water per m ³ of air | C26 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend, see Page 2/90, for footnotes, see Page 2/91.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|--|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors with increased output – Aluminum series 1LA9 | | | | | | | | | | | | | | | | |
| 1LA9 (aluminum) | | | | | | | | | | | | | | | | |
| Colors and paint finish | | | | | | | | | | | | | | | | |
| Special finish in RAL 7030 stone gray | | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y54 • and special finish RAL | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" on Page 0/19 | Y51 • and special finish RAL | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Sea air resistant special finish | M94 | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Unpainted (only cast iron parts primed) | K23 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Unpainted, only primed | K24 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mechanical design and degrees of protection | | | | | | | | | | | | | | | | |
| Drive-end seal for flange-mounting motors with an oil-tightness of up to 0.1 bar Not possible for IM V3 type of construction. | K17 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Low-noise version for 2-pole motors with clockwise direction of rotation | K37 | - | - | - | - | - | - | - | - | - | - | - | - | ✓ | ✓ | |
| Low-noise version for 2-pole motors with counter-clockwise direction of rotation | K38 | - | - | - | - | - | - | - | - | - | - | - | - | ✓ | ✓ | |
| IP65 degree of protection | K50 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| IP56 degree of protection (non-heavy-sea) | K52 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Vibration-proof version | L03 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Condensation drainage holes | L12 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-rusting screws (externally) | M27 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature and site altitude | | | | | | | | | | | | | | | | |
| Coolant temperature -40 to +40 °C | D03 | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - |
| Coolant temperature -30 to +40 °C | D04 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Designs in accordance with standards and specifications | | | | | | | | | | | | | | | | |
| CCC China Compulsory Certification ⁵⁾ | D01 | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - | - | - | - | - | - |
| Electrical according to NEMA MG1-12 ⁶⁾ | D30 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Design according to UL with "Recognition Mark" ⁷⁾ | D31 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Canadian regulations (CSA) ⁸⁾ | D40 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| PSE Mark Japan ⁹⁾ | D46 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - |
| Bearings and lubrication | | | | | | | | | | | | | | | | |
| Measuring nipple for SPM shock pulse measurement for bearing inspection | G50 | - | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bearing design for increased cantilever forces | K20 | - | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Regreasing device | K40 | - | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Located bearing DE | K94 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Located bearing NDE | L04 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | □ | □ | □ | □ | □ |
| Balance and vibration quantity | | | | | | | | | | | | | | | | |
| Vibration quantity A | | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Full key balancing | L68 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Balancing without key | M37 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend, see Page 2/90, for footnotes, see Page 2/91.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors with increased output – Aluminum series 1LA9 | | | | | | | | | | | | | | | | |
| 1LA9 (aluminum) | | | | | | | | | | | | | | | | |
| Shaft and rotor | | | | | | | | | | | | | | | | |
| Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors ¹⁰⁾ | K04 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second standard shaft extension | K16 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft extension with normal dimensions without featherkey way | K42 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Concentricity of shaft extension in accordance with DIN 42955 Tolerance R | L39 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard cylindrical shaft extension ¹¹⁾ | Y55 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Heating and ventilation | | | | | | | | | | | | | | | | |
| Fan cover for textile industry | H17 | – | – | – | – | – | – | – | ✓ | ✓ | – | – | – | – | – | – |
| Metal external fan ¹²⁾ | K35 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 230 V | K45 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 115 V | K46 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rating plate and extra rating plates | | | | | | | | | | | | | | | | |
| Second lubricating plate, supplied loose | B06 | – | – | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second rating plate, loose | K31 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate or rating plate with deviating rating plate data | Y80 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate with identification codes | Y82 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Additional information on rating plate and on package label (maximum of 20 characters) | Y84 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Packaging, safety notes, documentation and test certificates | | | | | | | | | | | | | | | | |
| Without safety and commissioning note. Customer's declaration of renouncement required. | B00 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| With one safety and startup guide per box pallet | B01 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | – |
| Acceptance test certificate 3.1 according to EN 10204 | B02 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Operating instructions German/English in print | B23 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, with acceptance | F83 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Wire-lattice pallet | L99 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | – |
| Connected in star for dispatch | M32 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connected in delta for dispatch | M33 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- . R. Possible on request
- ✓ With additional charge
- Not possible

For footnotes, see Page 2/91.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions
2

- 1) Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended.
- 2) Only one sensor (temperature sensor or PTC thermistor) can be connected. Only possibilities are voltage code **1** with voltage of 230 VΔ/400 VY and special voltage with voltage code and order code **L1U** (400 VΔ). The following order codes cannot be used in combination with the ECOFAST plugs, order code **G55: A12, C02, C18, D31, D40, G26, G50, H15, H17, H62, H63, H64, H98, H99, K04, K15, K16, K34, K35, K40, K45, K46, K52, K54, K82, L03, L44, L45, L47, L48, L49, L51, L52**.
- 3) In combination with the PTC thermistor option or anti-condensation heating option, please inquire before ordering.
- 4) Not possible for voltage codes **1** or **6**.
- 5) CCC certification is required for
 - 2-pole motors ≤ 2.2 kW
 - 4-pole motors ≤ 1.1 kW
 - 6-pole motors ≤ 0.75 kW
 - 8-pole motors ≤ 0.55 kW
- 6) Possible up to 600 V max. For EPACT version or UL standard version (no order code necessary).
- 7) Possible up to 600 V max. The rated voltage is indicated on the rating plate without voltage range.
- 8) The rated voltage is indicated on the rating plate without voltage range.
- 9) "Small power motors" with a rated output of up to 3 kW which are exported to Japan must bear the PSE marking.
- 10) Can be combined with deep-groove bearings of series 60... 62... and 63... Not possible in combination with parallel roller bearings (e.g. bearings for increased cantilever forces, order code **K20**), brake mounting or encoder mounting.
- 11) When motors are ordered that have a longer or shorter shaft extension than normal, the required position and length of the featherkey way must be specified in a sketch. It must be ensured that only featherkeys in accordance with DIN 6885, Form A are permitted to be used. The featherkey way is positioned centrally on the shaft extension. The length is defined by the manufacturer normatively. Not valid for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The featherkeys are supplied in every case. For order codes **Y55** and **K16**:
 - Dimensions D and DA \leq internal diameter of roller bearing (see dimension tables under "Dimensions")
 - Dimensions E and EA $\leq 2 \times$ length E (normal) of the shaft extension
 For an explanation of the order codes, see catalog part 0 "Introduction".
- 12) For 1LA5/6/7/9 motors and 1LG with metal external fan, converter-fed operation is permitted. The metal external fan is not possible in combination with the low-noise version – order code **K37** or **K38**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated energy-saving motors with improved efficiency – Cast-iron series 1LA6 and 1LG4 | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| Motor connection and connection box (continued) | | | | | | | | | | | | | | | | |
| Undrilled entry plate | L01 | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ |
| 6 cables protruding, 1.5 m long ²⁾ | L48 | | | | | | | | | | | ✓ | ✓ | ✓ | O. R. | O. R. |
| 6 cables protruding, 3 m long ²⁾ | L49 | | | | | | | | | | | ✓ | ✓ | ✓ | O. R. | O. R. |
| Protruding cable ends – right side ³⁾ | L51 | | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. |
| Protruding cable ends – left side ³⁾ | L52 | | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. |
| Auxiliary connection box 1XB3 020 | L97 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Stud terminal for cable connection, accessories pack (3 items) | M46 | | | | | | | | | | | | | | ✓ | ✓ |
| Saddle terminal for connection without cable lug, accessories pack (6 items) | M47 | | | | | | | | | | | | | | ✓ | ✓ |
| Windings and insulation | | | | | | | | | | | | | | | | |
| Temperature class 155 (F), used acc. to 155 (F), with service factor (SF) | C11 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), with increased output | C12 | | | | | | | | | | | ✓ ⁴⁾ | ✓ ⁴⁾ | ✓ ⁴⁾ | ✓ ⁴⁾ | ✓ ⁴⁾ |
| Temperature class 155 (F), used acc. to 155 (F), with increased coolant temperature | C13 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 180 (H) at rated output and max. CT 60 °C ⁵⁾ | C18 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Increased air humidity/temperature with 30 to 60 g water per m ³ of air | C19 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 % | C22 | | | | | | | | | | | ✓ ⁴⁾ | ✓ ⁴⁾ | ✓ ⁴⁾ | ✓ ⁴⁾ | ✓ ⁴⁾ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 % | C23 | | | | | | | | | | | ✓ ⁴⁾ | ✓ ⁴⁾ | ✓ ⁴⁾ | ✓ ⁴⁾ | ✓ ⁴⁾ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 % | C24 | | | | | | | | | | | ✓ ⁴⁾ | ✓ ⁴⁾ | ✓ ⁴⁾ | ✓ ⁴⁾ | ✓ ⁴⁾ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 % | C25 | | | | | | | | | | | ✓ ⁴⁾ | ✓ ⁴⁾ | ✓ ⁴⁾ | ✓ ⁴⁾ | ✓ ⁴⁾ |
| Increased air humidity/temperature with 60 to 100 g water per m ³ of air | C26 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), with increased coolant temperature and/or site altitude | Y50 • and specified output, CT... °C or SA m above sea level | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), other requirements | Y52 • and specified output, CT... °C or SA m above sea level | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend, see Page 2/97, for footnotes, see Page 2/98.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated energy-saving motors with improved efficiency – Cast-iron series 1LA6 and 1LG4 | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| Colors and paint finish | | | | | | | | | | | | | | | | |
| Standard finish in RAL 7030 stone gray | | | | | | | | | | | | | | | | |
| Standard finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y53 • and standard finish RAL | | | | | | | | | | | | | | | |
| Special finish in RAL 7030 stone gray ⁹⁾ | K26 | | | | | | | | | | | | | | | |
| Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9002, 9005 Page 0/18 | Y54 • and special finish RAL | | | | | | | | | | | | | | | |
| Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" on Page 0/19 | Y51 • and special finish RAL | | | | | | | | | | | | | | | |
| Offshore special finish | M91 | | | | | | | | | | | | | | | |
| Sea air resistant special finish | M94 | | | | | | | | | | | | | | | |
| Unpainted (only cast iron parts primed) | K23 | | | | | | | | | | | | | | | |
| Unpainted, only primed | K24 | | | | | | | | | | | | | | | |
| Modular technology – Basic versions⁷⁾ | | | | | | | | | | | | | | | | |
| Mounting of separately driven fan ⁸⁾ | G17 | | | | | | | | | | | | | | | |
| Mounting of brake ^{8) 9)} | G26 | | | | | | | | | | | | | | | |
| Mounting of 1XP8 001-1 (HTL) rotary pulse encoder | H57 | | | | | | | | | | | | | | | |
| Mounting of 1XP8 001-2 (TTL) rotary pulse encoder | H58 | | | | | | | | | | | | | | | |
| Modular technology – Combinations of basic versions⁷⁾ | | | | | | | | | | | | | | | | |
| Mounting of separately driven fan and 1XP8 001-1 rotary pulse encoder | H61 | | | | | | | | | | | | | | | |
| Mounting of brake and 1XP8 001-1 rotary pulse encoder ⁹⁾ | H62 | | | | | | | | | | | | | | | |
| Mounting of brake and separately driven fan ^{8) 9)} | H63 | | | | | | | | | | | | | | | |
| Mounting of brake, separately driven fan and 1XP8 001-1 rotary pulse encoder ⁹⁾ | H64 | | | | | | | | | | | | | | | |
| Mounting of separately driven fan and 1XP8 001-2 rotary pulse encoder | H97 | | | | | | | | | | | | | | | |
| Mounting of brake and 1XP8 001-2 rotary pulse encoder ⁹⁾ | H98 | | | | | | | | | | | | | | | |
| Mounting of brake, separately driven fan and 1XP8 001-2 rotary pulse encoder ⁹⁾ | H99 | | | | | | | | | | | | | | | |

For legend, see Page 2/97, for footnotes, see Page 2/98.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

2

- 1) Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended.
- 2) In combination with the PTC thermistor option or anti-condensation heating option, please inquire before ordering.
- 3) Possible in combination with order code **L44** to **L49** or length specification in plain text.
- 4) Only the 50 Hz data are indicated on the rating plate.
- 5) Cannot be used for motors in UL version (order code **D31**). Cannot be used for motors according to CSA approval (order code **D40**) for motor serie 1LG4. The grease lifetime specified in catalog part 0 "Introduction" refers to CT 40 °C. When the coolant temperature rises by 10 K, the grease lifetime or relubrication interval is halved.
- 6) For frame sizes 100 to 160, do not specify an order code. Order code is only necessary for frame sizes 180 to 315.
- 7) A second shaft extension is not possible. Please inquire for mounted brakes. The order codes listed cannot be combined within the various technologies nor with each other within the same technology system. This applies for:
 - Modular technology
 - Basic versions of "Modular technology"
 - Combination of special versions "Special technology"
- 8) For 1LG4/1LG6 motors, order codes **G17**, **G26** and **H63** frame size 225 and above can also be combined with all rotary pulse encoders in the "Special technology" range.
- 9) The standard brake supply voltage is 230 V AC, 50/60 Hz. Other brake supply voltages are possible with order codes **C00** and **C01**.
- 10) Not possible for motor series 1LG4 for 2-pole motors.
- 11) For 1LG4 motors in low-noise version a second shaft extension and/or mounting of an encoder are not possible.)
- 12) Not possible in combination with rotary pulse encoder HOG 9 D 10241 (order code **H72**, **H79**) and/or brake 2LM8 (used for motors up to and including frame size 225, order code **G26**).
- 13) Not possible in combination with brake 2LM8 (used for motors up to and including frame size 225, order code **G26**).
- 14) Supplied with the condensation drainage holes sealed at the drive end DE and non-drive end NDE (IP55, IP56, IP65). If condensation drainage holes are required in motors of the IM B6, IM B7 or IM B8 type of construction (feet located on side or top), it is necessary to relocate the bearing plates at the drive end (DE) and non-drive end (NDE) so that the condensation drainage holes situated between the feet on delivery are underneath.
- 15) Not necessary when a rotary pulse encoder is combined with a separately driven fan, because in this case the rotary pulse encoder is installed under the fan cowl.
- 16) Possible up to 600 V max. Order with voltage code **9** and order code for voltage and frequency. The rated voltage is indicated on the rating plate.
- 17) Order with voltage code **9** and order code for voltage and frequency. The rated voltage is indicated on the rating plate.
- 18) "Small power motors" with a rated output of up to 3 kW which are exported to Japan must bear the PSE marking.
- 19) Not possible for 2-pole 1LG4 motors, frame size 315 L in vertical types of construction; bearings for increased cantilever forces at vibration quantity level A available on request for 1LG4 motors. Not possible for 1LG4 motors in the combination "Concentricity of the shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors" – order code **K04**.
- 20) Additional charge for 2-pole motors. With 4-pole to 8-pole motors, standard version.
- 21) Can be combined with deep-groove bearings of series 60... 62... and 63... Not possible in combination with parallel roller bearings (e.g. bearings for increased cantilever forces, order code **K20**), brake mounting or encoder mounting.
- 22) Possible for motors of frame size 315 and above in vertical types of construction or 2-pole for version with second shaft extension on request. Version with protective cover not possible.
- 23) When motors are ordered that have a longer or shorter shaft extension than normal, the required position and length of the featherkey way must be specified in a sketch. It must be ensured that only featherkeys in accordance with DIN 6885, Form A are permitted to be used. The featherkey way is positioned centrally on the shaft extension. The length is defined by the manufacturer normatively. Not valid for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The featherkeys are supplied in every case. For order codes **Y55** and **K16**:
 - Dimensions D and DA ≤ internal diameter of roller bearing (see dimension tables under "Dimensions")
 - Dimensions E and EA ≤ 2 x length E (normal) of the shaft extension
 For an explanation of the order codes, see catalog part 0 "Introduction".
- 24) For 1LA5/6/7/9 motors and 1LG with metal external fan, converter-fed operation is permitted. The metal external fan is not possible in combination with the low-noise version – order code **K37** or **K38**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions
Options or order codes (supplement **-Z** is required)

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | |
|--|--|-----------------------|----|----|----|----|-----|-----|-----|-----|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 |
| Self-ventilated motors with increased output – Cast-iron series 1LG4 | | | | | | | | | | | | | | | |
| 1LG4 (cast-iron) | | | | | | | | | | | | | | | |
| Motor protection | | | | | | | | | | | | | | | |
| Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ¹⁾ | A11 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor protection with PTC thermistors with 6 embedded temperature sensors for tripping and alarm ¹⁾ | A12 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor temperature detection with embedded temperature sensor KTY 84-130 ¹⁾ | A23 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor temperature detection with embedded temperature sensors 2 x KTY 84-130 ¹⁾ | A25 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature detectors for tripping ¹⁾ | A31 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 3 PT 100 resistance thermometers ¹⁾ | A60 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 6 PT 100 resistance thermometers in stator winding ¹⁾ | A61 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 2 PT 100 screw-in resistance thermometers (basic circuit) for rolling-contact bearings ¹⁾ | A72 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 2 PT 100 screw-in resistance thermometers (3-wire circuit) for rolling-contact bearings ¹⁾ | A78 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 2 PT 100 double screw-in resistance thermometers (3-wire circuit) for rolling-contact bearings ¹⁾ | A80 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor connection and connection box | | | | | | | | | | | | | | | |
| Two-part plate on connection box | K06 | | | | | | | | | | – | ✓ | ✓ | ✓ | ✓ |
| Connection box on RHS | K09 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on LHS | K10 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on top, feet screwed on | K11 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box in cast-iron version | K15 | | | | | | | | | | ✓ | ✓ | ✓ | □ | □ |
| One cable gland, metal | K54 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Cable gland, maximum configuration | K55 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from DE | K83 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from NDE | K84 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of connection box through 180° | K85 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Next larger connection box | L00 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Undrilled entry plate | L01 | | | | | | | | | | ○ | ○ | ○ | ○ | ○ |
| External earthing | L13 | | | | | | | | | | □ | □ | □ | □ | □ |
| 6 cables protruding, 1.5 m long ²⁾ | L48 | | | | | | | | | | ✓ | ✓ | ✓ | O. R. | O. R. |
| 6 cables protruding, 3 m long ²⁾ | L49 | | | | | | | | | | ✓ | ✓ | ✓ | O. R. | O. R. |
| Protruding cable ends – right side ³⁾ | L51 | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. |
| Protruding cable ends – left side ³⁾ | L52 | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. |
| Auxiliary connection box 1XB3 020 | L97 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend, see Page 2/103, for footnotes, see Page 2/104.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 |
| Self-ventilated motors with increased output – Cast-iron series 1LG4 | | | | | | | | | | | | | | | |
| 1LG4 (cast-iron) | | | | | | | | | | | | | | | |
| Motor connection and connection box (continued) | | | | | | | | | | | | | | | |
| Stud terminal for cable connection, accessories pack (3 items) | M46 | | | | | | | | | | | | | ✓ | ✓ |
| Saddle terminal for connection without cable lug, accessories pack (6 items) | M47 | | | | | | | | | | | | | ✓ | ✓ |
| Windings and insulation | | | | | | | | | | | | | | | |
| Temperature class 155 (F), used acc. to 155 (F), with service factor (SF) | C11 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), with increased output ⁵⁾ | C12 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), with increased coolant temperature | C13 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Increased air humidity/temperature with 30 to 60 g water per m ³ of air | C19 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 % ⁴⁾ | C22 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 % ⁴⁾ | C23 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 % ⁴⁾ | C24 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 % ⁴⁾ | C25 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Increased air humidity/temperature with 60 to 100 g water per m ³ of air | C26 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), with increased coolant temperature and/or site altitude | Y50 • and specified output, CT... °C or SA m above sea level | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Colors and paint finish | | | | | | | | | | | | | | | |
| Standard finish in RAL 7030 stone gray | | | | | | | | | | | □ | □ | □ | □ | □ |
| Standard finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y53 • and standard finish RAL | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in RAL 7030 stone gray | K26 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y54 • and special finish RAL | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend, see Page 2/103, for footnotes, see Page 2/104.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | |
|---|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 |
| Self-ventilated motors with increased output – Cast-iron series 1LG4 | | | | | | | | | | | | | | | |
| 1LG4 (cast-iron) | | | | | | | | | | | | | | | |
| Colors and paint finish (continued) | | | | | | | | | | | | | | | |
| Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" on Page 0/19 | Y51 • and special finish RAL | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Offshore special finish | M91 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Sea air resistant special finish | M94 | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. |
| Unpainted (only cast iron parts primed) | K23 | | | | | | | | | | ○ | ○ | ○ | ○ | ○ |
| Unpainted, only primed | K24 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Modular technology – Basic versions ⁵⁾ | | | | | | | | | | | | | | | |
| Mounting of separately driven fan ⁶⁾ | G17 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of brake ^{6) 7)} | G26 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of 1XP8 001-1 (HTL) rotary pulse encoder | H57 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of 1XP8 001-2 (TTL) rotary pulse encoder | H58 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Modular technology – Combinations of basic versions ⁶⁾ | | | | | | | | | | | | | | | |
| Mounting of separately driven fan and 1XP8 001-1 rotary pulse encoder | H61 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of brake and 1XP8 001-1 rotary pulse encoder ⁷⁾ | H62 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of brake and separately driven fan ^{6) 7)} | H63 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of brake, separately driven fan and 1XP8 001-1 rotary pulse encoder ⁷⁾ | H64 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of separately driven fan and 1XP8 001-2 rotary pulse encoder | H97 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of brake and 1XP8 001-2 rotary pulse encoder ⁷⁾ | H98 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of brake, separately driven fan and 1XP8 001-2 rotary pulse encoder ⁷⁾ | H99 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Modular technology – Additional versions | | | | | | | | | | | | | | | |
| Brake supply voltage 24 V DC | C00 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Brake supply voltage 400 V AC | C01 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mechanical manual brake release with lever (no locking) | K82 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special technology ⁵⁾ | | | | | | | | | | | | | | | |
| Mounting of LL 861 900 220 rotary pulse encoder | H70 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of HOG 9 D 1024 I rotary pulse encoder | H72 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of HOG 10 D 1024 I rotary pulse encoder | H73 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Prepared for mounting LL 861 900 220 | H78 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Prepared for mounting HOG 9 D 1024 I | H79 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Prepared for mounting HOG 10 D 1024 I | H80 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of explosion-proof rotary pulse encoder HOG 10 DN 1024 I, connection box protection against moisture | J15 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of explosion-proof rotary pulse encoder HOG 10 DN 1024 I, connection box protection against dust | J16 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | |
|---|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|------------------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 |
| Self-ventilated motors with increased output – Cast-iron series 1LG4 | | | | | | | | | | | | | | | |
| 1LG4 (cast-iron) | | | | | | | | | | | | | | | |
| Special technology ⁵⁾ (continued) | | | | | | | | | | | | | | | |
| Mounting of rotary pulse encoder HOG 10 DN 1024 I + FSL, (speed rpm), connection box protection against moisture | Y74 • and specified speed rpm | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of rotary pulse encoder HOG 10 DN 1024 I + FSL, (speed rpm), connection box protection against dust | Y76 • and specified speed rpm | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of rotary pulse encoder HOG 10 DN 1024 I + ESL 93, (speed rpm), connection box protection against dust | Y79 • and specified speed (max. 3) rpm | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mechanical design and degrees of protection | | | | | | | | | | | | | | | |
| Drive-end seal for flange-mounting motors with an oil-tightness of up to 0.1 bar Not possible for IM V3 type of construction ⁸⁾ | K17 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Low-noise version for 2-pole motors with clockwise direction of rotation ⁹⁾ | K37 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Low-noise version for 2-pole motors with counter-clockwise direction of rotation ⁹⁾ | K38 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| IP65 degree of protection ¹⁰⁾ | K50 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| IP56 degree of protection (non-heavy-sea) ¹¹⁾ | K52 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Condensation drainage holes ¹²⁾ | L12 | | | | | | | | | | □ | □ | □ | □ | □ |
| Non-rusting screws (externally) | M27 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Earth brushes for converter-fed operation | M44 | | | | | | | | | | – | – | – | – | O. R. |
| Mechanical protection for encoder ¹³⁾ | M68 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature and site altitude | | | | | | | | | | | | | | | |
| Coolant temperature –50 to +40 °C | D02 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature –40 to +40 °C | D03 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature –30 to +40 °C | D04 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Designs in accordance with standards and specifications | | | | | | | | | | | | | | | |
| Electrical according to NEMA MG1-12 | D30 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Design according to UL with "Recognition Mark" ¹⁴⁾ | D31 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Canadian regulations (CSA) ¹⁵⁾ | D40 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bearings and lubrication | | | | | | | | | | | | | | | |
| Measuring nipple for SPM shock pulse measurement for bearing inspection | G50 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bearing design for increased cantilever forces ¹⁶⁾ | K20 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special bearing for DE and NDE, bearing size | K36 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ ¹⁷⁾ |
| Regreasing device | K40 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | □ |
| Located bearing DE | K94 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Located bearing NDE | L04 | | | | | | | | | | □ | □ | □ | □ | □ |
| Insulated bearing cartridge | L27 | | | | | | | | | | – | – | ✓ | ✓ | ✓ |
| Balance and vibration quantity | | | | | | | | | | | | | | | |
| Vibration quantity A | | | | | | | | | | | □ | □ | □ | □ | □ |
| Vibration quantity B | K02 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Full key balancing | L68 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Balancing without key | M37 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend, see Page 2/103, for footnotes, see Page 2/104.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | |
|---|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 |
| Self-ventilated motors with increased output – Cast-iron series 1LG4 | | | | | | | | | | | | | | | |
| 1LG4 (cast-iron) | | | | | | | | | | | | | | | |
| Shaft and rotor | | | | | | | | | | | | | | | |
| Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors ¹⁸⁾ | K04 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second standard shaft extension ¹⁹⁾ | K16 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft extension with normal dimensions without featherkey way | K42 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Concentricity of shaft extension in accordance with DIN 42955 Tolerance R | L39 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard cylindrical shaft extension ²⁰⁾ | Y55 • and identification code | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Heating and ventilation | | | | | | | | | | | | | | | |
| Metal external fan ²¹⁾ | K35 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 230 V | K45 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 115 V | K46 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Sheet metal fan cover | L36 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Separately driven fan with non-standard voltage and/or frequency | Y81 • and identification code | | | | | | | | | | – | – | ✓ | ✓ | ✓ |
| Rating plate and extra rating plates | | | | | | | | | | | | | | | |
| Second lubricating plate, supplied loose | B06 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second rating plate, loose | K31 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate or rating plate with deviating rating plate data | Y80 • and identification code | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate with identification codes | Y82 • and identification code | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Additional information on rating plate and on package label (maximum of 20 characters) | Y84 • and identification code | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Packaging, safety notes, documentation and test certificates | | | | | | | | | | | | | | | |
| Acceptance test certificate 3.1 according to EN 10204 | B02 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Operating instructions German/English enclosed in print | B23 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for horizontal motors, with acceptance | F83 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connected in star for dispatch | M32 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connected in delta for dispatch | M33 | | | | | | | | | | ✓ | ✓ | □ | □ | □ |

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- R. Possible on request
- ✓ With additional charge
- Not possible

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

2

- 1) Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended.
- 2) In combination with the PTC thermistor option or anti-condensation heating option, please inquire before ordering.
- 3) Possible in combination with order code **L44** to **L49** or length specification in plain text.
- 4) Only the 50 Hz data are indicated on the rating plate.
- 5) A second shaft extension is not possible. Please inquire for mounted brakes. The order codes listed cannot be combined within the various technologies nor with each other within the same technology system. This applies for:
 - Modular technology
 - Basic versions of "Modular technology"
 - Combination of special versions "Special technology"
- 6) For 1LG4/1LG6 motors, order codes **G17**, **G26** and **H63** frame size 225 and above can also be combined with all rotary pulse encoders in the "Special technology" range.
- 7) The standard brake supply voltage is 230 V AC, 50/60 Hz. Other brake supply voltages are possible with order codes **C00** and **C01**.
- 8) Not possible for motor series 1LG4 for 2-pole motors.
- 9) For 1LG4 motors in low-noise version a second shaft extension and/or mounting of an encoder are not possible.)
- 10) Not possible in combination with rotary pulse encoder HOG 9 D 10241 (order code **H72**, **H79**) and/or brake 2LM8 (used for motors up to and including frame size 225, order code **G26**).
- 11) Not possible in combination with brake 2LM8 (used for motors up to and including frame size 225, order code **G26**).
- 12) Supplied with the condensation drainage holes sealed at the drive end DE and non-drive end NDE (IP55, IP56, IP65). If condensation drainage holes are required in motors of the IM B6, IM B7 or IM B8 type of construction (feet located on side or top), it is necessary to relocate the bearing plates at the drive end (DE) and non-drive end (NDE) so that the condensation drainage holes situated between the feet on delivery are underneath.
- 13) Not necessary when a rotary pulse encoder is combined with a separately driven fan, because in this case the rotary pulse encoder is installed under the fan cowl.
- 14) Possible up to 600 V max. Order with voltage code **9** and order code for voltage and frequency. The rated voltage is indicated on the rating plate.
- 15) Order with voltage code **9** and order code for voltage and frequency. The rated voltage is indicated on the rating plate.
- 16) Not possible for 2-pole 1LG4 motors, frame size 315 L in vertical types of construction; bearings for increased cantilever forces at vibration quantity level A available on request for 1LG4 motors. Not possible for 1LG4 motors in the combination "Concentricity of the shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors" – order code **K04**.
- 17) Extra charge for 2-pole motors. With 4-pole to 8-pole motors, standard version.
- 18) Can be combined with deep-groove bearings of series 60.., 62.. and 63... Not possible in combination with parallel roller bearings (e.g. bearings for increased cantilever forces, order code **K20**), brake mounting or encoder mounting.
- 19) Possible for motors of frame size 315 and above in vertical types of construction or 2-pole for version with second shaft extension on request. Version with protective cover not possible.
- 20) When motors are ordered that have a longer or shorter shaft extension than normal, the required position and length of the featherkey way must be specified in a sketch. It must be ensured that only featherkeys in accordance with DIN 6885, Form A are permitted to be used. The featherkey way is positioned centrally on the shaft extension. The length is defined by the manufacturer normatively. Not valid for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The featherkeys are supplied in every case. For order codes **Y55** and **K16**:
 - Dimensions D and DA \leq internal diameter of roller bearing (see dimension tables under "Dimensions")
 - Dimensions E and EA \leq x length E (normal) of the shaft extension
 For an explanation of the order codes, see catalog part 0 "Introduction".
- 21) For 1LA5/6/7/9 motors and 1LG with metal external fan, converter-fed operation is permitted. The metal external fan is not possible in combination with the low-noise version – order code **K37** or **K38**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions
Options or order codes (supplement **-Z** is required)

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated energy-saving motors with high efficiency – Cast-iron series 1LG6 | | | | | | | | | | | | | | | | |
| 1LG6 (cast-iron) | | | | | | | | | | | | | | | | |
| Motor protection | | | | | | | | | | | | | | | | |
| Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ¹⁾ | A11 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor protection with PTC thermistors with 6 embedded temperature sensors for tripping and alarm ¹⁾ | A12 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor temperature detection with embedded temperature sensor KTY 84-130 ¹⁾ | A23 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor temperature detection with embedded temperature sensors 2 x KTY 84-130 ¹⁾ | A25 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature detectors for tripping ¹⁾ | A31 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 3 PT 100 resistance thermometers ¹⁾ | A60 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 6 PT 100 resistance thermometers in stator winding ¹⁾ | A61 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 2 PT 100 screw-in resistance thermometers (basic circuit) for rolling-contact bearings ¹⁾ | A72 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 2 PT100 screw-in resistance thermometers (3-wire circuit) for rolling-contact bearings ¹⁾ | A78 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 2 PT 100 double screw-in resistance thermometers (3-wire circuit) for rolling-contact bearings ¹⁾ | A80 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor connection and connection box | | | | | | | | | | | | | | | | |
| Two-part plate on connection box | K06 | | | | | | | | | | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on RHS | K09 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on LHS | K10 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on top, feet screwed on | K11 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box in cast-iron version | K15 | | | | | | | | | | ✓ | ✓ | ✓ | □ | □ | □ |
| One cable gland, metal | K54 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Cable gland, maximum configuration | K55 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from DE | K83 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from NDE | K84 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of connection box through 180° | K85 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Next larger connection box | L00 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Undrilled entry plate | L01 | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ○ |
| External earthing | L13 | | | | | | | | | | □ | □ | □ | □ | □ | □ |

2

For legend, see Page 2/110, for footnotes, see Page 2/111.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|--|-----------------------|----|----|----|----|-----|-----|-----|-----|-------------------------|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated energy-saving motors with high efficiency – Cast-iron series 1LG6 | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | 1LG6 (cast-iron) | | | | | |
| Motor connection and connection box (continued) | | | | | | | | | | | | | | | | |
| 6 cables protruding, 1.5 m long ²⁾ | L48 | | | | | | | | | | ✓ | ✓ | ✓ | O. R. | O. R. | O. R. |
| 6 cables protruding, 3 m long ²⁾ | L49 | | | | | | | | | | ✓ | ✓ | ✓ | O. R. | O. R. | O. R. |
| Protruding cable ends – right side ³⁾ | L51 | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Protruding cable ends – left side ³⁾ | L52 | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Auxiliary connection box 1XB3 020 | L97 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Stud terminal for cable connection, accessories pack (3 items) | M46 | | | | | | | | | | – | – | – | ✓ | ✓ | ✓ |
| Saddle terminal for connection without cable lug, accessories pack (6 items) | M47 | | | | | | | | | | – | – | – | ✓ | ✓ | ✓ |
| Windings and insulation | | | | | | | | | | | | | | | | |
| Temperature class 155 (F), used acc. to 155 (F), with service factor (SF) | C11 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), with increased output ⁴⁾ | C12 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), with increased coolant temperature | C13 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Increased air humidity/temperature, with 30 to 60 g water per m ³ of air | C19 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 % ⁴⁾ | C22 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 % ⁴⁾ | C23 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 % ⁴⁾ | C24 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 % ⁴⁾ | C25 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Increased air humidity/temperature with 60 to 100 g water per m ³ of air | C26 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), with increased coolant temperature and/or site altitude | Y50 • and specified output, CT .. °C or SA m above sea level | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), other requirements | Y52 • and specified output, CT .. °C or SA m above sea level | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend, see Page 2/110, for footnotes, see Page 2/111.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|--|-----------------------|----|----|----|----|-----|-----|-----|-----|-------|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated energy-saving motors with high efficiency – Cast-iron series 1LG6 | | | | | | | | | | | | | | | | |
| 1LG6 (cast-iron) | | | | | | | | | | | | | | | | |
| Colors and paint finish | | | | | | | | | | | | | | | | |
| Standard finish in RAL 7030 stone gray | | | | | | | | | | | □ | □ | □ | □ | □ | □ |
| Standard finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y53 • and standard finish RAL | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in RAL 7030 stone gray | K26 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y54 • and special finish RAL | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" on Page 0/19 | Y51 • and special finish RAL | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Offshore special finish | M91 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Sea air resistant special finish | M94 | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Unpainted (only cast iron parts primed) | K23 | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ○ |
| Unpainted, only primed | K24 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Modular technology – Basic versions ⁵⁾ | | | | | | | | | | | | | | | | |
| Mounting of separately driven fan ⁶⁾ | G17 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of brake ^{6) 7)} | G26 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of 1XP8 001-1 (HTL) rotary pulse encoder | H57 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of 1XP8 001-2 (TTL) rotary pulse encoder | H58 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Modular technology – Combinations of basic versions ⁵⁾ | | | | | | | | | | | | | | | | |
| Mounting of separately driven fan and 1XP8 001-1 rotary pulse encoder | H61 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of brake and 1XP8 001-1 rotary pulse encoder ⁷⁾ | H62 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of brake and separately driven fan ^{6) 7)} | H63 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of brake, separately driven fan and 1XP8 001-1 rotary pulse encoder ⁷⁾ | H64 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of separately driven fan and 1XP8 001-2 rotary pulse encoder | H97 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of brake and 1XP8 001-2 rotary pulse encoder ⁷⁾ | H98 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of brake, separately driven fan and 1XP8 001-2 rotary pulse encoder ⁷⁾ | H99 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|--|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated energy-saving motors with high efficiency – Cast-iron series 1LG6 | | | | | | | | | | | | | | | | |
| 1LG6 (cast-iron) | | | | | | | | | | | | | | | | |
| Modular technology – Additional versions | | | | | | | | | | | | | | | | |
| Brake supply voltage 24 V DC | C00 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Brake supply voltage 400 V AC | C01 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mechanical manual brake release with lever (no locking) | K82 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special technology ⁵⁾ | | | | | | | | | | | | | | | | |
| Mounting of LL 861 900 220 rotary pulse encoder | H70 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of HOG 9 D 1024 I rotary pulse encoder | H72 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of HOG 10 D 1024 I rotary pulse encoder | H73 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Prepared for mounting LL 861 900 220 | H78 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Prepared for mounting HOG 9 D 1024 I | H79 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Prepared for mounting HOG 10 D 1024 I | H80 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of explosion-proof rotary pulse encoder HOG 10 DN 1024 I, connection box protection against moisture | J15 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of explosion-proof rotary pulse encoder HOG 10 DN 1024 I, connection box protection against dust | J16 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of rotary pulse encoder HOG 10 DN 1024 I + FSL, (speed rpm), connection box protection against moisture | Y74 • and specified speed rpm | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of rotary pulse encoder HOG 10 DN 1024 I + FSL, (speed rpm), connection box protection against dust | Y76 • and specified speed rpm | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of rotary pulse encoder HOG 10 DN 1024 I + ESL 93, (speed rpm), connection box protection against dust | Y79 • and specified speed (max. 3) rpm | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mechanical design and degrees of protection | | | | | | | | | | | | | | | | |
| Drive-end seal for flange- mounting motors with an oil- tightness of up to 0.1 bar Not possible for IM V3 type of construction and 2-pole motors ⁸⁾ | K17 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Low-noise version for 2-pole motors with clockwise direction of rotation ⁹⁾ | K37 | | | | | | | | | | – | – | – | – | – | – |
| Low-noise version for 2-pole motors with clockwise direction of rotation ⁹⁾ | K38 | | | | | | | | | | – | – | – | – | – | – |
| IP65 degree of protection ¹⁰⁾ | K50 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| IP56 degree of protection (non-heavy-sea) ¹¹⁾ | K52 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Condensation drainage holes ¹²⁾ | L12 | | | | | | | | | | □ | □ | □ | □ | □ | □ |
| Non-rusting screws (externally) | M27 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Earth brushes for converter-fed operation | M44 | | | | | | | | | | – | – | – | – | O. R. | O. R. |
| Mechanical protection for encoder ¹³⁾ | M68 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend, see Page 2/110, for footnotes, see Page 2/111.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|--|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|------------------|------------------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated energy-saving motors with high efficiency – Cast-iron series 1LG6 | | | | | | | | | | | | | | | | |
| 1LG6 (cast-iron) | | | | | | | | | | | | | | | | |
| Coolant temperature and site altitude | | | | | | | | | | | | | | | | |
| Coolant temperature –50 to +40 °C | D02 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature –40 to +40 °C | D03 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature –30 to +40 °C | D04 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Designs in accordance with standards and specifications | | | | | | | | | | | | | | | | |
| Electrical according to NEMA MG1-12 ¹⁴⁾ | D30 | | | | | | | | | | □ | □ | □ | □ | □ | □ |
| Design according to UL with "Recognition Mark" ¹⁵⁾ | D31 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Certified for Korea according to KS C4202 ¹⁶⁾ | D33 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Canadian regulations (CSA) ¹⁷⁾ | D40 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| VIK version (includes Zone 2 for mains-fed operation, without Ex nA II on rating plate) | K30 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bearings and lubrication | | | | | | | | | | | | | | | | |
| Measuring nipple for SPM shock pulse measurement for bearing inspection | G50 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bearing design for increased cantilever forces ¹⁸⁾ | K20 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special bearing for DE and NDE, bearing size 63 | K36 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ ¹⁹⁾ | ✓ ¹⁹⁾ |
| Regreasing device | K40 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | □ | □ |
| Located bearing DE | K94 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Located bearing NDE | L04 | | | | | | | | | | □ | □ | □ | □ | □ | □ |
| Insulated bearing cartridge | L27 | | | | | | | | | | – | – | ✓ | ✓ | ✓ | ✓ |
| Balance and vibration quantity | | | | | | | | | | | | | | | | |
| Vibration quantity A | | | | | | | | | | | □ | □ | □ | □ | □ | □ |
| Vibration quantity B | K02 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Full key balancing | L68 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Balancing without key | M37 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft and rotor | | | | | | | | | | | | | | | | |
| Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors ²⁰⁾ | K04 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second standard shaft extension ²¹⁾ | K16 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft extension with normal dimensions without featherkey way | K42 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Concentricity of shaft extension in accordance with DIN 42955 Tolerance R | L39 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard cylindrical shaft extension ²²⁾ | Y55 • and identification code | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Heating and ventilation | | | | | | | | | | | | | | | | |
| Metal external fan ²³⁾ | K35 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 230 V | K45 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 115 V | K46 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Sheet metal fan cover | L36 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Separately driven fan with non-standard voltage and/or frequency | Y81 • and identification code | | | | | | | | | | – | – | ✓ | ✓ | ✓ | ✓ |

For legend, see Page 2/110, for footnotes, see Page 2/111.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | | |
|--|--|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 | |
| Self-ventilated energy-saving motors with high efficiency – Cast-iron series 1LG6 | | | | | | | | | | | | | | | | | |
| Rating plate and extra rating plates | | | | | | | | | | | | | | | | | |
| Second lubricating plate, supplied loose | B06 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second rating plate, loose | K31 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate or rating plate with deviating rating plate data | Y80 • and identification codes | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate with identification codes | Y82 • and identification code | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Additional information on rating plate and on package label (maximum of 20 characters) | Y84 • and identification code | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Packaging, safety notes and test certificates | | | | | | | | | | | | | | | | | |
| Acceptance test certificate 3.1 according to EN 10204 | B02 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Operating instructions German/English enclosed in print | B23 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, with acceptance | F83 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connected in star for dispatch | M32 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connected in delta for dispatch | M33 | | | | | | | | | | | ✓ | ✓ | □ | □ | □ | □ |

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- R. Possible on request
- ✓ With additional charge
- Not possible

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions
2

- 1) Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended.
- 2) In combination with the PTC thermistor option or anti-condensation heating option, please inquire before ordering.
- 3) Possible in combination with order code **L44** to **L49** or length specification in plain text.
- 4) Only the 50 Hz data are indicated on the rating plate.
- 5) A second shaft extension is not possible. Please inquire for mounted brakes. The order codes listed cannot be combined within the various technologies nor with each other within the same technology system. This applies for:
 - Modular technology
 - Basic versions of "Modular technology"
 - Combination of special versions
 Exception: For frame size 225 and above, the options for mounting a brake (order code **G26**), separately driven fan (order code **G17**) or brake and separately driven fan (order code **H63**) can be combined with the options or rotary pulse encoders of the "Special technology" range.
- 6) For 1LG4/1LG6 motors, order codes **G17**, **G26** and **H63** frame size 225 and above can also be combined with all rotary pulse encoders in the "Special technology" range.
- 7) The standard brake supply voltage is 230 V AC, 50/60 Hz. Other brake supply voltages are possible with order codes **C00** and **C01**.
- 8) Not possible for motor series 1LG6 for 2-pole motors.
- 9) Not necessary for 1LG6 motors because these motors are already noise optimized.
- 10) Not possible in combination with rotary pulse encoder HOG 9 D 10241 (order code **H72**, **H79**) and/or brake 2LM8 (used for motors up to and including frame size 225, order code **G26**).
- 11) Not possible in combination with brake 2LM8 (used for motors up to and including frame size 225, order code **G26**).
- 12) Supplied with the condensation drainage holes sealed at the drive end DE and non-drive end NDE (IP55, IP56, IP65). If condensation drainage holes are required in motors of the IM B6, IM B7 or IM B8 type of construction (feet located on side or top), it is necessary to relocate the bearing plates at the drive end (DE) and non-drive end (NDE) so that the condensation drainage holes situated between the feet on delivery are underneath.
- 13) Not necessary when a rotary pulse encoder is combined with a separately driven fan, because in this case the rotary pulse encoder is installed under the fan cowl.
- 14) For the EPACT standard version (no order code required).
- 15) Possible up to 600 V max. Order with voltage code **9** and order code for voltage and frequency. The rated voltage is indicated on the rating plate.
- 16) For Korea are certified:
 - 2-pole motors ≤ 0.75 kW
 - 4-pole motors ≤ 0.75 kW
 - 6-pole motors ≤ 0.75 kW
- 17) Order with voltage code **9** and order code for voltage and frequency. The rated voltage is indicated on the rating plate.
- 18) Not possible for 2-pole 1LG6 motors, frame size 315 L in vertical types of construction; bearings for increased cantilever forces at vibration quantity level B available on request for 1LG6 motors. Not possible for 1LG6 motors in the combination "Concentricity of the shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors" – order code **K04**.
- 19) Extra charge for 2-pole motors. With 4-pole to 8-pole motors, standard version.
- 20) Can be combined with deep-groove bearings of series 60.., 62.. and 63... Not possible in combination with parallel roller bearings (e.g. bearings for increased cantilever forces, order code **K20**), brake mounting or encoder mounting.
- 21) Possible for motors of frame size 315 and above in vertical types of construction or 2-pole for version with second shaft extension on request. Version with protective cover not possible.
- 22) When motors are ordered that have a longer or shorter shaft extension than normal, the required position and length of the featherkey way must be specified in a sketch. It must be ensured that only featherkeys in accordance with DIN 6885, Form A are permitted to be used. The featherkey way is positioned centrally on the shaft extension. The length is defined by the manufacturer normatively. Not valid for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The featherkeys are supplied in every case. For order codes **Y55** and **K16**:
 - Dimensions D and DA \leq internal diameter of roller bearing (see dimension tables under "Dimensions")
 - Dimensions E and EA $\leq 2 \times$ length E (normal) of the shaft extension
 For an explanation of the order codes, see catalog part 0 "Introduction".
- 23) For 1LA5/6/7/9 motors and 1LG with metal external fan, converter-fed operation is permitted. The metal external fan is not possible in combination with the low-noise version – order code **K37** or **K38**.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

Options or order codes (supplement **-Z** is required)

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|---|-----------------------|------------------------|----|----|----|-----|-----|-----|-----|------------------------|-----|-------|-------|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-cooled motors without external fan – Aluminum series 1LP7 and 1LP5 | | | | | | | | | | | | | | | | |
| | | | 1LP7 (aluminum) | | | | | | | | 1LP5 (aluminum) | | | | | |
| Motor protection | | | | | | | | | | | | | | | | |
| Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ¹⁾ | A11 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor protection with PTC thermistors with 6 embedded temperature sensors for tripping and alarm ¹⁾ | A12 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor temperature detection with embedded temperature sensor KTY 84-130 ¹⁾ | A23 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor temperature detection with embedded temperature sensors 2 x KTY 84-130 ¹⁾ | A25 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature detectors for tripping ¹⁾ | A31 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 3 PT 100 resistance thermometers ¹⁾ | A60 | | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor connection and connection box | | | | | | | | | | | | | | | | |
| ECOFAST motor plug Han-Drive 10e for 230 VΔ/400 VY ²⁾ | G55 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – |
| ECOFAST motor plug EMC Han-Drive 10e for 230 VΔ/400 VY ³⁾ | G56 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – |
| Connection box on RHS | K09 | | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on LHS | K10 | | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| One cable gland, metal | K54 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Cable gland, maximum configuration | K55 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from DE | K83 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from NDE | K84 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of connection box through 180° | K85 | | ✓ | ✓ | ✓ | ✓ | ✓ | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Next larger connection box | L00 | | – | – | – | – | – | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ |
| External earthing | L13 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 3 cables protruding, 0.5 m long ⁴⁾ | L44 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | O. R. | O. R. | – | – |
| 3 cables protruding, 1.5 m long ⁴⁾ | L45 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | O. R. | O. R. | – | – |
| 6 cables protruding, 0.5 m long ⁴⁾ | L47 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | O. R. | O. R. | – | – |
| 6 cables protruding, 1.5 m long ⁴⁾ | L48 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 6 cables protruding, 3 m long ⁵⁾ | L49 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Connection box on NDE | M64 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Terminal strip for main and auxiliary terminals | M69 | | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – | – | – | – | – |
| Windings and insulation | | | | | | | | | | | | | | | | |
| Increased air humidity/temperature with 30 to 60 g water per m ³ of air | C19 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Increased air humidity/temperature with 60 to 100 g water per m ³ of air | C26 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend, see Page 2/114, for footnotes, see Page 2/115.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|--|-----------------------|------------------------|-------|-------|-------|-------|-------|-------|-------|------------------------|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-cooled motors without external fan – Aluminum series 1LP7 and 1LP5 | | | | | | | | | | | | | | | | |
| | | | 1LP7 (aluminum) | | | | | | | | 1LP5 (aluminum) | | | | | |
| Colors and paint finish | | | | | | | | | | | | | | | | |
| Special finish in RAL 7030 stone gray | | | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y54 • and special finish RAL | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" on Page 0/19 | Y51 • and special finish RAL | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Standard finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y53 • and standard finish RAL | | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Sea air resistant special finish | M94 | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Unpainted (only cast iron parts primed) | K23 | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Unpainted, only primed | K24 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mechanical design and degrees of protection | | | | | | | | | | | | | | | | |
| Drive-end seal for flange-mounting motors with an oil-tightness of up to 0.1 bar ⁵⁾ | K17 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With two additional eyebolts for IM V1/IM V3 | K32 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| IP65 degree of protection | K50 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| IP56 degree of protection (non-heavy-sea) | K52 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Vibration-proof version | L03 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Condensation drainage holes ⁶⁾ | L12 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-rusting screws (externally) | M27 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature and site altitude | | | | | | | | | | | | | | | | |
| Coolant temperature –40 to +40 °C | D03 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature –30 to +40 °C | D04 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Designs in accordance with standards and specifications | | | | | | | | | | | | | | | | |
| Design according to UL with "Recognition Mark" ⁷⁾ | D31 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Canadian regulations (CSA) ⁸⁾ | D40 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| PSE Mark Japan ⁹⁾ | D46 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – |
| Bearings and lubrication | | | | | | | | | | | | | | | | |
| Measuring nipple for SPM shock pulse measurement for bearing inspection | G50 | | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bearing design for increased cantilever forces | K20 | | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Regreasing device | K40 | | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Located bearing DE | K94 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Located bearing NDE | L04 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | □ | □ | □ | □ |

For legend, see Page 2/114, for footnotes, see Page 2/115.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|--|-----------------------|------------------------|----|----|----|-----|-----|-----|-----|------------------------|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-cooled motors without external fan – Aluminum series 1LP7 and 1LP5 | | | | | | | | | | | | | | | | |
| | | | 1LP7 (aluminum) | | | | | | | | 1LP5 (aluminum) | | | | | |
| Balance and vibration quantity | | | | | | | | | | | | | | | | |
| Vibration quantity A | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Vibration quantity B | K02 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Full key balancing | L68 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Balancing without key | M37 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft and rotor | | | | | | | | | | | | | | | | |
| Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors ¹⁰⁾ | K04 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second standard shaft extension | K16 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft extension with normal dimensions without featherkey way | K42 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Concentricity of shaft extension in accordance with DIN 42955 Tolerance R | L39 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Standard shaft made of non-rusting steel | M65 | | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard cylindrical shaft extension ¹¹⁾ | Y55 • and identification code | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Heating and ventilation | | | | | | | | | | | | | | | | |
| Anti-condensation heaters for 230 V | K45 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 115 V | K46 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rating plate and extra rating plates | | | | | | | | | | | | | | | | |
| Second lubricating plate, supplied loose | B06 | | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second rating plate, loose | K31 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate or rating plate with deviating rating plate data | Y80 • and identification code | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate with identification codes | Y82 • and identification code | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Additional information on rating plate and on package label (maximum of 20 characters) | Y84 • and identification code | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Packaging, safety notes and test certificates | | | | | | | | | | | | | | | | |
| Without safety and commissioning note. Customer's declaration of renouncement required. | B00 | | – | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| With one safety and startup guide per box pallet | B01 | | – | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Acceptance test certificate 3.1 according to EN 10204 | B02 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Operating instructions German/English in print | B23 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, with acceptance | F83 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Wire-lattice pallet | L99 | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Connected in star for dispatch | M32 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connected in delta for dispatch | M33 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

- ☐ Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- R. Possible on request
- ✓ With additional charge
- Not possible

For footnotes, see Page 2/115.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions
2

- 1) Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended.
- 2) Only one sensor (temperature sensor or PTC thermistor) can be connected. Only possibilities are voltage code **1** with voltage of 230 VΔ/400 VY and special voltage with voltage code **9** and order code **L1U** (400 VΔ). The following order codes cannot be used in combination with the ECOFAST plugs, order code **G55: A12, C18, D31, D40, G50, H15, H17, H62, H63, H64, H98, H99, K04, K15, K16, K34, K35, K40, K45, K46, K52, K54, K82, L03, L44, L45, L47, L48, L49, L51, L52.**
- 3) Only one sensor (temperature sensor or PTC thermistor) can be connected. Only possibilities are voltage code **1** with voltage of 230 VΔ/400 VY and special voltage with voltage code **9** and order code **L1U** (400 VΔ). The following order codes cannot be used in combination with the ECOFAST plugs, order code **G56: A12, A23, A31, C00, C18, D31, D40, G50, H15, H17, H90, H91, H92, H93, H94, H95, K04, K15, K16, K34, K35, K40, K45, K46, K52, K54, K82, L03, L44, L45, L47, L48, L49, L51, L52.**
- 4) In combination with the PTC thermistor option or anti-condensation heating option, please inquire before ordering.
- 5) Not possible for type of construction IM V3.
- 6) Supplied with the condensation drainage holes sealed at the drive end DE and non-drive end NDE (IP55, IP56, IP65). If condensation drainage holes are required in motors of the IM B6, IM B7 or IM B8 type of construction (feet located on side or top), it is necessary to relocate the bearing plates at the drive end (DE) and non-drive end (NDE) so that the condensation drainage holes situated between the feet on delivery are underneath.
- 7) Possible up to 600 V max. The rated voltage is indicated on the rating plate without voltage range.
- 8) The rated voltage is indicated on the rating plate without voltage range.
- 9) "Small power motors" with a rated output of up to 3 kW which are exported to Japan must bear the PSE marking.
- 10) Can be combined with deep-groove bearings of series 60... 62... and 63... Not possible in combination with parallel roller bearings (e.g. bearings for increased cantilever forces, order code **K20**).
- 11) When motors are ordered that have a longer or shorter shaft extension than normal, the required position and length of the featherkey way must be specified in a sketch. It must be ensured that only featherkeys in accordance with DIN 6885, Form A are permitted to be used. The featherkey way is positioned centrally on the shaft extension. The length is defined by the manufacturer normatively. Not valid for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The featherkeys are supplied in every case. For order codes **Y55** and **K16**:
 - Dimensions D and DA ≤ internal diameter of roller bearing (see dimension tables under "Dimensions")
 - Dimensions E and EA ≤ 2 x length E (normal) of the shaft extension
 For an explanation of the order codes, see catalog part 0 "Introduction".

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

Options or order codes (supplement **-Z** is required)

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-------|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-cooled motors without external fan – Cast-iron series 1LP4 | | | | | | | | | | | | | | | | |
| 1LP4 (cast-iron) | | | | | | | | | | | | | | | | |
| Motor protection | | | | | | | | | | | | | | | | |
| Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ¹⁾ | A11 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor protection with PTC thermistors with 6 embedded temperature sensors for tripping and alarm ¹⁾ | A12 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor temperature detection with embedded temperature sensor KTY 84-130 ¹⁾ | A23 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor temperature detection with embedded temperature sensors 2 x KTY 84-130 ¹⁾ | A25 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature detectors for tripping ¹⁾ | A31 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 3 PT 100 resistance thermometers ¹⁾ | A60 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 6 PT 100 resistance thermometers in stator winding ¹⁾ | A61 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 2 PT 100 screw-in resistance thermometers (basic circuit) for rolling-contact bearings ¹⁾ | A72 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 2 PT100 screw-in resistance thermometers (3-wire circuit) for rolling-contact bearings ¹⁾ | A78 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 2 PT 100 double screw-in resistance thermometers (3-wire circuit) for rolling-contact bearings ¹⁾ | A80 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor connection and connection box | | | | | | | | | | | | | | | | |
| Two-part plate on connection box | K06 | | | | | | | | | | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on RHS | K09 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on LHS | K10 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on top, feet screwed on | K11 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| One cable gland, metal | K54 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Cable gland, maximum configuration | K55 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from DE | K83 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from NDE | K84 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of connection box through 180° | K85 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Next larger connection box | L00 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| External earthing | L13 | | | | | | | | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 6 cables protruding, 1.5 m long ²⁾ | L48 | | | | | | | | | | ✓ | ✓ | ✓ | O. R. | O. R. | O. R. |
| 6 cables protruding, 3 m long ²⁾ | L49 | | | | | | | | | | ✓ | ✓ | ✓ | O. R. | O. R. | O. R. |
| Protruding cable ends – right side ³⁾ | L51 | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Protruding cable ends – left side ³⁾ | L52 | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Auxiliary connection box 1XB3 020 | L97 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 2/119.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|--|-----------------------|----|----|----|----|-----|-----|-----|-----|-------------------------|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-cooled motors without external fan – Cast-iron series 1LP4 | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | 1LP4 (cast-iron) | | | | | |
| Motor connection and connection box (continued) | | | | | | | | | | | | | | | | |
| Stud terminal for cable connection, accessories pack (3 items) | M46 | | | | | | | | | | – | – | – | ✓ | ✓ | ✓ |
| Saddle terminal for connection without cable lug, accessories pack (6 items) | M47 | | | | | | | | | | – | – | – | ✓ | ✓ | ✓ |
| Windings and insulation | | | | | | | | | | | | | | | | |
| Temperature class 155 (F), used acc. to 155 (F), with service factor (SF) | C11 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), with increased output ⁴⁾ | C12 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), with increased coolant temperature | C13 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Increased air humidity/temperature, with 30 to 60 g water per m ³ of air | C19 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Increased air humidity/temperature, with 60 to 100 g water per m ³ of air | C26 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), with increased coolant temperature and/or site altitude | Y50 • and specified output, CT .. °C or SA m above sea level | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), other requirements | Y52 • and specified output, CT .. °C or SA m above sea level | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Colors and paint finish | | | | | | | | | | | | | | | | |
| Standard finish in RAL 7030 stone gray | | | | | | | | | | | □ | □ | □ | □ | □ | □ |
| Standard finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y53 • and standard finish RAL | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in RAL 7030 stone gray | K26 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y54 • and special finish RAL | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" on Page 0/19 | Y51 • and special finish RAL | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Offshore special finish | M91 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Sea air resistant special finish | M94 | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Unpainted (only cast iron parts primed) | K23 | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ○ |
| Unpainted, only primed | K24 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 2/119.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|--|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|------------------|------------------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-cooled motors without external fan – Cast-iron series 1LP4 | | | | | | | | | | | | | | | | |
| 1LP4 (cast-iron) | | | | | | | | | | | | | | | | |
| Mechanical design and degrees of protection | | | | | | | | | | | | | | | | |
| Drive-end seal for flange-mounting motors with an oil-tightness of up to 0.1 bar Not possible for IM V3 type of construction ⁵⁾ | K17 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| IP65 degree of protection | K50 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| IP56 degree of protection (non-heavy-sea) | K52 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Condensation drainage holes ⁶⁾ | L12 | | | | | | | | | | □ | □ | □ | □ | □ | □ |
| Non-rusting screws (externally) | M27 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature and site altitude | | | | | | | | | | | | | | | | |
| Coolant temperature -50 to +40 °C | D02 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature -40 to +40 °C | D03 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature -30 to +40 °C | D04 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Designs in accordance with standards and specifications | | | | | | | | | | | | | | | | |
| Design according to UL with "Recognition Mark" ⁷⁾ | D31 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Canadian regulations (CSA) ⁸⁾ | D40 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bearings and lubrication | | | | | | | | | | | | | | | | |
| Measuring nipple for SPM shock pulse measurement for bearing inspection | G50 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bearing design for increased cantilever forces ⁹⁾ | K20 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special bearing for DE and NDE, bearing size | K36 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ ¹⁰⁾ | ✓ ¹⁰⁾ |
| Regreasing device | K40 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | □ | □ |
| Located bearing DE | K94 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Located bearing NDE | L04 | | | | | | | | | | □ | □ | □ | □ | □ | □ |
| Insulated bearing cartridge | L27 | | | | | | | | | | - | - | ✓ | ✓ | ✓ | ✓ |
| Balance and vibration quantity | | | | | | | | | | | | | | | | |
| Vibration quantity A | | | | | | | | | | | □ | □ | □ | □ | □ | □ |
| Vibration quantity B | K02 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Full key balancing | L68 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Balancing without key | M37 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft and rotor | | | | | | | | | | | | | | | | |
| Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors ¹¹⁾ | K04 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second standard shaft extension ¹²⁾ | K16 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft extension with normal dimensions without featherkey way | K42 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Concentricity of shaft extension in accordance with DIN 42955 Tolerance R | L39 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard cylindrical shaft extension ¹³⁾ | Y55 • and identification code | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Heating and ventilation | | | | | | | | | | | | | | | | |
| Anti-condensation heaters for 230 V | K45 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 115 V | K46 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 2/119.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-cooled motors without external fan – Cast-iron series 1LP4 | | | | | | | | | | | | | | | | |
| 1LP4 (cast-iron) | | | | | | | | | | | | | | | | |
| Rating plate and extra rating plates | | | | | | | | | | | | | | | | |
| Second lubricating plate, supplied loose | B06 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second rating plate, loose | K31 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate or rating plate with deviating rating plate data | Y80 • and identification code | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate with identification codes | Y82 • and identification code | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Additional information on rating plate and on package label (maximum of 20 characters) | Y84 • and identification code | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Packaging, safety notes, documentation and test certificates | | | | | | | | | | | | | | | | |
| Acceptance test certificate 3.1 according to EN 10204 | B02 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, with acceptance | F83 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connected in star for dispatch | M32 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connected in delta for dispatch | M33 | | | | | | | | | | ✓ | ✓ | □ | □ | □ | □ |

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- R. Possible on request
- ✓ With additional charge
- Not possible

- 1) Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended.
- 2) In combination with the PTC thermistor option or anti-condensation heating option, please inquire before ordering.
- 3) Possible in combination with order code **L44** to **L49** or length specification in plain text.
- 4) Only the 50 Hz data are indicated on the rating plate.
- 5) Not possible for motor series 1LP4 for 2-pole motors.
- 6) Supplied with the condensation drainage holes sealed at the drive end DE and non-drive end NDE (IP55, IP56, IP65). If condensation drainage holes are required in motors of the IM B6, IM B7 or IM B8 type of construction (feet located on side or top), it is necessary to relocate the bearing plates at the drive end (DE) and non-drive end (NDE) so that the condensation drainage holes situated between the feet on delivery are underneath.
- 7) Possible up to 600 V max. Order with voltage code **9** and order code for voltage and frequency. The rated voltage is indicated on the rating plate.
- 8) Order with voltage code **9** and order code for voltage and frequency. The rated voltage is indicated on the rating plate.
- 9) Not possible for 2-pole 1LP4 motors, frame size 315 L in vertical types of construction; bearings for increased cantilever forces at vibration quantity level B available on request for 1LP4 motors. Not possible for 1LP4 motors in the combination "Concentricity of the shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors" – order code **K04**.

- 10) Extra charge for 2-pole motors. With 4-pole to 8-pole motors, standard version.
- 11) Can be combined with deep-groove bearings of series 60... 62... and 63... Not possible in combination with parallel roller bearings (e.g. bearings for increased cantilever forces, order code **K20**).
- 12) Possible for motors of frame size 315 and above in vertical types of construction or 2-pole for version with second shaft extension on request. Version with protective cover not possible.
- 13) When motors are ordered that have a longer or shorter shaft extension than normal, the required position and length of the featherkey way must be specified in a sketch. It must be ensured that only featherkeys in accordance with DIN 6885, Form A are permitted to be used. The featherkey way is positioned centrally on the shaft extension. The length is defined by the manufacturer normatively. Not valid for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The featherkeys are supplied in every case. For order codes **Y55** and **K16**: – Dimensions D and DA ≤ internal diameter of roller bearing (see dimension tables under "Dimensions") – Dimensions E and EA ≤ 2 x length E (normal) of the shaft extension For an explanation of the order codes, see catalog part 0 "Introduction".

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Accessories

Overview

Modular technology

The components of modular technology can be ordered as accessories. The brake, as a safety-related module, must not be retrofitted.

Cables for rotary pulse encoders can be ordered from Catalog DA 65.10.

Mounting of rotary pulse encoder and separately driven fan for 1LA5, 1LA6, 1LA7 and 1LG motors

| Version | Frame size | Number of poles | Order No. |
|--|-------------------|--|--|
| Rotary pulse encoder ¹⁾ | HTL version | 71 ... 225 | 1XP8 001-1 |
| | TTL version | 71 ... 225 | 1XP8 001-2 |
| Separately driven fan incl. mounting parts ²⁾ | 100 | all | 2CW2 180-8RF54-1AB0 |
| | 112 | all | 2CW2 210-8RF54-1AB1 |
| | 132 | all | 2CW2 250-8RF54-1AB2 |
| | 160 | all | 2CW2 300-8RF54-1AB3 |
| | 180 | all | 2CW2 300-8RF54-1AB4 |
| | 200 | all | 2CW2 300-8RF54-1AB5 |
| | 225 ³⁾ | all | 2CW2 300-8RF54-1AB6 |
| | 250 | all | 1PP9 063-2LA12-Z A11+K50⁴⁾ |
| | 280 | all | 1PP9 063-2LA12-Z A11+K50⁴⁾ |
| | 315 | 2 | 1PP9 070-2LA12-Z A11+K50⁴⁾ |
| 315 | 4 to 8 | 1PP9 063-2LA12-Z A11+K50⁴⁾ | |
| Separately driven fan and rotary pulse encoder 1XP8 001-1 incl. mounting parts ²⁾ | 100 | all | 2CW2 180-8RF54-2AB0 |
| | 112 | all | 2CW2 210-8RF54-2AB1 |
| | 132 | all | 2CW2 250-8RF54-2AB2 |
| | 160 | all | 2CW2 300-8RF54-2AB3 |
| | 180 | all | 2CW2 300-8RF54-2AB4 |
| | 200 | all | 2CW2 300-8RF54-2AB5 |
| 225 ³⁾ | all | 2CW2 300-8RF54-2AB6 | |

Slide rails with fixing bolts and tensioning screws acc. to DIN 42923

Slide rails are used to tension the belt of a machine easily and conveniently when a belt tightener is not available. They are fixed to the base using stone bolts or foundation blocks.

The assignment of slide rails to motor size can be found in DIN 42923. For motors of frame sizes 335 to 450, there are no standardised slide rails (please inquire).

Available from:
Lütgert & Co. GmbH
Postfach 42 51
33276 Gütersloh, Germany
Tel. +49 (0)5241-7407-0
Fax +49 (0)5241-7407-90

<http://www.luetgert-antriebe.de>
e-mail: info@luetgert-antriebe.de

Foundation block acc. to DIN 799

The foundation blocks are inserted into the stone foundation and embedded in concrete. They are used for fixing machines of medium size, slide rails, pedestal bearings, baseframes, etc. After the fixing bolts have been unscrewed, the machine can be dragged without it having to be lifted.

When the machine is initially installed, the foundation block that is bolted to the machine (without washers) and fitted with tapered pins is not embedded with concrete until the machine has been fully aligned. In this case, the machine is positioned 2 to 3 mm lower. The difference in shaft height is compensated by inserting shims on final installation. The tapered pins safeguard the exact position of the machine when it is repeatedly removed and replaced without the need for realignment.

Available from:
Lütgert & Co. GmbH
Postfach 42 51
33276 Gütersloh, Germany
Tel. +49 (0)5241-7407-0
Fax +49 (0)5241-7407-90

<http://www.luetgert-antriebe.de>
e-mail: info@luetgert-antriebe.de

¹⁾ For motor series 1LG, the rotary pulse encoders are available on request. They are only available for motor series 1LA7 as accessories for spare parts.

²⁾ The separately driven fan 2CW2 ... comprises a complete fan unit with impeller, the separately driven fan 1PP9 ... only comprises the fan motor without mounting components and impeller.

³⁾ For 1LG motors with separately driven fan with Order No. 1PP9 063-2LA12-Z A11+K50 (weight 4.37 kg).

⁴⁾ Only for replacement purposes.

Overview (continued)

Taper pins acc. to DIN 258 with threaded ends and constant taper lengths

Taper pins are used for components that are repeatedly removed. The drilled hole is ground conical using a conical reamer until the pin can be pushed in by hand until the cone shoulder lies 3 to 4 mm above the rim of the hole.

It can then be driven in using a hammer until it is correctly seated. The pin is removed from the drilled hole by screwing on the nut and tightening it.

Standardised taper pins are available from general engineering suppliers.

Available from:
Otto Roth GmbH & Co. KG
Rutesheimer Straße 22
70499 Stuttgart, Germany
Tel. +49 (0)711-13 88-0
Fax +49 (0)711-13 88-233

<http://www.ottoroth.de>
e-mail: info@ottoroth.de

Couplings

The motor from Siemens is connected to the machine or gear unit through a coupling. Flender is an important coupling manufacturer with a wide range of products. For standard applications, Siemens recommends that elastic couplings of Flender types N-Eupex and Rupex or torsionally rigid couplings of types Arpex and Zapex are used. For special applications, Fludex and Elpex couplings are recommended.

Source of supply:
Siemens contact partner – ordering from Catalog
Siemens MD 10.1 "FLENDER Standard Couplings"

or

A. Friedr. Flender AG
Kupplungswerk Mussum
Industriepark Bocholt
Schlavenhorst 100
46395 Bocholt, Germany
Tel. +49 (0)2871-92 2185
Fax +49 (0)2871-92 2579

<http://www.flender.com>
e-mail: couplings@flender.com

More information

Spare motors and repair parts

- Supply commitment for spare motors and repair parts following delivery of the motor
 - For up to 5 years, in the event of total motor failure, Siemens will supply a comparable motor with regard to the mounting dimensions and functions (the type series may vary).
 - Repair parts will be supplied for up to 5 years.
 - For up to 10 years, Siemens will provide information and will, if necessary, supply documentation for repair parts.
- When repair parts are ordered, the following details must be provided:
 - Designation and part number
 - Order No. and factory number of the motor

Example for ordering a fan cowl 1LA7,
frame size 160 M, 4-pole:

**Fan cowl No. 7.40,
1LA7 163-4AA60, factory number J783298901018**

Mounting of encoder

In the case of mounting by the customer.

Options H79, H80

Baumer Hübner GmbH
Planufer 92b
10967 Berlin, Germany
Tel. +49 (0)30-690 03-0
Fax +49 (0)30-690 03-104

<http://www.baumerhuebner.com>
e-mail: info@baumerhuebner.com

Options H78

Leine & Linde (Deutschland) GmbH
Bahnhofstraße 36
73430 Aalen, Germany
Tel. +49 (0)7361-78 093-0
Fax +49 (0)7361-78 093-11

<http://www.leinelinde.com>
e-mail: info@leinelinde.se

- For bearing types, see the "Introduction".
- Repair parts for 1MJ6, 1MJ7, 1MJ8, 1MJ1, 1ME8, 1ML8, 1LG8 motors and smoke-extraction motors are available on request.
- For standard components, a supply commitment does not apply.
- Support – Hotline
In Germany
Tel.: 01 80/5 05 04 48

National telephone numbers can be found on the Internet page:
<http://www.siemens.com/automation/service&support>

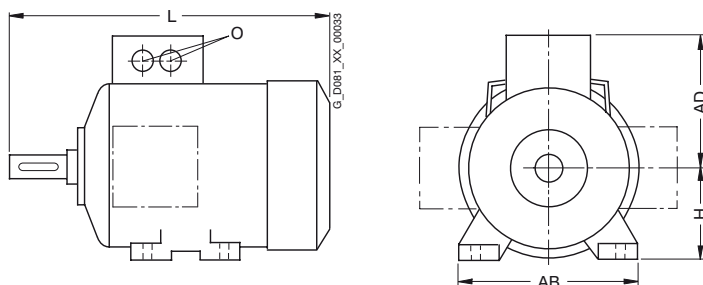
IEC Squirrel-Cage Motors

Standard motors frame size 315L and above

Dimensions

Overview

Overall dimensions



| Frame size | Type | Number of poles | Dimensions | | | | | |
|-----------------|-----------------|-----------------|------------|-----|-----|---------------|--------------------------------|---------------|
| | | | L | AD | H | AB | O | |
| 56 M | 1LA7 | | 169 | 101 | 56 | 110 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1LA9 050 | | 169 | 101 | 56 | 110 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1LA9 053 | | 195 | 101 | 56 | 110 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| 63 M | 1LA7 | | 202.5 | 101 | 63 | 120 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1LA9 063 | | 202.5 | 101 | 63 | 120 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1LA9 061 | | 228.5 | 101 | 63 | 120 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| 71 M | 1LA7 | | 240 | 111 | 71 | 132 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1LA9 | | 240 | 111 | 71 | 132 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1LP7 | | 207 | 111 | 71 | 132 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| 80 M | 1LA7 | | 273.5 | 120 | 80 | 150 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1LA9 080 | | 273.5 | 120 | 80 | 150 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1LA9 083 | | 308.5 | 120 | 80 | 150 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1LP7 | | 237 | 120 | 80 | 150 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1LA9 096-6K. | | 376 | 128 | 90 | 165 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| 90 S/ 90 L | 1LA7 | | 331 | 128 | 90 | 165 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1LA9 | | 331 | 128 | 90 | 165 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1LA9 096-2.. | | 358 | 128 | 90 | 165 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1LA9 096-4.. | | 358 | 128 | 90 | 165 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1LP7 | | 286 | 128 | 90 | 165 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1LA9 107-4KA. | | 442 | 135 | 100 | 196 | 2 x M32 x 1.5 | |
| | 1LP7 | | 331 | 135 | 100 | 196 | 2 x M32 x 1.5 | |
| 100 L | 1LA6 | | 372 | 164 | 100 | 196 | 2 x M32 x 1.5 | |
| | 1LA7 | | 372 | 135 | 100 | 196 | 2 x M32 x 1.5 | |
| | 1LA9 | | 407 | 135 | 100 | 196 | 2 x M32 x 1.5 | |
| | 1LA9 107-4KA. | | 442 | 135 | 100 | 196 | 2 x M32 x 1.5 | |
| | 1LP7 | | 331 | 135 | 100 | 196 | 2 x M32 x 1.5 | |
| 112 M | 1LA6 | | 393 | 178 | 112 | 226 | 2 x M32 x 1.5 | |
| | 1LA7 | | 393 | 148 | 112 | 226 | 2 x M32 x 1.5 | |
| | 1LA9 | | 431 | 148 | 112 | 226 | 2 x M32 x 1.5 | |
| | 1LP7 | | 349 | 148 | 112 | 226 | 2 x M32 x 1.5 | |
| | 1LA9 131 | | 490.5 | 167 | 132 | 256 | 2 x M32 x 1.5 | |
| 132 S/ 132 M | 1LA6 | | 453 | 194 | 132 | 256 | 2 x M32 x 1.5 | |
| | 1LA7 | | 452.5 | 167 | 132 | 256 | 2 x M32 x 1.5 | |
| | 1LA9 | | 452.5 | 167 | 132 | 256 | 2 x M32 x 1.5 | |
| | 1LA9 131 | | 490.5 | 167 | 132 | 256 | 2 x M32 x 1.5 | |
| | 1LA9 133 | 4 | 490.5 | 167 | 132 | 256 | 2 x M32 x 1.5 | |
| | 1LA9 134 | | 490.5 | 167 | 132 | 256 | 2 x M32 x 1.5 | |
| | 1LP7 | | 397 | 167 | 132 | 256 | 2 x M32 x 1.5 | |
| 160 M/ 160 L | 1LA6 | | 588 | 226 | 160 | 300 | 2 x M40 x 1.5 | |
| | 1LA7 | | 588 | 197 | 160 | 300 | 2 x M40 x 1.5 | |
| | 1LA9 | | 588 | 197 | 160 | 300 | 2 x M40 x 1.5 | |
| | 1LA9 166 | | 628 | 197 | 160 | 300 | 2 x M40 x 1.5 | |
| | 1LP7 | | 529 | 197 | 160 | 300 | 2 x M40 x 1.5 | |
| | 180 M/ 180 L | 1LA5 | | 712 | 258 | 180 | 339 | 2 x M40 x 1.5 |
| | | 1LA9 | | 712 | 258 | 180 | 339 | 2 x M40 x 1.5 |
| | | 1LG4 | | 669 | 262 | 180 | 339 | 2 x M40 x 1.5 |
| | | 1LG4 188 | | 720 | 262 | 180 | 339 | 2 x M40 x 1.5 |
| | | 1LG6 183 | 2 | 720 | 262 | 180 | 339 | 2 x M40 x 1.5 |
| | | 1LG6 183 | 4 | 669 | 262 | 180 | 339 | 2 x M40 x 1.5 |
| | | 1LG6 186 | 4, 6, 8 | 720 | 262 | 180 | 339 | 2 x M40 x 1.5 |
| | | 1LP4 183 | 2, 4 | 562 | 262 | 180 | 339 | 2 x M40 x 1.5 |
| | | 1LP4 186 | 4, 6, 8 | 562 | 262 | 180 | 339 | 2 x M40 x 1.5 |
| | | 1LP5 | | 611 | 258 | 180 | 339 | 2 x M40 x 1.5 |
| 200 L | 1LA5 | | 769.5 | 305 | 200 | 388 | 2 x M50 x 1.5 | |
| | 1LA9 | | 768.5 | 305 | 200 | 388 | 2 x M50 x 1.5 | |
| | 1LG4 | | 720 | 300 | 200 | 378 | 2 x M50 x 1.5 | |
| | 1LG4 208 | 2, 6 | 777 | 300 | 200 | 378 | 2 x M50 x 1.5 | |
| | 1LG6 206 | | 720 | 300 | 200 | 378 | 2 x M50 x 1.5 | |
| | 1LG6 207 | 2, 6 | 777 | 300 | 200 | 378 | 2 x M50 x 1.5 | |
| | 1LG6 207 | 4, 8 | 720 | 300 | 200 | 378 | 2 x M50 x 1.5 | |
| | 1LP4 206 | 2, 6 | 617 | 300 | 200 | 378 | 2 x M50 x 1.5 | |
| | 1LP4 207 | 2, 4, 6, 8 | 617 | 300 | 200 | 378 | 2 x M50 x 1.5 | |
| | 1LP5 | | 675 | 305 | 200 | 388 | 2 x M50 x 1.5 | |
| 225 S/ 225 M | 1LA5 | | 806 | 305 | 225 | 426 | 2 x M50 x 1.5 | |
| | 1LA5 | 2 | 776 | 305 | 225 | 426 | 2 x M50 x 1.5 | |
| | 1LG4 | | 789 | 325 | 225 | 436 | 2 x M50 x 1.5 | |
| | 1LG4 223 | 2 | 759 | 325 | 225 | 436 | 2 x M50 x 1.5 | |
| | 1LG4 228 | 2 | 819 | 325 | 225 | 436 | 2 x M50 x 1.5 | |
| | 1LG4 228 | 4, 6, 8 | 849 | 325 | 225 | 436 | 2 x M50 x 1.5 | |
| | 1LG6 220 | 4, 8 | 789 | 325 | 225 | 436 | 2 x M50 x 1.5 | |
| | 1LG6 223 | 2 | 819 | 325 | 225 | 436 | 2 x M50 x 1.5 | |
| | 1LG6 223 | 4, 6, 8 | 849 | 325 | 225 | 436 | 2 x M50 x 1.5 | |
| | 1LG6 228 | 2 | 869 | 325 | 225 | 436 | 2 x M50 x 1.5 | |
| 1LG6 228 | 4, 6 | 899 | 325 | 225 | 436 | 2 x M50 x 1.5 | | |
| 250 M | 1LP4 220 | 4, 8 | 670 | 325 | 225 | 436 | 2 x M50 x 1.5 | |
| | 1LP4 223 | 2 | 640 | 325 | 225 | 436 | 2 x M50 x 1.5 | |
| | 1LP4 223 | 4, 6, 8 | 670 | 325 | 225 | 436 | 2 x M50 x 1.5 | |
| | 1LG4 | | 887 | 392 | 250 | 490 | 2 x M63 x 1.5 | |
| | 1LG4 258 | 4 | 957 | 392 | 250 | 490 | 2 x M63 x 1.5 | |
| | 1LG6 253 | 2, 6, 8 | 887 | 392 | 250 | 490 | 2 x M63 x 1.5 | |
| | 1LG6 253 | 4 | 957 | 392 | 250 | 490 | 2 x M63 x 1.5 | |
| | 1LG6 258 | 2, 4, 6 | 957 | 392 | 250 | 490 | 2 x M63 x 1.5 | |
| 1LP4 253 | 2 | 764 | 392 | 250 | 490 | 2 x M63 x 1.5 | | |
| 1LP4 253 | 4, 6, 8 | 764 | 392 | 250 | 490 | 2 x M63 x 1.5 | | |

IEC Squirrel-Cage Motors

Standard motors frame size 315L and above

Dimensions

Overview (continued)

| Frame size | Type | Number of poles | Dimensions | | | | |
|------------|----------|-----------------|------------|-----|-----|-----|---------------|
| | | | L | AD | H | AB | O |
| 280 S/ | 1LG4 | | 960 | 432 | 280 | 540 | 2 x M63 x 1.5 |
| 280 M | 1LG4 288 | 2, 4 | 1070 | 432 | 280 | 540 | 2 x M63 x 1.5 |
| | 1LG6 280 | 2, 4, 6, 8 | 960 | 432 | 280 | 540 | 2 x M63 x 1.5 |
| | 1LG6 283 | 2, 4 | 1070 | 432 | 280 | 540 | 2 x M63 x 1.5 |
| | 1LG6 283 | 6, 8 | 960 | 432 | 280 | 540 | 2 x M63 x 1.5 |
| | 1LG6 288 | 2, 4, 6 | 1070 | 432 | 280 | 540 | 2 x M63 x 1.5 |
| | 1LP4 280 | 2, 4, 6, 8 | 830 | 432 | 280 | 540 | 2 x M63 x 1.5 |
| | 1LP4 283 | 2, 4, 6, 8 | 830 | 432 | 280 | 540 | 2 x M63 x 1.5 |
| 315 S/ | 1LG4 | | 1072 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| 315 M/ | 1LG4 310 | 4, 6, 8 | 1102 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| 315 L | 1LG4 313 | 4, 6, 8 | 1102 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG4 316 | 2 | 1232 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG4 316 | 4, 6, 8 | 1262 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG4 317 | 2 | 1232 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG4 317 | 4, 6, 8 | 1262 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG4 318 | 8 | 1262 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG4 318 | 6 | 1402 | 500 | 315 | 610 | 2 x M63 x 1.5 |

| Frame size | Type | Number of poles | Dimensions | | | | |
|------------|----------|-----------------|------------|-----|-----|-----|---------------|
| | | | L | AD | H | AB | O |
| 315 S/ | 1LG6 310 | 2 | 1072 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| 315 M/ | 1LG6 310 | 4, 6, 8 | 1102 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| 315 L | 1LG6 313 | 2 | 1232 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 313 | 4, 6 | 1262 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 313 | 8 | 1102 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 316 | 2 | 1232 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 316 | 4, 6, 8 | 1262 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 317 | 8 | 1262 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 317 | 2 | 1372 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 317 | 4, 6 | 1402 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 318 | 2 | 1372 | 651 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 318 | 4 | 1402 | 651 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 318 | 6, 8 | 1402 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LP4 310 | 2 | 925 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LP4 310 | 4, 6, 8 | 955 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LP4 313 | 2 | 925 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LP4 313 | 4, 6, 8 | 955 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LP4 316 | 2 | 1085 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LP4 316 | 4, 6, 8 | 1115 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LP4 317 | 2 | 1085 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LP4 317 | 4, 6, 8 | 1115 | 500 | 315 | 610 | 2 x M63 x 1.5 |

Notes on the dimensions

■ Dimension drawings according to DIN EN 50347 and IEC 60072.

■ Fits

The shaft extensions specified in the dimension tables (DIN 748) and centering spigot diameters (DIN EN 50347) are machined with the following fits:

| Dimension designation | ISO fit | DIN ISO 286-2 |
|-----------------------|---------------|---------------|
| D, DA | to 30 | j6 |
| | over 31 to 50 | k6 |
| | over 50 | m6 |
| N | to 250 | j6 |
| | over 250 | h6 |
| F, FA | | h9 |
| K | | H17 |
| S | flange (FF) | H17 |

The drilled holes of couplings and belt pulleys should have an ISO fit of at least H7.

■ Dimension tolerances

For the following dimensions, the admissible deviations are given below:

| Dimension designation | Dimension | Permitted deviation |
|-----------------------|-----------|---------------------|
| H | to 250 | -0.5 |
| | over 250 | -1.0 |
| E, EA | | -0.5 |

Keyways and feather keyways (dimensions GA, GC, F and FA) are made in compliance with DIN 6885 Part 1.

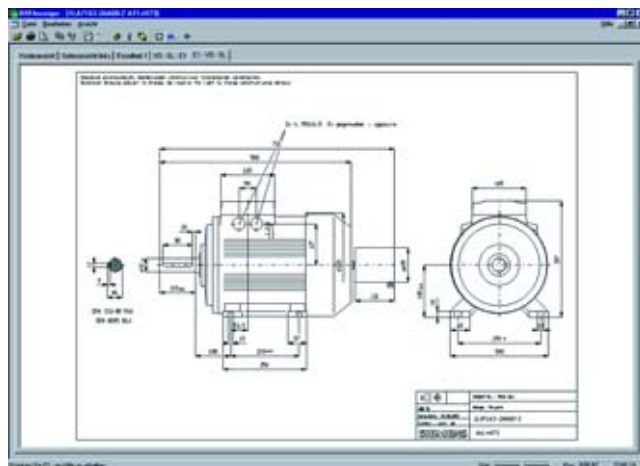
■ All dimensions are specified in mm.

More information

Dimension sheet generator

(part of the SD configurator)

A dimension drawing can be created in the SD configurator for every configurable motor. A dimension drawing can be requested for every other motor.



When a complete Order No. is entered with or without order codes, a dimension drawing can be called up under the "Documentation" tab.

These dimension drawings can be presented in different views and sections and printed.

The corresponding dimension sheets can be exported, saved and processed further in DXF format (interchange/import format for CAD systems) or as bitmap graphics.

The SD configurator has been integrated into the electronic Catalog CA 01 as a selection aid (for further information, catalog part 11 "Appendix", "SD configurator selection tool").

The interactive Catalog CA 01 can be ordered from your local Siemens sales representative or on the Internet at

<http://www.siemens.com/automation/CA01>

At this address, you will also find links to Tips & Tricks and to downloads for function or content updates.

Order number for CA 01 10/2008, English international:
DVD: E86060-D4001-A510-C7-7600

IEC Squirrel-Cage Motors

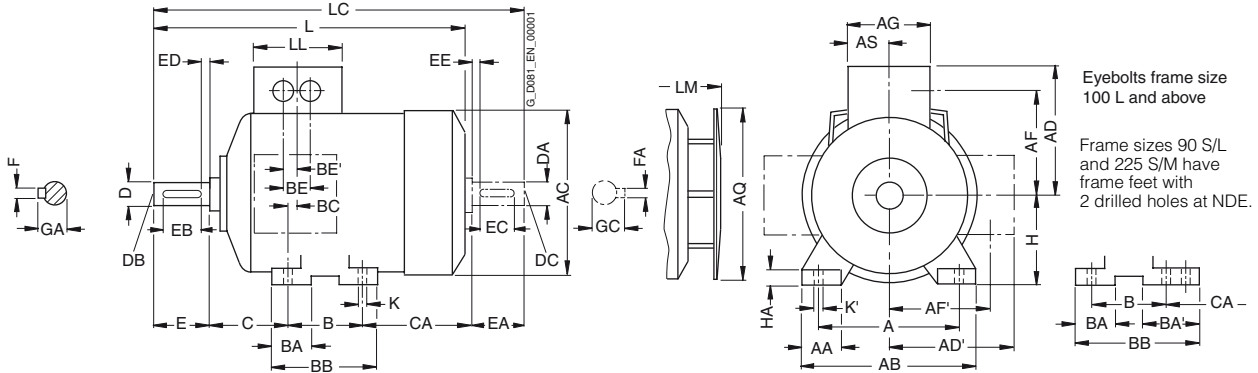
Standard motors up to frame size 315 L

Dimensions

Dimensional drawings

Aluminum series 1LA7 and 1LA5, frame sizes 56 M to 225 M

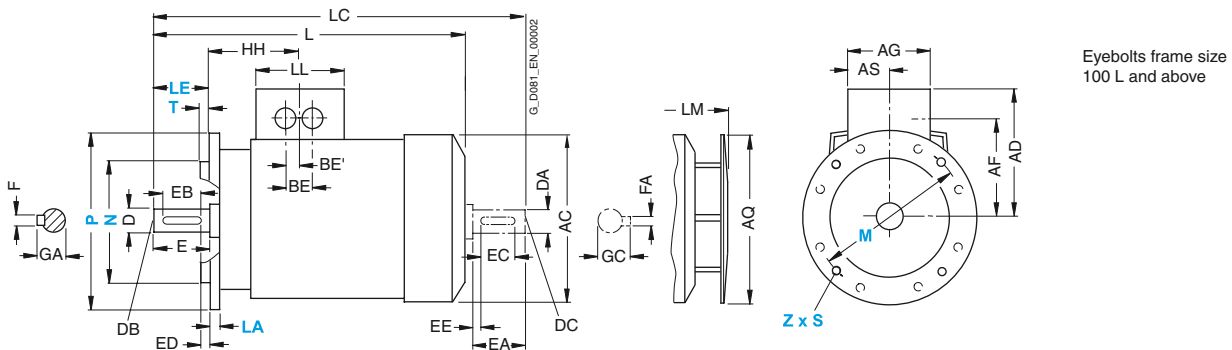
Type of construction IM B3



Eyebolts frame size 100 L and above
 Frame sizes 90 S/L and 225 S/M have frame feet with 2 drilled holes at NDE.

Types of construction IM B5 and IM V1

For flange dimensions, see Page 2/140 (Z = the number of retaining holes)



Eyebolts frame size 100 L and above

| For motor | | | Dimension designation acc. to IEC | | | | | | | | | | | | | | | | | | | | | |
|--------------------|----------------------|--------------------|-----------------------------------|------|-----|------------------|------------------|-------------------|------------------|-----|------------------|-----|------|-----|------|-----|-----|------|------------------|-------------------|-----|-------|-----|----|
| Frame size | Type | Number of poles | A | AA | AB | AC ¹⁾ | AD ²⁾ | AD' ²⁾ | AF ²⁾ | AF' | AG ²⁾ | AQ | AS | B* | BA | BA' | BB | BC | BE ²⁾ | BE' ²⁾ | C | CA* | H | HA |
| 56 M ³⁾ | 1LA7 050 1LA7 053 | 2, 4 | 90 | 25 | 110 | 116 | 101 | 101 | 78 | 78 | 75 | - | 37.5 | 71 | 28 | - | 87 | 34 | 32 | 18 | 36 | 53 | 56 | 6 |
| 63 M | 1LA7 060 1LA7 063 | 2, 4, 6 | 100 | 27 | 120 | 124 | 101 | 101 | 78 | 78 | 75 | 124 | 37.5 | 80 | 28 | - | 96 | 30 | 32 | 18 | 40 | 66 | 63 | 7 |
| 71 M | 1LA7 070 1LA7 073 | 2, 4, 6, 8 | 112 | 27 | 132 | 145 | 111 | 111 | 88 | 88 | 75 | 124 | 37.5 | 90 | 27 | - | 106 | 18 | 32 | 18 | 45 | 83 | 71 | 7 |
| 80 M | 1LA7 080 1LA7 083 | 2, 4, 6, 8 | 125 | 30.5 | 150 | 163 | 120 | 120 | 97 | 97 | 75 | 124 | 37.5 | 100 | 32 | - | 118 | 14 | 32 | 18 | 50 | 94 | 80 | 8 |
| 90 S 90 L | 1LA7 090 1LA7 096 | 2, 4, 6, 8 | 140 | 30.5 | 165 | 180 | 128 | 128 | 105 | 105 | 75 | 170 | 37.5 | 100 | 33 | 54 | 143 | 23 | 32 | 18 | 56 | 143 | 90 | 10 |
| 100 L | 1LA7 106 1LA7 107 | 2, 4, 6, 8 4, 8 | 160 | 42 | 196 | 203 | 135 | 163 | 78 | 123 | 120 | 170 | 60 | 140 | 47 | - | 176 | 39 | 42 | 21 | 63 | 125 | 100 | 12 |
| 112 M | 1LA7 113 | 2, 4, 6, 8 | 190 | 46 | 226 | 227 | 148 | 176 | 91 | 136 | 120 | 170 | 60 | 140 | 47 | - | 176 | 32 | 42 | 21 | 70 | 141 | 112 | 12 |
| 132 S | 1LA7 130 1LA7 131 | 2, 4, 6, 8 2 | 216 | 53 | 256 | 267 | 167 | 194 | 107 | 154 | 140 | 250 | 70 | 140 | 49 | - | 180 | 39 | 42 | 21 | 89 | 162.5 | 132 | 15 |
| 132 M | 1LA7 133 1LA7 134 | 4, 6, 8 6 | 216 | 53 | 256 | 267 | 167 | 194 | 107 | 154 | 140 | 250 | 70 | 178 | 49 | - | 218 | 39 | 42 | 21 | 89 | 124.5 | 132 | 15 |
| 160 M | 1LA7 163 1LA7 164 | 2, 4, 6, 8 2, 8 | 254 | 60 | 300 | 320 | 197 | 226 | 127 | 183 | 165 | 250 | 82.5 | 210 | 57 | - | 256 | 52.5 | 54 | 27 | 108 | 183 | 160 | 18 |
| 160 L | 1LA7 166 | 2, 4, 6, 8 | 254 | 60 | 300 | 320 | 197 | 226 | 127 | 183 | 165 | 250 | 82.5 | 254 | 57 | - | 300 | 52.5 | 54 | 27 | 108 | 139 | 160 | 18 |
| 180 M | 1LA5 183 | 2, 4 | 279 | 69.5 | 339 | 363 | 258 | 258 | 216 | 216 | 152 | 340 | 71 | 241 | 50 | - | 287 | 38 | 54 | 27 | 121 | 259 | 180 | 18 |
| 180 L | 1LA5 186 | 4, 6, 8 | 279 | 69.5 | 339 | 363 | 258 | 258 | 216 | 216 | 152 | 340 | 71 | 279 | 50 | - | 325 | 38 | 54 | 27 | 121 | 221 | 180 | 18 |
| 200 L | 1LA5 206 1LA5 207 | 2, 6 2, 4, 6, 8 | 318 | 83 | 388 | 402 | 305 | 305 | 252 | 252 | 260 | 340 | 96 | 305 | 58.5 | - | 355 | 45 | 85 | 42.5 | 133 | 239 | 200 | 24 |
| 225 S | 1LA5 220 | 4, 8 | 356 | 103 | 426 | 402 | 305 | 305 | 252 | 252 | 260 | 340 | 96 | 286 | 58 | 83 | 361 | 36 | 85 | 42.5 | 149 | 248.5 | 225 | 24 |
| 225 M | 1LA5 223 | 2 4, 6, 8 | 356 | 103 | 426 | 402 | 305 | 305 | 252 | 252 | 260 | 340 | 96 | 311 | 58 | 83 | 361 | 36 | 85 | 42.5 | 149 | 223.5 | 225 | 24 |

■ For 1LA7 and 1LA5 standard motors in pole-changing version (6 or 9 terminals), the dimensions of the basic version apply.

* This dimension is assigned in DIN EN 50347 to the frame size listed.

1) Measured across the bolt heads.

2) The values increase if the connection box is rotated or if a brake is mounted. Further information is provided by the dimension sheet generator in SD configurator.

3) The motors of frame size 56 M are not ventilated.

IEC Squirrel-Cage Motors

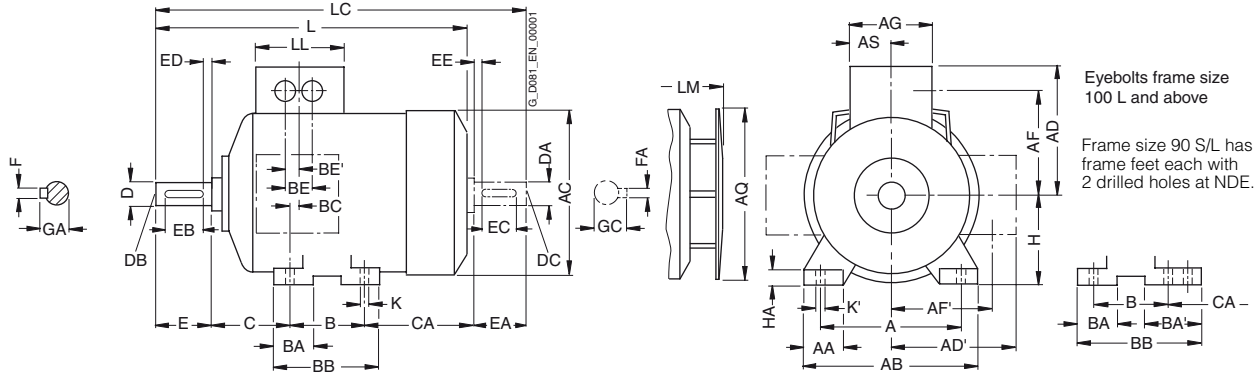
Standard motors up to frame size 315 L

Dimensions

Dimensional drawings

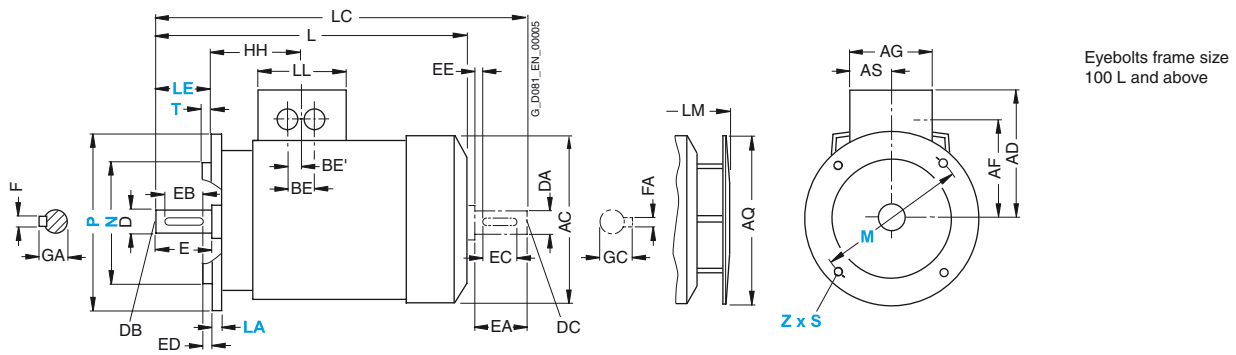
Aluminum series 1LA9, frame sizes 56 M to 200 L

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 2/140 (Z = the number of retaining holes)



| For motor | | Dimension designation acc. to IEC | | | | | | | | | | | | | | | | | | | | | | |
|--------------------|----------------------------------|-----------------------------------|-----|------|-----|------------------|-----|-----|-----|-----|-----|-----|------|------------|------|-----|-----|------|----|------|-----|--------------------------|-----|----|
| Frame size | Type | Number of poles | A | AA | AB | AC ¹⁾ | AD | AD' | AF | AF' | AG | AQ | AS | B* | BA | BA' | BB | BC | BE | BE' | C | CA* | H | HA |
| 56 M ²⁾ | 1LA9 050 1LA9 053 | 2, 4 | 90 | 25 | 110 | 116 | 101 | 101 | 78 | 78 | 75 | - | 37.5 | 71 | 28 | - | 87 | 34 | 32 | 18 | 36 | 53 | 56 | 6 |
| 63 M | 1LA9 060 1LA9 063 | 2, 4 | 100 | 27 | 120 | 124 | 101 | 101 | 78 | 78 | 75 | 124 | 37.5 | 80 | 28 | - | 96 | 30 | 32 | 18 | 40 | 66 92 | 63 | 7 |
| 71 M | 1LA9 070 1LA9 073 | 2, 4 | 112 | 30.5 | 132 | 145 | 111 | 111 | 88 | 88 | 75 | 124 | 37.5 | 90 | 27 | - | 106 | 18 | 32 | 18 | 45 | 83 | 71 | 7 |
| 80 M | 1LA9 080 1LA9 083 | 2, 4 | 125 | 30.5 | 150 | 163 | 120 | 120 | 97 | 97 | 75 | 124 | 37.5 | 100 | 32 | - | 118 | 14 | 32 | 18 | 50 | 94 134 | 80 | 8 |
| 90 S 90 L | 1LA9 090 1LA9 096 | 2, 4, 6 | 140 | 30.5 | 165 | 180 | 128 | 128 | 105 | 105 | 75 | 170 | 37.5 | 100 125 | 33 | 54 | 143 | 23 | 32 | 18 | 56 | 143 118 | 90 | 10 |
| 100 L | 1LA9 106 1LA9 107 | 2, 4, 6 | 160 | 42 | 196 | 203 | 135 | 163 | 78 | 123 | 120 | 170 | 60 | 140 | 47 | - | 176 | 39 | 42 | 21 | 63 | 160 195 ³⁾ | 100 | 12 |
| 112 M | 1LA9 113 | 2, 4, 6 | 190 | 46 | 226 | 227 | 148 | 176 | 91 | 136 | 120 | 170 | 60 | 140 | 47 | - | 176 | 32 | 42 | 21 | 70 | 179 | 112 | 12 |
| 132 S | 1LA9 130 | 2, 4 | 216 | 53 | 256 | 267 | 167 | 194 | 107 | 154 | 140 | 250 | 70 | 140 | 49 | - | 180 | 39 | 42 | 21 | 89 | 162.5 200.5 | 132 | 15 |
| 132 M | 1LA9 133 1LA9 133 1LA9 134 | 6 4 6 | 216 | 53 | 256 | 267 | 167 | 194 | 107 | 154 | 140 | 250 | 70 | 178 | 49 | - | 218 | 39 | 42 | 21 | 89 | 124.5 162.5 | 132 | 15 |
| 160 M | 1LA9 163 1LA9 164 | 2, 4, 6 2 | 254 | 60 | 300 | 320 | 197 | 226 | 127 | 183 | 165 | 250 | 82.5 | 210 | 57 | - | 256 | 52.5 | 54 | 27 | 108 | 183 | 160 | 18 |
| 160 L | 1LA9 166 | 2, 4, 6 | 254 | 60 | 300 | 320 | 197 | 226 | 127 | 183 | 165 | 250 | 82.5 | 254 | 57 | - | 300 | 52.5 | 54 | 27 | 108 | 179 | 160 | 18 |
| 180 M | 1LA9 183 | 2, 4 | 279 | 69.5 | 339 | 363 | 258 | 258 | 216 | 216 | 152 | 340 | 71 | 241 | 50 | - | 287 | 38 | 54 | 27 | 121 | 259 | 180 | 18 |
| 180 L | 1LA9 186 | 4, 6 | 279 | 69.5 | 339 | 363 | 258 | 258 | 216 | 216 | 152 | 340 | 71 | 279 | 50 | - | 325 | 38 | 54 | 27 | 121 | 221 | 180 | 18 |
| 200 L | 1LA9 206 1LA9 207 | 2, 6 2, 4, 6 | 318 | 83 | 388 | 402 | 305 | 305 | 252 | 252 | 260 | 340 | 96 | 305 | 58.5 | - | 355 | 45 | 85 | 42.5 | 133 | 239 | 200 | 24 |

* This dimension is assigned in DIN EN 50347 to the frame size listed.

¹⁾ Measured across the bolt heads.

²⁾ The motors of frame size 56 M are not ventilated. Frame size 56 M is not available in IM B35.

³⁾ For 1LA9 107-4KA.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

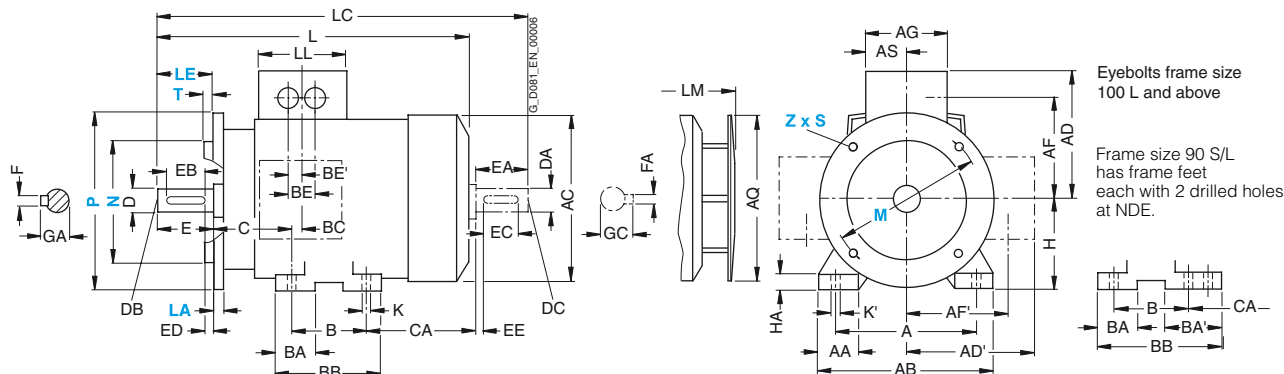
Dimensions

Dimensional drawings

Aluminum series 1LA9, frame sizes 56 M to 200 L

Type of construction IM B35

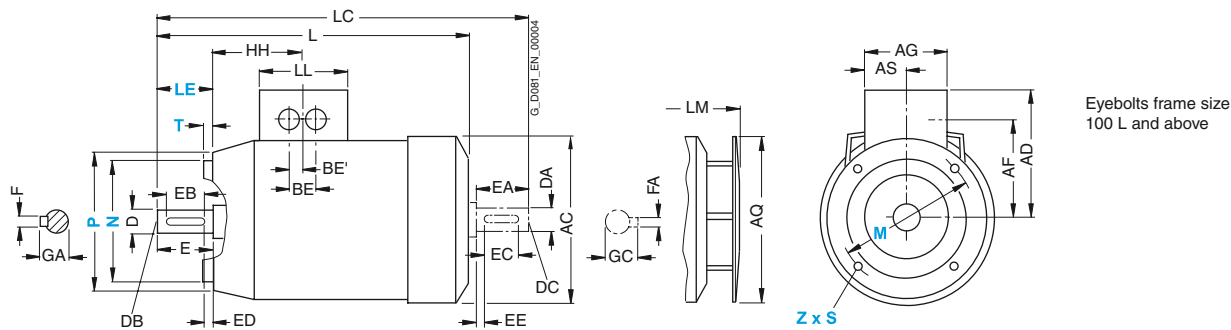
For flange dimensions, see Page 2/140 (Z = the number of retaining holes)



Type of construction IM B14

Type of construction IM B14 not possible for 1LA9 motors, frame sizes 180 M to 200 L

For flange dimensions, see Page 2/140 (Z = the number of retaining holes)



| For motor | | Dimension designation acc. to IEC | | | | | | | | | | DE shaft extension | | | | NDE shaft extension | | | | | | | |
|--------------------|----------------------------------|-----------------------------------|-------|-----|------|---|---|-----|---|----|-----|--------------------|-----|-----|----|---------------------|----|-----|-----|-----|-----|----|------|
| Frame size | Type | Number of poles | HH | K | K' | L | LC | LL | LM | D | DB | E | EB | ED | F | GA | DA | DC | EA | EC | EE | FA | GC |
| 56 M ¹⁾ | 1LA9 050 1LA9 053 | 2, 4 | 69.5 | 5.8 | 9 | 169 ²⁾ 195 | 200 ²⁾ 226 | 75 | - | 9 | M3 | 20 | 14 | 3 | 3 | 10.2 | 9 | M3 | 20 | 14 | 3 | 3 | 10.2 |
| 63 M | 1LA9 060 1LA9 063 | 2, 4 | 69.5 | 7 | 10 | 202.5 ³⁾ 228.5 | 232 ³⁾ 258 | 75 | 231.5 257.5 | 11 | M4 | 23 | 16 | 3.5 | 4 | 12.5 | 11 | M4 | 23 | 16 | 3.5 | 4 | 12.5 |
| 71 M | 1LA9 070 1LA9 073 | 2, 4 | 63.5 | 7 | 10 | 240 | 278 | 75 | 268 | 14 | M5 | 30 | 22 | 4 | 5 | 16 | 14 | M5 | 30 | 22 | 4 | 5 | 16 |
| 80 M | 1LA9 080 1LA9 083 | 2, 4 | 63.5 | 9.5 | 13.5 | 273.5 308.5 | 324 364 | 75 | 299.5 334.5 | 19 | M6 | 40 | 32 | 4 | 6 | 21.5 | 19 | M6 | 40 | 32 | 4 | 6 | 21.5 |
| 90 S 90 L | 1LA9 090 1LA9 096 | 2, 4, 6 | 79 | 10 | 14 | 331 376 ⁴⁾ 358 ⁵⁾ | 389 434 ⁴⁾ 414 ⁵⁾ | 75 | 382.5 427.5 ⁴⁾ 409.5 ⁵⁾ | 24 | M8 | 50 | 40 | 5 | 8 | 27 | 19 | M6 | 40 | 32 | 4 | 6 | 21.5 |
| 100 L | 1LA9 106 1LA9 107 | 2, 4, 6 | 102 | 12 | 16 | 407 442 ⁶⁾ | 473 508 ⁶⁾ | 120 | 458.5 493 ⁶⁾ | 28 | M10 | 60 | 50 | 5 | 8 | 31 | 24 | M8 | 50 | 40 | 5 | 8 | 27 |
| 112 M | 1LA9 113 | 2, 4, 6 | 102 | 12 | 16 | 431 | 499 | 120 | 482.5 | 28 | M10 | 60 | 50 | 5 | 8 | 31 | 24 | M8 | 50 | 40 | 5 | 8 | 27 |
| 132 S | 1LA9 130 1LA9 131 | 2, 4 | 128 | 12 | 16 | 452.5 490.5 | 551.5 589.5 | 140 | 505 543 | 38 | M12 | 80 | 70 | 5 | 10 | 41 | 38 | M12 | 80 | 70 | 5 | 10 | 41 |
| 132 M | 1LA9 133 1LA9 133 1LA9 134 | 6 4 6 | 128 | 12 | 16 | 452.5 490.5 | 551.5 589.5 | 140 | 505 543 | 38 | M12 | 80 | 70 | 5 | 10 | 41 | 38 | M12 | 80 | 70 | 5 | 10 | 41 |
| 160 M | 1LA9 163 1LA9 164 | 2, 4, 6 2 | 160.5 | 15 | 19 | 588 | 721 | 165 | 640.5 | 42 | M16 | 110 | 90 | 10 | 12 | 45 | 42 | M16 | 110 | 90 | 10 | 12 | 45 |
| 160 L | 1LA9 166 | 2, 4, 6 | 160.5 | 15 | 19 | 628 | 761 | 165 | 680.5 | 42 | M16 | 110 | 90 | 10 | 12 | 45 | 42 | M16 | 110 | 90 | 10 | 12 | 45 |
| 180 M | 1LA9 183 | 2, 4 | 159 | 15 | 19 | 712 | 841 | 132 | 793.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| 180 L | 1LA9 186 | 4, 6 | 159 | 15 | 19 | 712 | 841 | 132 | 793.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| 200 L | 1LA9 206 1LA9 207 | 2, 6 2, 4, 6 | 178 | 19 | 25 | 768.5 | 897 | 192 | 850 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |

1) The motors of frame size 56 M are not ventilated. Frame size 56 M is not available in IM B35.
 2) For 1LA9 frame size 56 M with type of construction code 1 (B5, IM V1 without protective cover, IM V3) the dimensions L and LC are 26 mm longer.

3) For 1LA9 060 with type of construction code 1 (B5, IM V1 without protective cover, IM V3) the dimensions L, LC and LM are 26 mm longer.
 4) For 1LA9 096-6KA.
 5) For 1LA9 096-2 and 1LA9 096-4.
 6) For 1LA9 107-4KA.



IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

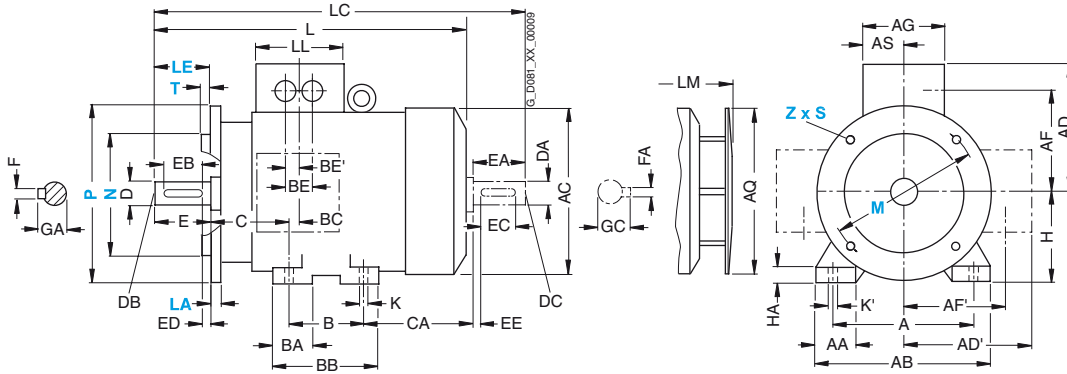
Dimensions

Dimensional drawings

Cast-iron series 1LA6, frame sizes 100 L to 160 L

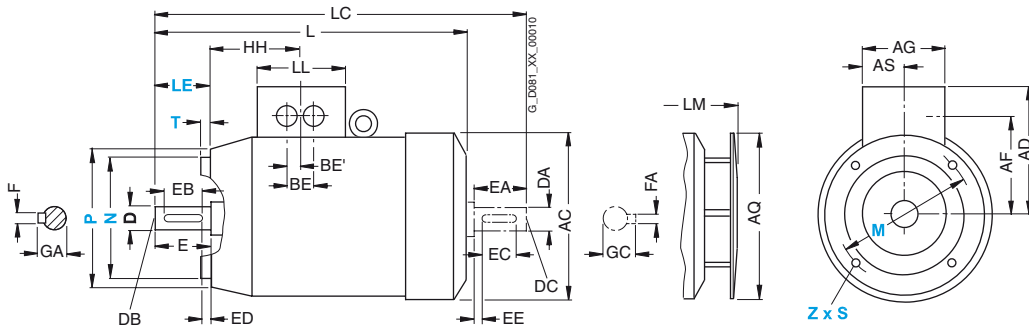
Type of construction IM B35

For flange dimensions, see Page 2/140 (Z = the number of retaining holes)



Types of construction IM B14

For flange dimensions, see Page 2/140 (Z = the number of retaining holes)



| For motor | | Dimension designation acc. to IEC | | | | | | | | | | DE shaft extension | | | | NDE shaft extension | | | | | | | |
|------------|----------------------|-----------------------------------|-------|------|----|-------|-------|-----|-------|----|-----|--------------------|----|----|----|---------------------|----|-----|-----|----|----|----|----|
| Frame size | Type | Number of poles | HH | K | K' | L | LC | LL | LM | D | DB | E | EB | ED | F | GA | DA | DC | EA | EC | EE | FA | GC |
| 100 L | 1LA6 106 1LA6 107 | 2, 4, 6, 8 4, 8 | 104.5 | 12 | 16 | 372 | 438 | 121 | 423.5 | 28 | M10 | 60 | 50 | 5 | 8 | 31 | 24 | M8 | 50 | 40 | 5 | 8 | 27 |
| 112 M | 1LA6 113 | 2, 4, 6, 8 | 104.5 | 12 | 16 | 393 | 461 | 121 | 444.5 | 28 | M10 | 60 | 50 | 5 | 8 | 31 | 24 | M8 | 50 | 40 | 5 | 8 | 27 |
| 132 S | 1LA6 130 1LA6 131 | 2, 4, 6, 8 2 | 130.5 | 12 | 16 | 453.5 | 551.5 | 141 | 506 | 38 | M12 | 80 | 70 | 5 | 10 | 41 | 38 | M12 | 80 | 70 | 5 | 10 | 41 |
| 132 M | 1LA6 133 1LA6 134 | 4, 6, 8 6 | 130.5 | 12 | 16 | 453.5 | 551.5 | 141 | 506 | 38 | M12 | 80 | 70 | 5 | 10 | 41 | 38 | M12 | 80 | 70 | 5 | 10 | 41 |
| 160 M | 1LA6 163 1LA6 164 | 2, 4, 6, 8 2, 8 | 160 | 14.5 | 18 | 588 | 721 | 166 | 640.5 | 42 | M16 | 110 | 90 | 10 | 12 | 45 | 42 | M16 | 110 | 90 | 10 | 12 | 45 |
| 160 L | 1LA6 166 | 2, 4, 6, 8 | 160 | 14.5 | 18 | 588 | 721 | 166 | 640.5 | 42 | M16 | 110 | 90 | 10 | 12 | 45 | 42 | M16 | 110 | 90 | 10 | 12 | 45 |

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

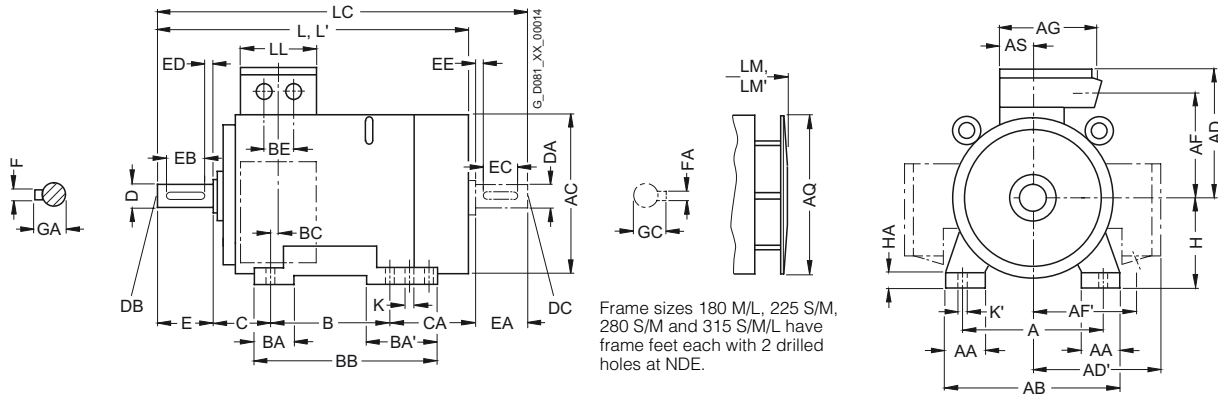
Dimensions

2

Dimensional drawings

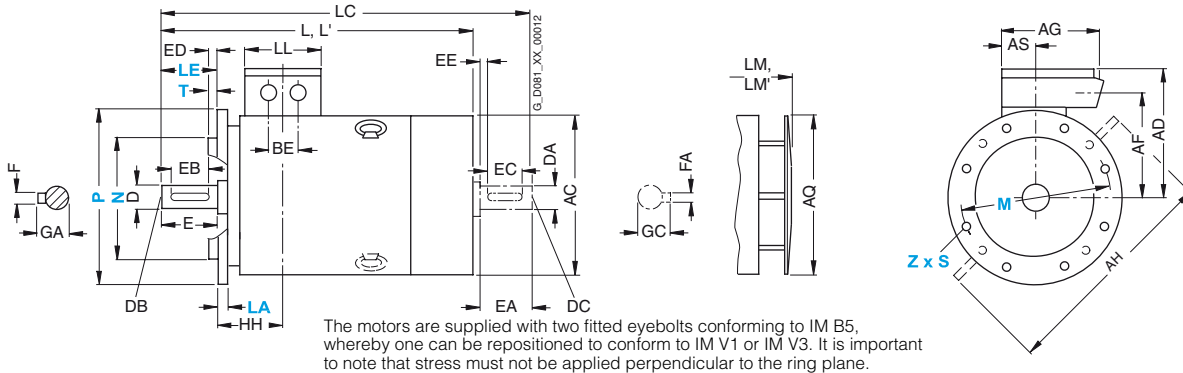
Cast-iron series 1LG4, frame sizes 180 M to 315 L

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 2/140 (Z = the number of retaining holes)



| For motor | | Dimension designation acc. to IEC | | | | | | | | | | | | | | | | | | | | | | |
|---------------------|--------------|-----------------------------------|-----|-----|-----|------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|----|
| Frame size | Type | Number of poles | A | AA | AB | AC ¹⁾ | AD | AD' | AF | AF' | AG | AH | AQ | AS | B* | BA | BA' | BB | BC | BE | C | CA* | H | HA |
| 180 M | 1LG4 183 | 2, 4 | 279 | 65 | 339 | 363 | 262 | 262 | 220 | 220 | 152 | 452 | 340 | 71 | 241 | 70 | 111 | 328 | 36 | 54 | 121 | 202 | 180 | 20 |
| 180 L | 1LG4 186 | 4, 6, 8 | 279 | 65 | 339 | 363 | 262 | 262 | 220 | 220 | 152 | 452 | 340 | 71 | 279 | 70 | 111 | 328 | 36 | 54 | 121 | 164 | 180 | 20 |
| | 1LG4 188 | 2, 4, 6, 8 | 279 | 65 | 339 | 363 | 262 | 262 | 220 | 220 | 152 | 452 | 340 | 71 | 279 | 70 | 111 | 328 | 36 | 54 | 121 | 215 | 180 | 20 |
| 200 L | 1LG4 206 | 2, 6 | 318 | 70 | 378 | 402 | 300 | 300 | 247 | 247 | 260 | 512 | 340 | 96 | 305 | 80 | 80 | 355 | 63 | 85 | 133 | 177 | 200 | 25 |
| | 1LG4 207 | 2, 4, 6, 8 | 318 | 70 | 378 | 402 | 300 | 300 | 247 | 247 | 260 | 512 | 340 | 96 | 305 | 80 | 80 | 355 | 63 | 85 | 133 | 177 | 200 | 25 |
| | 1LG4 208 | 2, 6 | 318 | 70 | 378 | 402 | 300 | 300 | 247 | 247 | 260 | 512 | 340 | 96 | 305 | 80 | 80 | 355 | 63 | 85 | 133 | 234 | 200 | 25 |
| | | 4, 8 | | | | | | | | | | | | | | | | | | | 177 | | | |
| 225 S | 1LG4 220 | 4, 8 | 356 | 80 | 436 | 442 | 325 | 325 | 272 | 272 | 260 | 556 | 425 | 96 | 286 | 85 | 110 | 361 | 47 | 85 | 149 | 218 | 225 | 34 |
| 225 M | 1LG4 223 | 2 | 356 | 80 | 436 | 442 | 325 | 325 | 272 | 272 | 260 | 556 | 425 | 96 | 311 | 85 | 110 | 361 | 47 | 85 | 149 | 193 | 225 | 34 |
| | 1LG4 228 | 2 | 356 | 80 | 436 | 442 | 325 | 325 | 272 | 272 | 260 | 556 | 425 | 96 | 311 | 85 | 110 | 361 | 47 | 85 | 149 | 253 | 225 | 34 |
| | | 4, 6, 8 | | | | | | | | | | | | | | | | | | | | | | |
| 250 M | 1LG4 253 | 2 | 406 | 100 | 490 | 495 | 392 | 392 | 308 | 308 | 300 | 620 | 470 | 118 | 349 | 100 | 100 | 409 | 69 | 110 | 168 | 235 | 250 | 40 |
| | 1LG4 258 | 2 | 406 | 100 | 490 | 495 | 392 | 392 | 308 | 308 | 300 | 620 | 470 | 118 | 349 | 100 | 100 | 409 | 69 | 110 | 168 | 305 | 250 | 40 |
| | | 4 | | | | | | | | | | | | | | | | | | | | 235 | | |
| | | 6, 8 | | | | | | | | | | | | | | | | | | | | | | |
| 280 S | 1LG4 280 | 2 | 457 | 100 | 540 | 555 | 432 | 432 | 348 | 348 | 300 | 672 | 525 | 118 | 368 | 100 | 151 | 479 | 62 | 110 | 190 | 267 | 280 | 40 |
| | | 4, 6, 8 | | | | | | | | | | | | | | | | | | | | | | |
| 280 M | 1LG4 283 | 2 | 457 | 100 | 540 | 555 | 432 | 432 | 348 | 348 | 300 | 672 | 525 | 118 | 419 | 100 | 151 | 479 | 62 | 110 | 190 | 216 | 280 | 40 |
| | 1LG4 288 | 2 | 457 | 100 | 540 | 555 | 432 | 432 | 348 | 348 | 300 | 672 | 525 | 118 | 419 | 100 | 151 | 479 | 62 | 110 | 190 | 326 | 280 | 40 |
| | | 4 | | | | | | | | | | | | | | | | | | | | | | |
| | | 6, 8 | | | | | | | | | | | | | | | | | | | | 216 | | |
| 315 S | 1LG4 310 | 2 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 406 | 125 | 176 | 527 | 69 | 110 | 216 | 315 | 315 | 50 |
| | 1LG4 310 | 4, 6, 8 | | | | | | | | | | | | | | | | | | | | | | |
| 315 M ²⁾ | 1LG4 313 | 2 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 457 | 125 | 176 | 527 | 69 | 110 | 216 | 264 | 315 | 50 |
| | 1LG4 313 | 4, 6, 8 | | | | | | | | | | | | | | | | | | | | | | |
| 315 L ²⁾ | 1LG4 316/317 | 2 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 125 | 176 | 578 | 69 | 110 | 216 | 373 | 315 | 50 |
| | 1LG4 316/317 | 4, 6, 8 | | | | | | | | | | | | | | | | | | | | | | |
| | 1LG4 318 | 8 | | | | | | | | | | | | | | | | | | | | | | |
| | 1LG4 318 | 6 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 155 | 206 | 648 | 69 | 110 | 216 | 513 | 315 | 50 |

* This dimension is assigned in DIN EN 50347 to the frame size listed.

1) Measured across the bolt heads.

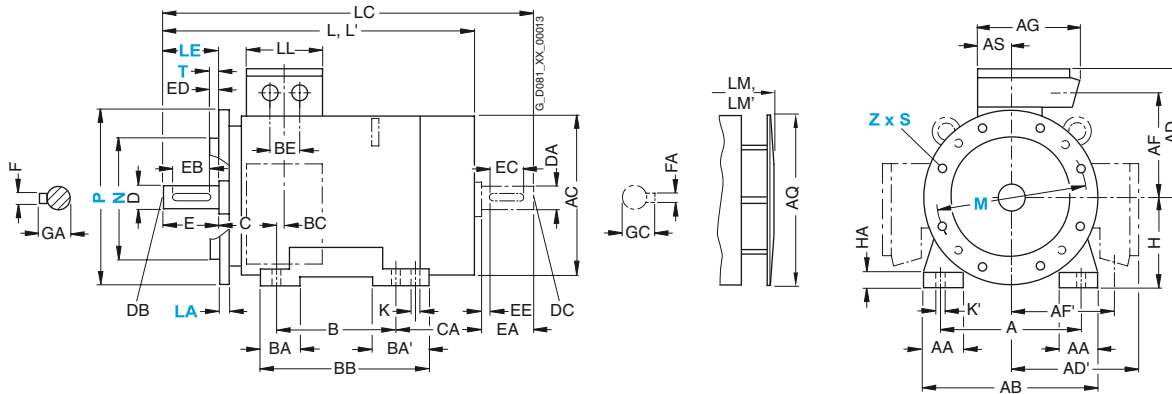
2) With order codes for connection box positions (K09, K10, K11) only fitted feet with 3 drilled holes with dimension "B" (406, 457 and 508 mm). BB will then be 666 mm.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Dimensions
Dimensional drawings
Cast-iron series 1LG4, frame sizes 180 M to 315 L
Type of construction IM B35

For flange dimensions, see Page 2/140 (Z = the number of retaining holes)



| For motor | | Dimension designation acc. to IEC | | | | | | | | | | DE shaft extension | | | | | NDE shaft extension | | | | | | | | |
|---------------------|--------------|-----------------------------------|-----|----|----|------|------------------|-------------------|-----|------|-------------------|--------------------|-----|-----|-----|----|---------------------|------|----|-----|-----|-----|----|----|------|
| Frame size | Type | Number of poles | HH | K | K' | L | L ⁽¹⁾ | LC ⁽²⁾ | LL | LM | LM ⁽¹⁾ | D | DB | E | EB | ED | F | GA | DA | DC | EA | EC | EE | FA | GC |
| 180 M | 1LG4 183 | 2, 4 | 157 | 15 | 19 | 669 | 669 | 784 | 132 | 759 | 759 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| 180 L | 1LG4 186 | 4, 6, 8 | 157 | 15 | 19 | 669 | – | 784 | 132 | 759 | – | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| | 1LG4 188 | 2, 4, 6, 8 | 157 | 15 | 19 | 720 | 720 | 835 | 132 | 810 | 810 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| 200 L | 1LG4 206 | 2, 6 | 196 | 19 | 25 | 720 | 754 | 835 | 192 | 810 | 844 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| | 1LG4 207 | 2, 4, 6, 8 | 196 | 19 | 25 | 720 | 754 | 835 | 192 | 810 | 844 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| | 1LG4 208 | 2, 6 | 196 | 19 | 25 | 777 | 811 | 892 | 192 | 867 | 901 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| | | 4, 8 | – | – | – | 720 | – | 835 | – | 810 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | |
| 225 S | 1LG4 220 | 4, 8 | 196 | 19 | 25 | 789 | – | 903 | 192 | 889 | – | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| 225 M | 1LG4 223 | 2 | 196 | 19 | 25 | 759 | 793 | 873 | 192 | 859 | 893 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| | | 4, 6, 8 | – | – | – | 789 | – | 903 | – | 889 | – | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| | 1LG4 228 | 2 | 196 | 19 | 25 | 819 | 853 | 933 | 192 | 919 | 953 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| | | 4, 6, 8 | – | – | – | 849 | – | 963 | – | 949 | – | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| 250 M | 1LG4 253 | 2 | 237 | 24 | 30 | 887 | 924 | 1002 | 236 | 987 | 1024 | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| | | 4, 6, 8 | – | – | – | – | – | 1032 | – | – | – | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | 1LG4 258 | 2 | 237 | 24 | 30 | 887 | 924 | 1002 | 236 | 987 | 1024 | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| | | 4 | – | – | – | 957 | – | 1102 | – | 1057 | – | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 6, 8 | – | – | – | 887 | – | 1032 | – | 987 | – | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| 280 S | 1LG4 280 | 2 | 252 | 24 | 30 | 960 | 998 | 1105 | 236 | 1070 | 1108 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 4, 6, 8 | – | – | – | – | – | – | – | – | – | 75 | M20 | 140 | 125 | 10 | 20 | 79.5 | 65 | M20 | 140 | 125 | 10 | 18 | 69 |
| 280 M | 1LG4 283 | 2 | 252 | 24 | 30 | 960 | 998 | 1105 | 236 | 1070 | 1108 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 4, 6, 8 | – | – | – | – | – | – | – | – | – | 75 | M20 | 140 | 125 | 10 | 20 | 79.5 | 65 | M20 | 140 | 125 | 10 | 18 | 69 |
| | 1LG4 288 | 2 | 252 | 24 | 30 | 1070 | 1108 | 1215 | 236 | 1180 | 1218 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 4 | – | – | – | – | – | – | – | – | – | 75 | M20 | 140 | 125 | 10 | 20 | 79.5 | 65 | M20 | 140 | 125 | 10 | 18 | 69 |
| | | 6, 8 | – | – | – | 960 | – | 1105 | – | 1070 | – | 75 | M20 | 140 | 125 | 10 | 20 | 79.5 | 65 | M20 | 140 | 125 | 10 | 18 | 69 |
| 315 S | 1LG4 310 | 2 | 285 | 28 | 35 | 1072 | 1142 | 1217 | 307 | 1182 | 1252 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | 1LG4 310 | 4, 6, 8 | – | – | – | 1102 | – | 1247 | – | 1212 | – | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |
| 315 M ³⁾ | 1LG4 313 | 2 | 285 | 28 | 35 | 1072 | 1142 | 1217 | 307 | 1182 | 1252 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | 1LG4 313 | 4, 6, 8 | – | – | – | 1102 | – | 1247 | – | 1212 | – | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |
| 315 L ³⁾ | 1LG4 316/317 | 2 | 285 | 28 | 35 | 1232 | 1302 | 1377 | 307 | 1342 | 1412 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | 1LG4 316/317 | 4, 6, 8 | – | – | – | 1262 | – | 1407 | – | 1372 | – | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |
| | 1LG4 318 | 8 | – | – | – | – | – | – | – | – | – | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |
| | 1LG4 318 | 6 | 285 | 28 | 35 | 1402 | – | 1547 | 307 | 1512 | – | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |

¹⁾ For version with low-noise fan for 2-pole motors.

²⁾ In the low-noise version, a second shaft extension and/or mounted encoder is not possible.

³⁾ With order codes for connection box positions (K09, K10, K11) only fitted feet with 3 drilled holes with dimension "B" (406, 457 and 508 mm). BB will then be 666 mm.

IEC Squirrel-Cage Motors

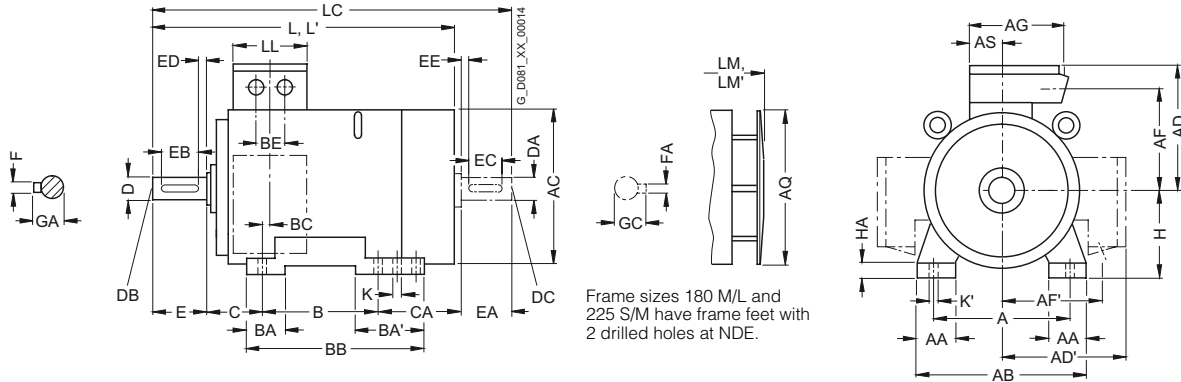
Standard motors up to frame size 315 L

Dimensions

Dimensional drawings

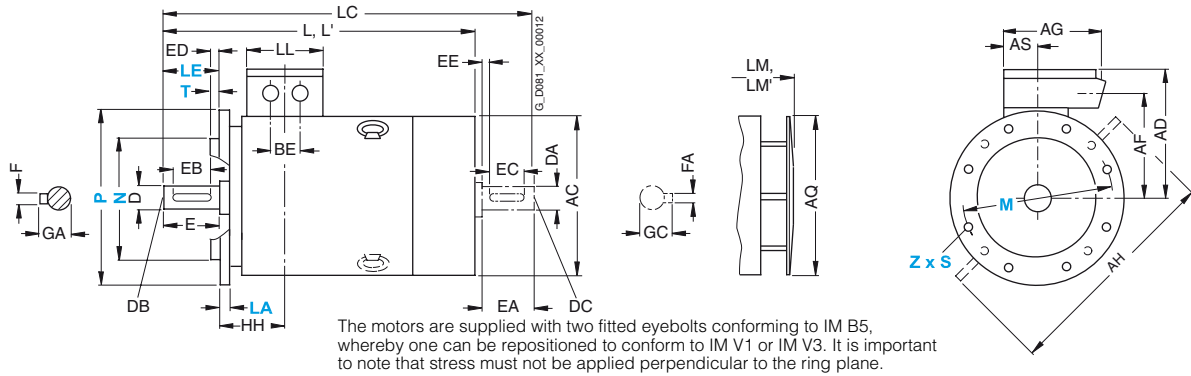
Cast-iron series 1LG6, frame sizes 180 M to 250 M

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 2/140 (Z = the number of retaining holes)



| For motor | | Number of poles | Dimension designation acc. to IEC | | | | | | | | | | | | | | | | | | | | | |
|------------|----------|-----------------|-----------------------------------|-----|-----|------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|----|
| Frame size | Type | | A | AA | AB | AC ¹⁾ | AD | AD' | AF | AF' | AG | AH | AQ | AS | B* | BA | BA' | BB | BC | BE | C | CA* | H | HA |
| 180 M | 1LG6 183 | 2 | 279 | 65 | 339 | 363 | 262 | 262 | 220 | 220 | 152 | 452 | 340 | 71 | 241 | 70 | 111 | 328 | 36 | 54 | 121 | 253 | 180 | 20 |
| | | 4 | | | | | | | | | | | | | | | | | | | | 202 | | |
| 180 L | 1LG6 186 | 4, 6, 8 | 279 | 65 | 339 | 363 | 262 | 262 | 220 | 220 | 152 | 452 | 340 | 71 | 279 | 70 | 111 | 328 | 36 | 54 | 121 | 215 | 180 | 20 |
| | | 2, 6 | 318 | 70 | 378 | 402 | 300 | 300 | 247 | 247 | 260 | 512 | 340 | 96 | 305 | 80 | 80 | 355 | 63 | 85 | 133 | 177 | 200 | 25 |
| 200 L | 1LG6 206 | 2, 6 | 318 | 70 | 378 | 402 | 300 | 300 | 247 | 247 | 260 | 512 | 340 | 96 | 305 | 80 | 80 | 355 | 63 | 85 | 133 | 234 | 200 | 25 |
| | | 4, 8 | | | | | | | | | | | | | | | | | | | | 177 | | |
| 225 S | 1LG6 220 | 4, 8 | 356 | 80 | 436 | 442 | 325 | 325 | 272 | 272 | 260 | 556 | 425 | 96 | 286 | 85 | 110 | 361 | 47 | 85 | 149 | 218 | 225 | 34 |
| | | 2 | 356 | 80 | 436 | 442 | 325 | 325 | 272 | 272 | 260 | 556 | 425 | 96 | 311 | 85 | 110 | 361 | 47 | 85 | 149 | 253 | 225 | 34 |
| 225 M | 1LG6 223 | 4, 6, 8 | | | | | | | | | | | | | | | | | | | | | | |
| | | 2 | 356 | 80 | 436 | 442 | 325 | 325 | 272 | 272 | 260 | 556 | 425 | 96 | 311 | 85 | 110 | 361 | 47 | 85 | 149 | 303 | 225 | 34 |
| 250 M | 1LG6 253 | 2 | 406 | 100 | 490 | 495 | 392 | 392 | 308 | 308 | 300 | 620 | 470 | 118 | 349 | 100 | 100 | 409 | 69 | 110 | 168 | 235 | 250 | 40 |
| | | 4 | | | | | | | | | | | | | | | | | | | | 305 | | |
| 250 M | 1LG6 258 | 6, 8 | | | | | | | | | | | | | | | | | | | | 235 | | |
| | | 2 | 406 | 100 | 490 | 495 | 392 | 392 | 308 | 308 | 300 | 620 | 470 | 118 | 349 | 100 | 100 | 409 | 69 | 110 | 168 | 305 | 250 | 40 |
| | | 4, 6 | | | | | | | | | | | | | | | | | | | | | | |

* This dimension is assigned in DIN EN 50347 to the frame size listed.

¹⁾ Measured across the bolt heads.

IEC Squirrel-Cage Motors

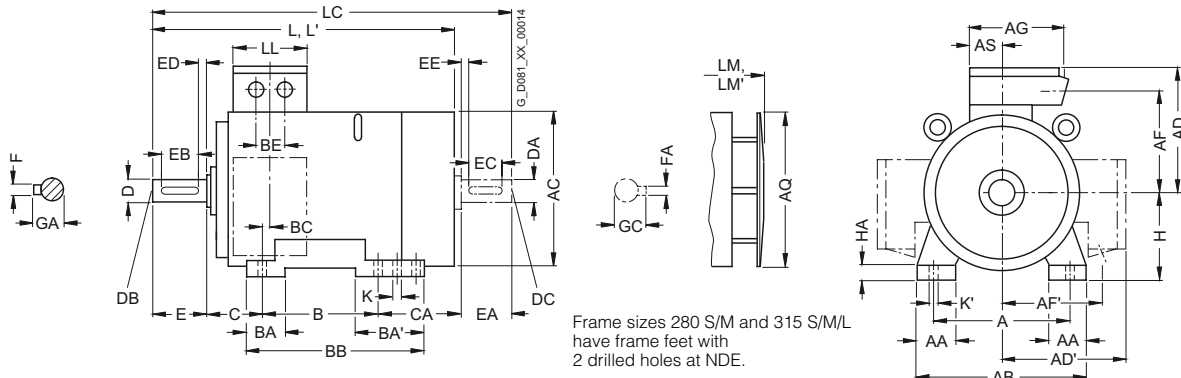
Standard motors up to frame size 315 L

Dimensions

Dimensional drawings

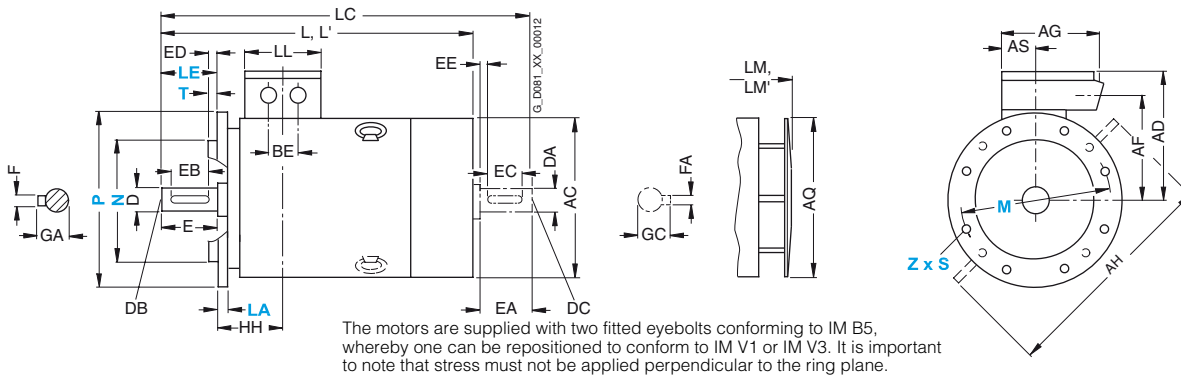
Cast-iron series 1LG6, frame sizes 280 S to 315 L

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 2/140 (Z = the number of retaining holes)



| For motor | | | Dimension designation acc. to IEC | | | | | | | | | | | | | | | | | | | | | |
|---------------------|----------|-----------------|-----------------------------------|-----|-----|------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|----|
| Frame size | Type | Number of poles | A | AA | AB | AC ¹⁾ | AD | AD' | AF | AF' | AG | AH | AQ | AS | B* | BA | BA' | BB | BC | BE | C | CA* | H | HA |
| 280 S | 1LG6 280 | 2 | 457 | 100 | 540 | 555 | 432 | 432 | 348 | 348 | 300 | 672 | 525 | 118 | 368 | 100 | 151 | 479 | 62 | 110 | 190 | 267 | 280 | 40 |
| | | 4, 6, 8 | 457 | 100 | 540 | 555 | 432 | 432 | 348 | 348 | 300 | 672 | 525 | 118 | 419 | 100 | 151 | 479 | 62 | 110 | 190 | 326 | 280 | 40 |
| | | 2 | 457 | 100 | 540 | 555 | 432 | 432 | 348 | 348 | 300 | 672 | 525 | 118 | 419 | 100 | 151 | 479 | 62 | 110 | 190 | 326 | 280 | 40 |
| 280 M | 1LG6 283 | 2 | 457 | 100 | 540 | 555 | 432 | 432 | 348 | 348 | 300 | 672 | 525 | 118 | 419 | 100 | 151 | 479 | 62 | 110 | 190 | 326 | 280 | 40 |
| | | 4, 6, 8 | 457 | 100 | 540 | 555 | 432 | 432 | 348 | 348 | 300 | 672 | 525 | 118 | 419 | 100 | 151 | 479 | 62 | 110 | 190 | 326 | 280 | 40 |
| | 1LG6 288 | 2 | 457 | 100 | 540 | 555 | 432 | 432 | 348 | 348 | 300 | 672 | 525 | 118 | 419 | 100 | 151 | 479 | 62 | 110 | 190 | 326 | 280 | 40 |
| | | 4, 6 | 457 | 100 | 540 | 555 | 432 | 432 | 348 | 348 | 300 | 672 | 525 | 118 | 419 | 100 | 151 | 479 | 62 | 110 | 190 | 326 | 280 | 40 |
| 315 S | 1LG6 310 | 2 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 406 | 125 | 176 | 527 | 69 | 110 | 216 | 315 | 315 | 50 |
| | 1LG6 310 | 4, 6, 8 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 457 | 125 | 176 | 527 | 69 | 110 | 216 | 264 | 315 | 50 |
| 315 M ²⁾ | 1LG6 313 | 8 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 457 | 125 | 176 | 578 | 69 | 110 | 216 | 424 | 315 | 50 |
| | 1LG6 313 | 2 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 457 | 125 | 176 | 578 | 69 | 110 | 216 | 424 | 315 | 50 |
| 315 L ²⁾ | 1LG6 316 | 4, 6 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 125 | 176 | 578 | 69 | 110 | 216 | 373 | 315 | 50 |
| | 1LG6 316 | 2 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 125 | 176 | 578 | 69 | 110 | 216 | 373 | 315 | 50 |
| | 1LG6 316 | 4, 6 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 125 | 176 | 578 | 69 | 110 | 216 | 513 | 315 | 50 |
| | 1LG6 316 | 8 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 125 | 176 | 578 | 69 | 110 | 216 | 513 | 315 | 50 |
| | 1LG6 317 | 2 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 125 | 176 | 578 | 69 | 110 | 216 | 513 | 315 | 50 |
| | 1LG6 317 | 4, 6 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 125 | 176 | 578 | 69 | 110 | 216 | 513 | 315 | 50 |
| | 1LG6 317 | 8 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 125 | 176 | 578 | 69 | 110 | 216 | 513 | 315 | 50 |
| | 1LG6 318 | 2 | 508 | 120 | 610 | 610 | 651 | 651 | 524 | 524 | 470 | 780 | 590 | 165 | 508 | 125 | 176 | 578 | 69 | 135 | 216 | 513 | 315 | 50 |
| | 1LG6 318 | 4 | 508 | 120 | 610 | 610 | 651 | 651 | 524 | 524 | 470 | 780 | 590 | 165 | 508 | 125 | 176 | 578 | 69 | 135 | 216 | 513 | 315 | 50 |
| | 1LG6 318 | 6, 8 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 125 | 176 | 578 | 69 | 110 | 216 | 513 | 315 | 50 |

* This dimension is assigned in DIN EN 50347 to the frame size listed.

1) Measured across the bolt heads.

2) With order codes for connection box positions (K09, K10, K11) only fitted feet with 3 drilled holes with dimension "B" (406, 457 and 508 mm). BB will then be 666 mm.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

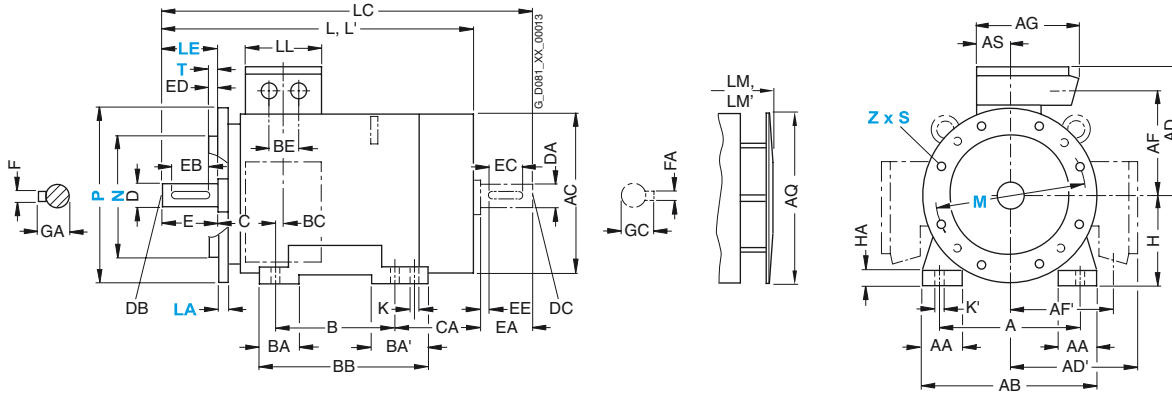
Dimensions

Dimensional drawings

Cast-iron series 1LG6, frame sizes 280 S to 315 L

Type of construction IM B35

For flange dimensions, see Page 2/140 (Z = the number of retaining holes)



| For motor Frame size | Type | Number of poles | Dimension designation acc. to IEC | | | | | | | | DE shaft extension | | | | | NDE shaft extension | | | | | | | |
|-------------------------|----------|-----------------|-----------------------------------|----|----|------|------|-----|------|------------------|--------------------|-----|-----|----|----|---------------------|-----|-----|-----|-----|----|------|------|
| | | | HH | K | K' | L | LC | LL | LM | D | DB | E | EB | ED | F | GA | DA | DC | EA | EC | EE | FA | GC |
| 280 S | 1LG6 280 | 2 | 252 | 24 | 30 | 960 | 1105 | 236 | 1070 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 4, 6, 8 | | | | | | | | 75 | M20 | 140 | 125 | 10 | 20 | 79.5 | 65 | M20 | 140 | 125 | 10 | 18 | 69 |
| 280 M | 1LG6 283 | 2 | 252 | 24 | 30 | 1070 | 1215 | 236 | 1180 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 4 | | | | | | | | 75 | M20 | 140 | 125 | 10 | 20 | 79.5 | 65 | M20 | 140 | 125 | 10 | 18 | 69 |
| | 1LG6 288 | 2 | 252 | 24 | 30 | 960 | 1105 | 236 | 1070 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 4, 6 | | | | 1070 | 1215 | 236 | 1180 | 75 | M20 | 140 | 125 | 10 | 20 | 79.5 | 65 | M20 | 140 | 125 | 10 | 18 | 69 |
| 315 S | 1LG6 310 | 2 | 285 | 28 | 35 | 1072 | 1217 | 307 | 1182 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | 1LG6 310 | 4, 6, 8 | | | | 1102 | 1247 | | 1212 | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |
| 315 M | 1LG6 313 | 8 | 285 | 28 | 35 | 1102 | 1247 | 307 | 1212 | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |
| | 1LG6 313 | 2 | 285 | 28 | 35 | 1232 | 1377 | 307 | 1342 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | 1LG6 313 | 4, 6 | | | | 1262 | 1407 | | 1372 | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |
| 315 L | 1LG6 316 | 2 | 285 | 28 | 35 | 1232 | 1377 | 307 | 1342 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | 1LG6 316 | 4, 6 | | | | 1262 | 1407 | | 1372 | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |
| | 1LG6 316 | 8 | | | | | | | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 | |
| | 1LG6 317 | 2 | 285 | 28 | 35 | 1372 | 1517 | 307 | 1482 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | 1LG6 317 | 4, 6 | | | | 1402 | 1547 | | 1512 | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |
| | 1LG6 317 | 8 | | | | 1262 | 1407 | | 1372 | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |
| | 1LG6 318 | 2 | 285 | 28 | 35 | 1372 | 1517 | 330 | 1482 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | 1LG6 318 | 4 | | | | 1402 | 1547 | | 1512 | 80 ¹⁾ | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |
| | 1LG6 318 | 6, 8 | | | | | | 307 | | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |

¹⁾ Diameters up to 90 mm are possible.

IEC Squirrel-Cage Motors

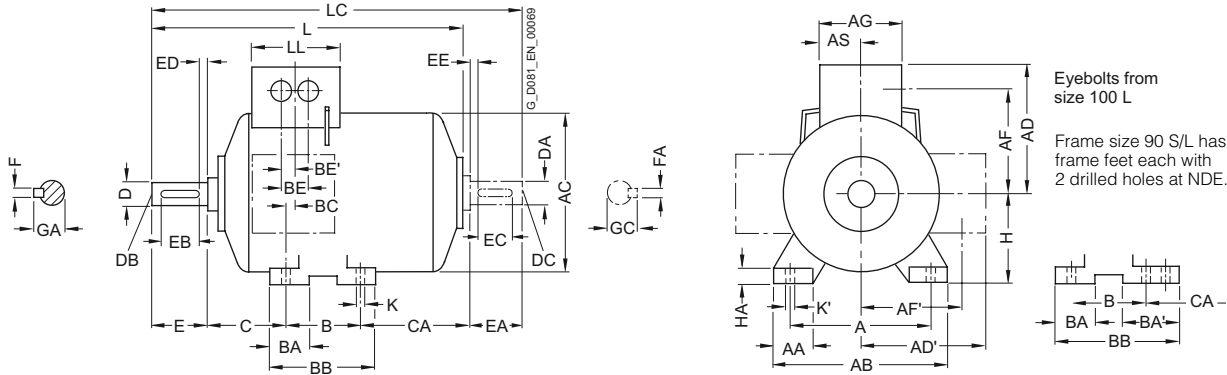
Standard motors up to frame size 315 L

Dimensions

Dimensional drawings

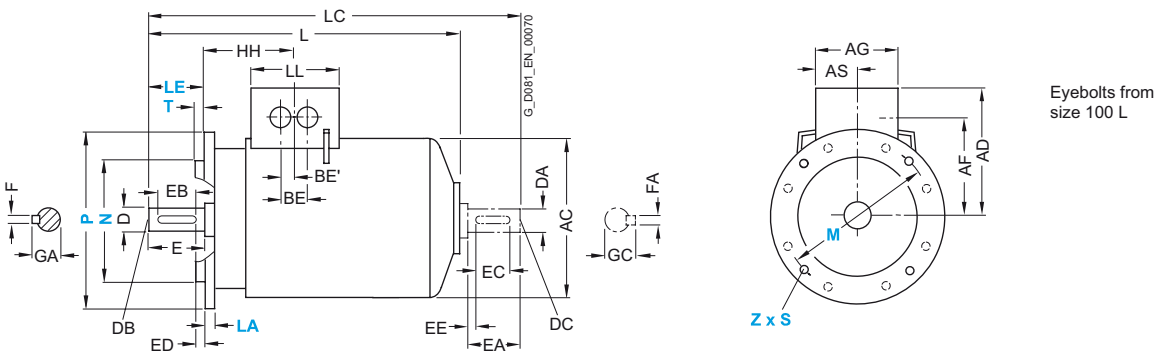
Aluminum series 1LP7 and 1LP5, frame sizes 63 M to 200 L

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 2/140 (Z = the number of retaining holes)



| For motor | | | Dimension designation acc. to IEC | | | | | | | | | | | | | | | | | | | | |
|--------------|----------------------|--------------------|-----------------------------------|------|-----|-----|-----|-----|-----|-----|-----|------|------------|------|-----|-----|------|----|------|-----|----------|-----|----|
| Frame size | Type | Number of poles | A | AA | AB | AC | AD | AD' | AF | AF' | AG | AS | B* | BA | BA' | BB | BC | BE | BE' | C | CA* | H | HA |
| 63 M | 1LP7 060 1LP7 063 | 2, 4, 6 | 100 | 27 | 120 | 124 | 101 | 101 | 78 | 78 | 75 | 37.5 | 80 | 28 | - | 96 | 30 | 32 | 18 | 40 | 40 | 63 | 7 |
| 71 M | 1LP7 070 1LP7 073 | 2, 4, 6, 8 | 112 | 27 | 132 | 145 | 111 | 111 | 88 | 88 | 75 | 37.5 | 90 | 27 | - | 106 | 18 | 32 | 18 | 45 | 42 | 71 | 7 |
| 80 M | 1LP7 080 1LP7 083 | 2, 4, 6, 8 | 125 | 30.5 | 150 | 163 | 120 | 120 | 97 | 97 | 75 | 37.5 | 100 | 32 | - | 118 | 14 | 32 | 18 | 50 | 47 | 80 | 8 |
| 90 S 90 L | 1LP7 090 1LP7 096 | 2, 4, 6, 8 | 140 | 30.5 | 165 | 180 | 128 | 128 | 105 | 105 | 75 | 37.5 | 100 125 | 33 | 54 | 143 | 23 | 32 | 18 | 56 | 80 55 | 90 | 10 |
| 100 L | 1LP7 106 1LP7 107 | 2, 4, 6, 8 4, 8 | 160 | 42 | 196 | 203 | 135 | 163 | 78 | 123 | 120 | 60 | 140 | 47 | - | 176 | 39 | 42 | 21 | 63 | 68 | 100 | 12 |
| 112 M | 1LP7 113 | 2, 4, 6, 8 | 190 | 46 | 226 | 227 | 148 | 176 | 91 | 136 | 120 | 60 | 140 | 47 | - | 176 | 32 | 42 | 21 | 70 | 79 | 112 | 12 |
| 132 S | 1LP7 130 1LP7 131 | 2, 4, 6, 8 2 | 216 | 53 | 256 | 267 | 167 | 194 | 107 | 154 | 140 | 70 | 140 | 49 | - | 180 | 39 | 42 | 21 | 89 | 96 | 132 | 15 |
| 132 M | 1LP7 133 1LP7 134 | 4, 6, 8 6 | 216 | 53 | 256 | 267 | 167 | 194 | 107 | 154 | 140 | 70 | 178 | 49 | - | 218 | 39 | 42 | 21 | 89 | 58 | 132 | 15 |
| 160 M | 1LP7 163 1LP7 164 | 2, 4, 6, 8 2, 8 | 254 | 60 | 300 | 320 | 197 | 226 | 127 | 183 | 165 | 82.5 | 210 | 57 | - | 256 | 52.5 | 54 | 27 | 108 | 107 | 160 | 18 |
| 160 L | 1LP7 166 | 2, 4, 6, 8 | 254 | 60 | 300 | 320 | 197 | 226 | 127 | 183 | 165 | 82.5 | 254 | 57 | - | 300 | 52.5 | 54 | 27 | 108 | 63 | 160 | 18 |
| 180 M | 1LP5 183 | 2, 4 | 279 | 69.5 | 339 | 363 | 258 | 258 | 216 | 216 | 152 | 71 | 241 | 50 | - | 287 | 38 | 54 | 27 | 121 | 145 | 180 | 18 |
| 180 L | 1LP5 186 | 4, 6, 8 | 279 | 69.5 | 339 | 363 | 258 | 258 | 216 | 216 | 152 | 71 | 279 | 50 | - | 325 | 38 | 54 | 27 | 121 | 107 | 180 | 18 |
| 200 L | 1LP5 206 1LP5 207 | 2, 6 2, 4, 6, 8 | 318 | 83 | 388 | 402 | 305 | 305 | 252 | 252 | 260 | 96 | 305 | 58.5 | - | 355 | 45 | 85 | 42.5 | 133 | 133 | 200 | 24 |

* This dimension is assigned in DIN EN 50347 to the frame size listed.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

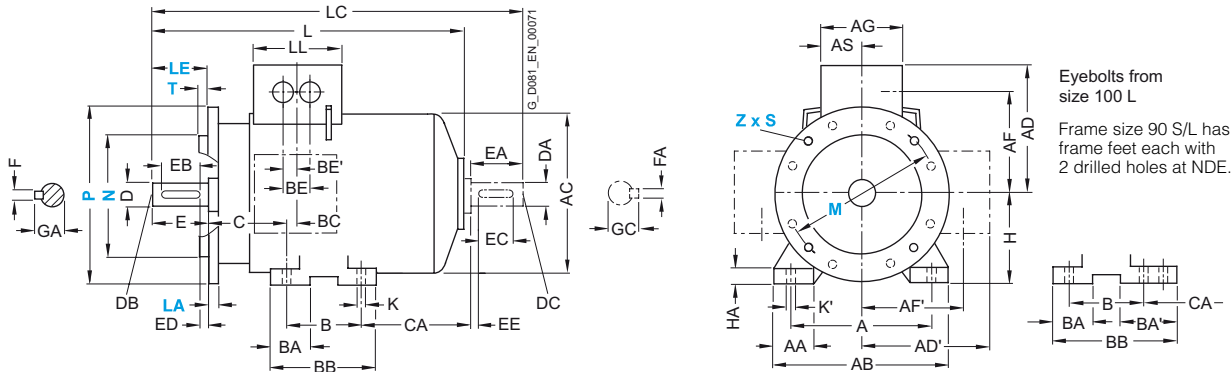
Dimensions

Dimensional drawings

Aluminum series 1LP7 and 1LP5, frame sizes 63 M to 200 L

Types of construction IM B35

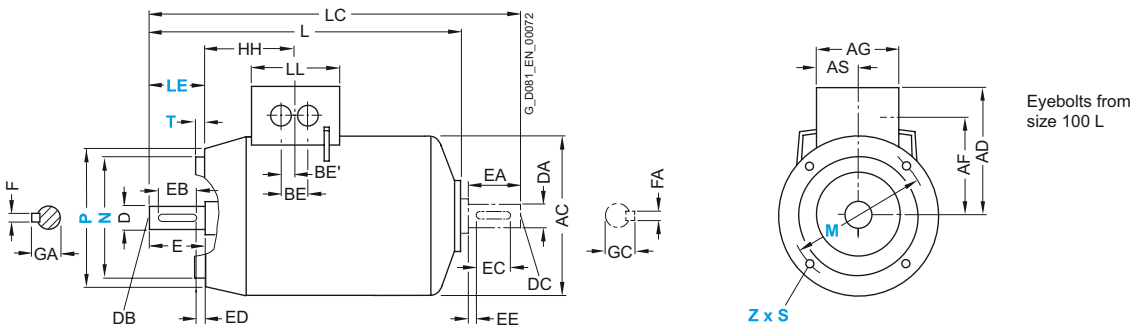
For flange dimensions, see Page 2/140 (Z = the number of retaining holes)



Type of construction IM B14

Type of construction IM B14 not possible for 1LP5 motors, frame sizes 180 M to 200 L

For flange dimensions, see Page 2/140 (Z = the number of retaining holes)



| For motor | | Number of poles | Dimension designation acc. to IEC | | | | | | DE shaft extension | | | | | NDE shaft extension | | | | | | | | |
|--------------|----------------------|--------------------|-----------------------------------|-----|------|-------------------|-------------------|-----|--------------------|-----|-----|-----|-----|---------------------|------|----|-----|-----|-----|-----|----|------|
| Frame size | Type | | HH | K | K' | L | LC | LL | D | DB | E | EB | ED | F | GA | DA | DC | EA | EC | EE | FA | GC |
| 63 M | 1LP7 060 1LP7 063 | 2, 4, 6 | 69.5 | 7 | 10 | 172 ¹⁾ | 206 ¹⁾ | 75 | 11 | M4 | 23 | 16 | 3.5 | 4 | 12.5 | 11 | M4 | 23 | 16 | 3.5 | 4 | 12.5 |
| 71 M | 1LP7 070 1LP7 073 | 2, 4, 6, 8 | 63.5 | 7 | 10 | 207 | 240 | 75 | 14 | M5 | 30 | 22 | 4 | 5 | 16 | 14 | M5 | 30 | 22 | 4 | 5 | 16 |
| 80 M | 1LP7 080 1LP7 083 | 2, 4, 6, 8 | 63.5 | 9.5 | 13.5 | 237 | 280 | 75 | 19 | M6 | 40 | 32 | 4 | 6 | 21.5 | 19 | M6 | 40 | 32 | 4 | 6 | 21.5 |
| 90 S 90 L | 1LP7 090 1LP7 096 | 2, 4, 6, 8 | 79 | 10 | 14 | 286 286 | 333 333 | 75 | 24 | M8 | 50 | 40 | 5 | 8 | 27 | 19 | M6 | 40 | 32 | 4 | 6 | 21.5 |
| 100 L | 1LP7 106 1LP7 107 | 2, 4, 6, 8 4, 8 | 102 | 12 | 16 | 331 | 385 ²⁾ | 120 | 28 | M10 | 60 | 50 | 5 | 8 | 31 | 24 | M8 | 50 | 40 | 5 | 8 | 27 |
| 112 M | 1LP7 113 | 2, 4, 6, 8 | 102 | 12 | 16 | 349 ³⁾ | 403 ⁴⁾ | 120 | 28 | M10 | 60 | 50 | 5 | 8 | 31 | 24 | M8 | 50 | 40 | 5 | 8 | 27 |
| 132 S | 1LP7 130 1LP7 131 | 2, 4, 6, 8 2 | 128 | 12 | 16 | 397 | 485 | 140 | 38 | M12 | 80 | 70 | 5 | 10 | 41 | 38 | M12 | 80 | 70 | 5 | 10 | 41 |
| 132 M | 1LP7 133 1LP7 134 | 4, 6, 8 6 | 128 | 12 | 16 | 397 | 485 | 140 | 38 | M12 | 80 | 70 | 5 | 10 | 41 | 38 | M12 | 80 | 70 | 5 | 10 | 41 |
| 160 M | 1LP7 163 1LP7 164 | 2, 4, 6, 8 2, 8 | 160.5 | 15 | 19 | 529 | 645 | 165 | 42 | M16 | 110 | 90 | 10 | 12 | 45 | 42 | M16 | 110 | 90 | 10 | 12 | 45 |
| 160 L | 1LP7 166 | 2, 4, 6, 8 | 160.5 | 15 | 19 | 529 | 645 | 165 | 42 | M16 | 110 | 90 | 10 | 12 | 45 | 42 | M16 | 110 | 90 | 10 | 12 | 45 |
| 180 M | 1LP5 183 | 2, 4 | 159 | 15 | 19 | 611 | 727 | 132 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| 180 L | 1LP5 186 | 4, 6, 8 | 159 | 15 | 19 | 611 | 727 | 132 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| 200 L | 1LP5 206 1LP5 207 | 2, 6 2, 4, 6, 8 | 178 | 19 | 25 | 675 | 791 | 192 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |

¹⁾ For 1LP7 063 with type of construction code 1 (B5, IM V1 without protective cover, IM V3) the dimensions L and LC are 26 mm longer.

²⁾ For IM B14, 381 mm.

³⁾ For IM B5, 345 mm.

⁴⁾ For IM B5, 399 mm.

IEC Squirrel-Cage Motors

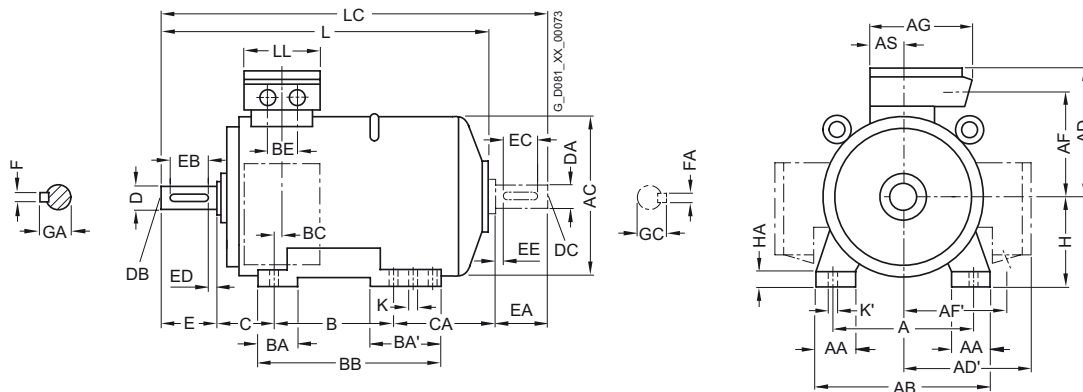
Standard motors up to frame size 315 L

Dimensions

Dimensional drawings

Cast-iron series 1LP4, frame sizes 180 M to 315 L

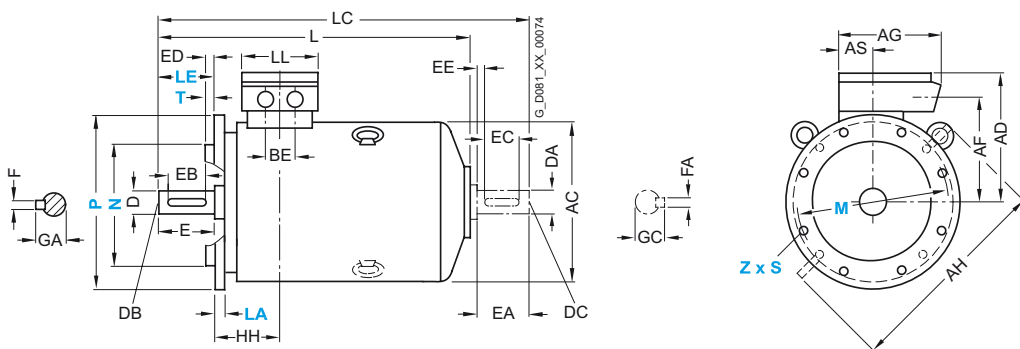
Type of construction IM B3



Frame sizes 180 M/L, 225 S/M, 280 S/M and 315 S/M/L have frame feet each with 2 drilled holes at NDE.

Types of construction IM B5 and IM V1 (IM B5 only up to frame size 315 M)

For flange dimensions, see Page 2/140 (Z = the number of retaining holes)



The motors are supplied with two fitted eyebolts conforming to IM B5, whereby one can be repositioned to conform to IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

| For motor | | | Dimension designation acc. to IEC | | | | | | | | | | | | | | | | | | | | |
|---------------------|--------------|-----------------|-----------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|----|
| Frame size | Type | Number of poles | A | AA | AB | AC | AD | AD' | AF | AF' | AG | AH | AS | B* | BA | BA' | BB | BC | BE | C | CA* | H | HA |
| 180 M | 1LP4 183 | 2, 4 | 279 | 65 | 339 | 363 | 262 | 262 | 220 | 220 | 152 | 452 | 71 | 241 | 70 | 111 | 328 | 36 | 54 | 121 | 94 | 180 | 20 |
| 180 L | 1LP4 186 | 4, 6, 8 | 279 | 65 | 339 | 363 | 262 | 262 | 220 | 220 | 152 | 452 | 71 | 279 | 70 | 111 | 328 | 36 | 54 | 121 | 56 | 180 | 20 |
| 200 L | 1LP4 206 | 2, 6 | 318 | 70 | 378 | 402 | 300 | 300 | 247 | 247 | 260 | 512 | 96 | 305 | 80 | 80 | 355 | 63 | 85 | 133 | 76 | 200 | 25 |
| | 1LP4 207 | 2, 4, 6, 8 | 318 | 70 | 378 | 402 | 300 | 300 | 247 | 247 | 260 | 512 | 96 | 305 | 80 | 80 | 355 | 63 | 85 | 133 | 76 | 200 | 25 |
| 225 S | 1LP4 220 | 4, 8 | 356 | 80 | 436 | 442 | 325 | 325 | 272 | 272 | 260 | 556 | 96 | 286 | 85 | 110 | 361 | 47 | 85 | 149 | 99 | 225 | 34 |
| 225 M | 1LP4 223 | 2 | 356 | 80 | 436 | 442 | 325 | 325 | 272 | 272 | 260 | 556 | 96 | 311 | 85 | 110 | 361 | 47 | 85 | 149 | 74 | 225 | 34 |
| | | 4, 6, 8 | | | | | | | | | | | | | | | | | | | | | |
| 250 M | 1LP4 253 | 2 | 406 | 100 | 490 | 495 | 392 | 392 | 308 | 308 | 300 | 620 | 118 | 349 | 100 | 100 | 409 | 69 | 110 | 168 | 111 | 250 | 40 |
| | | 4, 6, 8 | | | | | | | | | | | | | | | | | | | | | |
| 280 S | 1LP4 280 | 2 | 457 | 100 | 540 | 555 | 432 | 432 | 348 | 348 | 300 | 672 | 118 | 368 | 100 | 151 | 479 | 62 | 110 | 190 | 137 | 280 | 40 |
| | | 4, 6, 8 | | | | | | | | | | | | | | | | | | | | | |
| 280 M | 1LP4 283 | 2 | 457 | 100 | 540 | 555 | 432 | 432 | 348 | 348 | 300 | 672 | 118 | 414 | 100 | 151 | 479 | 62 | 110 | 190 | 86 | 280 | 40 |
| | | 4, 6, 8 | | | | | | | | | | | | | | | | | | | | | |
| 315 S | 1LP4 310 | 2 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 154 | 406 | 125 | 176 | 527 | 69 | 110 | 216 | 168 | 315 | 50 |
| | 1LP4 310 | 4, 6, 8 | | | | | | | | | | | | | | | | | | | | | |
| 315 M ¹⁾ | 1LP4 313 | 2 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 154 | 457 | 125 | 176 | 527 | 69 | 110 | 216 | 117 | 315 | 50 |
| | 1LP4 313 | 4, 6, 8 | | | | | | | | | | | | | | | | | | | | | |
| 315 L ¹⁾ | 1LP4 316/317 | 2 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 154 | 508 | 125 | 176 | 578 | 69 | 110 | 216 | 226 | 315 | 50 |
| | 1LP4 316/317 | 4, 6, 8 | | | | | | | | | | | | | | | | | | | | | |

* This dimension is assigned in DIN EN 50347 to the frame size listed.

¹⁾ With order codes for connection box positions (K09, K10, K11) only fitted feet with 3 drilled holes with dimension "B" (406, 457 and 508 mm). BB will then be 666 mm.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

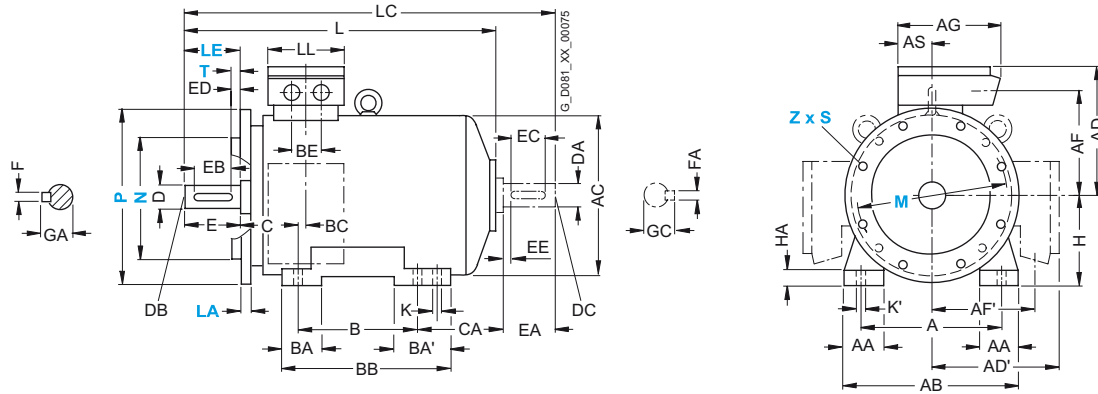
Dimensions

Dimensional drawings

Cast-iron series 1LP4, frame sizes 180 M to 315 L

Type of construction IM B35

For flange dimensions, see Page 2/140 (Z = the number of retaining holes)



| For motor | | Number of poles | Dimension designation acc. to IEC | | | | | | DE shaft extension | | | | | NDE shaft extension | | | | | | | | |
|---------------------|--------------|-----------------|-----------------------------------|----|----|------|------|-----|--------------------|-----|-----|-----|----|---------------------|------|----|-----|-----|-----|----|----|------|
| Frame size | Type | | HH | K | K' | L | LC | LL | D | DB | E | EB | ED | F | GA | DA | DC | EA | EC | EE | FA | GC |
| 180 M | 1LP4 183 | 2, 4 | 157 | 15 | 19 | 562 | 676 | 132 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| 180 L | 1LP4 186 | 4, 6, 8 | 157 | 15 | 19 | 562 | 676 | 132 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| 200 L | 1LP4 206 | 2, 6 | 196 | 19 | 25 | 617 | 734 | 192 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| | 1LP4 207 | 2, 4, 6, 8 | 196 | 19 | 25 | 617 | 734 | 192 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| 225 S | 1LP4 220 | 4, 8 | 196 | 19 | 25 | 670 | 784 | 192 | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| 225 M | 1LP4 223 | 2 | 196 | 19 | 25 | 640 | 754 | 192 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| | | 4, 6, 8 | | | | 670 | 784 | | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| 250 M | 1LP4 253 | 2 | 237 | 24 | 30 | 764 | 878 | 236 | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| | | 4, 6, 8 | | | | | 908 | | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| 280 S | 1LP4 280 | 2 | 252 | 24 | 30 | 830 | 975 | 236 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 4, 6, 8 | | | | | | | 75 | M20 | 140 | 125 | 10 | 20 | 79.5 | 65 | M20 | 140 | 125 | 10 | 18 | 69 |
| 280 M | 1LP4 283 | 2 | 252 | 24 | 30 | 830 | 975 | 236 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 4, 6, 8 | | | | | | | 75 | M20 | 140 | 125 | 10 | 20 | 79.5 | 65 | M20 | 140 | 125 | 10 | 18 | 69 |
| 315 S | 1LP4 310 | 2 | 285 | 28 | 35 | 925 | 1070 | 307 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | 1LP4 310 | 4, 6, 8 | | | | 955 | 1100 | | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |
| 315 M ¹⁾ | 1LP4 313 | 2 | 285 | 28 | 35 | 925 | 1070 | 307 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | 1LP4 313 | 4, 6, 8 | | | | 955 | 1100 | | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |
| 315 L ¹⁾ | 1LP4 316/317 | 2 | 285 | 28 | 35 | 1085 | 1230 | 307 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | 1LP4 316/317 | 4, 6, 8 | | | | 1115 | 1260 | | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |

¹⁾ With order codes for connection box positions (K09, K10, K11) only fitted feet with 3 drilled holes with dimension "B" (406, 457 and 508 mm). BB will then be 666 mm.

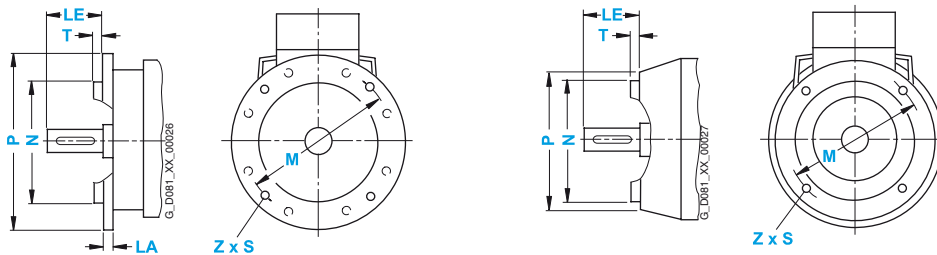
IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Dimensions

Dimensional drawings

Flange dimensions



In DIN EN 50347, the frame sizes are allocated flange FF with through holes and flange FT with tapped holes. The designation of flange A and C according to DIN 42948 (invalid since 09/2003) are also listed for information purposes. See the table below. (Z = the number of retaining holes)

| Frame size | Type of construction | Flange type | Flange with | | Dimension designation acc. to IEC | | | | | | | |
|--|--------------------------------|-----------------|----------------------|-------------------------------|-----------------------------------|------------|-----|-----|-----|------|-----|---|
| | | | through holes (FF/A) | Tapped holes (FT/C) | LA | LE | M | N | P | S | T | Z |
| 56 M | IM B5, IM B35, IM V1, IM V3 | Flange | FF 100 | Acc. to DIN EN 50347 A 120 | 8 | 20 | 100 | 80 | 120 | 7 | 3 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 65 | Acc. to DIN 42948 C 80 | – | 20 | 65 | 50 | 80 | M5 | 2.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 85 | Acc. to DIN 42948 C 105 | – | 20 | 85 | 70 | 105 | M6 | 2.5 | 4 |
| 63 M | IM B5, IM B35, IM V1, IM V3 | Flange | FF 115 | Acc. to DIN EN 50347 A 140 | 8 | 23 | 115 | 95 | 140 | 10 | 3 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 75 | Acc. to DIN 42948 C 90 | – | 23 | 75 | 60 | 90 | M5 | 2.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 100 | Acc. to DIN 42948 C 120 | – | 23 | 100 | 80 | 120 | M6 | 3 | 4 |
| 71 M | IM B5, IM B35, IM V1, IM V3 | Flange | FF 130 | Acc. to DIN EN 50347 A 160 | 9 | 30 | 130 | 110 | 160 | 10 | 3.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 85 | Acc. to DIN 42948 C 105 | – | 30 | 85 | 70 | 105 | M6 | 2.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 115 | Acc. to DIN 42948 C 140 | – | 30 | 115 | 95 | 140 | M8 | 3 | 4 |
| 80 M | IM B5, IM B35, IM V1, IM V3 | Flange | FF 165 | Acc. to DIN EN 50347 A 200 | 10 | 40 | 165 | 130 | 200 | 12 | 3.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 100 | Acc. to DIN 42948 C 120 | – | 40 | 100 | 80 | 120 | M6 | 3 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 130 | Acc. to DIN 42948 C 160 | – | 40 | 130 | 110 | 160 | M8 | 3.5 | 4 |
| 90 S, 90 L | IM B5, IM B35, IM V1, IM V3 | Flange | FF 165 | Acc. to DIN EN 50347 A 200 | 10 | 50 | 165 | 130 | 200 | 12 | 3.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 115 | Acc. to DIN 42948 C 140 | – | 50 | 115 | 95 | 140 | M8 | 3 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 130 | Acc. to DIN 42948 C 160 | – | 50 | 130 | 110 | 160 | M8 | 3.5 | 4 |
| 100 L | IM B5, IM B35, IM V1, IM V3 | Flange | FF 215 | Acc. to DIN EN 50347 A 250 | 11 | 60 | 215 | 180 | 250 | 14.5 | 4 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 130 | Acc. to DIN 42948 C 160 | – | 60 | 130 | 110 | 160 | M8 | 3.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 165 | Acc. to DIN 42948 C 200 | – | 60 | 165 | 130 | 200 | M10 | 3.5 | 4 |
| 112 M | IM B5, IM B35, IM V1, IM V3 | Flange | FF 215 | Acc. to DIN EN 50347 A 250 | 11 | 60 | 215 | 180 | 250 | 14.5 | 4 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 130 | Acc. to DIN 42948 C 160 | – | 60 | 130 | 110 | 160 | M8 | 3.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 165 | Acc. to DIN 42948 C 200 | – | 60 | 165 | 130 | 200 | M10 | 3.5 | 4 |
| 132 S, 132 M | IM B5, IM B35, IM V1, IM V3 | Flange | FF 265 | Acc. to DIN EN 50347 A 300 | 12 | 80 | 265 | 230 | 300 | 14.5 | 4 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 165 | Acc. to DIN 42948 C 200 | – | 80 | 165 | 130 | 200 | M10 | 3.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 215 | Acc. to DIN 42948 C 250 | – | 80 | 215 | 180 | 250 | M12 | 4 | 4 |
| 160 M, 160 L | IM B5, IM B35, IM V1, IM V3 | Flange | FF 300 | Acc. to DIN EN 50347 A 350 | 13 | 110 | 300 | 250 | 350 | 18.5 | 5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 215 | Acc. to DIN 42948 C 250 | – | 110 | 215 | 180 | 250 | M12 | 4 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 265 | Acc. to DIN 42948 C 300 | – | 110 | 265 | 230 | 300 | M12 | 4 | 4 |
| 180 M, 180 L | IM B5, IM V1, IM V3 | Flange | FF 300 | Acc. to DIN EN 50347 A 350 | 13 | 110 | 300 | 250 | 350 | 18.5 | 5 | 4 |
| 200 L | IM B5 | Flange | FF 350 | Acc. to DIN EN 50347 A 400 | 15 | 110 | 350 | 300 | 400 | 18.5 | 5 | 4 |
| 225 S, 225 M 2-pole 4-pole to 8-pole | IM B5, IM V1, IM V3 | Flange | FF 400 | Acc. to DIN EN 50347 A 450 | 16 | 110 140 | 400 | 350 | 450 | 18.5 | 5 | 8 |
| 250 M | IM B5, IM V1, IM V3 | Flange | FF 500 | Acc. to DIN EN 50347 A 550 | 18 | 140 | 500 | 450 | 550 | 18.5 | 5 | 8 |
| 280 S, 280 M | IM B5, IM V1, IM V3 | Flange | FF 500 | Acc. to DIN EN 50347 A 550 | 18 | 140 | 500 | 450 | 550 | 18.5 | 5 | 8 |
| 315 S, 315 M, 315 L 2-pole 4-pole to 8-pole | IM B5, IM V1, IM V3 | Flange | FF 600 | Acc. to DIN EN 50347 A 660 | 22 | 140 170 | 600 | 550 | 660 | 24 | 6 | 8 |

Non-standard motors frame size 315 and above



| | | | |
|------|--|------|--|
| 3/2 | Orientation | 3/34 | Self-ventilated motors with through ventilation for mains-fed operation Cast-iron series 1LL8 |
| 3/2 | Overview | 3/34 | Selection and ordering data |
| 3/2 | Benefits | | |
| 3/3 | Application | | |
| 3/3 | Design | | |
| 3/4 | Technical specifications | | |
| 3/11 | Selection and ordering data | | |
| 3/13 | More information | | |
| 3/14 | Self-ventilated motors for mains-fed operation Cast-iron series 1LA8 | 3/38 | Self-ventilated motors with through ventilation for converter-fed operation Cast-iron series 1LL8 |
| 3/14 | Selection and ordering data | 3/38 | Selection and ordering data |
| 3/18 | Self-ventilated motors for converter-fed operation Cast-iron series 1LA8 | 3/46 | Special versions |
| 3/18 | Selection and ordering data | 3/46 | Overview |
| | | 3/47 | Selection and ordering data |
| | | 3/47 | • Voltages |
| | | 3/50 | • Options |
| 3/26 | Forced-air cooled motors with separately driven fan for converter-fed operation Cast-iron series 1PQ8 | 3/62 | Accessories |
| 3/26 | Selection and ordering data | 3/62 | Overview |
| | | 3/62 | More information |
| | | 3/63 | Dimensions |
| | | 3/63 | Overview |
| | | 3/64 | Dimensional drawings |

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Orientation

Overview



N compact three-phase asynchronous motors: Series 1LA8, 1PQ8, 1LL8

The three-phase motor series N compact covers outputs up to 1250 kW (at 50 Hz) in the non-standard range. A number of technical features provide this motor series with its ruggedness and long service life and ensure the highest level of availability.

N compact motors are also characterised by their high output for small frame size. The consequence of this is an extremely compact design that can be used to save space in a number of industrial applications.

N compact motors are not only optimised in terms of their construction, but also in terms of their efficiency, so they also contribute towards lower energy consumption.

Apart from mains-fed operation, the motors of the series N compact are also specially designed for converter-fed operation. In combination with frequency converters from the SINAMICS and SIMOVERT MASTERDRIVES product series, they build up perfectly interacting drive systems for variable-speed drive applications.

Versions in the N compact series

Series 1LA8

The motors are asynchronous squirrel-cage motors with compact dimensions in fin-cooled design. They are designed for direct connection to the three-phase supply and for converter-fed operation.

- **1LA8 for mains-fed operation**
 - Designed for operation on the three-phase supply
 - Degree of protection: IP55
 - Cooling method: IC411, self-ventilated
 - Housing: Cast iron

- **1LA8 for converter-fed operation**
 - Converter-fed operation, optimised for the SINAMICS and SIMOVERT MASTERDRIVES drive systems
 - Degree of protection: IP55
 - Cooling method: IC411, self-ventilated
 - Housing: Cast iron
 - With standard insulation for voltages ≤ 500 V or with special insulation for 690 V

Series 1PQ8

The motors are asynchronous squirrel-cage motors with compact dimensions in fin-cooled design with forced ventilation. As these motors are forced-ventilated, no derating or only relatively minor derating (depending on their speed range) is required for operation at constant load torque and with wide speed ranges. The motors are designed for converter-fed operation with the SINAMICS and SIMOVERT MASTERDRIVES drive system.

- Converter-fed operation
- Degree of protection: IP55
- Cooling method: IC416, forced-ventilated
- Housing: Cast iron
- With standard insulation for voltages ≤ 500 V or with special insulation for 690 V

Series 1LL8

The motors of series 1LL8 are asynchronous squirrel-cage motors with compact dimensions in an open fin-cooled design with self-cooling. They are similar in construction to 1LA8 motors. IP23 degree of protection is achieved by opening the internal cooling circuit and supplying it with external cooling air. This can increase the performance by up to 25 % as compared to the 1LA8. They are designed for direct connection to the three-phase supply and for converter-fed operation.

Motors of the 1LL8 type series are intended for installation indoors. They must not be subjected to humid, salty or corrosive atmospheres.

- **1LL8 for mains-fed operation**
 - Mains-fed operation
 - Degree of protection: IP23
 - Cooling method: IC01, self-ventilated
 - Housing: Cast iron
- **1LL8 for converter-fed operation**
 - Converter-fed operation
 - Degree of protection: IP23
 - Cooling method: IC01, self-ventilated
 - Housing: Cast iron

Versions with special insulation for >500 V and operation without an output filter on the frequency converter are only possible on request.

Benefits

Non-standard motors from Siemens offer the user numerous advantages:

- The optimised efficiency results in lower operating costs.
- The high output/size ratio ensures low space requirements combined with low weight.
- The cast-iron housing and bearing plates are extremely rigid and rugged and can therefore be subjected to considerable stress and have excellent vibration damping properties and are resistant to corrosion.
- The bearings are designed for maximum reliability, which results in good vibration characteristics, a long service life and low maintenance costs.
- The DURIGNIT IR 2000 insulation system with VPI or current-UV impregnation results in high reliability, a long service life and high resistance to stress, for example, during starting or under overload conditions.
- Due to the low noise emission level, the stringent requirements of worker protection are fulfilled without the need for additional measures.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Orientation

Application

Thanks to the many options, the three-phase motor series N compact covers applications in a wide range of different sectors: Chemicals, paper, water/waste water, steel and shipbuilding are just a few examples. The available types of construction are IM B3, IM B35 and IM V1 according to DIN EN 60034-7. The degree of protection is IP55 as standard, but IP23 for motor series 1LL8.

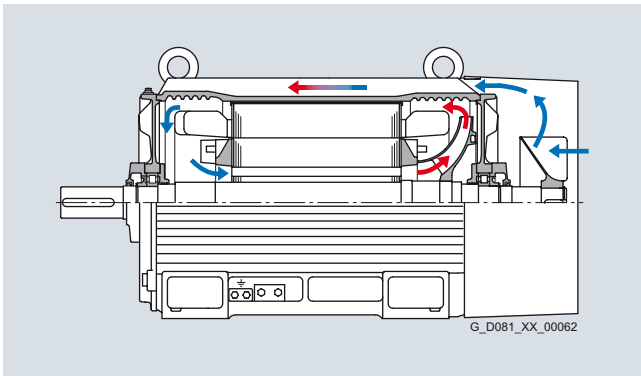
The 1PQ8 motors are specially designed for variable-speed applications with constant torque. The mounted separately driven fan provides a constantly high cooling air flow at any speed. These motors can therefore be continuously operated at low speed and high torque simultaneously.

The low-voltage motor series N compact is also available in a through-ventilated version to IP23 degree of protection. This 1LL8 motor series boasts an output 25 % higher than that of the closed 1LA8 motor series for the same frame size.

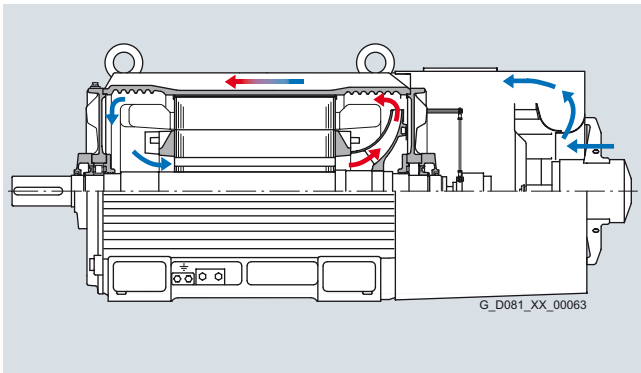
The 1LL8 motor is therefore useful for applications in which a closed 1LA8 motor is not essential and when the ambient conditions permit the use of a through-ventilated machine (IC 01 cooling method, IP23 degree of protection). Motors of the 1LL8 type series are only intended for installation indoors. They must not be subjected to humid, salty or corrosive atmospheres.

Design

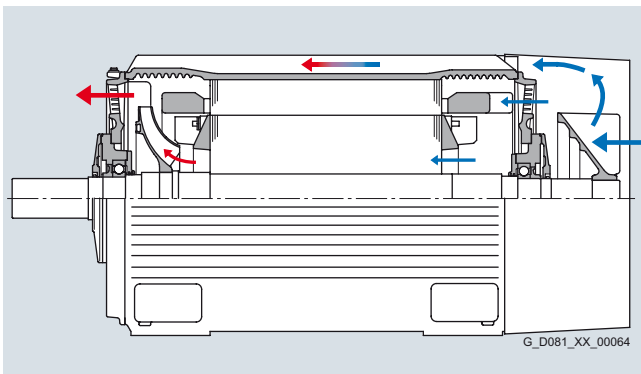
The basic structure of the non-standard motors is shown in the following sectional diagram.



Sectional diagram of 1LA8



Sectional diagram of 1PQ8



Sectional diagram of 1LL8

In conventional fin-cooled motors, the one-sided external ventilation naturally results in an uneven temperature distribution – this is however not the case with N compact motors with their additional internal air-flow channels. This cools, in particular, the stator winding heads, the rotor winding and the drive-end bearings. The resulting reduction in thermal loading increases the operating reliability and lengthens the service life. The internal air-flow channels increase the efficiency of the ventilation which means that the external air-flow can be reduced. The lower volumetric flow and air-flow optimisation of all guide channels results in a low level of fan noise.

3

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Orientation

Technical specifications

The following table lists the most important technical specifications. For further information and details, see catalog part 0 "Introduction".

Technical specifications at a glance

| | |
|--|--|
| Type of motor | Squirrel-cage induction motor |
| Connection types | Star/delta connection You can establish the connection type used from the Order No. supplements in the selection and ordering data for the required motor. |
| Number of poles | 2, 4, 6, 8 |
| Rated output | 160 ... 1250 kW (at 50 Hz) |
| Rated speed (synchronous speed) | 750 ... 3600 rpm |
| Rated torques | 800 ... 10,300 Nm |
| Insulation of the stator winding according to EN 60034-1 (IEC 60034-1) | Temperature class 155 (F) Used in mains-fed operation (at rated output) as: temperature class 130 (B) Used in converter-fed operation (at rated output): temperature class 155 (F) For coolant temperatures of up to 40 °C as standard DURIGNIT IR 2000 insulation system with impregnation by VPI or current-UV technique |
| Degree of protection according to EN 60034-5 (IEC 60034-5) | Motor series 1LA8 and 1PQ8: IP55 Motor series 1LL8: IP23 |
| Cooling according to EN 60034-6 (IEC 60034-6) | Self-ventilated (motor series 1LA8) Motor frame sizes 315 to 450 (IC 411) Forced-air cooled (motor series 1PQ8) Motor frame sizes 315 to 450 (IC 416) Self-ventilated (motor series 1LL8) Motor frame sizes 315 to 450 (IC 01) |
| Admissible coolant temperature | See "Coolant temperature and site altitude" in catalog part 0 "Introduction" |
| Standard voltages according to EN 60038 (IEC 60038) | 50 Hz: 400 V, 500 V, 690 V The voltage used can be found in the selection and ordering data for the required motor. |
| Type of construction according to EN 60034-7 (IEC 60034-7) | <u>Without flange:</u> IM B3 <u>With flange:</u> IM V1 without protective cover, IM V1 with protective cover, IM B35 |
| Frame design | Cast-iron with cast frame feet for IM B3 and IM B35 types of construction |
| Paint finish Suitability of paint finish for climate group in accordance with IEC 60721, Part 2-1 | <u>Standard:</u> Standard paint finish (moderate = expanded) RAL 7030 stone gray |
| Vibration quantity level according to EN 60034-14 (IEC 60034-14) | Level A (standard- without special vibration requirements) optional: Level B (with special vibration requirements) |
| Shaft extension according to DIN 748 (IEC 60072) | With featherkey, half-key balancing |
| Shaft and flange accuracy according to DIN 42955 (IEC 60072-1) | Tolerance N (normal) <u>Optional:</u> Tolerance R (reduced) |
| Sound pressure level to DIN EN ISO 1680 (tolerance +3 dB) | The sound pressure level is listed in the selection and ordering data for the required motor. |
| Weights | The weight is listed in the selection and ordering data for the required motor. |
| Mechanical limit speeds | The limit speed is listed in the selection and ordering data for the required motor. |
| Packing weights and dimensions | See "Packing weights and packing dimensions" in catalog part 0 "Introduction". |
| Rating plates | Fixed to the motor (optionally: 1 additional set of rating plates, loose), labeled as standard in English/German, can be supplied in French/Spanish, Italian or Portuguese without additional charge See "Rating plate" in catalog part 0 "Introduction". |
| Connection and connection boxes | See "Connection, circuit and connection box" in catalog part 0 "Introduction". |
| Bearing design | See "Bearings" in catalog part 0 "Introduction". |
| Cantilever forces | See "Admissible cantilever forces" in catalog part 0 "Introduction" |
| Pulse encoder | See "Special technology" in catalog part 0 "Introduction" |
| Options | See the selection and ordering data for "Special versions" |

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Orientation

Technical specifications (continued)

Rating plate

According to DIN EN 60034-1, the approximate overall weight is specified on the rating plate for all motors of frame size 90 and above (from approx. 30 kg).

For all motors, an additional rating plate can be supplied loose, order code **K31**. An extra rating plate for identification codes is also possible, order code **Y82**. In the standard version, the rating plate is available in English and German.

| SIEMENS | | | | | | | | | | |
|---------|---|----|-----|-----|------|-------|--------------------------------|------------------|-----------|----|
| 15 | 3-MOT. 1LA8 317-4AB60-Z NoN- R41124661010001/2003 IMB3 Th.CI.155(F) | | | | | | | | | |
| 1 | V | Hz | A | kW | cosφ | 1/min | I _A /I _N | T _E s | Certif.No | IP |
| 4 | 400 Δ | 50 | 540 | 315 | 0.87 | 1488 | | | | 55 |
| 12 | 690 Y | | 315 | | | | | | | |
| 7 | Rotor SQU.CAGE KL 13 EN/IEC 60034-1 Gew/Wt 1.5 t | | | | | | | | | |
| 5 | 380..420VΔ, 560..530A 660..725V Y, 325..305A 50Hz | | | | | | | | | |
| 16 | N _{MAX} =3000 1/MIN | | | | | | | | | |
| 17 | S.F. 1.10 | | | | | | | | | |
| 18 | MADE IN GERMANY D-90441 Nürnberg | | | | | | | | | |

1 Motor type: 3-phase LV motor

2 Type of construction

3 Degree of protection

4 Rated voltage [V] and circuit

5 Rated current [A]

6 Rated output [kW]

7 Standards and regulations
e.g. explosion-proof motors

8 Serial number

9 Motor weight [kg]

10 Temperature class

11 Rated speed [rpm]

12 Rated frequency [Hz]

13 Power factor [cos φ]

14 Maximum speed [rpm]

15 Motor type

16 Rotor class

17 Additional details (optional)

18 Service factor

Example of rating plate for 1LA8

Converter-fed operation

The motors are equipped with standard rotors and are suitable for mains-fed or converter-fed operation.

All motors can therefore be operated with a converter, in principle. Special measures are necessary in the case of some motors, especially when separately driven fans are used.

All data are applicable for a 50 Hz sinusoidal supply.

Rated voltage

The tolerance for the rated voltage is in accordance with DIN EN 60034-1 in all cases, a rated voltage range is not specified.

Motor protection

A motor protection function can be implemented using the I^2t detection present in the converter software.

If required, more precise motor protection can be afforded by direct temperature measurement using KTY84 sensors, PT 100 resistance thermometers or PTC thermistors in the motor winding. Some converters from Siemens determine the motor temperature using the resistance of the temperature sensor. They can be set to a required temperature for alarm and tripping.

If PT 100 resistance thermometers are ordered for cooling temperature monitoring (order code **A61**) or KTY84 temperature sensors (order code **A23**), the standard thermistors are omitted. A combination of **A12** and **A61** or **A12** and **A23** is possible; additional charge on request.

Insulation

The standard insulation of the motors is designed such that converter-fed operation is possible without limitation at voltages ≤ 500 V. This also applies for operation with a pulse-controlled AC converter with voltage rise times $t_s > 0.1 \mu\text{s}$ at the motor terminals.

All motors with voltage codes 4, 5 and 8 must be operated under these preconditions on a converter.

This does not apply to motors with voltages > 500 up to 690 V, which must have special insulation for operation on a pulse-controlled AC converter (SINAMICS, SIMOVERT MASTERDRIVES) without a converter circuit (du/dt filter or sinusoidal filter), i.e. when 10th position of the Order No. = "M".

For converter-fed operation with the outputs specified in the catalog, the motors are used according to temperature class 155 (F), i.e. in this case neither a service factor > 1 nor an increased coolant temperature is possible (order codes C11, C12 and C13 cannot be ordered).

Motor connection

When connecting the motors, it is important to consider the restrictions for mains-fed machines as well as the maximum conductor cross-sections permitted for the converter.

Ventilation/noise generation

The fan noise can increase at speeds that are higher than the rated speed of self-ventilated motors (this is not the case for forced ventilated motors 1PQ8). To increase motor utilization at low speeds it is recommended that forced ventilated motors are used, e.g. those of series 1PQ8.

In general, for converter-fed operation, the noise level is higher than that specified in the catalog (exception: 1PQ8). The increase depends on the converter type and can lie between 5 and 10 dB(A) depending on the frame size and number of poles for the motor.

Mechanical stress and grease lifetime

When motors are operated at speeds above the rated speed, the running smoothness and the bearings are subjected to greater mechanical stress. This reduces the grease lifetime and the bearing lifetime. More detailed information on request.

Bearings

To prevent damage being caused as a result of bearing currents, insulated bearings are used at the non-drive-end of 1LA8, 1LL8 and 1PQ8 motors for converter-fed operation in the standard version (this can be recognized when 9th position of Order No. = "P").

When operating multiphase induction machines on a converter, an electrical bearing stress results from a capacitive induced voltage via the bearing lubricating film, depending on the principle being used. The physical cause of this is the common-mode voltage at the converter output that is inherent in the control method for a converter: the sum of the three-phase voltages is – in contrast to straightforward mains-fed operation – not equal to zero at every point in time. The high-frequency, pulse-shaped common-mode voltage brings about a residual current, which closes back to the converter's DC link via the machine's internal capacitances, the machine housing and the earthing circuit. The machine's internal capacitances include the main insulation winding capacitance, the geometric capacitance between the rotor and stator, the lubricating film capacitance and the capacitance of any bearing insulation that may be present. The level of the currents due to the internal capacitances is proportional to the gradients, i.e. the voltage variation of the DC voltage ($i_{(t)} = C \cdot du/dt$).

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Orientation

Technical specifications (continued)

In order to apply currents to the motor which are sinusoidal as far as possible (smooth running, oscillation torques, stray losses), a high clock frequency is required for the converter's output voltage. The related (very steep) switching edges of the converter output voltage (and also, therefore, of the common-mode voltage) cause correspondingly high capacitive currents and voltages on the machine's internal capacitances.

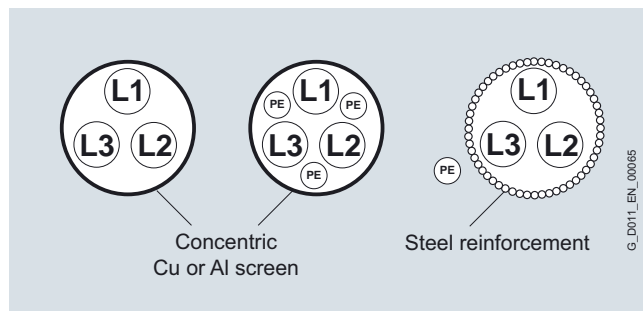
The voltage that is injected capacitively across the bearing can result, in the worst case, in stochastic arcing through the lubrication film of the bearing and prematurely age or damage the bearing. (The current pulses caused by arcing in the lubrication film are known as EDM currents (Electrostatic Discharge Machining) in the technical literature.)

This physical effect, which occurs in isolated cases, has mostly been observed in connection with larger motors.

EMC-compliant installation of the drive system is a basic prerequisite for preventing premature bearing damage as a result of bearing currents.

The most important measures for reducing bearing currents:

- Insulated motor bearings at the non-drive-end NDE (BS) (standard for 1LA8, 1LL8 and 1PQ8 for converter-fed operation)
- Use of cables with a symmetrical cable cross-section:



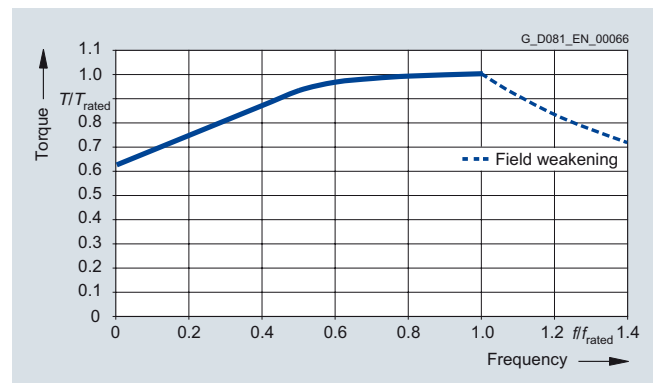
- Preference given to a supply with insulated neutral point (IT system)
- Use of earthing cables with low impedance in a large frequency range (DC up to approximately 70 MHz): for example, plaited copper ribbon cables, HF litz wires
- Separate HF equipotential-bonding cable between motor frame and driven machine
- Separate HF equipotential-bonding cable between motor housing and converter PE busbar
- 360° HF contacting of the cable shield on the motor frame and the converter PE busbar. This can be achieved using EMC screwed glands on the motor end and EMC shield clips on the converter end, for example.
- Using motor reactors at the converter
- Common-mode filters at the converter output

Thermal torque limits

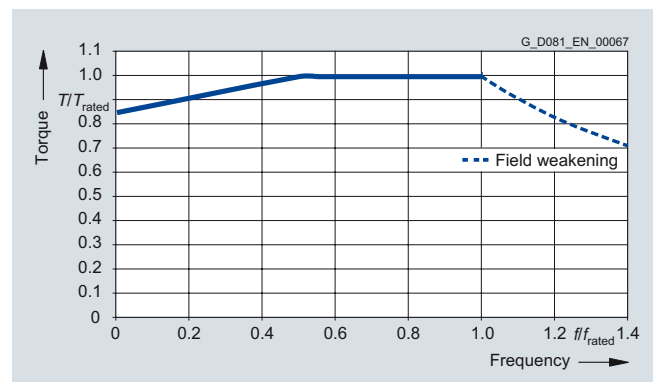
Guide values for the maximum load torques at various speeds can be obtained from the diagrams below.

In the case of self-ventilated motors, such as series 1LA8 and 1LL8, the thermally permissible load torques are reduced for continuous operation for speeds below the rated speed. This must be taken into account in those applications in particular that are not subjected to a load torque that is dependent on the square of the speed. Also in the case of forced-air cooled motors of series 1PQ8, the maximum load torques are reduced slightly for high speed ranges.

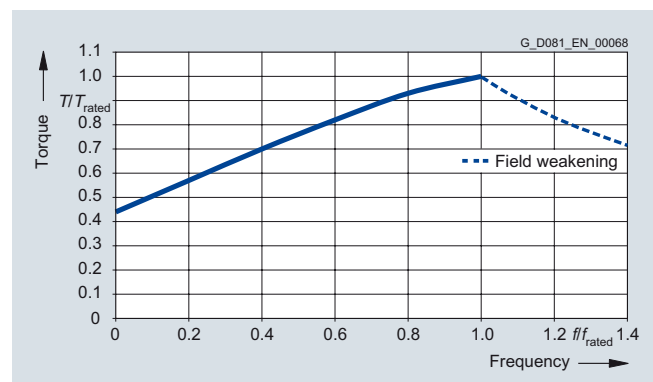
When motors are operated at speeds above their rated speed (operation in the field-weakening range), the maximum load torque is also reduced.



Thermal torque limit characteristic 1LA8



Thermal torque limit characteristic 1PQ8



Thermal torque limit characteristic 1LL8

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Orientation

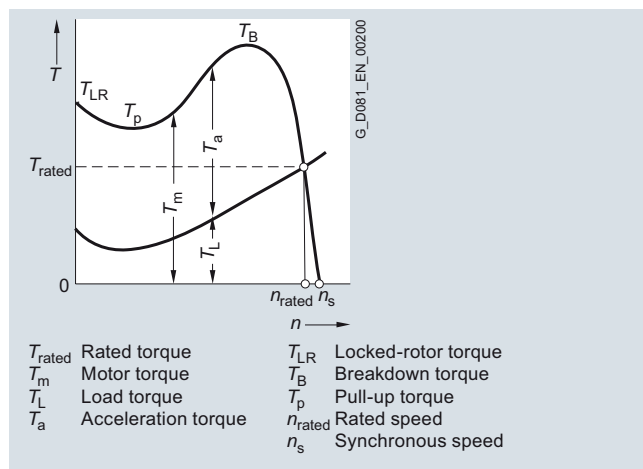
Technical specifications (continued)

Technical explanations regarding torque and determination of the start-up time for mains-fed operation

Torque characteristics – Torque characteristics for special drives

Torque characteristics

The torque generated on the shaft of a three-phase motor in the torque range of $n = 0$ to $n = n_s$ has a very varying magnitude. The characteristic curve of the torque as a function of the speed of a three-phase motor with torque class (CL) of a squirrel-cage rotor shows the following diagram.



The values for locked-rotor torque and breakdown torque as well as for locked-rotor current of a specific motor can be taken from the selection and ordering data.

The limit for the mechanical overload capability is the breakdown torque. According to IEC/EN 60034-1, asynchronous motors at rated voltage and rated frequency must withstand up to 1.6 times the rated torque for 15 s. The pull-up torque of asynchronous motors at rated voltage must - if not specified otherwise - have at least the values stated in the following rated torque.

For three-phase motors without pole-change with a rated output equal to or greater than 100 kW:

0.3 times rated torque and at least 0.5 times locked-rotor torque

According to IEC/EN 60034-1, the following tolerances are permitted:

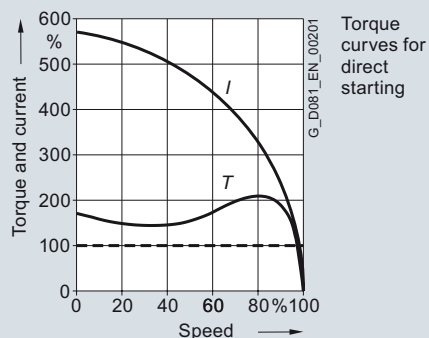
- for the locked-rotor torque of -15 to 25 % of the total locked-rotor torque
- for the locked-rotor current up to 20 % of the stated locked-rotor current without lower limit
- for the breakdown torque up to -10 % of the stated breakdown torque
- for the pull-up torque -15 % of the guaranteed value.

Under observance of these tolerances, the locked-rotor torque must be sufficiently higher than the the break loose torque of the driven machine and the motor torque during start-up up to reaching the operating speed must always be higher than the load torque.

In the case of squirrel-cage motors, the locked-rotor torque and breakdown torque are listed in the selection and ordering data as multiples of the rated torque. The normal practice is to start squirrel-cage motors directly online. The torque class indicates that with direct online starting, even if there is a 5 % undervoltage, it is possible to start up the motor against a load torque of:

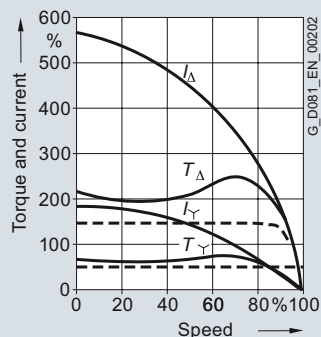
- 130 % (for CL 13),
- 100 % (for CL 10),
- 70 % (for CL 7),
- 50 % (for CL 5)

of the rated torque.



Motors with CL 10 torque class

----- maximum load torque during the starting



Motors with CL 13 torque class

----- maximum load torque during starting

The rated torque can be calculated as follows:

$$T_{rated} = 9.55 \cdot P_{rated} \cdot \frac{1000}{n_{rated}}$$

T_{rated} Rated torque in Nm
 n_{rated} Rated speed in rpm
 P_{rated} Rated output in kW

The rated speed of the motor differentiates itself from the synchronous speed by the slip s_{rated} :

It is:

$$s_{rated} = \frac{n_s - n_{rated}}{n_s} \cdot 100$$

s_{rated} Slip in %
 n_s Synchronous speed in rpm
 n_{rated} Rated speed in rpm

Determination of the start-up time

Calculation of the start-up time for direct online starting

The start-up time from $n = 0$ to $n = n_{op}$ can be approximately determined using the average acceleration torque.

$$t_{st} = \frac{\sum J \cdot n_{op}}{9.55 \cdot T_{aav}}$$

t_{st} Start-up time in s
 J Total moment of inertia in kgm^2
 n_{op} Operating speed in rpm
 T_{aav} Average acceleration torque in Nm

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Orientation

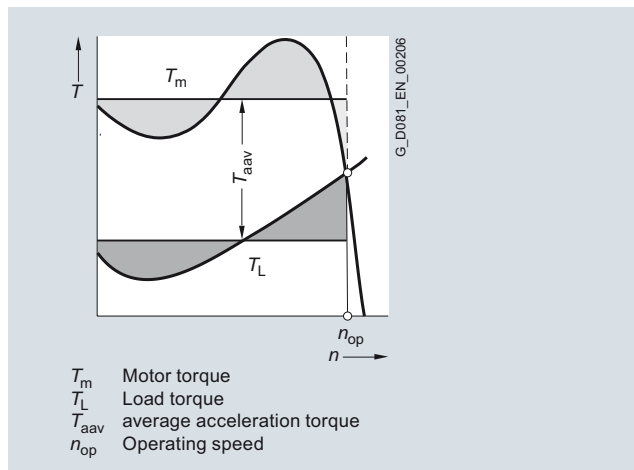
Technical specifications (continued)

The total moment of inertia is made up of the motor moment of inertia plus the moment of inertia of the driven machine and the coupling or pulleys and is converted to the speed of the motor shaft.

Limit values for the start-up curve of three-phase motors with squirrel-cage rotor for voltages up to and including 690 V are defined in EC/EN 60034.

If no sound start-up is possible due to a high moment of inertia and/or a high load torque, a larger motor or a three-phase motor with SINAMICS frequency converter can be selected for N-compact motors.

A mechanical solution for coping with the heavy starting is the employment of a starting coupling, whose application is limited by its capability to absorb heat.



Determination of the average acceleration torque

Start-up for three-phase motors with squirrel-cage rotor

The normal practice is to start squirrel-cage motors directly on-line.

- It must be observed that the torque and speed characteristics for a specific motor are predetermined - independently of the heaviness of the start-up. Star delta start-up must be realized for motors with squirrel-cage rotor if small locked-rotor currents (e.g. in the supply conditions of the electric power company) or a particularly low start-up torque (soft starting) are required. Locked-rotor torque, breakdown torque and all other torque values as well as the locked-rotor current are 25 to 30 % of the values at direct online starting.
- The motor torque must be sufficiently higher than the load torque during the start-up in the Y-stage. The change from star to delta must not occur before approximating the operating speed.

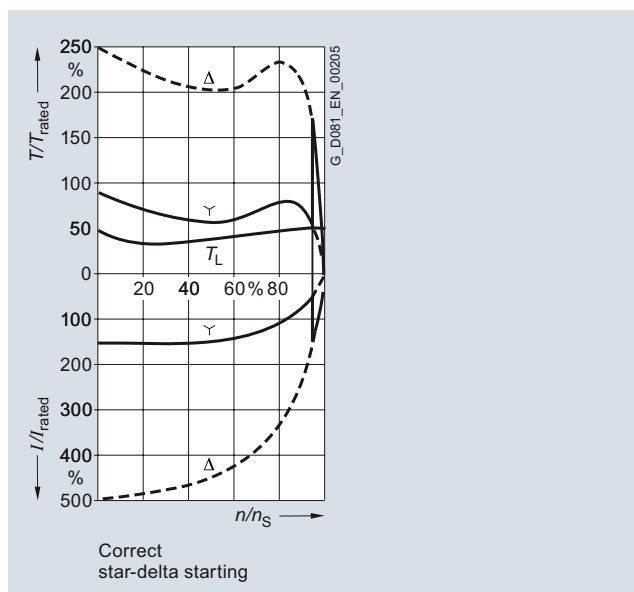
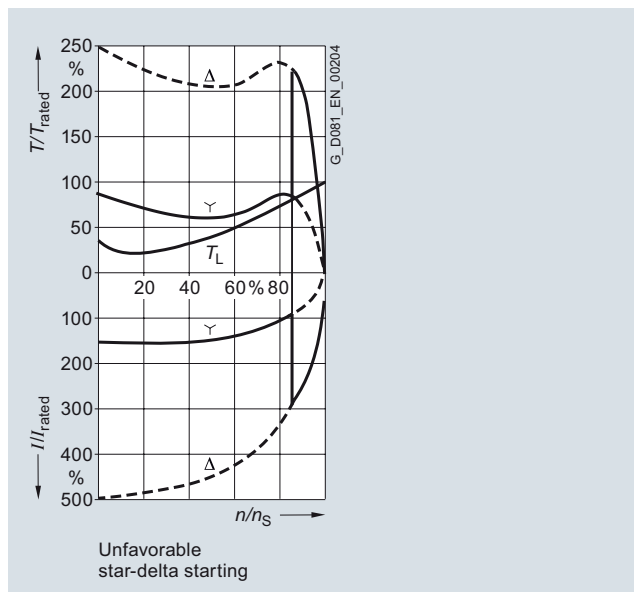
The adjoining diagram shows a case in which the star delta start-up is not appropriate because the too elevated load torque causes the early change which in turn causes a high torque and current surge that renders the star-delta starting ineffective.

The torque characteristics can be approximately reduced by the square of the voltage and the current characteristics linearly with the voltage by reducing the voltage at the motor terminals with the help of a starting transformer or starting resistors.

A starting with rated current is possible on the converter.

Soft starting for motors with squirrel-cage rotor can also be realized using the stator-resistance starting circuit (a resistor is engaged in one phase during the start-up). The locked-rotor torque can be arbitrarily reduced with the help of this circuit. The locked-rotor current without a resistor or reactor is a bit higher in both phases than for direct online starting.

The starting can be facilitated using the electrical motor starter "SIKOSTART", that limits the torque and the current during starting.



IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Orientation

Technical specifications (continued)

The following has to be provided in case of requests regarding start-ups:

- 1st Required output and rated speed of the driven machine
- 2nd Planned motor speed
- 3rd Load torque of the driven machine, depending on the speed of the driven machine or the motor speed
- 4th Total external moments of inertia and rated speed of the driven machine or with regard to the motor speed
- 5th Number of starts within a particular time frame and duty cycle or
- 6th Characteristics and number of operating cycles within a particular time frame (method of braking)

Start-up times and moments of inertia for 1LA8 motors for mains-fed operation

Default values

The values in the following table are only valid for 1LA8 motors for mains-fed operation (Pages 3/14 to 3/17) and apply for a continuous heating of 90 % of the rated output at 50 Hz ($0.9 \times P_{\text{rated}}$). The admissible moments of inertia must be reduced again by 20 % at 60 Hz. The moment of inertia J_{adm} in the tables is the moment of inertia which the driven machine is allowed to have as a maximum in order to start the motor. For this purpose has the moment of inertia already been considered in the selection and ordering data, Pages 3/15 to 3/17.

| Frame size | Order No. | Locking of brake | | Admissible moment of inertia and start-up times when starting the motor | | | |
|---|-----------------------|----------------------|----------------------|---|----------------------|--------------------------------------|----------------------|
| | | cold | warm | 1x cold | | 1x warm | |
| | | Braking time | Braking time | Moment of inertia | Start-up time | Moment of inertia | Start-up time |
| FS | | t_{Br} s | t_{Br} s | J_{adm} kgm ² | t_{st} s | J_{adm} kgm ² | t_{st} s |
| Self-ventilated motors for mains-fed operation cast-iron series 1LA8 – 2-pole, 3000 rpm at 50 Hz | | | | | | | |
| 315 | 1LA8 315-2AC□□ | 18 | 10 | 125 | 33.9 | 48 | 13.0 |
| 315 | 1LA8 317-2AC□□ | 17.5 | 10 | 140 | 33.2 | 58 | 13.4 |
| 355 | 1LA8 353-2AC□□ | 18 | 9 | 175 | 41.4 | 33 | 7.8 |
| 355 | 1LA8 355-2AC□□ | 20 | 10 | 190 | 45.8 | 40 | 9.7 |
| 355 | 1LA8 357-2AC□□ | 15 | 7.5 | 180 | 30.0 | 40 | 6.7 |
| 400 | 1LA8 403-2AC□□ | 22 | 13 | 245 | 40.2 | 95 | 15.7 |
| 400 | 1LA8 405-2AC□□ | 19 | 11 | 255 | 37.2 | 90 | 13.1 |
| 400 | 1LA8 407-2AC□□ | 17 | 9.5 | 300 | 34.9 | 85 | 9.9 |
| 450 | 1LA8 453-2AE□□ | 21.5 | 15 | 178 | 31.3 | 83 | 14.6 |
| 450 | 1LA8 455-2AE□□ | 20.5 | 14 | 190 | 30.2 | 90 | 14.3 |
| 450 | 1LA8 457-2AE□□ | 19 | 13 | 200 | 28.2 | 95 | 13.4 |
| Self-ventilated motors for mains-fed operation cast-iron series 1LA8 – 4-pole, 1500 rpm at 50 Hz | | | | | | | |
| 315 | 1LA8 315-4AB□□ | 22 | 13 | 590 | 36.9 | 350 | 21.9 |
| 315 | 1LA8 317-4AB□□ | 19 | 11 | 730 | 32.3 | 425 | 18.8 |
| 355 | 1LA8 353-4AB□□ | 20 | 11 | 1000 | 45.7 | 270 | 12.4 |
| 355 | 1LA8 355-4AB□□ | 18 | 10 | 1020 | 39.6 | 280 | 10.9 |
| 355 | 1LA8 357-4AB□□ | 19 | 10.5 | 1370 | 41.9 | 370 | 11.3 |
| 400 | 1LA8 403-4AB□□ | 20.5 | 11.5 | 1420 | 46.2 | 430 | 14.0 |
| 400 | 1LA8 405-4AB□□ | 20 | 11 | 1600 | 44.5 | 480 | 13.3 |
| 400 | 1LA8 407-4AB□□ | 19 | 10.5 | 1750 | 43.6 | 525 | 13.1 |
| 450 | 1LA8 453-4CE□□ | 17.5 | 10 | 950 | 23.7 | 300 | 7.5 |
| 450 | 1LA8 455-4AC□□ | 18.5 | 10.5 | 1200 | 26.8 | 370 | 8.3 |
| 450 | 1LA8 457-4AC□□ | 17 | 9 | 1160 | 22.3 | 380 | 7.3 |

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Orientation

Technical specifications (continued)

| Frame size | Order No. | Locking of brake | | Admissible moment of inertia and start-up times when starting the motor | | | |
|---|-----------------------|------------------|---------------|---|---------------|-------------------------------|---------------|
| | | cold | warm | 1x cold | | 1x warm | |
| | | Braking time | Braking time | Moment of inertia | Start-up time | Moment of inertia | Start-up time |
| FS | | t_{Br} s | t_{Br} s | J_{adm} kgm ² | t_{st} s | J_{adm} kgm ² | t_{st} s |
| Self-ventilated motors for mains-fed operation cast-iron series 1LA8 – 6-pole, 1000 rpm at 50 Hz | | | | | | | |
| 315 | 1LA8 315-6ABQQ | 33 | 18 | 1900 | 57.4 | 830 | 25.1 |
| 315 | 1LA8 317-6ABQQ | 31 | 15.5 | 2300 | 55.6 | 1000 | 24.2 |
| 355 | 1LA8 355-6ABQQ | 40 | 22 | 2950 | 62.2 | 1350 | 28.5 |
| 355 | 1LA8 357-6ABQQ | 40 | 22 | 3950 | 62.5 | 1800 | 28.5 |
| 400 | 1LA8 403-6ABQQ | 34 | 18.4 | 3450 | 51.1 | 850 | 12.6 |
| 400 | 1LA8 405-6ABQQ | 32 | 17.5 | 3500 | 43.3 | 900 | 11.1 |
| 400 | 1LA8 407-6ABQQ | 24 | 12 | 2200 | 25.6 | 740 | 8.6 |
| 450 | 1LA8 453-6ABQQ | 16 | 7 | 1400 | 15.5 | 560 | 6.2 |
| 450 | 1LA8 455-6ABQQ | 19 | 8.5 | 1700 | 18.1 | 670 | 7.1 |
| 450 | 1LA8 457-6ABQQ | 16 | 7 | 1800 | 15.9 | 720 | 6.4 |
| Self-ventilated motors for mains-fed operation cast-iron series 1LA8 – 8-pole, 750 rpm at 50 Hz | | | | | | | |
| 315 | 1LA8 315-8ABQQ | 40 | 22 | 4800 | 109.5 | 1950 | 44.5 |
| 315 | 1LA8 317-8ABQQ | 42 | 23 | 6800 | 125.9 | 2500 | 46.3 |
| 355 | 1LA8 355-8ABQQ | 41 | 22.5 | 6200 | 89.6 | 3100 | 44.8 |
| 355 | 1LA8 357-8ABQQ | 40 | 22 | 7600 | 88.7 | 3800 | 44.3 |
| 400 | 1LA8 403-8ABQQ | 55 | 30 | 9700 | 107.5 | 4400 | 48.8 |
| 400 | 1LA8 405-8ABQQ | 54 | 29.5 | 11000 | 102.9 | 5400 | 50.5 |
| 400 | 1LA8 407-8ABQQ | 52 | 28.5 | 11200 | 95.4 | 5400 | 46.0 |
| 450 | 1LA8 453-8ABQQ | 44 | 25 | 9800 | 78.8 | 2900 | 23.3 |
| 450 | 1LA8 455-8ABQQ | 42 | 23 | 10500 | 71.4 | 3000 | 20.4 |
| 450 | 1LA8 457-8ABQQ | 44 | 25 | 12400 | 78.1 | 3700 | 23.3 |

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Orientation

Selection and ordering data

Preliminary selection of the motor according to motor type/series, speed or number of poles, frame size, rated output, rated torque, rated speed and rated current

Self-ventilated motors for mains-fed operation (IP55 degree of protection)

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|------------------------------|--------------------|--------------|---------------|---------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Cast-iron series 1LA8 | | | | | | |
| 3000, 2-pole | 315 ... 450 | 250 ... 1000 | 2979 ... 2986 | 801 ... 3200 | 415 ... 1020 | 3/14 ... 3/15 |
| 1500, 4-pole | 315 ... 450 | 250 ... 1000 | 1488 ... 1492 | 1600 ... 6400 | 430 ... 1060 | 3/14 ... 3/15 |
| 1000, 6-pole | 315 ... 450 | 200 ... 800 | 988 ... 993 | 1930 ... 7690 | 345 ... 1100 | 3/16 ... 3/17 |
| 750, 8-pole | 315 ... 450 | 160 ... 630 | 739 ... 744 | 2070 ... 8090 | 295 ... 1160 | 3/16 ... 3/17 |

Self-ventilated motors for converter-fed operation (IP55 degree of protection)

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|--|--------------------|--------------|---------------|---------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Cast-iron series 1LA8 with standard insulation ≤500 V | | | | | | |
| 3000, 2-pole | 315 ... 450 | 250 ... 1000 | 2979 ... 2986 | 801 ... 3200 | 415 ... 1020 | 3/18 ... 3/19 |
| 1500, 4-pole | 315 ... 450 | 250 ... 1000 | 1488 ... 1492 | 1600 ... 6400 | 430 ... 1060 | 3/18 ... 3/19 |
| 1000, 6-pole | 315 ... 450 | 200 ... 800 | 988 ... 993 | 1930 ... 7690 | 345 ... 1100 | 3/20 ... 3/21 |
| 750, 8-pole | 315 ... 450 | 160 ... 630 | 739 ... 744 | 2070 ... 8090 | 295 ... 1160 | 3/20 ... 3/21 |

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 690 V | Detailed selection and ordering data Page |
|---|--------------------|--------------|---------------|---------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Cast-iron series 1LA8 with special insulation >500 to 690 V | | | | | | |
| 3000, 2-pole | 315 ... 450 | 240 ... 970 | 2978 ... 2987 | 770 ... 3101 | 730 ... 900 | 3/22 ... 3/23 |
| 1500, 4-pole | 315 ... 450 | 235 ... 980 | 1485 ... 1492 | 1511 ... 6273 | 235 ... 950 | 3/22 ... 3/23 |
| 1000, 6-pole | 315 ... 450 | 190 ... 780 | 990 ... 993 | 1833 ... 7502 | 196 ... 790 | 3/24 ... 3/25 |
| 750, 8-pole | 315 ... 450 | 145 ... 600 | 740 ... 745 | 1871 ... 7691 | 162 ... 660 | 3/24 ... 3/25 |

Forced-air cooled motors with mounted separately driven fan for converter-fed operation (IP55 degree of protection)

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|--|--------------------|--------------|---------------|---------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Cast-iron series 1PQ8 with standard insulation ≤500 V | | | | | | |
| 3000, 2-pole | 315 ... 450 | 250 ... 1000 | 2979 ... 2986 | 801 ... 3200 | 415 ... 1020 | 3/26 ... 3/27 |
| 1500, 4-pole | 315 ... 450 | 250 ... 1000 | 1488 ... 1492 | 1600 ... 6400 | 430 ... 1060 | 3/26 ... 3/27 |
| 1000, 6-pole | 315 ... 450 | 200 ... 800 | 988 ... 993 | 1930 ... 7690 | 345 ... 1100 | 3/28 ... 3/29 |
| 750, 8-pole | 315 ... 450 | 160 ... 630 | 739 ... 744 | 2070 ... 8090 | 295 ... 1160 | 3/28 ... 3/29 |

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 690 V | Detailed selection and ordering data Page |
|---|--------------------|--------------|---------------|---------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Cast-iron series 1PQ8 with special insulation >500 to 690 V | | | | | | |
| 3000, 2-pole | 315 ... 450 | 240 ... 970 | 2978 ... 2987 | 770 ... 3101 | 730 ... 900 | 3/30 ... 3/31 |
| 1500, 4-pole | 315 ... 450 | 235 ... 980 | 1485 ... 1492 | 1511 ... 6273 | 235 ... 950 | 3/30 ... 3/31 |
| 1000, 6-pole | 315 ... 450 | 190 ... 780 | 990 ... 993 | 1833 ... 7502 | 196 ... 790 | 3/32 ... 3/33 |
| 750, 8-pole | 315 ... 450 | 145 ... 600 | 740 ... 745 | 1871 ... 7691 | 162 ... 660 | 3/32 ... 3/33 |

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Orientation

Selection and ordering data (continued)

Self-ventilated motors with through-ventilation for mains-fed operation (IP23 degree of protection)

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|------------------------------|--------------------|--------------|---------------|----------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Cast-iron series 1LL8 | | | | | | |
| 3000, 2-pole | 315 ... 450 | 315 ... 1250 | 2974 ... 2986 | 1010 ... 4000 | 510 ... 1300 | 3/34 ... 3/35 |
| 1500, 4-pole | 315 ... 450 | 315 ... 1250 | 1483 ... 1490 | 2030 ... 8010 | 540 ... 1360 | 3/34 ... 3/35 |
| 1000, 6-pole | 315 ... 450 | 250 ... 1000 | 988 ... 993 | 2420 ... 9620 | 430 ... 1380 | 3/36 ... 3/37 |
| 750, 8-pole | 315 ... 450 | 200 ... 800 | 738 ... 743 | 2590 ... 10300 | 370 ... 1440 | 3/36 ... 3/37 |

Self-ventilated motors with through-ventilation for converter-fed operation (IP23 degree of protection)

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|--|--------------------|--------------|---------------|----------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Cast-iron series 1LL8 with standard insulation ≤500 V | | | | | | |
| 3000, 2-pole | 315 ... 450 | 315 ... 1250 | 2974 ... 2986 | 1010 ... 4000 | 510 ... 1300 | 3/38 ... 3/39 |
| 1500, 4-pole | 315 ... 450 | 315 ... 1250 | 1483 ... 1490 | 2030 ... 8010 | 540 ... 1360 | 3/38 ... 3/39 |
| 1000, 6-pole | 315 ... 450 | 250 ... 1000 | 988 ... 993 | 2420 ... 9620 | 430 ... 1380 | 3/40 ... 3/41 |
| 750, 8-pole | 315 ... 450 | 200 ... 800 | 738 ... 743 | 2590 ... 10300 | 370 ... 1440 | 3/40 ... 3/41 |

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 690 V | Detailed selection and ordering data Page |
|---|--------------------|--------------|---------------|---------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Cast-iron series 1LL8 with special insulation >500 to 690 V | | | | | | |
| 3000, 2-pole | 315 ... 450 | 300 ... 1210 | 2977 ... 2988 | 962 ... 3871 | 290 ... 800 | 3/42 ... 3/43 |
| 1500, 4-pole | 315 ... 450 | 295 ... 1225 | 1485 ... 1493 | 1897 ... 7846 | 300 ... 880 | 3/42 ... 3/43 |
| 1000, 6-pole | 315 ... 450 | 235 ... 975 | 990 ... 994 | 2267 ... 9377 | 240 ... 850 | 3/44 ... 3/45 |
| 750, 8-pole | 315 ... 450 | 180 ... 760 | 738 ... 742 | 2329 ... 9782 | 198 ... 800 | 3/44 ... 3/45 |

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Orientation

More information

Standardline

4-pole 1LA8 motors are available with a reduced range of options up to an output of 500 kW in the *Standardline*.

The benefit to the customer:

- Much shorter delivery time
- Products in the *Standardline* can be configured with a variety of options so as to ensure a high degree of flexibility.

Application:

Standardline low-voltage motors are optimised for applications in pump, fan and compressor drives.

For the low-voltage motors, this is particularly true for complete, coordinated drive systems comprising the motor and a SINAMICS G150 frequency converter.

Standardline motors can be ordered with the order code **B20**.

Scope of the *Standardline*:

- 4-pole version
- Power range 250 to 500 kW
- Types 1LA8 315, 1LA8 317, 1LA8 353, 1LA8 355 and 1LA8 357
- Type of construction code **0** (IM B3)
- For mains-fed operation: Voltage code **6** (400 VΔ/690 VY) or **5** (500 VΔ)
- For converter-fed operation: Voltage code **4** (400 VΔ), **8** (400 VΔ/690 VY) or **5** (500 VΔ)
- Can be ordered for converter-fed operation, but not in the 690 V version
- Possible order codes: **A23, A61, A72, G50, H70, H73, K09, K10, K45, K46, K57, K83, K84, K85, L00, L97, M58** (only frame size 315), **M88** and **Y53**

For more information, see Catalog D 86.1 *Standardline*.

For more information, please contact your local Siemens contact – see “Siemens contacts worldwide” in the Appendix.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Self-ventilated motors for mains-fed operation
Cast-iron series 1LA8

Selection and ordering data

| Rated output at | | Frame size | Operating values at rated output | | | | | | | Order No. | Price | Weight of IM B3 type of construction, approx. |
|---|--------------------------|------------|----------------------------------|--------------------------|------------------------------|------------------------------|--------------------------------|------------------------------|------------------------------|---|-----------|---|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | Rated current at 50 Hz 690 V | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | I_{rated} A | For Order No. supplements for voltage and type of construction, see table below | m kg | |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 130 (B), IP55 degree of protection | | | | | | | | | | | | |
| 250 | 280 | 315 | 2979 | 801 | 96.2 | 96.2 | 0.90 | 415 | 240 | 1LA8 315-2AC□□ | 1300 | |
| 315 | 353 | 315 | 2979 | 1010 | 96.5 | 96.5 | 0.91 | 520 | 300 | 1LA8 317-2AC□□ | 1500 | |
| 355 | 398 | 355 | 2980 | 1140 | 96.5 | 96.5 | 0.90 | 590 | 340 | 1LA8 353-2AC□□ | 1900 | |
| 400 | 448 | 355 | 2980 | 1280 | 96.7 | 96.7 | 0.91 | 660 | 380 | 1LA8 355-2AC□□ | 2000 | |
| 500 | 560 | 355 | 2982 | 1600 | 97.1 | 97.1 | 0.91 | 820 | 475 | 1LA8 357-2AC□□ | 2200 | |
| 560 | 616 | 400 | 2985 | 1790 | 97.1 | 97.1 | 0.91 | 910 | 530 | 1LA8 403-2AC□□ | 2800 | |
| 630 | 693 | 400 | 2985 | 2020 | 97.1 | 97.1 | 0.91 | 1020 | 600 | 1LA8 405-2AC□□ | 3000 | |
| 710 | 781 | 400 | 2985 | 2270 | 97.3 | 97.3 | 0.91 | – | 670 ¹⁾ | 1LA8 407-2AC□□ | 3200 | |
| 800 | – | 450 | 2986 | 2560 | 97.2 | 97.2 | 0.91 | – | 760 | 1LA8 453-2AE□□ | 4000 | |
| 900 | – | 450 | 2986 | 2880 | 97.3 | 97.3 | 0.92 | – | 840 | 1LA8 455-2AE□□ | 4200 | |
| 1000 | – | 450 | 2986 | 3200 | 97.4 | 97.4 | 0.93 | – | 920 | 1LA8 457-2AE□□ | 4400 | |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 130 (B), IP55 degree of protection | | | | | | | | | | | | |
| 250 | 288 | 315 | 1488 | 1600 | 96.0 | 96.0 | 0.87 | 430 | 250 ²⁾ | 1LA8 315-4AB□□ | 1300 | |
| 315 | 362 | 315 | 1488 | 2020 | 96.2 | 96.2 | 0.87 | 540 | 315 ²⁾ | 1LA8 317-4AB□□ | 1500 | |
| 355 | 408 | 355 | 1488 | 2280 | 96.3 | 96.3 | 0.87 | 610 | 355 ²⁾ | 1LA8 353-4AB□□ | 1900 | |
| 400 | 460 | 355 | 1488 | 2570 | 96.4 | 96.4 | 0.87 | 690 | 400 ²⁾ | 1LA8 355-4AB□□ | 2000 | |
| 500 | 575 | 355 | 1488 | 3210 | 96.7 | 96.7 | 0.88 | 850 | 490 ²⁾ | 1LA8 357-4AB□□ | 2200 | |
| 560 | 644 | 400 | 1492 | 3580 | 96.7 | 96.7 | 0.88 | 950 | 550 | 1LA8 403-4AB□□ | 2800 | |
| 630 | 725 | 400 | 1492 | 4030 | 96.9 | 96.9 | 0.88 | 1060 | 620 | 1LA8 405-4AB□□ | 3000 | |
| 710 | 817 | 400 | 1492 | 4540 | 97.0 | 97.0 | 0.89 | – | 690 ¹⁾ | 1LA8 407-4AB□□ | 3200 | |
| 800 | 920 | 450 | 1492 | 5120 | 97.0 | 97.0 | 0.88 | – | 780 ¹⁾ | 1LA8 453-4AC□□ | 4000 | |
| 900 | 1040 | 450 | 1492 | 5760 | 97.1 | 97.1 | 0.88 | – | 880 | 1LA8 455-4AC□□ | 4200 | |
| 1000 | 1150 | 450 | 1492 | 6400 | 97.1 | 97.1 | 0.89 | – | 970 | 1LA8 457-4AC□□ | 4400 | |

Up to frame size 355, a service factor of 1.1 is stamped, above this 1.05.

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | |
|--|------------------------------------|----------|-----------------|--|---|---|---|-----------------|
| | 400 VΔ/690 VY | 500 VΔ | 690 VΔ | 60 Hz 460 VΔ (for rated output at 60 Hz, see above) | Without flange IM B3 | With flange IM V1 without protective cover ³⁾ | IM V1 with protective cover ⁴⁾ | IM B35 |
| | 6 | 5 | 0 | 9 L2F | 0 | 8 | 4 | 6 |
| 1LA8 315-... □□ to 1LA8 405-... □□ | □ | ○ | – ⁵⁾ | ○ | □ | ✓ ⁶⁾ | ✓ ⁶⁾ | ✓ |
| 1LA8 407-... □□ to 1LA8 457-... □□ | – | ○ | □ | O. R. | □ | ✓ ⁶⁾ | ✓ ⁶⁾ | ✓ ⁷⁾ |

- Standard version
- Without additional charge
- ✓ With additional charge
- O. R. Possible on request
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see “Special versions” in the “Selection and ordering data” under “Voltages”).

Voltages or frequencies that are not covered by the predefined options can be ordered with order code **L1Y**. In this case, the output, voltage and frequency must be specified.

¹⁾ Can also be supplied for 400 VΔ 50 Hz with voltage code “9” and order code **L1Y** (specify output, voltage and frequency).

²⁾ *Standardline* for 1LA8 motors is a standardized range in specific versions which can be ordered with the order code **B20**. The delivery time is 4 weeks. Scope of the *Standardline*: 4-pole, types **1LA8 315**, **1LA8 317**, **1LA8 353**, **1LA8 355**, type of construction code **0** (IM B3), voltage code **6** (400 VΔ/690 VY) or **5** (500 VΔ); can be ordered for converter-fed operation, but not in 690 V version; possible order codes: **A23**, **A61**, **A72**, **G50**, **H70**, **H73**, **K09**, **K10**, **K45**, **K46**, **K57**, **K83**, **K84**, **K85**, **L00**, **L97**, **M58** (for frame size 315 only), **M88**, **Y53**.

³⁾ For explosion-proof motors, the type of construction IM V1 without protective cover is not possible.

⁴⁾ The “Second shaft extension” option, order code **K16** is not possible.

⁵⁾ As special version with voltage code “9” and order code **L1Y** (specify output, voltage and frequency).

⁶⁾ For 2-pole motors 60 Hz version, not possible for 1LA8 353 to 1LA8 457.

⁷⁾ For 2-pole motors 60 Hz version, not possible for 1LA8 453 to 1LA8 457.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Self-ventilated motors for mains-fed operation
Cast-iron series 1LA8

Selection and ordering data (continued)

| Order No. | Locked-rotor torque | Locked-rotor current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | | Mech. limit speed ¹⁾ | Parallel feeders required | | |
|---|---|----------------------|------------------|--------------|-------------------------|---|----------------------------|---------------------------------|---------------------------|-------|---------|
| | At 50 Hz and for direct online starting as multiple of rated torque | | | | | Measuring surface sound pressure level at 50 Hz | Sound power level at 50 Hz | | 400 V | 500 V | 690 V |
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | L_{pFA} dB(A) | L_{WA} dB(A) | $n_{max.}$ rpm | | | |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 130 (B), IP55 degree of protection | | | | | | | | | | | |
| 1LA8 315-2AC□□ | 1.8 | 7.0 | 2.8 | 10 | 2.7 | 82 (75) ²⁾ | 97 (90) ²⁾ | 3600 | | | Yes |
| 1LA8 317-2AC□□ | 1.8 | 7.0 | 2.8 | 10 | 3.3 | 82 (75) ²⁾ | 97 (90) ²⁾ | 3600 | | | Yes |
| 1LA8 353-2AC□□ | 1.7 | 6.5 | 2.5 | 10 | 4.8 | 77 ³⁾ | 92 ³⁾ | 3600/3100 ⁴⁾ | Yes | Yes | |
| 1LA8 355-2AC□□ | 1.7 | 6.5 | 2.5 | 10 | 5.3 | 77 ³⁾ | 92 ³⁾ | 3600/3100 ⁴⁾ | Yes | Yes | |
| 1LA8 357-2AC□□ | 1.8 | 6.5 | 2.6 | 10 | 6.4 | 77 ³⁾ | 92 ³⁾ | 3600/3100 ⁴⁾ | Yes | | |
| 1LA8 403-2AC□□ | 1.6 | 7.0 | 2.8 | 10 | 8.6 | 79 ³⁾ | 94 ³⁾ | 3600/3100 ⁴⁾ | Yes | | |
| 1LA8 405-2AC□□ | 1.6 | 7.0 | 2.8 | 10 | 9.6 | 79 ³⁾ | 94 ³⁾ | 3600/3100 ⁴⁾ | Yes | Yes | |
| 1LA8 407-2AC□□ | 1.7 | 7.0 | 2.8 | 10 | 11 | 79 ³⁾ | 94 ³⁾ | 3600/3100 ⁴⁾ | | | Yes |
| 1LA8 453-2AE□□ | 0.9 | 7.0 | 3.0 | 5 | 19 | 81 ³⁾ | 96 ³⁾ | 3000 | | | Yes |
| 1LA8 455-2AE□□ | 0.9 | 7.0 | 2.8 | 5 | 21 | 81 ³⁾ | 96 ³⁾ | 3000 | | | Yes Yes |
| 1LA8 457-2AE□□ | 0.9 | 7.0 | 2.7 | 5 | 23 | 81 ³⁾ | 96 ³⁾ | 3000 | | | Yes Yes |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 130 (B), IP55 degree of protection | | | | | | | | | | | |
| 1LA8 315-4AB□□ | 1.9 | 6.5 | 2.8 | 13 | 3.6 | 73 | 87 | 3000 (2650) | | | Yes |
| 1LA8 317-4AB□□ | 2.0 | 6.8 | 2.8 | 13 | 4.4 | 73 | 87 | 3000 (2650) | | | Yes |
| 1LA8 353-4AB□□ | 2.1 | 6.5 | 2.6 | 13 | 6.1 | 75 | 90 | 2500 (2350) | Yes | Yes | |
| 1LA8 355-4AB□□ | 2.1 | 6.5 | 2.6 | 13 | 6.8 | 75 | 90 | 2500 (2350) | Yes | Yes | |
| 1LA8 357-4AB□□ | 2.1 | 6.5 | 2.4 | 13 | 8.5 | 75 | 90 | 2500 (2350) | Yes | | |
| 1LA8 403-4AB□□ | 1.9 | 6.5 | 2.7 | 13 | 13 | 78 | 93 | 2200 (2100)/2100 ⁴⁾ | Yes | | |
| 1LA8 405-4AB□□ | 1.9 | 6.8 | 2.7 | 13 | 14 | 78 | 93 | 2200 (2100)/2100 ⁴⁾ | Yes | Yes | |
| 1LA8 407-4AB□□ | 1.9 | 6.8 | 2.7 | 13 | 16 | 78 | 93 | 2200 (2100)/2100 ⁴⁾ | | | Yes |
| 1LA8 453-4AC□□ | 1.6 | 7.0 | 2.6 | 10 | 23 | 81 | 96 | 2100 (1900)/1800 ⁴⁾ | | | Yes |
| 1LA8 455-4AC□□ | 1.6 | 7.0 | 2.6 | 10 | 26 | 81 | 96 | 2100 (1900)/1800 ⁴⁾ | Yes | Yes | |
| 1LA8 457-4AC□□ | 1.7 | 7.0 | 2.6 | 10 | 28 | 81 | 96 | 2100 (1900)/1800 ⁴⁾ | Yes | Yes | |

Values in brackets apply to the use of motors in hazardous areas.

¹⁾ Limit speeds for reinforced bearings (order code **K20**) for 4-pole motors on request.
²⁾ Low-noise version, 2-pole, in brackets. To reduce noise, 2-pole motors can be equipped with an axial fan that is only suitable for one direction of rotation. Clockwise rotation order code **K37**, counter-clockwise rotation **K38**.

³⁾ In the standard version, the motors already have an axial fan for clockwise rotation. Order code **K37** is not necessary. For counter-clockwise rotation, order code **K38** is necessary.

⁴⁾ For vertical type of construction IM V1.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Self-ventilated motors for mains-fed operation
Cast-iron series 1LA8

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output | | | | | | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | Rated current at 50 Hz 690 V | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight of IM B3 type of construction, approx. m kg |
|---|--------------------------|------------|----------------------------------|--------------------------|------------------------------|------------------------------|------------------------------|-------------------------|--------------------------------|------------------------------|------------------------------|--|-------|--|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Efficiency at 50 Hz 4/4-load | | | | | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | I_{rated} A | | | | | |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 130 (B), IP55 degree of protection | | | | | | | | | | | | | | |
| 200 | 230 | 315 | 988 | 1930 | 95.7 | 95.8 | 0.86 | 345 | 200 | | 1LA8 315-6AB□□ | | 1300 | |
| 250 | 288 | 315 | 988 | 2410 | 95.9 | 96.0 | 0.86 | 430 | 250 | | 1LA8 317-6AB□□ | | 1500 | |
| 315 | 362 | 355 | 993 | 3040 | 96.2 | 96.2 | 0.86 | 540 | 315 | | 1LA8 355-6AB□□ | | 2000 | |
| 400 | 460 | 355 | 993 | 3850 | 96.5 | 96.5 | 0.86 | 690 | 400 | | 1LA8 357-6AB□□ | | 2200 | |
| 450 | 518 | 400 | 991 | 4330 | 96.5 | 96.5 | 0.86 | 780 | 455 | | 1LA8 403-6AB□□ | | 2800 | |
| 500 | 575 | 400 | 991 | 4810 | 96.5 | 96.5 | 0.86 | 860 | 500 | | 1LA8 405-6AB□□ | | 3000 | |
| 560 | 644 | 400 | 991 | 5390 | 96.7 | 96.7 | 0.86 | 960 | 560 | | 1LA8 407-6AB□□ | | 3200 | |
| 630 | 725 | 450 | 993 | 6060 | 96.8 | 96.8 | 0.86 | 1100 | 630 | | 1LA8 453-6AB□□ | | 4000 | |
| 710 | 817 | 450 | 993 | 6830 | 96.8 | 96.8 | 0.86 | – | 710 ¹⁾ | | 1LA8 455-6AB□□ | | 4200 | |
| 800 | 920 | 450 | 993 | 7690 | 97.0 | 97.1 | 0.86 | – | 790 | | 1LA8 457-6AB□□ | | 4500 | |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 130 (B), IP55 degree of protection | | | | | | | | | | | | | | |
| 160 | 184 | 315 | 739 | 2070 | 94.9 | 94.9 | 0.82 | 295 | 172 | | 1LA8 315-8AB□□ | | 1300 | |
| 200 | 230 | 315 | 739 | 2580 | 95.2 | 95.2 | 0.82 | 370 | 215 | | 1LA8 317-8AB□□ | | 1500 | |
| 250 | 288 | 355 | 741 | 3220 | 95.7 | 95.7 | 0.82 | 460 | 265 | | 1LA8 355-8AB□□ | | 2000 | |
| 315 | 362 | 355 | 741 | 4060 | 96.0 | 96.0 | 0.82 | 580 | 335 | | 1LA8 357-8AB□□ | | 2200 | |
| 355 | 408 | 400 | 742 | 4570 | 96.1 | 96.1 | 0.82 | 650 | 375 | | 1LA8 403-8AB□□ | | 2800 | |
| 400 | 460 | 400 | 742 | 5150 | 96.2 | 96.2 | 0.82 | 730 | 425 | | 1LA8 405-8AB□□ | | 3000 | |
| 450 | 518 | 400 | 742 | 5790 | 96.3 | 96.3 | 0.82 | 820 | 475 | | 1LA8 407-8AB□□ | | 3200 | |
| 500 | 575 | 450 | 744 | 6420 | 96.4 | 96.4 | 0.81 | 920 | 540 | | 1LA8 453-8AB□□ | | 4000 | |
| 560 | 644 | 450 | 744 | 7190 | 96.5 | 96.5 | 0.81 | 1040 | 600 | | 1LA8 455-8AB□□ | | 4200 | |
| 630 | 725 | 450 | 744 | 8090 | 96.6 | 96.6 | 0.81 | 1160 | 670 | | 1LA8 457-8AB□□ | | 4500 | |

Up to frame size 355, a service factor of 1.1 is stamped, above this 1.05.

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | |
|--|------------------------------------|----------|-----------------|--|---|---|---|----------|
| | 400 VΔ/690 VY | 500 VΔ | 690 VΔ | 60 Hz 460 VΔ (for rated output at 60 Hz, see above) | Without flange IM B3 | With flange IM V1 without protective cover ²⁾ | IM V1 with protective cover ³⁾ | IM B35 |
| | 6 | 5 | 0 | 9 L2F | 0 | 8 | 4 | 6 |
| 6-pole | | | | | | | | |
| 1LA8 315-...□□ to 1LA8 453-...□□ | □ | ○ | – ⁴⁾ | ○ | □ | ✓ | ✓ | ✓ |
| 1LA8 455-...□□ to 1LA8 457-...□□ | – | ○ | □ | O. R. | □ | ✓ | ✓ | ✓ |
| 8-pole | | | | | | | | |
| 1LA8 315-...□□ to 1LA8 457-...□□ | □ | ○ | – ⁴⁾ | ○ | □ | ✓ | ✓ | ✓ |

- Standard version
- Without additional charge
- ✓ With additional charge
- O. R. Possible on request
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Voltages or frequencies that are not covered by the predefined options can be ordered with order code **L1Y**. In this case, the output, voltage and frequency must be specified.

¹⁾ Can also be supplied for 400 VΔ 50 Hz with voltage code "9" and order code **L1Y** (specify output, voltage and frequency).
²⁾ For explosion-proof motors, the type of construction IM V1 without protective cover is not possible.

³⁾ The "Second shaft extension" option, order code **K16** is not possible.
⁴⁾ As special version with voltage code "9" and order code **L1Y** (specify output, voltage and frequency).

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Self-ventilated motors for mains-fed operation
Cast-iron series 1LA8

Selection and ordering data (continued)

| Order No. | Locked-rotor torque | Locked-rotor current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | | Mech. limit speed ¹⁾ | Parallel feeders required | | |
|---|---|----------------------|------------------|--------------|-------------------------|---|----------------------------|---------------------------------|---------------------------|-------|-------|
| | At 50 Hz and for direct online starting as multiple of rated torque | | | | | Measuring surface sound pressure level at 50 Hz | Sound power level at 50 Hz | | 400 V | 500 V | 690 V |
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | L_{pFA} dB(A) | L_{WA} dB(A) | $n_{max.}$ rpm | | | |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 130 (B), IP55 degree of protection | | | | | | | | | | | |
| 1LA8 315-6AB□□ | 2.0 | 6.3 | 2.5 | 13 | 6.0 | 68 | 82 | 2950 (2350) | | | |
| 1LA8 317-6AB□□ | 2.0 | 6.3 | 2.5 | 13 | 7.3 | 68 | 82 | 2950 (2350) | Yes | | |
| 1LA8 355-6AB□□ | 2.2 | 6.5 | 2.8 | 13 | 13 | 71 | 86 | 2500 (2100) | Yes | | |
| 1LA8 357-6AB□□ | 2.2 | 6.5 | 2.8 | 13 | 16 | 71 | 86 | 2500 (2100) | Yes | Yes | Yes |
| 1LA8 403-6AB□□ | 2.2 | 6.5 | 2.8 | 13 | 21 | 73 | 88 | 2200 (1900)/2100 ²⁾ | | | |
| 1LA8 405-6AB□□ | 2.3 | 6.5 | 2.8 | 13 | 24 | 73 | 88 | 2200 (1900)/2100 ²⁾ | Yes | | |
| 1LA8 407-6AB□□ | 2.3 | 6.5 | 2.8 | 13 | 27 | 73 | 88 | 2200 (1900)/2100 ²⁾ | Yes | | |
| 1LA8 453-6AB□□ | 2.0 | 6.5 | 2.6 | 13 | 35 | 75 | 90 | 2100 (1700)/1800 ²⁾ | Yes | Yes | |
| 1LA8 455-6AB□□ | 2.0 | 6.5 | 2.5 | 13 | 39 | 75 | 90 | 2100 (1700)/1800 ²⁾ | Yes | Yes | |
| 1LA8 457-6AB□□ | 2.0 | 6.5 | 2.5 | 13 | 44 | 75 | 90 | 2100 (1700)/1800 ²⁾ | Yes | Yes | |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 130 (B), IP55 degree of protection | | | | | | | | | | | |
| 1LA8 315-8AB□□ | 2.1 | 6.0 | 2.3 | 13 | 6.0 | 65 | 79 | 2950 (2350) | | | |
| 1LA8 317-8AB□□ | 2.1 | 6.0 | 2.3 | 13 | 7.3 | 65 | 79 | 2950 (2350) | | | |
| 1LA8 355-8AB□□ | 2.1 | 6.1 | 2.4 | 13 | 13 | 67 | 82 | 2500 (2100) | | | |
| 1LA8 357-8AB□□ | 2.1 | 6.1 | 2.4 | 13 | 16 | 67 | 82 | 2500 (2100) | Yes | | |
| 1LA8 403-8AB□□ | 2.0 | 6.5 | 2.6 | 13 | 21 | 69 | 84 | 2200 (1900)/2100 ²⁾ | | | |
| 1LA8 405-8AB□□ | 2.1 | 6.5 | 2.6 | 13 | 24 | 69 | 84 | 2200 (1900)/2100 ²⁾ | | | |
| 1LA8 407-8AB□□ | 2.1 | 6.5 | 2.6 | 13 | 27 | 69 | 84 | 2200 (1900)/2100 ²⁾ | Yes | | |
| 1LA8 453-8AB□□ | 2.0 | 6.6 | 2.4 | 13 | 35 | 71 | 86 | 2100 (1700)/1800 ²⁾ | Yes | | |
| 1LA8 455-8AB□□ | 2.0 | 6.6 | 2.4 | 13 | 39 | 71 | 86 | 2100 (1700)/1800 ²⁾ | Yes | Yes | |
| 1LA8 457-8AB□□ | 2.0 | 6.6 | 2.4 | 13 | 44 | 71 | 86 | 2100 (1700)/1800 ²⁾ | Yes | Yes | |

Values in brackets apply to the use of motors in hazardous areas.

¹⁾ Limit speeds for reinforced bearings (order code **K20**) for 6- and 8-pole motors on request.

²⁾ For vertical type of construction IM V1.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Self-ventilated motors for converter-fed operation
Cast-iron series 1LA8

Selection and ordering data

| Rated output at | | Frame size | Operating values at rated output and sinusoidal supply | | | | | | | Order No. | Price | Weight of IM B3 type of construction approx. |
|--|-------------------|------------|--|-----------------------|------------------------------|------------------------------|--------------------------------|------------------------------|------------------------------|---|-----------|--|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | Rated current at 50 Hz 690 V | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | I_{rated} A | For Order No. supplements for voltage and type of construction, see table below | m kg | |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with standard insulation for voltages ≤500 V | | | | | | | | | | | | |
| 250 | 280 | 315 | 2979 | 801 | 96.2 | 96.2 | 0.90 | 415 | 240 | 1LA8 315-2PC□□ | 1300 | |
| 315 | 353 | 315 | 2979 | 1010 | 96.5 | 96.5 | 0.91 | 520 | 300 | 1LA8 317-2PC□□ | 1500 | |
| 355 | 398 | 355 | 2980 | 1140 | 96.5 | 96.5 | 0.90 | 590 | 340 | 1LA8 353-2PC□□ | 1900 | |
| 400 | 448 | 355 | 2980 | 1280 | 96.7 | 96.7 | 0.91 | 660 | 380 | 1LA8 355-2PC□□ | 2000 | |
| 500 | 560 | 355 | 2982 | 1600 | 97.1 | 97.1 | 0.91 | 820 | 475 | 1LA8 357-2PC□□ | 2200 | |
| 560 | 616 | 400 | 2985 | 1790 | 97.1 | 97.1 | 0.91 | 910 | 530 | 1LA8 403-2PC□□ | 2800 | |
| 630 | 693 | 400 | 2985 | 2020 | 97.1 | 97.1 | 0.91 | 1020 | 600 | 1LA8 405-2PC□□ | 3000 | |
| 710 | 781 | 400 | 2985 | 2270 | 97.3 | 97.3 | 0.91 | – | 670 ¹⁾ | 1LA8 407-2PC□□ | 3200 | |
| 800 | – | 450 | 2986 | 2560 | 97.2 | 97.2 | 0.91 | – | 760 | 1LA8 453-2PE□□ | 4000 | |
| 900 | – | 450 | 2986 | 2880 | 97.3 | 97.3 | 0.92 | – | 840 | 1LA8 455-2PE□□ | 4200 | |
| 1000 | – | 450 | 2986 | 3200 | 97.4 | 97.4 | 0.93 | – | 920 | 1LA8 457-2PE□□ | 4400 | |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with standard insulation for voltages ≤500 V | | | | | | | | | | | | |
| 250 | 288 | 315 | 1488 | 1600 | 96.0 | 96.0 | 0.87 | 430 | 250 ²⁾ | 1LA8 315-4PB□□ | 1300 | |
| 315 | 362 | 315 | 1488 | 2020 | 96.2 | 96.2 | 0.87 | 540 | 315 ²⁾ | 1LA8 317-4PB□□ | 1500 | |
| 355 | 408 | 355 | 1488 | 2280 | 96.3 | 96.3 | 0.87 | 610 | 355 ²⁾ | 1LA8 353-4PB□□ | 1900 | |
| 400 | 460 | 355 | 1488 | 2570 | 96.4 | 96.4 | 0.87 | 690 | 400 ²⁾ | 1LA8 355-4PB□□ | 2000 | |
| 500 | 575 | 355 | 1488 | 3210 | 96.7 | 96.7 | 0.88 | 850 | 490 ²⁾ | 1LA8 357-4PB□□ | 2200 | |
| 560 | 644 | 400 | 1492 | 3580 | 96.7 | 96.7 | 0.88 | 950 | 550 | 1LA8 403-4PB□□ | 2800 | |
| 630 | 725 | 400 | 1492 | 4030 | 96.9 | 96.9 | 0.88 | 1060 | 620 | 1LA8 405-4PB□□ | 3000 | |
| 710 | 817 | 400 | 1492 | 4540 | 97.0 | 97.0 | 0.89 | – | 690 ¹⁾ | 1LA8 407-4PB□□ | 3200 | |
| 800 | 920 | 450 | 1492 | 5120 | 97.0 | 97.0 | 0.88 | – | 780 ¹⁾ | 1LA8 453-4PC□□ | 4000 | |
| 900 | 1040 | 450 | 1492 | 5760 | 97.1 | 97.1 | 0.88 | – | 880 | 1LA8 455-4PC□□ | 4200 | |
| 1000 | 1150 | 450 | 1492 | 6400 | 97.1 | 97.1 | 0.89 | – | 970 | 1LA8 457-4PC□□ | 4400 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | |
|--|------------------------------------|-----------------------------|--------|----------------------|---|---|---|-----------------|
| | 400 VΔ | 400 VΔ/690 VY ³⁾ | 500 VΔ | 690 VΔ ³⁾ | Without flange IM B3 | With flange IM V1 without protective cover ⁴⁾ | IM V1 with protective cover ⁵⁾ | IM B35 |
| | 4 | 8 | 5 | 7 | 0 | 8 | 4 | 6 |
| 1LA8 315-... □□ to 1LA8 405-... □□ | ○ | □ | ○ | – | □ | ✓ ⁶⁾ | ✓ ⁶⁾ | ✓ |
| 1LA8 407-... □□ to 1LA8 457-... □□ | – | – | ○ | □ | □ | ✓ ⁶⁾ | ✓ ⁶⁾ | ✓ ⁷⁾ |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Voltages or frequencies that are not covered by the predefined options can be ordered with order code **L1Y**. In this case, the output, voltage and frequency must be specified.

¹⁾ Can also be supplied for 400 VΔ 50 Hz with voltage code **9** and order code **L1Y** (specify output, voltage and frequency).
²⁾ **Standardline** for 1LA8 motors is a standardized range in specific versions which can be ordered with the order code **B20**. The delivery time is 4 weeks. Scope of the **Standardline**: 4-pole, types **1LA8 315**, **1LA8 317**, **1LA8 353**, **1LA8 355**, type of construction code **0** (IM B3), voltage code **4** (400 VΔ), **8** (400 VΔ/690 VY) or **5** (500 VΔ); can be ordered for converter-fed operation, but not in 690 V version. Possible order codes: **A23**, **A61**, **A72**, **G50**, **H70**, **H73**, **K09**, **K10**, **K45**, **K46**, **K57**, **K83**, **K84**, **K85**, **L00**, **L97**, **M58** (for frame size 315 only), **M88**, **Y53**.

³⁾ Motors with standard insulation can only be operated with converter circuit (du/dt or sinusoidal filter).
⁴⁾ For explosion-proof motors, the type of construction IM V1 without protective cover is not possible.
⁵⁾ The "Second shaft extension" option, order code **K16** is not possible.
⁶⁾ In 2-pole motors 60 Hz version, not possible for 1LA8 353 to 1LA8 457.
⁷⁾ In 2-pole motors 60 Hz version, not possible for 1LA8 453 to 1LA8 457.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Self-ventilated motors for converter-fed operation
Cast-iron series 1LA8

Selection and ordering data (continued)

| Order No. | At 50 Hz as multiple of rated torque | Torque class | Moment of inertia | Noise | Sound power level | Mech. limit speed ¹⁾ | | Parallel feeders required | | |
|--|--------------------------------------|--------------|-----------------------|--|-------------------------------|---------------------------------|--------------------------|---------------------------|-------|-------|
| | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz For rated output and sinusoidal supply, 50 Hz, tolerance +3 dB(A) L_{pFA} dB(A) | at 50 Hz L_{WA} dB(A) | n_{max} rpm | f_{max} Hz | 400 V | 500 V | 690 V |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with standard insulation for voltages ≤500 V | | | | | | | | | | |
| 1LA8 315-2PC□□ | 2.8 | 10 | 2.7 | 82 (75) ²⁾ | 97 (90) ²⁾ | 3600 | 60 | Yes | | |
| 1LA8 317-2PC□□ | 2.8 | 10 | 3.3 | 82 (75) ²⁾ | 97 (90) ²⁾ | 3600 | 60 | Yes | | |
| 1LA8 353-2PC□□ | 2.5 | 10 | 4.8 | 77 ³⁾ | 92 ³⁾ | 3600/3100 ⁴⁾ | 60/52 ⁴⁾ | Yes | Yes | |
| 1LA8 355-2PC□□ | 2.5 | 10 | 5.3 | 77 ³⁾ | 92 ³⁾ | 3600/3100 ⁴⁾ | 60/52 ⁴⁾ | Yes | Yes | |
| 1LA8 357-2PC□□ | 2.6 | 10 | 6.4 | 77 ³⁾ | 92 ³⁾ | 3600/3100 ⁴⁾ | 60/52 ⁴⁾ | Yes | | |
| 1LA8 403-2PC□□ | 2.8 | 10 | 8.6 | 79 ³⁾ | 94 ³⁾ | 3600/3100 ⁴⁾ | 60/52 ⁴⁾ | Yes | | |
| 1LA8 405-2PC□□ | 2.8 | 10 | 9.6 | 79 ³⁾ | 94 ³⁾ | 3600/3100 ⁴⁾ | 60/52 ⁴⁾ | Yes | Yes | |
| 1LA8 407-2PC□□ | 2.8 | 10 | 11 | 79 ³⁾ | 94 ³⁾ | 3600/3100 ⁴⁾ | 60/52 ⁴⁾ | Yes | | |
| 1LA8 453-2PE□□ | 3.0 | 5 | 19 | 81 ³⁾ | 96 ³⁾ | 3000 | 50 | Yes | | |
| 1LA8 455-2PE□□ | 2.8 | 5 | 21 | 81 ³⁾ | 96 ³⁾ | 3000 | 50 | Yes | Yes | |
| 1LA8 457-2PE□□ | 2.7 | 5 | 23 | 81 ³⁾ | 96 ³⁾ | 3000 | 50 | Yes | Yes | |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with standard insulation for voltages ≤500 V | | | | | | | | | | |
| 1LA8 315-4PB□□ | 2.8 | 13 | 3.6 | 73 | 87 | 3000 (2650) | 100 (88) | Yes | | |
| 1LA8 317-4PB□□ | 2.8 | 13 | 4.4 | 73 | 87 | 3000 (2650) | 100 (88) | Yes | | |
| 1LA8 353-4PB□□ | 2.6 | 13 | 6.1 | 75 | 90 | 2500 (2350) | 83 (78) | Yes | Yes | |
| 1LA8 355-4PB□□ | 2.6 | 13 | 6.8 | 75 | 90 | 2500 (2350) | 83 (78) | Yes | Yes | |
| 1LA8 357-4PB□□ | 2.4 | 13 | 8.5 | 75 | 90 | 2500 (2350) | 83 (78) | Yes | | |
| 1LA8 403-4PB□□ | 2.7 | 13 | 13 | 78 | 93 | 2200 (2100)/2100 ⁴⁾ | 73 (70)/70 ⁴⁾ | Yes | | |
| 1LA8 405-4PB□□ | 2.7 | 13 | 14 | 78 | 93 | 2200 (2100)/2100 ⁴⁾ | 73 (70)/70 ⁴⁾ | Yes | Yes | |
| 1LA8 407-4PB□□ | 2.7 | 13 | 16 | 78 | 93 | 2200 (2100)/2100 ⁴⁾ | 73 (70)/70 ⁴⁾ | Yes | | |
| 1LA8 453-4PC□□ | 2.6 | 10 | 23 | 81 | 96 | 2100 (1900)/1800 ⁴⁾ | 70 (63)/60 ⁴⁾ | Yes | | |
| 1LA8 455-4PC□□ | 2.6 | 10 | 26 | 81 | 96 | 2100 (1900)/1800 ⁴⁾ | 70 (63)/60 ⁴⁾ | Yes | Yes | |
| 1LA8 457-4PC□□ | 2.6 | 10 | 28 | 81 | 96 | 2100 (1900)/1800 ⁴⁾ | 70 (63)/60 ⁴⁾ | Yes | Yes | |

Values in brackets apply to the use of motors in hazardous areas.

¹⁾ Limit speeds for reinforced bearings (order code **K20**) for 4-pole motors on request.

²⁾ Low-noise version, 2-pole, in brackets. To reduce noise, 2-pole motors can be equipped with an axial fan that is only suitable for one direction of rotation. Clockwise rotation order code **K37**, counter-clockwise rotation **K38**.

³⁾ In the standard version, the motors already have an axial fan for clockwise rotation. Order code **K37** is not necessary. For counter-clockwise rotation, order code **K38** is necessary.

⁴⁾ For vertical type of construction IM V1.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Self-ventilated motors for converter-fed operation
Cast-iron series 1LA8

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output and sinusoidal supply | | | | | | | Order No. | Price | Weight of IM B3 type of construction approx. |
|--|--------------------------|------------|--|--------------------------|------------------------------|------------------------------|--------------------------------|------------------------------|------------------------------|---|-----------|--|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | Rated current at 50 Hz 690 V | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | I_{rated} A | For Order No. supplements for voltage and type of construction, see table below | m kg | |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with standard insulation for voltages ≤500 V | | | | | | | | | | | | |
| 200 | 230 | 315 | 988 | 1930 | 95.7 | 95.8 | 0.86 | 345 | 200 | 1LA8 315-6PBQQ | 1300 | |
| 250 | 288 | 315 | 988 | 2410 | 95.9 | 96.0 | 0.86 | 430 | 250 | 1LA8 317-6PBQQ | 1500 | |
| 315 | 362 | 355 | 993 | 3040 | 96.2 | 96.2 | 0.86 | 540 | 315 | 1LA8 355-6PBQQ | 2000 | |
| 400 | 460 | 355 | 993 | 3850 | 96.5 | 96.5 | 0.86 | 690 | 400 | 1LA8 357-6PBQQ | 2200 | |
| 450 | 518 | 400 | 991 | 4330 | 96.5 | 96.5 | 0.86 | 780 | 455 | 1LA8 403-6PBQQ | 2800 | |
| 500 | 575 | 400 | 991 | 4810 | 96.5 | 96.5 | 0.86 | 860 | 500 | 1LA8 405-6PBQQ | 3000 | |
| 560 | 644 | 400 | 991 | 5390 | 96.7 | 96.7 | 0.86 | 960 | 560 | 1LA8 407-6PBQQ | 3200 | |
| 630 | 725 | 450 | 993 | 6060 | 96.8 | 96.8 | 0.86 | 1100 | 630 | 1LA8 453-6PBQQ | 4000 | |
| 710 | 817 | 450 | 993 | 6830 | 96.8 | 96.8 | 0.86 | – | 710 ¹⁾ | 1LA8 455-6PBQQ | 4200 | |
| 800 | 920 | 450 | 993 | 7690 | 97.0 | 97.1 | 0.86 | – | 790 ¹⁾ | 1LA8 457-6PBQQ | 4500 | |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with standard insulation for voltages ≤500 V | | | | | | | | | | | | |
| 160 | 184 | 315 | 739 | 2070 | 94.9 | 94.9 | 0.82 | 295 | 172 | 1LA8 315-8PBQQ | 1300 | |
| 200 | 230 | 315 | 739 | 2580 | 95.2 | 95.2 | 0.82 | 370 | 215 | 1LA8 317-8PBQQ | 1500 | |
| 250 | 288 | 355 | 741 | 3220 | 95.7 | 95.7 | 0.82 | 460 | 265 | 1LA8 355-8PBQQ | 2000 | |
| 315 | 362 | 355 | 741 | 4060 | 96.0 | 96.0 | 0.82 | 580 | 335 | 1LA8 357-8PBQQ | 2200 | |
| 355 | 408 | 400 | 742 | 4570 | 96.1 | 96.1 | 0.82 | 650 | 375 | 1LA8 403-8PBQQ | 2800 | |
| 400 | 460 | 400 | 742 | 5150 | 96.2 | 96.2 | 0.82 | 730 | 425 | 1LA8 405-8PBQQ | 3000 | |
| 450 | 518 | 400 | 742 | 5790 | 96.3 | 96.3 | 0.82 | 820 | 475 | 1LA8 407-8PBQQ | 3200 | |
| 500 | 575 | 450 | 744 | 6420 | 96.4 | 96.4 | 0.81 | 920 | 540 | 1LA8 453-8PBQQ | 4000 | |
| 560 | 644 | 450 | 744 | 7190 | 96.5 | 96.5 | 0.81 | 1040 | 600 | 1LA8 455-8PBQQ | 4200 | |
| 630 | 725 | 450 | 744 | 8090 | 96.6 | 96.6 | 0.81 | 1160 | 670 | 1LA8 457-8PBQQ | 4500 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | |
|--|------------------------------------|-----------------------------|--------|----------------------|---|---|---|--------|
| | 400 VA | 400 VA/690 VY ²⁾ | 500 VA | 690 VA ²⁾ | Without flange IM B3 | With flange IM V1 without protective cover ³⁾ | IM V1 with protective cover ⁴⁾ | IM B35 |
| | 4 | 8 | 5 | 7 | 0 | 8 | 4 | 6 |
| 6-pole | | | | | | | | |
| 1LA8 315-... QQ to 1LA8 453-... QQ | ○ | □ | ○ | – | □ | ✓ | ✓ | ✓ |
| 1LA8 455-... QQ to 1LA8 457-... QQ | – | – | ○ | □ | □ | ✓ | ✓ | ✓ |
| 8-pole | | | | | | | | |
| 1LA8 315-... QQ to 1LA8 457-... QQ | ○ | □ | ○ | – ⁵⁾ | □ | ✓ | ✓ | ✓ |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Voltages or frequencies that are not covered by the predefined options can be ordered with order code **L1Y**. In this case, the output, voltage and frequency must be specified.

¹⁾ Can also be supplied for 400 VA 50 Hz with voltage code **9** and order code **L1Y** (specify output, voltage and frequency).
²⁾ Motors with standard insulation can only be operated with converter circuit (du/dt or sinusoidal filter).

³⁾ For explosion-proof motors, the type of construction IM V1 without protective cover is not possible.
⁴⁾ The "Second shaft extension" option, order code **K16** is not possible.
⁵⁾ As special version with voltage code **9** and order code **L1Y** (specify output, voltage and frequency).

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Self-ventilated motors for converter-fed operation
Cast-iron series 1LA8

Selection and ordering data (continued)

| Order No. | At 50 Hz as multiple of rated torque | Torque class | Moment of inertia | Noise | | Mech. limit speed ¹⁾ | | Parallel feeders required | | |
|--|--------------------------------------|--------------|-----------------------|--|----------------------------|---------------------------------|-----------------------------|---------------------------|-------|-------|
| | | | | Measuring surface sound pressure level at 50 Hz For rated output and sinusoidal supply, 50 Hz, tolerance +3 dB(A) | Sound power level at 50 Hz | n_{max} rpm | f_{max} Hz | 400 V | 500 V | 690 V |
| | T_B/T_{rated} | CL | J kgm ² | L_{pFA} dB(A) | L_{WA} dB(A) | | | | | |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with standard insulation for voltages ≤500 V | | | | | | | | | | |
| 1LA8 315-6PB□□ | 2.5 | 13 | 6.0 | 68 | 82 | 2950 (2350) | 147 (117) | | | |
| 1LA8 317-6PB□□ | 2.5 | 13 | 7.3 | 68 | 82 | 2950 (2350) | 147 (117) | Yes | | |
| 1LA8 355-6PB□□ | 2.8 | 13 | 13 | 71 | 86 | 2500 (2100) | 125 (105) | Yes | | |
| 1LA8 357-6PB□□ | 2.8 | 13 | 16 | 71 | 86 | 2500 (2100) | 125 (105) | Yes | Yes | |
| 1LA8 403-6PB□□ | 2.8 | 13 | 21 | 73 | 88 | 2200 (1900)/2100 ²⁾ | 110 (95)/105 ²⁾ | | | |
| 1LA8 405-6PB□□ | 2.8 | 13 | 24 | 73 | 88 | 2200 (1900)/2100 ²⁾ | 110 (95)/105 ²⁾ | Yes | | |
| 1LA8 407-6PB□□ | 2.8 | 13 | 27 | 73 | 88 | 2200 (1900)/2100 ²⁾ | 110 (95)/105 ²⁾ | Yes | | |
| 1LA8 453-6PB□□ | 2.6 | 13 | 35 | 75 | 90 | 2100 (1700)/1800 ²⁾ | 105 (85)/90 ²⁾ | Yes | Yes | |
| 1LA8 455-6PB□□ | 2.5 | 13 | 39 | 75 | 90 | 2100 (1700)/1800 ²⁾ | 105 (85)/90 ²⁾ | | Yes | |
| 1LA8 457-6PB□□ | 2.5 | 13 | 44 | 75 | 90 | 2100 (1700)/1800 ²⁾ | 105 (85)/90 ²⁾ | | Yes | |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with standard insulation for voltages ≤500 V | | | | | | | | | | |
| 1LA8 315-8PB□□ | 2.3 | 13 | 6.0 | 65 | 79 | 2950 (2350) | 196 (156) | | | |
| 1LA8 317-8PB□□ | 2.3 | 13 | 7.3 | 65 | 79 | 2950 (2350) | 196 (156) | | | |
| 1LA8 355-8PB□□ | 2.4 | 13 | 13 | 67 | 82 | 2500 (2100) | 166 (140) | | | |
| 1LA8 357-8PB□□ | 2.4 | 13 | 16 | 67 | 82 | 2500 (2100) | 166 (140) | Yes | | |
| 1LA8 403-8PB□□ | 2.6 | 13 | 21 | 69 | 84 | 2200 (1900)/2100 ²⁾ | 146 (126)/140 ²⁾ | | | |
| 1LA8 405-8PB□□ | 2.6 | 13 | 24 | 69 | 84 | 2200 (1900)/2100 ²⁾ | 146 (126)/140 ²⁾ | | | |
| 1LA8 407-8PB□□ | 2.6 | 13 | 27 | 69 | 84 | 2200 (1900)/2100 ²⁾ | 146 (126)/140 ²⁾ | Yes | | |
| 1LA8 453-8PB□□ | 2.4 | 13 | 35 | 71 | 86 | 2100 (1700)/1800 ²⁾ | 140 (113)/120 ²⁾ | Yes | | |
| 1LA8 455-8PB□□ | 2.4 | 13 | 39 | 71 | 86 | 2100 (1700)/1800 ²⁾ | 140 (113)/120 ²⁾ | Yes | Yes | |
| 1LA8 457-8PB□□ | 2.4 | 13 | 44 | 71 | 86 | 2100 (1700)/1800 ²⁾ | 140 (113)/120 ²⁾ | Yes | Yes | |

Values in brackets apply to the use of motors in hazardous areas.

¹⁾ Limit speeds for reinforced bearings (order code **K20**) for 6- and 8-pole motors on request.

²⁾ For vertical type of construction IM V1.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Self-ventilated motors for converter-fed operation Cast-iron series 1LA8

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output and sinusoidal supply | | | | | | Order No. | Price | Weight of IM B3 type of construction approx. |
|---|--------------------------|------------|--|--------------------------|------------------------------|------------------------------|--------------------------------|------------------------------|-----------------------|-----------|--|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 690 V | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | | m kg | |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with special insulation for voltages >500 to 690 V | | | | | | | | | | | |
| 240 | 270 | 315 | 2978 | 770 | 96.0 | 96.0 | 0.90 | 230 | 1LA8 315-2PM8□ | 1300 | |
| 300 | 335 | 315 | 2978 | 962 | 96.4 | 96.4 | 0.91 | 285 | 1LA8 317-2PM8□ | 1500 | |
| 345 | 385 | 355 | 2981 | 1105 | 96.4 | 96.4 | 0.90 | 335 | 1LA8 353-2PM8□ | 1900 | |
| 390 | 435 | 355 | 2981 | 1249 | 96.6 | 96.6 | 0.91 | 370 | 1LA8 355-2PM8□ | 2000 | |
| 485 | 545 | 355 | 2982 | 1553 | 97.0 | 97.0 | 0.91 | 460 | 1LA8 357-2PM8□ | 2200 | |
| 545 | 600 | 400 | 2986 | 1743 | 97.1 | 97.1 | 0.91 | 520 | 1LA8 403-2PM7□ | 2800 | |
| 610 | 670 | 400 | 2986 | 1951 | 97.1 | 97.1 | 0.91 | 580 | 1LA8 405-2PM7□ | 3000 | |
| 680 | 750 | 400 | 2986 | 2175 | 97.2 | 97.2 | 0.92 | 640 | 1LA8 407-2PM7□ | 3200 | |
| 775 | - | 450 | 2987 | 2478 | 97.2 | 97.2 | 0.92 | 730 | 1LA8 453-2PM7□ | 4000 | |
| 875 | - | 450 | 2987 | 2798 | 97.3 | 97.3 | 0.92 | 820 | 1LA8 455-2PM7□ | 4200 | |
| 970 | - | 450 | 2987 | 3101 | 97.4 | 97.4 | 0.93 | 900 | 1LA8 457-2PM7□ | 4400 | |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with special insulation for voltages >500 to 690 V | | | | | | | | | | | |
| 235 | 270 | 315 | 1485 | 1511 | 95.8 | 95.8 | 0.87 | 235 | 1LA8 315-4PM8□ | 1300 | |
| 290 | 335 | 315 | 1485 | 1865 | 95.9 | 95.9 | 0.87 | 285 | 1LA8 317-4PM8□ | 1500 | |
| 340 | 390 | 355 | 1488 | 2182 | 96.0 | 96.0 | 0.87 | 340 | 1LA8 353-4PM8□ | 1900 | |
| 385 | 445 | 355 | 1488 | 2471 | 96.2 | 96.2 | 0.87 | 385 | 1LA8 355-4PM8□ | 2000 | |
| 480 | 550 | 355 | 1488 | 3081 | 96.4 | 96.4 | 0.87 | 480 | 1LA8 357-4PM8□ | 2200 | |
| 545 | 625 | 400 | 1491 | 3491 | 96.5 | 96.5 | 0.88 | 540 | 1LA8 403-4PM8□ | 2800 | |
| 615 | 710 | 400 | 1491 | 3939 | 96.7 | 96.7 | 0.88 | 600 | 1LA8 405-4PM8□ | 3000 | |
| 690 | 795 | 400 | 1491 | 4420 | 96.9 | 96.9 | 0.89 | 670 | 1LA8 407-4PM7□ | 3200 | |
| 785 | 905 | 450 | 1492 | 5025 | 96.8 | 96.8 | 0.88 | 770 | 1LA8 453-4PM7□ | 4000 | |
| 880 | 1010 | 450 | 1492 | 5633 | 97.0 | 97.0 | 0.87 | 870 | 1LA8 455-4PM7□ | 4200 | |
| 980 | 1125 | 450 | 1492 | 6273 | 97.1 | 97.1 | 0.89 | 950 | 1LA8 457-4PM7□ | 4400 | |

Order No. supplements

| Motor type | Final position: Type of construction code | | | |
|--|---|---|-----------------------------|----------|
| | Without flange IM B3 | With flange IM V1 without protective cover | IM V1 with protective cover | IM B35 |
| 1LA8 315-... □□ to 1LA8 457-... □□ | 0 | 8 | 4 | 6 |
| | □ | ✓ | ✓ | ✓ |

- Standard version
- ✓ With additional charge

The voltage code is already in the Order No. as the penultimate position.

Assignment:

7 = 690 VΔ

8 = 400 VΔ/690 VY

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Voltages or frequencies that are not covered by the predefined options can be ordered with order code **L1Y**. In this case, the output, voltage and frequency must be specified.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Self-ventilated motors for converter-fed operation
Cast-iron series 1LA8

Selection and ordering data (continued)

| Order No. | Breakdown torque at 50 Hz as multiple of rated torque | Torque class | Moment of inertia | Noise | | Mech. limit speed ¹⁾ | | Parallel feeders required | | |
|---|---|--------------|-----------------------|--|---|---------------------------------|--------------------------|---------------------------|-------|-------|
| | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz For rated output and sinusoidal supply, 50 Hz, tolerance +3 dB(A) L_{pFA} dB(A) | Sound power level at 50 Hz L_{WA} dB(A) | n_{max} rpm | f_{max} Hz | 400 V | 500 V | 690 V |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with special insulation for voltages >500 to 690 V | | | | | | | | | | |
| 1LA8 315-2PM8□ | 3.0 | 10 | 2.7 | 82 (75) ²⁾ | 97 (90) ²⁾ | 3600 | 60 | Yes | | |
| 1LA8 317-2PM8□ | 3.0 | 10 | 3.3 | 82 (75) ²⁾ | 97 (90) ²⁾ | 3600 | 60 | Yes | | |
| 1LA8 353-2PM8□ | 2.6 | 10 | 4.8 | 77 ³⁾ | 92 ³⁾ | 3600/3100 ⁴⁾ | 60/52 ⁴⁾ | Yes | Yes | |
| 1LA8 355-2PM8□ | 2.6 | 10 | 5.3 | 77 ³⁾ | 92 ³⁾ | 3600/3100 ⁴⁾ | 60/52 ⁴⁾ | Yes | Yes | |
| 1LA8 357-2PM8□ | 2.6 | 10 | 6.4 | 77 ³⁾ | 92 ³⁾ | 3600/3100 ⁴⁾ | 60/52 ⁴⁾ | Yes | | |
| 1LA8 403-2PM7□ | 3.0 | 10 | 8.6 | 79 ³⁾ | 94 ³⁾ | 3600/3100 ⁴⁾ | 60/52 ⁴⁾ | Yes | | |
| 1LA8 405-2PM7□ | 3.1 | 10 | 9.6 | 79 ³⁾ | 94 ³⁾ | 3600/3100 ⁴⁾ | 60/52 ⁴⁾ | Yes | Yes | |
| 1LA8 407-2PM7□ | 3.0 | 10 | 11 | 79 ³⁾ | 94 ³⁾ | 3600/3100 ⁴⁾ | 60/52 ⁴⁾ | Yes | | |
| 1LA8 453-2PM7□ | 2.8 | 5 | 19 | 81 ³⁾ | 96 ³⁾ | 3000 | 50 | Yes | | |
| 1LA8 455-2PM7□ | 2.8 | 5 | 21 | 81 ³⁾ | 96 ³⁾ | 3000 | 50 | Yes | Yes | |
| 1LA8 457-2PM7□ | 2.8 | 5 | 23 | 81 ³⁾ | 96 ³⁾ | 3000 | 50 | Yes | Yes | |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with special insulation for voltages >500 to 690 V | | | | | | | | | | |
| 1LA8 315-4PM8□ | 2.8 | 13 | 3.6 | 73 | 87 | 3000 (2650) | 100 (88) | Yes | | |
| 1LA8 317-4PM8□ | 2.8 | 13 | 4.4 | 73 | 87 | 3000 (2650) | 100 (88) | Yes | | |
| 1LA8 353-4PM8□ | 2.6 | 13 | 6.1 | 75 | 90 | 2500 (2350) | 83 (78) | Yes | Yes | |
| 1LA8 355-4PM8□ | 2.6 | 13 | 6.8 | 75 | 90 | 2500 (2350) | 83 (78) | Yes | Yes | |
| 1LA8 357-4PM8□ | 2.5 | 13 | 8.5 | 75 | 90 | 2500 (2350) | 83 (78) | Yes | | |
| 1LA8 403-4PM8□ | 2.6 | 13 | 13 | 78 | 93 | 2200 (2100)/2100 ⁴⁾ | 73 (70)/70 ⁴⁾ | Yes | | |
| 1LA8 405-4PM8□ | 2.7 | 13 | 14 | 78 | 93 | 2200 (2100)/2100 ⁴⁾ | 73 (70)/70 ⁴⁾ | Yes | Yes | |
| 1LA8 407-4PM7□ | 2.6 | 13 | 16 | 78 | 93 | 2200 (2100)/2100 ⁴⁾ | 73 (70)/70 ⁴⁾ | Yes | | |
| 1LA8 453-4PM7□ | 2.5 | 10 | 23 | 81 | 96 | 2100 (1900)/1800 ⁴⁾ | 70 (63)/60 ⁴⁾ | Yes | | |
| 1LA8 455-4PM7□ | 2.6 | 10 | 26 | 81 | 96 | 2100 (1900)/1800 ⁴⁾ | 70 (63)/60 ⁴⁾ | Yes | Yes | |
| 1LA8 457-4PM7□ | 2.6 | 10 | 28 | 81 | 96 | 2100 (1900)/1800 ⁴⁾ | 70 (63)/60 ⁴⁾ | Yes | Yes | |

Values in brackets apply to the use of motors in hazardous areas.

¹⁾ Limit speeds for reinforced bearings (order code **K20**) for 4-pole motors on request.

²⁾ Low-noise version, 2-pole, in brackets. To reduce noise, 2-pole motors can be equipped with an axial fan that is only suitable for one direction of rotation. Clockwise rotation order code **K37**, counter-clockwise rotation **K38**.

³⁾ In the standard version, the motors already have an axial fan for clockwise rotation. Order code **K37** is not necessary. For counter-clockwise rotation, order code **K38** is necessary.

⁴⁾ For vertical type of construction IM V1.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Self-ventilated motors for converter-fed operation
Cast-iron series 1LA8

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output and sinusoidal supply | | | | | | Order No. | Price | Weight of IM B3 type of construction approx. |
|---|--------------------------|------------|--|--------------------------|------------------------------|------------------------------|--------------------------------|------------------------------|-----------------------|-----------|--|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 690 V | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | | m kg | |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with special insulation for voltages >500 to 690 V | | | | | | | | | | | |
| 190 | 220 | 315 | 990 | 1833 | 95.5 | 95.6 | 0.85 | 196 | 1LA8 315-6PM8□ | 1300 | |
| 235 | 270 | 315 | 990 | 2267 | 95.7 | 95.8 | 0.86 | 240 | 1LA8 317-6PM8□ | 1500 | |
| 300 | 345 | 355 | 992 | 2888 | 96.2 | 96.2 | 0.86 | 305 | 1LA8 355-6PM8□ | 2000 | |
| 380 | 435 | 355 | 992 | 3658 | 96.4 | 96.4 | 0.86 | 385 | 1LA8 357-6PM8□ | 2200 | |
| 435 | 500 | 400 | 993 | 4184 | 96.4 | 96.4 | 0.85 | 445 | 1LA8 403-6PM8□ | 2800 | |
| 485 | 560 | 400 | 993 | 4664 | 96.5 | 96.5 | 0.86 | 490 | 1LA8 405-6PM8□ | 3000 | |
| 545 | 625 | 400 | 993 | 5241 | 96.6 | 96.6 | 0.86 | 550 | 1LA8 407-6PM8□ | 3200 | |
| 615 | 705 | 450 | 993 | 5915 | 96.8 | 96.8 | 0.84 | 630 | 1LA8 453-6PM8□ | 4000 | |
| 690 | 795 | 450 | 993 | 6636 | 96.8 | 96.8 | 0.85 | 700 | 1LA8 455-6PM7□ | 4200 | |
| 780 | 895 | 450 | 993 | 7502 | 96.9 | 97.0 | 0.85 | 790 | 1LA8 457-6PM7□ | 4500 | |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with special insulation for voltages >500 to 690 V | | | | | | | | | | | |
| 145 | 165 | 315 | 740 | 1871 | 94.6 | 94.6 | 0.79 | 162 | 1LA8 315-8PM8□ | 1300 | |
| 180 | 205 | 315 | 740 | 2323 | 94.9 | 94.9 | 0.80 | 198 | 1LA8 317-8PM8□ | 1500 | |
| 230 | 265 | 355 | 743 | 2956 | 95.5 | 95.5 | 0.80 | 250 | 1LA8 355-8PM8□ | 2000 | |
| 290 | 335 | 355 | 743 | 3727 | 95.7 | 95.7 | 0.81 | 315 | 1LA8 357-8PM8□ | 2200 | |
| 335 | 385 | 400 | 743 | 4306 | 96.0 | 96.0 | 0.80 | 365 | 1LA8 403-8PM8□ | 2800 | |
| 375 | 430 | 400 | 743 | 4820 | 96.1 | 96.1 | 0.80 | 410 | 1LA8 405-8PM8□ | 3000 | |
| 425 | 490 | 400 | 743 | 5463 | 96.2 | 96.2 | 0.79 | 470 | 1LA8 407-8PM8□ | 3200 | |
| 485 | 560 | 450 | 745 | 6217 | 96.5 | 96.5 | 0.78 | 540 | 1LA8 453-8PM8□ | 4000 | |
| 545 | 625 | 450 | 745 | 6986 | 96.6 | 96.6 | 0.78 | 610 | 1LA8 455-8PM8□ | 4200 | |
| 600 | 690 | 450 | 745 | 7691 | 96.7 | 96.7 | 0.79 | 660 | 1LA8 457-8PM8□ | 4500 | |

Order No. supplements

| Motor type | Final position: Type of construction code | | | |
|--|---|--------------------------------|-----------------------------|----------|
| | Without flange | | With flange | |
| | IM B3 | IM V1 without protective cover | IM V1 with protective cover | IM B35 |
| | 0 | 8 | 4 | 6 |
| 1LA8 315-... □□ to 1LA8 457-... □□ | □ | ✓ | ✓ | ✓ |

- Standard version
- ✓ With additional charge

The voltage code is already in the Order No. as the penultimate position.

Assignment:

7 = 690 VΔ

8 = 400 VΔ/690 VY

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Voltages or frequencies that are not covered by the predefined options can be ordered with order code **L1Y**. In this case, the output, voltage and frequency must be specified.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Self-ventilated motors for converter-fed operation
Cast-iron series 1LA8

Selection and ordering data (continued)

| Order No. | Breakdown torque at 50 Hz as multiple of rated torque | Torque class | Moment of inertia | Noise | | Mech. limit speed ¹⁾ | | Parallel feeders required | | |
|---|---|--------------|-------------------------|--|----------------------------|---------------------------------|-----------------------------|---------------------------|-------|-------|
| | | | | Measuring surface sound pressure level at 50 Hz For rated output and sinusoidal supply, 50 Hz, tolerance +3 dB(A) | Sound power level at 50 Hz | n_{max} rpm | f_{max} Hz | 400 V | 500 V | 690 V |
| | T_B/T_{rated} | CL | J kgm ² | L_{pFA} dB(A) | L_{WA} dB(A) | | | | | |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with special insulation for voltages >500 to 690 V | | | | | | | | | | |
| 1LA8 315-6PM8□ | 2.7 | 13 | 6.0 | 68 | 82 | 2950 (2350) | 147 (117) | | | |
| 1LA8 317-6PM8□ | 2.7 | 13 | 7.3 | 68 | 82 | 2950 (2350) | 147 (117) | Yes | | |
| 1LA8 355-6PM8□ | 2.8 | 13 | 13 | 71 | 86 | 2500 (2100) | 125 (105) | Yes | | |
| 1LA8 357-6PM8□ | 2.9 | 13 | 16 | 71 | 86 | 2500 (2100) | 125 (105) | Yes | Yes | |
| 1LA8 403-6PM8□ | 2.8 | 13 | 21 | 73 | 88 | 2200 (1900)/2100 ²⁾ | 110 (95)/105 ²⁾ | | | |
| 1LA8 405-6PM8□ | 2.8 | 13 | 24 | 73 | 88 | 2200 (1900)/2100 ²⁾ | 110 (95)/105 ²⁾ | Yes | | |
| 1LA8 407-6PM8□ | 2.7 | 13 | 27 | 73 | 88 | 2200 (1900)/2100 ²⁾ | 110 (95)/105 ²⁾ | Yes | | |
| 1LA8 453-6PM8□ | 2.7 | 13 | 35 | 75 | 90 | 2100 (1700)/1800 ²⁾ | 105 (85)/90 ²⁾ | Yes | Yes | |
| 1LA8 455-6PM7□ | 2.5 | 13 | 39 | 75 | 90 | 2100 (1700)/1800 ²⁾ | 105 (85)/90 ²⁾ | | | Yes |
| 1LA8 457-6PM7□ | 2.6 | 13 | 44 | 75 | 90 | 2100 (1700)/1800 ²⁾ | 105 (85)/90 ²⁾ | | | Yes |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with special insulation for voltages >500 to 690 V | | | | | | | | | | |
| 1LA8 315-8PM8□ | 2.5 | 13 | 6.0 | 65 | 79 | 2950 (2350) | 196 (156) | | | |
| 1LA8 317-8PM8□ | 2.5 | 13 | 7.3 | 65 | 79 | 2950 (2350) | 196 (156) | | | |
| 1LA8 355-8PM8□ | 2.4 | 13 | 13 | 67 | 82 | 2500 (2100) | 166 (140) | | | |
| 1LA8 357-8PM8□ | 2.4 | 13 | 16 | 67 | 82 | 2500 (2100) | 166 (140) | Yes | | |
| 1LA8 403-8PM8□ | 2.6 | 13 | 21 | 69 | 84 | 2200 (1900)/2100 ²⁾ | 146 (126)/140 ²⁾ | | | |
| 1LA8 405-8PM8□ | 2.7 | 13 | 24 | 69 | 84 | 2200 (1900)/2100 ²⁾ | 146 (126)/140 ²⁾ | | | |
| 1LA8 407-8PM8□ | 2.7 | 13 | 27 | 69 | 84 | 2200 (1900)/2100 ²⁾ | 146 (126)/140 ²⁾ | Yes | | |
| 1LA8 453-8PM8□ | 2.5 | 13 | 35 | 71 | 86 | 2100 (1700)/1800 ²⁾ | 140 (113)/120 ²⁾ | Yes | | |
| 1LA8 455-8PM8□ | 2.5 | 13 | 39 | 71 | 86 | 2100 (1700)/1800 ²⁾ | 140 (113)/120 ²⁾ | Yes | Yes | |
| 1LA8 457-8PM8□ | 2.5 | 13 | 44 | 71 | 86 | 2100 (1700)/1800 ²⁾ | 140 (113)/120 ²⁾ | Yes | Yes | |

Values in brackets apply to the use of motors in hazardous areas.

¹⁾ Limit speeds for reinforced bearings (order code **K20**) for 6- and 8-pole motors on request.

²⁾ For vertical type of construction IM V1.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Forced-air cooled motors with separately driven fan for converter-fed operation – Cast-iron series 1PQ8

Selection and ordering data

| Rated output at | | Frame size | Operating values at rated output and sinusoidal supply | | | | | | | Order No. | Price | Weight of IM B3 type of construction approx. |
|--|-------------------|------------|--|-----------------------|------------------------------|------------------------------|--------------------------------|------------------------------|------------------------------|----------------|-----------|--|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | Rated current at 50 Hz 690 V | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos \varphi_{rated}$ | I_{rated} A | I_{rated} A | | m kg | |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with standard insulation for voltages ≤500 V | | | | | | | | | | | | |
| 250 | 280 | 315 | 2979 | 801 | 96.2 | 96.2 | 0.90 | 415 | 240 | 1PQ8 315-2PC□□ | 1400 | |
| 315 | 353 | 315 | 2979 | 1010 | 96.5 | 96.5 | 0.91 | 520 | 300 | 1PQ8 317-2PC□□ | 1600 | |
| 355 | 398 | 355 | 2980 | 1140 | 96.5 | 96.5 | 0.90 | 590 | 340 | 1PQ8 353-2PC□□ | 2000 | |
| 400 | 448 | 355 | 2980 | 1280 | 96.7 | 96.7 | 0.91 | 660 | 380 | 1PQ8 355-2PC□□ | 2100 | |
| 500 | 560 | 355 | 2982 | 1600 | 97.1 | 97.1 | 0.91 | 820 | 475 | 1PQ8 357-2PC□□ | 2300 | |
| 560 | 616 | 400 | 2985 | 1790 | 97.1 | 97.1 | 0.91 | 910 | 530 | 1PQ8 403-2PC□□ | 2900 | |
| 630 | 693 | 400 | 2985 | 2020 | 97.1 | 97.1 | 0.91 | 1020 | 600 | 1PQ8 405-2PC□□ | 3100 | |
| 710 | 781 | 400 | 2985 | 2270 | 97.3 | 97.3 | 0.91 | – | 670 ¹⁾ | 1PQ8 407-2PC□□ | 3300 | |
| 800 | – | 450 | 2986 | 2560 | 97.2 | 97.2 | 0.91 | – | 760 | 1PQ8 453-2PE□□ | 4100 | |
| 900 | – | 450 | 2986 | 2880 | 97.3 | 97.3 | 0.92 | – | 840 | 1PQ8 455-2PE□□ | 4300 | |
| 1000 | – | 450 | 2986 | 3200 | 97.4 | 97.4 | 0.93 | – | 920 | 1PQ8 457-2PE□□ | 4500 | |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with standard insulation for voltages ≤500 V | | | | | | | | | | | | |
| 250 | 288 | 315 | 1488 | 1600 | 96.0 | 96.0 | 0.87 | 430 | 250 | 1PQ8 315-4PB□□ | 1400 | |
| 315 | 362 | 315 | 1488 | 2020 | 96.2 | 96.2 | 0.87 | 540 | 315 | 1PQ8 317-4PB□□ | 1600 | |
| 355 | 408 | 355 | 1488 | 2280 | 96.3 | 96.3 | 0.87 | 610 | 355 | 1PQ8 353-4PB□□ | 2000 | |
| 400 | 460 | 355 | 1488 | 2570 | 96.4 | 96.4 | 0.87 | 690 | 400 | 1PQ8 355-4PB□□ | 2100 | |
| 500 | 575 | 355 | 1488 | 3210 | 96.7 | 96.7 | 0.88 | 850 | 490 | 1PQ8 357-4PB□□ | 2300 | |
| 560 | 644 | 400 | 1492 | 3580 | 96.7 | 96.7 | 0.88 | 950 | 550 | 1PQ8 403-4PB□□ | 2900 | |
| 630 | 725 | 400 | 1492 | 4030 | 96.9 | 96.9 | 0.88 | 1060 | 620 | 1PQ8 405-4PB□□ | 3100 | |
| 710 | 817 | 400 | 1492 | 4540 | 97.0 | 97.0 | 0.89 | – | 690 ¹⁾ | 1PQ8 407-4PB□□ | 3300 | |
| 800 | 920 | 450 | 1492 | 5120 | 97.0 | 97.0 | 0.88 | – | 780 ¹⁾ | 1PQ8 453-4PC□□ | 4100 | |
| 900 | 1040 | 450 | 1492 | 5760 | 97.1 | 97.1 | 0.88 | – | 880 | 1PQ8 455-4PC□□ | 4300 | |
| 1000 | 1150 | 450 | 1492 | 6400 | 97.1 | 97.1 | 0.89 | – | 970 | 1PQ8 457-4PC□□ | 4500 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | |
|--|------------------------------------|-----------------------------|--------|----------------------|---|---|---|--------|
| | 400 VΔ | 400 VΔ/690 VY ²⁾ | 500 VΔ | 690 VΔ ²⁾ | Without flange IM B3 | With flange IM V1 without protective cover ³⁾ | IM V1 with protective cover ⁴⁾ | IM B35 |
| | 4 | 8 | 5 | 7 | 0 | 8 | 4 | 6 |
| 1PQ8 315-...□□ to 1PQ8 405-...□□ | ○ | □ | ○ | – | □ | ✓ | ✓ | ✓ |
| 1PQ8 407-...□□ to 1PQ8 457-...□□ | – | – | ○ | □ | □ | ✓ | ✓ | ✓ |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Voltages or frequencies that are not covered by the predefined options can be ordered with order code **L1Y**. In this case, the output, voltage and frequency must be specified.

¹⁾ Can also be supplied for 400 VΔ 50 Hz with voltage code "9" and order code **L1Y** (specify output, voltage and frequency).
²⁾ Motors with standard insulation can only be operated with converter circuit (du/dt or sinusoidal filter).

³⁾ For explosion-proof motors, the type of construction IM V1 without protective cover is not possible.
⁴⁾ The "Second shaft extension" option, order code **K16** is not possible.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Forced-air cooled motors with separately driven fan
for converter-fed operation – Cast-iron series 1PQ8

Selection and ordering data (continued)

| Order No. | Breakdown torque at 50 Hz as multiple of rated torque | Torque class | Moment of inertia | Technical data of the separately driven fan | | | | Measuring surface sound pressure level at 50 Hz | Sound power level at 50 Hz | Mech. limit speed ¹⁾ | Parallel feeders required | | | |
|--|---|--------------|-------------------------|---|------------------|----------|----------|---|----------------------------|---------------------------------|---------------------------|-------|-------|-------|
| | | | | Power consumption with | Rated current at | 50 Hz | 60 Hz | | | | 400 V | 460 V | 50 Hz | 60 Hz |
| | T_B/T_{rated} | CL | J kgm ² | P kW | P kW | I A | I A | L_{pFA} dB(A) | L_{WA} dB(A) | $n_{max.}$ rpm | $f_{max.}$ Hz | 400 V | 500 V | 690 V |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with standard insulation for voltages ≤500 V | | | | | | | | | | | | | | |
| 1PQ8 315-2PC□□ | 2.8 | 10 | 2.7 | 0.75 | 1.23 | 3.4 | 3.3 | 79 | 94 | 3600 | 60 | Yes | | |
| 1PQ8 317-2PC□□ | 2.8 | 10 | 3.3 | 0.75 | 1.23 | 3.4 | 3.3 | 79 | 94 | 3600 | 60 | Yes | | |
| 1PQ8 353-2PC□□ | 2.5 | 10 | 4.8 | 1.3 | 2.2 | 6.4 | 6.2 | 81 | 96 | 3600/3100 ²⁾ | 60/52 ²⁾ | Yes | Yes | |
| 1PQ8 355-2PC□□ | 2.5 | 10 | 5.3 | 1.3 | 2.2 | 6.4 | 6.2 | 81 | 96 | 3600/3100 ²⁾ | 60/52 ²⁾ | Yes | Yes | |
| 1PQ8 357-2PC□□ | 2.6 | 10 | 6.4 | 1.3 | 2.2 | 6.4 | 6.2 | 81 | 96 | 3600/3100 ²⁾ | 60/52 ²⁾ | Yes | | |
| 1PQ8 403-2PC□□ | 2.8 | 10 | 8.6 | 1.6 | 2.8 | 6.4 | 6.2 | 83 | 98 | 3600/3100 ²⁾ | 60/52 ²⁾ | Yes | | |
| 1PQ8 405-2PC□□ | 2.8 | 10 | 9.6 | 1.6 | 2.8 | 6.4 | 6.2 | 83 | 98 | 3600/3100 ²⁾ | 60/52 ²⁾ | Yes | Yes | |
| 1PQ8 407-2PC□□ | 2.8 | 10 | 11 | 1.6 | 2.8 | 6.4 | 6.2 | 83 | 98 | 3600/3100 ²⁾ | 60/52 ²⁾ | Yes | | |
| 1PQ8 453-2PE□□ | 3.0 | 5 | 19 | 3.0 | 4.2 | 8.2 | 7.7 | 86 | 101 | 3000 | 50 | Yes | | |
| 1PQ8 455-2PE□□ | 2.8 | 5 | 21 | 3.0 | 4.2 | 8.2 | 7.7 | 86 | 101 | 3000 | 50 | Yes | Yes | |
| 1PQ8 457-2PE□□ | 2.7 | 5 | 23 | 3.0 | 4.2 | 8.2 | 7.7 | 86 | 101 | 3000 | 50 | Yes | Yes | |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with standard insulation for voltages ≤500 V | | | | | | | | | | | | | | |
| 1PQ8 315-4PB□□ | 2.8 | 13 | 3.6 | 0.75 | 1.23 | 3.4 | 3.3 | 79 | 93 | 3000 (2650) | 100 (88) | Yes | | |
| 1PQ8 317-4PB□□ | 2.8 | 13 | 4.4 | 0.75 | 1.23 | 3.4 | 3.3 | 79 | 93 | 3000 (2650) | 100 (88) | Yes | | |
| 1PQ8 353-4PB□□ | 2.6 | 13 | 6.1 | 1.3 | 2.2 | 6.4 | 6.2 | 81 | 96 | 2500 (2350) | 83 (78) | Yes | Yes | |
| 1PQ8 355-4PB□□ | 2.6 | 13 | 6.8 | 1.3 | 2.2 | 6.4 | 6.2 | 81 | 96 | 2500 (2350) | 83 (78) | Yes | Yes | |
| 1PQ8 357-4PB□□ | 2.4 | 13 | 8.5 | 1.3 | 2.2 | 6.4 | 6.2 | 81 | 96 | 2500 (2350) | 83 (78) | Yes | | |
| 1PQ8 403-4PB□□ | 2.7 | 13 | 13 | 1.6 | 2.8 | 6.4 | 6.2 | 83 | 98 | 2200 (2100)/2100 ²⁾ | 73 (70)/70 ²⁾ | Yes | | |
| 1PQ8 405-4PB□□ | 2.7 | 13 | 14 | 1.6 | 2.8 | 6.4 | 6.2 | 83 | 98 | 2200 (2100)/2100 ²⁾ | 73 (70)/70 ²⁾ | Yes | Yes | |
| 1PQ8 407-4PB□□ | 2.7 | 13 | 16 | 1.6 | 2.8 | 6.4 | 6.2 | 83 | 98 | 2200 (2100)/2100 ²⁾ | 73 (70)/70 ²⁾ | Yes | | |
| 1PQ8 453-4PC□□ | 2.6 | 10 | 23 | 3.0 | 4.2 | 8.2 | 7.7 | 86 | 101 | 2100 (1900)/1800 ²⁾ | 70 (63)/60 ²⁾ | Yes | | |
| 1PQ8 455-4PC□□ | 2.6 | 10 | 26 | 3.0 | 4.2 | 8.2 | 7.7 | 86 | 101 | 2100 (1900)/1800 ²⁾ | 70 (63)/60 ²⁾ | Yes | Yes | |
| 1PQ8 457-4PC□□ | 2.6 | 10 | 28 | 3.0 | 4.2 | 8.2 | 7.7 | 86 | 101 | 2100 (1900)/1800 ²⁾ | 70 (63)/60 ²⁾ | Yes | Yes | |

Values in brackets apply to the use of motors in hazardous areas.

¹⁾ Limit speeds for reinforced bearings (order code **K20**) for 4-pole motors on request.

²⁾ For vertical type of construction IM V1.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Forced-air cooled motors with separately driven fan for converter-fed operation – Cast-iron series 1PQ8

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output and sinusoidal supply | | | | | | | Order No. | Price | Weight of IM B3 type of construction approx. |
|--|--------------------------|------------|--|--------------------------|------------------------------|------------------------------|--------------------------------|------------------------------|------------------------------|----------------|-----------|--|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | Rated current at 50 Hz 690 V | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos \varphi_{\text{rated}}$ | I_{rated} A | I_{rated} A | | m kg | |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with standard insulation for voltages ≤500 V | | | | | | | | | | | | |
| 200 | 230 | 315 | 988 | 1930 | 95.7 | 95.8 | 0.86 | 345 | 200 | 1PQ8 315-6PB□□ | 1400 | |
| 250 | 288 | 315 | 988 | 2410 | 95.9 | 96.0 | 0.86 | 430 | 250 | 1PQ8 317-6PB□□ | 1600 | |
| 315 | 362 | 355 | 993 | 3040 | 96.2 | 96.2 | 0.86 | 540 | 315 | 1PQ8 355-6PB□□ | 2100 | |
| 400 | 460 | 355 | 993 | 3850 | 96.5 | 96.5 | 0.86 | 690 | 400 | 1PQ8 357-6PB□□ | 2300 | |
| 450 | 518 | 400 | 991 | 4330 | 96.5 | 96.5 | 0.86 | 780 | 455 | 1PQ8 403-6PB□□ | 2900 | |
| 500 | 575 | 400 | 991 | 4810 | 96.5 | 96.5 | 0.86 | 860 | 500 | 1PQ8 405-6PB□□ | 3100 | |
| 560 | 644 | 400 | 991 | 5390 | 96.7 | 96.7 | 0.86 | 960 | 460 | 1PQ8 407-6PB□□ | 3300 | |
| 630 | 725 | 450 | 993 | 6060 | 96.8 | 96.8 | 0.86 | 1100 | 630 | 1PQ8 453-6PB□□ | 4100 | |
| 710 | 817 | 450 | 993 | 6830 | 96.8 | 96.8 | 0.86 | – | 710 ¹⁾ | 1PQ8 455-6PB□□ | 4300 | |
| 800 | 920 | 450 | 993 | 7690 | 97.0 | 97.1 | 0.86 | – | 790 ¹⁾ | 1PQ8 457-6PB□□ | 4600 | |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with standard insulation for voltages ≤500 V | | | | | | | | | | | | |
| 160 | 184 | 315 | 739 | 2070 | 94.9 | 94.9 | 0.82 | 295 | 172 | 1PQ8 315-8PB□□ | 1400 | |
| 200 | 230 | 315 | 739 | 2580 | 95.2 | 95.2 | 0.82 | 370 | 215 | 1PQ8 317-8PB□□ | 1600 | |
| 250 | 288 | 355 | 741 | 3220 | 95.7 | 95.7 | 0.82 | 460 | 265 | 1PQ8 355-8PB□□ | 2100 | |
| 315 | 362 | 355 | 741 | 4060 | 96.0 | 96.0 | 0.82 | 580 | 335 | 1PQ8 357-8PB□□ | 2300 | |
| 355 | 408 | 400 | 742 | 4570 | 96.1 | 96.1 | 0.82 | 650 | 375 | 1PQ8 403-8PB□□ | 2900 | |
| 400 | 460 | 400 | 742 | 5150 | 96.2 | 96.2 | 0.82 | 730 | 425 | 1PQ8 405-8PB□□ | 3100 | |
| 450 | 518 | 400 | 742 | 5790 | 96.3 | 96.3 | 0.82 | 820 | 475 | 1PQ8 407-8PB□□ | 3300 | |
| 500 | 575 | 450 | 744 | 6420 | 96.4 | 96.4 | 0.81 | 920 | 540 | 1PQ8 453-8PB□□ | 4100 | |
| 560 | 644 | 450 | 744 | 7190 | 96.5 | 96.5 | 0.81 | 1040 | 600 | 1PQ8 455-8PB□□ | 4300 | |
| 630 | 725 | 450 | 744 | 8090 | 96.6 | 96.6 | 0.81 | 1160 | 670 | 1PQ8 457-8PB□□ | 4600 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | |
|--|------------------------------------|-----------------------------|--------|----------------------|---|---|---|--------|
| | 400 VΔ | 400 VΔ/690 VY ²⁾ | 500 VΔ | 690 VΔ ²⁾ | Without flange IM B3 | With flange IM V1 without protective cover ³⁾ | IM V1 with protective cover ⁴⁾ | IM B35 |
| | 4 | 8 | 5 | 7 | 0 | 8 | 4 | 6 |
| 6-pole | | | | | | | | |
| 1PQ8 315-... □□ to 1PQ8 453-... □□ | ○ | □ | ○ | – | □ | ✓ | ✓ | ✓ |
| 1PQ8 455-... □□ to 1PQ8 457-... □□ | – | – | ○ | □ | □ | ✓ | ✓ | ✓ |
| 8-pole | | | | | | | | |
| 1PQ8 315-... □□ to 1PQ8 457-... □□ | ○ | □ | ○ | – ⁵⁾ | □ | ✓ | ✓ | ✓ |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Voltages or frequencies that are not covered by the predefined options can be ordered with order code **L1Y**. In this case, the output, voltage and frequency must be specified.

- 1) Can also be supplied for 400 VΔ 50 Hz with voltage code **9** and order code **L1Y** (specify output, voltage and frequency).
- 2) Motors with standard insulation can only be operated with converter circuit (du/dt or sinusoidal filter).
- 3) For explosion-proof motors, the type of construction IM V1 without protective cover is not possible.

- 4) The "Second shaft extension" option, order code **K16** is not possible.
- 5) As special version with voltage code **9** and order code **L1Y** (specify output, voltage and frequency).

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Forced-air cooled motors with separately driven fan
for converter-fed operation – Cast-iron series 1PQ8

Selection and ordering data (continued)

| Order No. | Breakdown torque at 50 Hz as multiple of rated torque | Torque class | Moment of inertia | Technical data of the separately driven fan | | | | Measuring surface sound pressure level at 50 Hz | Sound power level at 50 Hz | Mech. limit speed ¹⁾ | Parallel feeders required | | | |
|--|---|--------------|-------------------------|---|-----------|------------------|----------|---|----------------------------|---------------------------------|-----------------------------|-------|-------|-------|
| | | | | Power consumption with | | Rated current at | | | | | | | | |
| | T_B/T_{rated} | CL | J kgm ² | P kW | P kW | I A | I A | $L_{p(A)}$ dB(A) | L_{WA} dB(A) | $n_{max.}$ rpm | $f_{max.}$ Hz | 400 V | 500 V | 690 V |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with standard insulation for voltages ≤500 V | | | | | | | | | | | | | | |
| 1PQ8 315-6PB□□ | 2.5 | 13 | 6.0 | 0.75 | 1.23 | 3.4 | 3.3 | 80 | 94 | 2950 (2350) | 147 (117) | | | |
| 1PQ8 317-6PB□□ | 2.5 | 13 | 7.3 | 0.75 | 1.23 | 3.4 | 3.3 | 80 | 94 | 2950 (2350) | 147 (117) | Yes | | |
| 1PQ8 355-6PB□□ | 2.8 | 13 | 13 | 1.3 | 2.2 | 6.4 | 6.2 | 82 | 97 | 2500 (2100) | 125 (105) | Yes | | |
| 1PQ8 357-6PB□□ | 2.8 | 13 | 16 | 1.3 | 2.2 | 6.4 | 6.2 | 82 | 97 | 2500 (2100) | 125 (105) | Yes | Yes | |
| 1PQ8 403-6PB□□ | 2.8 | 13 | 21 | 1.3 | 2.2 | 6.4 | 6.2 | 84 | 99 | 2200 (1900)/2100 ²⁾ | 110 (95)/105 ²⁾ | | | |
| 1PQ8 405-6PB□□ | 2.8 | 13 | 24 | 1.6 | 2.8 | 6.4 | 6.2 | 84 | 99 | 2200 (1900)/2100 ²⁾ | 110 (95)/105 ²⁾ | Yes | | |
| 1PQ8 407-6PB□□ | 2.8 | 13 | 27 | 1.6 | 2.8 | 6.4 | 6.2 | 84 | 99 | 2200 (1900)/2100 ²⁾ | 110 (95)/105 ²⁾ | Yes | | |
| 1PQ8 453-6PB□□ | 2.6 | 13 | 35 | 3.0 | 4.2 | 8.2 | 7.7 | 87 | 102 | 2100 (1700)/1800 ²⁾ | 105 (85)/90 ²⁾ | Yes | Yes | |
| 1PQ8 455-6PB□□ | 2.5 | 13 | 39 | 3.0 | 4.2 | 8.2 | 7.7 | 87 | 102 | 2100 (1700)/1800 ²⁾ | 105 (85)/90 ²⁾ | | Yes | |
| 1PQ8 457-6PB□□ | 2.5 | 13 | 44 | 3.0 | 4.2 | 8.2 | 7.7 | 87 | 102 | 2100 (1700)/1800 ²⁾ | 105 (85)/90 ²⁾ | | Yes | |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with standard insulation for voltages ≤500 V | | | | | | | | | | | | | | |
| 1PQ8 315-8PB□□ | 2.3 | 13 | 6.0 | 0.75 | 1.23 | 3.4 | 3.3 | 79 | 93 | 2950 (2350) | 196 (156) | | | |
| 1PQ8 317-8PB□□ | 2.3 | 13 | 7.3 | 0.75 | 1.23 | 3.4 | 3.3 | 79 | 93 | 2950 (2350) | 196 (156) | | | |
| 1PQ8 355-8PB□□ | 2.4 | 13 | 13 | 1.3 | 2.2 | 6.4 | 6.2 | 81 | 96 | 2500 (2100) | 166 (140) | | | |
| 1PQ8 357-8PB□□ | 2.4 | 13 | 16 | 1.3 | 2.2 | 6.4 | 6.2 | 81 | 96 | 2500 (2100) | 166 (140) | | Yes | |
| 1PQ8 403-8PB□□ | 2.6 | 13 | 21 | 1.3 | 2.2 | 6.4 | 6.2 | 83 | 98 | 2200 (1900)/2100 ²⁾ | 146 (126)/140 ²⁾ | | | |
| 1PQ8 405-8PB□□ | 2.6 | 13 | 24 | 1.6 | 2.8 | 6.4 | 6.2 | 83 | 98 | 2200 (1900)/2100 ²⁾ | 146 (126)/140 ²⁾ | | | |
| 1PQ8 407-8PB□□ | 2.6 | 13 | 27 | 1.6 | 2.8 | 6.4 | 6.2 | 83 | 98 | 2200 (1900)/2100 ²⁾ | 146 (126)/140 ²⁾ | Yes | | |
| 1PQ8 453-8PB□□ | 2.4 | 13 | 35 | 3.0 | 4.2 | 8.2 | 7.7 | 86 | 101 | 2100 (1700)/1800 ²⁾ | 140 (113)/120 ²⁾ | Yes | | |
| 1PQ8 455-8PB□□ | 2.4 | 13 | 39 | 3.0 | 4.2 | 8.2 | 7.7 | 86 | 101 | 2100 (1700)/1800 ²⁾ | 141 (113)/120 ²⁾ | Yes | Yes | |
| 1PQ8 457-8PB□□ | 2.4 | 13 | 44 | 3.0 | 4.2 | 8.2 | 7.7 | 86 | 101 | 2100 (1700)/1800 ²⁾ | 142 (113)/120 ²⁾ | Yes | Yes | |

Values in brackets apply to the use of motors in hazardous areas.

¹⁾ Limit speeds for reinforced bearings (order code **K20**) for 6- and 8-pole motors on request.

²⁾ For vertical type of construction IM V1.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Forced-air cooled motors with separately driven fan for converter-fed operation – Cast-iron series 1PQ8

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output and sinusoidal supply | | | | | | Rated current at 50 Hz 690 V | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight of IM B3 type of construction approx. |
|---|--------------------------|------------|--|--------------------------|------------------------------|------------------------------|--------------------------------|-------------------------|------------------------------|--|-----------|--|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | | | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\varphi_{\text{rated}}$ | I_{rated} A | | | m kg | |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with special insulation for voltages >500 to 690 V | | | | | | | | | | | | |
| 240 | 270 | 315 | 2978 | 770 | 96.0 | 96.0 | 0.90 | 230 | 1PQ8 315-2PM8□ | | 1400 | |
| 300 | 335 | 315 | 2978 | 962 | 96.4 | 96.4 | 0.91 | 285 | 1PQ8 317-2PM8□ | | 1600 | |
| 345 | 385 | 355 | 2981 | 1105 | 96.4 | 96.4 | 0.90 | 335 | 1PQ8 353-2PM8□ | | 2000 | |
| 390 | 435 | 355 | 2981 | 1249 | 96.6 | 96.6 | 0.91 | 370 | 1PQ8 355-2PM8□ | | 2100 | |
| 485 | 545 | 355 | 2982 | 1553 | 97.0 | 97.0 | 0.91 | 460 | 1PQ8 357-2PM8□ | | 2300 | |
| 545 | 600 | 400 | 2986 | 1743 | 97.1 | 97.1 | 0.91 | 520 | 1PQ8 403-2PM7□ | | 2900 | |
| 610 | 670 | 400 | 2986 | 1951 | 97.1 | 97.1 | 0.91 | 580 | 1PQ8 405-2PM7□ | | 3100 | |
| 680 | 750 | 400 | 2986 | 2175 | 97.2 | 97.2 | 0.92 | 640 | 1PQ8 407-2PM7□ | | 3300 | |
| 775 | - | 450 | 2987 | 2478 | 97.2 | 97.2 | 0.92 | 730 | 1PQ8 453-2PM7□ | | 4100 | |
| 875 | - | 450 | 2987 | 2798 | 97.3 | 97.3 | 0.92 | 820 | 1PQ8 455-2PM7□ | | 4300 | |
| 970 | - | 450 | 2987 | 3101 | 97.4 | 97.4 | 0.93 | 900 | 1PQ8 457-2PM7□ | | 4500 | |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with special insulation for voltages >500 to 690 V | | | | | | | | | | | | |
| 235 | 270 | 315 | 1485 | 1511 | 95.8 | 95.8 | 0.87 | 235 | 1PQ8 315-4PM8□ | | 1400 | |
| 290 | 335 | 315 | 1485 | 1865 | 95.9 | 95.9 | 0.87 | 285 | 1PQ8 317-4PM8□ | | 1600 | |
| 340 | 390 | 355 | 1488 | 2182 | 96.0 | 96.0 | 0.87 | 340 | 1PQ8 353-4PM8□ | | 2000 | |
| 385 | 445 | 355 | 1488 | 2471 | 96.2 | 96.2 | 0.87 | 385 | 1PQ8 355-4PM8□ | | 2100 | |
| 480 | 550 | 355 | 1488 | 3081 | 96.4 | 96.4 | 0.87 | 480 | 1PQ8 357-4PM8□ | | 2300 | |
| 545 | 625 | 400 | 1491 | 3491 | 96.5 | 96.5 | 0.88 | 540 | 1PQ8 403-4PM8□ | | 2900 | |
| 615 | 710 | 400 | 1491 | 3939 | 96.7 | 96.7 | 0.88 | 600 | 1PQ8 405-4PM8□ | | 3100 | |
| 690 | 795 | 400 | 1491 | 4420 | 96.9 | 96.9 | 0.89 | 670 | 1PQ8 407-4PM7□ | | 3300 | |
| 785 | 905 | 450 | 1492 | 5025 | 96.8 | 96.8 | 0.88 | 770 | 1PQ8 453-4PM7□ | | 4100 | |
| 880 | 1010 | 450 | 1492 | 5633 | 97.0 | 97.0 | 0.87 | 870 | 1PQ8 455-4PM7□ | | 4300 | |
| 980 | 1125 | 450 | 1492 | 6273 | 97.1 | 97.1 | 0.89 | 950 | 1PQ8 457-4PM7□ | | 4500 | |

Order No. supplements

| Motor type | Final position: Type of construction code | | | |
|--|---|--------------------------------|-----------------------------|--------|
| | Without flange IM B3 | With flange | | |
| | | IM V1 without protective cover | IM V1 with protective cover | IM B35 |
| | 0 | 8 | 4 | 6 |
| 1PQ8 315- . . . □□ to 1PQ8 457- . . . □□ | □ | ✓ | ✓ | ✓ |

- Standard version
- ✓ With additional charge

The voltage code is already in the Order No. as the penultimate position.

Assignment:

7 = 690 VΔ

8 = 400 VΔ/690 VY

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Voltages or frequencies that are not covered by the predefined options can be ordered with order code **L1Y**. In this case, the output, voltage and frequency must be specified.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Forced-air cooled motors with separately driven fan
for converter-fed operation – Cast-iron series 1PQ8

Selection and ordering data (continued)

| Order No. | Breakdown torque at 50 Hz as multiple of rated torque | Torque class | Moment of inertia | Technical data of the separately driven fan | | | | Measuring surface sound pressure level at 50 Hz | Sound power level at 50 Hz | Mech. limit speed ¹⁾ | Parallel feeders required | | | |
|---|---|--------------|-------------------------|---|------------------|----------|----------|---|----------------------------|---------------------------------|---------------------------|-------|-------|-------|
| | | | | Power consumption with | Rated current at | 50 Hz | 60 Hz | | | | | | 400 V | 460 V |
| | T_B/T_{rated} | CL | J kgm ² | P kW | P kW | I A | I A | $L_{p(A)}$ dB(A) | L_{WA} dB(A) | $n_{max.}$ rpm | $f_{max.}$ Hz | 400 V | 500 V | 690 V |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with special insulation for voltages >500 to 690 V | | | | | | | | | | | | | | |
| 1PQ8 315-2PM8□ | 3.0 | 10 | 2.7 | 0.75 | 1.23 | 3.4 | 3.3 | 79 | 94 | 3600 | 60 | Yes | Yes | |
| 1PQ8 317-2PM8□ | 3.0 | 10 | 3.3 | 0.75 | 1.23 | 3.4 | 3.3 | 79 | | 3600 | 60 | Yes | Yes | |
| 1PQ8 353-2PM8□ | 2.6 | 10 | 4.8 | 1.3 | 2.2 | 6.4 | 6.2 | 81 | 96 | 3600/3100 ²⁾ | 60/52 ²⁾ | Yes | Yes | |
| 1PQ8 355-2PM8□ | 2.6 | 10 | 5.3 | 1.3 | 2.2 | 6.4 | 6.2 | 81 | | 3600/3100 ²⁾ | 60/52 ²⁾ | Yes | Yes | |
| 1PQ8 357-2PM8□ | 2.6 | 10 | 6.4 | 1.3 | 2.2 | 6.4 | 6.2 | 81 | | 3600/3100 ²⁾ | 60/52 ²⁾ | Yes | | |
| 1PQ8 403-2PM7□ | 3.0 | 10 | 8.6 | 1.6 | 2.8 | 6.4 | 6.2 | 83 | 98 | 3600/3100 ²⁾ | 60/52 ²⁾ | Yes | | |
| 1PQ8 405-2PM7□ | 3.1 | 10 | 9.6 | 1.6 | 2.8 | 6.4 | 6.2 | 83 | | 3600/3100 ²⁾ | 60/52 ²⁾ | Yes | Yes | |
| 1PQ8 407-2PM7□ | 3.0 | 10 | 11 | 1.6 | 2.8 | 6.4 | 6.2 | 83 | | 3600/3100 ²⁾ | 60/52 ²⁾ | Yes | | |
| 1PQ8 453-2PM7□ | 2.8 | 5 | 19 | 3.0 | 4.2 | 8.2 | 7.7 | 86 | 101 | 3000 | 50 | Yes | | |
| 1PQ8 455-2PM7□ | 2.8 | 5 | 21 | 3.0 | 4.2 | 8.2 | 7.7 | 86 | | 3000 | 50 | Yes | Yes | |
| 1PQ8 457-2PM7□ | 2.8 | 5 | 23 | 3.0 | 4.2 | 8.2 | 7.7 | 86 | | 3000 | 50 | Yes | Yes | |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with special insulation for voltages >500 to 690 V | | | | | | | | | | | | | | |
| 1PQ8 315-4PM8□ | 2.8 | 13 | 3.6 | 0.75 | 1.23 | 3.4 | 3.3 | 79 | 93 | 3000 (2650) | 100 (88) | Yes | | |
| 1PQ8 317-4PM8□ | 2.8 | 13 | 4.4 | 0.75 | 1.23 | 3.4 | 3.3 | 79 | | 3000 (2650) | 100 (88) | Yes | | |
| 1PQ8 353-4PM8□ | 2.6 | 13 | 6.1 | 1.3 | 2.2 | 6.4 | 6.2 | 81 | 96 | 2500 (2350) | 83 (78) | Yes | Yes | |
| 1PQ8 355-4PM8□ | 2.6 | 13 | 6.8 | 1.3 | 2.2 | 6.4 | 6.2 | 81 | | 2500 (2350) | 83 (78) | Yes | Yes | |
| 1PQ8 357-4PM8□ | 2.5 | 13 | 8.5 | 1.3 | 2.2 | 6.4 | 6.2 | 81 | | 2500 (2350) | 83 (78) | Yes | | |
| 1PQ8 403-4PM8□ | 2.6 | 13 | 13 | 1.6 | 2.8 | 6.4 | 6.2 | 83 | 98 | 2200 (2100)/2100 ²⁾ | 73 (70)/70 ²⁾ | Yes | | |
| 1PQ8 405-4PM8□ | 2.7 | 13 | 14 | 1.6 | 2.8 | 6.4 | 6.2 | 83 | | 2200 (2100)/2100 ²⁾ | 73 (70)/70 ²⁾ | Yes | Yes | |
| 1PQ8 407-4PM7□ | 2.6 | 13 | 16 | 1.6 | 2.8 | 6.4 | 6.2 | 83 | | 2200 (2100)/2100 ²⁾ | 73 (70)/70 ²⁾ | Yes | | |
| 1PQ8 453-4PM7□ | 2.5 | 10 | 23 | 3.0 | 4.2 | 8.2 | 7.7 | 86 | 101 | 2100 (1900)/1800 ²⁾ | 70 (61)/60 ²⁾ | Yes | | |
| 1PQ8 455-4PM7□ | 2.6 | 10 | 26 | 3.0 | 4.2 | 8.2 | 7.7 | 86 | | 2100 (1900)/1800 ²⁾ | 70 (61)/60 ²⁾ | Yes | Yes | |
| 1PQ8 457-4PM7□ | 2.6 | 10 | 28 | 3.0 | 4.2 | 8.2 | 7.7 | 86 | | 2100 (1900)/1800 ²⁾ | 70 (61)/60 ²⁾ | Yes | Yes | |

Values in brackets apply to the use of motors in hazardous areas.

¹⁾ Limit speeds for reinforced bearings (order code **K20**) for 4-pole motors on request.

²⁾ For vertical type of construction IM V1.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Forced-air cooled motors with separately driven fan for converter-fed operation – Cast-iron series 1PQ8

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output and sinusoidal supply | | | | | | Order No. | Price | Weight of IM B3 type of construction approx. |
|---|-------------------|------------|--|-----------------------|------------------------------|------------------------------|--------------------------------|------------------------------|-----------------------|-----------|--|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 690 V | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | | m kg | |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with special insulation for voltages >500 to 690 V | | | | | | | | | | | |
| 190 | 220 | 315 | 990 | 1833 | 95.5 | 95.6 | 0.85 | 196 | 1PQ8 315-6PM8□ | 1400 | |
| 235 | 270 | 315 | 990 | 2267 | 95.7 | 95.8 | 0.86 | 240 | 1PQ8 317-6PM8□ | 1600 | |
| 300 | 345 | 355 | 992 | 2888 | 96.2 | 96.2 | 0.86 | 305 | 1PQ8 355-6PM8□ | 2100 | |
| 380 | 435 | 355 | 992 | 3658 | 96.4 | 96.4 | 0.86 | 385 | 1PQ8 357-6PM8□ | 2300 | |
| 435 | 500 | 400 | 993 | 4184 | 96.4 | 96.4 | 0.85 | 445 | 1PQ8 403-6PM8□ | 2900 | |
| 485 | 560 | 400 | 993 | 4664 | 96.5 | 96.5 | 0.86 | 490 | 1PQ8 405-6PM8□ | 3100 | |
| 545 | 625 | 400 | 993 | 5241 | 96.6 | 96.6 | 0.86 | 550 | 1PQ8 407-6PM8□ | 3300 | |
| 615 | 705 | 450 | 993 | 5915 | 96.8 | 96.8 | 0.84 | 630 | 1PQ8 453-6PM8□ | 4100 | |
| 690 | 795 | 450 | 993 | 6636 | 96.8 | 96.8 | 0.85 | 700 | 1PQ8 455-6PM7□ | 4300 | |
| 780 | 895 | 450 | 993 | 7502 | 96.9 | 97.0 | 0.85 | 790 | 1PQ8 457-6PM7□ | 4600 | |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with special insulation for voltages >500 to 690 V | | | | | | | | | | | |
| 145 | 165 | 315 | 740 | 1871 | 94.6 | 94.6 | 0.79 | 162 | 1PQ8 315-8PM8□ | 1400 | |
| 180 | 205 | 315 | 740 | 2323 | 94.9 | 94.9 | 0.80 | 198 | 1PQ8 317-8PM8□ | 1600 | |
| 230 | 265 | 355 | 743 | 2956 | 95.5 | 95.5 | 0.80 | 250 | 1PQ8 355-8PM8□ | 2100 | |
| 290 | 335 | 355 | 743 | 3727 | 95.7 | 95.7 | 0.81 | 315 | 1PQ8 357-8PM8□ | 2300 | |
| 335 | 385 | 400 | 743 | 4306 | 96.0 | 96.0 | 0.80 | 365 | 1PQ8 403-8PM8□ | 2900 | |
| 375 | 430 | 400 | 743 | 4820 | 96.1 | 96.1 | 0.80 | 410 | 1PQ8 405-8PM8□ | 3100 | |
| 425 | 490 | 400 | 743 | 5463 | 96.2 | 96.2 | 0.79 | 470 | 1PQ8 407-8PM8□ | 3300 | |
| 485 | 560 | 450 | 745 | 6217 | 96.5 | 96.5 | 0.78 | 540 | 1PQ8 453-8PM8□ | 4100 | |
| 545 | 625 | 450 | 745 | 6986 | 96.6 | 96.6 | 0.78 | 610 | 1PQ8 455-8PM8□ | 4300 | |
| 600 | 690 | 450 | 745 | 7691 | 96.7 | 96.7 | 0.79 | 660 | 1PQ8 457-8PM8□ | 4600 | |

Order No. supplements

| Motor type | Final position: Type of construction code | | | |
|---------------------------|---|--------------------------------|-----------------------------|----------|
| | Without flange | With flange | | |
| | IM B3 | IM V1 without protective cover | IM V1 with protective cover | IM B35 |
| | 0 | 8 | 4 | 6 |
| 1PQ8 315-... □□ | □ | ✓ | ✓ | ✓ |
| to 1PQ8 457-... □□ | | | | |

- Standard version
- ✓ With additional charge

The voltage code is already in the Order No. as the penultimate position.

Assignment:

7 = 690 VΔ

8 = 400 VΔ/690 VY

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Voltages or frequencies that are not covered by the predefined options can be ordered with order code **L1Y**. In this case, the output, voltage and frequency must be specified.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Forced-air cooled motors with separately driven fan
for converter-fed operation – Cast-iron series 1PQ8

Selection and ordering data (continued)

| Order No. | Breakdown torque at 50 Hz as multiple of rated torque | Torque class | Moment of inertia | Technical data of the separately driven fan | | | | Measuring surface sound pressure level at 50 Hz | Sound power level at 50 Hz | Mech. limit speed ¹⁾ | | | Parallel feeders required | |
|---|---|-------------------------|-------------------|---|------------------|----------|---|---|----------------------------|---------------------------------|-----------------------------|-------------------|---------------------------|------------------|
| | | | | Power consumption with | Rated current at | | For rated output, 50 Hz, tolerance +3 dB(A) | | | L_{pA} dB(A) | L_{WA} dB(A) | $n_{max.}$ rpm | | $f_{max.}$ Hz |
| T_B/T_{rated} | CL | J kgm ² | P kW | P kW | I A | I A | | L_{pA} dB(A) | L_{WA} dB(A) | | | | $n_{max.}$ rpm | |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with special insulation for voltages >500 to 690 V | | | | | | | | | | | | | | |
| 1PQ8 315-6PM8□ | 2.7 | 13 | 6 | 0.75 | 1.23 | 3.4 | 3.3 | 80 | 94 | 2950 (2350) | 147 (117) | | | |
| 1PQ8 317-6PM8□ | 2.7 | 13 | 7.3 | 0.75 | 1.23 | 3.4 | 3.3 | 80 | 94 | 2950 (2350) | 147 (117) | Yes | | |
| 1PQ8 355-6PM8□ | 2.8 | 13 | 13 | 1.3 | 2.2 | 6.4 | 6.2 | 82 | 97 | 2500 (2100) | 125 (105) | Yes | | |
| 1PQ8 357-6PM8□ | 2.9 | 13 | 16 | 1.3 | 2.2 | 6.4 | 6.2 | 82 | 97 | 2500 (2100) | 125 (105) | Yes | Yes | |
| 1PQ8 403-6PM8□ | 2.8 | 13 | 21 | 1.3 | 2.2 | 6.4 | 6.2 | 84 | 99 | 2200 (1900)/2100 ²⁾ | 110 (95)/105 ²⁾ | | | |
| 1PQ8 405-6PM8□ | 2.8 | 13 | 24 | 1.6 | 2.8 | 6.4 | 6.2 | 84 | 99 | 2200 (1900)/2100 ²⁾ | 110 (95)/105 ²⁾ | Yes | | |
| 1PQ8 407-6PM8□ | 2.7 | 13 | 27 | 1.6 | 2.8 | 6.4 | 6.2 | 84 | 99 | 2200 (1900)/2100 ²⁾ | 110 (95)/105 ²⁾ | Yes | | |
| 1PQ8 453-6PM8□ | 2.7 | 13 | 35 | 1.6 | 2.8 | 6.4 | 6.2 | 87 | 102 | 2100 (1700)/1800 ²⁾ | 105 (85)/90 ²⁾ | Yes | Yes | |
| 1PQ8 455-6PM7□ | 2.5 | 13 | 39 | 3 | 4.2 | 8.2 | 7.7 | 87 | 102 | 2100 (1700)/1800 ²⁾ | 105 (85)/90 ²⁾ | | Yes | |
| 1PQ8 457-6PM7□ | 2.6 | 13 | 44 | 3 | 4.2 | 8.2 | 7.7 | 87 | 102 | 2100 (1700)/1800 ²⁾ | 105 (85)/90 ²⁾ | | Yes | |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP55 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with special insulation for voltages >500 to 690 V | | | | | | | | | | | | | | |
| 1PQ8 315-8PM8□ | 2.5 | 13 | 6 | 0.75 | 1.23 | 3.4 | 3.3 | 79 | 93 | 2950 (2350) | 196 (156) | | | |
| 1PQ8 317-8PM8□ | 2.5 | 13 | 7.3 | 0.75 | 1.23 | 3.4 | 3.3 | 79 | 93 | 2950 (2350) | 196 (156) | | | |
| 1PQ8 355-8PM8□ | 2.4 | 13 | 13 | 1.3 | 2.2 | 6.4 | 6.2 | 81 | 96 | 2500 (2100) | 166 (140) | | | |
| 1PQ8 357-8PM8□ | 2.4 | 13 | 16 | 1.3 | 2.2 | 6.4 | 6.2 | 81 | 96 | 2500 (2100) | 166 (140) | Yes | | |
| 1PQ8 403-8PM8□ | 2.6 | 13 | 21 | 1.3 | 2.2 | 6.4 | 6.2 | 83 | 98 | 2200 (1900)/2100 ²⁾ | 146 (126)/140 ²⁾ | | | |
| 1PQ8 405-8PM8□ | 2.7 | 13 | 24 | 1.6 | 2.8 | 6.4 | 6.2 | 83 | 98 | 2200 (1900)/2100 ²⁾ | 146 (126)/140 ²⁾ | Yes | | |
| 1PQ8 407-8PM8□ | 2.7 | 13 | 27 | 1.6 | 2.8 | 6.4 | 6.2 | 83 | 98 | 2200 (1900)/2100 ²⁾ | 146 (126)/140 ²⁾ | Yes | | |
| 1PQ8 453-8PM8□ | 2.5 | 13 | 35 | 1.6 | 2.8 | 6.4 | 6.2 | 86 | 101 | 2100 (1700)/1800 ²⁾ | 140 (113)/120 ²⁾ | Yes | | |
| 1PQ8 455-8PM8□ | 2.5 | 13 | 39 | 3 | 4.2 | 8.2 | 7.7 | 86 | 101 | 2100 (1700)/1800 ²⁾ | 140 (113)/120 ²⁾ | Yes | Yes | |
| 1PQ8 457-8PM8□ | 2.5 | 13 | 44 | 3 | 4.2 | 8.2 | 7.7 | 86 | 101 | 2100 (1700)/1800 ²⁾ | 140 (113)/120 ²⁾ | Yes | Yes | |

Values in brackets apply to the use of motors in hazardous areas.

¹⁾ Limit speeds for reinforced bearings (order code **K20**) for 6- and 8-pole motors on request.

²⁾ For vertical type of construction IM V1.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Self-ventilated motors with through ventilation
for mains-fed operation – Cast-iron series 1LL8

Selection and ordering data

| Rated output at | | Frame size | Operating values at rated output | | | | | | Order No. | Price | Weight of IM B3 type of construction approx. |
|---|-------------------|------------|----------------------------------|-----------------------|------------------------------|--------------------------------|------------------------------|------------------------------|-----------------------|-----------|--|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | Rated current at 50 Hz 690 V | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | I_{rated} A | | m kg | |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 130 (B), IP23 degree of protection | | | | | | | | | | | |
| 315 | 345 | 315 | 2974 | 1010 | 96.1 | 0.92 | 510 | 300 | 1LL8 315-2AC□□ | 1300 | |
| 400 | 440 | 315 | 2974 | 1280 | 96.4 | 0.92 | 650 | 375 | 1LL8 317-2AC□□ | 1500 | |
| 450 | – | 355 | 2978 | 1440 | 96.4 | 0.91 | 740 | 430 | 1LL8 353-2AD□□ | 1900 | |
| 500 | – | 355 | 2979 | 1600 | 96.6 | 0.92 | 810 | 470 | 1LL8 355-2AD□□ | 2000 | |
| 630 | – | 355 | 2980 | 2020 | 96.9 | 0.93 | 1000 | 580 | 1LL8 357-2AD□□ | 2200 | |
| 710 | – | 400 | 2984 | 2270 | 97.0 | 0.91 | 1160 | 670 | 1LL8 403-2AD□□ | 2800 | |
| 800 | – | 400 | 2984 | 2560 | 97.1 | 0.92 | 1300 | 750 | 1LL8 405-2AD□□ | 3000 | |
| 900 | – | 400 | 2985 | 2880 | 97.3 | 0.92 | – | 840 | 1LL8 407-2AD□□ | 3200 | |
| 1000 | – | 450 | 2987 | 3200 | 97.3 | 0.93 | – | 920 | 1LL8 453-2AE□□ | 4000 | |
| 1120 | – | 450 | 2986 | 3580 | 97.3 | 0.94 | – | 1020 | 1LL8 455-2AE□□ | 4200 | |
| 1250 | – | 450 | 2986 | 4000 | 97.4 | 0.94 | – | 1140 | 1LL8 457-2AE□□ | 4400 | |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 130 (B), IP23 degree of protection | | | | | | | | | | | |
| 315 | 360 | 315 | 1483 | 2030 | 96.0 | 0.87 | 540 | 315 | 1LL8 315-4AC□□ | 1300 | |
| 400 | 460 | 315 | 1484 | 2570 | 96.2 | 0.88 | 680 | 395 | 1LL8 317-4AC□□ | 1500 | |
| 450 | 515 | 355 | 1487 | 2890 | 96.5 | 0.87 | 770 | 450 | 1LL8 353-4AC□□ | 1900 | |
| 500 | 575 | 355 | 1487 | 3210 | 96.6 | 0.88 | 850 | 490 | 1LL8 355-4AC□□ | 2000 | |
| 630 | 725 | 355 | 1488 | 4040 | 96.9 | 0.88 | 1060 | 620 | 1LL8 357-4AC□□ | 2200 | |
| 710 | 815 | 400 | 1489 | 4550 | 96.9 | 0.88 | 1200 | 700 | 1LL8 403-4AC□□ | 2800 | |
| 800 | 920 | 400 | 1490 | 5130 | 97.0 | 0.88 | – | 780 | 1LL8 405-4AC□□ | 3000 | |
| 900 | 1035 | 400 | 1491 | 5760 | 97.2 | 0.87 | – | 890 | 1LL8 407-4AC□□ | 3200 | |
| 1000 | 1150 | 450 | 1492 | 6400 | 97.2 | 0.86 | – | 1000 | 1LL8 453-4AD□□ | 4000 | |
| 1120 | 1280 | 450 | 1491 | 7170 | 97.2 | 0.89 | – | 1080 | 1LL8 455-4AD□□ | 4200 | |
| 1250 | 1430 | 450 | 1490 | 8010 | 97.2 | 0.89 | – | 1200 | 1LL8 457-4AD□□ | 4400 | |

A service factor (SF) of 1.05 is stamped onto all 1LL8 motors for mains-fed operation.

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | |
|--|------------------------------------|----------|-----------------|---|---|--------------------------------------|---|-----------------|
| | 400 VΔ/690 VY | 500 VΔ | 690 VΔ | 60 Hz 460 VΔ (see "Introduction" for outputs at 60 Hz) | Without flange IM B3 | With flange | | IM B35 |
| | | | | | | IM V1 without protective cover | IM V1 with protective cover ¹⁾ | |
| | 6 | 5 | 0 | 9 L2F | 0 | 8 | 4 | 6 |
| 1LL8 315-...□□ to 1LL8 317-...□□ | □ | ○ | – ²⁾ | ○ | □ | ✓ | ✓ | ✓ |
| 1LL8 353-...□□ to 1LL8 405-...□□ | □ | ○ | – ²⁾ | ○ | □ ³⁾ | ✓ ³⁾ | ✓ ³⁾ | ✓ ³⁾ |
| 1LL8 407-...□□ to 1LL8 457-...□□ | – | ○ | □ | O. R. | □ ³⁾ | ✓ ³⁾ | ✓ ³⁾ | ✓ ³⁾ |

- Standard version
- Without additional charge
- ✓ With additional charge
- O. R. Possible on request
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Voltages or frequencies that are not covered by the predefined options can be ordered with order code **L1Y**. In this case, the output, voltage and frequency must be specified.

- 1) The "Second shaft extension" option, order code **K16** is not possible.
- 2) As special version with voltage code **9** and order code **L1Y** (specify output, voltage and frequency).
- 3) Not possible for 2-pole motors in 60 Hz version.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Self-ventilated motors with through ventilation
for mains-fed operation – Cast-iron series 1LL8

Selection and ordering data (continued)

| Order No. | Locked-rotor torque | Locked-rotor current | Break-down torque | Torque class | Moment of inertia | Noise at rated output | | Mech. limit speed | Parallel feeders required | | |
|---|---|--|---|--------------|-------------------------|---|----------------------------|-------------------------|---------------------------|-------|-------|
| | At 50 Hz and for direct online starting as multiple of rated torque | At 50 Hz and for direct online starting as multiple of rated current | At 50 Hz and for direct online starting as multiple of rated torque | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz | Sound power level at 50 Hz | | η_{\max} rpm | 400 V | 500 V |
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | | | L_{pA} dB(A) | L_{WA} dB(A) | | | | |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 130 (B), IP23 degree of protection | | | | | | | | | | | |
| 1LL8 315-2AC□□ | 1.6 | 7.0 | 2.8 | 10 | 2.7 | 84 ¹⁾ | 99 | 3600 | Yes | | |
| 1LL8 317-2AC□□ | 1.7 | 7.0 | 2.8 | 10 | 3.3 | 84 ¹⁾ | 99 | 3600 | Yes | | |
| 1LL8 353-2AD□□ | 1.4 | 7.0 | 2.6 | 7 | 4.8 | 86 ¹⁾ | 101 | 3600/3100 ²⁾ | Yes | Yes | |
| 1LL8 355-2AD□□ | 1.4 | 7.0 | 2.6 | 7 | 5.3 | 86 ¹⁾ | 101 | 3600/3100 ²⁾ | Yes | Yes | |
| 1LL8 357-2AD□□ | 1.6 | 7.0 | 2.6 | 7 | 6.4 | 86 ¹⁾ | 101 | 3600/3100 ²⁾ | Yes | | |
| 1LL8 403-2AD□□ | 1.4 | 6.8 | 2.6 | 7 | 8.6 | 88 ¹⁾ | 103 | 3600/3100 ²⁾ | Yes | | |
| 1LL8 405-2AD□□ | 1.5 | 7.0 | 2.6 | 7 | 9.6 | 88 ¹⁾ | 103 | 3600/3100 ²⁾ | Yes | Yes | |
| 1LL8 407-2AD□□ | 1.5 | 7.0 | 2.7 | 7 | 11 | 88 ¹⁾ | 103 | 3600/3100 ²⁾ | Yes | | |
| 1LL8 453-2AE□□ | 0.9 | 7.0 | 2.9 | 5 | 19 | 90 ¹⁾ | 105 | 3000 | Yes | | |
| 1LL8 455-2AE□□ | 0.9 | 7.0 | 2.7 | 5 | 21 | 90 ¹⁾ | 105 | 3000 | Yes | Yes | |
| 1LL8 457-2AE□□ | 0.9 | 7.0 | 2.6 | 5 | 23 | 90 ¹⁾ | 105 | 3000 | Yes | Yes | |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 130 (B), IP23 degree of protection | | | | | | | | | | | |
| 1LL8 315-4AC□□ | 1.6 | 7.0 | 2.7 | 10 | 3.6 | 75 | 90 | 3000/2600 ²⁾ | Yes | | |
| 1LL8 317-4AC□□ | 1.7 | 7.0 | 2.7 | 10 | 4.4 | 75 | 90 | 3000/2600 ²⁾ | Yes | | |
| 1LL8 353-4AC□□ | 1.5 | 7.0 | 2.6 | 10 | 6.1 | 77 | 92 | 2500/2200 ²⁾ | Yes | Yes | |
| 1LL8 355-4AC□□ | 1.6 | 7.0 | 2.6 | 10 | 6.8 | 77 | 92 | 2500/2200 ²⁾ | Yes | Yes | |
| 1LL8 357-4AC□□ | 1.6 | 7.0 | 2.7 | 10 | 8.5 | 77 | 92 | 2500/2200 ²⁾ | Yes | | |
| 1LL8 403-4AC□□ | 1.6 | 7.0 | 2.4 | 10 | 13 | 81 | 96 | 2200/1900 ²⁾ | Yes | | |
| 1LL8 405-4AC□□ | 1.7 | 7.0 | 2.5 | 10 | 14 | 81 | 96 | 2200/1900 ²⁾ | Yes | Yes | |
| 1LL8 407-4AC□□ | 1.7 | 7.0 | 2.6 | 10 | 16 | 81 | 96 | 2200/1900 ²⁾ | Yes | | |
| 1LL8 453-4AD□□ | 1.5 | 7.0 | 2.8 | 7 | 23 | 84 | 99 | 2100/1800 ²⁾ | Yes | | |
| 1LL8 455-4AD□□ | 1.5 | 7.0 | 2.6 | 7 | 26 | 84 | 99 | 2100/1800 ²⁾ | Yes | Yes | |
| 1LL8 457-4AD□□ | 1.5 | 7.0 | 2.5 | 7 | 28 | 84 | 99 | 2100/1800 ²⁾ | Yes | Yes | |

¹⁾ The noise values for **1LL8**, 2-pole are for guidance only.

²⁾ For vertical type of construction IM V1.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Self-ventilated motors with through ventilation
for mains-fed operation – Cast-iron series 1LL8

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output | | | | | | Order No. | Price | Weight of IM B3 type of construction approx. |
|---|-------------------|------------|----------------------------------|-----------------------|------------------------------|--------------------------------|------------------------------|------------------------------|---|-----------|--|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | Rated current at 50 Hz 690 V | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | I_{rated} A | For Order No. supplements for voltage and type of construction, see table below | m kg | |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 130 (B), IP23 degree of protection | | | | | | | | | | | |
| 250 | 285 | 315 | 988 | 2420 | 95.4 | 0.88 | 430 | 250 | 1LL8 315-6AC□□ | 1300 | |
| 315 | 360 | 315 | 988 | 3040 | 95.7 | 0.89 | 530 | 310 | 1LL8 317-6AC□□ | 1500 | |
| 400 | 460 | 355 | 991 | 3850 | 96.1 | 0.88 | 680 | 395 | 1LL8 355-6AC□□ | 2000 | |
| 500 | 575 | 355 | 991 | 4820 | 96.4 | 0.88 | 850 | 495 | 1LL8 357-6AC□□ | 2200 | |
| 560 | 645 | 400 | 993 | 5390 | 96.6 | 0.87 | 960 | 560 | 1LL8 403-6AC□□ | 2800 | |
| 630 | 725 | 400 | 993 | 6060 | 96.7 | 0.88 | 1060 | 620 | 1LL8 405-6AC□□ | 3000 | |
| 710 | 815 | 400 | 993 | 6830 | 96.7 | 0.88 | 1200 | 700 | 1LL8 407-6AC□□ | 3200 | |
| 800 | 920 | 450 | 993 | 7700 | 96.8 | 0.87 | – | 790 | 1LL8 453-6AD□□ | 4000 | |
| 900 | 1035 | 450 | 992 | 8660 | 96.8 | 0.88 | – | 880 | 1LL8 455-6AD□□ | 4200 | |
| 1000 | 1150 | 450 | 993 | 9620 | 96.9 | 0.88 | – | 980 | 1LL8 457-6AD□□ | 4500 | |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 130 (B), IP23 degree of protection | | | | | | | | | | | |
| 200 | 230 | 315 | 738 | 2590 | 94.7 | 0.82 | 370 | 215 | 1LL8 315-8AC□□ | 1300 | |
| 250 | 285 | 315 | 738 | 3240 | 95.0 | 0.82 | 465 | 270 | 1LL8 317-8AC□□ | 1500 | |
| 315 | 360 | 355 | 740 | 4070 | 95.5 | 0.83 | 570 | 335 | 1LL8 355-8AC□□ | 2000 | |
| 400 | 460 | 355 | 740 | 5160 | 95.6 | 0.84 | 720 | 415 | 1LL8 357-8AC□□ | 2200 | |
| 450 | 515 | 400 | 741 | 5800 | 95.9 | 0.84 | 810 | 465 | 1LL8 403-8AD□□ | 2800 | |
| 500 | 575 | 400 | 741 | 6440 | 96.1 | 0.84 | 890 | 520 | 1LL8 405-8AD□□ | 3000 | |
| 560 | 645 | 400 | 742 | 7210 | 96.2 | 0.83 | 1020 | 590 | 1LL8 407-8AD□□ | 3200 | |
| 630 | 745 | 450 | 743 | 8100 | 96.3 | 0.82 | 1160 | 670 | 1LL8 453-8AD□□ | 4000 | |
| 710 | 815 | 450 | 743 | 9130 | 96.4 | 0.83 | 1280 | 740 | 1LL8 455-8AD□□ | 4200 | |
| 800 | 920 | 450 | 743 | 10300 | 96.5 | 0.83 | – | 840 | 1LL8 457-8AD□□ | 4500 | |

A service factor (SF) of 1.05 is stamped onto all 1LL8 motors for mains-fed operation.

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | |
|--|------------------------------------|--------|-----------------|---|---|---|---|--------|
| | 400 VΔ/690 VY | 500 VΔ | 690 VΔ | 60 Hz 460 VΔ (see "Introduction" for outputs at 60 Hz) | Without flange IM B3 | With flange IM V1 without protective cover | IM V1 with protective cover ¹⁾ | IM B35 |
| | 6 | 5 | 0 | 9 L2F | 0 | 8 | 4 | 6 |
| 6-pole | | | | | | | | |
| 1LL8 315-...□□ to 1LL8 407-...□□ | □ | ○ | – ²⁾ | ○ | □ | ✓ | ✓ | ✓ |
| 1LL8 453-...□□ to 1LL8 457-...□□ | – | ○ | □ | O. R. | □ | ✓ | ✓ | ✓ |
| 8-pole | | | | | | | | |
| 1LL8 315-...□□ to 1LL8 455-...□□ | □ | ○ | – ²⁾ | ○ | □ | ✓ | ✓ | ✓ |
| 1LL8 457-...□□ | – | ○ | □ | O. R. | □ | ✓ | ✓ | ✓ |

- Standard version
- Without additional charge
- ✓ With additional charge
- O. R. Possible on request
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Voltages or frequencies that are not covered by the predefined options can be ordered with order code **L1Y**. In this case, the output, voltage and frequency must be specified.

¹⁾ The "Second shaft extension" option, order code **K16** is not possible.

²⁾ As special version with voltage code **9** and order code **L1Y** (specify output, voltage and frequency).

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Self-ventilated motors with through ventilation
for mains-fed operation – Cast-iron series 1LL8

Selection and ordering data (continued)

| Order No. | Locked-rotor torque | Locked-rotor current | Break-down torque | Torque class | Moment of inertia | Noise at rated output | | Mech. limit speed | Parallel feeders required | | |
|---|---|----------------------|-------------------|--------------|-------------------------|---|----------------------------|-------------------------|---------------------------|-------|-------|
| | At 50 Hz and for direct online starting as multiple of rated torque | | | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz | Sound power level at 50 Hz | n_{max} rpm | 400 V | 500 V | 690 V |
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | | | L_{pA} dB(A) | L_{WA} dB(A) | | | | |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 130 (B), IP23 degree of protection | | | | | | | | | | | |
| 1LL8 315-6AC□□ | 1.6 | 7 | 2.6 | 10 | 6 | 70 | 84 | 2950/2600 ¹⁾ | | | |
| 1LL8 317-6AC□□ | 1.7 | 7 | 2.6 | 10 | 7.3 | 70 | 84 | 2950/2600 ¹⁾ | Yes | | |
| 1LL8 355-6AC□□ | 1.7 | 7 | 2.5 | 10 | 13 | 73 | 88 | 2500/2200 ¹⁾ | Yes | | |
| 1LL8 357-6AC□□ | 1.8 | 7 | 2.6 | 10 | 16 | 73 | 88 | 2500/2200 ¹⁾ | Yes | Yes | |
| 1LL8 403-6AC□□ | 1.8 | 7 | 2.6 | 10 | 21 | 76 | 91 | 2200/1900 ¹⁾ | | | |
| 1LL8 405-6AC□□ | 1.8 | 7 | 2.6 | 10 | 24 | 76 | 91 | 2200/1900 ¹⁾ | Yes | | |
| 1LL8 407-6AC□□ | 1.8 | 7 | 2.5 | 10 | 27 | 76 | 91 | 2200/1900 ¹⁾ | Yes | | |
| 1LL8 453-6AD□□ | 1.5 | 7 | 2.5 | 7 | 35 | 78 | 93 | 2100/1800 ¹⁾ | Yes | Yes | |
| 1LL8 455-6AD□□ | 1.5 | 7 | 2.4 | 7 | 39 | 78 | 93 | 2100/1800 ¹⁾ | | Yes | |
| 1LL8 457-6AD□□ | 1.5 | 7 | 2.5 | 7 | 44 | 78 | 93 | 2100/1800 ¹⁾ | | Yes | |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 130 (B), IP23 degree of protection | | | | | | | | | | | |
| 1LL8 315-8AC□□ | 1.6 | 5.8 | 2.4 | 10 | 6 | 67 | 81 | 2950/2600 ¹⁾ | | | |
| 1LL8 317-8AC□□ | 1.6 | 5.8 | 2.4 | 10 | 7.3 | 67 | 81 | 2950/2600 ¹⁾ | | | |
| 1LL8 355-8AC□□ | 1.6 | 6 | 2.4 | 10 | 13 | 69 | 84 | 2500/2200 ¹⁾ | | | |
| 1LL8 357-8AC□□ | 1.6 | 6 | 2.3 | 10 | 16 | 69 | 84 | 2500/2200 ¹⁾ | Yes | | |
| 1LL8 403-8AD□□ | 1.3 | 5.8 | 2.3 | 7 | 21 | 72 | 87 | 2200/1900 ¹⁾ | | | |
| 1LL8 405-8AD□□ | 1.4 | 5.8 | 2.4 | 7 | 24 | 72 | 87 | 2200/1900 ¹⁾ | | | |
| 1LL8 407-8AD□□ | 1.4 | 6 | 2.4 | 7 | 27 | 72 | 87 | 2200/1900 ¹⁾ | Yes | | |
| 1LL8 453-8AD□□ | 1.3 | 5.8 | 2.3 | 7 | 35 | 74 | 89 | 2100/1800 ¹⁾ | Yes | | |
| 1LL8 455-8AD□□ | 1.3 | 5.8 | 2.3 | 7 | 39 | 74 | 89 | 2100/1800 ¹⁾ | Yes | Yes | |
| 1LL8 457-8AD□□ | 1.3 | 5.8 | 2.3 | 7 | 44 | 74 | 89 | 2100/1800 ¹⁾ | Yes | Yes | |

¹⁾ For vertical type of construction IM V1.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Self-ventilated motors with through-ventilation
for converter-fed operation – Cast-iron series 1LL8

Selection and ordering data

| Rated output at | | Frame size | Operating values at rated output and sinusoidal supply | | | | | | Order No. | Price | Weight of IM B3 type of construction approx. |
|--|-------------------|------------|--|-----------------------|------------------------------|--------------------------------|------------------------------|------------------------------|----------------|-------|--|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | Rated current at 50 Hz 690 V | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | I_{rated} A | | kg | |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP23 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with standard insulation for voltages ≤500 V | | | | | | | | | | | |
| 315 | 345 | 315 | 2974 | 1010 | 96.1 | 0.92 | 510 | 300 | 1LL8 315-2PCQQ | 1300 | |
| 400 | 440 | 315 | 2974 | 1280 | 96.4 | 0.92 | 650 | 375 | 1LL8 317-2PCQQ | 1500 | |
| 450 | – | 355 | 2978 | 1440 | 96.4 | 0.91 | 740 | 430 | 1LL8 353-2PDQQ | 1900 | |
| 500 | – | 355 | 2979 | 1600 | 96.6 | 0.92 | 810 | 470 | 1LL8 355-2PDQQ | 2000 | |
| 630 | – | 355 | 2980 | 2020 | 96.9 | 0.93 | 1000 | 580 | 1LL8 357-2PDQQ | 2200 | |
| 710 | – | 400 | 2984 | 2270 | 97.0 | 0.91 | 1160 | 670 | 1LL8 403-2PDQQ | 2800 | |
| 800 | – | 400 | 2984 | 2560 | 97.1 | 0.92 | 1300 | 750 | 1LL8 405-2PDQQ | 3000 | |
| 900 | – | 400 | 2985 | 2880 | 97.3 | 0.92 | – | 840 | 1LL8 407-2PDQQ | 3200 | |
| 1000 | – | 450 | 2987 | 3200 | 97.3 | 0.93 | – | 920 | 1LL8 453-2PEQQ | 4000 | |
| 1120 | – | 450 | 2986 | 3580 | 97.3 | 0.94 | – | 1020 | 1LL8 455-2PEQQ | 4200 | |
| 1250 | – | 450 | 2986 | 4000 | 97.4 | 0.94 | – | 1140 | 1LL8 457-2PEQQ | 4400 | |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP23 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with standard insulation for voltages ≤500 V | | | | | | | | | | | |
| 315 | 360 | 315 | 1483 | 2030 | 96.0 | 0.87 | 540 | 315 | 1LL8 315-4PCQQ | 1300 | |
| 400 | 460 | 315 | 1484 | 2570 | 96.2 | 0.88 | 680 | 395 | 1LL8 317-4PCQQ | 1500 | |
| 450 | 515 | 355 | 1487 | 2890 | 96.5 | 0.87 | 770 | 450 | 1LL8 353-4PCQQ | 1900 | |
| 500 | 575 | 355 | 1487 | 3210 | 96.6 | 0.88 | 850 | 490 | 1LL8 355-4PCQQ | 2000 | |
| 630 | 725 | 355 | 1488 | 4040 | 96.9 | 0.88 | 1060 | 620 | 1LL8 357-4PCQQ | 2200 | |
| 710 | 815 | 400 | 1489 | 4550 | 96.9 | 0.88 | 1200 | 700 | 1LL8 403-4PCQQ | 2800 | |
| 800 | 920 | 400 | 1490 | 5130 | 97.0 | 0.88 | 1360 | 780 | 1LL8 405-4PCQQ | 3000 | |
| 900 | 1035 | 400 | 1491 | 5760 | 97.2 | 0.87 | – | 890 | 1LL8 407-4PCQQ | 3200 | |
| 1000 | 1150 | 450 | 1492 | 6400 | 97.2 | 0.86 | – | 1000 | 1LL8 453-4PDQQ | 4000 | |
| 1120 | 1280 | 450 | 1491 | 7170 | 97.2 | 0.89 | – | 1080 | 1LL8 455-4PDQQ | 4200 | |
| 1250 | 1430 | 450 | 1490 | 8010 | 97.2 | 0.89 | – | 1200 | 1LL8 457-4PDQQ | 4400 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | |
|--|------------------------------------|-----------------------------|----------|----------------------|---|--------------------------------|-----------------------------|----------|
| | 400 VΔ | 400 VΔ/690 VY ¹⁾ | 500 VΔ | 690 VΔ ¹⁾ | Without flange IM B3 | With flange | | |
| | | | | | | IM V1 without protective cover | IM V1 with protective cover | IM B35 |
| | 4 | 8 | 5 | 7 | 0 | 8 | 4 | 6 |
| 1LL8 315-... QQ to 1LL8 405-... QQ | ○ | □ | ○ | – | □ | ✓ | ✓ | ✓ |
| 1LL8 407-... QQ to 1LL8 457-... QQ | – | – | ○ | □ | □ | ✓ | ✓ | ✓ |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see “Special versions” in the “Selection and ordering data” under “Voltages”).

Voltages or frequencies that are not covered by the predefined options can be ordered with order code **L1Y**. In this case, the output, voltage and frequency must be specified.

¹⁾ Motors with standard insulation can only be operated with converter circuit (du/dt or sinusoidal filter).

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Self-ventilated motors with through-ventilation
for converter-fed operation – Cast-iron series 1LL8

Selection and ordering data (continued)

| Order No. | Breakdown torque at 50 Hz as multiple of rated torque | Torque class | Moment of inertia | Measuring surface sound pressure level at 50 Hz | Sound power level at 50 Hz | Mech. limit speed | | Parallel feeders required | | | |
|--|---|--------------|-------------------|---|----------------------------|-------------------------|----------------------|---------------------------|---------------------|-------------------|-------------------|
| | | | | | | T_B/T_{rated} | CL | J kgm ² | $L_{p(A)}$ dB(A) | L_{WA} dB(A) | $n_{max.}$ rpm |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP23 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with standard insulation for voltages ≤500 V | | | | | | | | | | | |
| 1LL8 315-2PC□□ | 2.8 | 10 | 2.7 | 84 ¹⁾ | 99 | 3600 | 60 | | | Yes | |
| 1LL8 317-2PC□□ | 2.8 | 10 | 3.3 | 84 ¹⁾ | 99 | 3600 | 60 | | | Yes | |
| 1LL8 353-2PD□□ | 2.6 | 7 | 4.8 | 86 ¹⁾ | 101 | 3600/3100 ²⁾ | 60/52 ²⁾ | | | Yes | Yes |
| 1LL8 355-2PD□□ | 2.6 | 7 | 5.3 | 86 ¹⁾ | 101 | 3600/3100 ²⁾ | 60/52 ²⁾ | | | Yes | Yes |
| 1LL8 357-2PD□□ | 2.6 | 7 | 6.4 | 86 ¹⁾ | 101 | 3600/3100 ²⁾ | 60/52 ²⁾ | | | Yes | |
| 1LL8 403-2PD□□ | 2.6 | 7 | 8.6 | 88 ¹⁾ | 103 | 3600/3100 ²⁾ | 60/52 ²⁾ | | | Yes | |
| 1LL8 405-2PD□□ | 2.6 | 7 | 9.6 | 88 ¹⁾ | 103 | 3600/3100 ²⁾ | 60/52 ²⁾ | | | Yes | Yes |
| 1LL8 407-2PD□□ | 2.7 | 7 | 11 | 88 ¹⁾ | 103 | 3600/3100 ²⁾ | 60/52 ²⁾ | | | Yes | |
| 1LL8 453-2PE□□ | 2.9 | 5 | 19 | 90 ¹⁾ | 105 | 3000 | 50 | | | Yes | |
| 1LL8 455-2PE□□ | 2.7 | 5 | 21 | 90 ¹⁾ | 105 | 3000 | 50 | | | Yes | Yes |
| 1LL8 457-2PE□□ | 2.6 | 5 | 23 | 90 ¹⁾ | 105 | 3000 | 50 | | | Yes | Yes |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP23 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with standard insulation for voltages ≤500 V | | | | | | | | | | | |
| 1LL8 315-4PC□□ | 2.7 | 10 | 3.6 | 75 | 90 | 3000/2600 ²⁾ | 100/87 ²⁾ | | | Yes | |
| 1LL8 317-4PC□□ | 2.7 | 10 | 4.4 | 75 | 90 | 3000/2600 ²⁾ | 100/87 ²⁾ | | | Yes | |
| 1LL8 353-4PC□□ | 2.6 | 10 | 6.1 | 77 | 92 | 2500/2200 ²⁾ | 83/73 ²⁾ | | | Yes | Yes |
| 1LL8 355-4PC□□ | 2.6 | 10 | 6.8 | 77 | 92 | 2500/2200 ²⁾ | 83/73 ²⁾ | | | Yes | Yes |
| 1LL8 357-4PC□□ | 2.7 | 10 | 8.5 | 77 | 92 | 2500/2200 ²⁾ | 83/73 ²⁾ | | | Yes | |
| 1LL8 403-4PC□□ | 2.4 | 10 | 13 | 81 | 96 | 2200/1900 ²⁾ | 73/63 ²⁾ | | | Yes | |
| 1LL8 405-4PC□□ | 2.5 | 10 | 14 | 81 | 96 | 2200/1900 ²⁾ | 73/63 ²⁾ | | | Yes | Yes |
| 1LL8 407-4PC□□ | 2.6 | 10 | 16 | 81 | 96 | 2200/1900 ²⁾ | 73/63 ²⁾ | | | Yes | |
| 1LL8 453-4PD□□ | 2.8 | 7 | 23 | 84 | 99 | 2100/1800 ²⁾ | 70/60 ²⁾ | | | Yes | |
| 1LL8 455-4PD□□ | 2.6 | 7 | 26 | 84 | 99 | 2100/1800 ²⁾ | 70/60 ²⁾ | | | Yes | Yes |
| 1LL8 457-4PD□□ | 2.5 | 7 | 28 | 84 | 99 | 2100/1800 ²⁾ | 70/60 ²⁾ | | | Yes | Yes |

¹⁾ The noise values for 1LL8, 2-pole are for guidance only.

²⁾ For vertical type of construction IM V1.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Self-ventilated motors with through-ventilation
for converter-fed operation – Cast-iron series 1LL8

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output and sinusoidal supply | | | | | | Order No. | Price | Weight of IM B3 type of construction approx. |
|--|-------------------|------------|--|-----------------------|------------------------------|--------------------------------|------------------------------|------------------------------|---|-------|--|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | Rated current at 50 Hz 690 V | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | I_{rated} A | For Order No. supplements for voltage and type of construction, see table below | kg | |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP23 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with standard insulation for voltages ≤500 V | | | | | | | | | | | |
| 250 | 285 | 315 | 988 | 2420 | 95.4 | 0.88 | 430 | 250 | 1LL8 315-6PC□□ | 1300 | |
| 315 | 360 | 315 | 988 | 3040 | 95.7 | 0.89 | 530 | 310 | 1LL8 317-6PC□□ | 1500 | |
| 400 | 460 | 355 | 991 | 3850 | 96.1 | 0.88 | 680 | 395 | 1LL8 355-6PC□□ | 2000 | |
| 500 | 575 | 355 | 991 | 4820 | 96.4 | 0.88 | 850 | 495 | 1LL8 357-6PC□□ | 2200 | |
| 560 | 645 | 400 | 993 | 5390 | 96.6 | 0.87 | 960 | 560 | 1LL8 403-6PC□□ | 2800 | |
| 630 | 725 | 400 | 993 | 6060 | 96.7 | 0.88 | 1060 | 620 | 1LL8 405-6PC□□ | 3000 | |
| 710 | 815 | 400 | 993 | 6830 | 96.7 | 0.88 | 1200 | 700 | 1LL8 407-6PC□□ | 3200 | |
| 800 | 920 | 450 | 993 | 7700 | 96.8 | 0.87 | 1380 | 790 | 1LL8 453-6PD□□ | 4000 | |
| 900 | 1035 | 450 | 992 | 8660 | 96.8 | 0.88 | – | 880 | 1LL8 455-6PD□□ | 4200 | |
| 1000 | 1150 | 450 | 993 | 9620 | 96.9 | 0.88 | – | 980 | 1LL8 457-6PD□□ | 4500 | |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP23 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with standard insulation for voltages ≤500 V | | | | | | | | | | | |
| 200 | 230 | 315 | 738 | 2590 | 94.7 | 0.82 | 370 | 215 | 1LL8 315-8PC□□ | 1300 | |
| 250 | 285 | 315 | 738 | 3240 | 95.0 | 0.82 | 465 | 270 | 1LL8 317-8PC□□ | 1500 | |
| 315 | 360 | 355 | 740 | 4070 | 95.5 | 0.83 | 570 | 335 | 1LL8 355-8PC□□ | 2000 | |
| 400 | 460 | 355 | 740 | 5160 | 95.6 | 0.84 | 720 | 415 | 1LL8 357-8PC□□ | 2200 | |
| 450 | 515 | 400 | 741 | 5800 | 95.9 | 0.84 | 810 | 465 | 1LL8 403-8PD□□ | 2800 | |
| 500 | 575 | 400 | 741 | 6440 | 96.1 | 0.84 | 890 | 520 | 1LL8 405-8PD□□ | 3000 | |
| 560 | 645 | 400 | 742 | 7210 | 96.2 | 0.83 | 1020 | 590 | 1LL8 407-8PD□□ | 3200 | |
| 630 | 745 | 450 | 743 | 8100 | 96.3 | 0.82 | 1160 | 670 | 1LL8 453-8PD□□ | 4000 | |
| 710 | 815 | 450 | 743 | 9130 | 96.4 | 0.83 | 1280 | 740 | 1LL8 455-8PD□□ | 4200 | |
| 800 | 920 | 450 | 743 | 10300 | 96.5 | 0.83 | – | 840 | 1LL8 457-8PD□□ | 4500 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | |
|--|------------------------------------|-----------------------------|--------|----------------------|---|--------------------------------|---|--------|
| | 400 VΔ | 400 VΔ/690 VY ¹⁾ | 500 VΔ | 690 VΔ ¹⁾ | Without flange IM B3 | With flange | | IM B35 |
| | 4 | 8 | 5 | 7 | 0 | IM V1 without protective cover | IM V1 with protective cover ²⁾ | 6 |
| 6-pole | | | | | | | | |
| 1LL8 315-...□□ to 1LL8 453-...□□ | ○ | □ | ○ | – | □ | ✓ | ✓ | ✓ |
| 1LL8 455-...□□ to 1LL8 457-...□□ | – | – | ○ | □ | □ | ✓ | ✓ | ✓ |
| 8-pole | | | | | | | | |
| 1LL8 315-...□□ to 1LL8 455-...□□ | ○ | □ | ○ | – ³⁾ | □ | ✓ | ✓ | ✓ |
| 1LL8 457-...□□ | – | – | ○ | □ | □ | ✓ | ✓ | ✓ |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Voltages or frequencies that are not covered by the predefined options can be ordered with order code **L1Y**. In this case, the output, voltage and frequency must be specified.

¹⁾ Motors with standard insulation can only be operated with converter circuit (du/dt or sinusoidal filter).

²⁾ The "Second shaft extension" option, order code **K16** is not possible.

³⁾ As special version with voltage code **"9"** and order code **L1Y** (specify output, voltage and frequency).

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Self-ventilated motors with through-ventilation
for converter-fed operation – Cast-iron series 1LL8

Selection and ordering data (continued)

| Order No. | Breakdown torque at 50 Hz as multiple of rated torque | Torque class | Moment of inertia | Measuring surface sound pressure level at 50 Hz | Sound power level at 50 Hz | Mech. limit speed | | Parallel feeders required | | |
|--|---|--------------|-------------------|---|----------------------------|-------------------------|-----------------------|---------------------------|-------------------|-------------------|
| | | | | | | T_B/T_{rated} | CL | J kgm ² | L_{pA} dB(A) | L_{WA} dB(A) |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP23 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with standard insulation for voltages ≤500 V | | | | | | | | | | |
| 1LL8 315-6PC□□ | 2.6 | 10 | 6.0 | 70 | 84 | 2950/2600 ¹⁾ | 147/130 ¹⁾ | | | |
| 1LL8 317-6PC□□ | 2.6 | 10 | 7.3 | 70 | 84 | 2950/2600 ¹⁾ | 147/130 ¹⁾ | Yes | | |
| 1LL8 355-6PC□□ | 2.5 | 10 | 13 | 73 | 88 | 2500/2200 ¹⁾ | 125/110 ¹⁾ | Yes | | |
| 1LL8 357-6PC□□ | 2.6 | 10 | 16 | 73 | 88 | 2500/2200 ¹⁾ | 125/110 ¹⁾ | Yes | Yes | |
| 1LL8 403-6PC□□ | 2.6 | 10 | 21 | 76 | 91 | 2200/1900 ¹⁾ | 110/95 ¹⁾ | | | |
| 1LL8 405-6PC□□ | 2.6 | 10 | 24 | 76 | 91 | 2200/1900 ¹⁾ | 110/95 ¹⁾ | Yes | | |
| 1LL8 407-6PC□□ | 2.5 | 10 | 27 | 76 | 91 | 2200/1900 ¹⁾ | 110/95 ¹⁾ | Yes | | |
| 1LL8 453-6PD□□ | 2.5 | 7 | 35 | 78 | 93 | 2100/1800 ¹⁾ | 105/90 ¹⁾ | Yes | Yes | |
| 1LL8 455-6PD□□ | 2.4 | 7 | 39 | 78 | 93 | 2100/1800 ¹⁾ | 105/90 ¹⁾ | Yes | | |
| 1LL8 457-6PD□□ | 2.5 | 7 | 44 | 78 | 93 | 2100/1800 ¹⁾ | 105/90 ¹⁾ | Yes | | |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP23 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with standard insulation for voltages ≤500 V | | | | | | | | | | |
| 1LL8 315-8PC□□ | 2.4 | 10 | 6.0 | 67 | 81 | 2950/2600 ¹⁾ | 196/173 ¹⁾ | | | |
| 1LL8 317-8PC□□ | 2.4 | 10 | 7.3 | 67 | 81 | 2950/2600 ¹⁾ | 196/173 ¹⁾ | | | |
| 1LL8 355-8PC□□ | 2.4 | 10 | 13 | 69 | 84 | 2500/2200 ¹⁾ | 166/146 ¹⁾ | | | |
| 1LL8 357-8PC□□ | 2.3 | 10 | 16 | 69 | 84 | 2500/2200 ¹⁾ | 166/146 ¹⁾ | Yes | | |
| 1LL8 403-8PD□□ | 2.3 | 7 | 21 | 72 | 87 | 2200/1900 ¹⁾ | 146/126 ¹⁾ | | | |
| 1LL8 405-8PD□□ | 2.4 | 7 | 24 | 72 | 87 | 2200/1900 ¹⁾ | 146/126 ¹⁾ | | | |
| 1LL8 407-8PD□□ | 2.4 | 7 | 27 | 72 | 87 | 2200/1900 ¹⁾ | 146/126 ¹⁾ | Yes | | |
| 1LL8 453-8PD□□ | 2.3 | 7 | 35 | 74 | 89 | 2100/1800 ¹⁾ | 140/120 ¹⁾ | Yes | | |
| 1LL8 455-8PD□□ | 2.3 | 7 | 39 | 74 | 89 | 2100/1800 ¹⁾ | 140/120 ¹⁾ | Yes | Yes | |
| 1LL8 457-8PD□□ | 2.3 | 7 | 44 | 74 | 89 | 2100/1800 ¹⁾ | 140/120 ¹⁾ | Yes | Yes | |

¹⁾ For vertical type of construction IM V1.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Self-ventilated motors with through-ventilation
for converter-fed operation – Cast-iron series 1LL8

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output and sinusoidal supply | | | | | | Order No. | Price | Weight of IM B3 type of construction approx. |
|---|--------------------------|------------|--|--------------------------|------------------------------|------------------------------|--------------------------------|------------------------------|---------------|-----------|--|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 690 V | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | | m kg | |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP23 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with special insulation for voltages >500 V to 690 V | | | | | | | | | | | |
| 300 | 330 | 315 | 2977 | 962 | 95.9 | | 0.91 | 290 | 1LL8315-2PM8□ | 1300 | |
| 380 | 415 | 315 | 2977 | 1219 | 96.3 | | 0.91 | 365 | 1LL8317-2PM8□ | 1500 | |
| 435 | 475 | 355 | 2982 | 1393 | 96.2 | | 0.90 | 420 | 1LL8353-2PM8□ | 1900 | |
| 485 | 530 | 355 | 2982 | 1553 | 96.5 | | 0.90 | 465 | 1LL8355-2PM8□ | 2000 | |
| 610 | 670 | 355 | 2983 | 1953 | 96.8 | | 0.91 | 580 | 1LL8357-2PM8□ | 2200 | |
| 690 | 755 | 400 | 2986 | 2207 | 96.9 | | 0.91 | 650 | 1LL8403-2PM8□ | 2800 | |
| 770 | 845 | 400 | 2986 | 2463 | 96.9 | | 0.91 | 730 | 1LL8405-2PM8□ | 3000 | |
| 860 | 945 | 400 | 2988 | 2749 | 97.2 | | 0.92 | 800 | 1LL8407-2PM7□ | 3200 | |
| 965 | 1060 | 450 | 2988 | 3084 | 97.2 | | 0.92 | 2x450 | 1LL8453-2PM7□ | 4000 | |
| 1085 | 1190 | 450 | 2987 | 3469 | 97.2 | | 0.93 | 2x500 | 1LL8455-2PM7□ | 4200 | |
| 1210 | 1330 | 450 | 2985 | 3871 | 97.3 | | 0.93 | 2x560 | 1LL8457-2PM7□ | 4400 | |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP23 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with special insulation for voltages >500 V to 690 V | | | | | | | | | | | |
| 295 | 340 | 315 | 1485 | 1897 | 95.7 | | 0.86 | 300 | 1LL8315-4PM8□ | 1300 | |
| 365 | 420 | 315 | 1487 | 2344 | 96.1 | | 0.87 | 365 | 1LL8317-4PM8□ | 1500 | |
| 430 | 495 | 355 | 1489 | 2758 | 96.3 | | 0.86 | 435 | 1LL8353-4PM8□ | 1900 | |
| 480 | 550 | 355 | 1489 | 3079 | 96.5 | | 0.87 | 480 | 1LL8355-4PM8□ | 2000 | |
| 600 | 690 | 355 | 1490 | 3846 | 96.8 | | 0.86 | 600 | 1LL8357-4PM8□ | 2200 | |
| 690 | 790 | 400 | 1491 | 4420 | 96.7 | | 0.87 | 690 | 1LL8403-4PM8□ | 2800 | |
| 780 | 895 | 400 | 1491 | 4996 | 96.9 | | 0.88 | 770 | 1LL8405-4PM8□ | 3000 | |
| 870 | 1000 | 400 | 1493 | 5565 | 97.1 | | 0.85 | 880 | 1LL8407-4PM7□ | 3200 | |
| 980 | 1125 | 450 | 1493 | 6269 | 97.1 | | 0.85 | 2x495 | 1LL8453-4PM7□ | 4000 | |
| 1095 | 1255 | 450 | 1492 | 7009 | 97.1 | | 0.88 | 2x530 | 1LL8455-4PM7□ | 4200 | |
| 1225 | 1405 | 450 | 1491 | 7846 | 97.1 | | 0.88 | 2x600 | 1LL8457-4PM7□ | 4400 | |

Order No. supplements

| Motor type | Final position: Type of construction code | | | |
|--|---|--------------------------------|-----------------------------|--------|
| | Without flange | | With flange | |
| | IM B3 | IM V1 without protective cover | IM V1 with protective cover | IM B35 |
| | 0 | 8 | 4 | 6 |
| 1LL8 315-... □□ to 1LL8 457-... □□ | □ | ✓ | ✓ | ✓ |

- Standard version
- ✓ With additional charge

The voltage code is already in the Order No. as the penultimate position.

Assignment:

7 = 690 VΔ

8 = 400 VΔ/690 VY

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Voltages or frequencies that are not covered by the predefined options can be ordered with order code **L1Y**. In this case, the output, voltage and frequency must be specified.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Self-ventilated motors with through-ventilation
for converter-fed operation – Cast-iron series 1LL8

Selection and ordering data (continued)

| Order No. | Breakdown torque at 50 Hz as multiple of rated torque | Parallel feeders required |
|---|--|------------------------------|
| | T_B/T_{rated} | 690 V |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP23 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with special insulation for voltages >500 V to 690 V | | |
| 1LL8315-2PM8□ | 2.9 | |
| 1LL8317-2PM8□ | 2.9 | |
| 1LL8353-2PM8□ | 2.7 | |
| 1LL8355-2PM8□ | 2.7 | |
| 1LL8357-2PM8□ | 2.7 | |
| 1LL8403-2PM8□ | 2.7 | |
| 1LL8405-2PM8□ | 2.7 | |
| 1LL8407-2PM7□ | 2.8 | |
| 1LL8453-2PM7□ | 3.0 | Yes |
| 1LL8455-2PM7□ | 2.8 | Yes |
| 1LL8457-2PM7□ | 2.7 | Yes |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP23 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with special insulation for voltages >500 V to 690 V | | |
| 1LL8315-4PM8□ | 2.9 | |
| 1LL8317-4PM8□ | 3.0 | |
| 1LL8353-4PM8□ | 2.7 | |
| 1LL8355-4PM8□ | 2.7 | |
| 1LL8357-4PM8□ | 2.8 | |
| 1LL8403-4PM8□ | 2.5 | |
| 1LL8405-4PM8□ | 2.6 | |
| 1LL8407-4PM7□ | 2.7 | |
| 1LL8453-4PM7□ | 2.9 | Yes |
| 1LL8455-4PM7□ | 2.7 | Yes |
| 1LL8457-4PM7□ | 2.6 | Yes |

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Self-ventilated motors with through-ventilation
for converter-fed operation – Cast-iron series 1LL8

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output and sinusoidal supply | | | | | | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight of IM B3 type of construction approx. m kg |
|---|-------------------|------------|--|-----------------------|------------------------------|------------------------------|--------------------------------|------------------------------|--|-------|---|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 690 V | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | | | |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP23 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with special insulation for voltages >500 V to 690 V | | | | | | | | | | | |
| 235 | 270 | 315 | 990 | 2267 | 95.0 | | 0.87 | 240 | 1LL8315-6PM8□ | 1300 | |
| 295 | 335 | 315 | 990 | 2846 | 95.3 | | 0.87 | 295 | 1LL8317-6PM8□ | 1500 | |
| 380 | 435 | 355 | 992 | 3658 | 95.6 | | 0.87 | 380 | 1LL8355-6PM8□ | 2000 | |
| 475 | 545 | 355 | 993 | 4568 | 96.3 | | 0.87 | 475 | 1LL8357-6PM8□ | 2200 | |
| 540 | 620 | 400 | 993 | 5193 | 96.4 | | 0.86 | 550 | 1LL8403-6PM8□ | 2800 | |
| 610 | 700 | 400 | 994 | 5861 | 96.5 | | 0.87 | 610 | 1LL8405-6PM8□ | 3000 | |
| 690 | 790 | 400 | 993 | 6636 | 96.6 | | 0.87 | 690 | 1LL8407-6PM8□ | 3200 | |
| 780 | 895 | 450 | 993 | 7502 | 96.7 | | 0.87 | 780 | 1LL8453-6PM8□ | 4000 | |
| 870 | 1000 | 450 | 993 | 8367 | 96.8 | | 0.88 | 850 | 1LL8455-6PM7□ | 4200 | |
| 975 | 1120 | 450 | 993 | 9377 | 96.8 | | 0.88 | 2x480 | 1LL8457-6PM7□ | 4500 | |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP23 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with special insulation for voltages >500 V to 690 V | | | | | | | | | | | |
| 180 | 205 | 315 | 738 | 2329 | 94.1 | | 0.81 | 198 | 1LL8315-8PM8□ | 1300 | |
| 225 | 255 | 315 | 740 | 2904 | 94.8 | | 0.80 | 250 | 1LL8317-8PM8□ | 1500 | |
| 285 | 325 | 355 | 741 | 3673 | 95.1 | | 0.81 | 310 | 1LL8355-8PM8□ | 2000 | |
| 365 | 415 | 355 | 741 | 4704 | 95.4 | | 0.83 | 385 | 1LL8357-8PM8□ | 2200 | |
| 420 | 480 | 400 | 741 | 5413 | 95.5 | | 0.83 | 445 | 1LL8403-8PM8□ | 2800 | |
| 465 | 530 | 400 | 742 | 5985 | 96.0 | | 0.83 | 490 | 1LL8405-8PM8□ | 3000 | |
| 525 | 600 | 400 | 742 | 6757 | 96.0 | | 0.82 | 560 | 1LL8407-8PM8□ | 3200 | |
| 610 | 700 | 450 | 742 | 7851 | 95.9 | | 0.82 | 650 | 1LL8453-8PM8□ | 4000 | |
| 690 | 790 | 450 | 742 | 8881 | 96.0 | | 0.82 | 730 | 1LL8455-8PM8□ | 4200 | |
| 760 | 870 | 450 | 742 | 9782 | 96.0 | | 0.83 | 800 | 1LL8457-8PM8□ | 4500 | |

Order No. supplements

| Motor type | Final position: Type of construction code | | | |
|--|---|---|-----------------------------|----------|
| | Without flange IM B3 | With flange IM V1 without protective cover | IM V1 with protective cover | IM B35 |
| 1LL8 315-... □□ to 1LL8 457-... □□ | 0 | 8 | 4 | 6 |
| | □ | ✓ | ✓ | ✓ |

- Standard version
- ✓ With additional charge

The voltage code is already in the Order No. as the penultimate position.

Assignment:

7 = 690 VΔ

8 = 400 VΔ/690 VY

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Voltages or frequencies that are not covered by the predefined options can be ordered with order code **L1Y**. In this case, the output, voltage and frequency must be specified.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Self-ventilated motors with through-ventilation
for converter-fed operation – Cast-iron series 1LL8

Selection and ordering data (continued)

| Order No. | Breakdown torque at 50 Hz as multiple of rated torque | Parallel feeders required |
|---|--|------------------------------|
| | T_B/T_{rated} | 690 V |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP23 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with special insulation for voltages >500 V to 690 V | | |
| 1LL8315-6PM8□ | 2.8 | |
| 1LL8317-6PM8□ | 2.8 | |
| 1LL8355-6PM8□ | 2.6 | |
| 1LL8357-6PM8□ | 2.7 | |
| 1LL8403-6PM8□ | 2.7 | |
| 1LL8405-6PM8□ | 2.7 | |
| 1LL8407-6PM8□ | 2.6 | |
| 1LL8453-6PM8□ | 2.6 | |
| 1LL8455-6PM7□ | 2.5 | |
| 1LL8457-6PM7□ | 2.6 | Yes |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), used acc. to temperature class 155 (F), IP23 degree of protection, specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with special insulation for voltages >500 V to 690 V | | |
| 1LL8315-8PM8□ | 2.7 | |
| 1LL8317-8PM8□ | 2.7 | |
| 1LL8355-8PM8□ | 2.7 | |
| 1LL8357-8PM8□ | 2.5 | |
| 1LL8403-8PM8□ | 2.5 | |
| 1LL8405-8PM8□ | 2.6 | |
| 1LL8407-8PM8□ | 2.6 | |
| 1LL8453-8PM8□ | 2.4 | |
| 1LL8455-8PM8□ | 2.4 | |
| 1LL8457-8PM8□ | 2.4 | |

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Special versions

Overview

Motor protection

KTY 84 temperature sensor:

Order code **A23**:

1 x KTY 84-130 (+ 1 x KTY 84-130 as spare)

The sensor is a semi-conductor sensor that changes its resistance depending on temperature in accordance with a defined, approximately linear characteristic. The temperature sensor is embedded in the winding head of the motor in the same manner as a PTC thermistor.

PT100 resistance thermometers

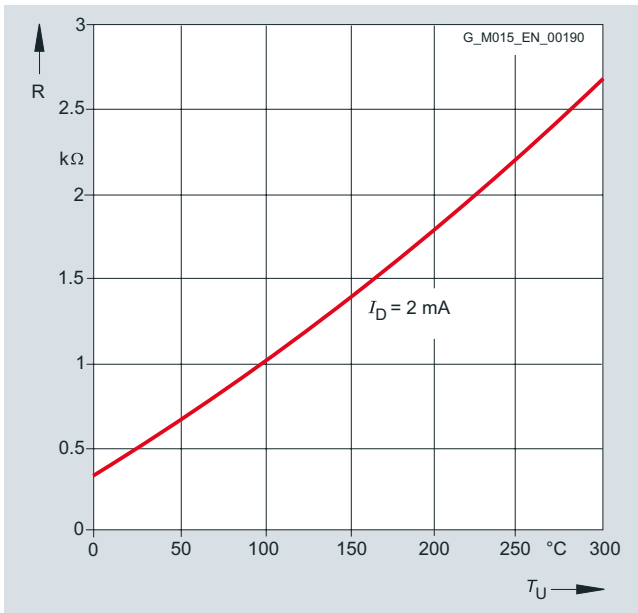
Order code **A61**: 6 PT100 resistance thermometers

The thermometer changes its resistance depending on the temperature in accordance with a defined, almost linear characteristic. The temperature sensor is embedded in the winding head of the motor in the same manner as a PTC thermistor.

Evaluation of the KTY or PT100 sensor is performed, for example, in the converter.

For motors for mains-fed operation, the 3RS10 temperature monitoring device that forms part of the protective equipment must be ordered separately, for further details, see Catalog LV 1.

For all non-standard motors of series 1LA8, 1PQ8 and 1LL8, if order code **A23** or **A61** is used, the standard PTC thermistors will be omitted. A combination of **A12** and **A61** or **A12** and **A23** is possible on request for an additional charge.



IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Special versions

Selection and ordering data

Voltages

Additional order codes for other voltages or voltage codes
(without **-Z** supplement)

For some non-standard voltages at 50 or 60 Hz, order codes are specified. They are ordered by specifying the code digit **9** for voltage in the 11th position of the Order No. and the appropriate order code.

| Special versions | Voltage code 11th position of Order No. | Additional identification code with order code and plain text if required | Motor type frame size | | | |
|---|---|---|-----------------------|-----|-----|-----|
| | | | 315 | 355 | 400 | 450 |
| Self-ventilated motors for mains-fed operation – Cast-iron series 1LA8 | | | | | | |
| Self-ventilated motors for converter-fed operation – Cast-iron series 1LA8 | | | | | | |
| | | | 1LA8 | | | |
| Voltage at 60 Hz | | | | | | |
| 380 VΔ/660 VY; 50 Hz output ¹⁾ | 9 | L2C | ✓ | ✓ | ✓ | ✓ |
| 380 VΔ/660 VY; 60 Hz output ¹⁾ | 9 | L2D | ✓ | ✓ | ✓ | ✓ |
| 440 VΔ; 50 Hz output ¹⁾ | 9 | L2R | ✓ | ✓ | ✓ | ✓ |
| 440 VΔ; 60 Hz output ¹⁾ | 9 | L2X | ✓ | ✓ | ✓ | ✓ |
| 460 VΔ; 50 Hz output ¹⁾ | 9 | L2T | ✓ | ✓ | ✓ | ✓ |
| 460 VΔ; 60 Hz output ¹⁾ | 9 | L2F | ✓ | ✓ | ✓ | ✓ |
| 575 VΔ; 50 Hz output | 9 | L2V | ✓ | ✓ | ✓ | ✓ |
| 575 VΔ; 60 Hz output | 9 | L2M | ✓ | ✓ | ✓ | ✓ |
| Non-standard voltage and/or frequencies | | | | | | |
| Standard winding (winding according to voltage code 0, 4, 5, 6, 7 or 8; rating plate will be stamped in accordance with order) ²⁾ | 9 | L8Y • | ✓ | ✓ | ✓ | ✓ |
| Non-standard winding for voltages between 380 and 690 V (voltages outside this range are available on request) ²⁾ | 9 | L1Y • | ✓ | ✓ | ✓ | ✓ |

- ✓ With additional charge
- This order code only determines the price of the version – Additional plain text is required.

¹⁾ Only possible with rated outputs of up to 630 kW.

²⁾ Plain text must be specified in the order: Voltage, frequency, circuit, required rated output in kW.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Special versions

| Special versions | Voltage code 11th position of Order No. | Additional identification code with order code and plain text if required | Motor type frame size | | | |
|---|---|---|-----------------------|-----|-----|-----|
| | | | 315 | 355 | 400 | 450 |
| Forced-air cooled motors with mounted separately driven fan for converter-fed operation – Cast-iron series 1PQ8 | | | | | | |
| 1PQ8 | | | | | | |
| Voltage at 60 Hz | | | | | | |
| 380 VΔ/660 VY; 50 Hz output ¹⁾ | 9 | L2C | ✓ | ✓ | ✓ | ✓ |
| 380 VΔ/660 VY; 60 Hz output ¹⁾ | 9 | L2D | ✓ | ✓ | ✓ | ✓ |
| 440 VΔ; 50 Hz output ¹⁾ | 9 | L2R | ✓ | ✓ | ✓ | ✓ |
| 440 VΔ; 60 Hz output ¹⁾ | 9 | L2X | ✓ | ✓ | ✓ | ✓ |
| 460 VΔ; 50 Hz output ¹⁾ | 9 | L2T | ✓ | ✓ | ✓ | ✓ |
| 460 VΔ; 60 Hz output ¹⁾ | 9 | L2F | ✓ | ✓ | ✓ | ✓ |
| 575 VΔ; 50 Hz output | 9 | L2V | ✓ | ✓ | ✓ | ✓ |
| 575 VΔ; 60 Hz output | 9 | L2M | ✓ | ✓ | ✓ | ✓ |
| Non-standard voltage and/or frequencies | | | | | | |
| Standard winding (winding according to voltage code 4, 5, 7 or 8; rating plate will be stamped in accordance with order) ²⁾ | 9 | L8Y • | ✓ | ✓ | ✓ | ✓ |
| Non-standard winding for voltages between 380 and 690 V (voltages outside this range are available on request) ²⁾ | 9 | L1Y • | ✓ | ✓ | ✓ | ✓ |

- ✓ With additional charge
- This order code only determines the price of the version – Additional plain text is required.

Note:

The order codes listed above are only valid for motor series 1PQ8 with forced-air cooled motor.

The required voltage/frequency according to order code Y81 „Separately driven fan with non-standard voltage/frequency“ must be ordered in plain text with indication of the voltage, frequency and circuit.

¹⁾ Only possible with rated outputs of up to 630 kW.

²⁾ Plain text must be specified in the order: Voltage, frequency, circuit, required rated output in kW.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Special versions

| Special versions | Voltage code 11th position of Order No. | Additional identification code with order code and plain text if required | Motor type frame size | | | |
|--|---|---|-----------------------|-----------------|-----------------|-----------------|
| | | | 315 | 355 | 400 | 450 |
| Self-ventilated motors with through ventilation for mains-fed and converter-fed operation – Cast-iron series 1LL8 | | | | | | |
| 1LL8 | | | | | | |
| Voltage at 60 Hz | | | | | | |
| 380 VΔ/660 VY; 50 Hz output ¹⁾ | 9 | L2C | ✓ | ✓ ³⁾ | ✓ ³⁾ | ✓ ³⁾ |
| 380 VΔ/660 VY; 60 Hz output ¹⁾ | 9 | L2D | ✓ | ✓ | ✓ | ✓ |
| 440 VΔ; 50 Hz output ¹⁾ | 9 | L2R | ✓ | ✓ | ✓ | ✓ |
| 440 VΔ; 60 Hz output ¹⁾ | 9 | L2X | ✓ | ✓ | ✓ | ✓ |
| 460 VΔ; 50 Hz output ¹⁾ | 9 | L2T | ✓ | ✓ | ✓ | ✓ |
| 460 VΔ; 60 Hz output ¹⁾ | 9 | L2F | ✓ | ✓ | ✓ | ✓ |
| 575 VΔ; 50 Hz output | 9 | L2V | ✓ | ✓ | ✓ | ✓ |
| 575 VΔ; 60 Hz output | 9 | L2M | ✓ | ✓ | ✓ | ✓ |
| Non-standard voltage and/or frequencies | | | | | | |
| Standard winding (winding according to voltage code 0, 5 or 6; rating plate will be stamped in accordance with order) ²⁾ | 9 | L8Y • | ✓ | ✓ | ✓ | ✓ |
| Non-standard winding for voltages between 380 and 690 V (voltages outside this range are available on request) ²⁾ | 9 | L1Y • | ✓ | ✓ | ✓ | ✓ |

- ✓ With additional charge
- This order code only determines the price of the version – Additional plain text is required.

¹⁾ Only possible with rated outputs of up to 630 kW.

²⁾ Plain text must be specified in the order: Voltage, frequency, circuit, required rated output in kW.

³⁾ Not possible for 2-pole motors in 60 Hz version of frame size 355 and above.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Special versions

Options

Options or order codes (supplement **-Z** is required)

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | |
|--|---|------------------------------------|-----------------|-------|-------|--|-----------------|-------|-------|
| | | 315 | 355 | 400 | 450 | 315 | 355 | 400 | 450 |
| Self-ventilated motors for mains-fed and converter-fed operation 1LA8 | | | | | | | | | |
| | | 1LA8 Mains-fed operation | | | | 1LA8 Converter-fed operation | | | |
| Standardline | | | | | | | | | |
| Standardline version ¹⁾ | B20 | ○ | ○ | – | – | ○ | ○ | – | – |
| Motor protection | | | | | | | | | |
| Motor protection with PTC thermistors with 6 embedded temperature sensors for alarm and tripping ²⁾ | A12 | □ | □ | □ | □ | □ | □ | □ | □ |
| Motor temperature detection with embedded temperature sensor KTY 84-130 ³⁾ | A23 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Installation of 6 PT 100 resistance thermometers in stator winding ⁵⁾ | A61 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 2 PT 100 screw-in resistance thermometers (basic circuit) for rolling-contact bearings | A72 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor connection and connection box | | | | | | | | | |
| Two-part plate on connection box | K06 | ✓ ⁴⁾ | ✓ | ✓ | ✓ | O. R. | O. R. | O. R. | O. R. |
| Undrilled entry plate | L01 | ○ ⁴⁾ | ○ | ○ | ○ | ○ ⁴⁾ | ○ | ○ | ○ |
| Connection box on RHS | K09 | □ | □ | □ | □ | □ | □ | □ | □ |
| Connection box on LHS | K10 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Connection box above (1XB1 634 connection box) ⁵⁾ | K11 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Cable gland DIN 89280, maximum configuration | K57 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from DE | K83 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Rotation of the connection box through 90°, entry from NDE | K84 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Rotation of connection box through 180° | K85 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Larger connection box (1XB1 621 connection box) | M58 | ✓ | □ ⁶⁾ | – | – | ✓ | □ ⁶⁾ | – | – |
| Larger connection box (1XB1 631 connection box) | L00 | ✓ | ✓ ⁶⁾ | □ | □ | ✓ | ✓ ⁶⁾ | □ | □ |
| 6 cables protruding, 1.5 m long | L48 | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| 6 cables protruding, 3 m long | L49 | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Auxiliary connection box 1XB9 016 (cast-iron) | M50 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Auxiliary connection box 1XB3 020 ⁷⁾ | L97 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Auxiliary connection box 1XB9 014 (aluminum) | M88 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on NDE | M64 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Windings and insulation | | | | | | | | | |
| Temperature class 155 (F), used acc. to 155 (F), with service factor (SF 1.1, SF 1.05 from frame size 400) ⁸⁾ | C11 | ✓ | ✓ | ✓ | ✓ | – | – | – | – |
| Temperature class 155 (F), used acc. to 155 (F), with increased output (10 %, 5 % from frame size 400) ⁸⁾ | C12 | ✓ | ✓ | ✓ | ✓ | – | – | – | – |
| Temperature class 155 (F), used acc. to 155 (F), with increased coolant temperature (55 °C, 50 °C from frame size 400) ⁸⁾ | C13 | ✓ | ✓ | ✓ | ✓ | – | – | – | – |
| Temperature class 180 (H), used acc. to 155 (F), with service factor (SF 1.1) ⁸⁾ | C14 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 3/53.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | |
|--|---|------------------------------------|-------|-------|-------|--|-------|-------|-------|
| | | 315 | 355 | 400 | 450 | 315 | 355 | 400 | 450 |
| Self-ventilated motors for mains-fed and converter-fed operation 1LA8 | | | | | | | | | |
| | | 1LA8 Mains-fed operation | | | | 1LA8 Converter-fed operation | | | |
| Colors and paint finish | | | | | | | | | |
| Standard finish in RAL 7030 stone gray | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Standard paint finish in other colors | Y53 • and standard finish RAL | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in RAL 7030 stone gray | K26 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in other colors | Y54 • and special finish RAL | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Unpainted (only cast iron parts primed) | K23 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Special technology | | | | | | | | | |
| Mounting of brake (incl. brake of Stromag) | H47 | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Mounting of LL 861 900 220 rotary pulse encoder | H70 | – | – | – | – | ✓ | ✓ | ✓ | ✓ |
| Mounting of HOG 10 D 1024 I rotary pulse encoder | H73 | – | – | – | – | ✓ | ✓ | ✓ | ✓ |
| Prepared for mounting LL 861 900 220 | H78 | – | – | – | – | ✓ | ✓ | ✓ | ✓ |
| Prepared for mounting HOG 10 D 1024 I | H80 | – | – | – | – | ✓ | ✓ | ✓ | ✓ |
| Mounting a special type of rotary pulse encoder | Y70 • and encoder designation | – | – | – | – | O. R. | O. R. | O. R. | O. R. |
| Mechanical design and degrees of protection | | | | | | | | | |
| Low-noise version for 2-pole motors with clockwise direction of rotation | K37 | ✓ | ☐ | ☐ | ☐ | ✓ | ☐ | ☐ | ☐ |
| Low-noise version for 2-pole motors with counter-clockwise direction of rotation | K38 | ✓ | ○ | ○ | ○ | ✓ | ○ | ○ | ○ |
| IP56 degree of protection (non-heavy-sea) | K52 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-rusting screws (externally) | M27 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature and site altitude | | | | | | | | | |
| Coolant temperature –40 to +40 °C | D03 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature –30 to +40 °C | D04 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature 45 °C, derating 4 % ⁹⁾ | D11 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Coolant temperature 50 °C, derating 8 % ⁹⁾ | D12 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Coolant temperature 55 °C, derating 13 % ⁹⁾ | D13 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Coolant temperature 60 °C, derating 18 % ⁹⁾ | D14 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Designs in accordance with standards and specifications | | | | | | | | | |
| Electrical according to NEMA MG1-12 | D30 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Design according to UL with "Recognition Mark" | D31 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Canadian regulations (CSA) | D40 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | |
|---|--|-----------------------|------------------------------------|-------|-------|-------|--|-------|-------|-------|
| | | 315 | 355 | 400 | 450 | 315 | 355 | 400 | 450 | |
| Self-ventilated motors for mains-fed and converter-fed operation 1LA8 | | | | | | | | | | |
| | | | 1LA8 Mains-fed operation | | | | 1LA8 Converter-fed operation | | | |
| Design for Zones 1, 2 and 22 according to ATEX ¹⁰⁾ | | | | | | | | | | |
| Design for Zone 2 for mains-fed operation Ex nA II T3 to IEC/EN 60079-15 ^{11) 12) 13)} | M72 | | ✓ | ✓ | ✓ | ✓ | – | – | – | – |
| Design for Zone 2 for converter-fed operation, reduced output Ex nA II T3 to IEC/EN 60079-15 ^{11) 12) 13) 14)} | M73 | | – | – | – | – | O. R. | O. R. | O. R. | O. R. |
| Design for Zone 22 for non-conducting dust (IP55) for mains-fed operation ¹³⁾ | M35 | | ✓ | ✓ | ✓ | ✓ | – | – | – | – |
| Design for Zone 22 for non-conducting dust (IP55) for converter-fed operation ^{12) 13)} | M39 | | – | – | – | – | ✓ | ✓ | ✓ | ✓ |
| VIK version ^{13) 15)} | K30 | | ✓ | ✓ | – | – | O. R. | O. R. | – | – |
| Stamping of Ex nA II on VIK rating plate | C27 | | ✓ | ✓ | – | – | O. R. | O. R. | – | – |
| Bearings and lubrication | | | | | | | | | | |
| Measuring nipple for SPM shock pulse measurement for bearing inspection | G50 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bearing design for increased cantilever forces ¹⁶⁾ | K20 | | ✓ | ✓ | – | – | ✓ | ✓ | – | – |
| Balance and vibration quantity | | | | | | | | | | |
| Vibration quantity level B | K02 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Full key balancing | L68 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft and rotor | | | | | | | | | | |
| Second standard shaft extension ¹⁷⁾ | K16 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft extension with standard dimensions, without featherkey way | K42 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard cylindrical shaft extension | Y55 • and identification code | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Heating and ventilation | | | | | | | | | | |
| Metal external fan | K35 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 230 V | K45 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 115 V | K46 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rating plate and extra rating plates | | | | | | | | | | |
| Second rating plate, loose | K31 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate or rating plate with deviating rating plate data | Y80 • and identification code | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate with identification code | Y82 • and identification code | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Packaging, safety notes, documentation and test certificates¹⁸⁾ | | | | | | | | | | |
| Document – Electrical data sheet | B31 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Document – Order dimension drawing | B32 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Document – Load characteristics | B37 | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Standard test (routine test) with acceptance | F01 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Visual acceptance and report handover with acceptance | F03 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 3/53.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | |
|---|---|------------------------------------|-----|-----|-----|--|-----|-----|-----|
| | | 315 | 355 | 400 | 450 | 315 | 355 | 400 | 450 |
| Self-ventilated motors for mains-fed and converter-fed operation 1LA8 | | | | | | | | | |
| | | 1LA8 Mains-fed operation | | | | 1LA8 Converter-fed operation | | | |
| Packaging, safety notes, documentation and test certificates ¹⁸⁾ (continued) | | | | | | | | | |
| Temperature-rise test, without acceptance | F04 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature-rise test, with acceptance | F05 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Noise measurement in no-load operation, no noise analysis, no acceptance | F28 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Noise measurement in no-load operation, no noise analysis, with acceptance | F29 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Noise measurement in no-load operation, with noise analysis, without acceptance | F62 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Noise measurement in no-load operation, with noise analysis, with acceptance | F63 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Recording of current and torque curves with torque metering shaft during starting, without acceptance | F34 | ✓ | ✓ | ✓ | ✓ | – | – | – | – |
| Recording of current and torque curves with torque metering shaft during starting, with acceptance | F35 | ✓ | ✓ | ✓ | ✓ | – | – | – | – |
| Measurement of locked-rotor torque and current, without acceptance | F52 | ✓ | ✓ | ✓ | ✓ | – | – | – | – |
| Measurement of locked-rotor torque and current, with acceptance | F53 | ✓ | ✓ | ✓ | ✓ | – | – | – | – |
| Type test with heat run for horizontal motors, without acceptance | F82 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for horizontal motors, with acceptance | F83 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, without acceptance | F92 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, with acceptance | F93 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- R. Possible on request
- ✓ With additional charge
- Not possible

¹⁾ For 4-pole version only, type of construction IM B3, 400 V Δ /690 VY or 500 VA voltage (no special insulation). Only the following short codes can be ordered in combination with the *Standardline*: **A23, A61, A72, G50, H70, H73, K09, K10, K45, K46, K83, K84, K85, L00, L97, M58** (only frame size 315), **M88, Y53**.

²⁾ Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended.

³⁾ The standard thermistors are omitted. If PTC thermistors are required as well as KTYs or PT100s, this must be specified in the order in plain text. A combination of **A12** and **A61** or **A12** and **A23** is possible on request for an additional charge.

⁴⁾ Only possible in combination with the larger connection boxes 1XB1 621 or 1XB1 631 (order codes **M58** or **L00**).

⁵⁾ A combination with the order codes **M88** and **M50** is not possible. Connection box 1XP1 634 can be rotated through 4 x 90°. Cable entry is from NDE or the delivery position. Dimension drawings available on request.

⁶⁾ With 1LA8 357-2 and 1LA8 357-4, connection box 1XB1 631 is supplied in the standard version.

⁷⁾ VIK version is not possible.

⁸⁾ Use according to temperature class 180 (H) is not possible. All 400 V version are available on request. Due to the rated current, a larger connection box of type 1XB9 600, which is part of order code **C14**, is generally provided for frame sizes 400 (2- and 4-pole) and 450 (all no. of poles).

⁹⁾ Site altitude up to 1000 m above sea level.

¹⁰⁾ Explosion-protected encoders are available on request.

¹¹⁾ Only admissible for use in accordance with temperature class 130 (B). PTC thermistors for temperature class 130 (B) are included. For compliance with temperature class 130 (B), derating is necessary in the case of converter-fed operation in Zones 2 and 22. Derating data are available on request.

¹²⁾ These motors do not have a rated voltage range stamped on the rating plate.

¹³⁾ For options **K30, M35, M39, M72, M73** an additional metal external fan order code **K35** must be ordered.

¹⁴⁾ In the order, the "Speed range and torque characteristic" must be specified in plain text. A system test is necessary for $M = \text{constant}$.

¹⁵⁾ The VIK version comprises Zone 2 for mains-fed operation – without Ex nA II marking on rating plate. For 2-pole motors of frame size 315, the low-noise version is also required. Order code **K37** or **K38** and additionally the metal external fan order code **K35**. Note the specified output and dimensions. For 1LA8 353 to 1LA8 357 motors, the connection box cannot be rotated by 4 x 90°.

¹⁶⁾ Not possible for 2-pole motors and motors of vertical type of construction.

¹⁷⁾ Please inquire in the case of 2-pole motors and motors in vertical type of construction.

¹⁸⁾ Type testing is also performed for converter-fed operation.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Special versions

Options or order codes (supplement **-Z** is required)

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | |
|--|---|-----------------------|-----------------|-------|-------|
| | | 315 | 355 | 400 | 450 |
| Forced-air cooled motors with mounted separately driven fan for converter-fed operation 1PQ8 | | | | | |
| 1PQ8 | | | | | |
| Converter-fed operation | | | | | |
| Standardline | | | | | |
| Standardline version | B20 | – | – | – | – |
| Motor protection | | | | | |
| Motor protection with PTC thermistors with 6 embedded temperature sensors for alarm and tripping ¹⁾ | A12 | ☐ | ☐ | ☐ | ☐ |
| Motor temperature detection with embedded temperature sensor KTY 84-130 ²⁾ | A23 | ○ | ○ | ○ | ○ |
| Installation of 6 PT 100 resistance thermometers in stator winding ²⁾ | A61 | ✓ | ✓ | ✓ | ✓ |
| Installation of 2 PT 100 screw-in resistance thermometers (basic circuit) for rolling-contact bearings | A72 | ✓ | ✓ | ✓ | ✓ |
| Motor connection and connection box | | | | | |
| Two-part plate on connection box | K06 | O. R. | O. R. | O. R. | O. R. |
| Undrilled entry plate | L01 | ○ ³⁾ | ○ | ○ | ○ |
| Connection box on RHS | K09 | ☐ | ☐ | ☐ | ☐ |
| Connection box on LHS | K10 | ○ | ○ | ○ | ○ |
| Connection box above (1XB1 634 connection box) ⁴⁾ | K11 | ✓ | ✓ | ✓ | ✓ |
| Cable gland, maximum configuration | K57 | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from DE | K83 | ○ | ○ | ○ | ○ |
| Rotation of the connection box through 90°, entry from NDE | K84 | ○ | ○ | ○ | ○ |
| Rotation of connection box through 180° | K85 | ○ | ○ | ○ | ○ |
| Larger connection box (1XB1 621 connection box) | M58 | ✓ | ☐ ⁵⁾ | – | – |
| Larger connection box (1XB1 631 connection box) | L00 | ✓ | ✓ ⁵⁾ | ☐ | ☐ |
| 6 cables protruding, 1.5 m long | L48 | O. R. | O. R. | O. R. | O. R. |
| 6 cables protruding, 3 m long | L49 | O. R. | O. R. | O. R. | O. R. |
| Auxiliary connection box 1XB9 016 (cast-iron) | M50 | ✓ | ✓ | ✓ | ✓ |
| Auxiliary connection box 1XB3 020 | L97 | ✓ | ✓ | ✓ | ✓ |
| Auxiliary connection box 1XB9 014 (aluminum) | M88 | ✓ | ✓ | ✓ | ✓ |
| Connection box on NDE | M64 | ✓ | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 3/57.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | |
|---|---|-----------------------|-------|-------|-------|
| | | 315 | 355 | 400 | 450 |
| Forced-air cooled motors with mounted separately driven fan for converter-fed operation 1PQ8 | | | | | |
| 1PQ8 Converter-fed operation | | | | | |
| Windings and insulation | | | | | |
| Temperature class 180 (H), used acc. to 155 (F), with service factor (SF 1.1) ⁶⁾ | C14 | ✓ | ✓ | ✓ | ✓ |
| Colors and paint finish | | | | | |
| Standard finish in RAL 7030 stone gray | | □ | □ | □ | □ |
| Standard paint finish in other colors | Y53 • and standard finish RAL | ✓ | ✓ | ✓ | ✓ |
| Special finish in RAL 7030 stone gray | K26 | ✓ | ✓ | ✓ | ✓ |
| Special finish in other colors | Y54 • and special finish RAL | ✓ | ✓ | ✓ | ✓ |
| Unpainted (only cast-iron parts primed) | K23 | ○ | ○ | ○ | ○ |
| Special technology | | | | | |
| Mounting of brake (incl. brake of Stromag) | H47 | O. R. | O. R. | O. R. | O. R. |
| Mounting of LL 861 900 220 rotary pulse encoder | H70 | ✓ | ✓ | ✓ | ✓ |
| Mounting of HOG 10 D 1024 I rotary pulse encoder | H73 | ✓ | ✓ | ✓ | ✓ |
| Prepared for mounting LL 861 900 220 | H78 | ✓ | ✓ | ✓ | ✓ |
| Prepared for mounting HOG 10 D 1024 I | H80 | ✓ | ✓ | ✓ | ✓ |
| Mounting a special type of rotary pulse encoder | Y70 • and encoder designation | O. R. | O. R. | O. R. | O. R. |
| Mechanical design and degrees of protection | | | | | |
| Low-noise version for 2-pole motors with clockwise direction of rotation | K37 | – | – | – | – |
| Low-noise version for 2-pole motors with counter-clockwise direction of rotation | K38 | – | – | – | – |
| IP56 degree of protection (non-heavy-sea) | K52 | O. R. | O. R. | O. R. | O. R. |
| Non-rusting screws (externally) ⁷⁾ | M27 | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature and site altitude | | | | | |
| Coolant temperature –40 to +40 °C | D03 | O. R. | O. R. | O. R. | O. R. |
| Coolant temperature –30 to +40 °C | D04 | O. R. | O. R. | O. R. | O. R. |
| Coolant temperature 45 °C, derating 4 % ⁸⁾ | D11 | ○ | ○ | ○ | ○ |
| Coolant temperature 50 °C, derating 8 % ⁸⁾ | D12 | ○ | ○ | ○ | ○ |
| Coolant temperature 55 °C, derating 13 % ⁸⁾ | D13 | ○ | ○ | ○ | ○ |
| Coolant temperature 60 °C, derating 18 % ⁸⁾ | D14 | ○ | ○ | ○ | ○ |

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | |
|---|---|-------------------------|-------|-------|-------|
| | | 315 | 355 | 400 | 450 |
| Forced-air cooled motors with mounted separately driven fan for converter-fed operation 1PQ8 | | | | | |
| | | 1PQ8 | | | |
| | | Converter-fed operation | | | |
| Designs in accordance with standards and specifications | | | | | |
| Electrical according to NEMA MG1-12 ⁹⁾ | D30 | ✓ | ✓ | ✓ | ✓ |
| Design according to UL with "Recognition Mark" | D31 | ✓ | ✓ | ✓ | ✓ |
| Canadian regulations (CSA) | D40 | ✓ | ✓ | ✓ | ✓ |
| Design for Zones 2 and 22 according to ATEX¹⁰⁾ | | | | | |
| Design for Zone 2 for mains-fed operation Ex nA II T3 to IEC/EN 60079-15 | M72 | – | – | – | – |
| Design for Zone 2 for converter-fed operation, reduced output Ex nA II T3 to IEC/EN 60079-15 ^{11) 12) 13)} | M73 | O. R. | O. R. | O. R. | O. R. |
| Design for Zone 22 for non-conducting dust (IP55) for mains-fed operation | M35 | – | – | – | – |
| Design for Zone 22 for non-conducting dust (IP55) for converter-fed operation | M39 | – | – | – | – |
| VIK version | K30 | – | – | – | – |
| Stamping of Ex nA II on VIK rating plate | C27 | – | – | – | – |
| Bearings and lubrication | | | | | |
| Measuring nipple for SPM shock pulse measurement for bearing inspection | G50 | ✓ | ✓ | ✓ | ✓ |
| Bearing design for increased cantilever forces ¹⁴⁾ | K20 | ✓ | ✓ | – | – |
| Balance and vibration quantity | | | | | |
| Vibration quantity level B | K02 | ✓ | ✓ | ✓ | ✓ |
| Full key balancing | L68 | ✓ | ✓ | ✓ | ✓ |
| Shaft and rotor | | | | | |
| Second standard shaft extension | K16 | – | – | – | – |
| Shaft extension with standard dimensions, without featherkey way | K42 | ✓ | ✓ | ✓ | ✓ |
| Non-standard cylindrical shaft extension | Y55 • and identification code | ✓ | ✓ | ✓ | ✓ |
| Heating and ventilation | | | | | |
| Anti-condensation heaters for 230 V | K45 | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 115 V | K46 | ✓ | ✓ | ✓ | ✓ |
| Separately driven fan with non-standard voltage and/or frequency ¹⁵⁾ | Y81 • and identification code | ✓ | ✓ | ✓ | ✓ |
| Rating plate and extra rating plates | | | | | |
| Second rating plate, loose | K31 | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate or rating plate with deviating rating plate data | Y80 • and identification code | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate with identification code | Y82 • and identification code | ✓ | ✓ | ✓ | ✓ |
| Packaging, safety notes, documentation and test certificates¹⁶⁾ | | | | | |
| Document – Electrical data sheet | B31 | ✓ | ✓ | ✓ | ✓ |
| Document – Order dimension drawing | B32 | ✓ | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 3/57.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | |
|---|---|-----------------------|-------|-------|-------|
| | | 315 | 355 | 400 | 450 |
| Forced-air cooled motors with mounted separately driven fan for converter-fed operation 1PQ8 | | | | | |
| 1PQ8 Converter-fed operation | | | | | |
| Packaging, safety notes, documentation and test certificates ¹⁶⁾ (continued) | | | | | |
| Document – Load characteristics | B37 | O. R. | O. R. | O. R. | O. R. |
| Normal inspection (routine inspection) with acceptance | F01 | ✓ | ✓ | ✓ | ✓ |
| Visual acceptance and report handover with acceptance | F03 | ✓ | ✓ | ✓ | ✓ |
| Temperature-rise test, without acceptance | F04 | ✓ | ✓ | ✓ | ✓ |
| Temperature-rise test, with acceptance | F05 | ✓ | ✓ | ✓ | ✓ |
| Noise measurement in no-load operation, no noise analysis, no acceptance | F28 | ✓ | ✓ | ✓ | ✓ |
| Noise measurement in no-load operation, no noise analysis, with acceptance | F29 | ✓ | ✓ | ✓ | ✓ |
| Noise measurement in no-load operation, with noise analysis, without acceptance | F62 | ✓ | ✓ | ✓ | ✓ |
| Noise measurement in no-load operation, with noise analysis, with acceptance | F63 | ✓ | ✓ | ✓ | ✓ |
| Recording of current and torque curves with torque metering shaft during starting, without acceptance | F34 | – | – | – | – |
| Recording of current and torque curves with torque metering shaft during starting, with acceptance | F35 | – | – | – | – |
| Measurement of locked-rotor torque and current, without acceptance | F52 | – | – | – | – |
| Measurement of locked-rotor torque and current, with acceptance | F53 | – | – | – | – |
| Type test with heat run for horizontal motors, without acceptance | F82 | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for horizontal motors, with acceptance | F83 | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, without acceptance | F92 | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, with acceptance | F93 | ✓ | ✓ | ✓ | ✓ |

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- O. R. Possible on request
- ✓ With additional charge
- Not possible

¹⁾ Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended.

²⁾ The standard thermistors are omitted. If PTC thermistors are required as well as KTYs or PT100s, this must be specified in the order in plain text. A combination of **A12** and **A61** or **A12** and **A23** is possible on request for an additional charge.

³⁾ Only possible in combination with the larger connection boxes 1XB1 621 or 1XB1 631 (order codes **M58** or **L00**).

⁴⁾ A combination with the order codes **M88** and **M50** is not possible. Connection box 1XP1 634 can be rotated through 4 x 90°. Cable entry is from NDE or the delivery position. Dimension drawings available on request.

⁵⁾ With 1PQ8 357-2 and 1PQ8 357-4, connection box 1XB1 631 is supplied in the standard version.

⁶⁾ Use according to temperature class 180 (H) is not possible. All 400 V version are available on request. Due to the rated current, a larger connection box of type 1XB9 600, which is part of order code **C14**, is generally provided for frame sizes 400 (2- and 4-pole) and 450 (all no. of poles).

⁷⁾ Only possible for main motor – Not possible for separately driven fan.

⁸⁾ Site altitude up to 1000 m above sea level.

⁹⁾ Only possible for main motor – Not possible for separately driven fan motor.

¹⁰⁾ Explosion-protected encoders are available on request.

¹¹⁾ Only admissible for use in accordance with temperature class 130 (B). PTC thermistors for temperature class 130 (B) are included. For compliance with temperature class 130 (B), derating is necessary in the case of converter-fed operation in Zones 2 and 22. Derating data are available on request.

¹²⁾ These motors do not have a rated voltage range stamped on the rating plate.

¹³⁾ In the order, the "Speed range and torque characteristic" must be specified in plain text. A system test is necessary for $M = \text{constant}$.

¹⁴⁾ Not possible for 2-pole motors and motors of vertical type of construction.

¹⁵⁾ When ordering, specify in plain text: Voltage, frequency and circuit.

¹⁶⁾ Type testing is also performed for converter-fed operation.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Special versions

Options or order codes (supplement **-Z** is required)

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | |
|--|---|-----------------------|------------------------------------|-------|-------|-------|--|-------|-------|-------|
| | | 315 | 355 | 400 | 450 | 315 | 355 | 400 | 450 | |
| Self-ventilated motors with through ventilation for mains-fed and converter-fed operation | | | | | | | | | | |
| | | | 1LL8 Mains-fed operation | | | | 1LL8 Converter-fed operation | | | |
| Standardline | | | | | | | | | | |
| Standardline version | B20 | | – | – | – | – | – | – | – | – |
| Motor protection | | | | | | | | | | |
| Motor protection with PTC thermistors with 6 embedded temperature sensors for alarm and tripping ¹⁾ | A12 | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Motor temperature detection with embedded temperature sensor KTY 84-130 ²⁾ | A23 | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Installation of 6 PT 100 resistance thermometers in stator winding ²⁾ | A61 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 2 PT 100 screw-in resistance thermometers (basic circuit) for rolling-contact bearings | A72 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor connection and connection box | | | | | | | | | | |
| Two-part plate on connection box | K06 | | ✓ | ✓ | ✓ | ✓ | O. R. | O. R. | O. R. | O. R. |
| Undrilled entry plate | L01 | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Connection box on RHS | K09 | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Connection box on LHS | K10 | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Connection box above (1XB1 634 connection box) ³⁾ | K11 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Cable gland, maximum configuration | K57 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from DE | K83 | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Rotation of the connection box through 90°, entry from NDE | K84 | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Rotation of connection box through 180° | K85 | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Larger connection box (1XB1 621 connection box) | M58 | | ✓ | – | – | – | ☐ | – | – | – |
| Larger connection box (1XB1 631 connection box) | L00 | | ✓ | ☐ | ☐ | ☐ | ✓ | ☐ | ☐ | ☐ |
| 6 cables protruding, 1.5 m long | L48 | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| 6 cables protruding, 3 m long | L49 | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Auxiliary connection box 1XB9 016 (cast-iron) | M50 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Auxiliary connection box 1XB3 020 | L97 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Auxiliary connection box 1XB9 014 (aluminum) | M88 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on NDE | M64 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 3/61.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | |
|--|--|-----------------------|------------------------------------|-------|-------|-------|--|-------|-------|--|
| | | 315 | 355 | 400 | 450 | 315 | 355 | 400 | 450 | |
| Self-ventilated motors with through ventilation for mains-fed and converter-fed operation | | | | | | | | | | |
| | | | 1LL8 Mains-fed operation | | | | 1LL8 Converter-fed operation | | | |
| Windings and insulation | | | | | | | | | | |
| Temperature class 155 (F), used acc. to 155 (F), with service factor (SF 1.1, SF 1.05 from frame size 400) ⁴⁾ | C11 | ✓ | ✓ | ✓ | ✓ | – | – | – | – | |
| Temperature class 155 (F), used acc. to 155 (F), with increased output (10 %, 5 % from frame size 400) ⁴⁾ | C12 | ✓ | ✓ | ✓ | ✓ | – | – | – | – | |
| Temperature class 155 (F), used acc. to 155 (F), with increased coolant temperature (55 °C, 50 °C from frame size 400) ⁴⁾ | C13 | ✓ | ✓ | ✓ | ✓ | – | – | – | – | |
| Temperature class 180 (H), used acc. to 155 (F), with service factor (SF 1.1) | C14 | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | |
| Colors and paint finish | | | | | | | | | | |
| Standard finish in RAL 7030 stone gray | | □ | □ | □ | □ | □ | □ | □ | □ | |
| Standard paint finish in other colors | Y53 • and standard finish RAL | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Special finish in RAL 7030 stone gray | K26 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Special finish in other colors | Y54 • and special finish RAL | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Unpainted (only cast iron parts primed) | K23 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | |
| Special technology | | | | | | | | | | |
| Mounting of brake (incl. brake of Stromag) | H47 | – | – | – | – | – | – | – | – | |
| Mounting of LL 861 900 220 rotary pulse encoder | H70 | – | – | – | – | ✓ | ✓ | ✓ | ✓ | |
| Mounting of HOG 10 D 1024 I rotary pulse encoder | H73 | – | – | – | – | ✓ | ✓ | ✓ | ✓ | |
| Prepared for mounting LL 861 900 220 | H78 | – | – | – | – | ✓ | ✓ | ✓ | ✓ | |
| Prepared for mounting HOG 10 D 1024 I | H80 | – | – | – | – | ✓ | ✓ | ✓ | ✓ | |
| Mounting a special type of rotary pulse encoder | Y70 • and encoder designation | – | – | – | – | O. R. | O. R. | O. R. | O. R. | |
| Mechanical design and degrees of protection | | | | | | | | | | |
| Low-noise version for 2-pole motors with clockwise direction of rotation | K37 | ✓ | ○ | ○ | ○ | ✓ | ○ | ○ | ○ | |
| Low-noise version for 2-pole motors with counter-clockwise direction of rotation | K38 | ✓ | ○ | ○ | ○ | ✓ | ○ | ○ | ○ | |
| IP56 degree of protection (non-heavy-sea) | K52 | – | – | – | – | – | – | – | – | |
| Non-rusting screws (externally) | M27 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Coolant temperature and site altitude | | | | | | | | | | |
| Coolant temperature –40 to +40 °C | D03 | – | – | – | – | – | – | – | – | |
| Coolant temperature –30 to +40 °C | D04 | – | – | – | – | – | – | – | – | |
| Coolant temperature 45 °C, derating 4 % ⁵⁾ | D11 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | |
| Coolant temperature 50 °C, derating 8 % ⁵⁾ | D12 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | |
| Coolant temperature 55 °C, derating 13 % ⁵⁾ | D13 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | |
| Coolant temperature 60 °C, derating 18 % ⁵⁾ | D14 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | |

For legend and footnotes, see Page 3/61.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | |
|--|---|------------------------------------|-------|-------|-------|--|-------|-------|-------|
| | | 315 | 355 | 400 | 450 | 315 | 355 | 400 | 450 |
| Self-ventilated motors with through ventilation for mains-fed and converter-fed operation | | | | | | | | | |
| | | 1LL8 Mains-fed operation | | | | 1LL8 Converter-fed operation | | | |
| Design in accordance with standards and specifications | | | | | | | | | |
| Electrical according to NEMA MG1-12 | D30 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Design according to UL with "Recognition Mark" | D31 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| VIK version | K30 | – | – | – | – | – | – | – | – |
| Canadian regulations (CSA) | D40 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Designs for Zones 2 and 22 according to ATEX | | | | | | | | | |
| Design for Zone 2 for mains-fed operation Ex nA II T3 to IEC/EN 60079-15 | M72 | – | – | – | – | – | – | – | – |
| Design for Zone 2 for converter-fed operation, derating Ex nA II T3 to IEC/EN 60079-15 | M73 | – | – | – | – | – | – | – | – |
| Design for Zone 22 for non-conducting dust (IP55) for mains-fed operation | M35 | – | – | – | – | – | – | – | – |
| Design for Zone 22 for non-conducting dust (IP55) for converter-fed operation | M39 | – | – | – | – | – | – | – | – |
| Stamping of Ex nA II on VIK rating plate | C27 | – | – | – | – | – | – | – | – |
| Bearings and lubrication | | | | | | | | | |
| Measuring nipple for SPM shock pulse measurement for bearing inspection | G50 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bearing design for increased cantilever forces | K20 | – | – | – | – | – | – | – | – |
| Balance and vibration quantity | | | | | | | | | |
| Vibration quantity level B | K02 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Full key balancing | L68 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft and rotor | | | | | | | | | |
| Second standard shaft extension ^{b)} | K16 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft extension with standard dimensions, without featherkey way | K42 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard cylindrical shaft extension | Y55 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Heating and ventilation | | | | | | | | | |
| Metal external fan | K35 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 230 V | K45 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 115 V | K46 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Sheet metal fan cover | L36 | □ | □ | □ | □ | □ | □ | □ | □ |
| Rating plate and extra rating plates | | | | | | | | | |
| Second rating plate, loose | K31 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate or rating plate with deviating rating plate data | Y80 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate with identification code | Y82 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Packaging, safety notes, documentation and test certificates ⁷⁾ | | | | | | | | | |
| Document – Electrical data sheet | B31 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Document – Order dimension drawing | B32 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Document – Load characteristics | B37 | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |

For legend and footnotes, see Page 3/61.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | |
|---|---|------------------------------------|-----|-----|-----|--|-----|-----|-----|
| | | 315 | 355 | 400 | 450 | 315 | 355 | 400 | 450 |
| Self-ventilated motors with through ventilation for mains-fed and converter-fed operation | | | | | | | | | |
| | | 1LL8 Mains-fed operation | | | | 1LL8 Converter-fed operation | | | |
| Packaging, safety notes, documentation and test certificates ⁷⁾ (continued) | | | | | | | | | |
| Standard test (routine test) with acceptance | F01 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Visual acceptance and report handover with acceptance | F03 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature-rise test, without acceptance | F04 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature-rise test, with acceptance | F05 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Noise measurement in no-load operation, no noise analysis, no acceptance | F28 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Noise measurement in no-load operation, no noise analysis, with acceptance | F29 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Noise measurement in no-load operation, with noise analysis, without acceptance | F62 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Noise measurement in no-load operation, with noise analysis, with acceptance | F63 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Recording of current and torque curves with torque metering shaft during starting, without acceptance | F34 | ✓ | ✓ | ✓ | ✓ | – | – | – | – |
| Recording of current and torque curves with torque metering shaft during starting, with acceptance | F35 | ✓ | ✓ | ✓ | ✓ | – | – | – | – |
| Measurement of locked-rotor torque and current, without acceptance | F52 | ✓ | ✓ | ✓ | ✓ | – | – | – | – |
| Measurement of locked-rotor torque and current, with acceptance | F53 | ✓ | ✓ | ✓ | ✓ | – | – | – | – |
| Type test with heat run for horizontal motors, without acceptance | F82 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for horizontal motors, with acceptance | F83 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, without acceptance | F92 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, with acceptance | F93 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- R. Possible on request
- ✓ With additional charge
- Not possible

1) Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended.

2) The standard thermistors are omitted. If PTC thermistors are required as well as KTYs or PT100s, this must be specified in the order in plain text. A combination of **A12** and **A61** or **A12** and **A23** is possible on request for an additional charge.

3) A combination with the order codes **M88** and **M50** is not possible. Connection box 1XP1 634 can be rotated through 4 x 90°. Cable entry is from NDE or the delivery position. Dimension drawings available on request.

4) Use according to temperature class 180 (H) is not possible. All 400 V version are available on request. Due to the rated current, a larger connection box of type 1XB9 600, which is part of order code **C14**, is generally provided for frame sizes 400 (2- and 4-pole) and 450 (all no. of poles).

5) Site altitude 1000 m above sea level

6) Please inquire in the case of 2-pole motors and motors in vertical type of construction.

7) Type testing is also performed for converter-fed operation.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Accessories

Overview

Slide rails with fixing bolts and tensioning screws to DIN 42923

Slide rails are used to tension the belt of a machine easily and conveniently when a belt tightener is not available. They are fixed to the base using stone bolts or foundation blocks.

The assignment of slide rails to motor size can be found in DIN 42923. For motors of frame sizes 335 to 450, there are no standardized slide rails (please inquire).

Available from:

Lütgert & Co. GmbH
Postfach 42 51
33276 Gütersloh, Germany
Tel. +49 (0)5241-7407-0
Fax +49 (0)5241-7407-90

<http://www.luetgert-antriebe.de>
e-mail: info@luetgert-antriebe.de

Foundation block acc. to DIN 799

The foundation blocks are inserted into the stone foundation and embedded in concrete. They are used for fixing machines of medium size, slide rails, pedestal bearings, baseframes, etc. After the fixing bolts have been unscrewed, the machine can be dragged without it having to be lifted.

When the machine is initially installed, the foundation block that is bolted to the machine (without washers) and fitted with tapered pins is not embedded with concrete until the machine has been fully aligned. In this case, the machine is positioned 2 to 3 mm lower. The difference in shaft height is compensated by inserting shims on final installation. The tapered pins safeguard the exact position of the machine when it is repeatedly removed and replaced without the need for realignment.

Available from:

Lütgert & Co. GmbH
Postfach 42 51
33276 Gütersloh, Germany
Tel. +49 (0)5241-7407-0
Fax +49 (0)5241-7407-90

<http://www.luetgert-antriebe.de>
e-mail: info@luetgert-antriebe.de

Taper pins to DIN 258 with threaded ends and constant taper lengths

Taper pins are used for components that are repeatedly removed. The drilled hole is ground conical using a conical reamer until the pin can be pushed in by hand until the cone shoulder lies 3 to 4 mm above the rim of the hole.

It can then be driven in using a hammer until it is correctly seated. The pin is removed from the drilled hole by screwing on the nut and tightening it.

Standardized taper pins are available from general engineering suppliers.

Available from:

Otto Roth GmbH & Co. KG
Rutesheimer Straße 22
70499 Stuttgart, Germany
Tel. +49 (0)711-13 88-0
Fax +49 (0)711-13 88-233

<http://www.ottoroth.de>
e-mail: info@ottoroth.de

Couplings

The motor from Siemens is connected to the machine or gear unit through a coupling. Flender is an important coupling manufacturer with a wide range of products. For standard applications, Siemens recommends that elastic couplings of Flender types N-Eupex and Rupex or torsionally rigid couplings of types Arpex and Zapex are used. For special applications, Fludex and Elpex-S couplings are recommended. These coupling types are suitable for use in areas subject to explosion hazards and are offered with declaration of conformity and type test certificate according to directive 94/9/EU.

Source of supply:

Siemens contact partner – ordering from Catalog
Siemens MD 10.1 „FLENDER Standard Couplings“

or

A. Friedr. Flender AG
Kupplungswerk Mussum
Industriepark Bocholt
Schlavenhorst 100
46395 Bocholt, Germany
Tel. +49 (0)2871-92 2185
Fax +49 (0)2871-92 2579

<http://www.flender.com>
e-mail: couplings@flender.com

More information

Spare motors and repair parts

- Supply commitment for spare motors and repair parts following delivery of the motor
 - For up to 5 years, in the event of total motor failure, Siemens will supply a comparable motor with regard to the mounting dimensions and functions (the type series may vary).
 - Repair parts will be supplied for up to 5 years.
 - For up to 10 years, Siemens will provide information and will, if necessary, supply documentation for repair parts.
- When repair parts are ordered, the following details must be provided:
 - Designation and part number
 - Order No. and factory number of the motor

Example for an order for a fan cowl 1LA8, frame size 315, 4-pole:

**Fan cowl No. 12.01,
1LA8 315-4AB60, factory No. J1172515010001**

- For bearing types, see the “Introduction”.
- For standard components, a supply commitment does not apply.
- Support – Hotline
In Germany
Tel.: 01 80/5 05 04 48

You will find telephone numbers for other countries on our Internet site:

<http://www.siemens.com/automation/service&support>

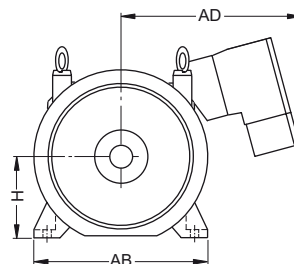
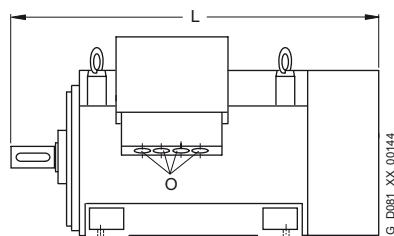
IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Dimensions

Overview

Overall dimensions



| Frame size | Type | Number of poles | Dimensions | | | |
|------------|------|-----------------------|------------|-----|-----|-----|
| | | | L | AD | H | AB |
| 315 | 1LA8 | 2 | 1380 | 570 | 315 | 680 |
| | 1LA8 | 4, 6, 8 | 1410 | 570 | 315 | 680 |
| | 1LA8 | 4, 6, 8 ¹⁾ | 1430 | 570 | 315 | 680 |
| | 1PQ8 | 2 | 1742 | 570 | 315 | 680 |
| | 1PQ8 | 4, 6, 8 | 1772 | 570 | 315 | 680 |
| | 1PQ8 | 4 ¹⁾ | 1792 | 570 | 315 | 680 |
| | 1LL8 | 2 | 1380 | 662 | 315 | 680 |
| | 1LL8 | 4, 6, 8 | 1410 | 662 | 315 | 680 |
| 355 | 1LA8 | 2 | 1605 | 710 | 355 | 780 |
| | 1LA8 | 4, 6, 8 | 1635 | 710 | 355 | 780 |
| | 1LA8 | 4, 6, 8 ¹⁾ | 1699 | 710 | 355 | 780 |
| | 1PQ8 | 2 | 1971 | 690 | 355 | 780 |
| | 1PQ8 | 4, 6, 8 | 2001 | 690 | 355 | 780 |
| | 1PQ8 | 4, 6, 8 ¹⁾ | 2065 | 690 | 355 | 780 |
| | 1LL8 | 2 | 1635 | 840 | 355 | 780 |
| | 1LL8 | 4, 6, 8 | 1675 | 840 | 355 | 780 |

| Frame size | Type | Number of poles | Dimensions | | | |
|------------|------|-----------------|------------|-----|-----|-----|
| | | | L | AD | H | AB |
| 400 | 1LA8 | 2 | 1793 | 865 | 400 | 860 |
| | 1LA8 | 4, 6, 8 | 1833 | 865 | 400 | 860 |
| | 1PQ8 | 2 | 2148 | 865 | 400 | 860 |
| | 1PQ8 | 4, 6, 8 | 2188 | 865 | 400 | 860 |
| | 1LL8 | 2 | 1793 | 865 | 400 | 860 |
| | 1LL8 | 4, 6, 8 | 1833 | 865 | 400 | 860 |
| 450 | 1LA8 | 2 | 1953 | 900 | 450 | 980 |
| | 1LA8 | 4, 6, 8 | 1993 | 900 | 450 | 980 |
| | 1PQ8 | 2 | 2308 | 900 | 450 | 980 |
| | 1PQ8 | 4, 6, 8 | 2348 | 900 | 450 | 980 |
| | 1LL8 | 2 | 1953 | 900 | 450 | 980 |
| | 1LL8 | 4, 6, 8 | 2033 | 900 | 450 | 980 |

For dimension "O", see "Introduction" under "Connection boxes".

Notes on the dimensions

■ Dimension drawings according to DIN EN 50347 and IEC 60072.

■ Fits

The shaft extensions specified in the dimension tables (DIN 748) and centering spigot diameters (DIN EN 50347) are machined with the following fits:

| Dimension designation | ISO fit | DIN ISO 286-2 |
|-----------------------|-------------|---------------|
| D, DA | over 50 | m6 |
| N | over 250 | h6 |
| F, FA | | h9 |
| K | | H17 |
| S | Flange (FF) | H17 |

The drilled holes of couplings and belt pulleys should have an ISO fit of at least H7.

■ Dimension tolerances

For the following dimensions, the permissible deviations are given below:

| Dimension designation | Dimension | Permitted deviation |
|-----------------------|-----------|---------------------|
| H | over 250 | - 1.0 |
| E, EA | | - 0.5 |

Keyways and feather keyways (dimensions GA, GC, F and FA) are made in compliance with DIN 6885 Part 1.

■ All dimensions are specified in mm.

¹⁾ With bearings for increased cantilever forces: Dimensions available on request.

IEC Squirrel-Cage Motors

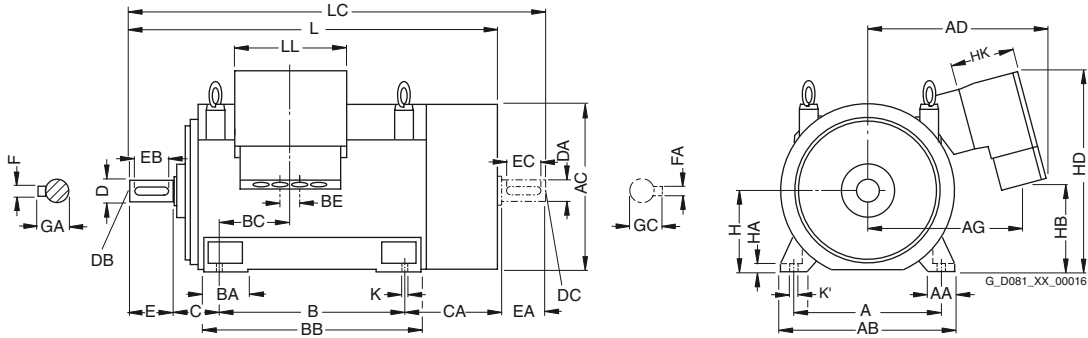
Non-standard motors frame size 315 and above

Dimensions

Dimensional drawings

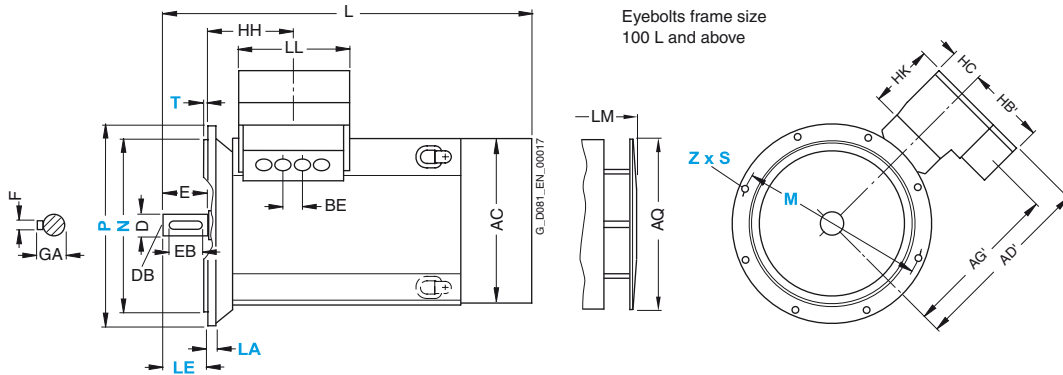
Cast-iron series 1LA8, frame sizes 315 to 450

Type of construction IM B3



Type of construction IM V1

For flange dimensions, see Page 3/70 (Z = the number of retaining holes)



Connection box position

| Version | Cable entry | Console | Order code |
|-------------------------|-------------|-------------|------------|
| Basic version | bottom | 0 degrees | - |
| Special versions | top | 180 degrees | K85 |
| | top | 0 degrees | plain text |

With cable entry from above, protection against rain and other adverse weather conditions must be provided.

| For motor | | Dimension designation acc. to IEC | | | | | | | | | | | | | | | | | | | | | |
|------------|----------|---------------------------------------|-----|-----|-----|------------------|-----|-----|-----|-----|-----|------|-----|------|-----|-----|-------------------|-----|-----|----|-----|-----|-----|
| Frame size | Type | Number of poles | A | AA | AB | AC ¹⁾ | AD | AD' | AG | AG' | AQ | B | BA | BB | BC | BE | C | CA | H | HA | HB | HB' | HC |
| 315 | 1LA8 31 | 2 4, 6, 8 4, 6, 8 ²⁾ | 560 | 120 | 680 | 710 | 570 | 582 | 474 | 481 | 670 | 630 | 180 | 780 | 195 | 140 | 180 180 200 | 435 | 315 | 28 | 404 | 217 | 162 |
| 355 | 1LA8 35 | 2 4, 6, 8 | 630 | 150 | 780 | 790 | 690 | 697 | 597 | 593 | 750 | 800 | 220 | 980 | 185 | 135 | 200 200 | 470 | 355 | 35 | 431 | 290 | 165 |
| | 1LA8 357 | 2, 4 | | | | | 829 | 875 | 739 | 745 | | | | | | 100 | 200 | | | | 359 | 395 | 175 |
| | 1LA8 35 | 4, 6, 8 ²⁾ | | | | | 690 | 697 | 597 | 593 | | | | | | 135 | 224 | | | | 431 | 290 | 165 |
| 400 | 1LA8 40 | 2 4, 6, 8 | 710 | 150 | 860 | 880 | 865 | 925 | 775 | 795 | 850 | 900 | 220 | 1080 | 186 | 100 | 224 | 506 | 400 | 35 | 439 | 395 | 175 |
| 450 | 1LA8 45 | 2 ³⁾ 4, 6, 8 | 800 | 180 | 980 | 970 | 900 | 975 | 810 | 845 | 950 | 1000 | 260 | 1220 | 170 | 100 | 250 | 540 | 450 | 42 | 525 | 395 | 175 |

¹⁾ Measured across the bolt heads (not in the flattened area of the fan cowl).
²⁾ With bearings for increased cantilever forces. – No second shaft extension possible.
³⁾ Only at 50 Hz.

3

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

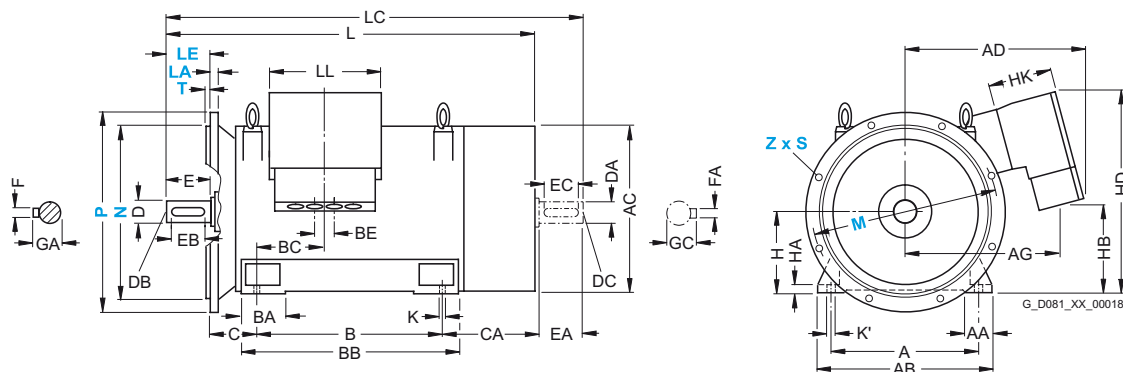
Dimensions

Dimensional drawings

Cast-iron series 1LA8, frame sizes 315 to 450

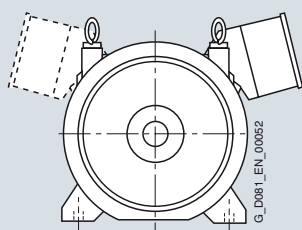
Type of construction IM B35

For flange dimensions, see Page 3/70 (Z = the number of retaining holes)

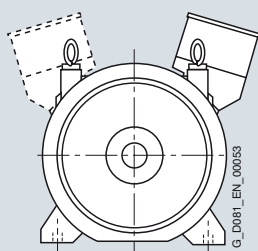


Connection box position

Special versions



Cable entry: DE / NDE
Console: 0 degrees
Order code: K83/K84



Cable entry: DE / NDE
Console: 180 degrees
Order code: plain text

| For motor Frame size | Type | Number of poles | Dimension designation acc. to IEC | | | | | | | | | | DE shaft extension | | | | NDE shaft extension | | | | | | |
|-------------------------|-----------|-----------------------|-----------------------------------|-----|----|----|------|------|------|------|------|-----|--------------------|-----|-----|------|---------------------|-----|-----|-----|-----|------|------|
| | | | HD | HK | K | K' | L | LC | LL | LM | D | DB | E | EB | F | GA | DA | DC | EA | EC | FA | GC | |
| 315 | 1LA8 31 . | 2 | 783 | 170 | 26 | 33 | 1380 | 1495 | 308 | 1510 | 65 | M20 | 140 | 125 | 18 | 69 | 50 | M16 | 110 | 100 | 14 | 53.5 | |
| | | 4, 6, 8 | | | | | | 1410 | 1555 | | 1540 | 85 | M20 | 170 | 140 | 22 | 90 | 70 | M20 | 140 | 125 | 20 | 74.5 |
| | | 4, 6, 8 ¹⁾ | | | | | 1430 | 1575 | | | 95 | M24 | 170 | 140 | 25 | 100 | - | - | - | - | - | - | |
| 355 | 1LA8 35 . | 2 | 896 | 229 | 33 | 40 | 1605 | 1750 | 330 | 1745 | 75 | M20 | 140 | 125 | 20 | 79.5 | 60 | M20 | 140 | 125 | 18 | 64 | |
| | | 4, 6, 8 | | | | | 1635 | 1810 | | 1775 | 95 | M24 | 170 | 140 | 25 | 100 | 80 | | 170 | 140 | 22 | 85 | |
| | | 2, 4 | 945 | 320 | | | | | 554 | | | | | | | | | | | | | | |
| | 1LA8 357 | 2, 4 | | | | | | | | | | | | | | | | | | | | | |
| | 1LA8 35 . | 4, 6, 8 ¹⁾ | | | | | 1699 | - | | | 100 | M24 | 210 | 180 | 28 | 106 | - | - | - | - | - | - | |
| 400 | 1LA8 40 . | 2 | 1025 | 320 | 33 | 40 | 1793 | 1940 | 554 | 1943 | 80 | M20 | 170 | 140 | 22 | 85 | 70 | M20 | 140 | 125 | 20 | 74.5 | |
| | | 4, 6, 8 | | | | | 1833 | 2010 | | 1983 | 110 | M24 | 210 | 180 | 28 | 116 | 90 | M24 | 170 | 140 | 25 | 95 | |
| 450 | 1LA8 45 . | 2 ²⁾ | 1111 | 320 | 39 | 47 | 1953 | 2100 | 554 | 2103 | 90 | M24 | 170 | 140 | 25 | 95 | 75 | M20 | 140 | 125 | 20 | 79.5 | |
| | | 4, 6, 8 | | | | | 1993 | 2210 | | 2143 | 120 | | 210 | 180 | 32 | 127 | 100 | M24 | 210 | 180 | 28 | 106 | |

¹⁾ With bearings for increased cantilever forces. – No second shaft extension possible.

²⁾ Only at 50 Hz.

IEC Squirrel-Cage Motors

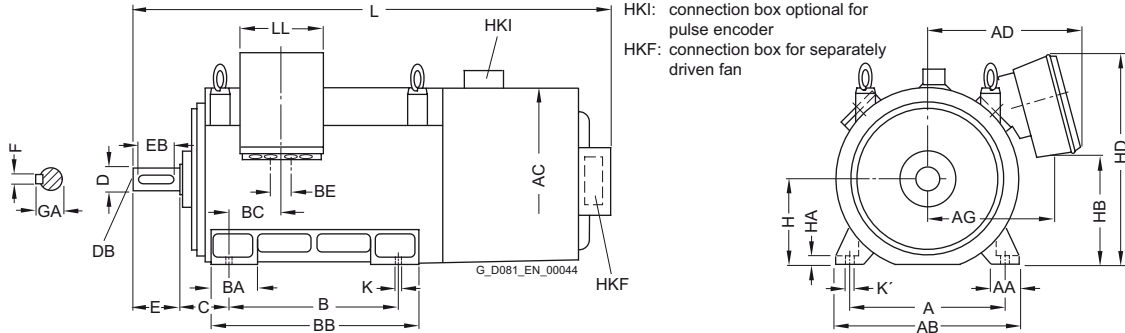
Non-standard motors frame size 315 and above

Dimensions

Dimensional drawings

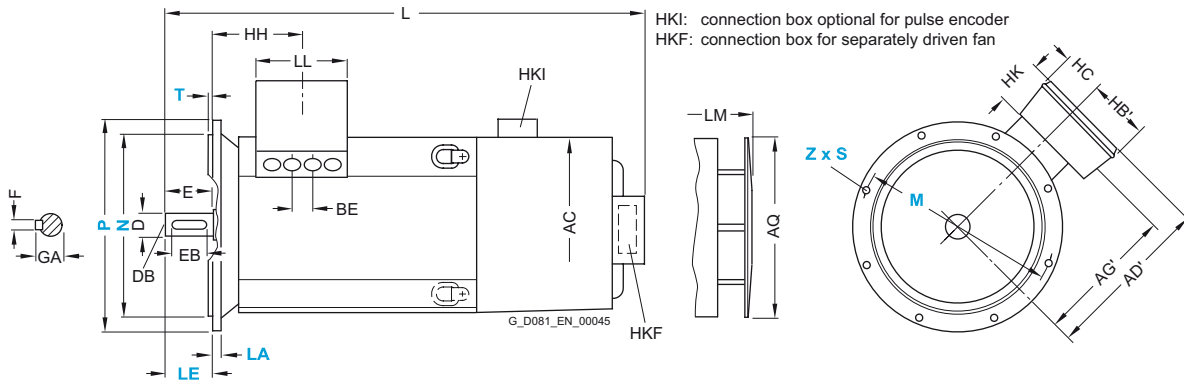
Cast-iron series 1PQ8, frame sizes 315 to 450

Type of construction IM B3

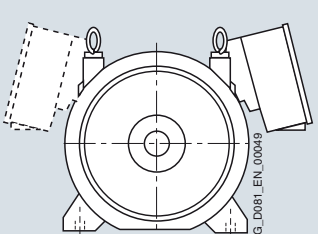
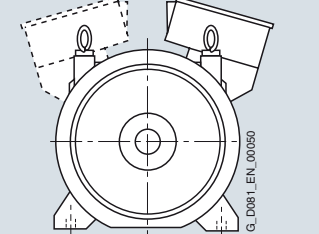
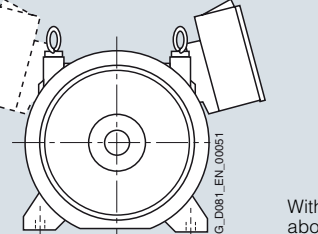


Type of construction IM V1

For flange dimensions, see Page 3/70 (Z = the number of retaining holes)



Connection box position

| Basic version | Special versions | |
|---|--|--|
|  <p>Cable entry: bottom Console: 0 degrees Order code: -</p> |  <p>Cable entry: top Console: 180 degrees Order code: K85</p> |  <p>Cable entry: top Console: 0 degrees Order code: plain text</p> |
| <p>With cable entry from above, protection against rain and other adverse weather conditions must be provided.</p> | | |

| For motor | Dimension designation acc. to IEC | | | | | | | | | | | | | | | | | |
|------------|-----------------------------------|-----------------------|-----|-----|-----|------------------|-----|-----|-----|-----|-----|------|-----|------|-----|-----|-----|-----|
| Frame size | Type | Number of poles | A | AA | AB | AC ¹⁾ | AD | AD' | AG | AG' | AQ | B | BA | BB | BC | BE | C | |
| 315 | 1PQ8 31. | 2 | 560 | 120 | 680 | 710 | 570 | 582 | 474 | 481 | 750 | 630 | 180 | 780 | 195 | 140 | 180 | |
| | | 4, 6, 8 | | | | | | | | | | | | | | | 180 | |
| | | 4, 6, 8 ²⁾ | | | | | | | | | | | | | | | 200 | |
| 355 | 1PQ835. 35. | 2 | 630 | 150 | 780 | 790 | 690 | 697 | 597 | 593 | 850 | 800 | 220 | 980 | 185 | 135 | 200 | |
| | | 4, 6, 8 | | | | | | | | | | | | | | | 200 | |
| | | 2, 4 | | | | | | | | | | | | | | | 100 | |
| | 1PQ8357 | 2, 4 | | | | | 829 | 875 | 739 | 745 | | | | | | 100 | 200 | |
| | 1PQ835. | 4, 6, 8 ²⁾ | | | | | 670 | 697 | 597 | 593 | | | | | | | 135 | 224 |
| 400 | 1PQ8 40. | 2 | 710 | 150 | 860 | 880 | 865 | 925 | 775 | 795 | 950 | 900 | 220 | 1080 | 186 | 100 | 224 | |
| | 4, 6, 8 | 224 | | | | | | | | | | | | | | | | |
| 450 | 1PQ8 45. | 2 ³⁾ | 800 | 180 | 980 | 970 | 900 | 980 | 810 | 845 | 950 | 1000 | 260 | 1220 | 170 | 100 | 250 | |
| | | 4, 6, 8 | | | | | | | | | | | | | | | 250 | |

¹⁾ Measured across the bolt heads (not in the flattened area of the fan cowl).

²⁾ With bearings for increased cantilever forces.

³⁾ Only at 50 Hz.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

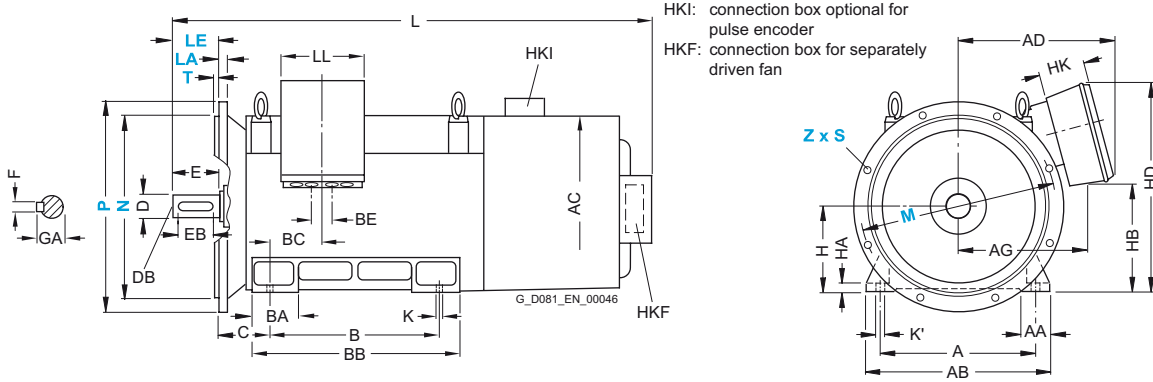
Dimensions

Dimensional drawings

Cast-iron series 1PQ8, frame sizes 315 to 450

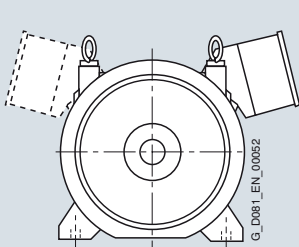
Type of construction IM B35

For flange dimensions, see Page 3/70 (Z = the number of retaining holes)

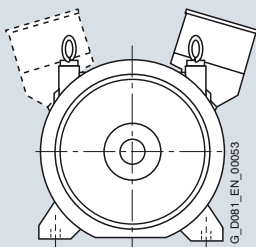


Connection box position

Special versions



Cable entry: DE / NDE
 Console: 0 degrees
 Order code: K83/K84



Cable entry: DE / NDE
 Console: 180 degrees
 Order code: plain text

| For motor | | Dimension designation acc. to IEC | | | | | | | | | | | | | | DE shaft extension | | | | |
|------------|----------|-----------------------------------|-----|----|-----|-----|-----|------|-----|----|----|------|------|------|-----|--------------------|-----|-----|-----|------|
| Frame size | Type | Number of poles | H | HA | HB | HB' | HC | HD | HK | K | K' | L | LL | LM | D | DB | E | EB | F | GA |
| 315 | 1PQ8 31. | 2 | 315 | 28 | 404 | 217 | 162 | 783 | 170 | 26 | 33 | 1742 | 308 | 1765 | 65 | M20 | 140 | 125 | 18 | 69 |
| | | 4, 6, 8 | | | | | | | | | | | | | 85 | M20 | 170 | 140 | 22 | 90 |
| | | 4, 6, 8 ¹⁾ | | | | | | | | | | | | | 95 | M24 | 170 | 140 | 25 | 100 |
| 355 | 1PQ8 35. | 2 | 355 | 35 | 431 | 290 | 165 | 896 | 229 | 33 | 40 | 1971 | 330 | 2005 | 75 | M20 | 140 | 125 | 20 | 79.5 |
| | | 4, 6, 8 | | | | | | | | | | | | | 95 | M24 | 170 | 140 | 25 | 100 |
| | | 2, 4 | | | | | | | | | | | | | 554 | | | | | |
| | 1PQ8 357 | 2, 4 | | | 359 | 395 | 175 | 945 | 320 | | | | | | | | | | | |
| | 1PQ8 35. | 4, 6, 8 ¹⁾ | | | | | | | | | | 2065 | 2099 | 100 | M24 | 210 | 180 | 28 | 106 | |
| 400 | 1PQ8 40. | 2 | 400 | 35 | 440 | 400 | 175 | 1025 | 320 | 33 | 40 | 2148 | 554 | 2182 | 80 | M20 | 170 | 140 | 22 | 85 |
| | | 4, 6, 8 | | | | | | | | | | | | | 110 | M24 | 210 | 180 | 28 | 116 |
| 450 | 1PQ8 45. | 2 ²⁾ | 450 | 42 | 525 | 400 | 175 | 1111 | 320 | 39 | 47 | 2308 | 554 | 2340 | 90 | M24 | 170 | 140 | 25 | 95 |
| | | 4, 6, 8 | | | | | | | | | | | | | 120 | | 210 | 180 | 32 | 127 |

1) With bearings for increased cantilever forces.
 2) Only at 50 Hz.

IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

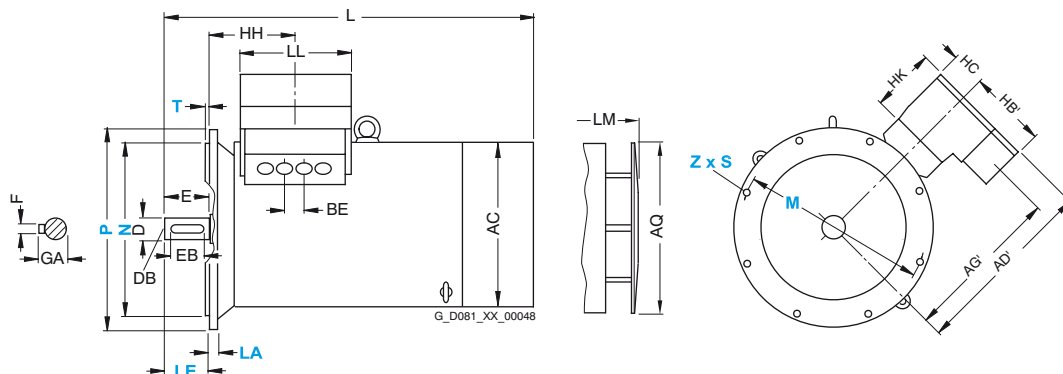
Dimensions

Dimensional drawings

Cast-iron series 1LL8, frame sizes 315 to 450

Type of construction IM V1

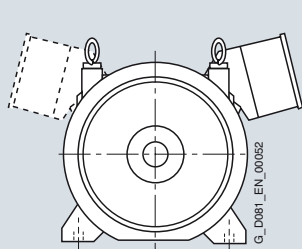
For flange dimensions, see Page 3/70 (Z = the number of retaining holes)



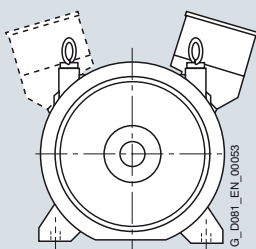
3

Connection box position

Special versions



Cable entry: DE / NDE
Console: 0 degrees
Order code: K83/K84



Cable entry: DE / NDE
Console: 180 degrees
Order code: plain text

| For motor | | Dimension designation acc. to IEC | | | | | | | | | | | | | | DE shaft extension | | | | |
|------------|----------|-----------------------------------|-----|----|-----|-----|------|-----|----|----|------|------|-----|------|-----|--------------------|-----|-----|----|------|
| Frame size | Type | Number of poles | H | HA | HB | HB' | HD | HK | K | K' | L | LC | LL | LM | D | DB | E | EB | F | GA |
| 315 | 1LL8 31. | 2 | 315 | 28 | 363 | – | 828 | 229 | 26 | 33 | 1380 | 1495 | 330 | 1510 | 70 | M20 | 140 | 125 | 20 | 74.5 |
| | | 4, 6, 8 | | | | 290 | | | | | | | | | 90 | M24 | 170 | 140 | 25 | 95 |
| 355 | 1LL8 35. | 2 | 355 | 35 | 359 | – | 945 | 320 | 33 | 40 | 1605 | 1750 | 554 | 1775 | 80 | M20 | 170 | 140 | 22 | 85 |
| | | 4, 6, 8 | | | | 400 | | | | | | | | | 110 | M24 | 210 | 180 | 28 | 116 |
| 400 | 1LL8 40. | 2 | 400 | 35 | 439 | – | 1025 | 320 | 33 | 40 | 1793 | 1940 | 554 | 1943 | 85 | M20 | 170 | 140 | 22 | 90 |
| | | 4, 6, 8 | | | | 400 | | | | | | | | | 120 | M24 | 210 | 180 | 32 | 127 |
| 450 | 1LL8 45. | 2 ¹⁾ | 450 | 42 | 525 | – | 1111 | 320 | 39 | 47 | 1953 | 2100 | 554 | 2143 | 90 | M24 | 170 | 140 | 25 | 95 |
| | | 4, 6, 8 | | | | 400 | | | | | | | | | 130 | M24 | 250 | 220 | 32 | 137 |

¹⁾ Only at 50 Hz.

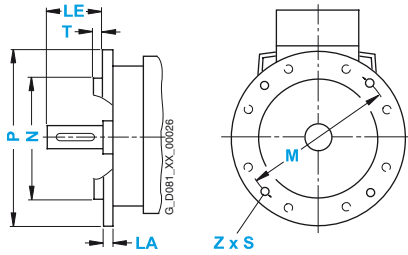
IEC Squirrel-Cage Motors

Non-standard motors frame size 315 and above

Dimensions

Dimensional drawings

Flange dimensions



| Frame size | Type of construction | Flange type | Flange with through holes (FF/A) | | Dimension designation acc. to IEC | | | | | | | |
|--|----------------------|-------------|----------------------------------|-------------------|-----------------------------------|------------|------|------|------|----|---|---|
| | | | According to DIN EN 50347 | Acc. to DIN 42948 | LA | LE | M | N | P | S | T | Z |
| 315 2-pole 4-pole to 8-pole | IM B35, IM V1 | Flange | – | – | 25 | 140 170 | 740 | 680 | 800 | 22 | 6 | 8 |
| 355 2-pole 4-pole to 8-pole | IM B35, IM V1 | Flange | – | – | 25 | 140 170 | 840 | 780 | 900 | 22 | 6 | 8 |
| 400 2-pole 4-pole to 8-pole | IM B35, IM V1 | Flange | – | – | 28 | 170 210 | 940 | 880 | 1000 | 22 | 6 | 8 |
| 450 2-pole 4-pole to 8-pole | IM B35, IM V1 | Flange | – | – | 30 | 170 210 | 1080 | 1000 | 1150 | 26 | 6 | 8 |

Explosion-proof motors



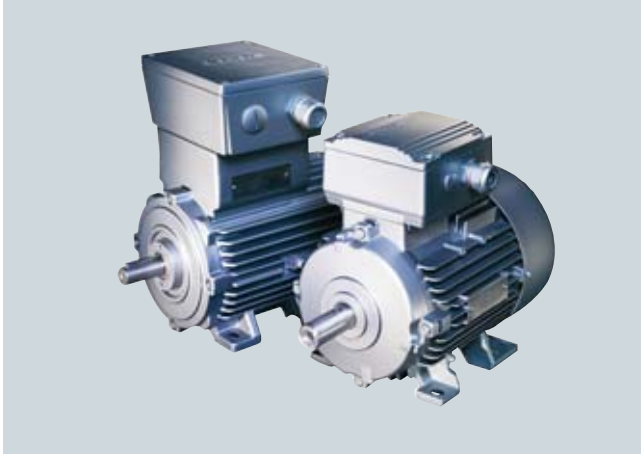
| | | | |
|------|--|-------|--|
| 4/2 | Orientation | 4/70 | Self-ventilated motors in Zones 2, 21, 22 with type of protection “n” or protection against dust explosions |
| 4/2 | Overview | 4/70 | Cast-iron series 1LG6 |
| 4/3 | Benefits | 4/70 | Selection and ordering data |
| 4/3 | Application | 4/80 | Self-ventilated motors in Zones 2, 22 with type of protection “n” or protection against dust explosions |
| 4/3 | Technical specifications | 4/80 | Cast-iron series 1LA8 |
| 4/11 | Selection and ordering data | 4/80 | Selection and ordering data |
| 4/13 | More information | 4/80 | Forced-air cooled motors in Zones 2, 22 with type of protection “n” or protection against dust explosions |
| 4/18 | Self-ventilated motors in Zone 1 with type of protection “e” | 4/80 | Cast-iron series 1PQ8 |
| | Aluminum series 1MA7 | 4/81 | Special versions |
| 4/18 | Selection and ordering data | 4/81 | Overview |
| 4/22 | Self-ventilated motors in Zone 1 with type of protection “e” | 4/84 | Selection and ordering data |
| | Cast-iron series 1MA6 | 4/84 | • Voltages |
| 4/22 | Selection and ordering data | 4/90 | • Types of construction |
| 4/34 | Self-ventilated motors in Zone 1 with type of protection “de” | 4/93 | • Options |
| | Cast-iron series 1MJ6 and 1MJ7 | 4/125 | Accessories |
| 4/34 | Selection and ordering data | 4/125 | Overview |
| 4/42 | Self-ventilated motors in Zones 2, 21, 22 with type of protection “n” or protection against dust explosions | 4/126 | More information |
| | Aluminum series 1LA7 and 1LA5 | 4/127 | Dimensions |
| 4/42 | Selection and ordering data | 4/127 | Overview |
| 4/50 | Self-ventilated motors in Zones 2, 21, 22 with type of protection “n” or protection against dust explosions | 4/129 | More information |
| | Aluminum series 1LA9 | 4/130 | Dimensional drawings |
| 4/50 | Selection and ordering data | | |
| 4/62 | Self-ventilated motors in Zones 2, 21, 22 with type of protection “n” or protection against dust explosions | | |
| | Cast-iron series 1LA6 and 1LG4 | | |
| 4/62 | Selection and ordering data | | |

IEC Squirrel-Cage Motors

Explosion-proof motors

Orientation

Overview



Explosion-protected equipment are designed such that an explosion can be prevented when they are used properly.

The explosion-protected equipment can be designed in accordance with various types of protection.

The **local** conditions must be subdivided into specified zones by the user with the assistance of the responsible authorities in accordance with the frequency of occurrence of an explosion hazard. Device (equipment) categories are assigned to these zones. The zones are then subdivided into possible types of protection and therefore into possible equipment (product) types.

Our product range contains motors in the following types of protection:

- “Increased safety” Ex e II
- “Explosion-proof enclosure” Ex de IIC/Ex d IIC
- “Non-sparking” Ex nA II
- “Areas protected against dust explosions in Zones 21 and 22”

The table below “Overview of explosion-proof motors” contains a complete overview of our products, their types of protection and the assignment of motor types to categories. It is important to note that depending on whether the motor is used for converter-fed operation or mains-fed operation, different order codes are required for unique selection of the required product.

In many industrial sectors as well as in domestic life, explosion protection or explosion hazards are ever-present, e.g. in the chemicals industry, in refineries, on drilling platforms, at petrol stations, in feed manufacturing and in sewage treatment plants.

The risk of explosion is always present when gases, fumes, mist or dust are mixed with oxygen in the air in an explosive ratio close to sources of ignition that are able to release the so-called minimum ignition energy.

Overview of explosion-proof motors

| Section | Category | Zone | Frequency of occurrence of the Ex atmosphere | Degree of protection | Temperature class | Degree of protection | Standard | Motor type (Pos. 1-4 of Order No.) | Operation | Order code | Utilization according to temperature class |
|--|----------|-------------------|--|---|-----------------------------------|----------------------|---|------------------------------------|-----------|------------|--|
| Gas and Fumes (G) | 1G | 0 | Continuously or long-term | Not common practice with low-voltage motors | | | | | | | |
| | 2G | 1 | Infrequently | Ex de IIC ¹⁾ (explosion-proof enclosure) | T1 – T4 | IP55 | IEC/EN 60 079-0 IEC/EN 60 079-1 | 1MJ6/7 | Mains | – | 130 (B) |
| | | | | Ex e II (increased safety) | T1 – T3 | IP55 | IEC/EN 60 079-0 IEC/EN 60 079-7 | 1MA6 1MA7 | Mains | – | 130 (B)/ 155 (F) |
| | 3G | 2 | Rarely or briefly | Ex nA II (non sparking) | T1 – T3 | IP55 | IEC/EN 60079-15 | 1LA6 | Mains | M72 | 130 (B) |
| 1LA7 1LA8, 1PQ8 ²⁾ 1LA9 1LG4/6 | | | | | | | | Converter | M73 | | |
| Dust (D) | 1D | 20 | Continuously or long-term | Not common practice with low-voltage motors | | | | | | | |
| | 2D | 21 | Infrequently | Conductive and non-conductive dust | Max. housing temperature T 125 °C | IP65 | IEC/EN 61241 | 1LA5 | Mains | M34 | 130 (B) |
| | | | | | | | | 1LA6 1LA7 | Converter | M38 | |
| 3D | 22 | Rarely or briefly | Non-conductive dust | | IP55 | | 1LA8 ³⁾ , 1PQ8 ²⁾ 1LA9 1LG4/6 | Mains | M35 | | |
| | | | | | | | | | Converter | M39 | |

¹⁾ Highest explosion group IIC includes IIB and IIA.

²⁾ 1PQ8 is not possible for Zones 21 and 22; Zone 2 for 1PQ8 available on request. Utilization according to temperature class 155 (F).

³⁾ 1LA8 only available for Zone 22 (order codes M35, M39). Utilization according to temperature class 155 (F).

Benefits

The explosion-proof motors from Siemens offer the user numerous advantages:

- The motors are designed in accordance with Directive 94/9/EU (ATEX 95 previously ATEX 100a). As product supplier, Siemens accepts responsibility for compliance with the applicable product standards for the selected equipment.
- By using this product, the plant operating company satisfies Directive 1999/92/EU in accordance with Appendix II B (ATEX 137 previously ATEX 118a). The plant manufacturer or plant operating company is responsible for correct selection and proper usage of the equipment.

- Comprehensive series of explosion-proof motors for protection against gas and dust.
- Individual versions of motors are possible thanks to the numerous catalog options.
- Further special versions are possible on request.
- Certificates are available for a defined spectrum of Siemens motors/converters.

Application

The explosion-proof motors are used in the following sectors to prevent explosion hazards that result in serious injury to persons and severe damage to property.

- Chemical and petrochemical industry
- Production of mineral oil and gas
- Gas works
- Gas supply companies
- Petrol stations
- Coking plants
- Mills (e.g. corn, solids)
- Sewage treatment plants
- Wood processing (e.g. sawdust, tree resin)
- Other industries subject to explosion hazards

Technical specifications

Zone 1 with type of protection Ex e II Increased Safety "e"

All 1MA motors are certified in type of protection Ex e II for temperature classes T1 to T3 at an ambient temperature from -20 to +40 °C and have an EU type test certificate according to Directive 94/9/EG (ATEX 95). Higher temperature classes are available on request.

Explosion protection is achieved when the certified motor versions interact with a similarly certified motor protection switch. The motor protection switch is selected in accordance with the values certified for the motor for the starting current ratio I_{LR}/I_{rated} and the t_E times, so that in the case of a locked rotor fault, the motor is isolated from the supply within the t_E time. The t_E times assigned to the separate temperature classes and the starting current ratio are marked on the rating plate.

Explosion protection can be achieved exclusively by the PTC thermistors embedded in the winding provided that the motor has been specially approved and certified for this. This type of protection is not technically possible for every motor, so it is essential to inquire before ordering.

With the exception of 2-pole motors of frame size 225 M and above, all motors are of an identical version, i.e. the motors can be operated at T1/T2 or T3 at the appropriate rated output. For special versions (different frequency, output, coolant temperature, site altitude, etc.) a new certificate is necessary (please inquire). The temperature class must be specified in the order, otherwise the universal version T1/T2 and T3 will be certified (doubling the certification costs).

Identification on the rating plate:

 II 2G Ex e II T1 – T3

Zone 1 with type of protection Ex de IIC explosion-proof enclosure "d"

All 1MJ motors are certified for the highest explosion group IIC, temperature classes T1 to T4 at ambient temperatures from -20 to +60 °C and have an EC type test certificate according to Directive 94/9/EG (ATEX 95).

These motors are designed such that an explosion within the housing cannot result in an explosion in the environment. The energy that is generated internally by an explosion is dissipated in the so-called "flameproof chamber" so far that the energy is no longer sufficient for ignition outside the casing. The housing temperature is below the ignition temperature of the gases to which temperature class T4 applies.



The 1MJ6 motors (frame sizes 71 to 200) generally have a located bearing on the non-drive-end (NDE) of the motor.

The following variations are possible on request:

- Coolant temperature >40 °C or site altitude >1000 m (for 1MJ6, the reduction factors listed in catalog part 0 "Introduction" under "General technical data", "Coolant temperature and site altitude" are applicable).
- Frequency and rated duty
- Pole-changing motors
- Insulated bearing at the non-drive-end (NDE)
- Use according to temperature class 155 (F) in mains-fed operation

On the frequency converter, motors in type of protection "explosion-proof enclosure" can be used thermally acc. to temperature class 155 (F). Converter-fed operation can be ordered with order code **A15** (PTC thermistors for tripping) or **A16** (PTC thermistors for alarm and tripping), whereby an additional PTC thermistor is fitted to 1MJ6/1MJ7 motors in the connection box.

Identification on the rating plate:

 II 2G Ex de IIC T1 – T4
or
 II 2G Ex d IIC T1 – T4

IEC Squirrel-Cage Motors

Explosion-proof motors

Orientation

Technical specifications (continued)

Zone 2 with type of protection Ex nA (non-sparking)

- Zone 2 acc. to IEC/EN 60079-15
The duty types are:
 - Design for Zone 2 for mains-fed operation (order code **M72**)
 - Design for Zone 2 for mains-fed operation, with derating (order code **M73**)

1LA/1LG motors are modified for this purpose in the "Non-sparking" design and are suitable for use in hazardous areas of Zone 2 for temperature classes T1 to T3. The maximum surface temperature that can occur during operation must lie below the limit temperature of the respective temperature class. The ventilation system must be in accordance with IEC/EN 60079-0. An external earthing terminal is fitted to the motors. The connection box is similar to the EExe design.


Please inquire in the case of

- Use in accordance with temperature class 155 (F)
- For pole-changing versions

For motors in the "Non-sparking" version, a conformity declaration is available from a recognized testing authority.

Ambient temperature -20 to $+60$ °C, whereby derating applies from 40 °C upwards. Other temperatures are available on request.

The rating plate or the extra rating plate contains the text:

 II 3G Ex nA II T3

IEC/EN 60079-15 and number of the "Conformity declaration"

The motors do not have a rated voltage range stamped on the rating plate.

Protection against dust explosions in Zones 21 and 22

The distinction between Zones 21 and 22 is as follows:

- Zone 21 according to IEC 61241, EN 50281¹⁾
 - Design for Zone 21²⁾, as well as Zone 22 for conducting dust (IP65) for mains-fed operation (order code **M34**)
 - Design for Zone 21²⁾, as well as Zone 22 for conducting dust (IP65) for converter-fed operation, derating (order code **M38**)

- Zone 22 according to IEC 61241, EN 50281
 - Design for Zone 22 for non-conducting dust (IP55) for mains-fed operation (order code **M35**)
 - Design for Zone 22 for non-conducting dust (IP55) for converter-fed operation, derating (order code **M39**)

The 1LA/1LG motors are modified for this purpose for use in zones subject to dust explosion hazards. The surface temperature is ≤ 125 °C at rated duty.


An external earthing terminal and a metal external fan are fitted to the motors. In the design for Zone 21, the connection box is similar to the Exe design.

Pole-changing versions are not possible for Zone 21 – they are possible for Zone 22 on request.

Certification:

- Zone 21: EC type-test certificate (ATEX), issued by the DMT testing authority (Deutsche Montan-Technologie) and EC declaration of conformity.
- Zone 22: EC declaration of conformity

Identification on the rating plate:

Zone 21:  II 2D Ex tD A21 IP65 T125 °C

Zone 22:  II 3D Ex tD A22 IP55 T125 °C

Ambient temperature -20 °C to $+60$ °C, whereby derating applies from 40 °C upwards. Other temperatures are available on request.

Generally, the following is valid:

All Ex motors in vertical type of construction with shaft extension pointing down must have a protective cover.

Ex motors cannot be designed in accordance with UL and CSA.

The certificates for the motors for hazardous areas are stored with the documentation in the SD configurator tool for low-voltage motors.

For converter-fed operation, Ex motors must always be monitored using PTC thermistors. Certified tripping units are required for this purpose, see Catalog LV1.

Comprehensive operating instructions and the declaration of conformity are supplied with Ex motors.

In the case of non-standard 1LA8 and 1PQ8 motors, the bearing temperature must be monitored (order code **A72**).

Overview of the technical specifications

Explosion-proof motors - The technology at a glance

| Motors | Type of protection "e" | Type of protection "d" | Type of protection "n" | Dust explosion protection |
|----------------------|--|--|--|---|
| Frame size | 63 M ... 315 L | 71 M ... 315 M | 63 M ... 450 | 56 M ... 450 L |
| Output range | 0.12 to 160 kW | 0.25 ... 132 kW | 0.09 to 1000 kW | 0.06 to 1000 kW |
| Number of poles | 2/4/6 | 2/4/6/8 | 2/4/6/8 | 2/4/6/8 |
| Temperature class | T1 - T3 | T1 - T4 | T3 | - |
| Degree of protection | II 2 G Ex e II acc. to IEC/EN 60079-0 IEC/EN 60079-7 | II 2 G Ex de II acc. to IEC/EN 60079-0 IEC/EN 60079-1 | II 3 G Ex nA acc. to IEC/EN 60079-15 | Zone 21: II 2D Ex td A21 IP65 T125 °C ³⁾ Zone 22: II 3D Ex td A22 IP55 T125 °C acc. to EN 50281/IEC 61241 |
| Directive | 94/9/EG, ATEX 95 | 94/9/EG, ATEX 95 | 94/9/EG, ATEX 95 | 94/9/EG, ATEX 95 |
| Protection class | IP55 | IP55 | IP55 | Zone 21: IP65 Zone 22: IP55 |
| Voltages | All commonly used voltages | All commonly used voltages | All commonly used voltages | All commonly used voltages |
| Frequency | 50 and 60 Hz | 50 and 60 Hz | 50 and 60 Hz | 50 and 60 Hz |
| Type of construction | All common types of construction | All common types of construction | All common types of construction | All common types of construction |
| Housing | FS 63 M ... 160 L aluminum FS 100 L ... 315 L cast-iron | FS 71 M ... 315 M cast-iron | FS 63 M ... 160 L aluminum FS 100 L ... 450 cast-iron | FS 56 M ... 225 M aluminum FS 100 L ... 450 ¹⁾ cast-iron |
| Cooling method | Surface-cooled | Surface-cooled | Surface-cooled | Surface-cooled |
| Temperature class | 155 (F) used acc. to 130 (B) | 155 (F) used acc. to 130 (B) ⁴⁾ | 155 (F) used acc. to 130 (B) | 155 (F) used acc. to 130 (B) ⁵⁾ |
| Insulation system | DURIGNIT IR 2000 | DURIGNIT IR 2000, converter-compatible up to 500 V, 690 V on request | DURIGNIT IR 2000, converter-compatible up to 500 V, 690 V on request | DURIGNIT IR 2000, converter-compatible up to 500 V, 690 V on request |

¹⁾ Zone 21 only up to frame size 315 L

²⁾ Zone 21 takes into account conducting and non-conducting dust

³⁾ Zone 21 for "Non-standard motors frame size 315 and above" only up to frame size 315 possible.

⁴⁾ For converter-fed operation used 155 (F)

⁵⁾ For "Non-standard motors frame size 315 and above" temperature class 155 (F) used according to 155 (F).

Technical specifications (continued)

Coolant temperature and site altitude

Coolant temperature -40 °C to $+40\text{ °C}$ for Ex motor

For all 1LA5, 1LA6, 1LA7, 1LA9 motors (with the exception of 1LA9 with increased output), 1LG4, 1LG6, 1MA6, 1MA7 frame sizes 56 to 315 with the respective types of protection Ex e, Ex nA or dust-Ex (Zone 21/22), the operating ambient temperature can optionally be expanded up to -40 °C . Technical measures are required for this purpose (e.g. metal external fan).
Order **D19**

The order code **D19** is not possible in combination with order code **L03** "Vibration-proof version".

The mechanical limit speed of the 2-pole motors 1LA5/1LA9 in design for Zone 21/22 is reduced from frame size 180 as compared to the values in catalog part 5 "Motors operating with frequency converters":

| Frame size | Motor type | 2-pole | |
|------------|------------|-------------------|------------------|
| | | n_{\max} rpm | f_{\max} Hz |
| 180 | 1LA5/1LA9 | 3300 | 55 |
| 200 | | 3100 | 51 |
| 225 | | 3000 | 50 |

With converter-fed operation and operation on 60 Hz supplies, particular attention has to be paid to the mechanical limit speeds – 60 Hz data are not stamped on the rating plate.
Alternative: 1LG4/1LG6 motors in design for Zone 21/22.

Special technology

The "Special technology" comprises Ex-mountings on explosion-proof motors.

The field of application of explosion-proof motors is considerably expanded by mounting Ex rotary pulse encoders or Ex separately driven fans.

The use of a separately driven fan is recommended to increase motor utilization at low speeds and to limit noise generation at speeds significantly higher than the synchronous speed.

Both of these results can only be achieved with converter-fed operation.

For explosion-proof motor versions with Ex rotary pulse encoder or Ex separately driven fan, see tables below.

The following explosion-proof motor versions are available with an Ex rotary pulse encoder:

| Type of protection | Order No. + order code | Frame size | Order code of the Ex rotary pulse encoder |
|----------------------------|------------------------|-----------------|---|
| Ex nA | 1LA6/7/9... + M73 | 100 L ... 160 L | H86: Mounting of explosion-proof rotary pulse encoder – LL841 900 006 – for use in Zones 2, 21, 22. |
| | 1LG4/6... + M73 | 180 M ... 315 L | |
| Dust-Ex (Zone 21) | 1LA6/7... + M38 | 100 L ... 160 L | |
| | 1LA5... + M38 | 180 M ... 225 M | |
| | 1LA9... + M38 | 100 L ... 200 L | |
| | 1LG4/6... + M38 | 180 M ... 315 L | |
| Dust-Ex (Zone 22) | 1LA6/7... + M39 | 100 L ... 160 L | |
| | 1LA5... + M39 | 180 M ... 225 M | |
| | 1LA9... + M39 | 100 L ... 200 L | |
| | 1LG4/6... + M39 | 180 M ... 315 L | |
| Ex nA or dust-Ex (Zone 22) | 1LA6/7/9... + M75 | 100 L ... 160 L | |
| | 1LG4/6... + M75 | 180 M ... 315 L | |
| Ex de | 1MJ6... + A15/A16 | 90 L ... 200 L | H87: Mounting of explosion-proof rotary pulse encoder on motors Ex d/de in Zone 1. • Ex OG 9 DN 1024 I (BG 90L – 160L) • Ex HOG 161 DN 1024I (BG 180M – 315L) |
| | 1MJ7... + A15/A16 | 225 M ... 315 M | |

The following explosion-proof motor versions are available with an Ex separately driven fan:

| Type of protection | Order No. + order code | Frame size | Order code of the Ex separately driven fan |
|--------------------|------------------------|-----------------|---|
| Ex nA | 1LG4/6 + M73 | 225 M ... 315 L | M95: "Mounting of explosion-proof separately driven fan Ex nA for use in Zone 2". |
| Dust-Ex (Zone 21) | 1LG4/6 + M38 | 225 M ... 315 L | M96: "Mounting of explosion-proof separately driven fan II 2D for use in Zone 21". |
| Dust-Ex (Zone 22) | 1LG4/6 + M39 | 180 M ... 315 L | M97: "Mounting of explosion-proof separately driven fan II 3D for use in Zone 22". |
| | 1LA6/7 + M39 | 100 L ... 160 L | |
| | 1LA5 + M39 | 180 M ... 225 M | |
| | 1LA9 + M39 | 100 L ... 200 L | |
| Ex de | 1MJ7 + A15/A16 | 225 M ... 315 M | M98: "Mounting of explosion-proof separately driven fan Ex de for use in Zone 1". |

Note: Notwithstanding, Ex separately driven fans can also be used for mains-fed operation in special applications.

IEC Squirrel-Cage Motors

Explosion-proof motors

Orientation

Technical specifications (continued)

Ex rotary pulse encoder

The rotary pulse encoder can only be mounted on a standard non-drive end (NDE), i.e. a second shaft extension or protective cover cannot be supplied. Therefore, the user must implement a suitable cover for vertical mounting positions to prevent small parts from falling into the fan cover (see also standard IEC//EN 60079-0).

Ex rotary pulse encoders do not have insulated bearings due to their construction (request required!).

The degree of protection of the rotary pulse encoder must be observed. The relevant data are stamped on the rating plate of the rotary pulse encoder.

When an Ex rotary pulse encoder is mounted, the length of the motor increases by Δl . For an explanation of the additional dimensions and weights, see "Dimensions and weights".

LL 841 900 006 rotary pulse encoder

With its rugged construction, this rotary pulse encoder is also suitable for difficult operating environments. It is resistant to shock and vibration.

The LL 841 900 006 rotary pulse encoder for use in Zones 2, 21, 22 can be supplied with the already mounted ADS diagnostic system for an early error detection in the encoder.

Order code **H86**

Manufacturer:

Leine und Linde (Germany) GmbH

Bahnhofstraße 36

73430 Aalen

Tel. +49 (0)73 61-78093-0

Fax +49 (0)73 61-78093-11

<http://www.leinelinde.com>

e-Mail: info@leinelinde.se

Technical data for LL 841 900 006 (HTL version)

Mounting of encoder for use below -20 °C and higher than $+40\text{ °C}$ on request.

| Supply voltage U_B | +9 V to +30 V |
|--------------------------------------|---|
| Current input without load | max. 80 mA |
| Admissible load current per output | 40 mA |
| Pulses per revolution | 1024 |
| Outputs | 6 short-circuit proof square-wave pulses A, A', B, B', 0, 0' High Current HTL Isolated switching output for ADS signal |
| Pulse offset between the two outputs | $90^\circ \pm 25^\circ$ el. |
| Output amplitude | $U_{High} > U_B - 4\text{ V}$ $U_{Low} < 2.5\text{ V}$ |
| Mark space ratio | 1:1 $\pm 10\%$ |
| Edge steepness | 50 V/ μ s (without load) |
| Maximum frequency | 100 kHz for 350 m cable |
| Maximum speed | 4200 rpm |
| Temperature range | -40 to $+70\text{ °C}$ |
| Degree of protection | IP65 |
| Max. adm. radial cantilever force | 150 N |
| Max. adm. axial force | 100 N |
| Termination system | Terminal strips in encoder, Cable connection M20 x 1.5 radial |

Ex OG9 DN 1024 I rotary pulse encoder

The Ex OG9 DN 1024 I rotary pulse encoder for use on Ex d/de motors in Zone 1 (frame sizes 90 to 160) can be supplied already mounted.

Order code **H87**

Manufacturer:

Baumer Hübner GmbH

Planufer 92b

10967 Berlin

Tel. +49 (0)30-6 90 03-0

Fax +49 (0)30-6 90 03-1 04

<http://www.baumerhuebner.com>

e-Mail: info@baumerhuebner.com

Technical data for Ex OG9 DN 1024 I rotary pulse encoder (HTL version)

Mounting of encoder for use below -20 °C and higher than $+40\text{ °C}$ on request.

| Supply voltage U_B | +9 V to +30 V |
|--|--|
| Current input without load | Approx. 90 mA |
| Admissible load current per output | 60 mA, 300 mA peak |
| Pulses per revolution | 1024 |
| Outputs | 6 short-circuit proof square-wave pulses A, B and A', B' and R, R' |
| Pulse offset between the two outputs | $90^\circ \pm 20\%$ |
| Output amplitude | $U_{High} \geq U_B - 3.5\text{ V}$ $U_{Low} \leq 1.5\text{ V}$ |
| Mark space ratio | 1:1 $\pm 20\%$ |
| Edge steepness | 10 V/ μ s |
| Maximum frequency | 120 kHz |
| Maximum speed | 7000 rpm |
| Temperature range | -20 to $+55\text{ °C}$ |
| Degree of protection | IP56 |
| Max. adm. radial cantilever force | 350 N |
| Max. adm. axial force | 200 N |
| Termination system | Terminals with increased safety e, Cable connection M20 x 1.5 |
| Mech. design acc. to Hübner Ident. No. | 73 775 B |
| Weight | Approx. 3.5 kg |

Technical specifications (continued)

Ex HOG 161 DN 1024 I rotary pulse encoder

With its rugged construction, this rotary pulse encoder is also suitable for difficult operating environments.

The HOG10 DN 1024 I rotary pulse encoder for use on Ex d/de motors in Zone 1 (frame sizes 180 to 315) can be supplied already mounted.

Order code **H87**

Manufacturer:
Baumer Hübner GmbH
Planufer 92b
10967 Berlin
Tel. +49 (0)30-6 90 03-0
Fax +49 (0)30-6 90 03-1 04

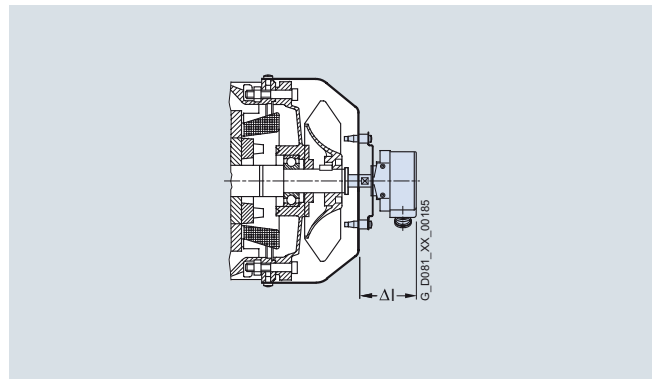
<http://www.baumerhuebner.com>
e-Mail: info@baumerhuebner.com

Technical data for HOG10 DN 1024 I (HTL version)

Mounting of encoder for use below -20 °C and higher than +40 °C on request.

| Supply voltage U_B | +9 V to +30 V |
|--|---|
| Current input without load | Approx. 100 mA |
| Admissible load current per output | 60 mA, 300 mA peak |
| Pulses per revolution | 1024 |
| Outputs | 64 short-circuit proof square-wave pulses A, B and A', B' and R, R' |
| Pulse offset between the two outputs | 90° ±20 % |
| Output amplitude | $U_{High} = U_B - 3.5 V$ $U_{Low} = 1.5 V$ |
| Mark space ratio | 1:1 ±20 % |
| Edge steepness | 10 V/μs |
| Maximum frequency | 120 kHz |
| Maximum speed | 5600 rpm |
| Temperature range | -20 to +65 °C |
| Degree of protection | IP56 |
| Max. adm. radial cantilever force | 650 N |
| Max. admissible axial force | 450 N |
| Termination system | Terminals with increased safety e, Cable connection M20 x 1.5 |
| Mech. design acc. to Hübner Ident. No. | 74 140 A |
| Weight | Approx. 8.8 kg |

Dimensions and weights of the rotary pulse encoders



Ex rotary pulse encoder (on cover), order codes **H86, H87**

| Frame size | Ex d/de (Zone 1) | | Ex nA (Zone 2) and dust-Ex (Zone 21/22) | | | |
|------------|------------------|------------|---|----------------|-----|----------------|
| | 1MJ6/7 | 1LA5/6/7/9 | 1LG4/6 | Weight approx. | ΔI | Weight approx. |
| | mm | kg | mm | kg | mm | kg |
| 90 | 184 | 14.0 | – | – | – | – |
| 100 | 188 | 14.5 | 110 | 2.0 | – | – |
| 112 | 190 | 14.5 | 110 | 2.0 | – | – |
| 132 | 186 | 16.5 | 110 | 2.0 | – | – |
| 160 | 183 | 17.5 | 110 | 2.0 | – | – |
| 180 | 164 | 9.0 | 110 | 2.0 | 100 | 3 |
| 200 | 164 | 9.0 | 110 | 2.0 | 100 | 3 |
| 225 | 160 | 12 | 110 | 2.0 | 100 | 3 |
| 250 | 160 | 12 | – | – | 100 | 3 |
| 280 | 160 | 12 | – | – | 100 | 3 |
| 315 | 160 | 12 | – | – | 100 | 3 |

The 1MJ6 motors of frame sizes 90 to 160 feature the rugged, flanged Ex OG9 rotary pulse encoder, which provides a high mechanical protection itself.

A protective cover of non-corrosive sheet steel is available for Ex rotary pulse encoders from the "Special technology" section, see "Mechanical protection for encoder" under "Mechanical design and degrees of protection".

Order code **M68**

Consequently, the motor length also increases:

- 1LA up to 146 mm
- 1MJ6 up to 175 mm
- 1LG/1MJ7 up to 25 mm

IEC Squirrel-Cage Motors

Explosion-proof motors

Orientation

Technical specifications (continued)

Ex separately driven fan

The use of a separately driven fan is recommended to increase motor utilization at low speeds and to limit noise generation at speeds significantly higher than the synchronous speed. Both of these results can only be achieved with converter-fed operation. Please inquire about traction and vibratory operation.

The separately driven fan can be supplied already mounted for the following zones:

- Mounting of explosion-proof separately driven fan Ex de for use in Zone 1
Order code **M98**
- Mounting of explosion-proof separately driven fan Ex nA for use in Zone 2
Order code **M95**
- Mounting of explosion-proof separately driven fan II 2D for use in Zone 21
Order code **M96**
- Mounting of explosion-proof separately driven fan II 3D for use in Zone 22
Order code **M97**

The supply voltage of the Ex separately driven fan motors is defined as follows:

Type 2CW2 has voltage windings for wide range voltages (see subsequently "Technical data of separately driven fan for Ex motors 1LA5/6/7/9, 1LG4/6 (frame sizes 180 and 200) in design for Zone 22").

The separately driven fan motors 1LA/1MJ have a rated voltage (rated voltage range) with tolerances in accordance with EC/EN 60034-1, Categories A and B.

A rating plate with the operating data is applied to the Ex separately driven fan motors.

The type of protection of the Ex separately driven fan motor corresponds with the type of protection of the assigned Ex basic motor (note order codes for the appropriate zone).

Please note the direction of rotation of the separately driven fan (axial-flow fan) when connecting it.

Coolant temperatures deviating from -20 to $+40$ °C on request.

The Ex separately driven fan has degree of protection IP55 as standard (higher degrees of protection on request).

Motors with separately driven fans must use a PTC thermistor as motor protection. The Ex motor versions for converter-fed operation (order codes: M73, M38, M39, M75, M77, A15, A16) already have PTC thermistors for tripping. The PTC thermistor must safely shut down the motor if the separately driven fan is defective.

For selection information and order numbers, see the tables "Technical data of separately driven fan for Ex motors ..." on the following pages. A rating plate listing all the important data is fitted to the separately driven fan. For supply voltages outside the rated voltage range for 1LA motors, order code **Y81** and plain text required. Please note the direction of rotation of the separately driven fan (axial-flow fan) when connecting it. Admissible coolant temperatures are CT_{min} -20 °C or CT_{max} $+40$ °C. Lower coolant temperatures on request.

When the separately driven fan is mounted, the length of the motor increases by Δl . For an explanation of the additional dimensions and weights, see "Technology", "Dimensions and weights".

Technical data of separately driven fan for Ex motors 1LA5/6/7/9, 1LG4/6 (frame sizes 180 and 200) in design for Zone 22

| Frame size | Designation on rating plate of separately driven fan | Rated voltage range | | Frequency | Rated speed | Power consumption | Rated current |
|--------------------------|--|---------------------|---------------------|-----------|-------------|-------------------|---------------|
| | | | V | Hz | rpm | kW | A |
| 100 | 2CW2 180-8RF54-1AC0 | 1 AC | 230 to 277 | 50 | 2790 | 0.075 | 0.29 |
| | | 3 AC | 220 to 290 Δ | 50 | 2830 | 0.086 | 0.27 |
| | | 3 AC | 380 to 500 Y | 50 | 2830 | 0.086 | 0.16 |
| | | 1 AC | 230 to 277 | 60 | 3280 | 0.094 | 0.28 |
| | | 3 AC | 220 to 332 Δ | 60 | 3490 | 0.093 | 0.27 |
| | | 3 AC | 380 to 575 Y | 60 | 3490 | 0.093 | 0.16 |
| 112 | 2CW2 180-8RF54-1AC1 | 1 AC | 230 to 277 | 50 | 2720 | 0.073 | 0.26 |
| | | 3 AC | 220 to 290 Δ | 50 | 2770 | 0.085 | 0.27 |
| | | 3 AC | 380 to 500 Y | 50 | 2770 | 0.085 | 0.15 |
| | | 1 AC | 230 to 277 | 60 | 3000 | 0.107 | 0.31 |
| | | 3 AC | 220 to 332 Δ | 60 | 3280 | 0.094 | 0.28 |
| | | 3 AC | 380 to 575 Y | 60 | 3280 | 0.094 | 0.16 |
| 132 | 2CW2 180-8RF54-1AC2 | 1 AC | 230 to 277 | 50 | 2860 | 0.115 | 0.40 |
| | | 3 AC | 220 to 290 Δ | 50 | 2880 | 0.138 | 0.45 |
| | | 3 AC | 380 to 500 Y | 50 | 2880 | 0.138 | 0.24 |
| | | 1 AC | 230 to 277 | 60 | 3380 | 0.185 | 0.59 |
| | | 3 AC | 220 to 332 Δ | 60 | 3470 | 0.148 | 0.41 |
| | | 3 AC | 380 to 575 Y | 60 | 3470 | 0.148 | 0.24 |
| 160 to 225 ¹⁾ | 2CW2 180-8RF54-1AC3 | 1 AC | 230 to 277 | 50 | 2780 | 0.236 | 0.96 |
| | | 3 AC | 220 to 290 Δ | 50 | 2840 | 0.220 | 0.76 |
| | | 3 AC | 380 to 500 Y | 50 | 2830 | 0.220 | 0.43 |
| | | 3 AC | 220 to 332 Δ | 60 | 3400 | 0.284 | 0.94 |
| | | 3 AC | 380 to 575 Y | 60 | 3400 | 0.284 | 0.56 |

¹⁾ Separately driven fans with Order No. **1LA. ...** are used for 1LG motors of frame size 225 and above.

Technical specifications (continued)

Technical data of separately driven fan for Ex motors 1LG4/6 (frame sizes 225 to 315) n design for Zones 2¹⁾, 21, 22

| Frame size | Designation on rating plate of separately driven fan | Rated voltage range | | Frequency | Rated speed | Power consumption | Rated current at rated voltage ²⁾ |
|---------------------|--|---------------------|--------------|-----------|-------------|-------------------|--|
| | | V | | Hz | rpm | kW | A |
| 225 M to 280 M | 1LA7 073-2AA62-Z | 3 AC | 220 to 240 Δ | 50 | 2800 | 0.550 | 1.36 |
| | | 3 AC | 380 to 420 Y | 50 | 2800 | 0.550 | 0.79 |
| | | 3 AC | 440 to 480 Y | 60 | 3400 | 0.630 | 1.32 |
| 315 – 2-pole | 1LA9 073-2LA92-Z | 3 AC | 220 to 240 Δ | 50 | 2780 | 0.700 | 1.73 |
| | | 3 AC | 380 to 420 Y | 50 | 2780 | 0.700 | 1.00 |
| | | 3 AC | 440 to 480 Y | 60 | 3385 | 0.700 | 1.64 |
| 315 – 4, 6, 8 -pole | 1LA7 073-2AA62-Z | 3 AC | 220 to 240 Δ | 50 | 2800 | 0.550 | 1.36 |
| | | 3 AC | 380 to 420 Y | 50 | 2800 | 0.550 | 0.79 |
| | | 3 AC | 440 to 480 Y | 60 | 3400 | 0.630 | 1.32 |

Technical data of separately driven fan for Ex motors 1MJ7 (frame sizes 225 bis 315) in design for Zone 1

| Frame size | Designation on rating plate of separately driven fan | Rated voltage range | | Frequency | Rated speed | Power consumption | Rated current at rated voltage |
|----------------------|--|---------------------|--------------|-----------|-------------|-------------------|--------------------------------|
| | | V | | Hz | rpm | kW | A |
| 225 M to 280 M | 1MJ6 073-2CA92-Z: Data for 50/60 Hz | 3 AC | 220 to 240 Δ | 50 | 2790 | 0.550 | 1.38 |
| | | 3 AC | 380 to 420 Y | 50 | 2790 | 0.550 | 0.8 |
| | | 3 AC | 440 to 480 Y | 60 | 3390 | 0.630 | 1.38 |
| 315 – 2-pole | 1MJ6 073-2CA92-Z: Data for 50/60 Hz | 3 AC | 220 to 240 Δ | 50 | 2790 | 0.550 | 1.38 |
| | | 3 AC | 380 to 420 Y | 50 | 2790 | 0.550 | 0.8 |
| | | 3 AC | 440 to 480 Y | 60 | 3390 | 0.630 | 1.38 |
| 315 – 4-, 6-, 8-pole | 1MJ6 073-2CA92-Z: Data for 50/60 Hz | 3 AC | 220 to 240 Δ | 50 | 2790 | 0.550 | 1.38 |
| | | 3 AC | 380 to 420 Y | 50 | 2790 | 0.550 | 0.8 |
| | | 3 AC | 440 to 480 Y | 60 | 3390 | 0.630 | 1.38 |

¹⁾ There is no rated voltage range for motors for Zone 2.

²⁾ The values are only valid for the medium voltage of the rated voltage; therefore, there is no valid rated voltage range.

IEC Squirrel-Cage Motors

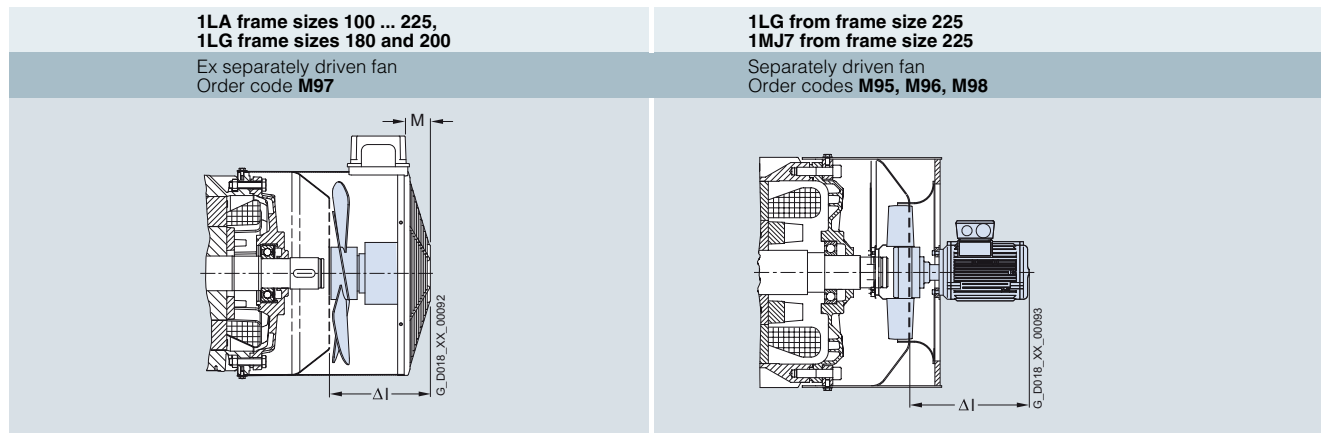
Explosion-proof motors

Orientation

Technical specifications (continued)

Dimensions and weights of the Ex separately driven fans

Ex rotary pulse encoder (on cover) order codes **H86, H87**



4

| Frame size | Zone 22 1LA5/6/7/9 | | 1LG4/6 | | Zones 2, 21 1LG4/6 | | Zone 1 (Ex d/de) 1MJ6/7 | |
|------------|-----------------------|----------------------|--------|----------------------|-----------------------|----------------------|----------------------------|----------------------|
| | Δl | Weight approx. kg | Δl | Weight approx. kg | Δl | Weight approx. kg | Δl | Weight approx. kg |
| | mm | | mm | | mm | | mm | |
| 100 | 141 | 4 | – | – | – | – | – | – |
| 112 | 158 | 4.5 | – | – | – | – | – | – |
| 132 | 177 | 5.5 | – | – | – | – | – | – |
| 160 | 227 | 7 | – | – | – | – | – | – |
| 180 | 269 | 10 | 269 | 10 | – | – | – | – |
| 200 | 272 | 11 | 272 | 11 | – | – | – | – |
| 225 | 272 | 11 | 235 | 22 | 235 | 22 | 372 | 27 |
| 250 | – | – | 235 | 25 | 235 | 25 | 370 | 32 |
| 280 | – | – | 235 | 28 | 235 | 28 | 370 | 34 |
| 315 | – | – | 247 | 36 | 247 | 36 | 385 | 40 |

Selection and ordering data

Preliminary selection of the motor according to motor type/series, speed or number of poles, frame size, rated output, rated torque, rated speed and rated current

Self-ventilated motors in Zone 1 with type of protection "e" (Ex e II Increased safety)

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|------------------------------------|------------------------|---------------|---------------|--------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Aluminum series 1MA7 50 Hz | | | | | | |
| 3000, 2-pole | 63 M ... 160 L | 0.18 ... 16 | 2810 ... 2910 | 0.61 ... 53 | 0.55 ... 30.0 | 4/18 ... 4/19 |
| 1500, 4-pole | 63 M ... 160 L | 0.12 ... 13.5 | 1375 ... 1465 | 0.83 ... 88 | 0.52 ... 27 | 4/20 ... 4/21 |
| 1000, 6-pole | 71 M ... 160 L | 0.25 ... 9.7 | 850 ... 965 | 2.8 ... 96 | 0.81 ... 21 | 4/20 ... 4/21 |
| Cast-iron series 1MA6 50 Hz | | | | | | |
| 3000, 2-pole | 100 L ... 315 L | 2.5 ... 165 | 2865 ... 2986 | 8.3 ... 528 | 5.3 ... 280 | 4/22 ... 4/25 |
| 1500, 4-pole | 100 L ... 315 L | 2 ... 165 | 1420 ... 1492 | 14 ... 1061 | 4.5 ... 305 | 4/26 ... 4/29 |
| 1000, 6-pole | 100 L ... 315 L | 1.3 ... 135 | 935 ... 991 | 13 ... 1300 | 3.35 ... 240 | 4/30 ... 4/33 |

Self-ventilated motors in Zone 1 with type of protection "de" (Ex de IIC explosion-proof enclosure)

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|------------------------------------|------------------------|--------------|---------------|--------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Cast-iron series 1MJ6 50 Hz | | | | | | |
| 3000, 2-pole | 71 M ... 200 L | 0.37 ... 37 | 2750 ... 2945 | 1 ... 120 | 0.98 ... 64 | 4/34 ... 4/35 |
| 1500, 4-pole | 71 M ... 200 L | 0.25 ... 30 | 1325 ... 1465 | 1 ... 196 | 0.78 ... 55 | 4/36 ... 4/37 |
| 1000, 6-pole | 71 M ... 200 L | 0.25 ... 22 | 870 ... 975 | 2 ... 215 | 0.82 ... 42.5 | 4/38 ... 4/39 |
| 750, 8-pole | 90 L ... 200 L | 0.37 ... 15 | 655 ... 725 | 5 ... 198 | 1.16 ... 32 | 4/40 ... 4/41 |
| Cast-iron series 1MJ7 50 Hz | | | | | | |
| 3000, 2-pole | 225 M ... 315 M | 45 ... 132 | 2955 ... 2980 | 145 ... 423 | 77 ... 225 | 4/34 ... 4/35 |
| 1500, 4-pole | 225 S ... 315 M | 37 ... 132 | 1475 ... 1486 | 240 ... 848 | 67 ... 232 | 4/36 ... 4/37 |
| 1000, 6-pole | 225 M ... 315 M | 30 ... 90 | 978 ... 988 | 293 ... 870 | 56 ... 162 | 4/38 ... 4/39 |
| 750, 8-pole | 225 S ... 315 M | 18.5 ... 75 | 725 ... 738 | 244 ... 970 | 37.5 ... 140 | 4/40 ... 4/41 |

IEC Squirrel-Cage Motors

Explosion-proof motors

Orientation

Selection and ordering data (continued)

Self-ventilated motors in Zones 2, 21 and 22 with type of protection “n” or protection against dust explosions

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V, 50 Hz at 460 V, 60 Hz | Detailed selection and ordering data Page |
|---|------------------------------------|----------------------------|---------------|---------------|---|---|
| rpm | | kW at 50 Hz HP at 60 Hz | rpm | Nm | A | |
| Aluminum series 1LA7 and 1LA5¹⁾ 50 Hz | | | | | | |
| 3000, 2-pole | 56 M²⁾ ... 225 M | 0.09 ... 45 | 2830 ... 2959 | 0.3 ... 145 | 0.26 ... 78 | 4/42 ... 4/43 |
| 1500, 4-pole | 56 M²⁾ ... 225 M | 0.06 ... 45 | 1350 ... 1470 | 0.42 ... 292 | 0.2 ... 80 | 4/44 ... 4/45 |
| 1000, 6-pole | 63 M ... 225 M | 0.09 ... 30 | 850 ... 978 | 1 ... 293 | 0.44 ... 61 | 4/46 ... 4/47 |
| 750, 8-pole | 71 M ... 225 M | 0.09 ... 22 | 630 ... 724 | 1.4 ... 290 | 0.36 ... 44.5 | 4/48 ... 4/49 |
| Aluminum series 1LA9 | | | | | | |
| “High Efficiency” 50 Hz | | | | | | |
| 3000, 2-pole | 56 M ... 200 L | 0.09 ... 37 | 2830 ... 2950 | 0.3 ... 120 | 0.24 ... 64 | 4/50 ... 4/51 |
| 1500, 4-pole | 56 M ... 200 L | 0.06 ... 30 | 1380 ... 1465 | 0.42 ... 196 | 0.22 ... 53 | 4/52 ... 4/53 |
| 1000, 6-pole | 90 S ... 200 L | 0.75 ... 22 | 925 ... 975 | 7.7 ... 215 | 2 ... 45 | 4/54 ... 4/55 |
| For use in the North American market according to EPACT 60 Hz | | | | | | |
| 3600, 2-pole | 56 M ... 200 L | 0.12 ... 50 | 3440 ... 3555 | 0.25 ... 100 | 0.23 ... 57 | 4/56 ... 4/57 |
| 1800, 4-pole | 56 M ... 200 L | 0.08 ... 40 | 1715 ... 1770 | 0.33 ... 161 | 0.18 ... 47 | 4/58 ... 4/59 |
| 1200, 6-pole | 90 S ... 200 L | 1 ... 30 | 1140 ... 1175 | 6.2 ... 182 | 1.78 ... 40 | 4/60 ... 4/61 |
| Cast-iron series 1LA6 and 1LG4 50 Hz | | | | | | |
| 3000, 2-pole | 100 L ... 315 L | 3 ... 200 | 2890 ... 2982 | 9.9 ... 641 | 6.1 ... 325 | 4/62 ... 4/63 |
| 1500, 4-pole | 100 L ... 315 L | 2.2 ... 200 | 1420 ... 1486 | 15 ... 1285 | 4.7 ... 340 | 4/64 ... 4/65 |
| 1000, 6-pole | 100 L ... 315 L | 1.5 ... 160 | 925 ... 988 | 15 ... 1547 | 3.9 ... 285 | 4/66 ... 4/67 |
| 750, 8-pole | 100 L ... 315 L | 0.75 ... 132 | 679 ... 738 | 11 ... 1708 | 2.15 ... 245 | 4/68 ... 4/69 |
| Cast-iron series 1LG6 | | | | | | |
| “High Efficiency” 50 Hz | | | | | | |
| 3000, 2-pole | 180 M ... 315 L | 22 ... 200 | 2955 ... 2982 | 71 ... 641 | 38.5 ... 320 | 4/70 ... 4/71 |
| 1500, 4-pole | 180 M ... 315 L | 18.5 ... 200 | 1470 ... 1490 | 120 ... 1282 | 34.5 ... 340 | 4/70 ... 4/71 |
| 1000, 6-pole | 180 M ... 315 L | 15 ... 160 | 975 ... 990 | 147 ... 1543 | 29.5 ... 280 | 4/72 ... 4/73 |
| 750, 8-pole | 180 M ... 315 L | 11 ... 132 | 725 ... 740 | 145 ... 1704 | 23.5 ... 240 | 4/72 ... 4/73 |
| For use in the North American market according to EPACT 60 Hz | | | | | | |
| 3600, 2-pole | 180 M ... 315 L | 30 ... 300 | 3560 ... 3591 | 60 ... 595 | 34 ... 320 | 4/74 ... 4/75 |
| 1800, 4-pole | 180 M ... 315 L | 25 ... 300 | 1775 ... 1792 | 100 ... 1193 | 31 ... 335 | 4/76 ... 4/77 |
| 1200, 6-pole | 180 M ... 315 L | 20 ... 200 | 1178 ... 1192 | 121 ... 1195 | 25.5 ... 235 | 4/78 ... 4/79 |
| Cast-iron series 1LA8 50 Hz for mains-fed operation³⁾ | | | | | | |
| 3000, 2-pole | 315 ... 450 | 250 ... 1000 | 2979 ... 2986 | 801 ... 3200 | 415 ... 1020 | 3/14 ... 3/15 |
| 1500, 4-pole | 315 ... 450 | 250 ... 1000 | 1488 ... 1492 | 1600 ... 6400 | 430 ... 1060 | 3/14 ... 3/15 |
| 1000, 6-pole | 315 ... 450 | 200 ... 800 | 988 ... 993 | 1930 ... 7690 | 345 ... 1100 | 3/16 ... 3/17 |
| 750, 8-pole | 315 ... 450 | 160 ... 630 | 739 ... 744 | 2070 ... 8090 | 295 ... 1160 | 3/16 ... 3/17 |
| Cast-iron series 1PQ8 50 Hz with standard insulation ≤500 V³⁾ | | | | | | |
| 3000, 2-pole | 315 ... 450 | 250 ... 1000 | 2979 ... 2986 | 801 ... 3200 | 415 ... 1020 | 3/26 ... 3/27 |
| 1500, 4-pole | 315 ... 450 | 250 ... 1000 | 1488 ... 1492 | 1600 ... 6400 | 430 ... 1060 | 3/26 ... 3/27 |
| 1000, 6-pole | 315 ... 450 | 200 ... 800 | 988 ... 993 | 1930 ... 7690 | 345 ... 1100 | 3/28 ... 3/29 |
| 750, 8-pole | 315 ... 450 | 160 ... 630 | 739 ... 744 | 2070 ... 8090 | 295 ... 1160 | 3/28 ... 3/29 |

Motors for converter-fed operation 1LA8³⁾ with normal and special insulation or 1PQ8³⁾ with special insulation, see overview on Page 3/11.

¹⁾ Motor series 1LA5 is not possible for Zone 2.

²⁾ Motor series 1LA7 is only possible for Zone 2 in frame size 63 M and above.

³⁾ Motor series 1LA8 and 1PQ8 are not possible for Zone 21, 1PQ8 for Zones 2 and 22 on request.

More information

Fundamental physical principles and definitions

Explosion

An explosion is the sudden chemical reaction of a combustible substance with oxygen, involving the release of high energy. Combustible substances can be gases, vapors, fumes or dust. An explosion can only take place if the following three factors coincide:

1. Combustible substance (in the relevant distribution and concentration)
2. Oxygen (in the air)
3. Source of ignition (e.g. electrical spark)

Primary and secondary explosion protection

Integrated explosion protection

1. Prevention of dangerous potentially explosive atmospheres
2. Prevention of the ignition of dangerous potentially explosive atmospheres
3. Limiting the explosion to a negligible degree

The principle of integrated explosion protection requires all explosion protection measures to be carried out in a defined order. A distinction is made here between primary and secondary protective measures.

Primary explosion protection covers all measures that prevent the formation of a potentially explosive atmosphere.

What are the protective measures that can be taken to minimize the risk of an explosion?

- Avoidance of combustible substances
- Inerting (addition of nitrogen, carbon dioxide, etc.)
- Limiting of the concentration
- Improved ventilation

Secondary explosion protection is required if the explosion hazard cannot be removed or can only be partially removed using primary explosion protection measures.

When considering safety-related factors, it is necessary to know certain characteristic quantities of combustible materials.

Flash point

The flash point for flammable liquids specifies the lowest temperature at which a vapor-air mixture forms over the surface of the liquid that can be ignited by a separate source.

If the flash point of such a flammable liquid is significantly above the maximum occurring temperatures, a potentially explosive atmosphere cannot form there. However, the flash point of a mixture of different liquids can also be lower than the flash point of the individual components.

In technical regulations, flammable liquids are divided into four hazard classes:

| Hazard class | Flash point |
|--------------|-----------------------------------|
| AI | <21 °C |
| AII | 21 ... 55 °C |
| AIII | >55 ... 100 °C |
| B | <21 °C, at 15 °C soluble in water |


Explosion limits

Combustible substances form a potentially explosive atmosphere when they are present within a certain range of concentration (see "Area subject to explosion hazard").

If the concentration is too low (lean mixture) and if the concentration is too high (rich mixture) an explosion does not take place. Instead slow burning takes place, or no burning at all. Only in the area between the upper and the lower explosion limits does the mixture react explosively if ignited. The explosion limits depend on the surrounding pressure and the proportion of oxygen in the air (see the table below).

We refer to a deflagration, explosion, or detonation, depending on the speed of combustion. A potentially explosive atmosphere is present if ignition represents a hazard for personnel or materials. A potentially explosive atmosphere, even one of low volume, can result in hazardous explosions in an enclosed space.

Area subject to explosion hazard

| 100 % vol | Air concentration | 0 % vol |
|--|---|----------------------------------|
| Mixture too weak | Area subject to explosion hazard | Mixture too rich |
| No combustion |  | Partial combustion, no explosion |
| ← Lower explosion limit upper → | | |
| 0 % vol | | 100 % vol |
| Concentration of combustible substance | | |

Dusts

In industrial environments, e.g. in chemical plants or in flour mills, solid matter is often present in small particles and also in the form of dust.

The term "dust" is defined in DIN EN 50281-1-2 as small solid particles in the atmosphere that are deposited due to their own weight but which remain in the atmosphere for some time in the form of a dust/air mixture". Dust deposits are comparable to a porous body and have an air component of up to 90 %. If the temperature of dust deposits is increased, this can result in self-ignition of the combustible substance in the form of dust.

When deposits of dust with a small particle size are disturbed, there is a risk of explosion. This risk increases as the particle size decreases, because the surface area of the hollow space increases. Dust explosions are often the result of disturbed glowing dust deposits that carry the initial spark within them.

Explosions of gas/air or vapor/air mixtures can also disturb dust, in which case the gas explosion can become a dust explosion.

IEC Squirrel-Cage Motors

Explosion-proof motors

Orientation

More information (continued)

In coal mines, methane gas explosions often caused coal dust explosions which surpassed the gas explosions in their effects.

The risk of an explosion is prevented by using explosion-proof equipment in accordance with its protection capability. The identification of the equipment categories mirrors the effectiveness of the explosion protection and therefore its use in the corresponding areas subject to explosion hazard.

The potential risk of explosive dust atmospheres and the selection of appropriate protective measures are assessed on the basis of safety characteristics for the materials involved. Dusts are subdivided here in accordance with two of their material-specific characteristics:

- **Conductivity**
Dusts that have a specific electrical resistance of up to $10^3 \Omega\text{m}$ are classed as conductive.
- **Combustibility**
Combustible dusts, however, are characterized by the fact that they can burn or glow in air and that they can form explosive mixtures at atmospheric pressure and at temperature from -20 to $+60$ °C in combination with air.

Examples of safety characteristics in the case of disturbed dust include the minimum ignition energy and the ignition temperature, whereas in the case of dust deposits, the glowing temperature is a characteristic feature.

Minimum ignition energy

The application of a certain amount of energy is required to ignite a potentially explosive atmosphere.

The minimum energy is taken to be the lowest possible converted energy, for example, the discharge of a capacitor, that will ignite the relevant flammable mixture.

The minimum energy lies between approximately 10^{-5} J for hydrogen, and several Joules for certain dusts.

What can cause ignition?

- Hot surfaces
- Adiabatic compression
- Ultrasound
- Ionized radiation
- Open flames
- Chemical reaction
- Optical radiation
- Electromagnetic radiation
- Electrostatic discharge
- Sparks caused mechanically by friction or impact
- Electrical sparks and arcing
- Ionized radiation

Legislative basis and standards

Legislative basis of explosion protection

Globally, explosion protection is regulated by the legislatures of the individual countries. At the international level, the IEC is attempting to get closer to the aim of "a single global test and certificate" by introducing the IECEx Scheme.

EU directives

In the European Union, explosion protection is regulated by directives and laws.

Electrical equipment for use in potentially explosive atmospheres must therefore possess test certification or approval. The relevant systems and equipment are graded as systems requiring monitoring and must only use devices approved for this purpose. In addition, commissioning, modification, and regular safety inspections must only be accepted or carried out by approved institutions or societies. The EU directives are binding for all member states and form the legal framework.

Selection of important EU directives

| Short designation | Full text | Directive no. | Valid as of: | End of transition period |
|------------------------|--|---------------|--------------|--------------------------|
| EX Directive (ATEX 95) | Directive of the European Parliament and Council of March 23, 1994 on the harmonization of laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres | 94/9/EG | 03/01/96 | 06/30/03 |
| ATEX 137 | Minimum regulations for improving the health protection and safety of employees that could be endangered by potentially explosive atmospheres | 1999/92/EG | 12/16/99 | 06/30/03 |

More information (continued)

National laws and regulations

In general, the EU directives are European laws that must be incorporated by the individual member states unmodified by ratification. Directive 94/9/EU was adopted completely into the German explosion protection regulation ExVO. The underlying legislation for technical equipment is the Equipment Safety Law (GSG) to which ExVO is appended as a separate regulation (11th GSGV).

In contrast, ATEX 137 (Directive - 1999/92/EC) contains only "Minimum regulations for improving the health protection and safety of employees that could be endangered by potentially explosive atmospheres", so that each EU member state can pass its own regulations beyond the minimum requirements. In the German Federal Republic, the contents of the directive have been implemented in factory safety legislation. In order to simplify the legislation, the contents of several earlier regulations have been simultaneously integrated into the factory safety legislation ('BetrSichVO'). From the area of explosion protection, these are:

- The regulation concerning electrical installations in potentially explosive atmospheres (EllexV)
- The acetylene regulation
- The regulation concerning flammable liquids

These regulations became defunct when the factory safety legislation came into force on 01/01/2003.

Explosion protection guidelines (EX-RL) of the professional associations

In the "Guidelines for the prevention of hazards from potentially explosive atmospheres with listed examples" of the *German Chemicals Professional Association*, specific information is given on the hazards of potentially explosive atmospheres and measures for their prevention or limitation are listed. Of special use are the examples of individual potentially explosive process plants in the most diverse industrial sectors in which these measures are listed in detail. Valuable suggestions and risk evaluations are available for planners and operators of such plants or similar process plants. While the EX Directives have no legal status, they are nevertheless to be regarded as important recommendations that can also be called upon for support in deciding legal questions in the event of damage.

Standards

There are a host of technical standards worldwide for the area of explosion protection. The standards environment is subject to constant modification. This is the result of both adaptation to technical progress and increased safety demands in society. International efforts towards harmonization also contribute to the aim of achieving the most uniform global standards possible and the resulting removal of barriers to trade.

EU standards

The standards for explosion protection valid in the European Union are created on the basis of the EU Directives under the leadership of CENELEC (European Committee for Electrotechnical Standardization). CENELEC comprises the national committees of the member states. Since, in the meantime, standardization at international level gained greatly in importance through the dynamism of the IEC (International Electrotechnical Commission), CENELEC has decided only to pass standards in parallel with the IEC. In practice, this means European standards in the area of electrical/electronic systems will now be created or redefined almost exclusively on the basis of IEC standards as harmonized EN standards. For the area of explosion protection, these are mainly the standards of the EN 60079 series. The numbers of harmonized European standards are built up according to the following system:

| IEC/EN | 60079-0 | : | 1997 | Meaning |
|--------|---------|---|------|------------------------------|
| | | | | Year of issue |
| | | | | Number of standard |
| | | | | Harmonized European Standard |

IEC

At the international level, the IEC (International Electrotechnical Commission) issues standards for explosion protection. The Technical Committee TC31 is responsible. Standards for explosion protection are found in the IEC 60079-x series (previously IEC 79-x). The x represents the numbers of the individual technical standards, e.g. IEC 60079-7 for intrinsic safety.

Classification of explosion-protected equipment

Identification

The identification of electrical equipment for areas protected against explosion hazards should include:

- The manufacturer who supplied the equipment
- A designation that identifies it
- The implementation range
 - In underground mines I
 - Other areas II
 - Gases and vapors – G -, dusts – D – or mines – M -,
- The categories that specify whether the device can be used for specific zones
- The type(s) of protection to which the equipment complies
- The testing authority that issued the test certificate, the standard or version of the standard to which the equipment complies – including the registration number of the certificate from the testing authority, and if necessary, the special conditions to be observed.
- The data that is normally required for an identical item of equipment in industrial design should also be provided.

Example for identification according to 94/9/EU

| CE | 0158 | ⊕ Ex | II 2D | IP65 | T125 °C | Meaning |
|----|------|------|-------|------|---------|---|
| | | | | | | Temperature range |
| | | | | | | Enclosure protection class |
| | | | | | | Ex protection zone |
| | | | | | | Nominated authority for certification of the QA system in accordance with 94/9/EU |
| | | | | | | Conformity mark |

| Equipment identification code | Meaning |
|-------------------------------|---|
| SAMPLE_COMPANY | Manufacturer and type designation |
| Type 07-5103-.../... | |
| Ex II 2D IP65 T 125 °C | Acc. to EN 50281-1-1. Protection afforded by housing, IP65 protection class, Max. surface temperature +125 °C |
| PTB | Symbol of test authority |
| 00 | ATEX generation |
| ATEX | Certified 2000 |
| 1081 | Serial No. of test authority |

IEC Squirrel-Cage Motors

Explosion-proof motors

Orientation

More information (continued)

Device groups/categories

Devices are classified into device groups:

- Device group I
 - in underground operations
 - in mines
 - as well as open-cast operations
- Device group II
 - Devices for use in the other areas

Each device group contains equipment that is in turn assigned to different categories (Directive 94/9/EC).

The category specifies the zone in which the equipment may be used.

Comparison of device groups and categories

| Device group I (mining) | | |
|-------------------------|--|---|
| Category | M1: Extremely high level of safety | M2: High level of safety |
| Sufficient safety | Through 2 protective measures/in the event of 2 faults | Must be switched off in the presence of an Ex atmosphere. |

| Device group II (other areas subject to explosion hazard) | | | | | | |
|---|--|----------|--|---------|-------------------------------------|---------|
| Category | 1: Extremely high level of safety | | 2: High level of safety | | 3: Normal level of safety | |
| Sufficient safety | Through 2 protective measures/in the event of 2 faults | | In the event of frequent device faults/in the event of one fault | | In the case of fault-free operation | |
| Use | Zone 0 | Zone 20 | Zone 1 | Zone 21 | Zone 2 | Zone 22 |
| Atmosphere | G (gas) | D (dust) | G | D | G | D |

Zones

Potentially explosive atmospheres are divided into zones. Division into zones depends on the chronological and geographical probability of the presence of a hazardous, potentially explosive atmosphere.

Information and specifications for zone subdivision can be found in EN/IEC 60079-10.

Equipment in areas where a constant explosion hazard exists (Zone 0/20) are subject to stricter requirements, and by contrast, equipment in less hazardous areas (Zone 1/21, Zone 2/22) is subject to less stringent requirements. In general, 95 % of systems are installed in Zone 1 and only 5 % of equipment is in Zone 0.

Subdivision of combustible dusts into different zones

| Flammable gases, vapors, and mist | | |
|-----------------------------------|--------------------|---|
| Zone | Equipment category | Description |
| 0 | 1G | Hazardous, potentially explosive atmosphere present continuously and over extended periods . |
| 1 | 2G 1G | It is to be expected that a hazardous, potentially explosive atmosphere will only occur occasionally . |
| 2 | 3G 2G 1G | It is to be expected that a hazardous, potentially explosive atmosphere will occur only rarely and then only for a short period . |

| Flammable dusts | | |
|-----------------|--------------------|---|
| Zone | Equipment category | Description |
| 20 | 1D | Areas where a potentially explosive atmosphere comprising dust-air mixtures is present continuously, over extended periods or frequently . |
| 21 | 2D 1D | Areas where it is expected that a hazardous, potentially explosive atmosphere comprising dust-air mixtures will occur occasionally and for short periods . |
| 22 | 3D 2D 1D | Areas in which it is not to be expected that a potentially explosive atmosphere will be caused by stirred-up dust. If this does occur, then in all probability only rarely and for a short period . |




Types of protection

The protection types are design measures and electrical measures carried out on the equipment to achieve explosion protection in the areas subject to explosion hazard.

Protection types are secondary explosion protection measures. The scope of the secondary explosion protection measures depends on the probability of the occurrence of a hazardous, potentially explosive atmosphere.

Electrical equipment for areas subject to explosion hazard must comply with the general requirements of IEC/EN 60079-0 and the specific requirements for the relevant type of protection in which the equipment is listed.

The types of protection listed on the pages below are significant in accordance with IEC/EN 60079-0. All types of protection are based on different principles.

| Types of protection for gases | | | | | | | Use in Zone | | |
|-------------------------------|--------|---|---|---|---|---|-------------|---|--|
| Degree of protection | Coding | Schematic diagram | Basic principle | Standard | Examples | 0 | 1 | 2 | |
| General requirements | |  | General requirements for the type and testing of electrical equipment intended for the Ex area | IEC/EN 60079-0 | | | | | |
| Increased safety | e |  | Applies only to equipment, or its component parts, that normally does not create sparks or arcs, does not attain hazardous temperatures, and whose mains voltage does not exceed 1 kV | IEC/EN 60079-7 | Squirrel-cage motors, terminals, connection boxes | | • | • | |
| Flameproof enclosure | d |  | If an explosion occurs inside the enclosure, the housing will withstand the pressure and the explosion will not be propagated outside the enclosure | IEC/EN 60079-1 | Squirrel-cage motors, switchgear, transformers | | • | • | |
| Types of protection | n | Zone 2 Several protection types are included under this type | Slightly simplified application of the other Zone 2 protection types – "n" stands for "non-igniting" | EN 50021 ¹⁾ IEC/EN 60079-15 | Squirrel-cage motors, programmable controllers | | | • | |

¹⁾ From 2007 IEC/EN 60079-15

More information (continued)

| Types of protection for dusts | | Basic principle | Standard | Examples | Use in Zone | | |
|-------------------------------|----------|---|-----------------------|--|-------------|----|----|
| Type of protection | Coding | | | | 20 | 21 | 22 |
| Pressurized enclosure | pD | Penetration of a surrounding atmosphere into the housing of electrical equipment is prevented by retaining an ignition protection gas (air, inert gas or other suitable gas) internally at a higher pressure than the surrounding atmosphere. | EN 50281 IEC 61241 | Equipment in which sparks, arcs or hot components occur during operation | • | • | • |
| Encapsulation | mD | Components that can ignite a potentially explosive atmosphere through sparks or heating are embedded in a potting compound such that the explosive atmosphere cannot ignite. This is achieved by completely covering the components with a potting compound that is resistant to physical (particularly electrical, thermal and mechanical) as well as chemical influences. | EN 50281 IEC 61241 | Switchgear and control cabinets | • | • | • |
| Protection by housing | tD | The housing is so thick that ingress of combustible dust is not possible. The external surface temperature of the housing is limited. | EN 50281 IEC 61241 | Measuring and monitoring equipment | • | • | • |
| Intrinsic safety | iaD, ibD | Current and voltage are limited so that intrinsic safety is guaranteed. Sparks or thermal effects cannot ignite a dust/air mixture. | EN 50281 IEC 61241 | Sensors and actuators | • | • | • |

Temperature classes

The ignition temperature of flammable gases or a flammable liquid is the lowest temperature of a heated surface at which the gas/air or vapor/air mixture just ignites.

Thus the highest surface temperature of any equipment must always be less than the ignition temperature of the surrounding atmosphere.

Temperature classes T1 to T6 have been introduced for electrical equipment of Explosion group II. Equipment is assigned to each temperature class according to its maximum surface temperature.

Equipment that corresponds to a higher temperature class can also be used for applications with a lower temperature class.

Flammable gases and vapors are assigned to the relevant temperature class according to ignition temperature.

Definition of the temperature classes

| Temperature class | Maximum surface temperature of the equipment | Ignition temperatures of combustible substances |
|-------------------|--|---|
| T1 | 450 °C | >450 °C |
| T2 | 300 °C | >300 °C |
| T3 | 200 °C | >200 °C |
| T4 | 135 °C | >135 °C |
| T5 | 100 °C | >100 °C |
| T6 | 85 °C | >85 °C |

Classification of gases and vapors into explosion groups and temperature classes

| Explosion group | Temperature classes | | | | | |
|-----------------|--|--|--|--------------------------------|----|------------------|
| | T1 | T2 | T3 | T4 | T5 | T6 |
| I | Methane | | | | | |
| II A | Acetone Ethane Ethyl acetate Ammonia Benzene (pure) Acetic acid Carbon monoxide Carbon dioxide Methane Methanol Propane Toluene | Ethyl alcohol i-amyl acetate n-butane n-butyl alcohol | Petrol Diesel fuel Aviation gasoline Fuel oil n-hexane | Acetyl aldehyde Ethyl ether | | |
| II B | Town gas (Illuminating gas) | Ethylene | | | | |
| II C | Hydrogen | Acetylene | | | | Carbon disulfide |

For further information, please contact your local Siemens contact – see “Siemens Contacts Worldwide” in the Appendix.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zone 1 with type of protection "e"
Aluminum series 1MA7

Selection and ordering data

| Rated output at | | Temperature class | Frame size | Operating values at rated output | | | | | Order No. | Price | Weight |
|---|-------------------|-------------------|------------|----------------------------------|-----------------------|---------------------|-----------------------|---------------------------------------|---|---|--------|
| 50 Hz | 60 Hz | | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz | Power factor at 50 Hz | Rated current at 380 ... 420 V, 50 Hz | | | |
| P_{rated} kW | P_{rated} kW | | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | For Order No. supplements for voltage and type of construction, see table below | IM B3 type of construction approx. m kg | |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, temperature classes T1 to T3 | | | | | | | | | | | |
| 0.18 | 0.18 | T1,T2,T3 | 63 M | 2810 | 0.61 | 66 | 0.74 | 0.55 | 1MA7 060-2BAQQ | 3.9 | |
| 0.25 | 0.25 | T1,T2,T3 | 63 M | 2800 | 0.85 | 68 | 0.81 | 0.7 | 1MA7 063-2BAQQ | 4.5 | |
| 0.37 | 0.37 | T1,T2,T3 | 71 M | 2825 | 1.3 | 73 | 0.8 | 0.93 | 1MA7 070-2BAQQ | 5.4 | |
| 0.55 | 0.55 | T1,T2,T3 | 71 M | 2785 | 1.9 | 72 | 0.80 | 1.4 | 1MA7 073-2BAQQ | 7 | |
| 0.75 | 0.75 | T1,T2,T3 | 80 M | 2845 | 2.5 | 73 | 0.85 | 1.81 | 1MA7 080-2BAQQ | 8.6 | |
| 1.1 | 1.1 | T1,T2,T3 | 80 M | 2855 | 3.7 | 79 | 0.85 | 2.5 | 1MA7 083-2BAQQ | 10.3 | |
| 1.3 | 1.3 | T1,T2,T3 | 90 S | 2850 | 4.4 | 78 | 0.88 | 2.9 | 1MA7 090-2BAQQ | 13.3 | |
| 1.85 | 1.85 | T1,T2,T3 | 90 L | 2860 | 6.2 | 81 | 0.88 | 3.95 | 1MA7 096-2BAQQ | 16.1 | |
| 2.5 | 2.5 | T1,T2,T3 | 100 L | 2865 | 8.3 | 82 | 0.87 | 5.3 | 1MA7 106-2BAQQ | 21 | |
| 3.3 | 3.3 | T1,T2,T3 | 112 M | 2875 | 11 | 84 | 0.89 | 6.7 | 1MA7 113-2BBQQ | 27 | |
| 4.6 | 4.6 | T1,T2,T3 | 132 S | 2920 | 15 | 83 | 0.9 | 9.2 | 1MA7 130-2BBQQ | 38 | |
| 5.5 | 5.5 | T3 | 132 S | 2925 | 18 | 86 | 0.92 | 10.6 | 1MA7 131-2BBQQ¹⁾ | 44 | |
| 7.5 | 7.5 | T3 | 160 M | 2945 | 24 | 87.5 | 0.9 | 14.3 | 1MA7 163-2BBQQ¹⁾ | 67 | |
| 10 | 10 | T3 | 160 M | 2940 | 33 | 88.5 | 0.92 | 18.6 | 1MA7 164-2BBQQ¹⁾ | 72 | |
| 12.5 | 12.5 | T3 | 160 L | 2940 | 41 | 89 | 0.93 | 23 | 1MA7 166-2BBQQ¹⁾ | 82 | |

| Rated output at | | Temperature class | Frame size | Operating values at rated output | | | | | Order No. | Price | Weight |
|---|-------------------|-------------------|------------|----------------------------------|-----------------------|---------------------|-----------------------|---------------------------------------|---|---|--------|
| 50 Hz | 60 Hz | | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz | Power factor at 50 Hz | Rated current at 380 ... 420 V, 50 Hz | | | |
| P_{rated} kW | P_{rated} kW | | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | For Order No. supplements for voltage and type of construction, see table below | IM B3 type of construction approx. m kg | |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, temperature classes T1 and T2, with double rating plate (T1/T2 and T3) | | | | | | | | | | | |
| 6.5 | 6.5 | T1,T2 | 132 S | 2900 | 21 | 85 | 0.93 | 12.5 | 1MA7 131-2BBQQ¹⁾ | 44 | |
| 9.5 | 9.5 | T1,T2 | 160 M | 2920 | 31 | 87 | 0.91 | 18.1 | 1MA7 163-2BBQQ¹⁾ | 67 | |
| 13 | 13 | T1,T2 | 160 M | 2910 | 43 | 87.5 | 0.92 | 24.5 | 1MA7 164-2BBQQ¹⁾²⁾ | 72 | |
| 16 | 16 | T1,T2 | 160 L | 2910 | 53 | 87 | 0.93 | 30 | 1MA7 166-2BBQQ¹⁾²⁾ | 82 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | |
|---------------------------|------------------------------------|------------------------|------------------------|----------|---|-------------------------------------|-------------------------------|--|----------------------|---------------------------------|---------------------|--------------------------------|
| | 50 Hz | 230 V Δ /400 VY | 400 V Δ /690 VY | 500 VY | 500 V Δ | Without flange | With flange | | With standard flange | | With special flange | |
| | | | | | | IM B3/6/7/8, IM V6 ³⁾ | IM B5, IM V3 ³⁾ | IM V1 with protective cover ³⁾⁴⁾ | IM B35 | IM B14, IM V19 ³⁾ | IM B34 | IM B14 IM V19 ³⁾ |
| | 1 | 6 | 3 | 5 | 0 | 1 | 4 | 6 | 2 | 7 | 3 | |
| 1MA7 06 QQ | ○ | – | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1MA7 07 QQ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1MA7 08 QQ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1MA7 09 QQ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1MA7 10 QQ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1MA7 11 QQ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1MA7 13 QQ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1MA7 16 QQ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

For footnotes, see Page 4/19.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zone 1 with type of protection "e"
Aluminum series 1MA7

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | Noise at rated output | | t_E time | |
|---|--|--|----------------------------|--------------|-------------------------|--|--|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz $L_{p(A)}$ dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) | for temperature class T1/T2 t_E s | for temperature class T3 t_E s |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, temperature classes T1 to T3 | | | | | | | | | |
| 1MA7 060-2BAQQ | 2.3 | 4.4 | 2.3 | 16 | 0.00018 | 49 | 60 | 30 | 27 |
| 1MA7 063-2BAQQ | 2.2 | 4.4 | 2.3 | 16 | 0.00023 | 49 | 60 | 19 | 16 |
| 1MA7 070-2BAQQ | 2.3 | 5.6 | 2.1 | 16 | 0.00035 | 52 | 63 | 28 | 25 |
| 1MA7 073-2BAQQ | 3 | 5.2 | 2.6 | 16 | 0.00045 | 52 | 63 | 18 | 13 |
| 1MA7 080-2BAQQ | 2.5 | 6.2 | 2.7 | 16 | 0.00085 | 56 | 67 | 13 | 11 |
| 1MA7 083-2BAQQ | 2.8 | 6.4 | 3 | 16 | 0.0011 | 56 | 67 | 12 | 10 |
| 1MA7 090-2BAQQ | 2.6 | 6.2 | 2.8 | 16 | 0.0015 | 60 | 72 | 12 | 11 |
| 1MA7 096-2BAQQ | 2.8 | 7.2 | 2.8 | 16 | 0.002 | 60 | 72 | 9 | 8 |
| 1MA7 106-2BAQQ | 2.6 | 7.4 | 2.8 | 16 | 0.0038 | 62 | 74 | 9 | 8 |
| 1MA7 113-2BBQQ | 2.1 | 6.6 | 2.3 | 13 | 0.0055 | 63 | 75 | 10 | 9 |
| 1MA7 130-2BBQQ | 1.9 | 6.8 | 2.5 | 13 | 0.016 | 68 | 80 | 15 | 13 |
| 1MA7 131-2BBQQ | 2.2 | 7.7 | 2.7 | 13 | 0.021 | 68 | 80 | 15 | 13 |
| 1MA7 163-2BBQQ | 2.2 | 7.6 | 3.1 | 13 | 0.034 | 70 | 82 | 29 | 18 |
| 1MA7 164-2BBQQ | 2.1 | 7.6 | 2.9 | 13 | 0.04 | 70 | 82 | 23 | 12 |
| 1MA7 166-2BBQQ | 2.3 | 7.6 | 3 | 13 | 0.052 | 70 | 82 | 21 | 9 |

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | Noise at rated output | | t_E time for temperature class T1/T2 | t_E time for temperature class T3 |
|---|--|--|----------------------------|--------------|-------------------------|--|--|--|-------------------------------------|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz $L_{p(A)}$ dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) | t_E s | t_E s |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, temperature classes T1 and T2, with double rating plate (T1/T2 and T3) | | | | | | | | | |
| 1MA7 131-2BBQQ | 1.9 | 6.5 | 2.3 | 13 | 0.021 | 68 | 80 | 12 | 7 |
| 1MA7 163-2BBQQ | 1.7 | 6 | 2.4 | 13 | 0.034 | 70 | 82 | 24 | – |
| 1MA7 164-2BBQQ | 1.6 | 5.8 | 2.2 | 13 | 0.04 | 70 | 82 | 16 | – |
| 1MA7 166-2BBQQ | 1.8 | 5.8 | 2.3 | 13 | 0.052 | 70 | 82 | 15 | – |

- 1) For the following versions T3-output is stamped as standard:
– order code **A11/A12**
– voltage code "9"
Alternative: order code **C30** "T1/T2-output on the rating plate"
- 2) Utilization according to temperature class 155 (F).

- 3) The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.
- 4) The "Second shaft extension" option, order code **K16** is not possible.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zone 1 with type of protection "e"
Aluminum series 1MA7

Selection and ordering data (continued)

| Rated output at | | Temperature class | Frame size | Operating values at rated output | | | | | Rated current at 380 ... 420 V, 50 Hz | Order No. | Price | Weight |
|---|-------------------|-------------------|------------|----------------------------------|-----------------------|---------------------|-----------------------|---------------------------------------|---|-----------|---|--------|
| 50 Hz | 60 Hz | | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz | Power factor at 50 Hz | Rated current at 380 ... 420 V, 50 Hz | | | | |
| P_{rated} kW | P_{rated} kW | | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | For Order No. supplements for voltage and type of construction, see table below | | IM B3 type of construction approx. m kg | |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, temperature classes T1 to T3 | | | | | | | | | | | | |
| 0.12 | 0.12 | T1,T2,T3 | 63 M | 1375 | 0.83 | 55 | 0.66 | 0.52 | 1MA7 060-4BBQQ | | 3.9 | |
| 0.18 | 0.18 | T1,T2,T3 | 63 M | 1330 | 1.3 | 57 | 0.75 | 0.62 | 1MA7 063-4BBQQ | | 4.5 | |
| 0.25 | 0.25 | T1,T2,T3 | 71 M | 1310 | 1.8 | 60 | 0.77 | 0.8 | 1MA7 070-4BBQQ | | 6 | |
| 0.37 | 0.37 | T3 | 71 M | 1355 | 2.6 | 67 | 0.74 | 1.1 | 1MA7 073-4BBQQ | | 6.4 | |
| 0.55 | 0.55 | T1,T2,T3 | 80 M | 1390 | 3.8 | 73 | 0.73 | 1.59 | 1MA7 080-4BAQQ | | 8.4 | |
| 0.75 | 0.75 | T1,T2,T3 | 80 M | 1395 | 5.1 | 73 | 0.75 | 2.05 | 1MA7 083-4BAQQ | | 11 | |
| 1 | 1 | T1,T2,T3 | 90 S | 1420 | 6.7 | 77 | 0.78 | 2.5 | 1MA7 090-4BAQQ | | 12.7 | |
| 1.35 | 1.35 | T1,T2,T3 | 90 L | 1415 | 9.1 | 78 | 0.82 | 3.1 | 1MA7 096-4BAQQ | | 16 | |
| 2 | 2 | T1,T2,T3 | 100 L | 1420 | 14 | 80 | 0.82 | 4.5 | 1MA7 106-4BAQQ | | 20 | |
| 2.5 | 2.5 | T1,T2,T3 | 100 L | 1415 | 17 | 81 | 0.83 | 5.5 | 1MA7 107-4BAQQ | | 23 | |
| 3.6 | 3.6 | T1,T2,T3 | 112 M | 1435 | 24 | 85 | 0.83 | 7.5 | 1MA7 113-4BAQQ | | 29 | |
| 5 | 5 | T1,T2,T3 | 132 S | 1445 | 33 | 86 | 0.82 | 10.4 | 1MA7 130-4BAQQ | | 42 | |
| 6.8 | 6.8 | T1,T2,T3 | 132 M | 1465 | 44 | 87 | 0.82 | 14 | 1MA7 133-4BAQQ | | 61 | |
| 10 | 10 | T1,T2,T3 | 160 M | 1455 | 66 | 88 | 0.87 | 19.7 | 1MA7 163-4BBQQ | | 67 | |
| 13.5 | 13.5 | T1,T2,T3 | 160 L | 1465 | 88 | 89 | 0.84 | 27 | 1MA7 166-4BBQQ | | 107 | |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, temperature classes T1 to T3 | | | | | | | | | | | | |
| 0.25 | 0.25 | T1,T2,T3 | 71 M | 850 | 2.8 | 63 | 0.72 | 0.81 | 1MA7 073-6BAQQ | | 6.7 | |
| 0.37 | 0.37 | T1,T2,T3 | 80 M | 920 | 3.6 | 68 | 0.7 | 1.14 | 1MA7 080-6BAQQ | | 8.3 | |
| 0.55 | 0.55 | T1,T2,T3 | 80 M | 930 | 5.6 | 69 | 0.67 | 1.75 | 1MA7 083-6BAQQ | | 12.5 | |
| 0.65 | 0.65 | T1,T2,T3 | 90 S | 915 | 6.8 | 70 | 0.75 | 1.8 | 1MA7 090-6BAQQ | | 14 | |
| 0.95 | 0.95 | T1,T2,T3 | 90 L | 915 | 9.9 | 72 | 0.75 | 2.6 | 1MA7 096-6BAQQ | | 15.7 | |
| 1.3 | 1.3 | T1,T2,T3 | 100 L | 935 | 13 | 77 | 0.73 | 3.35 | 1MA7 106-6BAQQ | | 20 | |
| 1.9 | 1.9 | T1,T2,T3 | 112 M | 940 | 19 | 79 | 0.76 | 4.7 | 1MA7 113-6BBQQ | | 24 | |
| 2.6 | 2.6 | T1,T2,T3 | 132 S | 945 | 26 | 79 | 0.75 | 6.5 | 1MA7 130-6BBQQ | | 36 | |
| 3.5 | 3.5 | T1,T2,T3 | 132 M | 955 | 35 | 81 | 0.72 | 9 | 1MA7 133-6BBQQ | | 41 | |
| 4.8 | 4.8 | T1,T2,T3 | 132 M | 950 | 48 | 83 | 0.76 | 11.4 | 1MA7 134-6BBQQ | | 50 | |
| 6.6 | 6.6 | T1,T2,T3 | 160 M | 960 | 65 | 85 | 0.75 | 14.9 | 1MA7 163-6BBQQ | | 70 | |
| 9.7 | 9.7 | T1,T2,T3 | 160 L | 965 | 96 | 88 | 0.76 | 21 | 1MA7 166-6BBQQ | | 105 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | |
|---------------------------|------------------------------------|---------------|-----------------|--------|---|----------------------------|--|----------------------|------------------------------|---------------------|-----------------------------|
| | 50 Hz | | | | Without flange | With flange | | With standard flange | | With special flange | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6 ¹⁾ | IM B5, IM V3 ¹⁾ | IM V1 with protective cover ^{1) 2)} | IM B35 | IM B14, IM V19 ¹⁾ | IM B34 | IM B14 IM V19 ¹⁾ |
| | 1 | 6 | 3 | 5 | 0 | 1 | 4 | 6 | 2 | 7 | 3 |
| 1MA7 06 □□ | ○ | – | ○ ³⁾ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1MA7 07 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1MA7 08 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1MA7 09 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1MA7 10 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1MA7 11 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1MA7 13 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1MA7 16 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

For footnotes, see Page 4/21.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zone 1 with type of protection "e"
Aluminum series 1MA7

Selection and ordering data (continued)

| Order No. | Locked-rotor torque | Locked-rotor current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | | t_E time | |
|---|-----------------------------|------------------------------|------------------|--------------|-------------------------|---|-------------------------------|-----------------------------|--------------------------|
| | with direct starting torque | as multiple of rated current | torque | | | Measuring surface sound pressure level at 50 Hz | Sound pressure level at 50 Hz | for temperature class T1/T2 | for temperature class T3 |
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | L_{pFA} dB(A) | L_{WA} dB(A) | t_E s | t_E s |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, temperature classes T1 to T3 | | | | | | | | | |
| 1MA7 060-4BBQQ | 1.9 | 2.6 | 1.9 | 13 | 0.0003 | 42 | 53 | 35 | 30 |
| 1MA7 063-4BBQQ | 1.9 | 2.7 | 1.9 | 13 | 0.0004 | 42 | 53 | 30 | 25 |
| 1MA7 070-4BBQQ | 1.9 | 3.1 | 1.9 | 13 | 0.0006 | 44 | 55 | 50 | 40 |
| 1MA7 073-4BBQQ | 1.9 | 3.7 | 2.1 | 13 | 0.00083 | 44 | 55 | 35 | 29 |
| 1MA7 080-4BAQQ | 2.4 | 4.6 | 2.5 | 16 | 0.0015 | 47 | 58 | 24 | 21 |
| 1MA7 083-4BAQQ | 2.6 | 4.8 | 2.6 | 16 | 0.0018 | 47 | 58 | 19 | 16 |
| 1MA7 090-4BAQQ | 2.2 | 5.4 | 2.5 | 16 | 0.0028 | 48 | 60 | 16 | 14 |
| 1MA7 096-4BAQQ | 2.3 | 5.9 | 2.5 | 16 | 0.0035 | 48 | 60 | 15 | 13 |
| 1MA7 106-4BAQQ | 2.5 | 6.4 | 2.7 | 16 | 0.0048 | 53 | 65 | 13 | 11 |
| 1MA7 107-4BAQQ | 2.6 | 6.4 | 2.7 | 16 | 0.0058 | 53 | 65 | 12 | 10 |
| 1MA7 113-4BAQQ | 2.6 | 7.2 | 2.9 | 16 | 0.011 | 53 | 65 | 10 | 9 |
| 1MA7 130-4BAQQ | 2.7 | 6.6 | 3.2 | 16 | 0.021 | 62 | 74 | 10 | 9 |
| 1MA7 133-4BAQQ | 3 | 7.7 | 3.6 | 16 | 0.027 | 62 | 74 | 11 | 9 |
| 1MA7 163-4BBQQ | 2.3 | 6.5 | 2.7 | 13 | 0.052 | 66 | 78 | 17 | 10 |
| 1MA7 166-4BBQQ | 2.4 | 6.9 | 3 | 13 | 0.057 | 66 | 78 | 18 | 9 |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, temperature classes T1 to T3 | | | | | | | | | |
| 1MA7 073-6BAQQ | 2.2 | 3 | 2.1 | 16 | 0.0009 | 39 | 50 | 130 | 70 |
| 1MA7 080-6BAQQ | 2.3 | 3.6 | 2.4 | 16 | 0.0015 | 40 | 51 | 60 | 55 |
| 1MA7 083-6BAQQ | 2.4 | 4 | 2.4 | 16 | 0.0025 | 40 | 51 | 30 | 27 |
| 1MA7 090-6BAQQ | 2.3 | 3.9 | 2.4 | 16 | 0.0028 | 43 | 55 | 35 | 30 |
| 1MA7 096-6BAQQ | 2.3 | 4.1 | 2.4 | 16 | 0.0038 | 43 | 55 | 22 | 19 |
| 1MA7 106-6BAQQ | 2.4 | 4.8 | 2.5 | 16 | 0.0063 | 47 | 59 | 26 | 26 |
| 1MA7 113-6BBQQ | 2.3 | 5 | 2.5 | 13 | 0.011 | 52 | 64 | 19 | 16 |
| 1MA7 130-6BBQQ | 1.8 | 4.4 | 2.4 | 13 | 0.015 | 63 | 75 | 21 | 18 |
| 1MA7 133-6BBQQ | 2.3 | 5.1 | 2.8 | 13 | 0.019 | 63 | 75 | 16 | 13 |
| 1MA7 134-6BBQQ | 2.4 | 5.6 | 2.8 | 13 | 0.025 | 63 | 75 | 13 | 11 |
| 1MA7 163-6BBQQ | 2.7 | 6.4 | 3.1 | 13 | 0.041 | 66 | 78 | 18 | 9 |
| 1MA7 166-6BBQQ | 2.8 | 7.7 | 2.2 | 13 | 0.055 | 66 | 78 | 15 | 8 |

- 1) The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.
- 2) The "Second shaft extension" option, order code **K16** is not possible.
- 3) For motors 1MA7 06.-4. (motor series 1MA7 frame size 63, 4-pole) not possible.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zone 1 with type of protection "e"
Cast-iron series 1MA6

Selection and ordering data

| Rated output at | | Temperature class | Frame size | Operating values at rated output | | | | | Rated current at 380 ... 420 V, 50 Hz | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight IM B3 type of construction approx. m kg |
|---|-------------------|-------------------|------------|----------------------------------|-----------------------|---------------------|-----------------------|---------------------------------------|---------------------------------------|--|-------|---|
| 50 Hz | 60 Hz | | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz | Power factor at 50 Hz | Rated current at 380 ... 420 V, 50 Hz | | | | |
| P_{rated} kW | P_{rated} kW | | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | | | | |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, temperature classes T1 to T3 | | | | | | | | | | | | |
| 2.5 | 2.5 | T1,T2,T3 | 100 L | 2865 | 8.3 | 82 | 0.87 | 5.3 | 1MA6 106-2BA□□ | | 34 | |
| 3.3 | 3.3 | T1,T2,T3 | 112 M | 2875 | 11 | 84 | 0.89 | 6.7 | 1MA6 113-2BB□□ | | 43 | |
| 4.6 | 4.6 | T1,T2,T3 | 132 S | 2920 | 15 | 83 | 0.9 | 9.3 | 1MA6 130-2BB□□ | | 53 | |
| 5.5 | 5.5 | T3 | 132 S | 2925 | 18 | 86 | 0.92 | 10.7 | 1MA6 131-2BB□□¹⁾ | | 58 | |
| 7.5 | 7.5 | T3 | 160 M | 2945 | 24 | 87.5 | 0.9 | 15.3 | 1MA6 163-2BB□□¹⁾ | | 96 | |
| 10 | 10 | T3 | 160 M | 2940 | 33 | 88.5 | 0.92 | 19.1 | 1MA6 164-2BB□□¹⁾ | | 105 | |
| 12.5 | 12.5 | T3 | 160 L | 2940 | 41 | 89 | 0.93 | 23 | 1MA6 166-2BB□□¹⁾ | | 115 | |
| 15 | 15 | T3 | 180 M | 2955 | 49 | 92 | 0.87 | 29 | 1MA6 183-2BC□□ | | 170 | |
| 20 | 20 | T3 | 200 L | 2950 | 64 | 91.2 | 0.87 | 49 | 1MA6 206-2BC□□ | | 245 | |
| 24 | 24 | T3 | 200 L | 2965 | 77 | 92 | 0.87 | 46 | 1MA6 207-2BC□□ | | 246 | |
| 28 | 28 | T3 | 225 M | 2970 | 90 | 93.6 | 0.9 | 51 | 1MA6 223-2BC□□ | | 310 | |
| 38 | 38 | T1,T2 | 225 M | 2970 | 122 | 93.9 | 0.89 | 69 ²⁾ | 1MA6 223-2AC□□ | | 310 | |
| 36 | 36 | T3 | 250 M | 2975 | 116 | 93.5 | 0.91 | 64 | 1MA6 253-2BC□□ | | 415 | |
| 47 | 47 | T1,T2 | 250 M | 2975 | 151 | 93.9 | 0.9 | 85 | 1MA6 253-2AC□□ | | 415 | |
| 47 | 47 | T3 | 280 S | 2983 | 150 | 94.5 | 0.9 | 84 | 1MA6 280-2BD□□ | | 570 | |
| 64 | 64 | T1,T2 | 280 S | 2980 | 205 | 94.3 | 0.89 | 115 | 1MA6 280-2AD□□ | | 570 | |
| 58 | 58 | T3 | 280 M | 2982 | 186 | 94.7 | 0.91 | 104 | 1MA6 283-2BD□□ | | 610 | |
| 76 | 76 | T1,T2 | 280 M | 2978 | 244 | 94.8 | 0.9 | 134 | 1MA6 283-2AD□□ | | 610 | |
| 68 | 68 | T3 | 315 S | 2985 | 218 | 94 | 0.91 | 120 | 1MA6 310-2BD□□ | | 790 | |
| 95 | 95 | T1,T2 | 315 S | 2985 | 304 | 94.6 | 0.9 | 169 | 1MA6 310-2AD□□ | | 790 | |
| 80 | 80 | T3 | 315 M | 2985 | 256 | 94.8 | 0.91 | 142 | 1MA6 313-2BD□□ | | 850 | |
| 112 | 112 | T1,T2 | 315 M | 2985 | 358 | 94.8 | 0.91 | 198 ²⁾ | 1MA6 313-2AD□□ | | 850 | |
| 100 | 100 | T3 | 315 L | 2984 | 320 | 94.9 | 0.92 | 174 | 1MA6 316-2BD□□ | | 990 | |
| 135 | 135 | T1,T2 | 315 L | 2984 | 432 | 95.2 | 0.91 | 234 | 1MA6 316-2AD□□ | | 990 | |
| 125 | 125 | T3 | 315 L | 2985 | 400 | 95.5 | 0.91 | 214 | 1MA6 317-2BD□□³⁾ | | 1100 | |
| 165 | 165 | T1,T2 | 315 L | 2986 | 528 | 95.7 | 0.91 | 280 | 1MA6 317-2AD□□³⁾ | | 1100 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | |
|----------------------------|------------------------------------|---------------|----------|----------|---|---------------------------------|---|----------------------|---------------------------------|---------------------|--------------------------------|
| | 50 Hz | | | | Without flange | With flange | | With standard flange | | With special flange | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6 ⁴⁾⁵⁾ | IM B5, IM V3 ⁴⁾⁶⁾ | IM V1 with protective cover ⁴⁾⁶⁾⁷⁾ | IM B35 | IM B14, IM V19 ⁴⁾ | IM B34 | IM B14 IM V19 ⁴⁾ |
| | 1 | 6 | 3 | 5 | 0 | 1 | 4 | 6 | 2 | 7 | 3 |
| 1MA6 10 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1MA6 11 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1MA6 13 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1MA6 16 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1MA6 18 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁸⁾ | ✓ | ✓ | – | – | – |
| 1MA6 20 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁸⁾ | ✓ | ✓ | – | – | – |
| 1MA6 22 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁸⁾ | ✓ | ✓ | – | – | – |
| 1MA6 25 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁸⁾ | ✓ | ✓ | – | – | – |
| 1MA6 28 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁸⁾ | ✓ | ✓ | – | – | – |
| 1MA6 310 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁸⁾ | ✓ | ✓ | – | – | – |
| 1MA6 313 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁸⁾ | ✓ | ✓ | – | – | – |
| 1MA6 316 □□ | – | ○ | ○ | ○ | □ ⁹⁾ | – | ✓ ¹⁰⁾ | ✓ | – | – | – |
| 1MA6 317 □□ | – | ○ | ○ | ○ | □ ⁹⁾ | – | ✓ ¹⁰⁾ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

For footnotes, see Page 4/23.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zone 1 with type of protection "e"
Cast-iron series 1MA6

Selection and ordering data (continued)

| Order No. | Locked-rotor torque | Locked-rotor current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | | t_E time | |
|---|-----------------------------|------------------------------|------------------|--------------|-------------------------|---|-------------------------------|-----------------------------|--------------------------|
| | with direct starting torque | as multiple of rated current | torque | | | Measuring surface sound pressure level at 50 Hz | Sound pressure level at 50 Hz | for temperature class T1/T2 | for temperature class T3 |
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | $L_{p(A)}$ dB(A) | L_{WA} dB(A) | t_E s | t_E s |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, temperature classes T1 to T3 | | | | | | | | | |
| 1MA6 106-2BA□□ | 2.6 | 7.4 | 2.8 | 16 | 0.0038 | 62 | 74 | 9 | 8 |
| 1MA6 113-2BB□□ | 2.1 | 6.6 | 2.3 | 13 | 0.0055 | 63 | 75 | 10 | 9 |
| 1MA6 130-2BB□□ | 1.9 | 6.8 | 2.5 | 13 | 0.016 | 68 | 80 | 15 | 13 |
| 1MA6 131-2BB□□ | 2.2 | 7.7 | 2.7 | 13 | 0.021 | 68 | 80 | 15 | 13 |
| 1MA6 163-2BB□□ | 2.2 | 7.6 | 3.1 | 13 | 0.034 | 70 | 82 | 29 | 18 |
| 1MA6 164-2BB□□ | 2.1 | 7.6 | 2.9 | 13 | 0.04 | 70 | 82 | 23 | 12 |
| 1MA6 166-2BB□□ | 2.3 | 7.6 | 3 | 13 | 0.052 | 70 | 82 | 23 | 9 |
| 1MA6 183-2BC□□ | 2 | 6.9 | 3.3 | 10 | 0.077 | 70 | 83 | 30 | 14 |
| 1MA6 206-2BC□□ | 1.9 | 6 | 2.9 | 10 | 0.14 | 71 | 84 | 35 | 14 |
| 1MA6 207-2BC□□ | 2 | 6.4 | 3 | 10 | 0.16 | 71 | 84 | 35 | 10 |
| 1MA6 223-2BC□□ | 1.8 | 6.4 | 2.7 | 10 | 0.24 | 71 | 84 | 30 | 13 |
| 1MA6 223-2AC□□ | 1.8 | 7 | 2.7 | 10 | 0.24 | 71 | 84 | 16 | – |
| 1MA6 253-2BC□□ | 1.5 | 6.6 | 2.7 | 10 | 0.45 | 75 | 89 | 30 | 11 |
| 1MA6 253-2AC□□ | 1.5 | 6.5 | 2.7 | 10 | 0.45 | 75 | 89 | 18 | – |
| 1MA6 280-2BD□□ | 1.5 | 7.1 | 2.9 | 7 | 0.79 | 77 | 91 | 30 | 23 |
| 1MA6 280-2AD□□ | 1.5 | 7.8 | 2.9 | 7 | 0.79 | 77 | 91 | 19 | – |
| 1MA6 283-2BD□□ | 1.5 | 7.2 | 2.8 | 7 | 0.92 | 77 | 91 | 27 | 11 |
| 1MA6 283-2AD□□ | 1.5 | 7.5 | 2.8 | 7 | 0.92 | 77 | 91 | 15 | – |
| 1MA6 310-2BD□□ | 1.4 | 7.1 | 2.8 | 7 | 1.3 | 79 | 93 | 50 | 21 |
| 1MA6 310-2AD□□ | 1.5 | 7.3 | 2.9 | 7 | 1.3 | 79 | 93 | 30 | – |
| 1MA6 313-2BD□□ | 1.6 | 7 | 2.8 | 7 | 1.5 | 79 | 93 | 40 | 19 |
| 1MA6 313-2AD□□ | 1.4 | 7.5 | 2.7 | 7 | 1.5 | 79 | 93 | 21 | – |
| 1MA6 316-2BD□□ | 1.4 | 6.8 | 2.7 | 7 | 1.8 | 79 | 93 | 40 | 11 |
| 1MA6 316-2AD□□ | 1.6 | 7.4 | 2.9 | 7 | 1.8 | 79 | 93 | 17 | – |
| 1MA6 317-2BD□□ | 1.5 | 7.3 | 2.5 | 7 | 2.3 | 79 | 93 | 30 | 7 |
| 1MA6 317-2AD□□ | 1.8 | 9.3 | 2.9 | 7 | 2.3 | 79 | 93 | 7 | – |

1) For the following versions T3-output is stamped as standard:
– order code **A11/A12**
– voltage code "9"
Alternative: order code **C30** "T1/T2-output on the rating plate"

2) For connection to 230 V, parallel supply cables are necessary (see the "Introduction" section, "Connection, circuit and connection box").

3) Technical data and dimensions are available for VIK version (order code **K30**) on request (additional charge).

4) The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.

5) If motors 1MA6 183-... to 1MA6 318-... (motor series 1MA6 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7 or IM V6 are fixed to the wall, it is recommended that the motor feet are supported.

6) 1MA6 220-... to 1MA6 318-... motors (motor series 1MA6 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

7) The "Second shaft extension" option, order code **K16** is not possible.

8) Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

9) Type of construction IM V6 is only possible using type of construction code **9** and order code **M1E**.

10) 2-pole motors in 60 Hz version available on request.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zone 1 with type of protection "e"
Cast-iron series 1MA6

Selection and ordering data (continued)

| Rated output at | | Temperature class | Frame size | Operating values at rated output | | | | | Order No. | Price | Weight |
|---|-------------------|-------------------|------------|----------------------------------|-----------------------|---------------------|-----------------------|---------------------------------------|---|---------|--------|
| 50 Hz | 60 Hz | | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz | Power factor at 50 Hz | Rated current at 380 ... 420 V, 50 Hz | | | |
| P_{rated} kW | P_{rated} kW | | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | For Order No. supplements for voltage and type of construction, see table below | m kg | |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, temperature classes T1 and T2, with double rating plate (T1/T2 and T3) | | | | | | | | | | | |
| 6.5 | 6.5 | T1,T2 | 132 S | 2900 | 21 | 85 | 0.91 | 12.6 | 1MA6 131-2BB□□²⁾ | 58 | |
| 9.5 | 9.5 | T1,T2 | 160 M | 2920 | 31 | 87 | 0.88 | 18.6 | 1MA6 163-2BB□□²⁾ | 96 | |
| 13 | 13 | T1,T2 | 160 M | 2910 | 43 | 87.5 | 0.92 | 24.5 | 1MA6 164-2BB□□^{1) 2)} | 105 | |
| 16 | 16 | T1,T2 | 160 L | 2910 | 53 | 87 | 0.93 | 30 | 1MA6 166-2BB□□^{1) 2)} | 115 | |
| 19 | 19 | T1,T2 | 180 M | 2935 | 62 | 91.1 | 0.88 | 36.5 | 1MA6 183-2BC□□¹⁾ | 170 | |
| 25 | 25 | T1,T2 | 200 L | 2960 | 81 | 90.6 | 0.86 | 39 | 1MA6 206-2BC□□¹⁾ | 245 | |
| 31 | 31 | T1,T2 | 200 L | 2950 | 100 | 91.4 | 0.88 | 60 | 1MA6 207-2BC□□¹⁾ | 246 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | |
|---------------------------|------------------------------------|---------------|----------|----------|---|--|---|----------------------|---|---------------------|--------------------------------|
| | 50 Hz | | | | Without flange | With flange | | With standard flange | | With special flange | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3(6/7/8), IM V6 ^{3) 4)} | IM B5 ^{3) 5)} IM V3 ^{3) 5)} | IM V1 with protective cover ^{3) 5) 6)} | IM B35 | IM B14, ³⁾ IM V19 ³⁾ | IM B34 | IM B14 IM V19 ³⁾ |
| | 1 | 6 | 3 | 5 | 0 | 1 | 4 | 6 | 2 | 7 | 3 |
| 1MA6 13 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1MA6 16 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1MA6 18 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁷⁾ | ✓ | ✓ | – | – | – |
| 1MA6 20 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁷⁾ | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ Utilization according to temperature class 155 (F).

²⁾ For the following versions T3-output is stamped as standard:
– order code **A11/A12**
– voltage code "9"
Alternative: order code **C30** "T1/T2-output on the rating plate"

³⁾ The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.

⁴⁾ If motors 1MA6 183-... to 1MA6 318-... (motor series 1MA6 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7 or IM V6 are fixed to the wall, it is recommended that the motor feet are supported.

⁵⁾ 1MA6 220-... to 1MA6 318-... motors (motor series 1MA6 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

⁶⁾ The "Second shaft extension" option, order code **K16** is not possible.

⁷⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zone 1 with type of protection "e"
Cast-iron series 1MA6

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | t_E time | |
|---|--|--|----------------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | for temperature class T1/T2 t_E s | for temperature class T3 t_E s |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, temperature classes T1 and T2, with double rating plate (T1/T2 and T3) | | | | | | | |
| 1MA6 131-2BB□□ | 1.9 | 6.5 | 2.3 | 13 | 0.021 | 12 | 7 |
| 1MA6 163-2BB□□ | 1.7 | 6 | 2.4 | 13 | 0.034 | 24 | – |
| 1MA6 164-2BB□□ | 1.6 | 5.8 | 2.2 | 13 | 0.04 | 16 | – |
| 1MA6 166-2BB□□ | 1.8 | 5.8 | 2.3 | 13 | 0.052 | 5 | – |
| 1MA6 183-2BC□□ | 1.6 | 5.5 | 2.6 | 10 | 0.077 | 24 | – |
| 1MA6 206-2BC□□ | 1.5 | 4.8 | 2.3 | 10 | 0.14 | 28 | – |
| 1MA6 207-2BC□□ | 1.5 | 4.9 | 2.3 | 10 | 0.16 | 26 | – |

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zone 1 with type of protection "e"
Cast-iron series 1MA6

Selection and ordering data (continued)

| Rated output at | | Temperature class | Frame size | Operating values at rated output | | | | | Rated current at 380 ... 420 V, 50 Hz | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight IM B3 type of construction approx. <i>m</i> kg |
|---|-------------------|-------------------|------------|----------------------------------|-----------------------|---------------------|-----------------------|---------------------------------------|---------------------------------------|--|-------|--|
| 50 Hz | 60 Hz | | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz | Power factor at 50 Hz | Rated current at 380 ... 420 V, 50 Hz | | | | |
| P_{rated} kW | P_{rated} kW | | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | | | | |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, temperature classes T1 to T3 | | | | | | | | | | | | |
| 2 | 2 | T1,T2,T3 | 100 L | 1420 | 14 | 80 | 0.82 | 4.5 | 1MA6 106-4BAQQ | | 33 | |
| 2.5 | 2.5 | T1,T2,T3 | 100 L | 1415 | 17 | 81 | 0.83 | 5.5 | 1MA6 107-4BAQQ | | 36 | |
| 3.6 | 3.6 | T1,T2,T3 | 112 M | 1435 | 24 | 85 | 0.83 | 7.5 | 1MA6 113-4BAQQ | | 45 | |
| 5 | 5 | T1,T2,T3 | 132 S | 1445 | 33 | 86 | 0.82 | 10.4 | 1MA6 130-4BAQQ | | 55 | |
| 6.8 | 6.8 | T1,T2,T3 | 132 M | 1460 | 44 | 87 | 0.82 | 14 | 1MA6 133-4BAQQ | | 62 | |
| 10 | 10 | T1,T2,T3 | 160 M | 1455 | 66 | 88 | 0.87 | 19.7 | 1MA6 163-4BBQQ | | 100 | |
| 13.5 | 13.5 | T1,T2,T3 | 160 L | 1465 | 88 | 89 | 0.84 | 27 | 1MA6 166-4BBQQ | | 114 | |
| 15 | 15 | T3 | 180 M | 1470 | 97 | 90.7 | 0.8 | 31 | 1MA6 183-4BCQQ | | 165 | |
| 17.5 | 17.5 | T3 | 180 L | 1470 | 114 | 91.6 | 0.8 | 36 | 1MA6 186-4BCQQ | | 177 | |
| 24 | 24 | T3 | 200 L | 1475 | 155 | 92.5 | 0.82 | 47.5 | 1MA6 207-4BCQQ | | 280 | |
| 30 | 30 | T3 | 225 S | 1481 | 193 | 93.3 | 0.83 | 59 | 1MA6 220-4BCQQ | | 300 | |
| 36 | 36 | T3 | 225 M | 1484 | 232 | 93.8 | 0.84 | 70 ¹⁾ | 1MA6 223-4BCQQ | | 330 | |
| 44 | 44 | T3 | 250 M | 1485 | 283 | 94 | 0.85 | 83 | 1MA6 253-4BCQQ | | 435 | |
| 58 | 58 | T3 | 280 S | 1488 | 372 | 94.6 | 0.84 | 111 | 1MA6 280-4BCQQ²⁾ | | 610 | |
| 70 | 70 | T3 | 280 M | 1488 | 449 | 94.8 | 0.85 | 130 | 1MA6 283-4BCQQ²⁾ | | 660 | |
| 84 | 84 | T3 | 315 S | 1492 | 538 | 95.4 | 0.84 | 158 | 1MA6 310-4BDQQ | | 830 | |
| 100 | 100 | T3 | 315 M | 1492 | 640 | 95.8 | 0.85 | 185 | 1MA6 313-4BDQQ²⁾ | | 910 | |
| 115 | 115 | T3 | 315 L | 1490 | 740 | 95.6 | 0.86 | 214 | 1MA6 316-4BDQQ²⁾ | | 1060 | |
| 135 | 135 | T3 | 315 L | 1492 | 868 | 95.8 | 0.86 | 245 | 1MA6 317-4BDQQ | | 1200 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | |
|----------------------------|------------------------------------|------------------------|--------|----------------|---|------------------------|------------------------|---|----------------------|------------------------|---------------------|-----------------------------|
| | 50 Hz | | | | Without flange | With flange | | | With standard flange | | With special flange | |
| | 230 V Δ /400 VY | 400 V Δ /690 VY | 500 VY | 500 V Δ | IM B3(6/7/8, IM V6 ^{3) 4)} | IM B5 ^{3) 5)} | IM V3 ^{3) 5)} | IM V1 with protective cover ^{3) 5) 6)} | IM B35 | IM B14 ^{1,3)} | IM B34 | IM B14 IM V19 ³⁾ |
| | 1 | 6 | 3 | 5 | 0 | 1 | 4 | 6 | 2 | 7 | 3 | |
| 1MA6 10 QQ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1MA6 11 QQ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1MA6 13 QQ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1MA6 16 QQ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1MA6 18 QQ | ○ | ○ | ○ | ○ | □ | ✓ ⁷⁾ | ✓ | ✓ | – | – | – | |
| 1MA6 20 QQ | ○ | ○ | ○ | ○ | □ | ✓ ⁷⁾ | ✓ | ✓ | – | – | – | |
| 1MA6 22 QQ | ○ | ○ | ○ | ○ | □ | ✓ ⁷⁾ | ✓ | ✓ | – | – | – | |
| 1MA6 25 QQ | ○ | ○ | ○ | ○ | □ | ✓ ⁷⁾ | ✓ | ✓ | – | – | – | |
| 1MA6 28 QQ | ○ | ○ | ○ | ○ | □ | ✓ ⁷⁾ | ✓ | ✓ | – | – | – | |
| 1MA6 310 QQ | ○ | ○ | ○ | ○ | □ | ✓ ⁷⁾ | ✓ | ✓ | – | – | – | |
| 1MA6 313 QQ | ○ | ○ | ○ | ○ | □ | ✓ ⁷⁾ | ✓ | ✓ | – | – | – | |
| 1MA6 316 QQ | – | ○ | ○ | ○ | □ ⁸⁾ | – | ✓ | ✓ | – | – | – | |
| 1MA6 317 QQ | – | ○ | ○ | ○ | □ ⁸⁾ | – | ✓ | ✓ | – | – | – | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

For footnotes, see Page 4/27.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zone 1 with type of protection "e"
Cast-iron series 1MA6

Selection and ordering data (continued)

| Order No. | Locked-rotor torque | Locked-rotor current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | | t_E time | |
|---|-----------------------------|------------------------------|------------------|--------------|-------------------------|---|-------------------------------|-----------------------------|--------------------------|
| | with direct starting torque | as multiple of rated current | torque | | | Measuring surface sound pressure level at 50 Hz | Sound pressure level at 50 Hz | for temperature class T1/T2 | for temperature class T3 |
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | L_{pFA} dB(A) | L_{WA} dB(A) | t_E s | t_E s |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, temperature classes T1 to T3 | | | | | | | | | |
| 1MA6 106-4BA□□ | 2.5 | 6.4 | 2.7 | 16 | 0.0048 | 53 | 65 | 13 | 11 |
| 1MA6 107-4BA□□ | 2.6 | 6.4 | 2.7 | 16 | 0.0058 | 53 | 65 | 12 | 10 |
| 1MA6 113-4BA□□ | 2.6 | 7.2 | 2.9 | 16 | 0.011 | 53 | 65 | 10 | 9 |
| 1MA6 130-4BA□□ | 2.7 | 6.6 | 3.2 | 16 | 0.021 | 62 | 74 | 10 | 9 |
| 1MA6 133-4BA□□ | 3 | 7.7 | 3.6 | 16 | 0.027 | 62 | 74 | 10 | 9 |
| 1MA6 163-4BB□□ | 2.3 | 6.5 | 2.7 | 13 | 0.052 | 66 | 78 | 17 | 10 |
| 1MA6 166-4BB□□ | 2.4 | 6.9 | 3 | 13 | 0.057 | 66 | 78 | 18 | 9 |
| 1MA6 183-4BC□□ | 1.8 | 6.1 | 2.9 | 10 | 0.13 | 63 | 76 | 18 | 11 |
| 1MA6 186-4BC□□ | 1.8 | 6.4 | 3 | 10 | 0.15 | 63 | 76 | 16 | 11 |
| 1MA6 207-4BC□□ | 2.1 | 7.9 | 3 | 10 | 0.24 | 65 | 78 | 20 | 11 |
| 1MA6 220-4BC□□ | 1.6 | 6.7 | 2.7 | 10 | 0.44 | 65 | 78 | 13 | 13 |
| 1MA6 223-4BC□□ | 1.7 | 6.9 | 2.8 | 10 | 0.52 | 65 | 78 | 12 | 12 |
| 1MA6 253-4BC□□ | 1.7 | 7.3 | 2.5 | 10 | 0.79 | 65 | 79 | 18 | 11 |
| 1MA6 280-4BC□□ | 1.7 | 6.3 | 2.5 | 10 | 1.4 | 67 | 81 | 30 | 7 |
| 1MA6 283-4BC□□ | 1.7 | 7 | 2.5 | 10 | 1.6 | 67 | 81 | 26 | 6 |
| 1MA6 310-4BD□□ | 1.7 | 7.7 | 2.8 | 7 | 2.2 | 69 | 83 | 28 | 8 |
| 1MA6 313-4BD□□ | 1.6 | 7.2 | 2.5 | 7 | 2.7 | 69 | 83 | 29 | 7 |
| 1MA6 316-4BD□□ | 1.7 | 7.5 | 2.5 | 7 | 3.2 | 69 | 83 | 28 | 5 |
| 1MA6 317-4BD□□ | 1.7 | 7.8 | 2.8 | 7 | 4.2 | 69 | 83 | 26 | 7 |

4

- For connection to 230 V, parallel supply cables are necessary (see the "Introduction" section, "Connection, circuit and connection box").
- Technical data and dimensions are available for VIK version (order code **K30**) on request (additional charge).
- The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.
- If motors 1MA6 183-... to 1MA6 318-... (motor series 1MA6 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7 or IM V6 are fixed to the wall, it is recommended that the motor feet are supported.
- 1MA6 220-... to 1MA6 318-... motors (motor series 1MA6 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.
- The "Second shaft extension" option, order code **K16** is not possible.
- Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.
- Type of construction IM V6 is only possible using type of construction code **9** and order code **M1E**.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zone 1 with type of protection "e"
Cast-iron series 1MA6

Selection and ordering data (continued)

| Rated output at | | Temperature class | Frame size | Operating values at rated output | | | | | Rated current at 380 ... 420 V, 50 Hz | Order No. supplements for voltage and type of construction, see table below | Price | Weight IM B3 type of construction approx. m kg |
|---|----------------|-------------------|------------|----------------------------------|-----------------------|---------------------|-----------------------|---------------------------------------|---------------------------------------|---|-------|--|
| 50 Hz | 60 Hz | | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz | Power factor at 50 Hz | Rated current at 380 ... 420 V, 50 Hz | | | | |
| P_{rated} kW | P_{rated} kW | | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | | | | |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, temperature classes T1 and T2, with double rating plate (T1/T2 and T3) | | | | | | | | | | | | |
| 17 | 17 | T1,T2 | 180 M | 1460 | 111 | 90 | 0.82 | 35.5 | 1MA6 183-4BC□□¹⁾ | | 165 | |
| 20 | 20 | T1,T2 | 180 L | 1465 | 130 | 90.6 | 0.82 | 41 ²⁾ | 1MA6 186-4BC□□¹⁾ | | 177 | |
| 27 | 27 | T1,T2 | 200 L | 1475 | 175 | 92.4 | 0.84 | 53 | 1MA6 207-4BC□□ | | 280 | |
| 33 | 33 | T1,T2 | 225 S | 1480 | 213 | 93.1 | 0.84 | 64 ²⁾ | 1MA6 220-4BC□□ | | 300 | |
| 40 | 40 | T1,T2 | 225 M | 1480 | 258 | 93.6 | 0.85 | 77 ²⁾ | 1MA6 223-4BC□□ | | 330 | |
| 50 | 50 | T1,T2 | 250 M | 1485 | 322 | 93.8 | 0.86 | 94 | 1MA6 253-4BC□□ | | 435 | |
| 68 | 68 | T1,T2 | 280 S | 1485 | 437 | 94.5 | 0.85 | 131 | 1MA6 280-4BC□□³⁾ | | 610 | |
| 80 | 80 | T1,T2 | 280 M | 1485 | 514 | 94.8 | 0.87 | 150 ²⁾ | 1MA6 283-4BC□□³⁾ | | 660 | |
| 100 | 100 | T1,T2 | 315 S | 1490 | 641 | 95.3 | 0.85 | 188 | 1MA6 310-4BD□□ | | 830 | |
| 120 | 120 | T1,T2 | 315 M | 1488 | 770 | 95.7 | 0.86 | 222 ²⁾ | 1MA6 313-4BD□□³⁾ | | 910 | |
| 135 | 135 | T1,T2 | 315 L | 1488 | 868 | 95.5 | 0.86 | 248 | 1MA6 316-4BD□□³⁾ | | 1060 | |
| 165 | 165 | T1,T2 | 315 L | 1485 | 1061 | 95.8 | 0.87 | 305 | 1MA6 317-4BD□□ | | 1200 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | |
|----------------------------|------------------------------------|---------------|--------|--------|---|------------------------------|---|--------|------------------------------|--------|-----------------------------|--|
| | 50 Hz | | | | Without flange | With flange | | | With standard flange | | With special flange | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6 ⁴⁾⁵⁾ | IM B5, IM V3 ⁴⁾⁶⁾ | IM V1 with protective cover ⁴⁾⁶⁾⁷⁾ | IM B35 | IM B14, IM V19 ⁴⁾ | IM B34 | IM B14 IM V19 ⁴⁾ | |
| | 1 | 6 | 3 | 5 | 0 | 1 | 4 | 6 | 2 | 7 | 3 | |
| 1MA6 18 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁸⁾ | ✓ | ✓ | - | - | - | |
| 1MA6 20 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁸⁾ | ✓ | ✓ | - | - | - | |
| 1MA6 22 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁸⁾ | ✓ | ✓ | - | - | - | |
| 1MA6 25 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁸⁾ | ✓ | ✓ | - | - | - | |
| 1MA6 28 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁸⁾ | ✓ | ✓ | - | - | - | |
| 1MA6 310 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁸⁾ | ✓ | ✓ | - | - | - | |
| 1MA6 313 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁸⁾ | ✓ | ✓ | - | - | - | |
| 1MA6 316 □□ | - | ○ | ○ | ○ | □ ⁹⁾ | - | ✓ | ✓ | - | - | - | |
| 1MA6 317 □□ | - | ○ | ○ | ○ | □ ⁹⁾ | - | ✓ | ✓ | - | - | - | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ Utilization according to temperature class 155 (F).

²⁾ For connection to 230 V, parallel supply cables are necessary (see the "Introduction" section, "Connection, circuit and connection box").

³⁾ Technical data and dimensions are available for VIK version (order code **K30**) on request (additional charge).

⁴⁾ The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.

⁵⁾ If motors 1MA6 183-... to 1MA6 318-... (motor series 1MA6 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7 or IM V6 are fixed to the wall, it is recommended that the motor feet are supported.

⁶⁾ 1MA6 220-... to 1MA6 318-... motors (motor series 1MA6 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

⁷⁾ The "Second shaft extension" option, order code **K16** is not possible.

⁸⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

⁹⁾ Type of construction IM V6 is only possible using type of construction code **9** and order code **M1E**.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zone 1 with type of protection "e"
Cast-iron series 1MA6

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | t_E time | |
|---|---|---|----------------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | for temperature class T1/T2 t_E s | for temperature class T3 t_E s |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, temperature classes T1 and T2, with double rating plate (T1/T2 and T3) | | | | | | | |
| 1MA6 183-4BC□□ | 1.6 | 5.3 | 2.4 | 10 | 0.13 | 13 | – |
| 1MA6 186-4BC□□ | 1.6 | 5.6 | 2.6 | 10 | 0.15 | 13 | – |
| 1MA6 207-4BC□□ | 1.9 | 7.1 | 2.7 | 10 | 0.24 | 19 | – |
| 1MA6 220-4BC□□ | 1.4 | 6.2 | 2.5 | 10 | 0.44 | 11 | – |
| 1MA6 223-4BC□□ | 1.5 | 6.2 | 2.5 | 10 | 0.52 | 10 | – |
| 1MA6 253-4BC□□ | 1.5 | 6.4 | 2.1 | 10 | 0.79 | 15 | – |
| 1MA6 280-4BC□□ | 1.5 | 5.3 | 2.1 | 10 | 1.4 | 23 | – |
| 1MA6 283-4BC□□ | 1.5 | 6 | 2.2 | 10 | 1.6 | 20 | – |
| 1MA6 310-4BD□□ | 1.4 | 6.5 | 2.4 | 7 | 2.2 | 24 | – |
| 1MA6 313-4BD□□ | 1.3 | 6 | 2.1 | 7 | 2.7 | 24 | – |
| 1MA6 316-4BD□□ | 1.4 | 6.4 | 2.1 | 7 | 3.2 | 21 | – |
| 1MA6 317-4BD□□ | 1.5 | 6.3 | 2.3 | 7 | 4.2 | 17 | – |

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zone 1 with type of protection "e"
Cast-iron series 1MA6

Selection and ordering data (continued)

| Rated output at | | Temperature class | Frame size | Operating values at rated output | | | | | Rated current at 380 ... 420 V, 50 Hz | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight IM B3 type of construction approx. m kg |
|---|----------------|-------------------|------------|----------------------------------|-----------------------|---------------------|-----------------------|---------------------------------------|--|---|-------|--|
| 50 Hz | 60 Hz | | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz | Power factor at 50 Hz | Rated current at 380 ... 420 V, 50 Hz | | | | |
| P_{rated} kW | P_{rated} kW | | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | | | | |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, temperature classes T1 to T3 | | | | | | | | | | | | |
| 1.3 | 1.3 | T1,T2,T3 | 100 L | 935 | 13 | 77 | 0.73 | 3.35 | 1MA6 106-6BA□□ | | 33 | |
| 1.9 | 1.9 | T1,T2,T3 | 112 M | 940 | 19 | 79 | 0.76 | 4.7 | 1MA6 113-6BB□□ | | 40 | |
| 2.6 | 2.6 | T1,T2,T3 | 132 S | 945 | 26 | 79 | 0.75 | 6.5 | 1MA6 130-6BB□□ | | 50 | |
| 3.5 | 3.5 | T1,T2,T3 | 132 M | 955 | 35 | 81 | 0.72 | 9 | 1MA6 133-6BB□□ | | 57 | |
| 4.8 | 4.8 | T1,T2,T3 | 132 M | 950 | 48 | 83 | 0.76 | 11.4 | 1MA6 134-6BB□□ | | 66 | |
| 6.6 | 6.6 | T1,T2,T3 | 160 M | 960 | 65 | 85 | 0.75 | 14.9 | 1MA6 163-6BB□□ | | 103 | |
| 9.7 | 9.7 | T1,T2,T3 | 160 L | 965 | 96 | 88 | 0.76 | 21 | 1MA6 166-6BB□□ | | 122 | |
| 13.2 | 13.2 | T1,T2,T3 | 180 L | 975 | 129 | 89.6 | 0.78 | 28.5 | 1MA6 186-6BC□□ | | 177 | |
| 16.5 | 16.5 | T1,T2,T3 | 200 L | 980 | 161 | 90.5 | 0.81 | 34.5 | 1MA6 206-6BC□□ | | 220 | |
| 20 | 20 | T1,T2,T3 | 200 L | 980 | 195 | 90.8 | 0.82 | 41 | 1MA6 207-6BC□□ | | 235 | |
| 27 | 27 | T1,T2,T3 | 225 M | 980 | 263 | 92.5 | 0.82 | 54 | 1MA6 223-6BC□□ | | 305 | |
| 33 | 33 | T1,T2,T3 | 250 M | 985 | 320 | 93 | 0.83 | 66 | 1MA6 253-6BC□□ | | 410 | |
| 40 | 40 | T1,T2,T3 | 280 S | 990 | 386 | 93.3 | 0.85 | 77 | 1MA6 280-6BC□□ | | 540 | |
| 46 | 46 | T3 | 280 M | 988 | 445 | 93.5 | 0.86 | 86 | 1MA6 283-6BC□□ | | 580 | |
| 64 | 64 | T3 | 315 S | 991 | 617 | 94.3 | 0.84 | 124 | 1MA6 310-6BC□□ | | 770 | |
| 76 | 76 | T3 | 315 M | 991 | 732 | 94.6 | 0.84 | 146 | 1MA6 313-6BC□□ | | 830 | |
| 92 | 92 | T3 | 315 L | 991 | 887 | 95 | 0.85 | 172 | 1MA6 316-6BC□□ | | 970 | |
| 110 | 110 | T3 | 315 L | 991 | 1060 | 95.2 | 0.84 | 210 | 1MA6 317-6BC□□ ¹⁾ | | 1060 | |
| 125 | 125 | T3 | 315 L | 991 | 1210 | 95.2 | 0.86 | 220 | 1MA6 318-6BC□□ ^{1) 2)} | | 1100 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | |
|----------------------------|------------------------------------|---------------|--------|--------|---|-------------------------------|---|----------------------|------------------------------|--------|-----------------------------|---------------------|
| | 50 Hz | | | | Without flange | With flange | | With standard flange | | | | With special flange |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6 ^{3) 4)} | IM B5, IM V3 ^{3) 5)} | IM V1 with protective cover ^{3) 5) 6)} | IM B35 | IM B14, IM V19 ³⁾ | IM B34 | IM B14 IM V19 ³⁾ | |
| | 1 | 6 | 3 | 5 | 0 | 1 | 4 | 6 | 2 | 7 | 3 | |
| 1MA6 10 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1MA6 11 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1MA6 13 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1MA6 16 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1MA6 18 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁷⁾ | ✓ | ✓ | – | – | – | – |
| 1MA6 20 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁷⁾ | ✓ | ✓ | – | – | – | – |
| 1MA6 22 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁷⁾ | ✓ | ✓ | – | – | – | – |
| 1MA6 25 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁷⁾ | ✓ | ✓ | – | – | – | – |
| 1MA6 28 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁷⁾ | ✓ | ✓ | – | – | – | – |
| 1MA6 310 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁷⁾ | ✓ | ✓ | – | – | – | – |
| 1MA6 313 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁷⁾ | ✓ | ✓ | – | – | – | – |
| 1MA6 316 □□ | – | ○ | ○ | ○ | □ ⁸⁾ | – | ✓ | ✓ | – | – | – | – |
| 1MA6 317 □□ | – | ○ | ○ | ○ | □ | – | – | – | – | – | – | – |
| 1MA6 318 □□ | – | ○ | ○ | ○ | □ | – | – | – | – | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

For footnotes, see Page 4/31.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zone 1 with type of protection "e"
Cast-iron series 1MA6

Selection and ordering data (continued)

| Order No. | Locked-rotor torque | Locked-rotor current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | | t_E time | |
|---|--|------------------------------|------------------|--------------|-------------------------|---|-------------------------------|-----------------------------|--------------------------|
| | with direct starting as multiple of rated torque | as multiple of rated current | torque | | | Measuring surface sound pressure level at 50 Hz | Sound pressure level at 50 Hz | for temperature class T1/T2 | for temperature class T3 |
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | L_{dFA} dB(A) | L_{WA} dB(A) | t_E s | t_E s |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, temperature classes T1 to T3 | | | | | | | | | |
| 1MA6 106-6BA□□ | 2.4 | 4.8 | 2.5 | 16 | 0.0063 | 47 | 59 | 26 | 26 |
| 1MA6 113-6BB□□ | 2.3 | 5 | 2.5 | 13 | 0.011 | 52 | 64 | 19 | 16 |
| 1MA6 130-6BB□□ | 1.8 | 4.4 | 2.4 | 13 | 0.015 | 63 | 75 | 21 | 18 |
| 1MA6 133-6BB□□ | 2.3 | 5.1 | 2.8 | 13 | 0.019 | 63 | 75 | 16 | 13 |
| 1MA6 134-6BB□□ | 2.4 | 5.6 | 2.8 | 13 | 0.025 | 63 | 75 | 13 | 11 |
| 1MA6 163-6BB□□ | 2.7 | 6.4 | 3.1 | 13 | 0.041 | 66 | 78 | 18 | 9 |
| 1MA6 166-6BB□□ | 2.8 | 7.7 | 2.2 | 13 | 0.055 | 66 | 78 | 15 | 8 |
| 1MA6 186-6BC□□ | 1.6 | 5.4 | 2.5 | 10 | 0.2 | 66 | 78 | 22 | 18 |
| 1MA6 206-6BC□□ | 1.7 | 5.4 | 2.6 | 10 | 0.29 | 66 | 78 | 23 | 19 |
| 1MA6 207-6BC□□ | 1.7 | 5.6 | 2.6 | 10 | 0.33 | 66 | 78 | 22 | 17 |
| 1MA6 223-6BC□□ | 1.6 | 5.6 | 2.5 | 10 | 0.57 | 66 | 78 | 15 | 15 |
| 1MA6 253-6BC□□ | 1.6 | 5.3 | 2.4 | 10 | 0.89 | 60 | 74 | 16 | 16 |
| 1MA6 280-6BC□□ | 1.5 | 6.2 | 2.6 | 10 | 1.3 | 60 | 74 | 13 | 13 |
| 1MA6 283-6BC□□ | 1.6 | 6.5 | 2.5 | 10 | 1.5 | 60 | 74 | 0 | 12 |
| 1MA6 310-6BC□□ | 1.7 | 6.2 | 2.5 | 10 | 2.4 | 63 | 77 | 0 | 14 |
| 1MA6 313-6BC□□ | 1.7 | 6.4 | 2.5 | 10 | 2.9 | 63 | 77 | 0 | 8 |
| 1MA6 316-6BC□□ | 1.7 | 6.5 | 2.5 | 10 | 3.5 | 63 | 77 | 0 | 9 |
| 1MA6 317-6BC□□ | 1.7 | 6.8 | 2.5 | 10 | 4.3 | 63 | 77 | 0 | 6 |
| 1MA6 318-6BC□□ | 1.6 | 7 | 2.5 | 10 | 4.9 | 63 | 77 | 0 | 6 |

4

- 1) Technical data and dimensions are available for VIK version (order code **K30**) on request (additional charge).
- 2) Only certified for rated voltage of 400 V.
- 3) The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.
- 4) If motors 1MA6 183-... to 1MA6 318-... (motor series 1MA6 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7 or IM V6 are fixed to the wall, it is recommended that the motor feet are supported.
- 5) 1MA6 220-... to 1MA6 318-... motors (motor series 1MA6 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.
- 6) The "Second shaft extension" option, order code **K16** is not possible.
- 7) Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.
- 8) Type of construction IM V6 is only possible using type of construction code **9** and order code **M1E**.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zone 1 with type of protection "e"
Cast-iron series 1MA6

Selection and ordering data (continued)

| Rated output at | | Temperature class | Frame size | Operating values at rated output | | | | | Rated current at 380 ... 420 V, 50 Hz | Order No. supplements for voltage and type of construction, see table below | Price | Weight IM B3 type of construction approx. m kg |
|---|----------------|-------------------|------------|----------------------------------|-----------------------|---------------------|-----------------------|---------------------------------------|---------------------------------------|---|-------|--|
| 50 Hz | 60 Hz | | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz | Power factor at 50 Hz | Rated current at 380 ... 420 V, 50 Hz | | | | |
| P_{rated} kW | P_{rated} kW | | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | | | | |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, temperature classes T1 and T2, with double rating plate (T1/T2 and T3) | | | | | | | | | | | | |
| 50 | 50 | T1,T2 | 280 M | 987 | 484 | 93.3 | 0.86 | 96 | 1MA6 283-6BC□□ | | 580 | |
| 68 | 68 | T1,T2 | 315 S | 990 | 656 | 94.2 | 0.85 | 131 | 1MA6 310-6BC□□ | | 770 | |
| 82 | 82 | T1,T2 | 315 M | 990 | 791 | 94.5 | 0.84 | 158 | 1MA6 313-6BC□□ | | 830 | |
| 98 | 98 | T1,T2 | 315 L | 990 | 945 | 94.8 | 0.85 | 185 | 1MA6 316-6BC□□ | | 970 | |
| 120 | 120 | T1,T2 | 315 L | 990 | 1160 | 95 | 0.85 | 230 | 1MA6 317-6BC□□¹⁾ | | 1060 | |
| 135 | 135 | T1,T2 | 315 L | 990 | 1300 | 95 | 0.86 | 240 ²⁾ | 1MA6 318-6BC□□¹⁾ | | 1100 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | |
|------------------------------|---|---------------|----------|----------|---|-------------------------------|---|----------|------------------------------|----------|-----------------------------|--|
| | 50 Hz | | | | Without flange | With flange | | | With standard flange | | With special flange | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6 ^{3) 4)} | IM B5, IM V3 ^{3) 5)} | IM V1 with protective cover ^{3) 5) 6)} | IM B35 | IM B14, IM V19 ³⁾ | IM B34 | IM B14 IM V19 ³⁾ | |
| | For delta connection, overload protection with phase-failure protection must be provided. | | | | | | | | | | | |
| | 1 | 6 | 3 | 5 | 0 | 1 | 4 | 6 | 2 | 7 | 3 | |
| 1MA6 28 - □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁷⁾ | ✓ | ✓ | - | - | - | |
| 1MA6 310 - □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁷⁾ | ✓ | ✓ | - | - | - | |
| 1MA6 313 - □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁷⁾ | ✓ | ✓ | - | - | - | |
| 1MA6 316 - □□ | - | ○ | ○ | ○ | □ ⁸⁾ | - | ✓ | ✓ | - | - | - | |
| 1MA6 317 - □□ | - | - | - | - | - | - | - | - | - | - | - | |
| 1MA6 318 - □□ | - | - | - | - | - | - | - | - | - | - | - | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

- 1) Technical data and dimensions are available for VIK version (order code **K30**) on request (additional charge).
- 2) Only certified for rated voltage of 400 V.
- 3) The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.
- 4) If motors 1MA6 183-... to 1MA6 318-... (motor series 1MA6 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7 or IM V6 are fixed to the wall, it is recommended that the motor feet are supported.

- 5) 1MA6 220-... to 1MA6 318-... motors (motor series 1MA6 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.
- 6) The "Second shaft extension" option, order code **K16** is not possible.
- 7) Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.
- 8) Type of construction IM V6 is only possible using type of construction code **9** and order code **M1E**.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zone 1 with type of protection "e"
Cast-iron series 1MA6

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | t_E time | |
|---|--|--|----------------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | for temperature class T1/T2 t_E s | for temperature class T3 t_E s |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, temperature classes T1 and T2, with double rating plate (T1/T2 and T3) | | | | | | | |
| 1MA6 283-6BC□□ | 1.5 | 5.8 | 2.3 | 10 | 1.5 | 14 | – |
| 1MA6 310-6BC□□ | 1.6 | 5.9 | 2.3 | 10 | 2.4 | 22 | – |
| 1MA6 313-6BC□□ | 1.6 | 5.9 | 2.3 | 10 | 2.9 | 18 | – |
| 1MA6 316-6BC□□ | 1.6 | 6.1 | 2.3 | 10 | 3.5 | 20 | – |
| 1MA6 317-6BC□□ | 1.6 | 6.2 | 2.3 | 10 | 4.3 | 16 | – |
| 1MA6 318-6BC□□ | 1.5 | 6.5 | 2.3 | 10 | 4.9 | 17 | – |

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated in Zone 1 with type of protection "de"
Cast-iron series 1MJ6 and 1MJ7

Selection and ordering data

| Rated output at | | Frame size | Operating values at rated output | | | | | Power factor at 50 Hz | Rated current at 400 V, 50 Hz | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight IM B3 type of construction approx. <i>m</i> kg |
|---|-------------------|------------|----------------------------------|-----------------------|-----------------------------------|--------------------|-------------------|-----------------------|-------------------------------|--|-------|--|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz ¹⁾ | | | | | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | | | | | |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, temperature classes T1 to T4 | | | | | | | | | | | | |
| 0.37 | 0.43 | 71 M | 2750 | 1.3 | 67 | 0.81 | 0.98 | 1MJ6 070-2CA□□ | | | 19 | |
| 0.55 | 0.63 | 71 M | 2790 | 1.9 | 71 | 0.81 | 1.38 | 1MJ6 073-2CA□□ | | | 20 | |
| 0.75 | 0.86 | 80 M | 2840 | 2.5 | 72 | 0.86 | 1.75 | 1MJ6 080-2CA□□ | | | 24 | |
| 1.1 | 1.3 | 80 M | 2835 | 3.7 | 74 | 0.87 | 2.45 | 1MJ6 083-2CA□□ | | | 26 | |
| 1.5 | 1.75 | 90 L | 2850 | 5 | 78 | 0.84 | 3.3 | 1MJ6 096-2CA□□ | | | 32 | |
| 2.2 | 2.55 | 90 L | 2860 | 7.4 | 80 | 0.86 | 4.6 | 1MJ6 097-2CA□□ | | | 35 | |
| 3 | 3.45 | 100 L | 2885 | 9.9 | 82 | 0.85 | 6.2 | 1MJ6 106-2CA□□ | | | 44 | |
| 4 | 4.6 | 112 M | 2895 | 13 | 84 | 0.88 | 7.8 | 1MJ6 113-2CA□□ | | | 57 | |
| 5.5 | 6.3 | 132 S | 2925 | 18 | 85 | 0.89 | 10.5 | 1MJ6 130-2CA□□ | | | 75 | |
| 7.5 | 8.6 | 132 S | 2930 | 24 | 87 | 0.89 | 14.5 | 1MJ6 131-2CA□□ | | | 82 | |
| 11 | 12.6 | 160 M | 2940 | 36 | 88 | 0.88 | 20.5 | 1MJ6 163-2CA□□ | | | 123 | |
| 15 | 17.3 | 160 M | 2940 | 49 | 89 | 0.91 | 26.5 | 1MJ6 164-2CA□□ | | | 134 | |
| 18.5 | 21.3 | 160 L | 2940 | 60 | 91 | 0.91 | 32.5 | 1MJ6 166-2CA□□ | | | 161 | |
| 22 | 24.5 | 180 M | 2940 | 71 | 92 | 0.88 | 39 | 1MJ6 183-2CA□□ | | | 175 | |
| 30 | 33.5 | 200 L | 2940 | 97 | 92.3 | 0.89 | 53 | 1MJ6 206-2CA□□ | | | 250 | |
| 37 | 41.5 | 200 L | 2945 | 120 | 92.8 | 0.9 | 64 | 1MJ6 207-2CA□□ | | | 266 | |
| 45 | 51 | 225 M | 2955 | 145 | 93.9 | 0.9 | 77 ¹⁾ | 1MJ7 223-2CB□□ | | | 335 | |
| 55 | 62 | 250 M | 2965 | 177 | 94 | 0.9 | 93 | 1MJ7 253-2CB□□ | | | 445 | |
| 75 | 84 | 280 S | 2975 | 241 | 94.7 | 0.9 | 128 ¹⁾ | 1MJ7 280-2CC□□ | | | 600 | |
| 90 | 101 | 280 M | 2975 | 289 | 95.1 | 0.91 | 150 ¹⁾ | 1MJ7 283-2CC□□ | | | 640 | |
| 110 | 123 | 315 S | 2980 | 353 | 94.8 | 0.9 | 186 ¹⁾ | 1MJ7 310-2CC□□ | | | 840 | |
| 132 | 148 | 315 M | 2980 | 423 | 95.1 | 0.9 | 225 ¹⁾ | 1MJ7 313-2CC□□ | | | 900 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | |
|-----------------------------|------------------------------------|---------------|----------|----------|---|---|---|----------|---|----------------------|------------------------------|---------------------|
| | 50 Hz | | | | Without flange | | With flange | | | With standard flange | | With special flange |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3(6/7/8, IM V6 ²⁾³⁾ | IM B5 ²⁾⁴⁾ , IM V3 ²⁾⁴⁾ | IM V1 with protective cover ²⁾⁴⁾⁵⁾ | IM B35 | IM B14 ^{1,2)} , IM V19 ²⁾ | IM B34 | IM B14, IM V19 ²⁾ | |
| | 1 | 6 | 3 | 5 | 0 | 1 | 4 | 6 | 2 | 7 | 3 | |
| 1MJ6 07 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1MJ6 08 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1MJ6 09 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | – | |
| 1MJ6 10 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | – | – | – | |
| 1MJ6 11 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | – | – | – | |
| 1MJ6 13 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | – | – | – | |
| 1MJ6 16 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | – | – | – | |
| 1MJ6 18 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | ✓ | ✓ | – | – | – | |
| 1MJ6 20 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | ✓ | ✓ | – | – | – | |
| 1MJ7 22 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | ✓ | ✓ | – | – | – | |
| 1MJ7 25 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | ✓ | ✓ | – | – | – | |
| 1MJ7 28 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | ✓ | ✓ | – | – | – | |
| 1MJ7 31 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | ✓ | ✓ | – | – | – | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

For footnotes, see Page 4/35.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated in Zone 1 with type of protection "de"
Cast-iron series 1MJ6 and 1MJ7

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | |
|---|---|---|------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz L_{pFA} dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, temperature classes T1 to T4 | | | | | | | |
| 1MJ6 070-2CA□□ | 2.3 | 4.3 | 2.3 | 16 | 0.00035 | 52 | 63 |
| 1MJ6 073-2CA□□ | 2.3 | 5.3 | 2.3 | 16 | 0.00045 | 52 | 63 |
| 1MJ6 080-2CA□□ | 2.4 | 6.3 | 2.3 | 16 | 0.00085 | 56 | 67 |
| 1MJ6 083-2CA□□ | 2.6 | 6.3 | 2.3 | 16 | 0.0011 | 56 | 67 |
| 1MJ6 096-2CA□□ | 2.5 | 6.7 | 2.5 | 16 | 0.0015 | 60 | 72 |
| 1MJ6 097-2CA□□ | 2.8 | 7.1 | 2.8 | 16 | 0.002 | 60 | 72 |
| 1MJ6 106-2CA□□ | 2.8 | 7.7 | 3 | 16 | 0.0038 | 62 | 74 |
| 1MJ6 113-2CA□□ | 2.4 | 7.6 | 2.8 | 16 | 0.0055 | 63 | 75 |
| 1MJ6 130-2CA□□ | 2 | 5.9 | 2.6 | 16 | 0.01 | 68 | 80 |
| 1MJ6 131-2CA□□ | 2.3 | 6.9 | 2.6 | 16 | 0.01 | 68 | 80 |
| 1MJ6 163-2CA□□ | 2.1 | 6.5 | 2.6 | 16 | 0.03 | 70 | 82 |
| 1MJ6 164-2CA□□ | 2.2 | 6.6 | 3.1 | 16 | 0.04 | 70 | 82 |
| 1MJ6 166-2CA□□ | 2.4 | 7 | 3.3 | 16 | 0.05 | 70 | 82 |
| 1MJ6 183-2CA□□ | 2.5 | 6.9 | 3.2 | 16 | 0.07 | 70 | 83 |
| 1MJ6 206-2CA□□ | 2.4 | 6.5 | 2.8 | 16 | 0.14 | 71 | 84 |
| 1MJ6 207-2CA□□ | 2.4 | 7.7 | 2.8 | 16 | 0.16 | 71 | 84 |
| 1MJ7 223-2CB□□ | 2.3 | 6.9 | 2.7 | 13 | 0.24 | 71 | 84 |
| 1MJ7 253-2CB□□ | 2.1 | 6.9 | 2.8 | 13 | 0.45 | 75 | 89 |
| 1MJ7 280-2CC□□ | 1.9 | 7 | 2.7 | 10 | 0.79 | 77 | 91 |
| 1MJ7 283-2CC□□ | 2 | 7 | 2.7 | 10 | 0.92 | 77 | 91 |
| 1MJ7 310-2CC□□ | 1.8 | 7 | 2.8 | 10 | 1.3 | 79 | 93 |
| 1MJ7 313-2CC□□ | 1.9 | 7 | 2.8 | 10 | 1.5 | 79 | 93 |

The 1MJ6/1MJ7 motors can also be ordered for use with type of protection Ex d/de (Zone 1)/dust-Ex Zone 21, as well as for Zone 22 for conducting dust:

Mains-fed operation – order code **M76**

Converter-fed operation with derating – order code **M77**

See "Special versions" in the "Selection and ordering data" under "Options".

Other versions up to 900 kW as 2-pole motors as DN series with Order No. 1PS4 (Ex de IIB), 1PS5 (Ex de IIC) available; also higher outputs and other numbers of poles possible.

Place request with:

Loher GmbH (a Siemens company)

Hans-Loher-Str. 32

94099 Ruhstorf/Rott

<http://www.loher.com>

- For connection to 230 V, parallel feeders are necessary (see the "Introduction" section, "Connection, circuit and connection box").
- The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.
- If motors 1MJ6 183-... to 1MJ7 313-... (motor series 1MJ6 frame size 180 M and above to 1MJ7 frame size 315 M) in types of construction with feet IM B6, IM B7 or IM V6 are fixed to the wall, it is recommended that the motor feet are supported.
- 1MJ7 220-... to 1MJ7 313-... motors (motor series 1MJ7 frame sizes 225 S to 315 M) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.
- The "Second shaft extension" option, order code **K16** is not possible.
- Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated in Zone 1 with type of protection "de"
Cast-iron series 1MJ6 and 1MJ7

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output | | | | | Power factor at 50 Hz | Rated current at 400 V, 50 Hz | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight IM B3 type of construction approx. m kg |
|---|-------------------|------------|----------------------------------|-----------------------|-----------------------------------|--------------------|-------------------|-----------------------|-------------------------------|--|-------|---|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz ¹⁾ | | | | | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | | | | | |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, temperature classes T1 to T4 | | | | | | | | | | | | |
| 0.25 | 0.29 | 71 M | 1325 | 1.8 | 60 | 0.77 | 0.78 | 1MJ6 070-4CB□□ | | | 20 | |
| 0.37 | 0.43 | 71 M | 1375 | 2.5 | 64 | 0.74 | 1.13 | 1MJ6 073-4CB□□ | | | 21 | |
| 0.55 | 0.63 | 80 M | 1395 | 3.7 | 71 | 0.79 | 1.42 | 1MJ6 080-4CA□□ | | | 24 | |
| 0.75 | 0.86 | 80 M | 1395 | 5.1 | 73 | 0.79 | 1.88 | 1MJ6 083-4CA□□ | | | 26 | |
| 1.1 | 1.3 | 90 L | 1410 | 7.5 | 73 | 0.80 | 2.7 | 1MJ6 096-4CA□□ | | | 32 | |
| 1.5 | 1.75 | 90 L | 1420 | 10 | 77 | 0.8 | 3.5 | 1MJ6 097-4CA□□ | | | 35 | |
| 2.2 | 2.55 | 100 L | 1420 | 15 | 78 | 0.8 | 5.1 | 1MJ6 106-4CA□□ | | | 44 | |
| 3 | 3.45 | 100 L | 1415 | 20 | 80 | 0.82 | 6.6 | 1MJ6 107-4CA□□ | | | 47 | |
| 4 | 4.6 | 112 M | 1435 | 27 | 83 | 0.82 | 8 | 1MJ6 113-4CA□□ | | | 58 | |
| 5.5 | 6.3 | 132 S | 1450 | 36 | 86 | 0.83 | 11.1 | 1MJ6 130-4CA□□ | | | 76 | |
| 7.5 | 8.6 | 132 M | 1450 | 49 | 86 | 0.84 | 15 | 1MJ6 133-4CA□□ | | | 85 | |
| 11 | 12.6 | 160 M | 1455 | 72 | 87 | 0.85 | 21.5 | 1MJ6 163-4CA□□ | | | 128 | |
| 15 | 17.3 | 160 L | 1455 | 98 | 89 | 0.85 | 28.5 | 1MJ6 166-4CA□□ | | | 158 | |
| 18.5 | 21.3 | 180 M | 1460 | 121 | 90.5 | 0.84 | 35 | 1MJ6 183-4CA□□ | | | 175 | |
| 22 | 25.3 | 180 L | 1460 | 144 | 91.2 | 0.85 | 41 | 1MJ6 186-4CA□□ | | | 189 | |
| 30 | 34.5 | 200 L | 1465 | 196 | 91.8 | 0.86 | 55 | 1MJ6 207-4CA□□ | | | 247 | |
| 37 | 42.5 | 225 S | 1475 | 240 | 93 | 0.86 | 67 ¹⁾ | 1MJ7 220-4CA□□ | | | 325 | |
| 45 | 52 | 225 M | 1475 | 292 | 93.4 | 0.87 | 80 ¹⁾ | 1MJ7 223-4CA□□ | | | 355 | |
| 55 | 63 | 250 M | 1480 | 355 | 94 | 0.87 | 97 ¹⁾ | 1MJ7 253-4CA□□ | | | 465 | |
| 75 | 86 | 280 S | 1485 | 482 | 94.7 | 0.86 | 132 ¹⁾ | 1MJ7 280-4CA□□ | | | 630 | |
| 90 | 104 | 280 M | 1485 | 579 | 95 | 0.86 | 160 ¹⁾ | 1MJ7 283-4CA□□ | | | 680 | |
| 110 | 127 | 315 S | 1486 | 707 | 94.8 | 0.86 | 194 ¹⁾ | 1MJ7 310-4CA□□ | | | 870 | |
| 132 | 152 | 315 M | 1486 | 848 | 95.5 | 0.86 | 232 ¹⁾ | 1MJ7 313-4CA□□ | | | 950 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | |
|-----------------------------|------------------------------------|---------------|--------|--------|---|-------------------------------|---|----------------------|------------------------------|--------|------------------------------|---------------------|
| | 50 Hz | | | | Without flange | With flange | | With standard flange | | | | With special flange |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6 ^{2) 3)} | IM B5, IM V3 ^{2) 4)} | IM V1 with protective cover ^{2) 4) 5)} | IM B35 | IM B14, IM V19 ²⁾ | IM B34 | IM B14, IM V19 ²⁾ | |
| 1 | 6 | 3 | 5 | 0 | 1 | 4 | 6 | 2 | 7 | 3 | | |
| 1MJ6 07 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1MJ6 08 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1MJ6 09 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | – | |
| 1MJ6 10 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | – | – | – | |
| 1MJ6 11 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | – | – | – | |
| 1MJ6 13 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | – | – | – | |
| 1MJ6 16 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | – | – | – | |
| 1MJ6 18 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | ✓ | ✓ | – | – | – | |
| 1MJ6 20 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | ✓ | ✓ | – | – | – | |
| 1MJ7 22 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | ✓ | ✓ | – | – | – | |
| 1MJ7 25 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | ✓ | ✓ | – | – | – | |
| 1MJ7 28 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | ✓ | ✓ | – | – | – | |
| 1MJ7 31 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | ✓ | ✓ | – | – | – | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

For footnotes, see Page 4/37.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated in Zone 1 with type of protection "de"
Cast-iron series 1MJ6 and 1MJ7

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | |
|---|---|---|------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz L_{pFA} dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, temperature classes T1 to T4 | | | | | | | |
| 1MJ6 070-4CB□□ | 1.8 | 3.2 | 1.8 | 13 | 0.0006 | 44 | 55 |
| 1MJ6 073-4CB□□ | 2 | 3.6 | 2 | 13 | 0.0008 | 44 | 55 |
| 1MJ6 080-4CA□□ | 2.3 | 4.7 | 2.4 | 16 | 0.0015 | 47 | 58 |
| 1MJ6 083-4CA□□ | 2.5 | 5 | 2.6 | 16 | 0.0018 | 47 | 58 |
| 1MJ6 096-4CA□□ | 2.1 | 4.9 | 2.5 | 16 | 0.0028 | 48 | 60 |
| 1MJ6 097-4CA□□ | 2.2 | 5.8 | 2.6 | 16 | 0.0035 | 48 | 60 |
| 1MJ6 106-4CA□□ | 2.2 | 6 | 2.6 | 16 | 0.0048 | 53 | 65 |
| 1MJ6 107-4CA□□ | 2.7 | 6.4 | 3 | 16 | 0.0058 | 53 | 65 |
| 1MJ6 113-4CA□□ | 2.8 | 7.2 | 3 | 16 | 0.01 | 53 | 65 |
| 1MJ6 130-4CA□□ | 2.4 | 6.9 | 3.3 | 16 | 0.01 | 62 | 74 |
| 1MJ6 133-4CA□□ | 2.7 | 7.7 | 3.3 | 16 | 0.02 | 62 | 74 |
| 1MJ6 163-4CA□□ | 2.4 | 6.6 | 2.9 | 16 | 0.04 | 66 | 78 |
| 1MJ6 166-4CA□□ | 2.8 | 7.4 | 3.2 | 16 | 0.05 | 66 | 78 |
| 1MJ6 183-4CA□□ | 2.3 | 7.1 | 3 | 16 | 0.13 | 63 | 76 |
| 1MJ6 186-4CA□□ | 2.3 | 7.1 | 3 | 16 | 0.15 | 63 | 76 |
| 1MJ6 207-4CA□□ | 2.6 | 7.4 | 3.2 | 16 | 0.24 | 65 | 78 |
| 1MJ7 220-4CA□□ | 2.5 | 7 | 3.1 | 16 | 0.44 | 65 | 78 |
| 1MJ7 223-4CA□□ | 2.6 | 7 | 3.2 | 16 | 0.52 | 65 | 78 |
| 1MJ7 253-4CA□□ | 2.6 | 6.7 | 2.5 | 16 | 0.79 | 65 | 79 |
| 1MJ7 280-4CA□□ | 2.5 | 6.7 | 2.7 | 16 | 1.4 | 67 | 81 |
| 1MJ7 283-4CA□□ | 2.5 | 6.8 | 2.8 | 16 | 1.6 | 67 | 81 |
| 1MJ7 310-4CA□□ | 2.5 | 6.7 | 2.7 | 16 | 2.2 | 69 | 83 |
| 1MJ7 313-4CA□□ | 2.7 | 7.2 | 3 | 16 | 2.7 | 69 | 83 |

The 1MJ6/1MJ7 motors can also be ordered for use with type of protection Ex d/de (Zone 1)/dust-Ex Zone 21, as well as for Zone 22 for conducting dust:

Mains-fed operation – order code **M76**

Converter-fed operation with derating – order code **M77**

See "Special versions" in the "Selection and ordering data" under "Options".

Other versions up to 1400 kW as 4-pole motors as DN series with Order No. 1PS4 (Ex de IIB), 1PS5 (Ex de IIC) available; also higher outputs and other numbers of poles possible.

Place request with:

Loher GmbH (a Siemens company)
Hans-Loher-Str. 32
94099 Ruhstorf/Rott

<http://www.loher.com>

- For connection to 230 V, parallel feeders are necessary (see the "Introduction" section, "Connection, circuit and connection box").
- The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.
- If motors 1MJ6 183-... to 1MJ7 313-... (motor series 1MJ6 frame size 180 M and above to 1MJ7 frame size 315 M) in types of construction with feet IM B6, IM B7 or IM V6 are fixed to the wall, it is recommended that the motor feet are supported.
- 1MJ7 220-... to 1MJ7 313-... motors (motor series 1MJ7 frame sizes 225 S to 315 M) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.
- The "Second shaft extension" option, order code **K16** is not possible.
- Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated in Zone 1 with type of protection "de"
Cast-iron series 1MJ6 and 1MJ7

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output | | | | | Power factor at 50 Hz | Rated current at 400 V, 50 Hz | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight IM B3 type of construction approx. m kg |
|--|-------------------|------------|----------------------------------|-----------------------|-----------------------------------|--------------------|-------------------|-----------------------|-------------------------------|--|-------|---|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz ¹⁾ | | | | | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | | | | | |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection temperature classes T1 to T4 | | | | | | | | | | | | |
| 0.25 | 0.29 | 71 M | 870 | 2.7 | 63 | 0.7 | 0.82 | 1MJ6 073-6CA□□ | | | 16 | |
| 0.37 | 0.43 | 80 M | 910 | 3.9 | 64 | 0.71 | 1.18 | 1MJ6 080-6CA□□ | | | 35 | |
| 0.55 | 0.63 | 80 M | 900 | 5.8 | 64 | 0.74 | 1.67 | 1MJ6 083-6CA□□ | | | 22.5 | |
| 0.75 | 0.86 | 90 L | 910 | 8 | 68 | 0.74 | 2.15 | 1MJ6 096-6CA□□ | | | 32 | |
| 1.1 | 1.3 | 90 L | 905 | 12 | 72 | 0.75 | 2.95 | 1MJ6 097-6CA□□ | | | 32 | |
| 1.5 | 1.75 | 100 L | 930 | 15 | 75 | 0.73 | 4 | 1MJ6 106-6CA□□ | | | 39 | |
| 2.2 | 2.55 | 112 M | 945 | 22 | 76 | 0.76 | 5.5 | 1MJ6 113-6CA□□ | | | 52 | |
| 3 | 3.45 | 132 S | 945 | 30 | 78 | 0.75 | 7.4 | 1MJ6 130-6CA□□ | | | 78 | |
| 4 | 4.6 | 132 M | 945 | 40 | 79 | 0.76 | 9.6 | 1MJ6 133-6CA□□ | | | 85 | |
| 5.5 | 6.3 | 132 M | 950 | 55 | 83 | 0.76 | 12.6 | 1MJ6 134-6CA□□ | | | 92 | |
| 7.5 | 8.6 | 160 M | 960 | 75 | 86 | 0.72 | 17.5 | 1MJ6 163-6CA□□ | | | 134 | |
| 11 | 12.6 | 160 L | 960 | 109 | 87 | 0.74 | 24.5 | 1MJ6 166-6CA□□ | | | 167 | |
| 15 | 18 | 180 L | 970 | 148 | 89 | 0.83 | 29.5 | 1MJ6 186-6CA□□ | | | 190 | |
| 18.5 | 22 | 200 L | 975 | 181 | 90.2 | 0.82 | 36 | 1MJ6 206-6CA□□ | | | 240 | |
| 22 | 26.5 | 200 L | 975 | 215 | 90.8 | 0.83 | 42.5 | 1MJ6 207-6CA□□ | | | 255 | |
| 30 | 36 | 225 M | 978 | 293 | 92 | 0.84 | 56 | 1MJ7 223-6CA□□ | | | 330 | |
| 37 | 44.5 | 250 M | 980 | 361 | 92.4 | 0.84 | 69 | 1MJ7 253-6CA□□ | | | 440 | |
| 45 | 54 | 280 S | 982 | 438 | 93 | 0.86 | 81 | 1MJ7 280-6CA□□ | | | 560 | |
| 55 | 66 | 280 M | 984 | 534 | 93.6 | 0.86 | 99 ¹⁾ | 1MJ7 283-6CA□□ | | | 600 | |
| 75 | 90 | 315 S | 988 | 725 | 93.8 | 0.85 | 136 | 1MJ7 310-6CA□□ | | | 810 | |
| 90 | 108 | 315 M | 988 | 870 | 94.2 | 0.85 | 162 ¹⁾ | 1MJ7 313-6CA□□ | | | 870 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | | |
|-----------------------------|------------------------------------|---------------|--------|--------|---|-------------------------------|---|--------|------------------------------|--------|--------|----------------------|---------------------|
| | 50 Hz | | | | Without flange | | With flange | | With standard flange | | | | With special flange |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6 ^{2) 3)} | IM B5, IM V3 ^{2) 4)} | IM V1 with protective cover ^{2) 4) 5)} | IM B35 | IM B14, IM V19 ²⁾ | IM B34 | IM B14 | IM V19 ²⁾ | |
| | 1 | 6 | 3 | 5 | 0 | 1 | 4 | 6 | 2 | 7 | 3 | | |
| 1MJ6 07 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1MJ6 08 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1MJ6 09 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | |
| 1MJ6 10 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | – | – | – | – | |
| 1MJ6 11 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | – | – | – | – | |
| 1MJ6 13 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | – | – | – | – | |
| 1MJ6 16 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | – | – | – | – | |
| 1MJ6 18 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | ✓ | ✓ | – | – | – | – | |
| 1MJ6 20 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | ✓ | ✓ | – | – | – | – | |
| 1MJ7 22 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | ✓ | ✓ | – | – | – | – | |
| 1MJ7 25 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | ✓ | ✓ | – | – | – | – | |
| 1MJ7 28 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | ✓ | ✓ | – | – | – | – | |
| 1MJ7 31 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁶⁾ | ✓ | ✓ | – | – | – | – | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

For footnotes, see Page 4/39.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated in Zone 1 with type of protection "de"
Cast-iron series 1MJ6 and 1MJ7

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | Noise at rated output | |
|--|--|--|----------------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz L_{pFA} dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection temperature classes T1 to T4 | | | | | | | |
| 1MJ6 073-6CA□□ | 2.2 | 3.1 | 2.2 | 16 | 0.0009 | 39 | 50 |
| 1MJ6 080-6CA□□ | 1.9 | 3.3 | 2 | 16 | 0.0015 | 40 | 51 |
| 1MJ6 083-6CA□□ | 2 | 3.5 | 2.1 | 16 | 0.0018 | 40 | 51 |
| 1MJ6 096-6CA□□ | 2.2 | 3.9 | 2.3 | 16 | 0.0028 | 43 | 55 |
| 1MJ6 097-6CA□□ | 2.4 | 4.3 | 2.4 | 16 | 0.0035 | 43 | 55 |
| 1MJ6 106-6CA□□ | 2.3 | 4.5 | 2.5 | 16 | 0.0063 | 47 | 59 |
| 1MJ6 113-6CA□□ | 2.2 | 4.8 | 2.5 | 16 | 0.01 | 52 | 64 |
| 1MJ6 130-6CA□□ | 2 | 4.8 | 2.2 | 16 | 0.01 | 63 | 75 |
| 1MJ6 133-6CA□□ | 2 | 5 | 2.4 | 16 | 0.01 | 63 | 75 |
| 1MJ6 134-6CA□□ | 2.2 | 5.4 | 2.5 | 16 | 0.02 | 63 | 75 |
| 1MJ6 163-6CA□□ | 2.1 | 5.1 | 2.5 | 16 | 0.04 | 66 | 78 |
| 1MJ6 166-6CA□□ | 2.3 | 5.5 | 2.5 | 16 | 0.04 | 66 | 78 |
| 1MJ6 186-6CA□□ | 2.6 | 6.3 | 2.4 | 16 | 0.2 | 66 | 78 |
| 1MJ6 206-6CA□□ | 2.6 | 6.3 | 2.3 | 16 | 0.29 | 66 | 78 |
| 1MJ6 207-6CA□□ | 2.5 | 5.7 | 2.3 | 16 | 0.33 | 66 | 78 |
| 1MJ7 223-6CA□□ | 2.6 | 5.7 | 2.2 | 16 | 0.57 | 66 | 78 |
| 1MJ7 253-6CA□□ | 2.6 | 6 | 2.1 | 16 | 0.89 | 60 | 74 |
| 1MJ7 280-6CA□□ | 2.4 | 6 | 2.3 | 16 | 1.3 | 60 | 74 |
| 1MJ7 283-6CA□□ | 2.5 | 6.2 | 2.4 | 16 | 1.5 | 60 | 74 |
| 1MJ7 310-6CA□□ | 2.4 | 6.2 | 2.5 | 16 | 2.4 | 63 | 77 |
| 1MJ7 313-6CA□□ | 2.4 | 6.2 | 2.5 | 16 | 2.9 | 63 | 77 |

The 1MJ6/1MJ7 motors can also be ordered for use with type of protection Ex d/de (Zone 1)/dust-Ex Zone 21, as well as for Zone 22 for conducting dust:

Mains-fed operation – order code **M76**

Converter-fed operation with derating – order code **M77**

See "Special versions" in the "Selection and ordering data" under "Options".

Other versions up to 1600 kW as 6-pole motors as DN series with Order No. 1PS4 (Ex de IIB), 1PS5 (Ex de IIC) available; also higher outputs and other numbers of poles possible.

Place request with:

Loher GmbH (a Siemens company)

Hans-Loher-Str. 32

94099 Ruhstorf/Rott

<http://www.loher.com>

- For connection to 230 V, parallel feeders are necessary (see the "Introduction" section, "Connection, circuit and connection box").
- The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.
- If motors 1MJ6 183-... to 1MJ7 313-... (motor series 1MJ6 frame size 180 M and above to 1MJ7 frame size 315 M) in types of construction with feet IM B6, IM B7 or IM V6 are fixed to the wall, it is recommended that the motor feet are supported.
- 1MJ7 220-... to 1MJ7 313-... motors (motor series 1MJ7 frame sizes 225 S to 315 M) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.
- The "Second shaft extension" option, order code **K16** is not possible.
- Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated in Zone 1 with type of protection "de"
Cast-iron series 1MJ6 and 1MJ7

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output | | | | | Power factor at 50 Hz | Rated current at 400 V, 50 Hz | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight IM B3 type of construction approx. m kg |
|---|-------------------|------------|----------------------------------|-----------------------|---------------------|--------------------|------------------|-----------------------|-------------------------------|--|-------|---|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz | | | | | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | | | | | |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, temperature classes T1 to T4 | | | | | | | | | | | | |
| 0.37 | 0.43 | 90 L | 655 | 5.3 | 61 | 0.76 | 1.16 | 1MJ6 096-8CB□□ | | | 27.5 | |
| 0.55 | 0.63 | 90 L | 655 | 7.9 | 65 | 0.76 | 1.62 | 1MJ6 097-8CB□□ | | | 29.5 | |
| 0.75 | 0.86 | 100 L | 685 | 10 | 65 | 0.72 | 2.3 | 1MJ6 106-8CB□□ | | | 40 | |
| 1.1 | 1.3 | 100 L | 685 | 16 | 74 | 0.74 | 2.9 | 1MJ6 107-8CB□□ | | | 48 | |
| 1.5 | 1.75 | 112 M | 700 | 21 | 74 | 0.73 | 4 | 1MJ6 113-8CB□□ | | | 52 | |
| 2.2 | 2.55 | 132 S | 695 | 30 | 74 | 0.72 | 6 | 1MJ6 130-8CB□□ | | | 78 | |
| 3 | 3.45 | 132 M | 700 | 40 | 76 | 0.72 | 7.9 | 1MJ6 133-8CB□□ | | | 85 | |
| 4 | 4.6 | 160 M | 715 | 54 | 81 | 0.72 | 9.9 | 1MJ6 163-8CB□□ | | | 119 | |
| 5.5 | 6.3 | 160 M | 710 | 74 | 83 | 0.72 | 13.3 | 1MJ6 164-8CB□□ | | | 134 | |
| 7.5 | 8.6 | 160 L | 715 | 100 | 84 | 0.72 | 17.9 | 1MJ6 166-8CB□□ | | | 159 | |
| 11 | 13.2 | 180 L | 725 | 145 | 87 | 0.7 | 26 | 1MJ6 186-8CB□□ | | | 191 | |
| 15 | 18 | 200 L | 725 | 198 | 87.5 | 0.78 | 32 | 1MJ6 207-8CB□□ | | | 263 | |
| 18.5 | 22 | 225 S | 725 | 244 | 88.6 | 0.8 | 37.5 | 1MJ7 220-8CB□□ | | | 325 | |
| 22 | 26.5 | 225 M | 725 | 290 | 90.1 | 0.81 | 43.5 | 1MJ7 223-8CB□□ | | | 350 | |
| 30 | 36 | 250 M | 730 | 392 | 91.6 | 0.81 | 58 | 1MJ7 253-8CB□□ | | | 465 | |
| 37 | 44.5 | 280 S | 732 | 483 | 92.7 | 0.82 | 70 | 1MJ7 280-8CB□□ | | | 570 | |
| 45 | 54 | 280 M | 734 | 585 | 92.8 | 0.83 | 84 | 1MJ7 283-8CB□□ | | | 620 | |
| 55 | 66 | 315 S | 738 | 712 | 93.1 | 0.82 | 104 | 1MJ7 310-8CB□□ | | | 780 | |
| 75 | 90 | 315 M | 738 | 970 | 93.6 | 0.82 | 140 | 1MJ7 313-8CB□□ | | | 890 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | |
|---------------------------|------------------------------------|---------------|----------|----------|---|---|---|----------|---|----------|--------------------------------|--|
| | 50 Hz | | | | Without flange | | With flange | | With standard flange | | With special flange | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3(6/7/8), IM V6 ¹⁾²⁾ | IM B5, ³⁾ IM V3 ³⁾ | IM V1 with protective cover ¹⁾³⁾⁴⁾ | IM B35 | IM B14, ¹⁾ IM V19 ¹⁾ | IM B34 | IM B14 IM V19 ¹⁾ | |
| 1 | 6 | 3 | 5 | 0 | 1 | 4 | 6 | 2 | 7 | 3 | | |
| 1MJ6 07 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1MJ6 08 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1MJ6 09 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | – | |
| 1MJ6 10 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | – | – | – | |
| 1MJ6 11 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | – | – | – | |
| 1MJ6 13 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | – | – | – | |
| 1MJ6 16 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | – | – | – | |
| 1MJ6 18 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – | |
| 1MJ6 20 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – | |
| 1MJ7 22 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – | |
| 1MJ7 25 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – | |
| 1MJ7 28 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – | |
| 1MJ7 31 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

For footnotes, see Page 4/41.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated in Zone 1 with type of protection "de"
Cast-iron series 1MJ6 and 1MJ7

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | |
|---|---|---|------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz L_{pFA} dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, temperature classes T1 to T4 | | | | | | | |
| 1MJ6 096-8CB□□ | 1.4 | 2.8 | 1.7 | 13 | 0.0025 | 41 | 53 |
| 1MJ6 097-8CB□□ | 1.5 | 2.9 | 1.7 | 13 | 0.0035 | 41 | 53 |
| 1MJ6 106-8CB□□ | 1.6 | 3.5 | 1.8 | 13 | 0.0053 | 45 | 57 |
| 1MJ6 107-8CB□□ | 1.8 | 3.9 | 2 | 13 | 0.007 | 45 | 57 |
| 1MJ6 113-8CB□□ | 1.8 | 4.4 | 2 | 13 | 0.01 | 49 | 61 |
| 1MJ6 130-8CB□□ | 1.7 | 4.2 | 2.1 | 13 | 0.01 | 53 | 65 |
| 1MJ6 133-8CB□□ | 1.9 | 4.4 | 2.2 | 13 | 0.01 | 53 | 65 |
| 1MJ6 163-8CB□□ | 2.1 | 4.8 | 2.3 | 13 | 0.03 | 63 | 75 |
| 1MJ6 164-8CB□□ | 2.3 | 5.1 | 2.5 | 13 | 0.04 | 63 | 75 |
| 1MJ6 166-8CB□□ | 2.6 | 5.8 | 2.8 | 13 | 0.06 | 63 | 75 |
| 1MJ6 186-8CB□□ | 2 | 5 | 2.2 | 13 | 0.21 | 60 | 73 |
| 1MJ6 207-8CB□□ | 2.1 | 5 | 2.2 | 13 | 0.37 | 58 | 71 |
| 1MJ7 220-8CB□□ | 2.1 | 5 | 2.2 | 13 | 0.58 | 58 | 71 |
| 1MJ7 223-8CB□□ | 2.1 | 5 | 2.2 | 13 | 0.66 | 58 | 71 |
| 1MJ7 253-8CB□□ | 2.1 | 5 | 2.1 | 13 | 1.1 | 57 | 71 |
| 1MJ7 280-8CB□□ | 2.2 | 5.5 | 2.2 | 13 | 1.4 | 58 | 72 |
| 1MJ7 283-8CB□□ | 2.2 | 5.5 | 2.2 | 13 | 1.6 | 58 | 72 |
| 1MJ7 310-8CB□□ | 2.2 | 6 | 2.4 | 13 | 2.3 | 62 | 76 |
| 1MJ7 313-8CB□□ | 2.3 | 6.2 | 2.5 | 13 | 3 | 62 | 76 |

The 1MJ6/1MJ7 motors can also be ordered for use with type of protection Ex d/de (Zone 1)/dust-Ex Zone 21, as well as for Zone 22 for conducting dust:

Mains-fed operation – order code **M76**

Converter-fed operation with derating – order code **M77**

See "Special versions" in the "Selection and ordering data" under "Options".

Other versions up to 1350 kW as 8-pole motors as DN series with Order No. 1PS4 (Ex de IIB), 1PS5 (Ex de IIC) available; also higher outputs and other numbers of poles possible.

Place request with:

Loher GmbH (a Siemens company)
Hans-Loher-Str. 32
94099 Ruhstorf/Rott

<http://www.loher.com>

- The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.
- If motors 1MJ6 183-... to 1MJ7 313-... (motor series 1MJ6 frame size 180 M and above to 1MJ7 frame size 315 M) in types of construction with feet IM B6, IM B7 or IM V6 are fixed to the wall, it is recommended that the motor feet are supported.
- 1MJ7 220-... to 1MJ7 313-... motors (motor series 1MJ7 frame sizes 225 S to 315 M) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.
- The "Second shaft extension" option, order code **K16** is not possible.
- Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Aluminum series 1LA7/1LA5

Selection and ordering data

| Rated output at | | Frame size | Operating values at rated output | | | | | | Order No. | Price | Weight IM B3 type of construction approx. m kg |
|---|----------------|------------|----------------------------------|-----------------------|------------------------------|------------------------------|--------------------------------|-------------------------------|--|-------|--|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | For Order No. supplements for voltage, type of construction and explosion protection zones according to ATEX, see tables below | | |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | |
| 0.09 | 0.11 | 56 M | 2830 | 0.3 | 63 | 62 | 0.81 | 0.26 | 1LA7 050-2AA□□ | 3 | |
| 0.12 | 0.14 | 56 M | 2800 | 0.41 | 65 | 64 | 0.83 | 0.32 | 1LA7 053-2AA□□ | 3 | |
| 0.18 | 0.21 | 63 M | 2820 | 0.61 | 64 | 63 | 0.79 | 0.51 | 1LA7 060-2AA□□ | 3.5 | |
| 0.25 | 0.29 | 63 M | 2830 | 0.84 | 65 | 65 | 0.80 | 0.69 | 1LA7 063-2AA□□ | 4.1 | |
| 0.37 | 0.43 | 71 M | 2740 | 1.3 | 66 | 65 | 0.82 | 1 | 1LA7 070-2AA□□ | 5 | |
| 0.55 | 0.63 | 71 M | 2800 | 1.9 | 71 | 70 | 0.82 | 1.36 | 1LA7 073-2AA□□ | 6 | |
| 0.75 | 0.86 | 80 M | 2855 | 2.5 | 73 | 72 | 0.86 | 1.73 | 1LA7 080-2AA□□ | 9 | |
| 1.1 | 1.3 | 80 M | 2845 | 3.7 | 77 | 77 | 0.87 | 2.4 | 1LA7 083-2AA□□ | 11 | |
| 1.5 | 1.75 | 90 S | 2860 | 5 | 79 | 80 | 0.85 | 3.25 | 1LA7 090-2AA□□ | 12.9 | |
| 2.2 | 2.55 | 90 L | 2880 | 7.3 | 82 | 82 | 0.85 | 4.55 | 1LA7 096-2AA□□ | 15.7 | |
| 3 | 3.45 | 100 L | 2890 | 9.9 | 84 | 84 | 0.85 | 6.1 | 1LA7 106-2AA□□ | 22 | |
| 4 | 4.6 | 112 M | 2905 | 13 | 86 | 86 | 0.86 | 7.8 | 1LA7 113-2AA□□ | 29 | |
| 5.5 | 6.3 | 132 S | 2925 | 18 | 86.5 | 86.5 | 0.89 | 10.4 | 1LA7 130-2AA□□ | 39 | |
| 7.5 | 8.6 | 132 S | 2930 | 24 | 88 | 88 | 0.89 | 13.8 | 1LA7 131-2AA□□ | 48 | |
| 11 | 12.6 | 160 M | 2940 | 36 | 89.5 | 89.5 | 0.88 | 20 | 1LA7 163-2AA□□ | 68 | |
| 15 | 17.3 | 160 M | 2930 | 49 | 90 | 90.2 | 0.9 | 26.5 | 1LA7 164-2AA□□ | 77 | |
| 18.5 | 21.3 | 160 L | 2940 | 60 | 91 | 91.2 | 0.91 | 32 | 1LA7 166-2AA□□ | 86 | |
| 22 | 24.5 | 180 M | 2940 | 71 | 91.7 | 91.7 | 0.88 | 39.5 ¹⁾ | 1LA5 183-2AA□□ | 113 | |
| 30 | 33.5 | 200 L | 2945 | 97 | 92.3 | 92.3 | 0.89 | 53 | 1LA5 206-2AA□□ | 159 | |
| 37 | 41.5 | 200 L | 2945 | 120 | 92.8 | 92.8 | 0.89 | 65 ¹⁾ | 1LA5 207-2AA□□ | 179 | |
| 45 | 51 | 225 M | 2960 | 145 | 93.6 | 93.6 | 0.89 | 78 ¹⁾ | 1LA5 223-2AA□□ | 209 | |

Special versions according to ATEX

| Motor type | Zone 2 | | VIK (includes Zone 2) ²⁾ | | Zone 21 | | Zone 22 | |
|-------------|---------------------|------------------------------|-------------------------------------|------------------------------|---------------------|------------------------------|---------------------|------------------------------|
| | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) |
| Frame size | Order code M72 | Order code M73 | Order code K30 | On request | Order code M34 | Order code M38 | Order code M35 | Order code M39 |
| 1LA7 | 56 | – | – | – | ✓ | ✓ | ✓ | ✓ |
| | 63 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 71 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 80 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 90 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 100 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 112 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 132 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA5 | 160 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 180 | – | – | – | – | ✓ | ✓ | ✓ |
| | 200 | – | – | – | – | ✓ | ✓ | ✓ |
| | 225 | – | – | – | – | ✓ | ✓ | ✓ |

✓ With additional charge
– Not possible

The motors can also be ordered in design for Zones 2 and 22 for non-conducting dust (IP55):

Mains-fed operation – order code **M74**

Converter-fed operation with derating – order code **M75**

See "Special versions" in the "Selection and ordering data" under "Options".

¹⁾ For connection to 230 V, parallel feeders are necessary (see the "Introduction" section, "Connection, circuit and connection box").

²⁾ If the marking Ex nA II is required in addition to VIK on the rating plate, this must be ordered using order code **C27**. The VIK version is not possible in combination with Zone 21 and 22.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Aluminum series 1LA7/1LA5

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | |
|---|---|---|------------------|--------------|-------------------------|--|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz $L_{p(A)}$ dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | |
| 1LA7 050-2AA□□ | 2 | 3.7 | 2.3 | 16 | 0.00015 | 41 | 52 |
| 1LA7 053-2AA□□ | 2.1 | 3.7 | 2.4 | 16 | 0.00015 | 41 | 52 |
| 1LA7 060-2AA□□ | 2 | 3.7 | 2.2 | 16 | 0.00018 | 49 | 60 |
| 1LA7 063-2AA□□ | 2 | 4 | 2.2 | 16 | 0.00022 | 49 | 60 |
| 1LA7 070-2AA□□ | 2.3 | 3.5 | 2.3 | 16 | 0.00029 | 52 | 63 |
| 1LA7 073-2AA□□ | 2.5 | 4.3 | 2.6 | 16 | 0.00041 | 52 | 63 |
| 1LA7 080-2AA□□ | 2.3 | 5.6 | 2.4 | 16 | 0.00079 | 56 | 67 |
| 1LA7 083-2AA□□ | 2.6 | 6.1 | 2.7 | 16 | 0.001 | 56 | 67 |
| 1LA7 090-2AA□□ | 2.4 | 5.5 | 2.7 | 16 | 0.0014 | 62 | 74 |
| 1LA7 096-2AA□□ | 2.8 | 6.3 | 3.1 | 16 | 0.0018 | 62 | 74 |
| 1LA7 106-2AA□□ | 2.8 | 6.8 | 3 | 16 | 0.0035 | 62 | 74 |
| 1LA7 113-2AA□□ | 2.6 | 7.2 | 2.9 | 16 | 0.0059 | 63 | 75 |
| 1LA7 130-2AA□□ | 2 | 5.9 | 2.8 | 16 | 0.015 | 68 | 80 |
| 1LA7 131-2AA□□ | 2.3 | 6.9 | 3 | 16 | 0.019 | 68 | 80 |
| 1LA7 163-2AA□□ | 2.1 | 6.5 | 2.9 | 16 | 0.034 | 70 | 82 |
| 1LA7 164-2AA□□ | 2.2 | 6.6 | 3 | 16 | 0.043 | 70 | 82 |
| 1LA7 166-2AA□□ | 2.4 | 7 | 3.1 | 16 | 0.051 | 70 | 82 |
| 1LA5 183-2AA□□ | 2.5 | 6.9 | 3.2 | 16 | 0.077 | 70 | 83 |
| 1LA5 206-2AA□□ | 2.4 | 7.2 | 2.8 | 16 | 0.14 | 71 | 84 |
| 1LA5 207-2AA□□ | 2.4 | 7.7 | 2.8 | 16 | 0.16 | 71 | 84 |
| 1LA5 223-2AA□□ | 2.8 | 7.7 | 3.4 | 16 | 0.2 | 71 | 84 |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | | | Final position: Type of construction code | | | | | | |
|--------------------|------------------------------------|---------------|--------|--------|--------|--------|---|----------------------------|---|----------------------|------------------------------|---------------------|------------------------------|
| | 50 Hz | | 60 Hz | | | | Without flange | With flange | | With standard flange | | With special flange | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 460 VY | 460 VΔ | IM B3/6/7/8, IM V6 ¹⁾ | IM B5, IM V3 ¹⁾ | IM V1 with protective cover ^{1) 2) 3)} | IM B35 | IM B14, IM V19 ¹⁾ | IM B34 | IM B14, IM V19 ¹⁾ |
| | 1 | 6 | 3 | 5 | 1 | 6 | 0 | 1 | 4 | 6 | 2 | 7 | 3 |
| 1LA7 05 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | – | ✓ | ✓ | ✓ | ✓ |
| 1LA7 06 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 07 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 08 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 09 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 10 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 11 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 13 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 16 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA5 18 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | ✓ | – | – | – |
| 1LA5 20 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | ✓ | – | – | – |
| 1LA5 22 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.

²⁾ 1LA5 183-... to 1LA5 223-... motors (motor series 1LA5, frame size 180 M to 225 M) can be supplied with two additional eyebolts; specify supplement "**Z**" and order code **K32**.

³⁾ The "Second shaft extension" option, order code **K16** is not possible.

⁴⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Aluminum series 1LA7/1LA5

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output | | | | | | Order No. | Price | Weight |
|---|-------------------|------------|----------------------------------|-----------------------|------------------------------|------------------------------|--------------------------------|-------------------------------|--|---|--------|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | For Order No. supplements for voltage, type of construction and explosion protection zones according to ATEX, see tables below | IM B3 type of construction approx. m kg | |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | |
| 0.06 | 0.07 | 56 M | 1350 | 0.42 | 56 | 55 | 0.77 | 0.2 | 1LA7 050-4ABQQ | 3 | |
| 0.09 | 0.11 | 56 M | 1350 | 0.64 | 58 | 57 | 0.77 | 0.29 | 1LA7 053-4ABQQ | 3 | |
| 0.12 | 0.14 | 63 M | 1350 | 0.85 | 55 | 54 | 0.75 | 0.42 | 1LA7 060-4ABQQ | 3.5 | |
| 0.18 | 0.21 | 63 M | 1350 | 1.3 | 59 | 60 | 0.76 | 0.58 | 1LA7 063-4ABQQ | 4.1 | |
| 0.25 | 0.29 | 71 M | 1350 | 1.8 | 60 | 60 | 0.78 | 0.77 | 1LA7 070-4ABQQ | 4.8 | |
| 0.37 | 0.43 | 71 M | 1370 | 2.6 | 65 | 65 | 0.78 | 1.06 | 1LA7 073-4ABQQ | 6 | |
| 0.55 | 0.63 | 80 M | 1395 | 3.8 | 67 | 67 | 0.81 | 1.46 | 1LA7 080-4AAQQ | 9 | |
| 0.75 | 0.86 | 80 M | 1395 | 5.1 | 72 | 72 | 0.8 | 1.91 | 1LA7 083-4AAQQ | 10 | |
| 1.1 | 1.3 | 90 S | 1415 | 7.4 | 77 | 77 | 0.81 | 2.55 | 1LA7 090-4AAQQ | 13 | |
| 1.5 | 1.75 | 90 L | 1420 | 10 | 79 | 79 | 0.81 | 3.4 | 1LA7 096-4AAQQ | 15.6 | |
| 2.2 | 2.55 | 100 L | 1420 | 15 | 82 | 82.5 | 0.82 | 4.7 | 1LA7 106-4AAQQ | 21 | |
| 3 | 3.45 | 100 L | 1420 | 20 | 83 | 83.5 | 0.82 | 6.4 | 1LA7 107-4AAQQ | 24 | |
| 4 | 4.6 | 112 M | 1440 | 27 | 85 | 85.5 | 0.83 | 8.2 | 1LA7 113-4AAQQ | 31 | |
| 5.5 | 6.3 | 132 S | 1455 | 36 | 86 | 86 | 0.81 | 11.4 | 1LA7 130-4AAQQ | 41 | |
| 7.5 | 8.6 | 132 M | 1455 | 49 | 87 | 87.5 | 0.82 | 15.2 | 1LA7 133-4AAQQ | 49 | |
| 11 | 12.6 | 160 M | 1460 | 72 | 88.5 | 89 | 0.84 | 21.5 | 1LA7 163-4AAQQ | 73 | |
| 15 | 17.3 | 160 L | 1460 | 98 | 90 | 90.2 | 0.84 | 28.5 | 1LA7 166-4AAQQ | 85 | |
| 18.5 | 21.3 | 180 M | 1460 | 121 | 90.5 | 90.5 | 0.83 | 35.5 ¹⁾ | 1LA5 183-4AAQQ | 113 | |
| 22 | 25.3 | 180 L | 1460 | 144 | 91.2 | 91.2 | 0.84 | 41.5 ¹⁾ | 1LA5 186-4AAQQ | 123 | |
| 30 | 34.5 | 200 L | 1465 | 196 | 91.8 | 91.8 | 0.86 | 55 | 1LA5 207-4AAQQ | 157 | |
| 37 | 42.5 | 225 S | 1470 | 240 | 92.9 | 92.9 | 0.87 | 66 ¹⁾ | 1LA5 220-4AAQQ | 206 | |
| 45 | 52 | 225 M | 1470 | 292 | 93.4 | 93.4 | 0.87 | 80 ¹⁾ | 1LA5 223-4AAQQ | 232 | |

Special versions according to ATEX

| Motor type | Zone 2 | | VIK (includes Zone 2) ²⁾ | | Zone 21 | | Zone 22 | |
|-------------|-----------------------|------------------------------|-------------------------------------|------------------------------|-----------------------|------------------------------|-----------------------|------------------------------|
| | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) |
| Frame size | Order code M72 | Order code M73 | Order code K30 | On request | Order code M34 | Order code M38 | Order code M35 | Order code M39 |
| 1LA7 | 56 | - | - | - | - | - | - | - |
| | 63 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 71 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 80 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 90 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 100 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 112 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 132 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 160 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA5 | 180 | - | - | - | ✓ | ✓ | ✓ | ✓ |
| | 200 | - | - | - | ✓ | ✓ | ✓ | ✓ |
| | 225 | - | - | - | ✓ | ✓ | ✓ | ✓ |

- ✓ With additional charge
- Not possible

The motors can also be ordered in design for Zones 2 and 22 for non-conducting dust (IP55):

Mains-fed operation – order code **M74**

Converter-fed operation with derating – order code **M75**

See "Special versions" in the "Selection and ordering data" under "Options".

¹⁾ For connection to 230 V, parallel feeders are necessary (see the "Introduction" section, "Connection, circuit and connection box").

²⁾ If the marking Ex nA II is required in addition to VIK on the rating plate, this must be ordered using order code **C27**. The VIK version is not possible in combination with Zone 21 and 22.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Aluminum series 1LA7/1LA5

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | Noise at rated output | |
|---|---|---|-------------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz L_{pFA} dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | |
| 1LA7 050-4AB□□ | 1.9 | 2.6 | 1.9 | 13 | 0.00027 | 42 | 53 |
| 1LA7 053-4AB□□ | 1.9 | 2.6 | 1.9 | 13 | 0.00027 | 42 | 53 |
| 1LA7 060-4AB□□ | 1.9 | 2.8 | 2 | 13 | 0.00029 | 42 | 53 |
| 1LA7 063-4AB□□ | 1.9 | 3 | 1.9 | 13 | 0.00037 | 42 | 53 |
| 1LA7 070-4AB□□ | 1.9 | 3 | 1.9 | 13 | 0.00052 | 44 | 55 |
| 1LA7 073-4AB□□ | 1.9 | 3.3 | 2.1 | 13 | 0.00077 | 44 | 55 |
| 1LA7 080-4AA□□ | 2.2 | 3.9 | 2.2 | 16 | 0.0014 | 47 | 58 |
| 1LA7 083-4AA□□ | 2.3 | 4.2 | 2.3 | 16 | 0.0017 | 47 | 58 |
| 1LA7 090-4AA□□ | 2.3 | 4.6 | 2.4 | 16 | 0.0024 | 50 | 62 |
| 1LA7 096-4AA□□ | 2.4 | 5.3 | 2.6 | 16 | 0.0033 | 50 | 62 |
| 1LA7 106-4AA□□ | 2.5 | 5.6 | 2.8 | 16 | 0.0047 | 56 | 68 |
| 1LA7 107-4AA□□ | 2.7 | 5.6 | 3 | 16 | 0.0055 | 56 | 68 |
| 1LA7 113-4AA□□ | 2.7 | 6 | 3 | 16 | 0.012 | 53 | 65 |
| 1LA7 130-4AA□□ | 2.5 | 6.3 | 3.1 | 16 | 0.018 | 62 | 74 |
| 1LA7 133-4AA□□ | 2.7 | 6.7 | 3.2 | 16 | 0.023 | 62 | 74 |
| 1LA7 163-4AA□□ | 2.2 | 6.2 | 2.7 | 16 | 0.043 | 66 | 78 |
| 1LA7 166-4AA□□ | 2.6 | 6.5 | 3 | 16 | 0.055 | 66 | 78 |
| 1LA5 183-4AA□□ | 2.3 | 7.5 | 3 | 16 | 0.13 | 63 | 76 |
| 1LA5 186-4AA□□ | 2.3 | 7.5 | 3 | 16 | 0.15 | 63 | 76 |
| 1LA5 207-4AA□□ | 2.6 | 7 | 3.2 | 16 | 0.24 | 65 | 78 |
| 1LA5 220-4AA□□ | 2.8 | 7 | 3.2 | 16 | 0.32 | 65 | 78 |
| 1LA5 223-4AA□□ | 2.8 | 7.7 | 3.3 | 16 | 0.36 | 65 | 78 |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | | | | |
|--------------------|------------------------------------|---------------|----------|----------|---|----------|----------------------------------|-----------------|---|----------|----------------------|----------|---------------------|--------|------------------------------|
| | 50 Hz | | | | 60 Hz | | Without flange | With flange | | | With standard flange | | With special flange | | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 460 VY | 460 VΔ | IM B3/6/7/8, IM V6 ¹⁾ | IM B5, IM V3 | IM V1 with protective cover ^{1) 2) 3)} | | | IM B35 | IM B14, IM V19 | IM B34 | IM B14, IM V19 ¹⁾ |
| | 1 | 6 | 3 | 5 | 1 | 6 | 0 | 1 | 4 | 6 | 2 | 7 | 3 | | |
| 1LA7 05 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | – | ✓ | ✓ | ✓ | ✓ | | |
| 1LA7 06 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| 1LA7 07 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| 1LA7 08 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| 1LA7 09 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| 1LA7 10 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| 1LA7 11 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| 1LA7 13 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| 1LA7 16 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| 1LA5 18 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | ✓ | – | – | – | | |
| 1LA5 20 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | ✓ | – | – | – | | |
| 1LA5 22 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | ✓ | – | – | – | | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.

²⁾ 1LA5 183-... to 1LA5 223-... motors (motor series 1LA5, frame size 180 M to 225 M) can be supplied with two additional eyebolts; specify supplement "Z" and order code **K32**.

³⁾ The "Second shaft extension" option, order code **K16** is not possible.

⁴⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Aluminum series 1LA7/1LA5

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output | | | | | | Order No. | Price | Weight |
|---|-------------------|------------|----------------------------------|-----------------------|------------------------------|------------------------------|--------------------------------|-------------------------------|--|---------|--------|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | For Order No. supplements for voltage, type of construction and explosion protection zones according to ATEX, see tables below | m kg | |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | |
| 0.09 | 0.1 | 63 M | 850 | 1 | 45 | 41.5 | 0.66 | 0.44 | 1LA7 063-6AA□□ | 4.1 | |
| 0.18 | 0.21 | 71 M | 850 | 2 | 53 | 54.5 | 0.68 | 0.72 | 1LA7 070-6AA□□ | 5 | |
| 0.25 | 0.29 | 71 M | 830 | 2.8 | 60 | 58.5 | 0.76 | 0.79 | 1LA7 073-6AA□□ | 6.3 | |
| 0.37 | 0.43 | 80 M | 920 | 3.8 | 62 | 60.5 | 0.72 | 1.2 | 1LA7 080-6AA□□ | 9 | |
| 0.55 | 0.63 | 80 M | 910 | 5.8 | 67 | 66.5 | 0.74 | 1.6 | 1LA7 083-6AA□□ | 10 | |
| 0.75 | 0.86 | 90 S | 915 | 7.8 | 69 | 69 | 0.76 | 2.05 | 1LA7 090-6AA□□ | 12.5 | |
| 1.1 | 1.3 | 90 L | 915 | 11 | 72 | 72 | 0.77 | 2.85 | 1LA7 096-6AA□□ | 15.7 | |
| 1.5 | 1.75 | 100 L | 925 | 15 | 74 | 74 | 0.75 | 3.9 | 1LA7 106-6AA□□ | 21 | |
| 2.2 | 2.55 | 112 M | 940 | 22 | 78 | 78.5 | 0.78 | 5.2 | 1LA7 113-6AA□□ | 26 | |
| 3 | 3.45 | 132 S | 950 | 30 | 79 | 79.5 | 0.76 | 7.2 | 1LA7 130-6AA□□ | 38 | |
| 4 | 4.6 | 132 M | 950 | 40 | 80.5 | 80.5 | 0.76 | 9.4 | 1LA7 133-6AA□□ | 44 | |
| 5.5 | 6.3 | 132 M | 950 | 55 | 83 | 83 | 0.76 | 12.6 | 1LA7 134-6AA□□ | 52 | |
| 7.5 | 8.6 | 160 M | 960 | 75 | 86 | 86 | 0.74 | 17 | 1LA7 163-6AA□□ | 74 | |
| 11 | 12.6 | 160 L | 960 | 109 | 87.5 | 87.5 | 0.74 | 24.5 | 1LA7 166-6AA□□ | 95 | |
| 15 | 18 | 180 L | 970 | 148 | 89.5 | 89.5 | 0.77 | 31.5 | 1LA5 186-6AA□□ | 126 | |
| 18.5 | 22 | 200 L | 975 | 181 | 90.2 | 90.2 | 0.77 | 38.5 | 1LA5 206-6AA□□ | 161 | |
| 22 | 26.5 | 200 L | 975 | 215 | 90.8 | 90.8 | 0.77 | 45.5 | 1LA5 207-6AA□□ | 183 | |
| 30 | 36 | 225 M | 978 | 293 | 91.8 | 91.8 | 0.77 | 61 ¹⁾ | 1LA5 223-6AA□□ | 214 | |

Special versions according to ATEX

| Motor type | Zone 2 | | VIK (includes Zone 2) ²⁾ | | Zone 21 | | Zone 22 | |
|-------------|---------------------|------------------------------|-------------------------------------|------------------------------|---------------------|------------------------------|---------------------|------------------------------|
| | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) |
| Frame size | Order code M72 | Order code M73 | Order code K30 | On request | Order code M34 | Order code M38 | Order code M35 | Order code M39 |
| 1LA7 | 63 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 71 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 80 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 90 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 100 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 112 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 132 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 160 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA5 | 180 | – | – | – | ✓ | ✓ | ✓ | ✓ |
| | 200 | – | – | – | ✓ | ✓ | ✓ | ✓ |
| | 225 | – | – | – | ✓ | ✓ | ✓ | ✓ |

- ✓ With additional charge
– Not possible

The motors can also be ordered in design for Zones 2 and 22 for non-conducting dust (IP55):

Mains-fed operation – order code **M74**

Converter-fed operation with derating – order code **M75**

See "Special versions" in the "Selection and ordering data" under "Options".

¹⁾ For connection to 230 V, parallel feeders are necessary (see the "Introduction" section, "Connection, circuit and connection box").

²⁾ If the marking Ex nA II is required in addition to VIK on the rating plate, this must be ordered using order code **C27**. The VIK version is not possible in combination with Zone 21 and 22.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Aluminum series 1LA7/1LA5

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | Noise at rated output | |
|---|--|--|----------------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz L_{pFA} dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | |
| 1LA7 063-6AB□□ | 1.8 | 2 | 1.9 | 13 | 0.00037 | 39 | 50 |
| 1LA7 070-6AA□□ | 2.1 | 2.3 | 1.9 | 16 | 0.00055 | 39 | 50 |
| 1LA7 073-6AA□□ | 2.2 | 2.7 | 2 | 16 | 0.0008 | 39 | 50 |
| 1LA7 080-6AA□□ | 1.9 | 3.1 | 2.1 | 16 | 0.0014 | 40 | 51 |
| 1LA7 083-6AA□□ | 2.1 | 3.4 | 2.2 | 16 | 0.0017 | 40 | 51 |
| 1LA7 090-6AA□□ | 2.2 | 3.7 | 2.2 | 16 | 0.0024 | 43 | 55 |
| 1LA7 096-6AA□□ | 2.3 | 3.8 | 2.3 | 16 | 0.0033 | 43 | 55 |
| 1LA7 106-6AA□□ | 2.3 | 4 | 2.3 | 16 | 0.0047 | 47 | 59 |
| 1LA7 113-6AA□□ | 2.2 | 4.6 | 2.5 | 16 | 0.0091 | 52 | 64 |
| 1LA7 130-6AA□□ | 1.9 | 4.2 | 2.2 | 16 | 0.015 | 63 | 75 |
| 1LA7 133-6AA□□ | 2.1 | 4.5 | 2.4 | 16 | 0.019 | 63 | 75 |
| 1LA7 134-6AA□□ | 2.3 | 5 | 2.6 | 16 | 0.025 | 63 | 75 |
| 1LA7 163-6AA□□ | 2.1 | 4.6 | 2.5 | 16 | 0.044 | 66 | 78 |
| 1LA7 166-6AA□□ | 2.3 | 4.8 | 2.6 | 16 | 0.063 | 66 | 78 |
| 1LA5 186-6AA□□ | 2 | 5.2 | 2.4 | 16 | 0.15 | 66 | 78 |
| 1LA5 206-6AA□□ | 2.7 | 5.5 | 2.8 | 16 | 0.24 | 66 | 78 |
| 1LA5 207-6AA□□ | 2.8 | 5.5 | 2.9 | 16 | 0.28 | 66 | 78 |
| 1LA5 223-6AA□□ | 2.8 | 5.7 | 2.9 | 16 | 0.36 | 66 | 78 |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | | | Final position: Type of construction code | | | | | | |
|--------------------|------------------------------------|---------------|----------|----------|----------|----------|---|----------------------------|---|----------------------|------------------------------|----------|------------------------------|
| | 50 Hz | | | 60 Hz | | | Without flange | With flange | | With standard flange | With special flange | | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 460 VY | 460 VΔ | IM B3/6/7/8, IM V6 ¹⁾ | IM B5, IM V3 ¹⁾ | IM V1 with protective cover ^{1) 2) 3)} | IM B35 | IM B14, IM V19 ¹⁾ | IM B34 | IM B14, IM V19 ¹⁾ |
| | 1 | 6 | 3 | 5 | 1 | 6 | 0 | 1 | 4 | 6 | 2 | 7 | 3 |
| 1LA7 06 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 07 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 08 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 09 □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 10 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 11 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 13 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 16 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA5 18 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | ✓ | – | – | – |
| 1LA5 20 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | ✓ | – | – | – |
| 1LA5 22 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.

²⁾ 1LA5 183-... to 1LA5 223-... motors (motor series 1LA5, frame size 180 M to 225 M) can be supplied with two additional eyebolts; specify supplement "Z" and order code **K32**.
³⁾ The "Second shaft extension" option, order code **K16** is not possible.
⁴⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Aluminum series 1LA7/1LA5

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output | | | | | | Rated current at 400 V, 50 Hz | Order No. | Price | Weight |
|---|-------------------|------------|----------------------------------|-----------------------|------------------------------|------------------------------|--------------------------------|------------------|--|-----------|-------|--------|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | | | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | For Order No. supplements for voltage, type of construction and explosion protection zones according to ATEX, see tables below | m | kg | |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | |
| 0.09 | 0.1 | 71 M | 630 | 1.4 | 53 | 54.5 | 0.68 | 0.36 | 1LA7 070-8ABQQ | | 6.3 | |
| 0.12 | 0.14 | 71 M | 645 | 1.8 | 53 | 49.5 | 0.64 | 0.51 | 1LA7 073-8ABQQ | | 6.3 | |
| 0.18 | 0.21 | 80 M | 675 | 2.5 | 51 | 49.5 | 0.68 | 0.75 | 1LA7 080-8ABQQ | | 9 | |
| 0.25 | 0.29 | 80 M | 685 | 3.5 | 55 | 50.5 | 0.64 | 1.02 | 1LA7 083-8ABQQ | | 10 | |
| 0.37 | 0.43 | 90 S | 675 | 5.2 | 63 | 62 | 0.75 | 1.14 | 1LA7 090-8ABQQ | | 10.5 | |
| 0.55 | 0.63 | 90 L | 675 | 7.8 | 66 | 65 | 0.76 | 1.58 | 1LA7 096-8ABQQ | | 13.2 | |
| 0.75 | 0.86 | 100 L | 680 | 11 | 66 | 65 | 0.76 | 2.15 | 1LA7 106-8ABQQ | | 19 | |
| 1.1 | 1.3 | 100 L | 680 | 15 | 72 | 72 | 0.76 | 2.9 | 1LA7 107-8ABQQ | | 22 | |
| 1.5 | 1.75 | 112 M | 705 | 20 | 74 | 74 | 0.76 | 3.85 | 1LA7 113-8ABQQ | | 24 | |
| 2.2 | 2.55 | 132 S | 700 | 30 | 75 | 75 | 0.74 | 5.7 | 1LA7 130-8ABQQ | | 38 | |
| 3 | 3.45 | 132 M | 700 | 41 | 77 | 77.5 | 0.74 | 7.6 | 1LA7 133-8ABQQ | | 44 | |
| 4 | 4.6 | 160 M | 715 | 53 | 80 | 80 | 0.72 | 10 | 1LA7 163-8ABQQ | | 64 | |
| 5.5 | 6.3 | 160 M | 710 | 74 | 83.5 | 83.5 | 0.73 | 13 | 1LA7 164-8ABQQ | | 74 | |
| 7.5 | 8.6 | 160 L | 715 | 100 | 85.5 | 85.5 | 0.72 | 17.6 | 1LA7 166-8ABQQ | | 94 | |
| 11 | 13.2 | 180 L | 725 | 145 | 87 | 87 | 0.75 | 24.5 | 1LA5 186-8ABQQ | | 128 | |
| 15 | 18 | 200 L | 725 | 198 | 87.5 | 87.5 | 0.78 | 31.5 | 1LA5 207-8ABQQ | | 176 | |
| 18.5 | 22 | 225 S | 725 | 244 | 89.2 | 89.2 | 0.79 | 38 | 1LA5 220-8ABQQ | | 184 | |
| 22 | 26.5 | 225 M | 725 | 290 | 90.6 | 90.6 | 0.79 | 44.5 | 1LA5 223-8ABQQ | | 214 | |

Special versions according to ATEX

| Motor type | Zone 2 | | VIK (includes Zone 2) ¹⁾ | | Zone 21 | | Zone 22 | |
|-------------|---------------------|------------------------------|-------------------------------------|------------------------------|---------------------|------------------------------|---------------------|------------------------------|
| | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) |
| Frame size | Order code M72 | Order code M73 | Order code K30 | On request | Order code M34 | Order code M38 | Order code M35 | Order code M39 |
| 1LA7 | 71 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 80 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 90 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 100 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 112 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 132 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 160 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA5 | 180 | - | - | - | ✓ | ✓ | ✓ | ✓ |
| | 200 | - | - | - | ✓ | ✓ | ✓ | ✓ |
| | 225 | - | - | - | ✓ | ✓ | ✓ | ✓ |

- ✓ With additional charge
 - Not possible

The motors can also be ordered in design for Zones 2 and 22 for non-conducting dust (IP55):

Mains-fed operation – order code **M74**

Converter-fed operation with derating – order code **M75**

See "Special versions" in the "Selection and ordering data" under "Options".

¹⁾ If the marking Ex nA II is required in addition to VIK on the rating plate, this must be ordered using order code **C27**. The VIK version is not possible in combination with Zone 21 and 22.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Aluminum series 1LA7/1LA5

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | Noise at rated output | |
|---|--|--|----------------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz L_{pFA} dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | |
| 1LA7 070-8AB□□ | 1.9 | 2.2 | 1.7 | 13 | 0.0008 | 36 | 47 |
| 1LA7 073-8AB□□ | 2.2 | 2.2 | 2 | 13 | 0.0008 | 36 | 47 |
| 1LA7 080-8AB□□ | 1.7 | 2.3 | 1.9 | 13 | 0.0014 | 41 | 52 |
| 1LA7 083-8AB□□ | 2 | 2.6 | 2.2 | 13 | 0.0017 | 41 | 52 |
| 1LA7 090-8AB□□ | 1.6 | 2.9 | 1.8 | 13 | 0.0023 | 41 | 53 |
| 1LA7 096-8AB□□ | 1.7 | 3 | 1.9 | 13 | 0.0031 | 41 | 53 |
| 1LA7 106-8AB□□ | 1.6 | 3 | 1.9 | 13 | 0.0051 | 45 | 57 |
| 1LA7 107-8AB□□ | 1.8 | 3.3 | 2.1 | 13 | 0.0063 | 45 | 57 |
| 1LA7 113-8AB□□ | 1.8 | 3.7 | 2.1 | 13 | 0.013 | 49 | 61 |
| 1LA7 130-8AB□□ | 1.9 | 3.9 | 2.3 | 13 | 0.014 | 53 | 65 |
| 1LA7 133-8AB□□ | 2.1 | 4.1 | 2.4 | 13 | 0.019 | 53 | 65 |
| 1LA7 163-8AB□□ | 2.2 | 4.5 | 2.6 | 13 | 0.036 | 63 | 75 |
| 1LA7 164-8AB□□ | 2.3 | 4.7 | 2.7 | 13 | 0.046 | 63 | 75 |
| 1LA7 166-8AB□□ | 2.7 | 5.3 | 3 | 13 | 0.064 | 63 | 75 |
| 1LA5 186-8AB□□ | 2 | 5 | 2.2 | 13 | 0.21 | 60 | 73 |
| 1LA5 207-8AB□□ | 2.1 | 5 | 2.2 | 13 | 0.37 | 58 | 71 |
| 1LA5 220-8AB□□ | 2.1 | 4.5 | 2.2 | 13 | 0.37 | 58 | 71 |
| 1LA5 223-8AB□□ | 2.2 | 4.8 | 2.3 | 13 | 0.45 | 58 | 71 |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | | | Final position: Type of construction code | | | | | | | |
|----------------------|------------------------------------|---------------|--------|--------|--------|--------|---|----------------------------|---|-------------|------------------------------|----------------------|------------------------------|---------------------|
| | 50 Hz | | | | | | 60 Hz | | Without flange | With flange | | With standard flange | | With special flange |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 460 VY | 460 VΔ | IM B3/6/7/8, IM V6 ¹⁾ | IM B5, IM V3 ¹⁾ | IM V1 with protective cover ^{1) 2) 3)} | IM B35 | IM B14, IM V19 ¹⁾ | IM B34 | IM B14, IM V19 ¹⁾ | |
| 1 | 6 | 3 | 5 | 1 | 6 | 0 | 1 | 4 | 6 | 2 | 7 | 3 | | |
| 1LA7 07 .-. . . . □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA7 08 .-. . . . □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA7 09 .-. . . . □□ | ○ | ○ | ○ | – | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA7 10 .-. . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA7 11 .-. . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA7 13 .-. . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA7 16 .-. . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA5 18 .-. . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | ✓ | – | – | – | |
| 1LA5 20 .-. . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | ✓ | – | – | – | |
| 1LA5 22 .-. . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | ✓ | – | – | – | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.

²⁾ 1LA5 183-... to 1LA5 223-... motors (motor series 1LA5, frame size 180 M to 225 M) can be supplied with two additional eyebolts; specify supplement "Z" and order code **K32**.

³⁾ The "Second shaft extension" option, order code **K16** is not possible.

⁴⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Aluminum series 1LA9

Selection and ordering data

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | | Order No. | Price | Weight |
|---|------------|----------------------------------|--------------------------|------------------------------|------------------------------|--------------------------------|-------------------------------|--|-----------|--------|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | | | |
| P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | For Order No. supplements for voltage, type of construction and explosion protection zones according to ATEX, see tables below | m kg | |
| 2-pole, 3000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, "High Efficiency" | | | | | | | | | | |
| 0.09 | 56 M | 2830 | 0.3 | 70 | 68 | 0.76 | 0.24 | 1LA9 050-2KA00 | | 3 |
| 0.12 | 56 M | 2830 | 0.4 | 70 | 70 | 0.81 | 0.31 | 1LA9 053-2KA00 | | 3.8 |
| 0.18 | 63 M | 2840 | 0.61 | 70 | 70 | 0.78 | 0.48 | 1LA9 060-2KA00 | | 4.1 |
| 0.25 | 63 M | 2840 | 0.84 | 72 | 70 | 0.8 | 0.63 | 1LA9 063-2KA00 | | 5.1 |
| 0.37 | 71 M | 2840 | 1.2 | 74 | 74 | 0.77 | 0.94 | 1LA9 070-2KA00 | | 6 |
| 0.55 | 71 M | 2835 | 1.9 | 75 | 75 | 0.75 | 1.42 | 1LA9 073-2KA00 | | 7.2 |
| 0.75 | 80 M | 2870 | 2.5 | 80 | 80 | 0.82 | 1.66 | 1LA9 080-2KA00 | | 9.8 |
| 1.1 | 80 M | 2860 | 3.7 | 84 | 84 | 0.89 | 2.1 | 1LA9 083-2KA00 | | 12.3 |
| 1.5 | 90 S | 2890 | 5 | 85 | 85 | 0.87 | 2.95 | 1LA9 090-2KA00 | | 15 |
| 2.2 | 90 L | 2890 | 7.3 | 86.5 | 86.5 | 0.87 | 4.2 | 1LA9 096-2KA00 | | 18.6 |
| 3 | 100 L | 2890 | 9.9 | 87 | 87 | 0.88 | 5.7 | 1LA9 106-2KA00 | | 24 |
| 4 | 112 M | 2905 | 13 | 88.5 | 88.5 | 0.89 | 7.3 | 1LA9 113-2KA00 | | 35 |
| 5.5 | 132 S | 2930 | 18 | 89.5 | 89.5 | 0.9 | 9.9 | 1LA9 130-2KA00 | | 43 |
| 7.5 | 132 S | 2930 | 24 | 90.5 | 90.5 | 0.92 | 13 | 1LA9 131-2KA00 | | 56 |
| 11 | 160 M | 2945 | 36 | 91 | 91 | 0.9 | 19.4 | 1LA9 163-2KA00 | | 73 |
| 15 | 160 M | 2945 | 49 | 91.5 | 91.5 | 0.9 | 26.5 | 1LA9 164-2KA00 | | 82 |
| 18.5 | 160 L | 2940 | 60 | 92.3 | 92.5 | 0.92 | 31.5 | 1LA9 166-2KA00 | | 102 |
| 22 | 180 M | 2945 | 71 | 93 | 93.2 | 0.89 | 38.5 ¹⁾ | 1LA9 183-2WA00 | | 131 |
| 30 | 200 L | 2950 | 97 | 93.5 | 93.5 | 0.89 | 52 | 1LA9 206-2WA00 | | 185 |
| 37 | 200 L | 2950 | 120 | 94 | 94.1 | 0.89 | 64 ¹⁾ | 1LA9 207-2WA00 | | 214 |

Special versions according to ATEX

| Motor type | Zone 2 | VIK (includes Zone 2) ²⁾ | | | | Zone 21 | | Zone 22 | |
|------------|------------|-------------------------------------|------------------------------|---------------------|------------------------------|---------------------|------------------------------|---------------------|------------------------------|
| | | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) |
| | Frame size | Order code M72 | Order code M73 | Order code K30 | On request | Order code M34 | Order code M38 | Order code M35 | Order code M39 |
| 1LA9 | 56 | – | – | – | – | ✓ | ✓ | ✓ | ✓ |
| | 63 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 71 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 80 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 90 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 100 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 112 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 132 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 160 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 180 | – | – | – | – | ✓ | ✓ | ✓ | ✓ |
| | 200 | – | – | – | – | ✓ | ✓ | ✓ | ✓ |

✓ With additional charge
– Not possible

The motors can also be ordered in design for Zones 2 and 22 for non-conducting dust (IP55):

Mains-fed operation – order code **M74**

Converter-fed operation with derating – order code **M75**

See "Special versions" in the "Selection and ordering data" under "Options".

The motors can also be used for 60 Hz according to EPACT, see Pages 4/56 to 4/61.

¹⁾ For connection to 230 V, parallel feeders are necessary (see the "Introduction" section, "Connection, circuit and connection box").

²⁾ If the marking Ex nA II is required in addition to VIK on the rating plate, this must be ordered using order code **C27**. The VIK version is not possible in combination with Zone 21 and 22.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Aluminum series 1LA9

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | |
|---|--|--|------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz L_{pFA} dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| 2-pole, 3000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, "High Efficiency" | | | | | | | |
| 1LA9 050-2KA□□ | 3.6 | 4.5 | 3 | 16 | 0.00015 | 41 | 52 |
| 1LA9 053-2KA□□ | 3.2 | 4.3 | 2.8 | 16 | 0.0002 | 41 | 52 |
| 1LA9 060-2KA□□ | 2.8 | 4.8 | 3.1 | 16 | 0.00022 | 49 | 60 |
| 1LA9 063-2KA□□ | 2.5 | 4.9 | 2.5 | 16 | 0.00026 | 49 | 60 |
| 1LA9 070-2KA□□ | 3.3 | 6.5 | 3.1 | 16 | 0.00041 | 52 | 63 |
| 1LA9 073-2KA□□ | 3.6 | 6.3 | 2.9 | 16 | 0.0005 | 52 | 63 |
| 1LA9 080-2KA□□ | 4.4 | 8.3 | 3.2 | 16 | 0.001 | 56 | 67 |
| 1LA9 083-2KA□□ | 3.8 | 7 | 3.2 | 16 | 0.0013 | 56 | 67 |
| 1LA9 090-2KA□□ | 4.1 | 7 | 3.5 | 16 | 0.0018 | 60 | 72 |
| 1LA9 096-2KA□□ | 4.1 | 7 | 3.5 | 16 | 0.0022 | 60 | 72 |
| 1LA9 106-2KA□□ | 3.4 | 7 | 3.2 | 16 | 0.0044 | 62 | 74 |
| 1LA9 113-2KA□□ | 2.8 | 7 | 3.2 | 16 | 0.0077 | 63 | 75 |
| 1LA9 130-2KA□□ | 2.7 | 7 | 3.2 | 16 | 0.019 | 68 | 80 |
| 1LA9 131-2KA□□ | 2.8 | 7 | 3.1 | 16 | 0.024 | 68 | 80 |
| 1LA9 163-2KA□□ | 2.5 | 7 | 3.1 | 16 | 0.044 | 70 | 82 |
| 1LA9 164-2KA□□ | 2.5 | 7 | 3.1 | 16 | 0.051 | 70 | 82 |
| 1LA9 166-2KA□□ | 2.4 | 7 | 3.1 | 16 | 0.065 | 70 | 82 |
| 1LA9 183-2WA□□ | 2.6 | 7.2 | 3.3 | 16 | 0.09 | 70 | 83 |
| 1LA9 206-2WA□□ | 2.5 | 7 | 3.2 | 16 | 0.16 | 71 | 84 |
| 1LA9 207-2WA□□ | 2.7 | 7 | 3.3 | 16 | 0.2 | 71 | 84 |

Order No. supplements

| Motor type | Penultimate position: Voltage code 50 Hz | | | | Final position: Type of construction code | | | | | | |
|--------------------|---|---------------|--------|--------|---|--|---|---|--------|---|---|
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | Without flange IM B3/6/7/8, IM V6 ¹⁾ | With flange IM B5, ₁₎ IM V3 ₁₎ | | IM V1 with protective cover ^{1) 2)} | IM B35 | With standard flange IM B14, ₁₎ IM V19 ₁₎ | |
| | 1 | 6 | 3 | 5 | 0 | 1 | 4 | 6 | 2 | 7 | 3 |
| 1LA9 05 □□ | ○ | ○ | ○ | – | □ | ✓ | – | – | ✓ | ✓ | ✓ |
| 1LA9 06 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 07 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 08 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 09 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 10 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 11 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 13 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 16 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 18 □□ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | ✓ | – | – | – |
| 1LA9 20 □□ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.

²⁾ The "Second shaft extension" option, order code **K16** is not possible.

³⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Aluminum series 1LA9

Selection and ordering data (continued)

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | | Order No. | Price | Weight |
|---|------------|----------------------------------|--------------------------|------------------------------|------------------------------|--------------------------------|-------------------------------|--|-------|--------|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | | | |
| P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | For Order No. supplements for voltage, type of construction and explosion protection zones according to ATEX, see tables below | m | kg |
| 4-pole, 1500 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, "High Efficiency" | | | | | | | | | | |
| 0.06 | 56 M | 1380 | 0.42 | 61 | 61 | 0.66 | 0.22 | 1LA9 050-4KA00 | | 3 |
| 0.09 | 56 M | 1390 | 0.62 | 62 | 62 | 0.68 | 0.31 | 1LA9 053-4KA00 | | 3.8 |
| 0.12 | 63 M | 1395 | 0.82 | 66 | 66 | 0.65 | 0.41 | 1LA9 060-4KA00 | | 4.1 |
| 0.18 | 63 M | 1395 | 1.3 | 65 | 65 | 0.68 | 0.59 | 1LA9 063-4KA00 | | 5.1 |
| 0.25 | 71 M | 1410 | 1.7 | 70 | 70 | 0.64 | 0.81 | 1LA9 070-4KA00 | | 6 |
| 0.37 | 71 M | 1385 | 2.6 | 71 | 71 | 0.73 | 1.04 | 1LA9 073-4KA00 | | 7.2 |
| 0.55 | 80 M | 1410 | 3.7 | 77 | 77 | 0.78 | 1.32 | 1LA9 080-4KA00 | | 9.8 |
| 0.75 | 80 M | 1400 | 5.1 | 81 | 81 | 0.75 | 1.78 | 1LA9 083-4KA00 | | 12.3 |
| 1.1 | 90 S | 1440 | 7.3 | 84 | 84 | 0.77 | 2.45 | 1LA9 090-4KA00 | | 15 |
| 1.5 | 90 L | 1440 | 9.9 | 85 | 85 | 0.77 | 3.3 | 1LA9 096-4KA00 | | 18 |
| 2.2 | 100 L | 1435 | 15 | 86.5 | 86.5 | 0.82 | 4.5 | 1LA9 106-4KA00 | | 25 |
| 3 | 100 L | 1435 | 20 | 87.5 | 87.7 | 0.81 | 6.1 | 1LA9 107-4KA00 | | 30 |
| 4 | 112 M | 1440 | 27 | 88.5 | 89 | 0.81 | 8.1 | 1LA9 113-4KA00 | | 37 |
| 5.5 | 132 S | 1455 | 36 | 89.5 | 89.5 | 0.84 | 10.6 | 1LA9 130-4KA00 | | 45 |
| 7.5 | 132 M | 1455 | 49 | 90.3 | 90.5 | 0.84 | 14.2 | 1LA9 133-4KA00 | | 60 |
| 11 | 160 M | 1460 | 72 | 91.5 | 92 | 0.85 | 20.5 | 1LA9 163-4KA00 | | 81 |
| 15 | 160 L | 1460 | 98 | 92 | 92.3 | 0.86 | 27.5 | 1LA9 166-4KA00 | | 107 |
| 18.5 | 180 M | 1465 | 121 | 92.5 | 93 | 0.84 | 34.5 ¹⁾ | 1LA9 183-4WA00 | | 126 |
| 22 | 180 L | 1465 | 143 | 93 | 93.4 | 0.84 | 40.5 ¹⁾ | 1LA9 186-4WA00 | | 146 |
| 30 | 200 L | 1465 | 196 | 93.5 | 94 | 0.87 | 53 | 1LA9 207-4WA00 | | 199 |

Special versions according to ATEX

| Motor type | Zone 2 | VIK (includes Zone 2) ²⁾ | | | | Zone 21 | | Zone 22 | |
|------------|------------|-------------------------------------|------------------------------|---------------------|------------------------------|---------------------|------------------------------|---------------------|------------------------------|
| | | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) |
| | Frame size | Order code M72 | Order code M73 | Order code K30 | On request | Order code M34 | Order code M38 | Order code M35 | Order code M39 |
| 1LA9 | 56 | – | – | – | – | ✓ | ✓ | ✓ | ✓ |
| | 63 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 71 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 80 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 90 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 100 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 112 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 132 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 160 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 180 | – | – | – | – | ✓ | ✓ | ✓ | ✓ |
| | 200 | – | – | – | – | ✓ | ✓ | ✓ | ✓ |

- ✓ With additional charge
– Not possible

The motors can also be ordered in design for Zones 2 and 22 for non-conducting dust (IP55):

Mains-fed operation – order code **M74**

Converter-fed operation with derating – order code **M75**

See "Special versions" in the "Selection and ordering data" under "Options".

The motors can also be used for 60 Hz according to EPACT, see Pages 4/56 to 4/61.

¹⁾ For connection to 230 V, parallel feeders are necessary (see the "Introduction" section, "Connection, circuit and connection box").

²⁾ If the marking Ex nA II is required in addition to VIK on the rating plate, this must be ordered using order code **C27**. The VIK version is not possible in combination with Zone 21 and 22.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Aluminum series 1LA9

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | |
|---|---|---|------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz L_{pFA} dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| 4-pole, 1500 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, "High Efficiency" | | | | | | | |
| 1LA9 050-4KA□□ | 2.7 | 3.1 | 2.8 | 16 | 0.00027 | 42 | 53 |
| 1LA9 053-4KA□□ | 2.8 | 3.2 | 2.8 | 16 | 0.00035 | 42 | 53 |
| 1LA9 060-4KA□□ | 2.7 | 3.5 | 2.6 | 16 | 0.00037 | 42 | 53 |
| 1LA9 063-4KA□□ | 3 | 3.6 | 2.5 | 16 | 0.00045 | 42 | 53 |
| 1LA9 070-4KA□□ | 3.6 | 4.3 | 3.1 | 16 | 0.00076 | 44 | 55 |
| 1LA9 073-4KA□□ | 3.3 | 4.2 | 3 | 16 | 0.00095 | 44 | 55 |
| 1LA9 080-4KA□□ | 3.4 | 5.6 | 2.9 | 16 | 0.0017 | 47 | 58 |
| 1LA9 083-4KA□□ | 4 | 5.8 | 3.5 | 16 | 0.0024 | 47 | 58 |
| 1LA9 090-4KA□□ | 3.1 | 6.4 | 3.2 | 16 | 0.0033 | 48 | 60 |
| 1LA9 096-4KA□□ | 3.6 | 6.7 | 3.4 | 16 | 0.004 | 48 | 60 |
| 1LA9 106-4KA□□ | 3.4 | 7 | 3.6 | 16 | 0.0062 | 53 | 65 |
| 1LA9 107-4KA□□ | 3.8 | 7 | 3.9 | 16 | 0.0077 | 53 | 65 |
| 1LA9 113-4KA□□ | 3.2 | 6.9 | 3.2 | 16 | 0.014 | 53 | 65 |
| 1LA9 130-4KA□□ | 3.2 | 7 | 3.6 | 16 | 0.023 | 62 | 74 |
| 1LA9 133-4KA□□ | 3.4 | 7 | 3.6 | 16 | 0.029 | 62 | 74 |
| 1LA9 163-4KA□□ | 2.6 | 6.9 | 3.2 | 16 | 0.055 | 66 | 78 |
| 1LA9 166-4KA□□ | 2.8 | 7 | 3.3 | 16 | 0.072 | 66 | 78 |
| 1LA9 183-4WA□□ | 2.8 | 7 | 3.2 | 16 | 0.15 | 63 | 76 |
| 1LA9 186-4WA□□ | 3.1 | 7.3 | 3.4 | 16 | 0.19 | 63 | 76 |
| 1LA9 207-4WA□□ | 3 | 7 | 3.2 | 16 | 0.32 | 65 | 78 |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | |
|--------------------|------------------------------------|---------------|--------|--------|---|--|--|----------------------|--|--------|--|
| | 50 Hz | | | | Without flange | With flange | | With standard flange | | | With special flange |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6 ¹⁾ | IM B5, ₁ IM V3 ₁ | IM V1 with protective cover ^{1) 2)} | IM B35 | IM B14, ₁ IM V19 ₁ | IM B34 | IM B14, ₁ IM V19 ₁ |
| | 1 | 6 | 3 | 5 | 0 | 1 | 4 | 6 | 2 | 7 | 3 |
| 1LA9 05 □□ | ○ | ○ | ○ | – | □ | ✓ | – | – | ✓ | ✓ | ✓ |
| 1LA9 06 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 07 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 08 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 09 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 10 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 11 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 13 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 16 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 18 □□ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | ✓ | – | – | – |
| 1LA9 20 □□ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.

²⁾ The "Second shaft extension" option, order code **K16** is not possible.

³⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Aluminum series 1LA9

Selection and ordering data (continued)

| Rated output at 50 Hz P_{rated} kW | Frame size FS | Operating values at rated output | | | | | | Order No. For Order No. supplements for voltage, type of construction and explosion protection zones according to ATEX, see tables below | Price | Weight IM B3 type of construction approx. m kg |
|---|------------------|---|---|--|--|---|--|---|-------|---|
| | | Rated speed at 50 Hz n_{rated} rpm | Rated torque at 50 Hz T_{rated} Nm | Efficiency at 50 Hz 4/4-load η_{rated} % | Efficiency at 50 Hz 3/4-load η_{rated} % | Power factor at 50 Hz 4/4-load $\cos\phi_{\text{rated}}$ | Rated current at 400 V, 50 Hz I_{rated} A | | | |
| 6-pole, 1000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, "High Efficiency" | | | | | | | | | | |
| 0.75 | 90 S | 925 | 7.7 | 75.5 | 75.5 | 0.72 | 2 | 1LA9 090-6KAQQ | | 15.7 |
| 1.1 | 90 L | 940 | 11 | 82 | 82 | 0.7 | 2.75 | 1LA9 096-6KAQQ | | 19 |
| 1.5 | 100 L | 935 | 15 | 85 | 85 | 0.73 | 3.6 | 1LA9 106-6KAQQ | | 25 |
| 2.2 | 112 M | 955 | 22 | 84 | 84 | 0.7 | 5.4 | 1LA9 113-6KAQQ | | 37 |
| 4 | 132 M | 950 | 40 | 84 | 84 | 0.81 | 8.5 | 1LA9 133-6KAQQ | | 49 |
| 5.5 | 132 M | 960 | 55 | 86 | 86 | 0.77 | 12 | 1LA9 134-6KAQQ | | 64 |
| 7.5 | 160 M | 965 | 74 | 88 | 88 | 0.72 | 17 | 1LA9 163-6KAQQ | | 98 |
| 11 | 160 L | 960 | 109 | 88.5 | 88.5 | 0.78 | 23 | 1LA9 166-6KAQQ | | 105 |
| 15 | 180 L | 970 | 148 | 91 | 91 | 0.75 | 31.5 | 1LA9 186-6WAQQ | | 144 |
| 18.5 | 200 L | 975 | 181 | 91 | 91 | 0.77 | 38 | 1LA9 206-6WAQQ | | 186 |
| 22 | 200 L | 975 | 215 | 91.5 | 91.5 | 0.77 | 45 | 1LA9 207-6WAQQ | | 217 |

Special versions according to ATEX

| Motor type | Zone 2 | | VIK (includes Zone 2) ¹⁾ | | Zone 21 | | Zone 22 | | |
|------------|---------------------|------------------------------|-------------------------------------|------------------------------|---------------------|------------------------------|---------------------|------------------------------|---|
| | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) | |
| Frame size | Order code M72 | Order code M73 | Order code K30 | On request | Order code M34 | Order code M38 | Order code M35 | Order code M39 | |
| 1LA9 | 90 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| | 100 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| | 112 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| | 132 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| | 160 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| | 180 | – | – | – | – | ✓ | ✓ | ✓ | ✓ |
| | 200 | – | – | – | – | ✓ | ✓ | ✓ | ✓ |

- ✓ With additional charge
– Not possible

The motors can also be ordered in design for Zones 2 and 22 for non-conducting dust (IP55):

Mains-fed operation – order code **M74**

Converter-fed operation with derating – order code **M75**

See "Special versions" in the "Selection and ordering data" under "Options".

The motors can also be used for 60 Hz according to EPACT, see Pages 4/56 to 4/61.

¹⁾ If the marking Ex nA II is required in addition to VIK on the rating plate, this must be ordered using order code **C27**. The VIK version is not possible in combination with Zone 21 and 22.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Aluminum series 1LA9

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | Noise at rated output | |
|---|--|--|----------------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz L_{pFA} dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| 6-pole, 1000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, "High Efficiency" | | | | | | | |
| 1LA9 090-6KA□□ | 3. | 4.4 | 2.5 | 16 | 0.0033 | 43 | 55 |
| 1LA9 096-6KA□□ | 3.7 | 5.7 | 3.2 | 16 | 0.005 | 43 | 55 |
| 1LA9 106-6KA□□ | 3.5 | 6.2 | 3.4 | 16 | 0.0065 | 47 | 59 |
| 1LA9 113-6KA□□ | 2.9 | 6.2 | 3 | 16 | 0.014 | 52 | 64 |
| 1LA9 133-6KA□□ | 3 | 6.3 | 2.7 | 16 | 0.025 | 63 | 75 |
| 1LA9 134-6KA□□ | 3.7 | 7.3 | 3.6 | 16 | 0.03 | 63 | 75 |
| 1LA9 163-6KA□□ | 2.4 | 5.5 | 2.5 | 16 | 0.063 | 66 | 78 |
| 1LA9 166-6KA□□ | 3.1 | 6.9 | 3.2 | 16 | 0.072 | 66 | 78 |
| 1LA9 186-6WA□□ | 2.2 | 6.5 | 2.5 | 16 | 0.19 | 66 | 78 |
| 1LA9 206-6WA□□ | 2.8 | 6.2 | 2.5 | 16 | 0.28 | 66 | 78 |
| 1LA9 207-6WA□□ | 2.8 | 6.2 | 2.5 | 16 | 0.36 | 66 | 78 |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | |
|--------------------|------------------------------------|---------------|--------|--------|---|--|--|--------|--|--------|--|
| | 50 Hz | | | | Without flange | With flange | | | With standard flange | | With special flange |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6 ¹⁾ | IM B5, ¹⁾ IM V3 ¹⁾ | IM V1 with protective cover ^{1) 2)} | IM B35 | IM B14, ¹⁾ IM V19 ¹⁾ | IM B34 | IM B14, ¹⁾ IM V19 ¹⁾ |
| | 1 | 6 | 3 | 5 | 0 | 1 | 4 | 6 | 2 | 7 | 3 |
| 1LA9 09 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 10 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 11 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 13 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 16 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 18 □□ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | ✓ | – | – | – |
| 1LA9 20 □□ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.

²⁾ The "Second shaft extension" option, order code **K16** is not possible.

³⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Aluminum series 1LA9

Selection and ordering data

| Rated output at 60 Hz P_{rated} HP | Frame size FS | Operating values at rated output | | | | | Power factor at 60 Hz 4/4-load $\cos\phi_{\text{rated}}$ | Rated current at 460 V, 60 Hz I_{rated} A | Order No. For Order No. supplements for voltage, type of construction and explosion protection zones according to ATEX, see tables below | Price | Weight IM B3 type of construction approx. m kg |
|---|------------------|---|---|---------------------------|---|------|---|--|---|-------|---|
| | | Rated speed at 60 Hz n_{rated} rpm | Rated torque at 60 Hz T_{rated} Nm | EPACT with CC No. CC 032A | Nominal efficiency at 60 Hz η_{rated} % | | | | | | |
| 2-pole, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, for use in the North American market according to EPACT | | | | | | | | | | | |
| 0.12 | 56 M | 3440 | 0.25 | No | 70 | 0.74 | 0.23 | 1LA9 050-2KA□□ | | 3 | |
| 0.16 | 56 M | 3440 | 0.33 | No | 71 | 0.76 | 0.28 | 1LA9 053-2KA□□ | | 3.8 | |
| 0.25 | 63 M | 3440 | 0.53 | No | 71 | 0.79 | 0.4 | 1LA9 060-2KA□□ | | 4.1 | |
| 0.33 | 63 M | 3460 | 0.69 | No | 72 | 0.76 | 0.56 | 1LA9 063-2KA□□ | | 5.1 | |
| 0.5 | 71 M | 3445 | 1 | No | 72 | 0.75 | 0.86 | 1LA9 070-2KA□□ | | 6 | |
| 0.75 | 71 M | 3445 | 1.6 | No | 73 | 0.73 | 1.3 | 1LA9 073-2KA□□ | | 7.2 | |
| 1 | 80 M | 3485 | 2 | Yes | 75.5 | 0.82 | 1.52 | 1LA9 080-2KA□□ | | 9.8 | |
| 1.5 | 80 M | 3480 | 3.1 | Yes | 82.5 | 0.88 | 1.9 | 1LA9 083-2KA□□ | | 12.3 | |
| 2 | 90 S | 3510 | 4.1 | Yes | 84 | 0.86 | 2.6 | 1LA9 090-2KA□□ | | 15 | |
| 3 | 90 L | 3510 | 6.1 | Yes | 85.5 | 0.85 | 3.8 | 1LA9 096-2KA□□ | | 18.6 | |
| 4 | 100 L | 3510 | 8.1 | No | 86.5 | 0.87 | 5 | 1LA9 106-2KA□□ | | 24 | |
| 5 | 112 M | 3540 | 10 | Yes | 87.5 | 0.88 | 6 | 1LA9 113-2KA□□ | | 35 | |
| 7.5 | 132 S | 3540 | 15 | Yes | 88.5 | 0.9 | 8.7 | 1LA9 130-2KA□□ | | 43 | |
| 10 | 132 S | 3540 | 20 | Yes | 89.5 | 0.92 | 11.4 | 1LA9 131-2KA□□ | | 56 | |
| 15 | 160 M | 3555 | 30 | Yes | 90.2 | 0.9 | 17 | 1LA9 163-2KA□□ | | 73 | |
| 20 | 160 M | 3555 | 40 | Yes | 90.2 | 0.9 | 23.2 | 1LA9 164-2KA□□ | | 82 | |
| 25 | 160 L | 3550 | 50 | Yes | 91 | 0.92 | 27.7 | 1LA9 166-2KA□□ | | 102 | |
| 30 | 180 M | 3545 | 60 | Yes | 91 | 0.86 | 36 | 1LA9 183-2WA□□ | | 131 | |
| 40 | 200 L | 3555 | 80 | Yes | 91.7 | 0.88 | 46.5 | 1LA9 206-2WA□□ | | 185 | |
| 50 | 200 L | 3555 | 100 | Yes | 92.4 | 0.88 | 57 | 1LA9 207-2WA□□ | | 214 | |

Special versions according to ATEX

| Motor type | Zone 2 | | VIK (includes Zone 2) ¹⁾ | | Zone 21 | | Zone 22 | |
|------------|---------------------|------------------------------|-------------------------------------|------------------------------|---------------------|------------------------------|---------------------|------------------------------|
| | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) |
| Frame size | Order code M72 | Order code M73 | Order code K30 | On request | Order code M34 | Order code M38 | Order code M35 | Order code M39 |
| 1LA9 | 56 | – | – | – | – | ✓ | ✓ | ✓ |
| | 63 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 71 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 80 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 90 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 100 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 112 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 132 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 160 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 180 | – | – | – | – | ✓ | ✓ | ✓ |
| 200 | – | – | – | – | ✓ | ✓ | ✓ | ✓ |

- ✓ With additional charge
– Not possible

The motors can also be ordered in design for Zones 2 and 22 for non-conducting dust (IP55):

Mains-fed operation – order code **M74**

Converter-fed operation with derating – order code **M75**

See "Special versions" in the "Selection and ordering data" under "Options".

The motors can also be used for 50 Hz "High Efficiency", see Pages 4/50 to 4/55.

¹⁾ If the marking Ex nA II is required in addition to VIK on the rating plate, this must be ordered using order code **C27**. The VIK version is not possible in combination with Zone 21 and 22.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Aluminum series 1LA9

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | Noise at rated output | |
|---|--|--|----------------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 60 Hz L_{pFA} dB(A) | Sound pressure level at 60 Hz L_{WA} dB(A) |
| 2-pole, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, for use in the North American market according to EPACT | | | | | | | |
| 1LA9 050-2KA□□ | 3.6 | 5.5 | 3.8 | 16 | 0.00015 | 45 | 56 |
| 1LA9 053-2KA□□ | 3.2 | 5.4 | 3.4 | 16 | 0.0002 | 45 | 56 |
| 1LA9 060-2KA□□ | 2.8 | 4.9 | 3.3 | 16 | 0.00022 | 53 | 64 |
| 1LA9 063-2KA□□ | 2.5 | 5 | 2.7 | 16 | 0.00026 | 53 | 64 |
| 1LA9 070-2KA□□ | 3.3 | 7.5 | 3.4 | 16 | 0.00041 | 56 | 67 |
| 1LA9 073-2KA□□ | 3.6 | 7.2 | 3.7 | 16 | 0.0005 | 56 | 67 |
| 1LA9 080-2KA□□ | 4.4 | 9.6 | 4.4 | 16 | 0.001 | 60 | 71 |
| 1LA9 083-2KA□□ | 3.8 | 8.6 | 3.2 | 16 | 0.0013 | 60 | 71 |
| 1LA9 090-2KA□□ | 4.1 | 8.6 | 4.1 | 16 | 0.0018 | 64 | 76 |
| 1LA9 096-2KA□□ | 4.1 | 8.5 | 5.1 | 16 | 0.0022 | 64 | 76 |
| 1LA9 106-2KA□□ | 3.4 | 8.6 | 3.7 | 16 | 0.0044 | 66 | 78 |
| 1LA9 113-2KA□□ | 2.8 | 9.2 | 4 | 16 | 0.0077 | 67 | 79 |
| 1LA9 130-2KA□□ | 2.7 | 8.5 | 3.8 | 16 | 0.019 | 72 | 84 |
| 1LA9 131-2KA□□ | 2.8 | 8.3 | 3.7 | 16 | 0.024 | 72 | 84 |
| 1LA9 163-2KA□□ | 2.5 | 8.5 | 3.7 | 16 | 0.044 | 74 | 86 |
| 1LA9 164-2KA□□ | 2.5 | 8.5 | 3.7 | 16 | 0.051 | 74 | 86 |
| 1LA9 166-2KA□□ | 2.4 | 8.5 | 3.5 | 16 | 0.065 | 74 | 86 |
| 1LA9 183-2WA□□ | 2.6 | 8.6 | 3.5 | 16 | 0.09 | 74 | 87 |
| 1LA9 206-2WA□□ | 2.5 | 8.4 | 3.6 | 16 | 0.16 | 75 | 88 |
| 1LA9 207-2WA□□ | 2.7 | 8.4 | 3.7 | 16 | 0.2 | 75 | 88 |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | Final position: Type of construction | | | | With standard flange | | With special flange |
|--------------------|------------------------------------|---|---|---|---|----------|---------------------------------|----------|------------------------------|
| | 60 Hz 460 VY | 460 VA (see "Introduction" for outputs at 60 Hz) | Without flange IM B3/6/7/8, IM V6 ¹⁾ | With flange IM B5, IM V3 ¹⁾ | IM V1 with protective cover ¹⁾²⁾ | IM B35 | IM B14, IM V19 ¹⁾ | IM B34 | IM B14, IM V19 ¹⁾ |
| | 1 | 6 | 0 | 1 | 4 | 6 | 2 | 7 | 3 |
| 1LA9 05 □□ | ○ | ○ | □ | ✓ | – | – | ✓ | ✓ | ✓ |
| 1LA9 06 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 07 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 08 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 09 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 10 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 11 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 13 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 16 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 18 □□ | ○ | ○ | □ | ✓ ³⁾ | ✓ | ✓ | – | – | – |
| 1LA9 20 □□ | ○ | ○ | □ | ✓ ³⁾ | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.

²⁾ The "Second shaft extension" option, order code **K16** is not possible.

³⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Aluminum series 1LA9

Selection and ordering data (continued)

| Rated output at 60 Hz P_{rated} HP | Frame size FS | Operating values at rated output | | | | | Power factor at 60 Hz 4/4-load $\cos\phi_{\text{rated}}$ | Rated current at 460 V, 60 Hz I_{rated} A | Order No. For Order No. supplements for voltage, type of construction and explosion protection zones according to ATEX, see tables below | Price | Weight IM B3 type of construction approx. m kg |
|---|------------------|---|---|---------------------------|---|------|---|--|---|-------|---|
| | | Rated speed at 60 Hz n_{rated} rpm | Rated torque at 60 Hz T_{rated} Nm | EPACT with CC No. CC 032A | Nominal efficiency at 60 Hz η_{rated} % | | | | | | |
| 4-pole, 1800 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, for use in the North American market according to EPACT | | | | | | | | | | | |
| 0.08 | 56 M | 1715 | 0.33 | No | 63 | 0.65 | 0.18 | 1LA9 050-4KA□□ | | 3 | |
| 0.12 | 56 M | 1725 | 0.5 | No | 64 | 0.6 | 0.29 | 1LA9 053-4KA□□ | | 3.8 | |
| 0.16 | 63 M | 1710 | 0.66 | No | 68 | 0.6 | 0.37 | 1LA9 060-4KA□□ | | 4.1 | |
| 0.25 | 63 M | 1705 | 1.1 | No | 66 | 0.63 | 0.54 | 1LA9 063-4KA□□ | | 5.1 | |
| 0.33 | 71 M | 1730 | 1.4 | No | 69 | 0.6 | 0.76 | 1LA9 070-4KA□□ | | 6 | |
| 0.5 | 71 M | 1725 | 2.1 | No | 70 | 0.68 | 0.98 | 1LA9 073-4KA□□ | | 7.2 | |
| 0.75 | 80 M | 1725 | 3.1 | No | 75.5 | 0.74 | 1.24 | 1LA9 080-4KA□□ | | 9.8 | |
| 1 | 80 M | 1720 | 4.1 | Yes | 82.5 | 0.75 | 1.59 | 1LA9 083-4KA□□ | | 12.3 | |
| 1.5 | 90 S | 1755 | 6.1 | Yes | 84 | 0.76 | 2.15 | 1LA9 090-4KA□□ | | 15 | |
| 2 | 90 L | 1775 | 14 | Yes | 84 | 0.76 | 2.95 | 1LA9 096-4KA□□ | | 18 | |
| 3 | 100 L | 1750 | 12 | No | 87.5 | 0.79 | 4 | 1LA9 106-4KA□□ | | 25 | |
| 4 | 100 L | 1750 | 16 | No | 87.5 | 0.79 | 5.5 | 1LA9 107-4KA□□ | | 30 | |
| 5 | 112 M | 1755 | 20 | Yes | 87.5 | 0.79 | 6.7 | 1LA9 113-4KA□□ | | 37 | |
| 7.5 | 132 S | 1760 | 30 | Yes | 89.5 | 0.81 | 9.5 | 1LA9 130-4KA□□ | | 45 | |
| 10 | 132 M | 1760 | 40 | Yes | 89.5 | 0.82 | 12.8 | 1LA9 133-4KA□□ | | 60 | |
| 15 | 160 M | 1765 | 61 | Yes | 91 | 0.85 | 17.9 | 1LA9 163-4KA□□ | | 81 | |
| 20 | 160 L | 1765 | 81 | Yes | 91 | 0.85 | 24.5 | 1LA9 166-4KA□□ | | 107 | |
| 25 | 180 M | 1770 | 101 | Yes | 92.4 | 0.83 | 30.5 | 1LA9 183-4WA□□ | | 126 | |
| 30 | 180 L | 1770 | 121 | Yes | 92.4 | 0.83 | 36 | 1LA9 186-4WA□□ | | 146 | |
| 40 | 200 L | 1770 | 161 | Yes | 93 | 0.86 | 47 | 1LA9 207-4WA□□ | | 199 | |

Special versions according to ATEX

| Motor type | Zone 2 | | VIK (includes Zone 2) ¹⁾ | | Zone 21 | | Zone 22 | |
|-------------|---------------------|------------------------------|-------------------------------------|------------------------------|---------------------|------------------------------|---------------------|------------------------------|
| | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) |
| Frame size | Order code M72 | Order code M73 | Order code K30 | On request | Order code M34 | Order code M38 | Order code M35 | Order code M39 |
| 1LA9 | 56 | – | – | – | ✓ | ✓ | ✓ | ✓ |
| | 63 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 71 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 80 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 90 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 100 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 112 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 132 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 160 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 180 | – | – | – | ✓ | ✓ | ✓ | ✓ |
| | 200 | – | – | – | ✓ | ✓ | ✓ | ✓ |

- ✓ With additional charge
– Not possible

The motors can also be ordered in design for Zones 2 and 22 for non-conducting dust (IP55):
Mains-fed operation – order code **M74**
Converter-fed operation with derating – order code **M75**
See "Special versions" in the "Selection and ordering data" under "Options".

The motors can also be used for 50 Hz "High Efficiency", see Pages 4/50 to 4/55.

¹⁾ If the marking Ex nA II is required in addition to VIK on the rating plate, this must be ordered using order code **C27**. The VIK version is not possible in combination with Zone 21 and 22.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Aluminum series 1LA9

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | |
|---|--|--|------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 60 Hz L_{pFA} dB(A) | Sound pressure level at 60 Hz L_{WA} dB(A) |
| 4-pole, 1800 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, for use in the North American market according to EPACT | | | | | | | |
| 1LA9 050-4KA□□ | 2.7 | 3.4 | 3 | 16 | 0.00027 | 46 | 57 |
| 1LA9 053-4KA□□ | 2.8 | 3.5 | 3 | 16 | 0.00035 | 46 | 57 |
| 1LA9 060-4KA□□ | 2.7 | 3.9 | 2.8 | 16 | 0.00037 | 46 | 57 |
| 1LA9 063-4KA□□ | 3 | 3.6 | 3.1 | 16 | 0.00045 | 46 | 57 |
| 1LA9 070-4KA□□ | 3.6 | 4.9 | 3.4 | 16 | 0.00076 | 48 | 59 |
| 1LA9 073-4KA□□ | 3.3 | 4.9 | 3.4 | 16 | 0.00095 | 48 | 59 |
| 1LA9 080-4KA□□ | 3.4 | 6.8 | 3.6 | 16 | 0.0017 | 51 | 62 |
| 1LA9 083-4KA□□ | 4 | 7.3 | 3.9 | 16 | 0.0024 | 51 | 62 |
| 1LA9 090-4KA□□ | 3.1 | 7.7 | 3.9 | 16 | 0.0033 | 52 | 64 |
| 1LA9 096-4KA□□ | 3.6 | 8.1 | 4.2 | 16 | 0.004 | 52 | 64 |
| 1LA9 106-4KA□□ | 3.4 | 8.4 | 4.3 | 16 | 0.0062 | 57 | 69 |
| 1LA9 107-4KA□□ | 3.8 | 8.7 | 4.6 | 16 | 0.0077 | 57 | 69 |
| 1LA9 113-4KA□□ | 3.2 | 8.6 | 3.9 | 16 | 0.014 | 57 | 69 |
| 1LA9 130-4KA□□ | 3.2 | 8.7 | 4.1 | 16 | 0.023 | 66 | 78 |
| 1LA9 133-4KA□□ | 3.4 | 8.7 | 4.1 | 16 | 0.029 | 66 | 78 |
| 1LA9 163-4KA□□ | 2.6 | 8.1 | 3.2 | 16 | 0.055 | 70 | 82 |
| 1LA9 166-4KA□□ | 2.8 | 8.5 | 3.5 | 16 | 0.072 | 70 | 82 |
| 1LA9 183-4WA□□ | 2.8 | 8.4 | 3.6 | 16 | 0.15 | 67 | 80 |
| 1LA9 186-4WA□□ | 3.1 | 8.8 | 3.9 | 16 | 0.19 | 67 | 80 |
| 1LA9 207-4WA□□ | 3 | 8.3 | 3.6 | 16 | 0.32 | 69 | 82 |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | Final position: Type of construction code | | | | | With standard flange | | With special flange |
|--------------------|------------------------------------|---|---|---|---|----------|---------------------------------|----------------------|------------------------------|---------------------|
| | 60 Hz 460 VY | 460 VΔ (see "Introduction" for outputs at 60 Hz) | Without flange IM B3/6/7/8, IM V6 ¹⁾ | With flange IM B5, IM V3 ¹⁾ | IM V1 with protective cover ¹⁾²⁾ | IM B35 | IM B14, IM V19 ¹⁾ | IM B34 | IM B14, IM V19 ¹⁾ | |
| | 1 | 6 | 0 | 1 | 4 | 6 | 2 | 7 | 3 | |
| 1LA9 05 □□ | ○ | ○ | □ | ✓ | – | – | ✓ | ✓ | ✓ | |
| 1LA9 06 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA9 07 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA9 08 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA9 09 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA9 10 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA9 11 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA9 13 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA9 16 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA9 18 □□ | ○ | ○ | □ | ✓ ³⁾ | ✓ | ✓ | – | – | – | |
| 1LA9 20 □□ | ○ | ○ | □ | ✓ ³⁾ | ✓ | ✓ | – | – | – | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.

²⁾ The "Second shaft extension" option, order code **K16** is not possible.

³⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Aluminum series 1LA9

Selection and ordering data (continued)

| Rated output at 60 Hz P_{rated} HP | Frame size FS | Operating values at rated output | | | | | Power factor at 60 Hz 4/4-load $\cos\phi_{\text{rated}}$ | Rated current at 460 V, 60 Hz I_{rated} A | Order No. For Order No. supplements for voltage, type of construction and explosion protection zones according to ATEX, see tables below | Price | Weight IM B3 type of construction approx. m kg |
|---|------------------|---|---|---------------------------|---|------|---|--|---|-------|---|
| | | Rated speed at 60 Hz n_{rated} rpm | Rated torque at 60 Hz T_{rated} Nm | EPACT with CC No. CC 032A | Nominal efficiency at 60 Hz η_{rated} % | | | | | | |
| 6-pole, 1200 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, for use in the North American market according to EPACT | | | | | | | | | | | |
| 1 | 90 S | 1140 | 6.2 | Yes | 80 | 0.66 | 1.78 | 1LA9 090-6KA□□ | | 15.7 | |
| 1.5 | 90 L | 1150 | 9.3 | Yes | 85.5 | 0.64 | 2.55 | 1LA9 096-6KA□□ | | 19 | |
| 2 | 100 L | 1150 | 12 | No | 86.5 | 0.7 | 3.1 | 1LA9 106-6KA□□ | | 25 | |
| 3 | 112 M | 1160 | 18 | Yes | 87.5 | 0.66 | 4.8 | 1LA9 113-6KA□□ | | 37 | |
| 5 | 132 M | 1160 | 31 | Yes | 87.5 | 0.77 | 6.9 | 1LA9 133-6KA□□ | | 49 | |
| 7.5 | 132 M | 1160 | 46 | Yes | 89.5 | 0.73 | 10.6 | 1LA9 134-6KA□□ | | 64 | |
| 10 | 160 M | 1165 | 61 | Yes | 89.5 | 0.7 | 15 | 1LA9 163-6KA□□ | | 98 | |
| 15 | 160 L | 1165 | 92 | Yes | 90.2 | 0.77 | 19 | 1LA9 166-6KA□□ | | 105 | |
| 20 | 180 L | 1175 | 121 | Yes | 90.2 | 0.75 | 28 | 1LA9 186-6WA□□ | | 144 | |
| 25 | 200 L | 1175 | 152 | Yes | 91.7 | 0.75 | 34 | 1LA9 206-6WA□□ | | 186 | |
| 30 | 200 L | 1175 | 182 | Yes | 91.7 | 0.75 | 40 | 1LA9 207-6WA□□ | | 217 | |

Special versions according to ATEX

| Motor type | Frame size | Zone 2 | | VIK (includes Zone 2) ¹⁾ | | Zone 21 | | Zone 22 | |
|-------------|------------|--|---|--|--|--|---|--|---|
| | | Mains-fed operation Order code M72 | Converter-fed operation (FC) Order code M73 | Mains-fed operation Order code K30 | Converter-fed operation (FC) On request | Mains-fed operation Order code M34 | Converter-fed operation (FC) Order code M38 | Mains-fed operation Order code M35 | Converter-fed operation (FC) Order code M39 |
| 1LA9 | 90 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 100 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 112 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 132 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 160 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 180 | – | – | – | – | ✓ | ✓ | ✓ | ✓ |
| | 200 | – | – | – | – | ✓ | ✓ | ✓ | ✓ |

- ✓ With additional charge
– Not possible

The motors can also be ordered in design for Zones 2 and 22 for non-conducting dust (IP55):

Mains-fed operation – order code **M74**

Converter-fed operation with derating – order code **M75**

See "Special versions" in the "Selection and ordering data" under "Options".

The motors can also be used for 50 Hz "High Efficiency", see Pages 4/50 to 4/55.

¹⁾ If the marking Ex nA II is required in addition to VIK on the rating plate, this must be ordered using order code **C27**. The VIK version is not possible in combination with Zone 21 and 22.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Aluminum series 1LA9

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | Noise at rated output | |
|---|--|--|----------------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 60 Hz L_{pFA} dB(A) | Sound pressure level at 60 Hz L_{WA} dB(A) |
| 6-pole, 1200 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, for use in the North American market according to EPACT | | | | | | | |
| 1LA9 090-6KA□□ | 3 | 5.6 | 3 | 16 | 0.0033 | 47 | 59 |
| 1LA9 096-6KA□□ | 3.7 | 6.4 | 3.7 | 16 | 0.005 | 47 | 59 |
| 1LA9 106-6KA□□ | 3.5 | 7.2 | 3.8 | 16 | 0.0065 | 51 | 63 |
| 1LA9 113-6KA□□ | 2.9 | 7.5 | 3.7 | 16 | 0.014 | 56 | 68 |
| 1LA9 133-6KA□□ | 3 | 7.9 | 3.6 | 16 | 0.025 | 67 | 79 |
| 1LA9 134-6KA□□ | 3.7 | 8.4 | 4.3 | 16 | 0.03 | 67 | 79 |
| 1LA9 163-6KA□□ | 2.4 | 6.4 | 2.8 | 16 | 0.063 | 70 | 82 |
| 1LA9 166-6KA□□ | 3.1 | 8.3 | 3.8 | 16 | 0.072 | 70 | 82 |
| 1LA9 186-6WA□□ | 2.8 | 7.1 | 2.8 | 16 | 0.19 | 70 | 82 |
| 1LA9 206-6WA□□ | 2.8 | 7.1 | 2.8 | 16 | 0.28 | 70 | 82 |
| 1LA9 207-6WA□□ | 2.8 | 7.2 | 2.8 | 16 | 0.36 | 70 | 82 |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | Final position: Type of construction code | | | | | | |
|---------------------------|------------------------------------|---|---|---|---|----------|---|----------|---|
| | 60 Hz 460 VY | 460 VΔ (see "Introduction" for outputs at 60 Hz) | Without flange IM B3/6/7/8, IM V6 ¹⁾ | With flange IM B5, IM V3 ¹⁾ | IM V1 with protective cover ¹⁾²⁾ | IM B35 | With standard flange IM B14, ¹⁾ IM V19 ¹⁾ | IM B34 | With special flange IM B14, IM V19 ¹⁾ |
| | 1 | 6 | 0 | 1 | 4 | 6 | 2 | 7 | 3 |
| 1LA9 09 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 10 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 11 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 13 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 16 □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA9 18 □□ | ○ | ○ | □ | ✓ ³⁾ | ✓ | ✓ | – | – | – |
| 1LA9 20 □□ | ○ | ○ | □ | ✓ ³⁾ | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.

²⁾ The "Second shaft extension" option, order code **K16** is not possible.

³⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Cast-iron series 1LA6/1LG4

Selection and ordering data

| Rated output at | | Frame size | Operating values at rated output | | | | | | Order No. | Price | Weight |
|---|--------------------------|------------|----------------------------------|--------------------------|------------------------------|------------------------------|--------------------------------|-------------------------------|--|---------|--------|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | For Order No. supplements for voltage, type of construction and explosion protection zones according to ATEX, see tables below | m kg | |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | |
| 3 | 3.45 | 100 L | 2890 | 9.9 | 84 | 84 | 0.85 | 6.1 | 1LA6 106-2AAQQ | 34 | |
| 4 | 4.6 | 112 M | 2905 | 13 | 86 | 86 | 0.86 | 7.8 | 1LA6 113-2AAQQ | 43 | |
| 5.5 | 6.3 | 132 S | 2925 | 18 | 86.5 | 86.5 | 0.89 | 10.4 | 1LA6 130-2AAQQ | 53 | |
| 7.5 | 8.6 | 132 S | 2930 | 24 | 88 | 88 | 0.89 | 13.8 | 1LA6 131-2AAQQ | 58 | |
| 11 | 12.6 | 160 M | 2940 | 36 | 89.5 | 89.5 | 0.88 | 20 | 1LA6 163-2AAQQ | 96 | |
| 15 | 17.3 | 160 M | 2940 | 49 | 90 | 90.2 | 0.9 | 26.5 | 1LA6 164-2AAQQ | 105 | |
| 18.5 | 21.3 | 160 L | 2940 | 60 | 91 | 91.2 | 0.91 | 32 | 1LA6 166-2AAQQ | 115 | |
| 22 | 24.5 | 180 M | 2945 | 71 | 91.6 | 91.6 | 0.86 | 40.5 ¹⁾ | 1LG4 183-2AAQQ | 145 | |
| 30 | 33.5 | 200 L | 2950 | 97 | 91.8 | 91.9 | 0.88 | 54 ¹⁾ | 1LG4 206-2AAQQ | 205 | |
| 37 | 41.5 | 200 L | 2955 | 120 | 92.9 | 93.2 | 0.89 | 65 ¹⁾ | 1LG4 207-2AAQQ | 225 | |
| 45 | 51 | 225 M | 2960 | 145 | 93.6 | 93.9 | 0.88 | 79 ¹⁾ | 1LG4 223-2AAQQ | 285 | |
| 55 | 62 | 250 M | 2970 | 177 | 93.6 | 93.8 | 0.88 | 96 | 1LG4 253-2ABQQ | 375 | |
| 75 | 84 | 280 S | 2975 | 241 | 94.5 | 94.3 | 0.88 | 130 ¹⁾ | 1LG4 280-2ABQQ | 500 | |
| 90 | 101 | 280 M | 2975 | 289 | 95.1 | 95.2 | 0.89 | 154 ¹⁾ | 1LG4 283-2ABQQ | 540 | |
| 110 | 123 | 315 S | 2982 | 352 | 94.6 | 93.8 | 0.88 | 190 ¹⁾ | 1LG4 310-2ABQQ | 720 | |
| 132 | 148 | 315 M | 2982 | 423 | 95.1 | 94.8 | 0.9 | 225 ¹⁾ | 1LG4 313-2ABQQ | 775 | |
| 160 | 180 | 315 L | 2982 | 512 | 95.5 | 95.3 | 0.91 | 265 ²⁾ | 1LG4 316-2ABQQ | 900 | |
| 200 | 224 | 315 L | 2982 | 641 | 95.9 | 95.8 | 0.92 | 325 ²⁾ | 1LG4 317-2ABQQ | 1015 | |

Special versions according to ATEX

| Motor type | Zone 2 | | VIK (includes Zone 2) ³⁾ | | Zone 21 | | Zone 22 | |
|-------------|---------------------|------------------------------|-------------------------------------|------------------------------|---------------------|------------------------------|---------------------|------------------------------|
| | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) |
| Frame size | Order code M72 | Order code M73 | Order code K30 | On request | Order code M34 | Order code M38 | Order code M35 | Order code M39 |
| 1LA6 | 100 | ✓ | ✓ | ✓ | – | – | ✓ | ✓ |
| | 112 | ✓ | ✓ | ✓ | ✓ | – | ✓ | ✓ |
| | 132 | ✓ | ✓ | ✓ | ✓ | – | ✓ | ✓ |
| | 160 | ✓ | ✓ | ✓ | ✓ | – | ✓ | ✓ |
| 1LG4 | 180 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 200 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 225 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 250 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 280 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 315 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

✓ With additional charge
– Not possible

The motors can also be ordered in design for Zones 2 and 22 for non-conducting dust (IP55):

Mains-fed operation – order code **M74**

Converter-fed operation with derating – order code **M75**

See "Special versions" in the "Selection and ordering data" under "Options".

¹⁾ For connection to 230 V, parallel feeders are necessary (see the "Introduction" section, "Connection, circuit and connection box").

²⁾ For connection to 400 V, parallel feeders are necessary (see the "Introduction" section, "Connection, circuit and connection box").

³⁾ If the marking Ex nA II is required in addition to VIK on the rating plate, this must be ordered using order code **C27**. The VIK version is not possible in combination with Zone 21 and 22.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Cast-iron series 1LA6/1LG4

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | |
|---|---|---|------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz L_{pFA} dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| 2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | |
| 1LA6 106-2AA□□ | 2.8 | 6.8 | 3 | 16 | 0.0035 | 62 | 74 |
| 1LA6 113-2AA□□ | 2.6 | 7.2 | 2.9 | 16 | 0.0059 | 63 | 75 |
| 1LA6 130-2AA□□ | 2 | 5.9 | 2.8 | 16 | 0.015 | 68 | 80 |
| 1LA6 131-2AA□□ | 2.3 | 6.9 | 3 | 16 | 0.019 | 68 | 80 |
| 1LA6 163-2AA□□ | 2.1 | 6.5 | 2.9 | 16 | 0.034 | 70 | 82 |
| 1LA6 164-2AA□□ | 2.2 | 6.6 | 3 | 16 | 0.043 | 70 | 82 |
| 1LA6 166-2AA□□ | 2.4 | 7 | 3.1 | 16 | 0.051 | 70 | 82 |
| 1LG4 183-2AA□□ | 2.5 | 6.4 | 3.4 | 16 | 0.068 | 67 | 80 |
| 1LG4 206-2AA□□ | 2.3 | 6.5 | 3 | 16 | 0.13 | 74 | 87 |
| 1LG4 207-2AA□□ | 2.5 | 7.2 | 3.3 | 16 | 0.15 | 73 | 86 |
| 1LG4 223-2AA□□ | 2.4 | 6.7 | 3.1 | 16 | 0.22 | 73 | 86 |
| 1LG4 253-2AB□□ | 2.1 | 6.7 | 3.1 | 13 | 0.4 | 75 | 88 |
| 1LG4 280-2AB□□ | 2.5 | 7.5 | 3.1 | 13 | 0.72 | 74 | 87 |
| 1LG4 283-2AB□□ | 2.6 | 7.2 | 3.1 | 13 | 0.83 | 74 | 87 |
| 1LG4 310-2AB□□ | 2.4 | 7.2 | 3.1 | 13 | 1.2 | 81 | 95 |
| 1LG4 313-2AB□□ | 2.4 | 6.9 | 3 | 13 | 1.4 | 80 | 94 |
| 1LG4 316-2AB□□ | 2.4 | 7 | 3 | 13 | 1.6 | 79 | 92 |
| 1LG4 317-2AB□□ | 2.3 | 6.7 | 2.9 | 13 | 2.1 | 79 | 92 |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | | |
|-------------------|------------------------------------|---------------|----------|----------|---|----------|------------------------------------|------------------------------|-----------------|----------------------|------------------------------|---------------------|------------------------------|
| | 50 Hz | | | | 60 Hz | | Without flange | With flange | | With standard flange | | With special flange | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 460 VY | 460 VΔ | IM B3/6/7/8, IM V6 ¹⁾²⁾ | IM B5, IM V3 ¹⁾³⁾ | IM V1 | IM B35 | IM B14, IM V19 ¹⁾ | IM B34 | IM B14, IM V19 ¹⁾ |
| | 1 | 6 | 3 | 5 | 1 | 6 | 0 | 1 | 4 | 6 | 2 | 7 | 3 |
| 1LA6 10 - ... □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 11 - ... □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 13 - ... □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 16 - ... □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LG4 18 - ... □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – |
| 1LG4 20 - ... □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – |
| 1LG4 22 - ... □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – |
| 1LG4 25 - ... □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – |
| 1LG4 28 - ... □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – |
| 1LG4 310 - ... □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – |
| 1LG4 313 - ... □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – |
| 1LG4 316 - ... □□ | – | ○ | – | ○ | – | ○ | □ ⁶⁾ | – | ✓ ⁷⁾ | ✓ | – | – | – |
| 1LG4 317 - ... □□ | – | ○ | – | ○ | – | ○ | □ ⁶⁾ | – | ✓ ⁷⁾ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

- 1) The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.
- 2) If motors 1LG4 183-... to 1LG4 318-... (motor series 1LG4 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7 or IM V6 are fixed to the wall, it is recommended that the motor feet are supported.

- 3) 1LG4 220-... to 1LG4 318-... motors (motor series 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.
- 4) The "Second shaft extension" option, order code **K16** is not possible.
- 5) Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.
- 6) Type of construction IM V6 is only possible using type of construction code **9** and order code **M1E**.
- 7) 2-pole motors in 60 Hz version available on request.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Cast-iron series 1LA6/1LG4

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output | | | | | | Rated current at 400 V, 50 Hz | Order No. | Price | Weight |
|---|-------------------|------------|----------------------------------|-----------------------|------------------------------|------------------------------|--------------------------------|-------------------------------|--|---|-------|--------|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | For Order No. supplements for voltage, type of construction and explosion protection zones according to ATEX, see tables below | IM B3 type of construction approx. m kg | | |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | |
| 2.2 | 2.55 | 100 L | 1420 | 15 | 82 | 82.5 | 0.82 | 4.7 | 1LA6 106-4AA□□ | 33 | | |
| 3 | 3.45 | 100 L | 1420 | 20 | 83 | 83.5 | 0.82 | 6.4 | 1LA6 107-4AA□□ | 36 | | |
| 4 | 4.6 | 112 M | 1440 | 27 | 85 | 85.5 | 0.83 | 8.2 | 1LA6 113-4AA□□ | 45 | | |
| 5.5 | 6.3 | 132 S | 1455 | 36 | 86 | 86 | 0.81 | 11.4 | 1LA6 130-4AA□□ | 55 | | |
| 7.5 | 8.6 | 132 M | 1455 | 49 | 87 | 87.5 | 0.82 | 15.2 | 1LA6 133-4AA□□ | 62 | | |
| 11 | 12.6 | 160 M | 1460 | 72 | 88.5 | 89 | 0.84 | 21.5 | 1LA6 163-4AA□□ | 100 | | |
| 15 | 17.3 | 160 L | 1460 | 98 | 90 | 90.2 | 0.84 | 28.5 | 1LA6 166-4AA□□ | 114 | | |
| 18.5 | 21.3 | 180 M | 1465 | 121 | 90.4 | 90.8 | 0.84 | 35 ¹⁾ | 1LG4 183-4AA□□ | 140 | | |
| 22 | 25.3 | 180 L | 1465 | 143 | 91 | 91.5 | 0.84 | 41.5 ¹⁾ | 1LG4 186-4AA□□ | 155 | | |
| 30 | 34.5 | 200 L | 1465 | 196 | 91.6 | 92 | 0.85 | 56 ¹⁾ | 1LG4 207-4AA□□ | 205 | | |
| 37 | 42.5 | 225 S | 1475 | 240 | 92.2 | 92.6 | 0.85 | 68 ¹⁾ | 1LG4 220-4AA□□ | 265 | | |
| 45 | 52 | 225 M | 1475 | 291 | 93.1 | 93.6 | 0.86 | 81 ¹⁾ | 1LG4 223-4AA□□ | 300 | | |
| 55 | 63 | 250 M | 1480 | 355 | 93.5 | 93.8 | 0.85 | 100 | 1LG4 253-4AA□□ | 390 | | |
| 75 | 86 | 280 S | 1485 | 482 | 94.2 | 94.1 | 0.85 | 136 ¹⁾ | 1LG4 280-4AA□□ | 535 | | |
| 90 | 104 | 280 M | 1485 | 579 | 94.6 | 94.6 | 0.86 | 160 ¹⁾ | 1LG4 283-4AA□□ | 580 | | |
| 110 | 127 | 315 S | 1488 | 706 | 94.6 | 94.6 | 0.85 | 198 ¹⁾ | 1LG4 310-4AA□□ | 730 | | |
| 132 | 152 | 315 M | 1488 | 847 | 95.2 | 95.2 | 0.85 | 235 ¹⁾ | 1LG4 313-4AA□□ | 810 | | |
| 160 | 184 | 315 L | 1486 | 1028 | 95.7 | 95.8 | 0.86 | 280 ²⁾ | 1LG4 316-4AA□□ | 955 | | |
| 200 | 230 | 315 L | 1486 | 1285 | 95.9 | 96.2 | 0.88 | 340 ²⁾ | 1LG4 317-4AA□□ | 1060 | | |

Special versions according to ATEX

| Motor type | Frame size | Zone 2 | | VIK (includes Zone 2) ³⁾ | | Zone 21 | | Zone 22 | |
|-------------|------------|--|---|--|--|--|---|--|---|
| | | Mains-fed operation Order code M72 | Converter-fed operation (FC) Order code M73 | Mains-fed operation Order code K30 | Converter-fed operation (FC) On request | Mains-fed operation Order code M34 | Converter-fed operation (FC) Order code M38 | Mains-fed operation Order code M35 | Converter-fed operation (FC) Order code M39 |
| 1LA6 | 100 | ✓ | ✓ | ✓ | ✓ | – | – | ✓ | ✓ |
| | 112 | ✓ | ✓ | ✓ | ✓ | – | – | ✓ | ✓ |
| | 132 | ✓ | ✓ | ✓ | ✓ | – | – | ✓ | ✓ |
| | 160 | ✓ | ✓ | ✓ | ✓ | – | – | ✓ | ✓ |
| 1LG4 | 180 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 200 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 225 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 250 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 280 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 315 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

- ✓ With additional charge
– Not possible

The motors can also be orderd in design for Zones 2 and 22 for non-conducting dust (IP55):

Mains-fed operation – order code **M74**

Converter-fed operation with derating – order code **M75**

See "Special versions" in the "Selection and ordering data" under "Options".

¹⁾ For connection to 230 V, parallel feeders are necessary (see the "Introduction" section, "Connection, circuit and connection box").
²⁾ For connection to 400 V, parallel feeders are necessary (see the "Introduction" section, "Connection, circuit and connection box").

³⁾ If the marking Ex nA II is required in addition to VIK on the rating plate, this must be ordered using order code **C27**. The VIK version is not possible in combination with Zone 21 and 22.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Cast-iron series 1LA6/1LG4

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | |
|---|---|---|------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz L_{pFA} dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| 4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | |
| 1LA6 106-4AA□□ | 2.5 | 5.6 | 2.8 | 16 | 0.0047 | 53 | 65 |
| 1LA6 107-4AA□□ | 2.7 | 5.6 | 3 | 16 | 0.0055 | 53 | 65 |
| 1LA6 113-4AA□□ | 2.7 | 6 | 3 | 16 | 0.012 | 53 | 65 |
| 1LA6 130-4AA□□ | 2.5 | 6.3 | 3.1 | 16 | 0.018 | 62 | 74 |
| 1LA6 133-4AA□□ | 2.7 | 6.7 | 3.2 | 16 | 0.023 | 62 | 74 |
| 1LA6 163-4AA□□ | 2.2 | 6.2 | 2.7 | 16 | 0.043 | 66 | 78 |
| 1LA6 166-4AA□□ | 2.6 | 6.5 | 3 | 16 | 0.055 | 66 | 78 |
| 1LG4 183-4AA□□ | 2.4 | 6.7 | 3.1 | 16 | 0.099 | 65 | 78 |
| 1LG4 186-4AA□□ | 2.5 | 6.9 | 3.2 | 16 | 0.12 | 65 | 78 |
| 1LG4 207-4AA□□ | 2.5 | 6.7 | 3.4 | 16 | 0.19 | 66 | 79 |
| 1LG4 220-4AA□□ | 2.3 | 6.7 | 3.1 | 16 | 0.37 | 66 | 79 |
| 1LG4 223-4AA□□ | 2.6 | 7.2 | 3.2 | 16 | 0.45 | 66 | 79 |
| 1LG4 253-4AA□□ | 2.4 | 6.1 | 2.8 | 16 | 0.69 | 65 | 78 |
| 1LG4 280-4AA□□ | 2.5 | 7.1 | 3 | 16 | 1.2 | 70 | 83 |
| 1LG4 283-4AA□□ | 2.5 | 7.4 | 3 | 16 | 1.4 | 68 | 82 |
| 1LG4 310-4AA□□ | 2.5 | 6.4 | 2.8 | 16 | 1.9 | 70 | 83 |
| 1LG4 313-4AA□□ | 2.7 | 6.8 | 2.9 | 16 | 2.3 | 70 | 83 |
| 1LG4 316-4AA□□ | 2.7 | 6.8 | 2.8 | 16 | 2.9 | 70 | 83 |
| 1LG4 317-4AA□□ | 2.6 | 6.5 | 2.8 | 16 | 3.5 | 71 | 86 |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | | | Final position: Type of construction code | | | | | | |
|---------------------|------------------------------------|---------------|--------|--------|--------|--------|---|------------------------------|---|----------------------|------------------------------|--------|------------------------------|
| | 50 Hz | | | 60 Hz | | | Without flange | With flange | | With standard flange | With special flange | | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 460 VY | 460 VΔ | IM B3/6/7/8, IM V6 ¹⁾²⁾ | IM B5, IM V3 ¹⁾³⁾ | IM V1 With protective cover ¹⁾³⁾⁴⁾ | IM B 35 | IM B14, IM V19 ¹⁾ | IM B34 | IM B14, IM V19 ¹⁾ |
| 1 | 6 | 3 | 5 | 1 | 6 | 0 | 1 | 4 | 6 | 2 | 7 | 3 | |
| 1LA6 10 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 11 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 13 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 16 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LG4 18 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – |
| 1LG4 20 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – |
| 1LG4 22 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – |
| 1LG4 25 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – |
| 1LG4 28 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – |
| 1LG4 310 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – |
| 1LG4 313 - . . . □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – |
| 1LG4 316 - . . . □□ | – | ○ | – | ○ | – | ○ | □ ⁶⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 317 - . . . □□ | – | ○ | – | ○ | – | ○ | □ ⁶⁾ | – | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

- 1) The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.
- 2) If motors 1LG4 183-... to 1LG4 318-... (motor series 1LG4 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7 or IM V6 are fixed to the wall, it is recommended that the motor feet are supported.

- 3) 1LG4 220-... to 1LG4 318-... motors (motor series 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.
- 4) The "Second shaft extension" option, order code **K16** is not possible.
- 5) Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.
- 6) Type of construction IM V6 is only possible using type of construction code **9** and order code **M1E**.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Cast-iron series 1LA6/1LG4

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output | | | | | | Order No. | Price | Weight |
|---|-------------------|------------|----------------------------------|-----------------------|------------------------------|------------------------------|--------------------------------|-------------------------------|--|---|--------|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Rated current at 400 V, 50 Hz | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | For Order No. supplements for voltage, type of construction and explosion protection zones according to ATEX, see tables below | IM B3 type of construction approx. m kg | |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | |
| 1.5 | 1.75 | 100 L | 925 | 15 | 74 | 74 | 0.75 | 3.9 | 1LA6 106-6AA□□ | 33 | |
| 2.2 | 2.55 | 112 M | 940 | 22 | 78 | 78.5 | 0.78 | 5.2 | 1LA6 113-6AA□□ | 40 | |
| 3 | 3.45 | 132 S | 950 | 30 | 79 | 79.5 | 0.76 | 7.2 | 1LA6 130-6AA□□ | 50 | |
| 4 | 4.6 | 132 M | 950 | 40 | 80.5 | 80.5 | 0.76 | 9.4 | 1LA6 133-6AA□□ | 57 | |
| 5.5 | 6.3 | 132 M | 950 | 55 | 83 | 83 | 0.76 | 12.6 | 1LA6 134-6AA□□ | 66 | |
| 7.5 | 8.6 | 160 M | 960 | 75 | 86 | 86 | 0.74 | 17 | 1LA6 163-6AA□□ | 103 | |
| 11 | 12.6 | 160 L | 960 | 109 | 87.5 | 87.5 | 0.74 | 24.5 | 1LA6 166-6AA□□ | 122 | |
| 15 | 18 | 180 L | 965 | 148 | 88.9 | 90.3 | 0.83 | 29.5 | 1LG4 186-6AA□□ | 150 | |
| 18.5 | 22 | 200 L | 975 | 181 | 89.8 | 90.2 | 0.81 | 36.5 | 1LG4 206-6AA□□ | 195 | |
| 22 | 26.5 | 200 L | 975 | 215 | 90.3 | 91 | 0.81 | 43.5 | 1LG4 207-6AA□□ | 205 | |
| 30 | 36 | 225 M | 978 | 293 | 91.8 | 92.8 | 0.83 | 57 ¹⁾ | 1LG4 223-6AA□□ | 280 | |
| 37 | 44.5 | 250 M | 980 | 361 | 92.3 | 93 | 0.83 | 70 | 1LG4 253-6AA□□ | 370 | |
| 45 | 54 | 280 S | 985 | 436 | 92.4 | 93.1 | 0.85 | 83 | 1LG4 280-6AA□□ | 475 | |
| 55 | 66 | 280 M | 985 | 533 | 92.7 | 93.3 | 0.86 | 100 | 1LG4 283-6AA□□ | 510 | |
| 75 | 90 | 315 S | 988 | 725 | 93.5 | 93.7 | 0.84 | 138 | 1LG4 310-6AA□□ | 685 | |
| 90 | 108 | 315 M | 988 | 870 | 93.9 | 94.2 | 0.84 | 164 ¹⁾ | 1LG4 313-6AA□□ | 750 | |
| 110 | 132 | 315 L | 988 | 1063 | 94.3 | 94.6 | 0.86 | 196 | 1LG4 316-6AA□□ | 890 | |
| 132 | 158 | 315 L | 988 | 1276 | 94.8 | 95 | 0.86 | 235 | 1LG4 317-6AA□□ | 980 | |
| 160 | 192 | 315 L | 988 | 1547 | 95 | 95.1 | 0.86 | 285 ²⁾ | 1LG4 318-6AA□□ | 1180 | |

Special versions according to ATEX

| Motor type | Zone 2 | VIK (includes Zone 2) ³⁾ | | | | Zone 21 | | Zone 22 | |
|-------------|-----------------------|-------------------------------------|------------------------------|---------------------|------------------------------|-----------------------|------------------------------|-----------------------|------------------------------|
| | | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) | Mains-fed operation | Converter-fed operation (FC) |
| Frame size | Order code M72 | Order code M73 | Order code K30 | On request | Order code M34 | Order code M38 | Order code M35 | Order code M39 | |
| 1LA6 | 100 | ✓ | ✓ | ✓ | ✓ | – | – | ✓ | ✓ |
| | 112 | ✓ | ✓ | ✓ | ✓ | – | – | ✓ | ✓ |
| | 132 | ✓ | ✓ | ✓ | ✓ | – | – | ✓ | ✓ |
| | 160 | ✓ | ✓ | ✓ | ✓ | – | – | ✓ | ✓ |
| 1LG4 | 180 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 200 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 225 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 250 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 280 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 315 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

- ✓ With additional charge
– Not possible

The motors can also be ordered in design for Zones 2 and 22 for non-conducting dust (IP55):

Mains-fed operation – order code **M74**

Converter-fed operation with derating – order code **M75**

See "Special versions" in the "Selection and ordering data" under "Options".

¹⁾ For connection to 230 V, parallel feeders are necessary (see the "Introduction" section, "Connection, circuit and connection box").
²⁾ For connection to 400 V, parallel feeders are necessary (see the "Introduction" section, "Connection, circuit and connection box").

³⁾ If the marking Ex nA II is required in addition to VIK on the rating plate, this must be ordered using order code **C27**. The VIK version is not possible in combination with Zone 21 and 22.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Cast-iron series 1LA6/1LG4

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | Noise at rated output | |
|---|---|---|-------------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz L_{pFA} dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| 6-pole, 1000 rpm at 50 Hz, 1200 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | |
| 1LA6 106-6AA□□ | 2.3 | 4 | 2.3 | 16 | 0.0047 | 47 | 59 |
| 1LA6 113-6AA□□ | 2.2 | 4.6 | 2.5 | 16 | 0.0091 | 52 | 64 |
| 1LA6 130-6AA□□ | 1.9 | 4.2 | 2.2 | 16 | 0.015 | 63 | 75 |
| 1LA6 133-6AA□□ | 2.1 | 4.5 | 2.4 | 16 | 0.019 | 63 | 75 |
| 1LA6 134-6AA□□ | 2.3 | 5 | 2.6 | 16 | 0.025 | 63 | 75 |
| 1LA6 163-6AA□□ | 2.1 | 4.6 | 2.5 | 16 | 0.044 | 66 | 78 |
| 1LA6 166-6AA□□ | 2.3 | 4.8 | 2.6 | 16 | 0.063 | 66 | 78 |
| 1LG4 186-6AA□□ | 2.3 | 5.3 | 2.5 | 16 | 0.18 | 57 | 73 |
| 1LG4 206-6AA□□ | 2.5 | 5.6 | 2.5 | 16 | 0.24 | 58 | 73 |
| 1LG4 207-6AA□□ | 2.6 | 5.7 | 2.5 | 16 | 0.29 | 58 | 73 |
| 1LG4 223-6AA□□ | 2.7 | 5.6 | 2.5 | 16 | 0.49 | 59 | 73 |
| 1LG4 253-6AA□□ | 2.7 | 6 | 2.3 | 16 | 0.76 | 60 | 75 |
| 1LG4 280-6AA□□ | 2.4 | 6.1 | 2.4 | 16 | 1.1 | 61 | 75 |
| 1LG4 283-6AA□□ | 2.5 | 6.3 | 2.5 | 16 | 1.4 | 61 | 75 |
| 1LG4 310-6AA□□ | 2.5 | 6.5 | 2.8 | 16 | 2.1 | 63 | 77 |
| 1LG4 313-6AA□□ | 2.6 | 6.8 | 2.9 | 16 | 2.5 | 63 | 77 |
| 1LG4 316-6AA□□ | 2.5 | 6.8 | 2.9 | 16 | 3.2 | 64 | 78 |
| 1LG4 317-6AA□□ | 3.1 | 7.3 | 3 | 16 | 4 | 64 | 78 |
| 1LG4 318-6AA□□ | 3 | 7.5 | 3 | 16 | 4.7 | 65 | 79 |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | | | Final position: Type of construction code | | | | | | |
|---------------------|------------------------------------|---------------|----------|----------|----------|----------|---|------------------------------|--|---------------------------------|---------------------|------------------------------|----------|
| | 50 Hz | | 60 Hz | | | | Without flange | With flange | | With standard flange | With special flange | | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 460 VY | 460 VΔ | IM B3/6/7/8, IM V6 ¹⁾²⁾ | IM B5, IM V3 ¹⁾³⁾ | IM V1 With protective cover ¹⁾³⁾⁴⁾ | IM B 35 IM V19 ¹⁾ | IM B14, IM B34 | IM B14, IM V19 ¹⁾ | |
| | 1 | 6 | 3 | 5 | 1 | 6 | 0 | 1 | 4 | 6 | 2 | 7 | 3 |
| 1LA6 10 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 11 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 13 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 16 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LG4 18 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – |
| 1LG4 20 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – |
| 1LG4 22 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – |
| 1LG4 25 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – |
| 1LG4 28 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – |
| 1LG4 310 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – |
| 1LG4 313 □□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – |
| 1LG4 316 □□ | – | ○ | – | ○ | – | ○ | □ ⁶⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 317 □□ | | | | | | | | | | | | | |
| 1LG4 318 □□ | | | | | | | | | | | | | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

- 1) The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.
- 2) If motors 1LG4 183-... to 1LG4 318-... (motor series 1LG4 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7 or IM V6 are fixed to the wall, it is recommended that the motor feet are supported.

- 3) 1LG4 220-... to 1LG4 318-... motors (motor series 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.
- 4) The "Second shaft extension" option, order code **K16** is not possible.
- 5) Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.
- 6) Type of construction IM V6 is only possible using type of construction code **9** and order code **M1E**.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Cast-iron series 1LA6/1LG4

Selection and ordering data (continued)

| Rated output at | | Frame size | Operating values at rated output | | | | | | Rated current at 400 V, 50 Hz | Order No. | Price | Weight |
|---|-------------------|------------|----------------------------------|-----------------------|------------------------------|------------------------------|--------------------------------|------------------|--|-----------|-------|--------|
| 50 Hz | 60 Hz | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | | | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | For Order No. supplements for voltage, type of construction and explosion protection zones according to ATEX, see tables below | m | kg | |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | |
| 0.75 | 0.86 | 100 L | 680 | 11 | 66 | 65 | 0.76 | 2.15 | 1LA6 106-8ABQQ | | 29 | |
| 1.1 | 1.3 | 100 L | 680 | 15 | 72 | 72 | 0.76 | 2.9 | 1LA6 107-8ABQQ | | 32 | |
| 1.5 | 1.75 | 112 M | 705 | 20 | 74 | 74 | 0.76 | 3.85 | 1LA6 113-8ABQQ | | 39 | |
| 2.2 | 2.55 | 132 S | 700 | 30 | 75 | 75 | 0.74 | 5.7 | 1LA6 130-8ABQQ | | 50 | |
| 3 | 3.45 | 132 M | 700 | 41 | 77 | 77.5 | 0.74 | 7.6 | 1LA6 133-8ABQQ | | 57 | |
| 4 | 4.6 | 160 M | 715 | 53 | 80 | 80 | 0.72 | 10 | 1LA6 163-8ABQQ | | 91 | |
| 5.5 | 6.3 | 160 M | 710 | 74 | 83.5 | 83.5 | 0.73 | 13 | 1LA6 164-8ABQQ | | 102 | |
| 7.5 | 8.6 | 160 L | 715 | 100 | 85.5 | 85.5 | 0.72 | 17.6 | 1LA6 166-8ABQQ | | 122 | |
| 11 | 13.2 | 180 L | 725 | 145 | 87.5 | 88.3 | 0.73 | 25 | 1LG4 186-8ABQQ | | 150 | |
| 15 | 18 | 200 L | 725 | 198 | 87.7 | 88.4 | 0.76 | 32.5 | 1LG4 207-8ABQQ | | 205 | |
| 18.5 | 22 | 225 S | 730 | 242 | 89.4 | 90.4 | 0.78 | 38.5 | 1LG4 220-8ABQQ | | 270 | |
| 22 | 26.5 | 225 M | 730 | 288 | 89.7 | 90.7 | 0.79 | 45 | 1LG4 223-8ABQQ | | 290 | |
| 30 | 36 | 250 M | 730 | 392 | 91.4 | 92.2 | 0.81 | 58 | 1LG4 253-8ABQQ | | 385 | |
| 37 | 44.5 | 280 S | 735 | 481 | 92 | 92.8 | 0.81 | 72 | 1LG4 280-8ABQQ | | 475 | |
| 45 | 54 | 280 M | 735 | 585 | 92.4 | 93.3 | 0.81 | 87 | 1LG4 283-8ABQQ | | 515 | |
| 55 | 66 | 315 S | 740 | 710 | 93 | 93.4 | 0.81 | 106 | 1LG4 310-8ABQQ | | 680 | |
| 75 | 90 | 315 M | 738 | 971 | 93.3 | 94 | 0.83 | 140 | 1LG4 313-8ABQQ | | 745 | |
| 90 | 108 | 315 L | 738 | 1165 | 93.4 | 94 | 0.83 | 168 | 1LG4 316-8ABQQ | | 865 | |
| 110 | 132 | 315 L | 738 | 1423 | 94 | 94.4 | 0.83 | 205 | 1LG4 317-8ABQQ | | 1020 | |
| 132 | 158 | 315 L | 738 | 1708 | 94.2 | 94.6 | 0.83 | 245 | 1LG4 318-8ABQQ | | 1100 | |

Special versions according to ATEX

| Motor type | Frame size | Zone 2 | | VIK (includes Zone 2) ¹⁾ | | Zone 21 | | Zone 22 | |
|-------------|------------|--|---|--|--|--|---|--|---|
| | | Mains-fed operation Order code M72 | Converter-fed operation (FC) Order code M73 | Mains-fed operation Order code K30 | Converter-fed operation (FC) On request | Mains-fed operation Order code M34 | Converter-fed operation (FC) Order code M38 | Mains-fed operation Order code M35 | Converter-fed operation (FC) Order code M39 |
| 1LA6 | 100 | ✓ | ✓ | ✓ | ✓ | – | – | ✓ | ✓ |
| | 112 | ✓ | ✓ | ✓ | ✓ | – | – | ✓ | ✓ |
| | 132 | ✓ | ✓ | ✓ | ✓ | – | – | ✓ | ✓ |
| | 160 | ✓ | ✓ | ✓ | ✓ | – | – | ✓ | ✓ |
| 1LG4 | 180 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 200 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 225 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 250 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 280 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 315 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

- ✓ With additional charge
– Not possible

The motors can also be ordered in design for Zones 2 and 22 for non-conducting dust (IP55):

Mains-fed operation – order code **M74**

Converter-fed operation with derating – order code **M75**

See "Special versions" in the "Selection and ordering data" under "Options".

¹⁾ If the marking Ex nA II is required in addition to VIK on the rating plate, this must be ordered using order code **C27**. The VIK version is not possible in combination with Zone 21 and 22.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Cast-iron series 1LA6/1LG4

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | Noise at rated output | |
|---|---|---|-------------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz L_{pFA} dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| 8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | |
| 1LA6 106-8AB□□ | 1.6 | 3 | 1.9 | 13 | 0.0051 | 45 | 57 |
| 1LA6 107-8AB□□ | 1.8 | 3.3 | 2.1 | 13 | 0.0063 | 45 | 57 |
| 1LA6 113-8AB□□ | 1.8 | 3.7 | 2.1 | 13 | 0.013 | 49 | 61 |
| 1LA6 130-8AB□□ | 1.9 | 3.9 | 2.3 | 13 | 0.014 | 53 | 65 |
| 1LA6 133-8AB□□ | 2.1 | 4.1 | 2.4 | 13 | 0.019 | 53 | 65 |
| 1LA6 163-8AB□□ | 2.2 | 4.5 | 2.6 | 13 | 0.036 | 63 | 75 |
| 1LA6 164-8AB□□ | 2.3 | 4.7 | 2.7 | 13 | 0.046 | 63 | 75 |
| 1LA6 166-8AB□□ | 2.7 | 5.3 | 3 | 13 | 0.064 | 63 | 75 |
| 1LG4 186-8AB□□ | 1.7 | 4.2 | 2.1 | 13 | 0.17 | 65 | 78 |
| 1LG4 207-8AB□□ | 2.2 | 4.9 | 2.6 | 13 | 0.29 | 67 | 70 |
| 1LG4 220-8AB□□ | 2.3 | 5.5 | 2.7 | 13 | 0.48 | 57 | 70 |
| 1LG4 223-8AB□□ | 2.3 | 5.6 | 2.8 | 13 | 0.55 | 54 | 73 |
| 1LG4 253-8AB□□ | 2.3 | 5.5 | 2.6 | 13 | 0.84 | 55 | 73 |
| 1LG4 280-8AB□□ | 2.2 | 5 | 2.1 | 13 | 1.1 | 55 | 74 |
| 1LG4 283-8AB□□ | 2.2 | 5.1 | 2.1 | 13 | 1.4 | 58 | 74 |
| 1LG4 310-8AB□□ | 2.2 | 5.8 | 2.6 | 13 | 2.1 | 64 | 78 |
| 1LG4 313-8AB□□ | 2.2 | 5.7 | 2.6 | 13 | 2.5 | 64 | 78 |
| 1LG4 316-8AB□□ | 2.2 | 5.8 | 2.7 | 13 | 3.1 | 64 | 78 |
| 1LG4 317-8AB□□ | 2.4 | 6.1 | 2.8 | 13 | 3.9 | 64 | 78 |
| 1LG4 318-8AB□□ | 2.5 | 6.5 | 2.9 | 13 | 4.5 | 64 | 78 |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | | | Final position: Type of construction code | | | | | | |
|---------------|------------------------------------|---------------|----------|----------|----------------|-------------|---|------------------------------|--|---------------------------------|----------------|------------------------------|----------|
| | 50 Hz | | 60 Hz | | Without flange | With flange | | With standard flange | | With special flange | | | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | 460 VY | 460 VΔ | IM B3/6/7/8, IM V6 ¹⁾²⁾ | IM B5, IM V3 ¹⁾³⁾ | IM V1 With protective cover ¹⁾³⁾⁴⁾ | IM B 35 IM V19 ¹⁾ | IM B14, IM B34 | IM B14, IM V19 ¹⁾ | |
| | 1 | 6 | 3 | 5 | 1 | 6 | 0 | 1 | 4 | 6 | 2 | 7 | 3 |
| 1LA6 10...□□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 11...□□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 13...□□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 16...□□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LG4 18...□□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – |
| 1LG4 20...□□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – |
| 1LG4 22...□□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – |
| 1LG4 25...□□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – |
| 1LG4 28...□□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – |
| 1LG4 310...□□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – |
| 1LG4 313...□□ | ○ | ○ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | ✓ | – | – | – |
| 1LG4 316...□□ | – | ○ | – | ○ | – | ○ | □ ⁶⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 317...□□ | – | ○ | – | ○ | – | ○ | □ ⁶⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 318...□□ | – | ○ | – | ○ | – | ○ | □ ⁶⁾ | – | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

- 1) The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.
- 2) If motors 1LG4 183... to 1LG4 318... (motor series 1LG4 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7 or IM V6 are fixed to the wall, it is recommended that the motor feet are supported.
- 3) 1LG4 220... to 1LG4 318... motors (motor series 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.
- 4) The "Second shaft extension" option, order code **K16** is not possible.
- 5) Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.
- 6) Type of construction IM V6 is only possible using type of construction code **9** and order code **M1E**.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Cast-iron series 1LG6

Selection and ordering data

| Rated output at 50 Hz P_{rated} kW | Frame size FS | Operating values at rated output | | | | | | Order No. For Order No. supplements for voltage, type of construction and explosion protection zones according to ATEX, see tables below | Price | Weight IM B3 type of construction approx. m kg |
|---|------------------|---|---|--|--|---|--|---|-------|---|
| | | Rated speed at 50 Hz n_{rated} rpm | Rated torque at 50 Hz T_{rated} Nm | Efficiency at 50 Hz 4/4-load η_{rated} % | Efficiency at 50 Hz 3/4-load η_{rated} % | Power factor at 50 Hz 4/4-load $\cos\phi_{\text{rated}}$ | Rated current at 400 V, 50 Hz I_{rated} A | | | |
| 2-pole, 3000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, "High Efficiency" | | | | | | | | | | |
| 22 | 180 M | 2955 | 71 | 94.1 | 94.5 | 0.88 | 38.5 ¹⁾ | 1LG6 183-2AA□□ | | 180 |
| 30 | 200 L | 2960 | 97 | 93.5 | 93.4 | 0.88 | 53 ¹⁾ | 1LG6 206-2AA□□ | | 225 |
| 37 | 200 L | 2960 | 119 | 94.1 | 94 | 0.89 | 64 ¹⁾ | 1LG6 207-2AA□□ | | 255 |
| 45 | 225 M | 2965 | 145 | 94.9 | 95.1 | 0.89 | 77 ¹⁾ | 1LG6 223-2AA□□ | | 330 |
| 55 | 250 M | 2975 | 177 | 95.3 | 95.3 | 0.9 | 93 | 1LG6 253-2AA□□ | | 420 |
| 75 | 280 S | 2975 | 241 | 95.2 | 95.2 | 0.89 | 128 ¹⁾ | 1LG6 280-2AB□□ | | 530 |
| 90 | 280 M | 2978 | 289 | 95.6 | 95.7 | 0.9 | 150 ¹⁾ | 1LG6 283-2AB□□ | | 615 |
| 110 | 315 S | 2982 | 352 | 95.8 | 95.7 | 0.91 | 182 ¹⁾ | 1LG6 310-2AB□□ | | 790 |
| 132 | 315 M | 2982 | 423 | 96 | 95.9 | 0.91 | 220 ¹⁾ | 1LG6 313-2AB□□ | | 915 |
| 160 | 315 L | 2982 | 512 | 96.4 | 96.4 | 0.92 | 260 ²⁾ | 1LG6 316-2AB□□ | | 1055 |
| 200 | 315 L | 2982 | 641 | 96.5 | 96.5 | 0.93 | 320 ²⁾ | 1LG6 317-2AB□□ | | 1245 |
| 4-pole, 1500 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, "High Efficiency" | | | | | | | | | | |
| 18.5 | 180 M | 1470 | 120 | 92.6 | 93.2 | 0.83 | 34.5 ¹⁾ | 1LG6 183-4AA□□ | | 155 |
| 22 | 180 L | 1470 | 143 | 93.2 | 93.5 | 0.84 | 40.5 ¹⁾ | 1LG6 186-4AA□□ | | 180 |
| 30 | 200 L | 1470 | 195 | 93.3 | 93.4 | 0.85 | 55 ¹⁾ | 1LG6 207-4AA□□ | | 225 |
| 37 | 225 S | 1480 | 239 | 94 | 94.4 | 0.85 | 67 ¹⁾ | 1LG6 220-4AA□□ | | 290 |
| 45 | 225 M | 1480 | 290 | 94.5 | 94.7 | 0.85 | 81 ¹⁾ | 1LG6 223-4AA□□ | | 330 |
| 55 | 250 M | 1485 | 354 | 95.1 | 95.3 | 0.87 | 96 | 1LG6 253-4AA□□ | | 460 |
| 75 | 280 S | 1485 | 482 | 95.1 | 95.2 | 0.87 | 130 ¹⁾ | 1LG6 280-4AA□□ | | 575 |
| 90 | 280 M | 1486 | 578 | 95.4 | 95.5 | 0.86 | 158 ¹⁾ | 1LG6 283-4AA□□ | | 675 |
| 110 | 315 S | 1488 | 706 | 95.9 | 96 | 0.87 | 190 ¹⁾ | 1LG6 310-4AA□□ | | 810 |
| 132 | 315 M | 1488 | 847 | 96.1 | 96.2 | 0.88 | 225 ¹⁾ | 1LG6 313-4AA□□ | | 965 |
| 160 | 315 L | 1490 | 1026 | 96.3 | 96.4 | 0.88 | 275 ²⁾ | 1LG6 316-4AA□□ | | 1105 |
| 200 | 315 L | 1490 | 1282 | 96.4 | 96.5 | 0.88 | 340 ²⁾ | 1LG6 317-4AA□□ | | 1305 |

Special versions according to ATEX

| Motor type | Frame size | Zone 2 | | VIK (includes Zone 2) ³⁾ | | Zone 21 | | Zone 22 | |
|-------------|------------|--|---|--|--|--|---|--|---|
| | | Mains-fed operation Order code M72 | Converter-fed operation (FC) Order code M73 | Mains-fed operation Order code K30 | Converter-fed operation (FC) On request | Mains-fed operation Order code M34 | Converter-fed operation (FC) Order code M38 | Mains-fed operation Order code M35 | Converter-fed operation (FC) Order code M39 |
| 1LG6 | 180 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 200 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 225 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 250 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 280 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 315 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

✓ With additional charge

The motors can also be ordered in design for Zones 2 and 22 for non-conducting dust (IP55):

Mains-fed operation – order code **M74**

Converter-fed operation with derating – order code **M75**

See "Special versions" in the "Selection and ordering data" under "Options".

The motors can also be used for 60 Hz according to EPACT, see Pages 4/74 to 4/79.

¹⁾ For connection to 230 V, parallel feeders are necessary (see the "Introduction" section, "Connection, circuit and connection box").

²⁾ For connection to 400 V, parallel feeders are necessary (see the "Introduction" section, "Connection, circuit and connection box").

³⁾ If the marking Ex nA II is required in addition to VIK on the rating plate, this must be ordered using order code **C27**. The VIK version is not possible in combination with Zone 21 and 22.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Cast-iron series 1LG6

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | |
|---|---|---|------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz L_{pFA} dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| 2-pole, 3000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, "High Efficiency" | | | | | | | |
| 1LG6 183-2AA□□ | 2.5 | 7.2 | 3.4 | 16 | 0.086 | 67 | 80 |
| 1LG6 206-2AA□□ | 2.4 | 7 | 3.3 | 16 | 0.15 | 71 | 84 |
| 1LG6 207-2AA□□ | 2.5 | 7.2 | 3.3 | 16 | 0.18 | 71 | 84 |
| 1LG6 223-2AA□□ | 2.5 | 7.3 | 3.2 | 16 | 0.27 | 71 | 84 |
| 1LG6 253-2AA□□ | 2.4 | 6.8 | 3 | 16 | 0.47 | 71 | 84 |
| 1LG6 280-2AB□□ | 2.5 | 7 | 3 | 13 | 0.83 | 73 | 86 |
| 1LG6 283-2AB□□ | 2.6 | 7.6 | 3.1 | 13 | 1 | 73 | 86 |
| 1LG6 310-2AB□□ | 2.4 | 6.9 | 2.8 | 13 | 1.4 | 76 | 89 |
| 1LG6 313-2AB□□ | 2.6 | 7.1 | 2.9 | 13 | 1.6 | 76 | 89 |
| 1LG6 316-2AB□□ | 2.5 | 7.1 | 2.9 | 13 | 2.1 | 76 | 89 |
| 1LG6 317-2AB□□ | 2.5 | 6.9 | 2.8 | 13 | 2.5 | 76 | 89 |
| 4-pole, 1500 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, "High Efficiency" | | | | | | | |
| 1LG6 183-4AA□□ | 2.5 | 6.4 | 3 | 16 | 0.12 | 60 | 73 |
| 1LG6 186-4AA□□ | 2.5 | 6.7 | 3.1 | 16 | 0.14 | 60 | 73 |
| 1LG6 207-4AA□□ | 2.6 | 6.7 | 3.3 | 16 | 0.23 | 62 | 75 |
| 1LG6 220-4AA□□ | 2.7 | 6.8 | 3 | 16 | 0.4 | 60 | 73 |
| 1LG6 223-4AA□□ | 2.8 | 6.9 | 3 | 16 | 0.49 | 60 | 73 |
| 1LG6 253-4AA□□ | 2.6 | 7.5 | 3 | 16 | 0.86 | 65 | 78 |
| 1LG6 280-4AA□□ | 2.5 | 6.8 | 2.9 | 16 | 1.4 | 67 | 80 |
| 1LG6 283-4AA□□ | 2.7 | 7.5 | 3.1 | 16 | 1.7 | 67 | 80 |
| 1LG6 310-4AA□□ | 2.7 | 7.1 | 2.9 | 16 | 2.3 | 68 | 82 |
| 1LG6 313-4AA□□ | 2.7 | 7.3 | 2.9 | 16 | 2.9 | 68 | 82 |
| 1LG6 316-4AA□□ | 3 | 7.4 | 3 | 16 | 3.5 | 68 | 82 |
| 1LG6 317-4AA□□ | 3.2 | 7.6 | 3 | 16 | 4.2 | 68 | 82 |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | |
|-----------------------|------------------------------------|---------------|--------|--------|---|---|---|--------|------------------------------|--------|------------------------------|
| | 50 Hz | | | | Without flange | With flange | | | With standard flange | | With special flange |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6 ¹⁾²⁾ | IM B5 ¹⁾³⁾ , IM V3 ⁴⁾ | IM V1 with protective cover ¹⁾³⁾⁵⁾ | IM B35 | IM B14, IM V19 ¹⁾ | IM B34 | IM B14, IM V19 ¹⁾ |
| 1 | 6 | 3 | 5 | 0 | 1 | 4 | 6 | 2 | 7 | 3 | |
| 1LG6 18 - □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - |
| 1LG6 20 - □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - |
| 1LG6 22 - □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - |
| 1LG6 25 - □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - |
| 1LG6 28 - □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - |
| 1LG6 310 - □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - |
| 1LG6 313 - □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - |
| 1LG6 316 - □□ | - | ○ | - | ○ | □ ⁶⁾ | - | ✓ ⁷⁾ | ✓ | - | - | - |
| 1LG6 317 - □□ | - | ○ | - | ○ | □ ⁶⁾ | - | ✓ ⁷⁾ | ✓ | - | - | - |

□ Standard version
○ Without additional charge

✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

- The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.
- If motors 1LG6 183-... to 1LG6 318-... (motor series 1LG6 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7 or IM V6 are fixed to the wall, it is recommended that the motor feet are supported.

- 1LG6 220-... to 1LG6 318-... motors (motor series 1LG6 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.
- Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.
- The "Second shaft extension" option, order code **K16** is not possible.
- Type of construction IM V6 is only possible using type of construction code **9** and order code **M1E**.
- 2-pole motors in 60 Hz version available on request.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Cast-iron series 1LG6

Selection and ordering data (continued)

| Rated output at 50 Hz P_{rated} kW | Frame size FS | Operating values at rated output | | | | | | Order No. For Order No. supplements for voltage, type of construction and explosion protection zones according to ATEX, see tables below | Price | Weight IM B3 type of construction approx. m kg |
|---|------------------|---|---|--|--|---|--|---|-------|---|
| | | Rated speed at 50 Hz n_{rated} rpm | Rated torque at 50 Hz T_{rated} Nm | Efficiency at 50 Hz 4/4-load η_{rated} % | Efficiency at 50 Hz 3/4-load η_{rated} % | Power factor at 50 Hz 4/4-load $\cos\phi_{\text{rated}}$ | Rated current at 400 V, 50 Hz I_{rated} A | | | |
| 6-pole, 1000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, "High Efficiency" | | | | | | | | | | |
| 15 | 180 L | 975 | 147 | 90.9 | 91.7 | 0.81 | 29.5 | 1LG6 186-6AA□□ | | 175 |
| 18.5 | 200 L | 978 | 181 | 91.2 | 91.8 | 0.81 | 36 | 1LG6 206-6AA□□ | | 210 |
| 22 | 200 L | 978 | 215 | 91.9 | 92.5 | 0.82 | 42 | 1LG6 207-6AA□□ | | 240 |
| 30 | 225 M | 980 | 292 | 93.2 | 93.7 | 0.83 | 56 ¹⁾ | 1LG6 223-6AA□□ | | 325 |
| 37 | 250 M | 985 | 359 | 93.7 | 94.1 | 0.83 | 69 | 1LG6 253-6AA□□ | | 405 |
| 45 | 280 S | 988 | 435 | 94.4 | 94.6 | 0.85 | 81 | 1LG6 280-6AA□□ | | 520 |
| 55 | 280 M | 988 | 532 | 94.6 | 94.8 | 0.85 | 99 | 1LG6 283-6AA□□ | | 570 |
| 75 | 315 S | 990 | 723 | 95 | 95 | 0.83 | 138 | 1LG6 310-6AA□□ | | 760 |
| 90 | 315 M | 990 | 868 | 95.3 | 95.4 | 0.85 | 160 ¹⁾ | 1LG6 313-6AA□□ | | 935 |
| 110 | 315 L | 990 | 1061 | 95.6 | 95.7 | 0.85 | 196 | 1LG6 316-6AA□□ | | 1010 |
| 132 | 315 L | 990 | 1273 | 95.8 | 95.8 | 0.85 | 235 | 1LG6 317-6AA□□ | | 1180 |
| 160 | 315 L | 990 | 1543 | 95.8 | 95.9 | 0.86 | 280 ²⁾ | 1LG6 318-6AA□□ | | 1245 |
| 8-pole, 750 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, "High Efficiency" | | | | | | | | | | |
| 11 | 180 L | 725 | 145 | 88.7 | 89.6 | 0.76 | 23.5 | 1LG6 186-8AB□□ | | 165 |
| 15 | 200 L | 725 | 198 | 89.3 | 89.8 | 0.8 | 30.5 | 1LG6 207-8AB□□ | | 235 |
| 18.5 | 225 S | 730 | 242 | 91.1 | 91.8 | 0.81 | 36 | 1LG6 220-8AB□□ | | 295 |
| 22 | 225 M | 730 | 288 | 91.6 | 92.1 | 0.81 | 43 | 1LG6 223-8AB□□ | | 335 |
| 30 | 250 M | 735 | 390 | 92.8 | 93.3 | 0.82 | 57 | 1LG6 253-8AB□□ | | 435 |
| 37 | 280 S | 738 | 479 | 93.1 | 93.3 | 0.81 | 71 | 1LG6 280-8AB□□ | | 510 |
| 45 | 280 M | 738 | 582 | 93.7 | 94 | 0.81 | 86 | 1LG6 283-8AB□□ | | 560 |
| 55 | 315 S | 740 | 710 | 94.3 | 94.4 | 0.82 | 102 | 1LG6 310-8AB□□ | | 750 |
| 75 | 315 M | 740 | 968 | 94.5 | 94.7 | 0.83 | 138 | 1LG6 313-8AB□□ | | 840 |
| 90 | 315 L | 740 | 1161 | 94.7 | 95.1 | 0.84 | 164 | 1LG6 316-8AB□□ | | 1005 |
| 110 | 315 L | 740 | 1420 | 94.8 | 95.1 | 0.84 | 200 | 1LG6 317-8AB□□ | | 1100 |
| 132 | 315 L | 740 | 1704 | 94.9 | 95.2 | 0.84 | 240 | 1LG6 318-8AB□□ | | 1270 |

Special versions according to ATEX

| Motor type | Frame size | Zone 2 | | VIK (includes Zone 2) ³⁾ | | Zone 21 | | Zone 22 | |
|-------------|------------|---|--|---|--|---|--|---|--|
| | | Mains-fed operation Order code M72 | Converter-fed operation (FC) Order code M73 | Mains-fed operation Order code K30 | Converter-fed operation (FC) On request | Mains-fed operation Order code M34 | Converter-fed operation (FC) Order code M38 | Mains-fed operation Order code M35 | Converter-fed operation (FC) Order code M39 |
| 1LG6 | 180 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 200 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 225 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 250 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 280 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 315 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |

✓ With additional charge

The motors can also be ordered in design for Zones 2 and 22 for non-conducting dust (IP55):

Mains-fed operation – order code **M74**

Converter-fed operation with derating – order code **M75**

See "Special versions" in the "Selection and ordering data" under "Options".

The motors can also be used for 60 Hz according to EPACT, see Pages 4/74 to 4/79.

¹⁾ For connection to 230 V, parallel feeders are necessary (see the "Introduction" section, "Connection, circuit and connection box").

²⁾ For connection to 400 V, parallel feeders are necessary (see the "Introduction" section, "Connection, circuit and connection box").

³⁾ If the marking Ex nA II is required in addition to VIK on the rating plate, this must be ordered using order code **C27**. The VIK version is not possible in combination with Zone 21 and 22.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Cast-iron series 1LG6

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | |
|---|---|---|------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 50 Hz L_{pFA} dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
| 6-pole, 1000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, "High Efficiency" | | | | | | | |
| 1LG6 186-6AA□□ | 2.4 | 5.5 | 2.5 | 16 | 0.2 | 56 | 69 |
| 1LG6 206-6AA□□ | 2.4 | 5.6 | 2.4 | 16 | 0.29 | 59 | 72 |
| 1LG6 207-6AA□□ | 2.4 | 5.6 | 2.4 | 16 | 0.36 | 59 | 72 |
| 1LG6 223-6AA□□ | 2.8 | 6.5 | 2.9 | 16 | 0.63 | 59 | 72 |
| 1LG6 253-6AA□□ | 2.9 | 6.8 | 2.5 | 16 | 0.93 | 59 | 72 |
| 1LG6 280-6AA□□ | 3 | 6.8 | 2.7 | 16 | 1.4 | 58 | 71 |
| 1LG6 283-6AA□□ | 3.3 | 7.3 | 2.9 | 16 | 1.6 | 58 | 71 |
| 1LG6 310-6AA□□ | 2.8 | 7.3 | 3 | 16 | 2.5 | 61 | 74 |
| 1LG6 313-6AA□□ | 2.7 | 7.3 | 2.9 | 16 | 3.2 | 61 | 74 |
| 1LG6 316-6AA□□ | 2.9 | 7.4 | 2.9 | 16 | 4 | 61 | 74 |
| 1LG6 317-6AA□□ | 3.1 | 7.8 | 3.1 | 16 | 4.7 | 61 | 74 |
| 1LG6 318-6AA□□ | 3.2 | 7.8 | 3.1 | 16 | 5.4 | 64 | 77 |
| 8-pole, 750 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, "High Efficiency" | | | | | | | |
| 1LG6 186-8AB□□ | 1.7 | 4.6 | 2.2 | 13 | 0.21 | 62 | 75 |
| 1LG6 207-8AB□□ | 2.3 | 5.3 | 2.6 | 13 | 0.37 | 62 | 75 |
| 1LG6 220-8AB□□ | 2.3 | 5.6 | 2.6 | 13 | 0.55 | 54 | 67 |
| 1LG6 223-8AB□□ | 2.4 | 5.8 | 2.8 | 13 | 0.66 | 58 | 71 |
| 1LG6 253-8AB□□ | 2.5 | 6 | 2.8 | 13 | 1.1 | 57 | 70 |
| 1LG6 280-8AB□□ | 2.3 | 5.7 | 2.3 | 13 | 1.4 | 58 | 71 |
| 1LG6 283-8AB□□ | 2.6 | 6.1 | 2.5 | 13 | 1.6 | 58 | 71 |
| 1LG6 310-8AB□□ | 2.5 | 6.3 | 2.9 | 13 | 2.5 | 64 | 77 |
| 1LG6 313-8AB□□ | 2.5 | 6.7 | 2.9 | 13 | 3.1 | 58 | 72 |
| 1LG6 316-8AB□□ | 2.4 | 6.3 | 2.8 | 13 | 3.9 | 64 | 77 |
| 1LG6 317-8AB□□ | 2.4 | 6.4 | 2.6 | 13 | 4.5 | 64 | 77 |
| 1LG6 318-8AB□□ | 2.5 | 6.7 | 2.9 | 13 | 5.3 | 64 | 77 |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | |
|----------------|------------------------------------|---------------|--------|--------|---|---|---|--------|------------------------------|--------|------------------------------|--|
| | 50 Hz | | | | Without flange | With flange | | | With standard flange | | With special flange | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6 ¹⁾²⁾ | IM B5 ¹⁾³⁾ , IM V3 ⁴⁾ | IM V1 with protective cover ¹⁾³⁾⁵⁾ | IM B35 | IM B14, IM V19 ¹⁾ | IM B34 | IM B14, IM V19 ¹⁾ | |
| | 1 | 6 | 3 | 5 | 0 | 1 | 4 | 6 | 2 | 7 | 3 | |
| 1LG6 18-...□□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - | |
| 1LG6 20-...□□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - | |
| 1LG6 22-...□□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - | |
| 1LG6 25-...□□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - | |
| 1LG6 28-...□□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - | |
| 1LG6 310-...□□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - | |
| 1LG6 313-...□□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - | |
| 1LG6 316-...□□ | - | ○ | - | ○ | □ ⁶⁾ | - | ✓ | ✓ | - | - | - | |
| 1LG6 317-...□□ | | | | | | | | | | | | |
| 1LG6 318-...□□ | | | | | | | | | | | | |

- Standard version
○ Without additional charge

- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

- 1) The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.
- 2) If motors 1LG6 183-... to 1LG6 318-... (motor series 1LG6 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7 or IM V6 are fixed to the wall, it is recommended that the motor feet are supported.

- 3) 1LG6 220-... to 1LG6 318-... motors (motor series 1LG6 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.
- 4) Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.
- 5) The "Second shaft extension" option, order code **K16** is not possible.
- 6) Type of construction IM V6 is only possible using type of construction code **9** and order code **M1E**.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Cast-iron series 1LG6

Selection and ordering data

| Rated output at 60 Hz P_{rated} HP | Frame size FS | Operating values at rated output | | | | | | Order No. For Order No. supplements for voltage, type of construction and explosion protection zones according to ATEX, see tables below | Price | Weight IM B3 type of construction approx. m kg |
|---|------------------|---|---|---------------------------|---|---|--|---|-------|---|
| | | Rated speed at 60 Hz n_{rated} rpm | Rated torque at 60 Hz T_{rated} Nm | EPACT with CC No. CC 032A | Nominal efficiency at 60 Hz η_{rated} % | Power factor at 60 Hz 4/4-load $\cos\phi_{\text{rated}}$ | Rated current at 460 V, 60 Hz I_{rated} A | | | |
| 2-pole, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, for use in the North American market according to EPACT | | | | | | | | | | |
| 30 | 180 M | 3560 | 60 | Yes | 93 | 0.88 | 34 | 1LG6 183-2AA□□ | | 180 |
| 40 | 200 L | 3565 | 80 | Yes | 91.7 | 0.88 | 46 | 1LG6 206-2AA□□ | | 225 |
| 50 | 200 L | 3565 | 100 | Yes | 92.4 | 0.89 | 57 | 1LG6 207-2AA□□ | | 255 |
| 60 | 225 M | 3570 | 120 | Yes | 93.6 | 0.89 | 67 | 1LG6 223-2AA□□ | | 330 |
| 75 | 225 M | 3570 | 150 | Yes | 94.5 | 0.9 | 83 | 1LG6 228-2AA□□¹⁾ | | 390 |
| 75 | 250 M | 3578 | 149 | No | 93.6 | 0.89 | 84 | 1LG6 253-2AA□□ | | 420 |
| 100 | 250 M | 3580 | 199 | Yes | 94.1 | 0.89 | 112 | 1LG6 258-2AA□□¹⁾ | | 470 |
| 100 | 280 S | 3580 | 199 | No | 95 | 0.89 | 110 | 1LG6 280-2AB□□ | | 530 |
| 125 | 280 M | 3580 | 249 | Yes | 95 | 0.9 | 136 | 1LG6 283-2AB□□ | | 615 |
| 150 | 280 M | 3580 | 299 | Yes | 95 | 0.9 | 164 | 1LG6 288-2AA□□¹⁾ | | 660 |
| 150 | 315 S | 3585 | 298 | Yes | 94.5 | 0.91 | 164 | 1LG6 310-2AB□□ | | 790 |
| 175 | 315 M | 3586 | 348 | Yes | 95 | 0.91 | 190 | 1LG6 313-2AB□□ | | 915 |
| 200 | 315 L | 3588 | 397 | Yes | 95.4 | 0.91 | 215 | 1LG6 316-2AB□□ | | 1055 |
| 250 | 315 L | 3588 | 496 | No | 95.4 | 0.93 | 265 | 1LG6 317-2AB□□ | | 1245 |
| 300 | 315 L | 3591 | 595 | No | 95.4 | 0.92 | 320 | 1LG6 318-2AA□□¹⁾ | | 1330 |

Special versions according to ATEX

| Motor type | Frame size | Zone 2 | | VIK (includes Zone 2) ²⁾ | | Zone 21 | | Zone 22 | |
|-------------|------------|---|--|---|--|---|--|---|--|
| | | Mains-fed operation Order code M72 | Converter-fed operation (FC) Order code M73 | Mains-fed operation Order code K30 | Converter-fed operation (FC) On request | Mains-fed operation Order code M34 | Converter-fed operation (FC) Order code M38 | Mains-fed operation Order code M35 | Converter-fed operation (FC) Order code M39 |
| 1LG6 | 180 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 200 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 225 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 250 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 280 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 315 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

✓ With additional charge

The motors can also be ordered in design for Zones 2 and 22 for non-conducting dust (IP55):
Mains-fed operation – order code **M74**
Converter-fed operation with derating – order code **M75**
See "Special versions" in the "Selection and ordering data" under "Options".

The motors can also be used for 50 Hz "High Efficiency", see Pages 4/70 to 4/73.

¹⁾ Only 60 Hz data according to EPACT on the rating plate.

²⁾ If the marking Ex nA II is required in addition to VIK on the rating plate, this must be ordered using order code **C27**. The VIK version is not possible in combination with Zone 21 and 22.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Cast-iron series 1LG6

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | Noise at rated output | |
|---|--|--|----------------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 60 Hz L_{pFA} dB(A) | Sound pressure level at 60 Hz L_{WA} dB(A) |
| 2-pole, 3600 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, for use in the North American market according to EPACK | | | | | | | |
| 1LG6 183-2AA□□ | 2.7 | 7.9 | 3.7 | 16 | 0.086 | 72 | 85 |
| 1LG6 206-2AA□□ | 2.7 | 7.8 | 3.7 | 16 | 0.15 | 75 | 88 |
| 1LG6 207-2AA□□ | 2.8 | 7.8 | 3.7 | 16 | 0.18 | 75 | 88 |
| 1LG6 223-2AA□□ | 2.8 | 8.3 | 3.6 | 16 | 0.27 | 74 | 87 |
| 1LG6 228-2AA□□ | 3.3 | 8.7 | 3.7 | 16 | 0.32 | 74 | 87 |
| 1LG6 253-2AA□□ | 2.7 | 7.5 | 3.2 | 16 | 0.47 | 75 | 88 |
| 1LG6 258-2AA□□ | 2.8 | 8.4 | 3.5 | 16 | 0.57 | 79 | 92 |
| 1LG6 280-2AB□□ | 2.8 | 7.9 | 3.4 | 13 | 0.83 | 77 | 90 |
| 1LG6 283-2AB□□ | 2.9 | 8.3 | 3.4 | 13 | 1 | 77 | 90 |
| 1LG6 288-2AA□□ | 3.1 | 8.5 | 3.6 | 16 | 1.16 | 77 | 90 |
| 1LG6 310-2AB□□ | 2.6 | 7.5 | 3.1 | 13 | 1.4 | 81 | 94 |
| 1LG6 313-2AB□□ | 3 | 8.3 | 3.3 | 13 | 1.6 | 81 | 94 |
| 1LG6 316-2AB□□ | 3 | 8.4 | 3.5 | 13 | 2.1 | 81 | 94 |
| 1LG6 317-2AB□□ | 3.2 | 8.6 | 3.4 | 13 | 2.5 | 81 | 94 |
| 1LG6 318-2AA□□ | 4.1 | 10 | 3.9 | 16 | 2.74 | 83 | 96 |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | Final position: Type of construction code | | | | With standard flange | | With special flange |
|------------------------------|--|----------|---|---|---|----------|---------------------------------|----------|------------------------------|
| | 60 Hz 460 VY 460 VΔ (see "Introduction" for outputs at 60 Hz) | | Without flange IM B3/6/7/8, IM V6 ¹⁾²⁾ | With flange IM B5, IM V3 ¹⁾³⁾⁴⁾ | IM V1 with protective cover ¹⁾³⁾⁵⁾ | IM B35 | IM B14, IM V19 ¹⁾ | IM B34 | IM B14, IM V19 ¹⁾ |
| | 1 | 6 | 0 | 1 | 4 | 6 | 2 | 7 | 3 |
| 1LG6 18 - □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - |
| 1LG6 20 - □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - |
| 1LG6 22 - □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - |
| 1LG6 25 - □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - |
| 1LG6 28 - □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - |
| 1LG6 310 - □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - |
| 1LG6 313 - □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - |
| 1LG6 316 - □□ | - | ○ | □ ⁶⁾ | - | ✓ ⁷⁾ | ✓ | - | - | - |
| 1LG6 317 - □□ | - | ○ | □ ⁶⁾ | - | ✓ ⁷⁾ | ✓ | - | - | - |
| 1LG6 318 - □□ | - | ○ | □ ⁶⁾ | - | ✓ ⁷⁾ | ✓ | - | - | - |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

- 1) The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.
- 2) If motors 1LG6 183-... to 1LG6 318-... (motor series 1LG6 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7 or IM V6 are fixed to the wall, it is recommended that the motor feet are supported.

- 3) 1LG6 220-... to 1LG6 318-... motors (motor series 1LG6 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.
- 4) Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.
- 5) The "Second shaft extension" option, order code **K16** is not possible.
- 6) Type of construction IM V6 is only possible using type of construction code **9** and order code **M1E**.
- 7) 2-pole motors in 60 Hz version available on request.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. “n” or prot. against dust explosions – Cast-iron series 1LG6

Selection and ordering data (continued)

| Rated output at 60 Hz P_{rated} HP | Frame size FS | Operating values at rated output | | | | Nominal efficiency at 60 Hz η_{rated} % | Power factor at 60 Hz 4/4-load $\cos\phi_{\text{rated}}$ | Rated current at 460 V, 60 Hz I_{rated} A | Order No. For Order No. supplements for voltage, type of construction and explosion protection zones according to ATEX, see tables below | Price | Weight IM B3 type of construction approx. m kg |
|---|------------------|---|---|---------------------------|------|---|---|--|---|-------|---|
| | | Rated speed at 60 Hz n_{rated} rpm | Rated torque at 60 Hz T_{rated} Nm | EPACT with CC No. CC 032A | | | | | | | |
| 4-pole, 1800 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, for use in the North American market according to EPACT | | | | | | | | | | | |
| 25 | 180 M | 1775 | 100 | Yes | 92.4 | 0.82 | 31 | 1LG6 183-4AA□□ | | 155 | |
| 30 | 180 L | 1775 | 120 | Yes | 92.4 | 0.83 | 36.5 | 1LG6 186-4AA□□ | | 180 | |
| 40 | 200 L | 1775 | 160 | Yes | 93 | 0.84 | 48 | 1LG6 207-4AA□□ | | 225 | |
| 50 | 225 S | 1785 | 199 | No | 93.6 | 0.84 | 60 | 1LG6 220-4AA□□ | | 290 | |
| 60 | 225 M | 1785 | 239 | Yes | 94.1 | 0.85 | 70 | 1LG6 223-4AA□□ | | 330 | |
| 75 | 225 M | 1785 | 299 | Yes | 94.1 | 0.85 | 88 | 1LG6 228-4AA□□¹⁾ | | 355 | |
| 75 | 250 M | 1790 | 298 | No | 94.5 | 0.86 | 86 | 1LG6 253-4AA□□ | | 460 | |
| 100 | 250 M | 1788 | 398 | Yes | 94.5 | 0.86 | 116 | 1LG6 258-4AA□□¹⁾ | | 495 | |
| 100 | 280 S | 1788 | 398 | No | 94.5 | 0.86 | 114 | 1LG6 280-4AA□□ | | 575 | |
| 125 | 280 M | 1790 | 497 | Yes | 95 | 0.86 | 144 | 1LG6 283-4AA□□ | | 675 | |
| 150 | 280 M | 1788 | 598 | Yes | 95 | 0.86 | 172 | 1LG6 288-4AA□□¹⁾ | | 710 | |
| 150 | 315 S | 1791 | 596 | Yes | 95 | 0.87 | 170 | 1LG6 310-4AA□□ | | 810 | |
| 175 | 315 M | 1791 | 696 | Yes | 95.4 | 0.87 | 198 | 1LG6 313-4AA□□ | | 965 | |
| 200 | 315 L | 1792 | 795 | Yes | 95.4 | 0.87 | 225 | 1LG6 316-4AA□□ | | 1105 | |
| 250 | 315 L | 1792 | 994 | No | 95.8 | 0.87 | 280 | 1LG6 317-4AA□□ | | 1305 | |
| 300 | 315 L | 1792 | 1193 | No | 95.8 | 0.87 | 335 | 1LG6 318-4AA□□¹⁾ | | 1345 | |

Special versions according to ATEX

| Motor type | Zone 2 | | VIK (includes Zone 2) ²⁾ | | Zone 21 | | Zone 22 | | |
|-------------|------------|---|--|---|--|---|--|---|--|
| | Frame size | Mains-fed operation Order code M72 | Converter-fed operation (FC) Order code M73 | Mains-fed operation Order code K30 | Converter-fed operation (FC) On request | Mains-fed operation Order code M34 | Converter-fed operation (FC) Order code M38 | Mains-fed operation Order code M35 | Converter-fed operation (FC) Order code M39 |
| 1LG6 | 180 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 200 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 225 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 250 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 280 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 315 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

✓ With additional charge

The motors can also be ordered in design for Zones 2 and 22 for non-conducting dust (IP55):

Mains-fed operation – order code **M74**

Converter-fed operation with derating – order code **M75**

See “Special versions” in the “Selection and ordering data” under “Options”.

The motors can also be used for 50 Hz “High Efficiency”, see Pages 4/70 to 4/73.

¹⁾ Only 60 Hz data according to EPACT on the rating plate.

²⁾ If the marking Ex nA II is required in addition to VIK on the rating plate, this must be ordered using order code **C27**. The VIK version is not possible in combination with Zone 21 and 22.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Cast-iron series 1LG6

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque | Torque class | Moment of inertia | Noise at rated output | |
|---|---|---|------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 60 Hz L_{pFA} dB(A) | Sound pressure level at 60 Hz L_{WA} dB(A) |
| 4-pole, 1800 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, for use in the North American market according to EPACT | | | | | | | |
| 1LG6 183-4AA□□ | 2.9 | 7.1 | 3.3 | 16 | 0.12 | 65 | 78 |
| 1LG6 186-4AA□□ | 2.8 | 7.4 | 3.4 | 16 | 0.14 | 65 | 78 |
| 1LG6 207-4AA□□ | 3 | 7.7 | 3.7 | 16 | 0.23 | 66 | 79 |
| 1LG6 220-4AA□□ | 3.1 | 7.5 | 3.4 | 16 | 0.4 | 65 | 78 |
| 1LG6 223-4AA□□ | 3.3 | 7.9 | 3.5 | 16 | 0.49 | 65 | 78 |
| 1LG6 228-4AA□□ | 3 | 7.8 | 3.3 | 16 | 0.66 | 64 | 78 |
| 1LG6 253-4AA□□ | 2.9 | 8.2 | 3.4 | 16 | 0.86 | 68 | 81 |
| 1LG6 258-4AA□□ | 3 | 8.1 | 3.3 | 16 | 0.99 | 72 | 86 |
| 1LG6 280-4AA□□ | 2.9 | 7.6 | 3.2 | 16 | 1.4 | 71 | 84 |
| 1LG6 283-4AA□□ | 3 | 8.2 | 3.4 | 16 | 1.7 | 71 | 84 |
| 1LG6 288-4AA□□ | 3.1 | 8.4 | 3.5 | 16 | 1.88 | 71 | 85 |
| 1LG6 310-4AA□□ | 3.1 | 7.8 | 3.2 | 16 | 2.3 | 75 | 88 |
| 1LG6 313-4AA□□ | 3.2 | 8.4 | 3.3 | 16 | 2.9 | 75 | 88 |
| 1LG6 316-4AA□□ | 3.7 | 9 | 3.6 | 16 | 3.5 | 75 | 88 |
| 1LG6 317-4AA□□ | 4 | 9.1 | 3.7 | 16 | 4.2 | 75 | 88 |
| 1LG6 318-4AA□□ | 4 | 9.3 | 3.7 | 16 | 4.5 | 81 | 94 |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | Final position: Type of construction code | | | | | | |
|---------------------|--|---|---|---|---|--------|---|--------|---|
| | 60 Hz 460 VY 460 VΔ (see "Introduction" for outputs at 60 Hz) | | Without flange IM B3/6/7/8, IM V6 ¹⁾²⁾ | With flange IM B5, IM V3 ¹⁾³⁾⁴⁾ | IM V1 with protective cover ¹⁾³⁾⁵⁾ | IM B35 | With standard flange IM B14, ¹⁾ IM V19 ¹⁾ | IM B34 | With special flange IM B14, IM V19 ¹⁾ |
| | 1 | 6 | 0 | 1 | 4 | 6 | 2 | 7 | 3 |
| 1LG6 18 - . . . □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - |
| 1LG6 20 - . . . □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - |
| 1LG6 22 - . . . □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - |
| 1LG6 25 - . . . □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - |
| 1LG6 28 - . . . □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - |
| 1LG6 310 - . . . □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - |
| 1LG6 313 - . . . □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - |
| 1LG6 316 - . . . □□ | - | ○ | □ ⁶⁾ | - | ✓ | ✓ | - | - | - |
| 1LG6 317 - . . . □□ | | | | | | | | | |
| 1LG6 318 - . . . □□ | | | | | | | | | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

- ¹⁾ The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.
- ²⁾ If motors 1LG6 183-... to 1LG6 318-... (motor series 1LG6 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7 or IM V6 are fixed to the wall, it is recommended that the motor feet are supported.

- ³⁾ 1LG6 220-... to 1LG6 318-... motors (motor series 1LG6 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.
- ⁴⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.
- ⁵⁾ The "Second shaft extension" option, order code **K16** is not possible.
- ⁶⁾ Type of construction IM V6 is only possible using type of construction code **9** and order code **M1E**.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Cast-iron series 1LG6

Selection and ordering data (continued)

| Rated output at 60 Hz P_{rated} HP | Frame size FS | Operating values at rated output | | | | Nominal efficiency at 60 Hz η_{rated} % | Power factor at 60 Hz 4/4-load $\cos\phi_{\text{rated}}$ | Rated current at 460 V, 60 Hz I_{rated} A | Order No. For Order No. supplements for voltage, type of construction and explosion protection zones according to ATEX, see tables below | Price | Weight IM B3 type of construction approx. m kg |
|---|------------------|---|---|---------------------------|------|---|---|--|---|-------|---|
| | | Rated speed at 60 Hz n_{rated} rpm | Rated torque at 60 Hz T_{rated} Nm | EPACT with CC No. CC 032A | | | | | | | |
| 6-pole, 1200 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, for use in the North American market according to EPACT | | | | | | | | | | | |
| 20 | 180 L | 1178 | 121 | Yes | 91 | 0.8 | 25.5 | 1LG6 186-6AA□□ | | 175 | |
| 25 | 200 L | 1180 | 151 | Yes | 91.7 | 0.79 | 32.5 | 1LG6 206-6AA□□ | | 210 | |
| 30 | 200 L | 1180 | 181 | Yes | 91.7 | 0.8 | 38.5 | 1LG6 207-6AA□□ | | 240 | |
| 40 | 225 M | 1184 | 241 | Yes | 93 | 0.82 | 49 | 1LG6 223-6AA□□ | | 325 | |
| 50 | 225 M | 1184 | 301 | Yes | 93 | 0.83 | 61 | 1LG6 228-6AA□□¹⁾ | | 355 | |
| 50 | 250 M | 1186 | 300 | No | 93 | 0.82 | 61 | 1LG6 253-6AA□□ | | 405 | |
| 60 | 250 M | 1186 | 361 | Yes | 93.6 | 0.82 | 73 | 1LG6 258-6AA□□¹⁾ | | 435 | |
| 60 | 280 S | 1190 | 359 | No | 94.1 | 0.83 | 72 | 1LG6 280-6AA□□ | | 520 | |
| 75 | 280 M | 1190 | 449 | No | 94.5 | 0.83 | 89 | 1LG6 283-6AA□□ | | 570 | |
| 100 | 280 M | 1190 | 599 | Yes | 94.5 | 0.84 | 118 | 1LG6 288-6AA□□¹⁾ | | 615 | |
| 100 | 315 S | 1191 | 598 | Yes | 94.5 | 0.82 | 120 | 1LG6 310-6AA□□ | | 760 | |
| 125 | 315 M | 1191 | 747 | Yes | 94.5 | 0.84 | 148 | 1LG6 313-6AA□□ | | 935 | |
| 150 | 315 L | 1192 | 896 | Yes | 95 | 0.84 | 176 | 1LG6 316-6AA□□ | | 1010 | |
| 175 | 315 L | 1192 | 1046 | Yes | 95 | 0.84 | 205 | 1LG6 317-6AA□□ | | 1180 | |
| 200 | 315 L | 1192 | 1195 | Yes | 95.4 | 0.84 | 235 | 1LG6 318-6AA□□ | | 1245 | |

Special versions according to ATEX

| Motor type | Frame size | Zone 2 | | VIK (includes Zone 2) ²⁾ | | Zone 21 | | Zone 22 | |
|-------------|------------|---------------------------------------|--|---------------------------------------|--|---------------------------------------|--|---------------------------------------|--|
| | | Mains-fed operation Order code M72 | Converter-fed operation (FC) Order code M73 | Mains-fed operation Order code K30 | Converter-fed operation (FC) On request | Mains-fed operation Order code M34 | Converter-fed operation (FC) Order code M38 | Mains-fed operation Order code M35 | Converter-fed operation (FC) Order code M39 |
| 1LG6 | 180 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 200 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 225 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 250 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 280 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 315 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

✓ With additional charge

The motors can also be ordered in design for Zones 2 and 22 for non-conducting dust (IP55):
Mains-fed operation – order code **M74**
Converter-fed operation with derating – order code **M75**
See "Special versions" in the "Selection and ordering data" under "Options".

The motors can also be used for 50 Hz "High Efficiency", see Pages 4/70 to 4/73.

¹⁾ Only 60 Hz data according to EPACT on the rating plate.

²⁾ If the marking Ex nA II is required in addition to VIK on the rating plate, this must be ordered using order code **C27**. The VIK version is not possible in combination with Zone 21 and 22.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2, 21, 22 with type of prot. "n" or prot. against dust explosions – Cast-iron series 1LG6

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class | Moment of inertia | Noise at rated output | |
|---|--|--|----------------------------|--------------|-------------------------|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kgm ² | Measuring surface sound pressure level at 60 Hz L_{pFA} dB(A) | Sound pressure level at 60 Hz L_{WA} dB(A) |
| 6-pole, 1200 rpm at 60 Hz, temperature class 155 (F), IP55 degree of protection, for use in the North American market according to EPACT | | | | | | | |
| 1LG6 186-6AA□□ | 2.9 | 6.5 | 3 | 16 | 0.2 | 57 | 70 |
| 1LG6 206-6AA□□ | 2.9 | 6.5 | 2.7 | 16 | 0.29 | 65 | 78 |
| 1LG6 207-6AA□□ | 2.9 | 6.4 | 2.7 | 16 | 0.36 | 65 | 78 |
| 1LG6 223-6AA□□ | 3.4 | 7.2 | 3.4 | 16 | 0.63 | 62 | 75 |
| 1LG6 228-6AA□□ | 3.2 | 7.6 | 3.4 | 16 | 0.76 | 61 | 74 |
| 1LG6 253-6AA□□ | 3.4 | 7.4 | 2.9 | 16 | 0.93 | 63 | 76 |
| 1LG6 258-6AA□□ | 3.4 | 7.4 | 2.9 | 16 | 1.07 | 65 | 79 |
| 1LG6 280-6AA□□ | 3.6 | 7.7 | 3.1 | 16 | 1.4 | 62 | 75 |
| 1LG6 283-6AA□□ | 3.9 | 8.3 | 3.3 | 16 | 1.6 | 62 | 75 |
| 1LG6 288-6AA□□ | 4 | 8.4 | 3.3 | 16 | 1.94 | 64 | 78 |
| 1LG6 310-6AA□□ | 3.3 | 8.4 | 3.4 | 16 | 2.5 | 66 | 79 |
| 1LG6 313-6AA□□ | 3 | 7.9 | 3.1 | 16 | 3.2 | 66 | 79 |
| 1LG6 316-6AA□□ | 3.3 | 8.5 | 3.3 | 16 | 4 | 66 | 79 |
| 1LG6 317-6AA□□ | 3.6 | 8.9 | 3.6 | 16 | 4.7 | 66 | 79 |
| 1LG6 318-6AA□□ | 4 | 9.4 | 4 | 16 | 5.4 | 69 | 82 |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | Final position: Type of construction code | | | | With standard flange | | With special flange |
|----------------------------|--|----------|---|---|---|----------|---------------------------------|----------|------------------------------|
| | 60 Hz 460 VY 460 VΔ (see "Introduction" for outputs at 60 Hz) | | Without flange IM B3/6/7/8, IM V6 ¹⁾²⁾ | With flange IM B5, IM V3 ¹⁾³⁾⁴⁾ | IM V1 with protective cover ¹⁾³⁾⁵⁾ | IM B35 | IM B14, IM V19 ¹⁾ | IM B34 | IM B14, IM V19 ¹⁾ |
| | 1 | 6 | 0 | 1 | 4 | 6 | 2 | 7 | 3 |
| 1LG6 18 - . . . □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - |
| 1LG6 20 - . . . □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - |
| 1LG6 22 - . . . □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - |
| 1LG6 25 - . . . □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - |
| 1LG6 28 - . . . □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - |
| 1LG6 310 - . . . □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - |
| 1LG6 313 - . . . □□ | ○ | ○ | □ | ✓ | ✓ | ✓ | - | - | - |
| 1LG6 316 - . . . □□ | - | ○ | □ ⁶⁾ | - | ✓ | ✓ | - | - | - |
| 1LG6 317 - . . . □□ | - | ○ | □ ⁶⁾ | - | ✓ | ✓ | - | - | - |
| 1LG6 318 - . . . □□ | - | ○ | □ ⁶⁾ | - | ✓ | ✓ | - | - | - |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

- ¹⁾ The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.
- ²⁾ If motors 1LG6 183-... to 1LG6 318-... (motor series 1LG6 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7 or IM V6 are fixed to the wall, it is recommended that the motor feet are supported.

- ³⁾ 1LG6 220-... to 1LG6 318-... motors (motor series 1LG6 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.
- ⁴⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.
- ⁵⁾ The "Second shaft extension" option, order code **K16** is not possible.
- ⁶⁾ Type of construction IM V6 is only possible using type of construction code **9** and order code **M1E**.

IEC Squirrel-Cage Motors

Explosion-proof motors

Self-ventilated, in Zones 2 and 22 with type of prot. "n" or prot. against dust explosions – Cast-iron series 1LA8

Selection and ordering data

The data for series 1LA8 with type of protection "n" or protection against dust explosions can be found in the selection and ordering data in catalog part 3 "Non-standard motors of frame size 315 and above". The technical specifications are identical to the specifications of the non-explosion-proof versions. They are or-

dered using additional order options (special versions). These special versions for voltages, construction types or options are listed in catalog part 3 "Non-standard motors frame size 315 and above".

Special versions according to ATEX

| Motor type | Zone 2 | | VIK ¹⁾ (includes Zone 2, utilization 155 (F) according to 130 (B)) | | Zone 21 | | Zone 22 | | |
|-------------|------------|---|--|---|--|---|--|---|--|
| | Frame size | Mains-fed operation Order code M72 | Converter-fed operation (FC) Order code M73 | Mains-fed operation Order code K30 | Converter-fed operation (FC) On request | Mains-fed operation Order code M34 | Converter-fed operation (FC) Order code M38 | Mains-fed operation Order code M35 | Converter-fed operation (FC) Order code M39 |
| 1LA8 | 315 | ✓ | O. R. | ✓ | O. R. | – | – | ✓ | ✓ |
| | 355 | ✓ | O. R. | ✓ | O. R. | – | – | ✓ | ✓ |
| | 400 | ✓ | O. R. | – | – | – | – | ✓ | ✓ |
| | 450 | ✓ | O. R. | – | – | – | – | ✓ | ✓ |

O. R. Possible on request

✓ With additional charge

– Not possible

4

Forced-air cooled, in Zones 2 and 22 with type of prot. "n" or prot. against dust explosions – Cast-iron series 1PQ8

Selection and ordering data

The data for series 1PQ8 with type of protection "n" or protection against dust explosions can be found in the selection and ordering data in catalog part 3 "Non-standard motors of frame size 315 and above". The technical specifications are identical to the specifications of the non-explosion-proof versions. They are or-

dered using additional order options (special versions). These special versions for voltages, construction types or options are listed in catalog part 3 "Non-standard motors frame size 315 and above". Motor series 1PQ8 for converter-fed operation in Zone 2 available on request.

¹⁾ If the marking Ex nA II is required in addition to VIK on the rating plate, this must be ordered using order code **C27**. The VIK version is not possible in combination with Zone 21 and 22.

Overview

General information

Ex motors in vertical type of construction with shaft extension pointing down must have a protective cover.

Extensive operating instructions are supplied as standard with explosion-proof motors.

For all explosion-proof motors, designs according to UL (order code **D31**) and CSA (order code **D40**) are not possible.

Motor connection

For motors in Ex version (except for Zone 22, VIK, certified metric cable glands/sealing plugs are included in the scope of supply.

Mains-fed operation

Motors to type of protection

- Ex e are only certified for mains-fed operation. 2-pole motors 1MA frame sizes 132 to 160 are designed with double rating plate (T1/T2 and T3) as standard. For motor versions with order codes A11/A12 or with voltage code "9" T3-output is then stamped on the rating plate as standard. Alternatively, "T1/T2-output on the rating plate" can be stamped – order code **C30**
- Ex de/Ex d are designed in the basic version for mains-fed operation
- Motors 1MJ6/1MJ7 for use in type of protection Ex d/de (Zone 1)/dust-Ex Zone 21, as well as Zone 22 for conducting dust – order code **M76**
- Motors 1LA/1LG can be modified for use in Zones 2, 21 or 22 if they are ordered using order codes:
 - Design for Zone 2 for mains-fed operation – (order code **M72**)
 - Design for Zones 2 and 22 for non-conducting dust (IP55) for mains-fed operation – (order code **M74**)
 - Design for Zone 21¹⁾, as well as Zone 22 for conducting dust (IP65) for mains-fed operation – (order code **M34**)
 - Design for Zone 22 for non-conducting dust (IP55) for mains-fed operation – (order code **M35**)

Certified motor protection switches/tripping units must be used for motor protection, see Catalog LV 1.

¹⁾ Zone 21 takes into account conducting and non-conducting dust.

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

Converter-fed operation

The motors are suitable for use with converters for voltage rise times $t_s > 0.1 \mu\text{s}$ for $U \leq 460 \text{ V}$ (for motor series 1LA8 up to 500 V).

For converter-fed operation, Ex motors must always be monitored using PTC thermistors. Certified tripping units are required for this purpose, see Catalog LV 1.

For converter-fed operation with frame size 225 and above, it is recommended that an "Insulated bearing cartridge" – order code **L27** is used.

Type of protection "Explosion-proof enclosure" Ex de IIC T4/Ex d IIC T4

The motors must be ordered with:

- Motor protection with PTC thermistors for converter-fed operation with 4 embedded temperature sensors for tripping – Order code **A15**

or

- Motor protection with PTC thermistors for converter-fed operation with 8 embedded temperature sensors for alarm and tripping – Order code **A16**

or

- Design for Zones 1 and 21, as well as Zone 22 for conducting dust (IP65) for converter-fed operation, derating – order code **M77** (incl. order code **A15**)

For motor series 1MJ6 and 1MJ7, a fourth PTC thermistor is installed in the connection box.

Thermal utilization is according to temperature class 155 (F).

The EU type test certificate and factory certificate 2.1 also cover converter-fed operation.

General converters for Zone 2/21/22

1LA and 1LG motors for Zones 2, 21 and 22 for converter-fed operation have 3 PTC thermistors for tripping as standard. 1LG4/1LG6 motors also have an additional PTC thermistor in the connection box.

Optionally available: PTC thermistors for alarm for converter-fed operation in Zones 2, 21, 22 – Order code **A10**

For all motors, "MICROMASTER DUTY S9" is stamped on the rating plate complete with the relevant rating data. (Exception: Motor series 1LA8 and 1PQ8).

These rated operating points apply for both constant torque drives and pump/fan/compressor drives. For a constant torque drive, the resulting thermal motor torques in the positioning range must be taken into account.

On the rating plate, four rated operating points are possible in the following variants:

| Possible variants: | Rated operating points in Hz | | | | Additional order information |
|-----------------------------|------------------------------|----|----|------------------|--|
| 50 Hz field weakening range | 5 | 25 | 50 | f_{max} | 50 Hz voltage: e.g. "9" and L1A |
| 60 Hz field weakening range | 6 | 30 | 60 | f_{max} | 60 Hz voltage: e.g. "9" and L2E |
| 87 Hz characteristic | 5 | 25 | 87 | f_{max} | 87 Hz at 400 VΔ: "9" and L3A |

Alternatively, rated operating points for SIMOVERT MASTERDRIVES, SINAMICS G110, SINAMICS S120 or ET 200S FC on the rating plate can be ordered as follows:

Y68 with plain text (C text): Y68:SIMOVERT MASTERDRIVES

Y68 with plain text (C text): Y68:SINAMICS G110

Y68 with plain text (C text): Y68:ET 200S FC

Y68 with plain text (C text): Y68:SINAMICS S120

- The converter type and the associated rating data are on the rating plate

The reasons for this are the different control levels for the converter with a converter output frequency of 45 Hz and above and the associated derating of the motor.

For compliance with temperature class 130 (B), derating is necessary in the case of converter-fed operation in Zones 2, 21 and 22. Derating information is available in the configuration tool SIZER (see Appendix).

The certificates for the motors and converters for hazardous areas are stored under "Documentation" in the SD configurator tool for low-voltage motors.

Only "one" voltage must be assigned to voltage codes/ order codes:

| Voltage code | Order code | Mains voltage |
|--------------|-----------------------------------|--------------------------------------|
| 3 | - | 500 VY 50 Hz |
| 5 | - | 500 VΔ 50 Hz |
| 9 | L1A | 400 VY 50 Hz |
| 9 | L1B | 400 VΔ 50 Hz |
| 9 | L1C | 415 VY 50 Hz |
| 9 | L1D | 415 VΔ 50 Hz |
| 9 | L2E | 460 VY 60 Hz |
| 9 | L2F | 460 VΔ 60 Hz |
| 9 | L2W | 440 VY 60 Hz |
| 9 | L2X | 440 VΔ 60 Hz |
| 9 | L1Y (non-standard winding) | Plain text (max. 460 VY 50 or 60 Hz) |
| 9 | L3A ¹⁾ | For 87 Hz 400 VΔ (4 to 8-pole) |

¹⁾ Not technically possible for 1LG, FS 315 L.

Overview (continued)

1LA8, 1PQ8 motors for converter-fed operation

When 1LA8 and 1PQ8 motors are ordered, the speed setting range and the load torque must be specified as well as whether the application is for a "Constant torque drive" or a "Fan/pump/compressor drive".

In some cases, a system test must be performed to ensure that the admissible limit temperature is not exceeded.

- A system test is not generally required for motors for applications with quadratic load torque ($M \sim n^2$).
- A system test is usually required for motors for applications with constant load torque. In individual cases in which the motor type has already been measured once using the same speed setting range, a new system test is not necessary.

Please inquire in such cases.

For all motors, an additional rating plate complete with the rating data for the converter is fitted.

Converters specially for Zone 2, type of protection "n" or Ex nA II T3

The motors must be ordered with

- **Design for Zone 2 for converter-fed operation, derating**
Ex nA II T3 acc. to IEC/EN 60079-15 – Order code **M73**.

In the version for order code **M73**, PTC thermistors are included in accordance with temperature class 130 (B).

The IEC/EN 60079-15 standard requires that the converter drive for motors is subjected to the "non-sparking" test. The test is available for Siemens motors Ex nA II on Siemens converters in accordance with Factory Certificate 2.1.

Please inquire in the case of a non-Siemens converter (additional charge).

The test will cost more in the case of non-Siemens converters (especially on commissioning).

Commissioning personnel must be provided by the customer for setting up and operating the non-Siemens converter during the test, if required.

Converters specially for Zone 21/22

The motors must be ordered with:

- Design for Zone 21¹⁾, as well as Zone 22 for conducting dust (IP65) for converter-fed operation, derating – Order code **M38**
- Design for Zone 22 for non-conducting dust (IP55) for converter-fed operation, derating – Order code **M39**

In order codes **M38/M39**, PTC thermistors are included in accordance with temperature class 130 (B).

Please inquire in the case of a non-Siemens converter (additional charge).

Converters for Zone 2/22

The motors must be ordered with:

- Design for Zones 2 and 22 for non-conducting dust (IP55) for converter-fed operation, derating – Order code **M75**

In order code **M75**, PTC thermistors are included in accordance with temperature class 130 (B).

Please inquire in the case of a non-Siemens converter (additional charge).

VIK version

VIK standard version:

- VIK version – Order code **K30**

VIK version "Non-sparking":

- "Ex nA II T3" marking on VIK rating plate according to Directive 94/9/EU (ATEX) – Order code **C27**

The motors in VIK design (**K30**) contain technology for Zone 2 in Ex nA II T3 type of protection. In accordance with VIK recommendations, "Ex nA II T3" will only be stamped on the rating plate on the express wish of the customer when ordering with order code **C27**.

Note: When ordering, **C27** must be specified in addition to **K30**.

Motors up to frame size 355 can be supplied in accordance with the technical requirements of the VIK (Verband der Industriellen Energie- und Kraftwirtschaft e.V.). Not possible for 1LA5 motors, 1LG4 motors will be supplied.

1LG4, 1LG6, 1MJ6 and 1MJ7 motors in frame size 315 are supplied with special connection boxes with a removable cable entry plate.

Note the output and dimensions in the case of 1LA8 motors. With 1LA8 motors the connection boxes cannot be rotated by $4 \times 90^\circ$. Motors in a vertical type of construction with the shaft extension pointing down must have a protective cover (e.g. type of construction code **4**). Use according to temperature class 130 (B) is mandatory. Frame sizes 400 and 450 are not included in VIK.

Please inquire about converter-fed operation in all cases.

Motors in VIK design with mounted technology (brake, rotary pulse encoder, separately driven fan and anti-condensation heater) are not compatible with Zone 2. Designs for Zone 21/22 are not possible.

Chinese explosion-proof certification

For projects in China in particular, explosion-proof motors are required that have been approved by a named Chinese testing authority.

Ex certification for China – Order code **D32**

The following motor series have Chinese Ex certification:

- Zone 1 type of protection "d" or Ex de IIC T4/Ex d IIC T4: 1MJ6, 1MJ7
- Zone 2 type of protection "n" or Ex nA II T3: 1LA6, 1LA7, 1LA9, 1LG when ordered in:
 - **Design for Zone 2 for mains-fed operation**
Ex nA II T3 acc. to IEC/EN 60079-15 – Order code **M72**.
 - **Design for Zone 2 for converter-fed operation, derating**
Ex nA II T3 acc. to IEC/EN 60079-15 – Order code **M73**.

In addition, the VIK design for motor series 1MJ6, 1MJ7, 1LA, 1LG can also be ordered with Ex certification for China.

When these motors are ordered in the version

- "Ex certification for China" – Order code **D32**

the "NEPSI²⁾ certificate number" and the "NEPSI" logo are stamped on the rating plate.

For motor series 1LA8, the "CQST³⁾ certificate number" and the logo: "CQST" are then stamped on the rating plate.

¹⁾ Zone 21 takes into account conducting and non-conducting dust.

²⁾ NEPSI = National Supervision and Inspection Center for Explosion Protection and Safety of Instrumentation.

³⁾ CQST = China National Quality Supervision and Test Centre for Explosion Protected Electrical Products.

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

Selection and ordering data

Voltages

Additional order codes for other voltages or voltage codes
(without **-Z** supplement)

For some non-standard voltages at 50 or 60 Hz, order codes are specified. They are ordered by specifying the code digit **9** for voltage in the 11th position of the Order No. and the appropriate order code.

| Special versions | Voltage code 11th position of the Order No. | Additional identifica- tion code with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|--|--|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------|
| | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 S/M |
| Self-ventilated motors in Zone 1 with type of protection "e" – Aluminum series 1MA7 | | | | | | | | | | | | | | | | | |
| 1MA7 (aluminum) | | | | | | | | | | | | | | | | | |
| Voltage at 50 Hz | | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY (209 ... 231 VΔ/361 ... 399 VY); 50 Hz output ¹⁾ | 9 | L1R | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 230 VΔ (218 ... 242 VΔ); 50 Hz output ¹⁾ | 9 | L1E | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 380 VΔ/660 VY (361 ... 399 VΔ/627 ... 693 VY); 50 Hz output ¹⁾ | 9 | L1L | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 415 VY (394 ... 436 VY); 50 Hz output ¹⁾ | 9 | L1C | ✓ ²⁾ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 415 VΔ (394 ... 436 VΔ); 50 Hz output ¹⁾ | 9 | L1D | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Voltage at 60 Hz ³⁾ | | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY; 50 Hz output | 9 | L2A | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 380 VΔ/660 VY; 50 Hz output | 9 | L2C | ✓ ⁴⁾ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VY; 50 Hz output | 9 | L2Q | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VΔ; 50 Hz output | 9 | L2R | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VY; 50 Hz output | 9 | L2S | ✓ ²⁾ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VΔ; 50 Hz output | 9 | L2T | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 VY; 50 Hz output | 9 | L2U | ✓ ⁴⁾ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 VΔ; 50 Hz output | 9 | L2V | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard voltage and/or frequencies | | | | | | | | | | | | | | | | | |
| Non-standard winding for vol- tages between 200 and 690 V (voltages outside this range are available on request) ⁵⁾ | 9 | L1Y • | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Self-ventilated motors in Zone 1 with type of protection "e" – Cast-iron series 1MA6 | | | | | | | | | | | | | | | | | |
| 1MA6 (cast-iron) | | | | | | | | | | | | | | | | | |
| Voltage at 50 Hz | | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY (209 ... 231 VΔ/361 ... 399 VY); 50 Hz output ¹⁾ | 9 | L1R | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 230 VΔ (218 ... 242 VΔ); 50 Hz output ¹⁾ | 9 | L1E | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 380 VΔ/660 VY (361 ... 399 VΔ/627 ... 693 VY); 50 Hz output ¹⁾ | 9 | L1L | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 415 VY (394 ... 436 VY); 50 Hz output ¹⁾ | 9 | L1C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 415 VΔ (394 ... 436 VΔ); 50 Hz output ¹⁾ | 9 | L1D | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Voltage at 60 Hz ³⁾ | | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY; 50 Hz output | 9 | L2A | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 380 VΔ/660 VY; 50 Hz output | 9 | L2C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VY; 50 Hz output | 9 | L2Q | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VΔ; 50 Hz output | 9 | L2R | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VY; 50 Hz output | 9 | L2S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 460 VΔ; 50 Hz output | 9 | L2T | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 575 VY; 50 Hz output | 9 | L2U | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 575 VΔ; 50 Hz output | 9 | L2V | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Non-standard voltage and/or frequencies | | | | | | | | | | | | | | | | | |
| Non-standard winding for vol- tages between 200 and 690 V (voltages outside this range are available on request) ⁵⁾ | 9 | L1Y • | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

- Without additional charge
- ✓ With additional charge
- Not possible

- This order code only determines the price of the version – Additional plain text is required.

Footnotes, see Page 4/85.

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Voltage code 11th position of the Order No. | Additional identification code with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|--|---|-------------------------|----|----|----|----|-----|-----|-----|-----|-------------------------|-----|-----|-----|-----|---------|
| | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 S/M |
| Self-ventilated motors in Zone 1 with type of protection "de" – Cast-iron series 1MJ6 and 1MJ7 | | | | | | | | | | | | | | | | | |
| | | | 1MJ6 (cast-iron) | | | | | | | | | 1MJ7 (cast-iron) | | | | | |
| Voltage at 50 Hz | | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY (210 ... 230 VΔ/360 ... 400 VY); 50 Hz output ¹⁾ | 9 | L1R | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 230 VΔ (220 ... 240 VΔ); 50 Hz output ¹⁾ | 9 | L1E | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | – |
| 380 VΔ/660 VY (360 ... 400 VΔ/625 ... 695 VY); 50 Hz output ¹⁾ | 9 | L1L | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 415 VY (395 ... 435 VY); 50 Hz output ¹⁾ | 9 | L1C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 415 VΔ (395 ... 435 VΔ); 50 Hz output ¹⁾ | 9 | L1D | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| Voltage at 60 Hz | | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY; 50 Hz output | 9 | L2A | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 220 VΔ/380 VY; 60 Hz output | 9 | L2B | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 380 VΔ/660 VY; 50 Hz output | 9 | L2C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 380 VΔ/660 VY; 60 Hz output | 9 | L2D | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 440 VY; 50 Hz output | 9 | L2Q | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 440 VY; 60 Hz output | 9 | L2W | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 440 VΔ; 50 Hz output | 9 | L2R | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 440 VΔ; 60 Hz output | 9 | L2X | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 460 VY; 50 Hz output | 9 | L2S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 460 VY; 60 Hz output | 9 | L2E | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ○ | ○ | ○ | ○ |
| 460 VΔ; 50 Hz output | 9 | L2T | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 460 VΔ; 60 Hz output | 9 | L2F | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ○ | ○ | ○ | ○ |
| 575 VY; 50 Hz output | 9 | L2U | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 575 VY; 60 Hz output | 9 | L2L | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 575 VΔ; 50 Hz output | 9 | L2V | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 575 VΔ; 60 Hz output | 9 | L2M | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ○ | ○ | ○ | ○ |
| Non-standard voltage and/or frequencies | | | | | | | | | | | | | | | | | |
| Non-standard winding for voltages between 200 and 690 V (voltages outside this range are available on request) ³⁾ | 9 | L1Y • | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

- Without additional charge
- ✓ With additional charge
- Not possible
- This order code only determines the price of the version – Additional plain text is required.

¹⁾ For order codes **L1C**, **L1D**, **L1E**, **L1L**, **L1R**, **L1U** and **L1A** a rated voltage range is also marked on the rating plate.

²⁾ For motors 1MA7 060-4 (motor series 1MA7 frame size 63, 4-pole) not possible.

³⁾ Special certification is required for 60 Hz.

⁴⁾ For motors 1MA7 060-2, 1MA7 060-4 and 1MA7 063-4 (motor series 1MA7 frame size 63, 2- and 4-pole) not possible.

⁵⁾ Plain text must be specified in the order: Voltage, frequency, circuit, required rated output in kW.

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Voltage code 11th position of the Order No. | Additional identifica- tion code with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | |
|---|--|---|--------------------------------------|----|----|----|----|-----|-----|-----|-----|-----|--------------------------------------|-----|-----|-----|
| | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 |
| Self-ventilated motors in Zones 2, 21 and 22 with type of protection “n” or protection against dust explosions – Aluminum series 1LA7 and 1LA5 | | | | | | | | | | | | | | | | |
| | | | 1LA7 (aluminum) ¹⁾ | | | | | | | | | | 1LA5 (aluminum) ¹⁾ | | | |
| Voltage at 50 Hz | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY (440 VY at 60 Hz) (210 ... 230 VΔ/360 ... 400 VY); 50 Hz output ²⁾ | 9 | L1R | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 230 VΔ (220 ... 240 VΔ); 50 Hz output ²⁾ | 9 | L1E | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 380 VΔ/660 VY (440 VΔ at 60 Hz) (360 ... 400 VΔ/625 ... 695 VY); 50 Hz output ²⁾ | 9 | L1L | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 415 VY (395 ... 435 VY); 50 Hz output ²⁾ | 9 | L1C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 415 VΔ (395 ... 435 VΔ); 50 Hz output ²⁾ | 9 | L1D | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 400 VY (380 ... 420 VY); 50 Hz output ²⁾ | 9 | L1A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 400 VΔ (380 ... 420 VΔ); 50 Hz output ²⁾ | 9 | L1B | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 400 VΔ (460 VΔ bei 60 Hz) (380 ... 420 VΔ); 50 Hz output ²⁾ | 9 | L1U | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 400 VΔ 87 Hz output (4-pole to 8-pole only) ³⁾ | 9 | L3A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Voltage at 60 Hz | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY; 50 Hz output | 9 | L2A | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 220 VΔ/380 VY; 60 Hz output | 9 | L2B | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 380 VΔ/660 VY; 50 Hz output | 9 | L2C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 380 VΔ/660 VY; 60 Hz output | 9 | L2D | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VY; 50 Hz output | 9 | L2Q | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VY; 60 Hz output | 9 | L2W | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VΔ; 50 Hz output | 9 | L2R | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VΔ; 60 Hz output | 9 | L2X | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VY; 50 Hz output | 9 | L2S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VY; 60 Hz output | 9 | L2E | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 460 VΔ; 50 Hz output | 9 | L2T | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VΔ; 60 Hz output | 9 | L2F | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 575 VY; 50 Hz output | 9 | L2U | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 VY; 60 Hz output | 9 | L2L | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 VΔ; 50 Hz output | 9 | L2V | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 VΔ; 60 Hz output | 9 | L2M | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard voltage and/or frequencies | | | | | | | | | | | | | | | | |
| Non-standard winding for vol- tages between 200 V and 690 V (voltages outside this range are available on request) ⁴⁾ | 9 | L1Y • | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

- Without additional charge
- ✓ With additional charge
- This order code only determines the price of the version – Additional plain text is required.

¹⁾ Zone 2 is not possible for motor series 1LA5 and motor series 1LA7 for frame size 56.

²⁾ For Zones 21 and 22, for order codes **L1C, L1D, L1E, L1L, L1R, L1U, L1B** and **L1A** a rated voltage range is also marked on the rating plate.

³⁾ The rating data for converter-fed operation is also provided in a table on the rating plate.

⁴⁾ Plain text must be specified in the order: Voltage, frequency, circuit, required rated output in kW.

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Voltage code 11th position of the Order No. | Additional identifica- tion code with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | |
|--|--|--|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 |
| Self-ventilated motors in Zones 2, 21 and 22 with type of protection “n” or protection against dust explosions – Aluminum series 1LA9 | | | | | | | | | | | | | | | | |
| 1LA9 (aluminum) | | | | | | | | | | | | | | | | |
| Voltage at 50 Hz | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY (440 VY at 60 Hz) (210 ... 230 VΔ/360 ... 400 VY); 50 Hz output ¹⁾ | 9 | L1R | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 230 VΔ (220 ... 240 VΔ); 50 Hz output ¹⁾ | 9 | L1E | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 380 VΔ/660 VY (440 VΔ at 60 Hz) (360 ... 400 VΔ/625 ... 695 VY); 50 Hz output ¹⁾ | 9 | L1L | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 415 VY (395 ... 435 VY); 50 Hz output ¹⁾ | 9 | L1C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 415 VΔ (395 ... 435 VΔ); 50 Hz output ¹⁾ | 9 | L1D | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 400 VY (380 ... 420 VY); 50 Hz output ¹⁾ | 9 | L1A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 400 VΔ (380 ... 420 VΔ); 50 Hz output ¹⁾ | 9 | L1B | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 400 VΔ (460 VΔ bei 60 Hz) (380 ... 420 VΔ); 50 Hz output ¹⁾ | 9 | L1U | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 400 VΔ 87 Hz output (4-pole to 8-pole only) ²⁾ | 9 | L3A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Voltage at 60 Hz | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY; 50 Hz output | 9 | L2A | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 220 VΔ/380 VY; 60 Hz output | 9 | L2B | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 380 VΔ/660 VY; 50 Hz output | 9 | L2C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 380 VΔ/660 VY; 60 Hz output | 9 | L2D | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VY; 50 Hz output | 9 | L2Q | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VY; 60 Hz output | 9 | L2W | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VΔ; 50 Hz output | 9 | L2R | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VΔ; 60 Hz output | 9 | L2X | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VY; 50 Hz output | 9 | L2S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VY; 60 Hz output | 9 | L2E | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 460 VΔ; 50 Hz output | 9 | L2T | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VΔ; 60 Hz output | 9 | L2F | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 575 VY; 50 Hz output | 9 | L2U | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 VY; 60 Hz output | 9 | L2L | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 VΔ; 50 Hz output | 9 | L2V | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 VΔ; 60 Hz output | 9 | L2M | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard voltage and/or frequencies | | | | | | | | | | | | | | | | |
| Non-standard winding for vol- tages between 200 and 690 V (voltages outside this range are available on request) ³⁾ | 9 | L1Y • | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

- Without additional charge
- ✓ With additional charge
- This order code only determines the price of the version – Additional plain text is required.

¹⁾ For Zones 21 and 22, for order codes **L1C, L1D, L1E, L1L, L1R, L1U, L1B** and **L1A** a rated voltage range is also marked on the rating plate.

²⁾ The rating data for converter-fed operation is also provided in a table on the rating plate.

³⁾ Plain text must be specified in the order: Voltage, frequency, circuit, required rated output in kW.

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Voltage code 11th position of the Order No. | Additional identifica- tion code with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------|
| | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 S/M |
| Self-ventilated motors in Zones 2, 21, 22 with type of protection "n" or protection against dust explosions – Cast-iron series 1LA6 and 1LG4 | | | | | | | | | | | | | | | | | |
| Voltage at 50 Hz | | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY (440 VY at 60 Hz) (210 ... 230 VΔ/360 ... 400 VY); 50 Hz output ¹⁾ | 9 | L1R | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 230 VΔ (220 ... 240 VΔ); 50 Hz output ¹⁾ | 9 | L1E | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | – |
| 380 VΔ/660 VY (440 VΔ at 60 Hz) (360 ... 400 VΔ/625 ... 695 VY); 50 Hz output ¹⁾ | 9 | L1L | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 415 VY (395 ... 435 VY); 50 Hz output ¹⁾ | 9 | L1C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 415 VΔ (395 ... 435 VΔ); 50 Hz output ¹⁾ | 9 | L1D | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 400 VY (380 ... 420 VY); 50 Hz output ¹⁾ | 9 | L1A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | – |
| 400 VΔ (380 ... 420 VΔ); 50 Hz output ¹⁾ | 9 | L1B | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 400 VΔ (460 VΔ bei 60 Hz) (380 ... 420 VΔ); 50 Hz output ¹⁾ | 9 | L1U | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 400 VΔ 87 Hz output (2-pole to 4-pole only) ²⁾ | 9 | L3A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Voltage at 60 Hz | | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY; 50 Hz output | 9 | L2A | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 220 VΔ/380 VY; 60 Hz output | 9 | L2B | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 380 VΔ/660 VY; 50 Hz output | 9 | L2C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 380 VΔ/660 VY; 60 Hz output | 9 | L2D | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VY; 50 Hz output | 9 | L2Q | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 440 VY; 60 Hz output | 9 | L2W | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 440 VΔ; 50 Hz output | 9 | L2R | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VΔ; 60 Hz output | 9 | L2X | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VY; 50 Hz output | 9 | L2S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 460 VY; 60 Hz output | 9 | L2E | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | – |
| 460 VΔ; 50 Hz output | 9 | L2T | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VΔ; 60 Hz output | 9 | L2F | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 575 VY; 50 Hz output | 9 | L2U | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 575 VY; 60 Hz output | 9 | L2L | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 575 VΔ; 50 Hz output | 9 | L2V | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 VΔ; 60 Hz output | 9 | L2M | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Non-standard voltage and/or frequencies | | | | | | | | | | | | | | | | | |
| Non-standard winding for vol- tages between 200 and 690 V (voltages outside this range are available on request) ³⁾ | 9 | L1Y • | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

○ Without additional charge

✓ With additional charge

○. R. Possible on request

– Not possible

- This order code only determines the price of the version – Additional plain text is required.

¹⁾ For Zones 21 and 22, for order codes **L1C, L1D, L1E, L1L, L1R, L1U, L1B** and **L1A** a rated voltage range is also marked on the rating plate.

²⁾ The rating data for converter-fed operation is also provided in a table on the rating plate.

³⁾ Plain text must be specified in the order: Voltage, frequency, circuit, required rated output in kW.

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Voltage code 11th position of the Order No. | Additional identifica- tion code with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|--|--|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-------|------------|
| | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 S/M |
| Self-ventilated motors in Zones 2, 21 and 22 with type of protection “n” or protection against dust explosions – Cast-iron series 1LG6 | | | | | | | | | | | | | | | | | |
| 1LG6 (cast-iron) | | | | | | | | | | | | | | | | | |
| Voltage at 50 Hz | | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY (440 VY at 60 Hz) (210 ... 230 VΔ/360 ... 400 VY); 50 Hz output ¹⁾ | 9 | L1R | | | | | | | | | | | | | | ✓ | ✓ |
| 230 VΔ (220 ... 240 VΔ); 50 Hz output ¹⁾ | 9 | L1E | | | | | | | | | | | | | | ○ | ○ |
| 380 VΔ/660 VY (440 VΔ at 60 Hz) (360 ... 400 VΔ/625 ... 695 VY); 50 Hz output ¹⁾ | 9 | L1L | | | | | | | | | | | | | | ✓ | ✓ |
| 415 VY (395 ... 435 VY); 50 Hz output ¹⁾ | 9 | L1C | | | | | | | | | | | | | | ✓ | ✓ |
| 415 VΔ (395 ... 435 VΔ); 50 Hz output ¹⁾ | 9 | L1D | | | | | | | | | | | | | | ✓ | ✓ |
| 400 VY (380 ... 420 VY); 50 Hz output ¹⁾ | 9 | L1A | | | | | | | | | | | | | | ○ | ○ |
| 400 VΔ (380 ... 420 VΔ); 50 Hz output ¹⁾ | 9 | L1B | | | | | | | | | | | | | | ○ | ○ |
| 400 VΔ (460 VΔ bei 60 Hz) (380 ... 420 VΔ); 50 Hz output ¹⁾ | 9 | L1U | | | | | | | | | | | | | | ○ | ○ |
| 400 VΔ 87 Hz output (4-pole to 8-pole only) ²⁾ | 9 | L3A | | | | | | | | | | | | | | O. R. | O. R. |
| Voltage at 60 Hz | | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY; 50 Hz output | 9 | L2A | | | | | | | | | | | | | | ✓ | ✓ |
| 220 VΔ/380 VY; 60 Hz output | 9 | L2B | | | | | | | | | | | | | | ✓ | ✓ |
| 380 VΔ/660 VY; 50 Hz output | 9 | L2C | | | | | | | | | | | | | | ✓ | ✓ |
| 380 VΔ/660 VY; 60 Hz output | 9 | L2D | | | | | | | | | | | | | | ✓ | ✓ |
| 440 VY; 50 Hz output | 9 | L2Q | | | | | | | | | | | | | | ✓ | ✓ |
| 440 VY; 60 Hz output | 9 | L2W | | | | | | | | | | | | | | ✓ | ✓ |
| 440 VΔ; 50 Hz output | 9 | L2R | | | | | | | | | | | | | | ✓ | ✓ |
| 440 VΔ; 60 Hz output | 9 | L2X | | | | | | | | | | | | | | ✓ | ✓ |
| 460 VY; 50 Hz output | 9 | L2S | | | | | | | | | | | | | | ✓ | ✓ |
| 460 VY; 60 Hz output | 9 | L2E | | | | | | | | | | | | | | ○ | ○ |
| 460 VΔ; 50 Hz output | 9 | L2T | | | | | | | | | | | | | | ✓ | ✓ |
| 460 VΔ; 60 Hz output | 9 | L2F | | | | | | | | | | | | | | ○ | ○ |
| 575 VY; 50 Hz output | 9 | L2U | | | | | | | | | | | | | | ✓ | ✓ |
| 575 VY; 60 Hz output | 9 | L2L | | | | | | | | | | | | | | ✓ | ✓ |
| 575 VΔ; 50 Hz output | 9 | L2V | | | | | | | | | | | | | | ✓ | ✓ |
| 575 VΔ; 60 Hz output | 9 | L2M | | | | | | | | | | | | | | ○ | ○ |
| Non-standard voltage and/or frequencies | | | | | | | | | | | | | | | | | |
| Non-standard winding for vol- tages between 200 and 690 V (voltages outside this range are available on request) ³⁾ | 9 | L1Y • | | | | | | | | | | | | | | ✓ | ✓ |

- Without additional charge
- ✓ With additional charge
- O. R. Possible on request
- Not possible
- This order code only determines the price of the version –
Additional plain text is required.

¹⁾ For Zones 21 and 22, for order codes **L1C**, **L1D**, **L1E**, **L1L**, **L1R**, **L1U**, **L1B** and **L1A** a rated voltage range is also marked on the rating plate.

²⁾ The rating data for converter-fed operation is also provided in a table on the rating plate.

³⁾ Plain text must be specified in the order: Voltage, frequency, circuit, required rated output in kW.

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

Types of construction

Additional order codes for other types of construction or type of construction codes (without **-Z** supplement)

Order codes have been defined for some special types of construction. They are ordered by specifying the code digit **9** for the type of construction in the 12th position of the Order No. and the appropriate order code.

| Special versions | Type of construction code 12th position of the Order No. | Additional identification code with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | 315 L S/M | 315 L | 4-, 6-, 8-pole |
|---|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----------|-----------------|----------------|
| | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | | | |
| Self-ventilated motors in Zone 1 with type of protection "e" – Aluminum series 1MA7 | | | | | | | | | | | | | | | | | | |
| 1MA7 (aluminum) | | | | | | | | | | | | | | | | | | |
| Without flange | | | | | | | | | | | | | | | | | | |
| IM V5 with protective cover ^{1) 2)} | 9 | M1F | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| With standard flange | | | | | | | | | | | | | | | | | | |
| IM V18 with protective cover ^{1) 2)} | 9 | M2A | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| With special flange | | | | | | | | | | | | | | | | | | |
| IM V18 with protective cover ^{1) 2)} | 9 | M2B | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| IM B34 | 9 | M2C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Self-ventilated motors in Zone 1 with type of protection "e" – Cast-iron series 1MA6 | | | | | | | | | | | | | | | | | | |
| 1MA6 (cast-iron) | | | | | | | | | | | | | | | | | | |
| Without flange | | | | | | | | | | | | | | | | | | |
| IM V6 ^{1) 3)} | 9 | M1E | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ✓ ⁴⁾ | ○ |
| IM V5 with protective cover ^{1) 2) 3)} | 9 | M1F | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ ⁴⁾ | ✓ |
| With flange | | | | | | | | | | | | | | | | | | |
| IM V3 ^{1) 5)} | 9 | M1G | – | – | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – |
| With special flange | | | | | | | | | | | | | | | | | | |
| IM V18 with protective cover ^{1) 2)} | 9 | M2B | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – | – | – | – | – | – | – |
| IM B34 | 9 | M2C | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – | – | – | – | – | – | – |

- Without additional charge
- ✓ With additional charge
- Not possible

4

- 1) The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.
- 2) The "Second shaft extension" option, order code **K16** is not possible.
- 3) If motors of frame sizes 180 M to 315 L are mounted on the wall, it is recommended that the motor feet are supported.

- 4) 60 Hz version is possible on request.
- 5) 1MA6 motors of frame sizes 225 S to 315 M are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Type of construction code 12th position of the Order No. | Additional identification code with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | |
|---|--|---|-------------------------|----|----|----|----|-----|-------------------------|-----|-----|-----|-----|-----|-----|-----|
| | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 |
| Self-ventilated motors in Zone 1 with type of protection "de" – Cast-iron series 1MJ6 and 1MJ7 | | | | | | | | | | | | | | | | |
| | | | 1MJ6 (cast-iron) | | | | | | 1MJ7 (cast-iron) | | | | | | | |
| Without flange | | | | | | | | | | | | | | | | |
| IM V5 with protective cover ^{1) 2) 3)} | 9 | M1F | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With flange | | | | | | | | | | | | | | | | |
| IM V3 ^{1) 4)} | 9 | M1G | – | – | – | – | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| With standard flange | | | | | | | | | | | | | | | | |
| IM V18 with protective cover ^{1) 2)} | 9 | M2A | ✓ | ✓ | ✓ | – | – | – | – | – | – | – | – | – | – | – |
| With special flange | | | | | | | | | | | | | | | | |
| IM V18 with protective cover ^{1) 2)} | 9 | M2B | ✓ | ✓ | – | – | – | – | – | – | – | – | – | – | – | – |
| IM B34 | 9 | M2C | ✓ | ✓ | – | – | – | – | – | – | – | – | – | – | – | – |

- ✓ With additional charge
 – Not possible

¹⁾ The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.

²⁾ The "Second shaft extension" option, order code **K16** is not possible.

³⁾ If motors of frame sizes 180 M to 315 M are mounted on the wall, it is recommended that the motor feet are supported.

⁴⁾ 1MJ7 motors of frame sizes 225 S to 315 M are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Type of construction code 12th position of the Order No. | Additional identification code with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | 315 L S/M | 2-pole | 4-, 6-, 8-pole |
|--|--|---|--------------------------------------|----|----|----|----|-----|-----|-------------------------|-----|-----|--------------------------------------|-----|-----|-----|-----------|--------|----------------|
| | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | | | |
| Self-ventilated motors in Zones 2, 21 and 22 with type of protection "n" or protection against dust explosions – Aluminum series 1LA7 and 1LA5 | | | | | | | | | | | | | | | | | | | |
| | | | 1LA7 (aluminum) ¹⁾ | | | | | | | | | | 1LA5 (aluminum) ¹⁾ | | | | | | |
| Without flange | | | | | | | | | | | | | | | | | | | |
| IM V5 with protective cover ^{2) 3)} | 9 | M1F | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| With flange | | | | | | | | | | | | | | | | | | | |
| IM V3 ^{2) 4)} | 9 | M1G | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | |
| With standard flange | | | | | | | | | | | | | | | | | | | |
| IM V18 with protective cover ^{2) 3)} | 9 | M2A | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | |
| With special flange | | | | | | | | | | | | | | | | | | | |
| IM V18 with protective cover ^{2) 3)} | 9 | M2B | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | |
| IM B34 | 9 | M2C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | |
| Self-ventilated motors in Zones 2, 21 and 22 with type of protection "n" or protection against dust explosions – Aluminum series 1LA9 | | | | | | | | | | | | | | | | | | | |
| | | | 1LA9 (aluminum) | | | | | | | | | | | | | | | | |
| Without flange | | | | | | | | | | | | | | | | | | | |
| IM V5 with protective cover ^{2) 3)} | 9 | M1F | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| With flange | | | | | | | | | | | | | | | | | | | |
| IM V3 | 9 | M1G | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | |
| With standard flange | | | | | | | | | | | | | | | | | | | |
| IM V18 with protective cover ^{2) 3)} | 9 | M2A | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | |
| With special flange | | | | | | | | | | | | | | | | | | | |
| IM V18 with protective cover ^{2) 3)} | 9 | M2B | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | |
| IM B34 | 9 | M2C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | |
| Self-ventilated motors in Zones 2, 21 and 22 with type of protection "n" or protection against dust explosions – Cast-iron series 1LA6 and 1LG4 | | | | | | | | | | | | | | | | | | | |
| | | | 1LA6 (cast-iron) | | | | | | | 1LG4 (cast-iron) | | | | | | | | | |
| Without flange | | | | | | | | | | | | | | | | | | | |
| IM V6 ^{2) 6)} | 9 | M1E | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | |
| IM V5 with protective cover ^{2) 3) 6)} | 9 | M1F | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| With flange | | | | | | | | | | | | | | | | | | | |
| IM V3 ^{2) 7)} | 9 | M1G | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | |
| With standard flange | | | | | | | | | | | | | | | | | | | |
| IM V18 with protective cover ^{2) 3)} | 9 | M2A | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – | – | – | – | |
| With special flange | | | | | | | | | | | | | | | | | | | |
| IM V18 with protective cover ^{2) 3)} | 9 | M2B | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – | – | – | – | |
| IM B34 | 9 | M2C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – | – | – | – | |
| Self-ventilated motors in Zones 2, 21 and 22 with type of protection "n" or protection against dust explosions – Cast-iron series 1LG6 | | | | | | | | | | | | | | | | | | | |
| | | | 1LG6 (cast-iron) | | | | | | | | | | | | | | | | |
| Without flange | | | | | | | | | | | | | | | | | | | |
| IM V6 ⁶⁾ | 9 | M1E | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | |
| IM V5 with protective cover ^{2) 3) 6)} | 9 | M1F | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| With flange | | | | | | | | | | | | | | | | | | | |
| IM V3 ^{2) 7)} | 9 | M1G | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | |

- Without additional charge
 ✓ With additional charge
 – Not possible

¹⁾ Zone 2 is not possible for motor series 1LA5 and motor series 1LA7 for frame size 56.

²⁾ The following applies for explosion-proof motors: In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air-flow.

³⁾ The "Second shaft extension" option, order code **K16** is not possible.

⁴⁾ For frame sizes 180 M to 225 M, the 1LA5 motors can be supplied with two additional eyebolts; state identification code "**Z**" and order code **K32**.

⁵⁾ 60 Hz version is possible on request.

⁶⁾ If motors of frame sizes 180 M to 315 L are mounted on the wall, it is recommended that the motor feet are supported.

⁷⁾ 1LG4/1LG6 motors of frame sizes 225 S to 315 M are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

Options

Options or order codes (supplement **-Z** is required)

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|---|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-----|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors in Zone 1 with type of protection "e" – Aluminum series 1MA7 | | | | | | | | | | | | | | | | |
| 1MA7 (aluminum) | | | | | | | | | | | | | | | | |
| Design for Zones 1, 2, 21 and 22 according to ATEX | | | | | | | | | | | | | | | | |
| T1/T2 on rating plate ¹⁾ | C30 | | – | – | – | – | – | – | ○ | ○ | | | | | | |
| Motor protection | | | | | | | | | | | | | | | | |
| Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ²⁾ | A11 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Motor protection with PTC thermistors with 6 embedded temperature sensors for alarm and tripping ²⁾ | A12 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Motor connection and connection box | | | | | | | | | | | | | | | | |
| Connection box on RHS | K09 | | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Connection box on LHS | K10 | | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Rotation of the connection box through 90°, entry from DE | K83 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Rotation of the connection box through 90°, entry from NDE | K84 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Rotation of connection box through 180° | K85 | | ✓ | ✓ | ✓ | ✓ | ✓ | ○ | ○ | ○ | ○ | | | | | |
| Windings and insulation | | | | | | | | | | | | | | | | |
| Increased air humidity/temperature with 30 to 60 g water per m ³ of air | C19 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 % ³⁾ | C22 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 % ³⁾ | C23 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 % ³⁾ | C24 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 % ³⁾ | C25 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Increased air humidity/temperature with 60 to 100 g water per m ³ of air | C26 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Colors and paint finish | | | | | | | | | | | | | | | | |
| Special finish in RAL 7030 stone gray | | | □ | □ | □ | □ | □ | □ | □ | □ | | | | | | |
| Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y54 • and special finish RAL | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" Page 0/19 | Y51 • and special finish RAL | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Offshore special finish | M91 | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | | | | | | |
| Unpainted (only cast iron parts primed) | K23 | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | | |
| Unpainted, only primed | K24 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |

4

For legend and footnotes, see Page 4/95.

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|--|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors in Zone 1 with type of protection "e" – Aluminum series 1MA7 | | | | | | | | | | | | | | | | |
| 1MA7 (aluminum) | | | | | | | | | | | | | | | | |
| Mechanical design and degrees of protection | | | | | | | | | | | | | | | | |
| Drive-end seal for flange-mounting motors with an oil-tightness of up to 0.1 bar Not possible for IM V3 type of construction | K17 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Low-noise version for 2-pole motors with clockwise direction of rotation ⁴⁾ | K37 | – | – | – | – | – | – | – | ✓ | ✓ | | | | | | |
| Low-noise version for 2-pole motors with counter-clockwise direction of rotation ⁴⁾ | K38 | – | – | – | – | – | – | – | ✓ | ✓ | | | | | | |
| IP65 degree of protection | K50 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| IP56 degree of protection (non-heavy-sea) | K52 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Vibration-proof version | L03 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Condensation drainage holes ⁵⁾ | L12 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Rust-resistant screws (externally) | M27 | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Coolant temperature and site altitude | | | | | | | | | | | | | | | | |
| Coolant temperature –40 °C to +40 °C for EX motors ⁶⁾ | D19 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Designs in accordance with standards and specifications | | | | | | | | | | | | | | | | |
| CCC China Compulsory Certification ⁷⁾ | D01 | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | | | | | | |
| VIK version | K30 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Bearings and lubrication | | | | | | | | | | | | | | | | |
| Bearing design for increased cantilever forces | K20 | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Regreasing device | K40 | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Located bearing DE | K94 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Located bearing NDE | L04 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | □ | |
| Balance and vibration quantity | | | | | | | | | | | | | | | | |
| Vibration quantity A | | □ | □ | □ | □ | □ | □ | □ | □ | □ | | | | | | |
| Vibration quantity B | K02 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Full key balancing | L68 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Balancing without key | M37 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Shaft and rotor | | | | | | | | | | | | | | | | |
| Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors ⁸⁾ | K04 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Second standard shaft extension ⁹⁾ | K16 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Shaft extension with standard dimensions without featherkey way | K42 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Concentricity of shaft extension in accordance with DIN 42955 Tolerance R | L39 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Non-standard cylindrical shaft extension ¹⁰⁾ | Y55 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |

For legend and footnotes, see Page 4/95.

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|--|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors in Zone 1 with type of protection "e" – Aluminum series 1MA7 | | | | | | | | | | | | | | | | |
| 1MA7 (aluminum) | | | | | | | | | | | | | | | | |
| Heating and ventilation | | | | | | | | | | | | | | | | |
| Metal external fan | K35 | | – | – | – | – | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Rating plate and extra rating plates | | | | | | | | | | | | | | | | |
| Second lubricating plate, supplied loose | B06 | | – | – | – | – | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Second rating plate, loose | K31 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate or rating plate with deviating rating plate data | Y80 • and identification code | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate with identification code | Y82 • and identification code | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Additional information on rating plate and on package label (maximum of 20 characters) | Y84 • and identification code | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Packaging, safety notes, documentation and test certificates | | | | | | | | | | | | | | | | |
| Acceptance test certificate 3.1 according to EN 10204 | B02 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Operating instructions German/English enclosed in print | B23 | | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Wire-lattice pallet | L99 | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- R. Possible on request
- ✓ With additional charge
- Not possible

- 1) 2-pole motors 1 MA frame sizes 132 to 160 are designed with double rating plate (T1/T2 and T3) as standard. For motor versions with order codes **A11/A12** or with voltage code "9" T3-output is then stamped on the rating plate as standard. Alternatively, "T1/T2-output on the rating plate" can be stamped – order code **C30**
 - 2) Evaluation with associated 3RN1 tripping unit (see Catalog LV 1) is recommended. When used in hazardous areas, a certified tripping unit is required. Motor protection by means of PTC thermistor as sole protection available on request.
 - 3) The maximum certified output will be supplied.
 - 4) 1MA7 motors are up to 80 mm longer than normal. A second shaft extension is not possible.
 - 5) Supplied with the condensation drainage holes sealed at the drive end DE and non-drive end NDE for IP55, IP56 and IP65 degrees of protection. If condensation drainage holes are required in motors of the IM B6, IM B7 or IM B8 type of construction (feet located on side or top), it is necessary to relocate the bearing plates at the drive end (DE) and non-drive end (NDE) so that the condensation drainage holes situated between the feet on delivery are underneath.
 - 6) Not possible in combination with vibration-proof version, order code **L03**.
 - 7) CCC certification is required for
 - 2-pole motors ≤ 2.2 kW
 - 4-pole motors ≤ 1.1 kW
 - 6-pole motors ≤ 0.75 kW
 - 8-pole motors ≤ 0.55 kW
 - 8) Can be combined with deep-groove bearings of series 60... 62... and 63... Not possible in combination with parallel roller bearings (e.g. bearings for increased cantilever forces, order code **K20**).
 - 9) Not possible for low-noise version (2-pole) for frame sizes 132 S to 160 L. Version with protective cover not possible.
 - 10) When motors are ordered that have a longer or shorter shaft extension than normal, the required position and length of the featherkey way must be specified in a sketch. It must be ensured that only featherkeys in accordance with DIN 6885, Form A are permitted to be used. The featherkey way is positioned centrally on the shaft extension. The length is defined by the manufacturer normatively. Not valid for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The featherkeys are supplied in every case.
 - For order codes **Y55** and **K16**:
 - Dimensions D and DA \leq internal diameter of roller bearing (see dimension tables under "Dimensions")
 - Dimensions E and EA $\leq 2 \times$ length E (normal) of the shaft extension
- For an explanation of the order codes, see catalog part 0 "Introduction".

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors in Zone 1 with type of protection "e" – Cast-iron series 1MA6 | | | | | | | | | | | | | | | | |
| Design for Zones 1, 2, 21 and 22 according to ATEX | | | | | | | | | | | | | | | | |
| T1/T2 on rating plate ¹⁾ | C30 | | | | | | | | | | | | | | | |
| Motor protection | | | | | | | | | | | | | | | | |
| Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ²⁾ | A11 | | | | | | | | | | | | | | | |
| Motor protection with PTC thermistors with 6 embedded temperature sensors for alarm and tripping ²⁾ | A12 | | | | | | | | | | | | | | | |
| Installation of 2 PT 100 screw-in resistance thermometers (basic circuit) for rolling-contact bearings ²⁾ | A72 | | | | | | | | | | | | O. R. | O. R. | O. R. | O. R. |
| Installation of 2 PT100 screw-in resistance thermometers (3-wire circuit) for rolling-contact bearings ²⁾ | A78 | | | | | | | | | | | | O. R. | O. R. | O. R. | O. R. |
| Motor connection and connection box | | | | | | | | | | | | | | | | |
| Connection box on RHS | K09 | | | | | | | | | | | | | | | |
| Connection box on LHS | K10 | | | | | | | | | | | | | | | |
| Connection box in cast-iron version | K15 | | | | | | | | | | | | | | | |
| Rotation of the connection box through 90°, entry from DE | K83 | | | | | | | | | | | | | | | |
| Rotation of the connection box through 90°, entry from NDE | K84 | | | | | | | | | | | | | | | |
| Rotation of connection box through 180° | K85 | | | | | | | | | | | | | | | |
| Next larger connection box | L00 | | | | | | | | | | | | | | | |
| Auxiliary connection box 1XB3 020 | L97 | | | | | | | | | | | | | | | |
| Windings and insulation | | | | | | | | | | | | | | | | |
| Increased air humidity/temperature with 30 to 60 g water per m ³ of air | C19 | | | | | | | | | | | | | | | |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 % ³⁾ | C22 | | | | | | | | | | | | | | | |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 % ³⁾ | C23 | | | | | | | | | | | | | | | |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 % ³⁾ | C24 | | | | | | | | | | | | | | | |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 % ³⁾ | C25 | | | | | | | | | | | | | | | |
| Increased air humidity/temperature with 60 to 100 g water per m ³ of air | C26 | | | | | | | | | | | | | | | |

4

For legend, see Page 4/98, for footnotes, see Page 4/99.

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|---|-----------------------|----|----|----|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors in Zone 1 with type of protection "e" – Cast-iron series 1MA6 | | | | | | | | | | | | | | | | |
| 1MA6 (cast-iron) | | | | | | | | | | | | | | | | |
| Colors and paint finish | | | | | | | | | | | | | | | | |
| Standard finish in RAL 7030 stone gray | | | | | | | | | | | | □ | □ | □ | □ | |
| Standard finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y53 • and standard finish RAL | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | |
| Special finish in RAL 7030 stone gray ⁴⁾ | K26 | | | | | | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y54 • and special finish RAL | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" Page 0/19 | Y51 • and special finish RAL | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Offshore special finish | M91 | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Sea air resistant special finish | M94 | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Unpainted (only cast iron parts primed) | K23 | | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Unpainted, only primed | K24 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mechanical design and degrees of protection | | | | | | | | | | | | | | | | |
| Drive-end seal for flange-mounting motors with an oil-tightness of up to 0.1 bar Not possible for type of construction IM V3; with frame size 180 M and above, only possible for 4-pole to 6-pole motors | K17 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Low-noise version for 2-pole motors with clockwise direction of rotation ⁵⁾ | K37 | | | | | | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Low-noise version for 2-pole motors with counter-clockwise direction of rotation ⁵⁾ | K38 | | | | | | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| IP65 degree of protection | K50 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| IP56 degree of protection (non-heavy-sea) | K52 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Vibration-proof version | L03 | | | | | | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – |
| Condensation drainage holes ⁶⁾ | L12 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – |
| Rust-resistant screws (externally) | M27 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature and site altitude | | | | | | | | | | | | | | | | |
| Coolant temperature –40 °C to +40 °C for EX motor ⁷⁾ | D19 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Designs in accordance with standards and specifications | | | | | | | | | | | | | | | | |
| VIK version | K30 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bearings and lubrication | | | | | | | | | | | | | | | | |
| Measuring nipple for SPM shock pulse measurement for bearing inspection | G50 | | | | | | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bearing design for increased cantilever forces ⁸⁾ | K20 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Regreasing device | K40 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | □ | □ |
| Located bearing DE | K94 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – |
| Located bearing NDE | L04 | | | | | | ✓ | ✓ | ✓ | ✓ | □ | – | – | – | – | – |

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----------------|-----------------|-----------------|-----------------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors in Zone 1 with type of protection "e" – Cast-iron series 1MA6 | | | | | | | | | | | | | | | | |
| 1MA6 (cast-iron) | | | | | | | | | | | | | | | | |
| Balance and vibration quantity | | | | | | | | | | | | | | | | |
| Vibration quantity A | | | | | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Vibration quantity B | K02 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ ⁹⁾ | ✓ ⁹⁾ | ✓ ⁹⁾ | ✓ ⁹⁾ |
| Full key balancing | L68 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Balancing without key | M37 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft and rotor | | | | | | | | | | | | | | | | |
| Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors ⁹⁾ | K04 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second standard shaft extension ¹⁰⁾ | K16 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft extension with standard dimensions without featherkey way | K42 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Concentricity of shaft extension in accordance with DIN 42955 Tolerance R | L39 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard cylindrical shaft extension ¹¹⁾ | Y55 • and identification code | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Heating and ventilation | | | | | | | | | | | | | | | | |
| Cast-iron fan cover | K34 | | | | | | – | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ |
| Metal external fan | K35 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 230 V | K45 | | | | | | – | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 115 V | K46 | | | | | | – | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ |
| Rating plate and extra rating plates | | | | | | | | | | | | | | | | |
| Second lubricating plate, supplied loose | B06 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second rating plate, loose | K31 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate or rating plate with deviating rating plate data | Y80 • and identification code | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate with identification code | Y82 • and identification code | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Additional information on rating plate and on package label (maximum of 20 characters) | Y84 • and identification code | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Packaging, safety notes, documentation and test certificates | | | | | | | | | | | | | | | | |
| Acceptance test certificate 3.1 according to EN 10204 | B02 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Operating instructions German/English enclosed in print | B23 | | | | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Wire-lattice pallet | L99 | | | | | | ○ | ○ | ○ | ○ | ○ | ○ | – | – | – | – |

- ☐ Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- , R. Possible on request
- ✓ With additional charge
- Not possible

For footnotes, see Page 4/99.

- 1) 2-pole motors 1MA frame sizes 132 to 160 are designed with double rating plate (T1/T2 and T3) as standard. For motor versions with order codes **A11/A12** or with voltage code "9" T3-output is then stamped on the rating plate as standard. Alternatively, "T1/T2-output on the rating plate" can be stamped – order code **C30**
- 2) Evaluation with associated 3RN1 tripping unit (see Catalog LV 1) is recommended. When used in hazardous areas, a certified tripping unit is required. Motor protection with PTC thermistors is available as sole protection up to frame size 160 L on request. With frame size 180 M and above, it is not permitted as sole protection; motor protection switch is required.
- 3) The maximum certified output will be supplied.
- 4) For frame sizes 100 to 200, do not specify an order code. Order code is only necessary for frame sizes 225 to 315.
- 5) 1MA6 motors are up to 80 mm longer than normal. A second shaft extension is not possible.
- 6) Supplied with the condensation drainage holes sealed at the drive end DE and non-drive end NDE for IP55, IP56 and IP65 degrees of protection. If condensation drainage holes are required in motors of the IM B6, IM B7 or IM B8 type of construction (feet located on side or top), it is necessary to relocate the bearing plates at the drive end (DE) and non-drive end (NDE) so that the condensation drainage holes situated between the feet on delivery are underneath.
- 7) Not possible in combination with vibration-proof version, order code **L03**.
- 8) Not possible for 2-pole 1MA6 motors, frame size 315 L in vertical type of construction; bearings for increased cantilever forces for vibration quantity level B are available on request for 1MA6 motors of frame size 225 M and above. Not possible for 1MA6 motors of frame size 225 M and above in combination with concentricity of shaft extension, coaxiality and linear movement according to DIN 42955 tolerance R for flange-mounting types.
- 9) Can be combined with deep-groove bearings of series 60... 62... and 63... Not possible in combination with parallel roller bearings (e.g. bearings for increased cantilever forces, order code **K20**).
- 10) For motors of frame size 180 M and above in vertical type of construction in version with second shaft extension on request. Not possible for low-noise version (2-pole) for frame sizes 132 S to 160 L. Version with protective cover not possible.
- 11) When motors are ordered that have a longer or shorter shaft extension than normal, the required position and length of the featherkey way must be specified in a sketch. It must be ensured that only featherkeys in accordance with DIN 6885, Form A are permitted to be used. The featherkey way is positioned centrally on the shaft extension. The length is defined by the manufacturer normatively. Not applicable for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The featherkeys are supplied in every case.
For order codes **Y55** and **K16**:
– Dimensions D and DA \leq Inner diameter of roller bearing (see tables under "Dimensions")
– Dimensions E and EA $\leq 2 \times$ Length E (normal) of the shaft extension
For explanation of the order codes, see catalog part 0 "Introduction".

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | | |
|---|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----------------|-----|-----|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 | |
| Self-ventilated motors in Zone 1 with type of protection "de" – Cast-iron series 1MJ6 and 1MJ7 | | | | | | | | | | | | | | | | | |
| Design for Zones 1, 2, 21 and 22 according to ATEX | | | | | | | | | | | | | | | | | |
| Design for Zones 1 and 21, as well as for Zone 22 for conducting dust (IP65), for mains-fed operation ¹⁾ | | | | | | | | | | | | | | | | | |
| | M76 | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Design for Zones 1 and 21, as well as for Zone 22 for conducting dust (IP65), for converter-fed operation, derating ¹⁾ | | | | | | | | | | | | | | | | | |
| | M77 | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Motor protection | | | | | | | | | | | | | | | | | |
| Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ^{2) 3)} | | | | | | | | | | | | | | | | | |
| | A11 | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Motor protection with PTC thermistors with 6 embedded temperature sensors for alarm and tripping ^{2) 3) 4)} | | | | | | | | | | | | | | | | | |
| | A12 | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Motor protection with PTC thermistors for converter-fed operation with 4 embedded temperature sensors for tripping ^{2) 3)} | | | | | | | | | | | | | | | | | |
| | A15 | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Motor protection with PTC thermistors for converter-fed operation with 8 embedded temperature sensors for alarm and tripping ^{2) 3) 4)} | | | | | | | | | | | | | | | | | |
| | A16 | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Installation of 2 PT 100 screw-in resistance thermometers (basic circuit) for rolling-contact bearings ²⁾ | | | | | | | | | | | | | | | | | |
| | A72 | | | - | - | - | - | - | - | - | - | - | - | O. R. | O. R. | O. R. | O. R. |
| Installation of 2 PT100 screw-in resistance thermometers (3-wire circuit) for rolling-contact bearings ²⁾ | | | | | | | | | | | | | | | | | |
| | A78 | | | - | - | - | - | - | - | - | - | - | - | O. R. | O. R. | O. R. | O. R. |
| Motor connection and connection box | | | | | | | | | | | | | | | | | |
| Connection box on RHS | | | | | | | | | | | | | | | | | |
| | K09 | | | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on LHS | | | | | | | | | | | | | | | | | |
| | K10 | | | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box in cast-iron version | | | | | | | | | | | | | | | | | |
| | K15 | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ ⁵⁾ | ✓ | ✓ | ✓ | □ | □ | □ |
| Explosion-proof connection box, Ex d IIC type of protection ⁶⁾ | | | | | | | | | | | | | | | | | |
| | K53 | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from DE | | | | | | | | | | | | | | | | | |
| | K83 | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from NDE | | | | | | | | | | | | | | | | | |
| | K84 | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of connection box through 180° | | | | | | | | | | | | | | | | | |
| | K85 | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Auxiliary connection box 1XB3020 ⁷⁾ | | | | | | | | | | | | | | | | | |
| | L97 | | | - | - | - | - | - | - | - | - | - | - | ✓ | ✓ | ✓ | ✓ |
| Saddle terminal for connection without cable lug, accessories pack (3 items of high saddle terminals) | | | | | | | | | | | | | | | | | |
| | M47 | | | - | - | - | - | - | - | - | - | - | - | - | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 4/103.

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|---|-------------------------|-------|-------|-------|-------|-------|-------|-------------------------|-------|-------|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors in Zone 1 with type of protection "de" – Cast-iron series 1MJ6 and 1MJ7 | | | | | | | | | | | | | | | | |
| | | 1MJ6 (cast-iron) | | | | | | | 1MJ7 (cast-iron) | | | | | | | |
| Windings and insulation | | | | | | | | | | | | | | | | |
| Increased air humidity/temperature with 30 to 60 g water per m ³ of air | C19 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 % ⁸⁾ | C22 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 % ⁸⁾ | C23 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 % ⁸⁾ | C24 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 % | C25 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Increased air humidity/temperature with 60 to 100 g water per m ³ of air | C26 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), with a higher coolant temperature and/or site altitude | Y50 • and specified output, CT... °C or SA m above sea level | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Colors and paint finish | | | | | | | | | | | | | | | | |
| Standard finish in RAL 7030 stone gray | | | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Standard finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y53 • and standard finish RAL | | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Special finish in RAL 7030 stone gray ⁹⁾ | K26 | | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y54 • and special finish RAL | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" Page 0/19 | Y51 • and special finish RAL | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Offshore special finish | M91 | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Sea air resistant special finish | M94 | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Unpainted (only cast iron parts primed) | K23 | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Unpainted, only primed | K24 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special technology | | | | | | | | | | | | | | | | |
| Mounting of the explosion-proof rotary pulse encoder for use on Ex d/de motors in Zone 1 ¹⁰⁾ | H87 | | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of the explosion-proof Ex de separately driven fan for use in Zone 1 ¹¹⁾ | M98 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – |

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | |
|---|---|-------------------------|----|----|----|----|-----|-----|-------------------------|-----|-----|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 |
| Self-ventilated motors in Zone 1 with type of protection "de" – Cast-iron series 1MJ6 and 1MJ7 | | | | | | | | | | | | | | | |
| | | 1MJ6 (cast-iron) | | | | | | | 1MJ7 (cast-iron) | | | | | | |
| Mechanical design and degrees of protection | | | | | | | | | | | | | | | |
| Drive-end seal for flange-mounting motors with an oil-tightness of up to 0.1 bar Not possible for type of construction IM V3; with frame size 180 M and above, only possible for 4-pole to 8-pole motors | K17 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Low-noise version for 2-pole motors with clockwise direction of rotation ¹²⁾ | K37 | - | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Low-noise version for 2-pole motors with counter-clockwise direction of rotation ¹²⁾ | K38 | - | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| IP65 degree of protection ¹³⁾ | K50 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| IP56 degree of protection (non-heavy-sea) | K52 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Vibration-proof version | L03 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - | - | - |
| Mechanical protection for encoder ¹⁵⁾ | M68 | - | - | - | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Designs in accordance with standards and specifications | | | | | | | | | | | | | | | |
| CCC China Compulsory Certification ¹⁶⁾ | D01 | ✓ | ✓ | ✓ | - | - | - | - | - | - | - | - | - | - | - |
| VIK version | K30 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Ex certification for China | D32 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bearings and lubrication | | | | | | | | | | | | | | | |
| Measuring nipple for SPM shock pulse measurement for bearing inspection | G50 | - | - | - | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bearing design for increased cantilever forces ¹⁷⁾ | K20 | - | - | - | - | - | - | - | ✓ | ✓ | ✓ | ✓ | - | - | - |
| Regreasing device | K40 | - | - | - | - | - | - | - | ✓ | ✓ | ✓ | ✓ | □ | □ | □ |
| Insulated bearing cartridge | L27 | - | - | - | - | - | - | - | - | - | - | ✓ | ✓ | ✓ | ✓ |
| Balance and vibration quantity | | | | | | | | | | | | | | | |
| Vibration quantity A | | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Vibration quantity B | K02 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Full key balancing | L68 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Balancing without key | M37 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft and rotor | | | | | | | | | | | | | | | |
| Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors ¹⁸⁾ | K04 | - | - | - | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second standard shaft extension ¹⁹⁾ | K16 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Concentricity of shaft extension in accordance with DIN 42955 Tolerance R | L39 | - | - | - | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard cylindrical shaft extension ²⁰⁾ | Y55 • and identification code | - | - | - | - | - | - | - | - | - | - | O. R. | O. R. | O. R. | O. R. |
| Heating and ventilation | | | | | | | | | | | | | | | |
| Metal external fan | K35 | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 230 V ²¹⁾²²⁾ | K45 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 115 V ²¹⁾²²⁾ | K46 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Separately driven fan with non-standard voltage and/or frequency | Y81 • and identification code | - | - | - | - | - | - | - | - | - | - | ✓ | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 4/103.

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | |
|---|---|-------------------------|----|----|----|----|-----|-----|-------------------------|-----|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 |
| Self-ventilated motors in Zone 1 with type of protection "de" – Cast-iron series 1MJ6 and 1MJ7 | | | | | | | | | | | | | | | |
| | | 1MJ6 (cast-iron) | | | | | | | 1MJ7 (cast-iron) | | | | | | |
| Rating plate and extra rating plates | | | | | | | | | | | | | | | |
| Second lubricating plate, supplied loose | B06 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second rating plate, loose | K31 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate or rating plate with deviating rating plate data | Y80 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate with identification code | Y82 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Additional information on rating plate and on package label (maximum of 20 characters) | Y84 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Packaging, safety notes, documentation and test certificates | | | | | | | | | | | | | | | |
| Acceptance test certificate 3.1 according to EN 10204 | B02 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Operating instructions German/English enclosed in print | B23 | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Wire-lattice pallet | L99 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- , R. Possible on request
- ✓ With additional charge
- Not possible

- 1) In combination with order codes **K30** and **M98** please inquire. Not possible in combination with order codes **D32**, **K50** and **K52**.
- 2) Evaluation with appropriate 3RN1 tripping unit (see Catalog LV 1) is recommended. When used in hazardous areas, a certified tripping unit is required.
- 3) For 1MJ6 motors, for a version with PTC thermistors, an anti-condensation heater (order code **K45**, **K46**) up to frame size 160 L is not possible.
- 4) For 1MJ6 motors frame sizes 180 to 200 and 1MJ7 motors, for a version with PTC thermistors, an anti-condensation heater (order code **K45**, **K46**) is not possible. Exception: 1MJ7 frame size 315.
- 5) For 1MJ6 motors frame size 160 L standard version.
- 6) Drilled holes for the cable glands are sealed with Exd plugs for 1MJ motors as standard. On request, the Exd cable entries can be supplied for 1MJ7 motors. When ordering, the number of cables and outer diameters must be specified so that the appropriate cable glands can be supplied.
- 7) Not possible in combination with order code **K53**, since the auxiliary connection box has been approved only for Ex de.
- 8) Derating does not apply in combination with order codes **L2A**, **L2C**, **L2Q**, **L2R**, **L2S**, **L2T**, **L2U** and **L2V**.
- 9) For frame sizes 71 to 200, do not specify an order code. Order code is only necessary for frame sizes 225 to 315.
- 10) In combination with order codes **C19**, **C26**, **L27** and **M98** please inquire. Not possible in combination with order codes **C22** to **C25** (frame sizes 90 to 160), **D19**, **K16**, **K50**, **M77**. Furthermore a combination with protective cover is not possible. Therefore a suitable cover must be implemented by the end user in vertical mounting position to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0).
- 11) In combination with order codes **C19**, **C22** to **C26**, **D19**, **H87**, **K50**, **K52**, **M76** and **M77** please inquire. Not possible in combination with order code **K16**.
- 12) The motors are up to 80 mm longer than normal. A second shaft extension is not possible.
- 13) Order code **K50** (protective cover IP65) can be ordered only for Zone 1. For Zone 21, IP65 degree of protection is standard. Not possible for Zone 22, because only IP55 degree of protection is required.
- 14) A combination of order code **K52** degree of protection IP56 (non-heavy-sea) with **M76** or **M77** is not permissible.
- 15) 1MJ6 motors of frame size 90 to 160 have a rugged flanged. Ex OG9 rotary pulse encoder, which offers alone a high mechanical protection. The mechanical protection for the encoder is not necessary when a rotary pulse encoder is combined with a separately driven fan because in this case the rotary pulse encoder is installed under the fan cowl.
- 16) CCC certification is required for
 - 2-pole motors ≤2.2 kW
 - 4-pole motors ≤1.1 kW
 - 6-pole motors ≤0.75 kW
 - 8-pole motors ≤0.55 kW
- 17) Bearings for increased cantilever forces at vibration quantity level B on request.
- 18) Can be combined with deep-groove bearings of series 60.., 62.. and 63... Not possible in combination with parallel roller bearings (e.g. bearings for increased cantilever forces, order code **K20**).
- 19) For 1MJ6/1MJ7 motors of frame size 180 M and above in vertical type of construction in version with second shaft extension on request. Not possible for low-noise version (2-pole). Version with protective cover not possible.
- 20) When motors which have a longer or shorter shaft extension than normal are ordered, the required position and length of the featherkey way must be specified in a sketch. It must be ensured that only featherkeys in accordance with DIN 6885, Form A are permitted to be used. The featherkey way is positioned centrally on the shaft extension. The length is defined by the manufacturer normatively. Not valid for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The featherkeys are supplied in every case. For order codes **Y55** and **K16**:
 - Dimensions D and DA ≤ internal diameter of roller bearing (see dimension tables under "Dimensions")
 - Dimensions E and EA ≤ 2 x length E (normal) of the shaft extension For an explanation of the order codes, see catalog part 0 "Introduction".
- 21) For 1MJ6 motors, version with 3, 4 PTC thermistors (order codes **A11**, **A15**) is not possible up to frame size 160 L.
- 22) Not possible for version with 6, 8 PTC thermistors (order codes **A12**, **A16**). Exception: 1MJ7 frame size 315.



IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|---|--------------------------------------|----|----|----|----|-----|-----|-----|-----|--------------------------------------|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors in Zones 2, 21, 22 with type of protection "n" or protection against dust explosions – Aluminum series 1LA7 and 1LA5 | | | | | | | | | | | | | | | | |
| | | 1LA7 (aluminum) ¹⁾ | | | | | | | | | 1LA5 (aluminum) ²⁾ | | | | | |
| Design for Zones 1, 2, 21 and 22 according to ATEX ³⁾ | | | | | | | | | | | | | | | | |
| Design for Zone 2 for mains-fed operation Ex nA II T3 to IEC/EN 60079-15 ⁴⁾ | M72 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | | | |
| Design for Zone 2 for converter-fed operation, reduced output Ex nA II T3 to IEC/EN 60079-15 ^{4) 5) 6)} | M73 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | | | |
| Design for Zones 2 and 22, for non-conducting dust (IP55), for mains-fed operation ⁷⁾ | M74 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | | | |
| Design for Zones 2 and 22, for non-conducting dust (IP55), for converter-fed operation, derating ^{5) 6) 7)} | M75 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | | | |
| Design for Zone 21, as well as Zone 22 for conducting dust (IP65) for mains-fed operation ⁸⁾ | M34 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| Design for Zone 21, as well as Zone 22 for conducting dust (IP65) for converter-fed operation, derating ^{4) 6) 8)} | M38 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| Design for Zone 22 for non-conducting dust (IP55) for mains-fed operation | M35 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| Design for Zone 22 for conducting dust (IP55) for converter-fed operation, derating ^{4) 6)} | M39 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| VIK design (comprises Zone 2 for mains-fed operation, without Ex nA II marking on rating plate) | K30 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | | | |
| Ex nA II on VIK rating plate | C27 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | | | |
| Alternative converter (SIMOVERT MASTERDRIVES, SINAMICS G110, SINAMICS S120 or ET 200S FC) | Y68 • and converter type | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | |
| Motor protection | | | | | | | | | | | | | | | | |
| With PTC thermistors for alarm for converter-fed operation in Zones 2, 21, 22 ⁹⁾ | A10 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | | | |
| Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ⁹⁾ | A11 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| Motor protection with PTC thermistors with 6 embedded temperature sensors for alarm and tripping ⁹⁾ | A12 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| Motor temperature detection with embedded temperature sensor KTY 84-130 ⁹⁾ | A23 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| Motor temperature detection with embedded temperature sensors 2 x KTY 84-130 ⁹⁾ | A25 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| Installation of 3 PT 100 resistance thermometers ⁹⁾ | A60 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |

4

For legend, see Page 4/108, for footnotes, see Page 4/109.

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|--|--------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------------------------------------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors in Zones 2, 21, 22 with type of protection "n" or protection against dust explosions – Aluminum series 1LA7 and 1LA5 | | | | | | | | | | | | | | | | |
| | | 1LA7 (aluminum) ¹⁾ | | | | | | | | | | 1LA5 (aluminum) ²⁾ | | | | |
| Motor connection and connection box | | | | | | | | | | | | | | | | |
| Connection box on RHS | K09 | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on LHS | K10 | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| One cable gland, metal ¹⁰⁾ | K54 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Cable gland, maximum configuration | K55 | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Rotation of the connection box through 90°, entry from DE | K83 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from NDE | K84 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of connection box through 180° | K85 | ✓ | ✓ | ✓ | ✓ | ✓ | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Next larger connection box | L00 | – | – | – | – | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| External earthing | L13 | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Windings and insulation | | | | | | | | | | | | | | | | |
| Increased air humidity/temperature with 30 to 60 g water per m ³ of air | C19 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 % ¹¹⁾ | C22 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 % ¹¹⁾ | C23 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 % ¹¹⁾ | C24 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 % | C25 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Increased air humidity/temperature with 60 to 100 g water per m ³ of air | C26 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), with increased coolant temperature and/or site altitude | Y50 • and specified output, CT ... °C or SA ... m above sea level | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|--|--------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|--------------------------------------|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors in Zones 2, 21, 22 with type of protection "n" or protection against dust explosions – Aluminum series 1LA7 and 1LA5 | | | | | | | | | | | | | | | | |
| | | 1LA7 (aluminum) ¹⁾ | | | | | | | | | 1LA5 (aluminum) ²⁾ | | | | | |
| Colors and paint finish | | | | | | | | | | | | | | | | |
| Special finish in RAL 7030 stone gray | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y54 • and special finish RAL | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" Page 0/19 | Y51 • and special finish RAL | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Sea air resistant special finish | M94 | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Unpainted (only cast iron parts primed) | K23 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Unpainted, only primed | K24 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special technology | | | | | | | | | | | | | | | | |
| Mounting of explosion-proof rotary pulse encoder for use in Zones 2, 21, 22 ¹²⁾ | H86 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of explosion-proof separately driven fan II 3D for use in Zone 22 ¹³⁾ | M97 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mechanical design and degrees of protection | | | | | | | | | | | | | | | | |
| Drive-end seal for flange-mounting motors with an oil-tightness of up to 0.1 bar Not possible for IM V3 type of construction | K17 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With two additional eyebolts for IM V1/IM V3 | K32 | – | – | – | – | – | – | – | – | – | – | – | – | ✓ | ✓ | ✓ |
| Low-noise version for 2-pole motors with clockwise direction of rotation | K37 | – | – | – | – | – | – | – | – | – | – | – | – | ✓ | ✓ | ✓ |
| Low-noise version for 2-pole motors with counter-clockwise direction of rotation | K38 | – | – | – | – | – | – | – | – | – | – | – | – | ✓ | ✓ | ✓ |
| IP65 degree of protection ¹⁴⁾ | K50 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| IP56 degree of protection (non-heavy-sea) ¹⁵⁾ | K52 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Vibration-proof version | L03 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Condensation drainage holes ¹⁶⁾ | L12 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rust-resistant screws (externally) | M27 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mechanical protection for encoder ¹⁷⁾ | M68 | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend, see Page 4/108, for footnotes, see Page 4/109.

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|--|--------------------------------------|----|----|-------|-------|-------|-------|-------|-------|-------|--------------------------------------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors in Zones 2, 21, 22 with type of protection "n" or protection against dust explosions – Aluminum series 1LA7 and 1LA5 | | | | | | | | | | | | | | | | |
| | | 1LA7 (aluminum) ¹⁾ | | | | | | | | | | 1LA5 (aluminum) ²⁾ | | | | |
| Coolant temperature and site altitude | | | | | | | | | | | | | | | | |
| Coolant temperature –40 °C to +40 °C for EX motor ¹⁸⁾ | D19 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Designs in accordance with standards and specifications | | | | | | | | | | | | | | | | |
| CCC China Compulsory Certification ¹⁹⁾ | D01 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – | – |
| Electrical according to NEMA MG1-12 | D30 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Ex-certification for China (only valid for Zone 2) | D32 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – |
| Bearings and lubrication | | | | | | | | | | | | | | | | |
| Measuring nipple for SPM shock pulse measurement for bearing inspection | G50 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bearing design for increased cantilever forces | K20 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Regreasing device | K40 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Located bearing DE | K94 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Located bearing NDE | L04 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | □ | □ | □ | □ | □ | □ |
| Balance and vibration quantity | | | | | | | | | | | | | | | | |
| Vibration quantity A | | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Vibration quantity B | K02 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Full key balancing | L68 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Balancing without key | M37 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft and rotor | | | | | | | | | | | | | | | | |
| Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors ²⁰⁾ | K04 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second standard shaft extension | K16 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft extension with standard dimensions without featherkey way | K42 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Concentricity of shaft extension in accordance with DIN 42955 Tolerance R | L39 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Standard shaft made of rust-resistant steel | M65 | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard cylindrical shaft extension ²¹⁾ | Y55 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Heating and ventilation | | | | | | | | | | | | | | | | |
| Fan cover for textile industry | H17 | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Metal external fan ²²⁾ | K35 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heater, Ex. 230 V | M15 | – | – | – | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Anti-condensation heater, Ex. 115 V | M14 | – | – | – | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|--|--------------------------------------|----|----|----|----|-----|-----|-----|-----|-----|--------------------------------------|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors in Zones 2, 21, 22 with type of protection "n" or protection against dust explosions – Aluminum series 1LA7 and 1LA5 | | | | | | | | | | | | | | | | |
| | | 1LA7 (aluminum) ¹⁾ | | | | | | | | | | 1LA5 (aluminum) ²⁾ | | | | |
| Rating plate and extra rating plates | | | | | | | | | | | | | | | | |
| Second lubricating plate, supplied loose | B06 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second rating plate, loose | K31 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate or rating plate with deviating rating plate data | Y80 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate with identification code | Y82 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Additional information on rating plate and on package label (maximum of 20 characters) | Y84 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Packaging, safety notes, documentation and test certificates | | | | | | | | | | | | | | | | |
| Acceptance test certificate 3.1 according to EN 10204 | B02 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Operating instructions German/English enclosed in print | B23 | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Type test with heat run for vertical motors, with acceptance | F83 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Wire-lattice pallet | L99 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | – | – | – |
| Connected in star for dispatch | M32 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connected in delta for dispatch | M33 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- , R. Possible on request
- ✓ With additional charge
- Not possible

- 1) Zone 2 for motor series 1LA7 only frame size 63 and above.
- 2) Zone 2 is not possible for motor series 1LA5. For Zone 2, instead of 1LA5 motors, 1LG4 motors are used.
- 3) Anti-condensation heater up to frame size 71 M not possible.
- 4) These motors do not have a rated voltage range stamped on the rating plate.
- 5) According to the standard, the motor and converter must be tested as a unit. A "Manufacturer test certificate" is available for a defined spectrum of Siemens motors (frame sizes 63 M to 315 L)/converter. Please inquire in the case of a non-Siemens converter (additional charge).
- 6) With this option, PTC thermistors for temperature class 130 (B) are included. For compliance with temperature class 130 (B), derating is necessary in the case of converter-fed operation in Zones 2, 21 and 22. The operating data for the MICROMASTER converter series from Siemens are specified on the rating plate as standard. Derating information is available on request. For converter-fed operation only voltage codes/order codes with only one voltage are permitted, see also Page 4/82.
- 7) In combination with order codes **D19**, **K30** and **M97** please inquire. Not possible in combination with order codes **D32**, **K50** and **K52**.
- 8) Zone 21 takes into account conducting and non-conducting dust.
- 9) Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended. When used in hazardous areas, a certified tripping unit is required. KTY 84-130 and PT 100 are not permitted as sole protection. Full motor protection for mains-fed operation implemented only with PTC thermistors, please inquire.
- 10) For 1LA7 and 1LA5 motors additional charge only applies to Zone 22. Designs for Zones 2 and 21 already have a certified metal cable gland in the standard version.
- 11) Derating does not apply in combination with order codes **L2A**, **L2C**, **L2Q**, **L2R**, **L2S**, **L2T**, **L2U** and **L2V**.
- 12) In combination with order codes **C19**, **C26**, **L27** and **M97** please inquire. Not possible in combination with order code **K16**. Furthermore a combination with protective cover is not possible. Therefore a suitable cover must be implemented by the end user in vertical mounting position to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0).
- 13) In combination with order codes **C19**, **C22**, **C23**, **C24**, **C25**, **C26**, **D19**, **H86**, **K50** and **K52** please inquire. Not possible in combination with order codes **C27**, **K16**, **K30**, **M72**, **M73**, **M34**, **M38**, **M74** and **M75**.
- 14) Order code **K50** (IP65 degree of protection) can only be ordered for Zone 2. For Zone 21, IP65 degree of protection is standard. Not possible for Zone 22, because only IP55 degree of protection is required.
- 15) Order code **K52** IP56 degree of protection (non-heavy-sea) is only possible for Zone 2. Not admissible for Zone 21 (IP65 degree of protection) and Zone 22 (IP55 degree of protection).
- 16) When supplied the condensation drainage holes are sealed at the drive end DE and non-drive end NDE for IP55, IP56 and IP65 degrees of protection. If condensation drainage holes are required in motors of the IM B6, IM B7 or IM B8 type of construction (feet located on side or top), it is necessary to relocate the bearing plates at the drive end (DE) and non-drive end (NDE) so that the condensation drainage holes situated between the feet on delivery are underneath.
- 17) Not necessary when a rotary pulse encoder is combined with a separately driven fan, because in this case the rotary pulse encoder is installed under the fan cover.
- 18) Not possible in combination with order code **L03**. The mechanical limit speed of 1LA5 2-pole motors in the design for Zones 21/22 from frame size 180 has been reduced compared to the values in catalog part 5 "Motors operating with frequency converters" of the catalog:

| Frame size | 2 pole n_{max} in rpm | f_{max} in Hz |
|------------|-------------------------|-----------------|
| 180 | 3300 | 55 |
| 200 | 3100 | 51 |
| 225 | 3000 | 50 |

This is particularly important to be observed for converter-fed operation and operation on 60 Hz line supplies. Option: 1LG4 motors in the design for Zones 21/22.
- 19) CCC certification is required for
 - 2-pole motors: ≤ 2.2 kW
 - 4-pole motors: ≤ 1.1 kW
 - 6-pole motors: ≤ 0.75 kW
 - 8-pole motors: ≤ 0.55 kW
- 20) Can be combined with deep-groove bearings of series 60... 62... and 63... Not possible with parallel roller bearings (e.g. bearings for increased cantilever forces, order code **K20**).
- 21) When motors which have a longer or shorter shaft extension than normal are ordered, the required position and length of the featherkey way must be specified in a sketch. It must be ensured that only featherkeys in accordance with DIN 6885, Form A are permitted to be used. The featherkey way is positioned centrally on the shaft extension. The length is defined by the manufacturer normatively. Not valid for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The featherkeys are supplied in every case. For order codes **Y55** and **K16**:
 - Dimensions D and DA \leq internal diameter of roller bearing (see dimension tables under "Dimensions")
 - Dimensions E and EA $\leq 2 \times$ length E (normal) of the shaft extension
For an explanation of the order codes, see catalog part 0 "Introduction".
- 22) For 1LA5/6/7/9 motors and 1LG with metal external fan, converter-fed operation is permitted. The metal external fan is standard for these motors in the version for Zone 21/22. The metal external fan is not possible in combination with the low-noise version – order code **K37** or **K38**.

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors in Zones 2, 21 and 22 with type of protection “n” or protection against dust explosions – Aluminum series 1LA9 | | | | | | | | | | | | | | | | |
| 1LA9 (aluminum) | | | | | | | | | | | | | | | | |
| Design for Zones 1, 2, 21 and 22 according to ATEX ¹⁾ | | | | | | | | | | | | | | | | |
| Design for Zone 2 for mains-fed operation Ex nA II T3 to IEC/EN 60079-15 ²⁾ | M72 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | | | |
| Design for Zone 2 for converter-fed operation, reduced output Ex nA II T3 to IEC/EN 60079-15 ²⁾³⁾⁴⁾ | M73 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | | | |
| Design for Zones 2 and 22, for non-conducting dust (IP55), for mains-fed operation ⁵⁾ | M74 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | | | |
| Design for Zones 2 and 22, for non-conducting dust (IP55), for converter-fed operation, derating ³⁾⁴⁾⁵⁾ | M75 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | | | |
| Design for Zone 21, as well as Zone 22 for conducting dust (IP65) for mains-fed operation ⁶⁾ | M34 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| Design for Zone 21, as well as Zone 22 for conducting dust (IP65) for converter-fed operation, derating ²⁾⁴⁾⁶⁾ | M38 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| Design for Zone 22 for non-conducting dust (IP55) for mains-fed operation | M35 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| Design for Zone 22 for non-conducting dust (IP55) for converter-fed operation, derating ²⁾⁴⁾ | M39 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| VIK design (comprises Zone 2 for mains-fed operation, without Ex nA II marking on rating plate) | K30 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | | | |
| Ex nA II on VIK rating plate | C27 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | | | |
| Alternative converter (SIMOVERT MASTERDRIVES, SINAMICS G110, SINAMICS S120 or ET 200S FC) | Y68 • and converter type | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | |
| Motor protection | | | | | | | | | | | | | | | | |
| With PTC thermistors for alarm for converter-fed operation in Zones 2, 21, 22 ⁷⁾ | A10 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ⁷⁾ | A11 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| Motor protection with PTC thermistors with 6 embedded temperature sensors for alarm and tripping ⁷⁾ | A12 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| Motor temperature detection with embedded temperature sensor KTY 84-130 ⁷⁾ | A23 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| Motor temperature detection with embedded temperature sensors 2 x KTY 84-130 ⁷⁾ | A25 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| Installation of 3-PT 100 resistance thermometers ⁷⁾ | A60 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |

For legend, see Page 4/113, for footnotes, see Page 4/114.

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|---|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors in Zones 2, 21 and 22 with type of protection "n" or protection against dust explosions – Aluminum series 1LA9 | | | | | | | | | | | | | | | | |
| 1LA9 (aluminum) | | | | | | | | | | | | | | | | |
| Motor connection and connection box | | | | | | | | | | | | | | | | |
| Connection box on RHS | K09 | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on LHS | K10 | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| One cable gland, metal ⁸⁾ | K54 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – |
| Cable gland, maximum configuration | K55 | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Rotation of the connection box through 90°, entry from DE | K83 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from NDE | K84 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of connection box through 180° | K85 | ✓ | ✓ | ✓ | ✓ | ✓ | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Next larger connection box | L00 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| External earthing | L13 | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Windings and insulation | | | | | | | | | | | | | | | | |
| Increased air humidity/temperature with 30 to 60 g water per m ³ of air | C19 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 % ⁹⁾ | C22 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 % ⁹⁾ | C23 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 % ⁹⁾ | C24 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 % | C25 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Increased air humidity/temperature with 60 to 100 g water per m ³ of air | C26 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), with a higher coolant temperature and/or site altitude | Y50 • and specified output, CT .. °C or SA m above sea level | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Colors and paint finish | | | | | | | | | | | | | | | | |
| Special finish in RAL 7030 stone gray | | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y54 • and special finish RAL | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" Page 0/19 | Y51 • and special finish RAL | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Sea air resistant special finish | M94 | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Unpainted (only cast iron parts primed) | K23 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Unpainted, only primed | K24 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend, see Page 4/113, for footnotes, see Page 4/114.

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors in Zones 2, 21 and 22 with type of protection "n" or protection against dust explosions – Aluminum series 1LA9 | | | | | | | | | | | | | | | | |
| 1LA9 (aluminum) | | | | | | | | | | | | | | | | |
| Special technology | | | | | | | | | | | | | | | | |
| Mounting of explosion-proof rotary pulse encoder for use in Zones 2, 21, 22 ¹⁰⁾ | H86 | - | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | |
| Mounting of explosion-proof separately driven fan II 3D for use in Zone 22 ¹¹⁾ | M97 | - | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | |
| Mechanical design and degrees of protection | | | | | | | | | | | | | | | | |
| Drive-end seal for flange-mounting motors with an oil-tightness of up to 0.1 bar Not possible for IM V3 type of construction. | K17 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Low-noise version for 2-pole motors with clockwise direction of rotation | K37 | - | - | - | - | - | - | - | - | - | ✓ | ✓ | | | | |
| Low-noise version for 2-pole motors with counter-clockwise direction of rotation | K38 | - | - | - | - | - | - | - | - | - | ✓ | ✓ | | | | |
| IP65 degree of protection ¹²⁾ | K50 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| IP56 degree of protection (non-heavy-sea) ¹³⁾ | K52 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Vibration-proof version | L03 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Condensation drainage holes ¹⁴⁾ | L12 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rust-resistant screws (externally) | M27 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mechanical protection for encoder ¹⁵⁾ | M68 | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature and site altitude | | | | | | | | | | | | | | | | |
| Coolant temperature -40 °C to +40 °C for EX motor ¹⁶⁾ | D19 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Designs in accordance with standards and specifications | | | | | | | | | | | | | | | | |
| CCC China Compulsory Certification ¹⁷⁾ | D01 | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - | - | - | - | - | - |
| Electrical according to NEMA MG1-12 | D30 | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Ex-certification for China (only valid for Zone 2) | D32 | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - | - |
| Bearings and lubrication | | | | | | | | | | | | | | | | |
| Measuring nipple for SPM shock pulse measurement for bearing inspection | G50 | - | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bearing design for increased cantilever forces | K20 | - | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Regreasing device | K40 | - | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Located bearing DE | K94 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Located bearing NDE | L04 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | □ | □ | □ | □ | □ |
| Balance and vibration quantity | | | | | | | | | | | | | | | | |
| Vibration quantity A | | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Vibration quantity B | K02 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Full key balancing | L68 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Balancing without key | M37 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend, see Page 4/113, for footnotes, see Page 4/114.

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|---|-----------------------|----|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors in Zones 2, 21 and 22 with type of protection "n" or protection against dust explosions – Aluminum series 1LA9 | | | | | | | | | | | | | | | | |
| 1LA9 (aluminum) | | | | | | | | | | | | | | | | |
| Shaft and rotor | | | | | | | | | | | | | | | | |
| Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors ¹⁸⁾ | K04 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second standard shaft extension | K16 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft extension with standard dimensions without featherkey way | K42 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Concentricity of shaft extension in accordance with DIN 42955 Tolerance R | L39 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard cylindrical shaft extension ¹⁹⁾ | Y55 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Heating and ventilation | | | | | | | | | | | | | | | | |
| Fan cover for textile industry | H17 | – | – | – | – | – | – | ✓ | ✓ | – | – | – | – | – | – | – |
| Metal external fan ²⁰⁾ | K35 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heater, Ex. 230 V | M15 | – | – | – | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Anti-condensation heater, Ex. 115 V | M14 | – | – | – | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Rating plate and extra rating plates | | | | | | | | | | | | | | | | |
| Second lubricating plate, supplied loose | B06 | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second rating plate, loose | K31 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate or rating plate with deviating rating plate data | Y80 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate with identification code | Y82 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Additional information on rating plate and on package label (maximum of 20 characters) | Y84 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Packaging, safety notes, documentation and test certificates | | | | | | | | | | | | | | | | |
| Acceptance test certificate 3.1 according to EN 10204 | B02 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Operating instructions German/English enclosed in print | B23 | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Type test with heat run for vertical motors, with acceptance | F83 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Wire-lattice pallet | L99 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | – |
| Connected in star for dispatch | M32 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connected in delta for dispatch | M33 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- O. R. Possible on request
- ✓ With additional charge
- Not possible

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

4

- 1) Anti-condensation heater up to frame size 71 M not possible.
- 2) These motors do not have a rated voltage range stamped on the rating plate.
- 3) According to the standard, the motor and converter must be tested as a unit. A "Manufacturer test certificate" is available for a defined spectrum of Siemens motors (frame sizes 63 M to 315 L)/converter. Please inquire in the case of a non-Siemens converter (additional charge).
- 4) With this option, PTC thermistors for temperature class 130 (B) are included. For compliance with temperature class 130 (B), derating is necessary in the case of converter-fed operation in Zones 2, 21 and 22. The operating data for the MICROMASTER converter series from Siemens are specified on the rating plate as standard. Derating information is available on request. For converter-fed operation only voltage codes/order codes with only one voltage are permitted, see also Page 4/82.
- 5) In combination with order codes **D19**, **K30** and **M97** please inquire. Not possible in combination with order codes **D32**, **K50** and **K52**.
- 6) Zone 21 takes into account conducting and non-conducting dust.
- 7) Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended. When used in hazardous areas, a certified tripping unit is required. KTY 84-130 and PT 100 are not permitted as sole protection. Full motor protection for mains-fed operation implemented only with PTC thermistors, please inquire.
- 8) For 1LA9 motors additional charge only applies to Zone 22. Designs for Zones 2 and 21 already have a certified metal cable gland in the standard version.
- 9) Derating does not apply in combination with order codes **L2A**, **L2C**, **L2Q**, **L2R**, **L2S**, **L2T**, **L2U** and **L2V**.
- 10) In combination with order codes **C19**, **C26**, **L27** and **M97** please inquire. Not possible in combination with order code **K16**. Furthermore a combination with protective cover is not possible. Therefore a suitable cover must be implemented by the end user in vertical mounting position to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0).
- 11) In combination with order codes **C19**, **C22**, **C23**, **C24**, **C25**, **C26**, **C27**, **D19**, **H86**, **K30**, **K50** and **K52** please inquire. Not possible in combination with order codes **C27**, **K16**, **K30**, **M72**, **M73**, **M34**, **M38**, **M74** and **M75**.
- 12) Order code **K50** (IP65 degree of protection) can only be ordered for Zone 2. For Zone 21, IP65 degree of protection is standard. Not possible for Zone 22, because only IP55 degree of protection is required.
- 13) Order code **K52** IP56 degree of protection (non-heavy-sea) is only possible for Zone 2. Not admissible for Zone 21 (IP65 degree of protection) and Zone 22 (IP55 degree of protection).
- 14) When supplied the condensation drainage holes are sealed at the drive end DE and non-drive end NDE for IP55, IP56 and IP65 degrees of protection. If condensation drainage holes are required in motors of the IM B6, IM B7 or IM B8 type of construction (feet located on side or top), it is necessary to relocate the bearing plates at the drive end (DE) and non-drive end (NDE) so that the condensation drainage holes situated between the feet on delivery are underneath.
- 15) Not necessary when a rotary pulse encoder is combined with a separately driven fan, because in this case the rotary pulse encoder is installed under the fan cover.
- 16) Not possible in combination with order code **L03**. The mechanical limit speed of 1LA9 2-pole motors in the design for Zones 21/22 from frame size 180 has been reduced compared to the values in catalog part 5 "Motors operating with frequency converters" of the catalog:

| Frame size | 2 pole n_{max} in rpm | f_{max} in Hz |
|------------|-------------------------|-----------------|
| 180 | 3300 | 55 |
| 200 | 3100 | 51 |

This is particularly important to be observed for converter-fed operation and operation on 60 Hz line supplies. Option: 1LG6 motors in the design for Zones 21/22.
- 17) CCC certification is required for
 - 2-pole motors ≤ 2.2 kW
 - 4-pole motors ≤ 1.1 kW
 - 6-pole motors ≤ 0.75 kW
 - 8-pole motors ≤ 0.55 kW
- 18) Can be combined with deep-groove bearings of series 60... 62... and 63... Not possible with parallel roller bearings (e.g. bearings for increased cantilever forces, order code **K20**).
- 19) When motors which have a longer or shorter shaft extension are ordered, the required position and length of the featherkey way must be specified in a sketch. It must be ensured that only featherkeys in accordance with DIN 6885, Form A are permitted to be used. The featherkey way is positioned centrally on the shaft extension. The length is defined by the manufacturer normatively. Not valid for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The featherkeys are supplied in every case.
 - For order codes **Y55** and **K16**:
 - Dimensions D and DA \leq internal diameter of roller bearing (see dimension tables under "Dimensions")
 - Dimensions E and EA $\leq 2 \times$ length E (normal) of the shaft extension

For an explanation of the order codes, see catalog part 0 "Introduction".
- 20) For 1LA5/6/7/9 motors and 1LG with metal external fan, converter-fed operation is permitted. The metal external fan is standard for these motors in the version for Zone 21/22. The metal external fan is not possible in combination with a low-noise version – order code **K37** or **K38**.

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|---|-----------------------|----|----|----|----|-------------------------|-----|-----|-----|-------|-------------------------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors in Zones 2, 21, 22 with type of protection "n" or protection against dust explosions – Cast-iron series 1LA6 and 1LG4 | | | | | | | | | | | | | | | | |
| | | | | | | | 1LA6 (cast-iron) | | | | | 1LG4 (cast-iron) | | | | |
| Motor protection (continued) | | | | | | | | | | | | | | | | |
| Installation of 2 PT 100 screw-in resistance thermometers (basic circuit) for rolling-contact bearings ⁷⁾ | A72 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 2 PT 100 screw-in resistance thermometers (3-wire circuit) for rolling-contact bearings ⁷⁾ | A78 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 2 PT 100 double screw-in resistance thermometers (3-wire circuit) for rolling-contact bearings ⁷⁾ | A80 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor connection and connection box | | | | | | | | | | | | | | | | |
| Two-part plate on connection box | K06 | | | | | | | | | | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on RHS | K09 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on LHS | K10 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on top, feet screwed on | K11 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box in cast-iron version | K15 | | | | | | | | | | ✓ | ✓ | ✓ | □ | □ | □ |
| One cable gland, metal ⁸⁾ | K54 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Cable gland, maximum configuration ⁸⁾ | K55 | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Rotation of the connection box through 90°, entry from DE | K83 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from NDE | K84 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of connection box through 180° | K85 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Next larger connection box | L00 | | | | | | | | | | – | – | – | – | – | – |
| External earthing | L13 | | | | | | | | | | □ | □ | □ | □ | □ | □ |
| Auxiliary connection box 1XB3 020 | L97 | | | | | | | | | | – | – | – | – | – | – |
| Saddle terminal for connection without cable lug, accessories pack (6 items) | M47 | | | | | | | | | | – | – | – | – | – | – |
| Windings and insulation | | | | | | | | | | | | | | | | |
| Increased air humidity/temperature with 30 to 60 g water per m ³ of air | C19 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 % | C22 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 % | C23 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 % | C24 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 % | C25 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Increased air humidity/temperature with 60 to 100 g water per m ³ of air | C26 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), with increased coolant temperature and/or site altitude | Y50 • and specified output, CT... °C or SA m above sea level | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 4/119.

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | |
|---|---|-----------------------|----|----|----|----|-----|-----|-----|-----|------------------|-------|-------|-------|------------------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 |
| Self-ventilated motors in Zones 2, 21, 22 with type of protection "n" or protection against dust explosions – Cast-iron series 1LA6 and 1LG4 | | | | | | | | | | | | | | | |
| Colors and paint finish | | | | | | | | | | | | | | | |
| Standard finish in RAL 7030 stone gray | | | | | | | | | | | 1LA6 (cast-iron) | | | | 1LG4 (cast-iron) |
| Standard finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y53 • and standard finish RAL | | | | | | | | | | | | | | |
| Special finish in RAL 7030 stone gray ¹⁰⁾ | K26 | | | | | | | | | | □ | □ | □ | □ | □ |
| Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y54 • and special finish RAL | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" on Page 0/19 | Y51 • and special finish RAL | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Offshore special finish | M91 | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. |
| Sea air resistant special finish | M94 | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. |
| Unpainted (only cast iron parts primed) | K23 | | | | | | | | | | ○ | ○ | ○ | ○ | ○ |
| Unpainted, only primed | K24 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special technology | | | | | | | | | | | | | | | |
| Mounting of explosion-proof rotary pulse encoder for use in Zones 2, 21, 22 ¹¹⁾ | H86 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of explosion-proof separately driven fan Ex nA for use in Zone 2 ¹²⁾ | M95 | | | | | | | | | | – | – | – | – | – |
| Mounting of explosion-proof separately driven fan II 2D for use in Zone 21 ¹²⁾ | M96 | | | | | | | | | | – | – | – | – | – |
| Mounting of explosion-proof separately driven fan II 3D for use in Zone 22 ¹²⁾ | M97 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mechanical design and degrees of protection | | | | | | | | | | | | | | | |
| Drive-end seal for flange-mounting motors with an oil-tightness of up to 0.1 bar Not possible for IM V3 type of construction ¹³⁾ | K17 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Low-noise version for 2-pole motors with clockwise direction of rotation ¹⁴⁾ | K37 | | | | | | | | | | – | – | – | – | – |
| Low-noise version for 2-pole motors with counter-clockwise direction of rotation ¹⁴⁾ | K38 | | | | | | | | | | – | – | – | – | – |
| IP65 degree of protection ¹⁵⁾ | K50 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| IP56 degree of protection (non-heavy-sea) ¹⁶⁾ | K52 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Vibration-proof version | L03 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Condensation drainage holes ¹⁷⁾ | L12 | | | | | | | | | | □ | □ | □ | □ | □ |
| Rust-resistant screws (externally) | M27 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mechanical protection for encoder ¹⁸⁾ | M68 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors in Zones 2, 21, 22 with type of protection "n" or protection against dust explosions – Cast-iron series 1LA6 and 1LG4 | | | | | | | | | | | | | | | | |
| Packaging, safety notes, documentation and test certificates | | | | | | | | | | | | | | | | |
| Acceptance test certificate 3.1 according to EN 10204 | B02 | | | | | | | | | | | | | | | |
| Operating instructions German/English enclosed in print | B23 | | | | | | | | | | | | | | | |
| Type test with heat run for horizontal motors, with acceptance | F83 | | | | | | | | | | | | | | | |
| Wire-lattice pallet | L99 | | | | | | | | | | | | | | | |
| Connected in star for dispatch | M32 | | | | | | | | | | | | | | | |
| Connected in delta for dispatch | M33 | | | | | | | | | | | | | | | |

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- R. Possible on request
- ✓ With additional charge
- Not possible

- 1) Only permitted for use in accordance with temperature class 130 (B).
- 2) These motors do not have a rated voltage range stamped on the rating plate.
- 3) According to the standard, the motor and converter must be tested as a unit. A "Manufacturer test certificate" is available for a defined spectrum of Siemens motors (frame sizes 63 M to 315 L)/converter. Please inquire in the case of a non-Siemens converter (additional charge).
- 4) With this option, PTC thermistors for temperature class 130 (B) are included. For compliance with temperature class 130 (B), derating is necessary in the case of converter-fed operation in Zones 2, 21 and 22. The operating data for the MICROMASTER converter series from Siemens are specified on the rating plate as standard. Derating information is available on request. For converter-fed operation only voltage codes/order codes with only one voltage are permitted, see also Page 4/82.
- 5) In combination with order codes **D19, K30, M95, M96 and M97** please inquire. Not possible in combination with order codes **D32, K50 and K52**.
- 6) Zone 21 takes into account conducting and non-conducting dust.
- 7) Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended. When used in hazardous areas, a certified tripping unit is required. KTY 84-130 and PT 100 are not permitted as sole protection. Full motor protection for mains-fed operation implemented only with PTC thermistors, please inquire.
- 8) For 1LA6 and 1LG6 motors additional charge only applies to Zone 22. Designs for Zones 2 and 21 already have a certified metal cable gland in the standard version. Standard with designs for Zone 2, Zone 21 and VIK.
- 9) Standard with designs for Zone 2, Zone 21 and VIK.
- 10) For frame sizes 100 to 160, do not specify an order code. Order code is only necessary for frame sizes 180 to 315.
- 11) In combination with order codes **C19, C26, L27, M95, M96 and M97** please inquire. Not possible in combination with order code **K16**. Furthermore a combination with protective cover is not possible. Therefore a suitable cover must be implemented by the end user in vertical mounting position to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0).
- 12) In combination with order codes **C19, C22, C23, C24, C25, C26, C27, D19, H86, K30, K50 and K52** please inquire. Not possible in combination with order code **K16**. The type of protection of the separately driven fan must correspond to the type of protection of the motor.
- 13) Not possible for motor series 1LG4 for 2-pole motors.
- 14) For 1LG4 motors a second shaft extension is not possible in the low-noise version.
- 15) Order code **K50** (IP65 degree of protection) can only be ordered for Zone 2. For Zone 21, IP65 degree of protection is standard. Not possible for Zone 22, because only IP55 degree of protection is required.
- 16) Order code **K52** IP56 degree of protection (non-heavy-sea) is only possible for Zone 2. Not admissible for Zone 21 (IP65 degree of protection) and Zone 22 (IP55 degree of protection).
- 17) For 1LA6 motors: When supplied the condensation drainage holes are sealed at the drive end DE and non-drive end NDE for IP55, IP56 and IP65 degrees of protection. If condensation drainage holes are required in motors of the IM B6, IM B7 or IM B8 type of construction (feet located on side or top), it is necessary to relocate the bearing plates at the drive end (DE) and non-drive end (NDE) so that the condensation drainage holes situated between the feet on delivery are underneath.
- 18) Not necessary when a rotary pulse encoder is combined with a separately driven fan, because in this case the rotary pulse encoder is installed under the fan cover.
- 19) Not possible in combination with order code **L03**.
- 20) Not possible for 2-pole 1LG4 motors, frame size 315 L in vertical types of construction; bearings for increased cantilever forces at vibration quantity level B available on request for 1LG4 motors. Not possible for 1LG4 motors in the combination "Concentricity of the shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors" – order code **K04**.
- 21) Additional charge for 2-pole motors. With 4-pole to 8-pole motors, standard version.
- 22) Not possible in combination with parallel roller bearings (e.g. bearings for increased cantilever forces, order code **K20**).
- 23) Can be combined with deep-groove bearings of series 60.., 62.. and 63... Not possible in combination with parallel roller bearings (e.g. bearings for increased cantilever forces, order code **K20**).
- 24) Possible for motors of frame size 315 and above in vertical types of construction or 2-pole for version with second shaft extension on request. Version with protective cover not possible.
- 25) When motors which have a longer or shorter shaft extension than normal are ordered, the required position and length of the featherkey way must be specified in a sketch. It must be ensured that only featherkeys in accordance with DIN 6885, Form A are permitted to be used. The featherkey way is positioned centrally on the shaft extension. The length is defined by the manufacturer normatively. Not valid for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The featherkeys are supplied in every case. For order codes **Y55 and K16**:
– Dimensions D and DA ≤ internal diameter of roller bearing (see dimension tables under "Dimensions")
– Dimensions E and EA ≤ 2 x length E (normal) of the shaft extension
For an explanation of the order codes, see catalog part 0 "Introduction".
- 26) For 1LA5/6/7/9 motors and 1LG with metal external fan, converter-fed operation is permitted. The metal external fan is standard for these motors in the version for Zone 21/22. The metal external fan is not possible in combination with the low-noise version – order code **K37** or **K38**.

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | | | | | | |
|---|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------------------------|---|---|---|---|---|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 | | | | | |
| Self-ventilated motors in Zones 2, 21 and 22 with type of protection "n" or protection against dust explosions – Cast-iron series 1LG6 | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | 1LG6 (cast-iron) | | | | | |
| Design for Zones 1, 2, 21 and 22 according to ATEX ¹⁾ | | | | | | | | | | | | | | | | | | | | | |
| Design for Zone 2 for mains-fed operation Ex nA II T3 to IEC/EN 60079-15 ²⁾ | M72 | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Design for Zone 2 for converter-fed operation, reduced output Ex nA II T3 to IEC/EN 60079-15 ^{2) 3) 4)} | M73 | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Design for Zones 2 and 22, for non-conducting dust (IP55), for mains-fed operation ⁵⁾ | M74 | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Design for Zones 2 and 22, for non-conducting dust (IP55), for converter-fed operation, derating ^{4) 5)} | M75 | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Design for Zone 21, as well as Zone 22 for conducting dust (IP65) for mains-fed operation ⁶⁾ | M34 | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Design for Zone 21, as well as Zone 22 for conducting dust (IP65) for converter-fed operation, derating ^{2) 4) 6)} | M38 | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Design for Zone 22 for non-conducting dust (IP55) for mains-fed operation | M35 | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Design for Zone 22 for non-conducting dust (IP55) for converter-fed operation, derating ^{2) 4)} | M39 | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| VIK design (comprises Zone 2 for mains-fed operation, without Ex nA II marking on rating plate) | K30 | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Ex nA II on VIK rating plate | C27 | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Alternative converter (SIMOVERT MASTERDRIVES, SIMOVERT S120) | Y68 • and converter type | | | | | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ○ |
| Motor protection | | | | | | | | | | | | | | | | | | | | | |
| With PTC thermistors for alarm for converter-fed operation in Zones 2, 21, 22 ⁷⁾ | A10 | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ⁷⁾ | A11 | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor protection with PTC thermistors with 6 embedded temperature sensors for alarm and tripping ⁷⁾ | A12 | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor temperature detection with embedded temperature sensor KTY 84-130 ⁷⁾ | A23 | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor temperature detection with embedded temperature sensors 2 x KTY 84-130 ⁷⁾ | A25 | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 3 PT 100 resistance thermometers ⁷⁾ | A60 | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 6 PT 100 resistance thermometers in stator winding ⁷⁾ | A61 | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 2 PT 100 screw-in resistance thermometers (basic circuit) for rolling-contact bearings ⁷⁾ | A72 | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 2 PT 100 screw-in resistance thermometers (3-wire circuit) for rolling-contact bearings ⁷⁾ | A78 | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 2 PT 100 double screw-in resistance thermometers (three-wire circuit) for rolling-contact bearings ⁷⁾ | A80 | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend, see Page 4/123, for footnotes, see Page 4/124.

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | |
|---|---|-----------------------|-------|-------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------------|-----------------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 |
| Self-ventilated motors in Zones 2, 21 and 22 with type of protection "n" or protection against dust explosions – Cast-iron series 1LG6 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 1LG6 (cast-iron) | |
| Motor connection and connection box | | | | | | | | | | | | | | | |
| Two-part plate on connection box | K06 | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on RHS | K09 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on LHS | K10 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on top, feet screwed on | K11 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box in cast-iron version | K15 | ✓ | ✓ | ✓ | ✓ | □ | □ | □ | | | | | | | |
| One cable gland, metal ⁸⁾ | K54 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Cable gland, maximum configuration ⁸⁾ | K55 | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Rotation of the connection box through 90°, entry from DE | K83 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from NDE | K84 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of connection box through 180° | K85 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Next larger connection box | L00 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Auxiliary connection box | L97 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Saddle terminal for connection without cable lug, accessories pack (6 items) | M47 | – | – | – | ✓ ⁹⁾ | ✓ ⁹⁾ | ✓ ⁹⁾ | ✓ ⁹⁾ | ✓ ⁹⁾ | ✓ ⁹⁾ | ✓ ⁹⁾ | ✓ ⁹⁾ | ✓ ⁹⁾ | ✓ ⁹⁾ | ✓ ⁹⁾ |
| Windings and insulation | | | | | | | | | | | | | | | |
| Increased air humidity/temperature with 30 to 60 g water per m ³ of air | C19 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 % | C22 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 % | C23 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 % | C24 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 % | C25 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Increased air humidity/temperature with 60 to 100 g water per per m ³ of air | C26 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), with a higher coolant temperature and/or site altitude | Y50 • and specified output, CT ... °C or SA m above sea level | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Colors and paint finish | | | | | | | | | | | | | | | |
| Standard finish in RAL 7030 stone gray | | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Standard finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y53 • and standard finish RAL | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in RAL 7030 stone gray | K26 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y54 • and special finish RAL | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" on Page 0/19 | Y51 • and special finish RAL | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Offshore special finish | M91 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Sea air resistant special finish | M94 | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Unpainted (only cast-iron parts primed) | K23 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Unpainted, only primed | K24 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | | | | | | | |
|---|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------------------------|---|---|---|---|------------------|------------------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 | | | | | | |
| Self-ventilated motors in Zones 2, 21 and 22 with type of protection "n" or protection against dust explosions – Cast-iron series 1LG6 | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | 1LG6 (cast-iron) | | | | | | |
| Special technology | | | | | | | | | | | | | | | | | | | | | | |
| Mounting of explosion-proof rotary pulse encoder for use in Zones 2, 21, 22 ¹⁰⁾ | H86 | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of explosion-proof separately driven fan Ex nA for use in Zone 2 ¹¹⁾ | M95 | | | | | | | | | | | | | | | | – | – | ✓ | ✓ | ✓ | ✓ |
| Mounting of explosion-proof separately driven fan II 2D for use in Zone 21 ¹¹⁾ | M96 | | | | | | | | | | | | | | | | – | – | ✓ | ✓ | ✓ | ✓ |
| Mounting of explosion-proof separately driven fan II 3D for use in Zone 22 ¹¹⁾ | M97 | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mechanical design and degrees of protection | | | | | | | | | | | | | | | | | | | | | | |
| Drive-end seal for flange-mounting motors with an oil-tightness of up to 0.1 bar Not possible for IM V3 type of construction and 2-pole motors | K17 | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Low-noise version for 2-pole motors with clockwise direction of rotation ¹²⁾ | K37 | | | | | | | | | | | | | | | | – | – | – | – | – | – |
| Low-noise version for 2-pole motors with counter-clockwise direction of rotation ¹²⁾ | K38 | | | | | | | | | | | | | | | | – | – | – | – | – | – |
| IP65 degree of protection ¹³⁾ | K50 | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| IP56 degree of protection (non-heavy-sea) ¹⁴⁾ | K52 | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Condensation water holes ¹⁵⁾ | L12 | | | | | | | | | | | | | | | | □ | □ | □ | □ | □ | □ |
| Rust-resistant screws (externally) | M27 | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mechanical protection for encoder ¹⁶⁾ | M68 | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature and site altitude | | | | | | | | | | | | | | | | | | | | | | |
| Coolant temperature –40 °C to +40 °C for EX motor ¹⁷⁾ | D19 | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Designs in accordance with standards and specifications | | | | | | | | | | | | | | | | | | | | | | |
| Electrical according to NEMA MG1-12 (standard version with EPACT) | D30 | | | | | | | | | | | | | | | | □ | □ | □ | □ | □ | □ |
| Ex certification for China (only valid for Zone 2) | D32 | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bearings and lubrication | | | | | | | | | | | | | | | | | | | | | | |
| Measuring nipple for SPM shock pulse measurement for bearing inspection | G50 | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bearing design for increased cantilever forces ¹⁸⁾ | K20 | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special bearing for DE and NDE, bearing size | K36 | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ ¹⁹⁾ | ✓ ¹⁹⁾ |
| Regreasing device | K40 | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | □ | □ |
| Located bearing DE | K94 | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Located bearing NDE | L04 | | | | | | | | | | | | | | | | □ | □ | □ | □ | □ | □ |
| Insulated bearing cartridge | L27 | | | | | | | | | | | | | | | | – | – | ✓ | ✓ | ✓ | ✓ |
| Balance and vibration quantity | | | | | | | | | | | | | | | | | | | | | | |
| Vibration quantity A | | | | | | | | | | | | | | | | | □ | □ | □ | □ | □ | □ |
| Vibration quantity B ²⁰⁾ | K02 | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Full key balancing | L68 | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Balancing without key | M37 | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft and rotor | | | | | | | | | | | | | | | | | | | | | | |
| Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors ²¹⁾ | K04 | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second standard shaft extension ²²⁾ | K16 | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft extension with standard dimensions without featherkey way | K42 | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Concentricity of shaft extension in accordance with DIN 42955 Tolerance R | L39 | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard cylindrical shaft extension ²³⁾ | Y55 • and identification code | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend, see Page 4/123, for footnotes, see Page 4/124.

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | |
|---|---|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------------------------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 |
| Self-ventilated motors in Zones 2, 21 and 22 with type of protection "n" or protection against dust explosions – Cast-iron series 1LG6 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 1LG6 (cast-iron) | |
| Heating and ventilation | | | | | | | | | | | | | | | |
| Metal external fan ²⁴⁾ | K35 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heater, Ex. 230 V | M15 | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Anti-condensation heater, Ex. 115 V | M14 | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Separately driven fan with non-standard voltage and/or frequency | Y81 • and identification code | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rating plate and extra rating plates | | | | | | | | | | | | | | | |
| Second lubricating plate, supplied loose | B06 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second rating plate, loose | K31 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate or rating plate with deviating rating plate data | Y80 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate with identification code | Y82 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Additional information on rating plate and on package label (maximum of 20 characters) | Y84 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Packaging, safety notes, documentation and test certificates | | | | | | | | | | | | | | | |
| Acceptance test certificate 3.1 according to EN 10204 | B02 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Operating instructions German/English enclosed in print | B23 | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Type test with heat run for horizontal motors, with acceptance | F83 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connected in star for dispatch | M32 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connected in delta for dispatch | M33 | ✓ | ✓ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- O. R. Possible on request
- ✓ With additional charge
- Not possible

IEC Squirrel-Cage Motors

Explosion-proof motors

Special versions

4

- 1) Only permitted for use in accordance with temperature class 130 (B).
- 2) These motors do not have a rated voltage range stamped on the rating plate.
- 3) According to the standard, the motor and converter must be tested as a unit. A "Manufacturer test certificate" is available for a defined spectrum of Siemens motors (frame sizes 63 M to 315 L)/converter. Please inquire in the case of a non-Siemens converter (additional charge).
- 4) With this option, PTC thermistors for temperature class 130 (B) are included. For compliance with temperature class 130 (B), derating is necessary in the case of converter-fed operation in Zones 2, 21 and 22. Derating information is available on request.
- 5) In combination with order codes **D19**, **K30**, **M95**, **M96** and **M97** please inquire. Not possible in combination with order codes **D32**, **K50** and **K52**. Zone 21 takes into account conducting and non-conducting dust.
- 7) Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended. When used in hazardous areas, a certified tripping unit is required. KTY 84-130 and PT 100 are not permitted as sole protection. Full motor protection for mains-fed operation implemented only with PTC thermistors, please inquire.
- 8) For 1LG6 motors, additional charge only applies to Zone 22. Designs for Zones 2 and 21 already have a cable entry in the standard version.
- 9) Standard with designs for Zone 2, Zone 21 and VIK.
- 10) In combination with order codes **C19**, **C26**, **L27**, **M95**, **M96** and **M97** please inquire. Not possible in combination with order code **K16**. Furthermore a combination with protective cover is not possible. Therefore a suitable cover must be implemented by the end user in vertical mounting position to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0).
- 11) In combination with order codes **C19**, **C22**, **C23**, **C24**, **C25**, **C26**, **D19**, **H86**, **K50** and **K52** please inquire. Not possible in combination with order code **K16**. The type of protection of the separately driven fan must correspond to the type of protection of the motor.
- 12) Not necessary for 1LG6 motors because these motors are already noise optimized.
- 13) Order code **K50** (IP65 degree of protection) can only be ordered for Zone 2. For Zone 21, IP65 degree of protection is standard. Not possible for Zone 22, because only IP55 degree of protection is required.
- 14) Order code **K52** IP56 degree of protection (non-heavy-sea) is only possible for Zone 2. Not admissible for Zone 21 (IP65 degree of protection) and Zone 22 (IP55 degree of protection).
- 15) When supplied the condensation drainage holes are sealed at the drive end DE and non-drive end NDE (IP55, IP56, IP65). If condensation drainage holes are required in motors of the IM B6, IM B7 or IM B8 type of construction (feet located on side or top), it is necessary to relocate the bearing plates at the drive end (DE) and non-drive end (NDE) so that the condensation drainage holes situated between the feet on delivery are underneath.
- 16) Not necessary when a rotary pulse encoder is combined with a separately driven fan, because in this case the rotary pulse encoder is installed under the fan cover.
- 17) Not possible in combination with order code **L03**.
- 18) Not possible for 2-pole 1LG6 motors, frame size 315 L in vertical types of construction; bearings for increased cantilever forces at vibration quantity level B available on request for 1LG6 motors. Not possible for 1LG6 motors in the combination "Concentricity of the shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors" – order code **K04**.
- 19) Additional charge for 2-pole motors. With 4-pole to 8-pole motors, standard version.
- 20) Can be combined with deep-groove bearings of series 60.., 62.. and 63... Not possible with parallel roller bearings (e.g. bearings for increased cantilever forces, order code **K20**).
- 21) Not possible in combination with parallel roller bearings (e.g. bearings for increased cantilever forces, order code **K20**).
- 22) Possible for motors of frame size 315 and above in vertical types of construction or 2-pole for version with second shaft extension on request. Version with protective cover not possible.
- 23) When motors which have a longer or shorter shaft extension than normal are ordered, the required position and length of the featherkey way must be specified in a sketch. It must be ensured that only featherkeys in accordance with DIN 6885, Form A are permitted to be used. The featherkey way is positioned centrally on the shaft extension. The length is defined by the manufacturer normatively. Not valid for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The featherkeys are supplied in every case. For order codes **Y55** and **K16**:
– Dimensions D and DA ≤ internal diameter of roller bearing (see dimension tables under "Dimensions")
– Dimensions E and EA ≤ 2 x length E (normal) of the shaft extension
For an explanation of the order codes, see catalog part 0 "Introduction".
- 24) For 1LA5/6/7/9 motors and 1LG with metal external fan, converter-fed operation is permitted. The metal external fan is standard for these motors in the version for Zone 21/22. The metal external fan is not possible in combination with the low-noise version – order code **K37** or **K38**.

Overview

Slide rails with fixing bolts and tensioning screws to DIN 42923

Slide rails are used to tension the belt of a machine easily and conveniently when a belt tightener is not available. They are fixed to the base using stone bolts or foundation blocks.

The assignment of slide rails to motor size can be found in DIN 42923. For motors of frame sizes 355 to 450, there are no standardized slide rails (please inquire).

Available from:

Lütgert & Co. GmbH
Postfach 42 51
33276 Gütersloh, Germany
Tel. +49 (0)5241-7407-0
Fax +49 (0)5241-7407-90

<http://www.luetgert-antriebe.de>
e-mail: info@luetgert-antriebe.de

Foundation block acc. to DIN 799

The foundation blocks are inserted into the stone foundation and embedded in concrete. They are used for fixing machines of medium size, slide rails, pedestal bearings, baseframes, etc. After the fixing bolts have been unscrewed, the machine can be dragged without it having to be lifted.

When the machine is initially installed, the foundation block that is bolted to the machine (without washers) and fitted with taper pins is not embedded with concrete until the machine has been fully aligned. In this case, the machine is positioned 2 to 3 mm lower. The difference in shaft height is compensated by inserting shims on final installation. The taper pins safeguard the exact position of the machine when it is repeatedly removed and replaced without the need for realignment.

Available from:

Lütgert & Co. GmbH
Postfach 42 51
33276 Gütersloh, Germany
Tel. +49 (0)5241-7407-0
Fax +49 (0)5241-7407-90

<http://www.luetgert-antriebe.de>
e-mail: info@luetgert-antriebe.de

Taper pins to DIN 258 with threaded ends and constant taper lengths

Taper pins are used for components that are repeatedly removed. The drilled hole is ground conical using a conical reamer until the pin can be pushed in by hand until the cone shoulder lies 3 to 4 mm above the rim of the hole.

It can then be driven in using a hammer until it is correctly seated. The pin is removed from the drilled hole by screwing on the nut and tightening it.

Standardized taper pins are available from general engineering suppliers.

Source, for example:

Otto Roth GmbH & Co. KG
Rutesheimer Straße 22
70499 Stuttgart, Germany
Tel. +49 (0)7 11-1388-0
Fax +49 (0)7 11-1388-233

<http://www.ottoroth.de>
e-mail: info@ottoroth.de

Couplings for use in hazardous areas

The motor from Siemens is connected to the machine or gear unit through a coupling. Flender is an important coupling manufacturer with a wide range of products. For standard applications, Siemens recommends that elastic couplings of Flender types N-Eupex and Rupex or torsionally rigid couplings of types Arpex and Zapex are used. For special applications, Fludex and Elpex-S couplings are recommended. These coupling types are suitable for use in areas subject to explosion hazards and are offered with declaration of conformity and type test certificate according to directive 94/9/EU.

Source of supply:

Siemens contact partner – ordering from Catalog
Siemens MD 10.1 "FLENDER Standard Couplings"

or

A. Friedr. Flender AG
Kupplungswerk Mussum
Industriepark Bocholt
Schlavenhorst 100
46395 Bocholt, Germany
Tel. +49 (0)2871-92 2185
Fax +49 (0)2871-92 2579

<http://www.flender.com>
e-mail: couplings@flender.com

IEC Squirrel-Cage Motors

Explosion-proof motors

Accessories

More information

Spare motors and repair parts

- Supply commitment for spare motors and repair parts following delivery of the motor
 - For up to 5 years, in the event of total motor failure, Siemens will supply a comparable motor with regard to the mounting dimensions and functions (the type series may vary).
 - Repair parts will be supplied for up to 5 years.
 - For up to 10 years, Siemens will provide information and will, if necessary, supply documentation for repair parts.
- When repair parts are ordered, the following details must be provided:
 - Designation and part number
 - Order No. and factory number of the motor

Example for ordering a fan cover 1LA7,
frame size 160 M, 4-pole:

**Fan cover No. 7.40,
1LA7 163-4AA60, factory number J783298901018**

- For bearing types, see the "Introduction".
- Repair parts for 1MJ6, 1MJ7, 1MJ8, 1MJ1, 1ME8, 1ML8, 1LG8 motors and smoke-extraction motors are available on request.
- For standard components, a supply commitment does not apply.
- Support – Hotline
In Germany
Tel.: 01 80/5 05 04 48

You will find telephone numbers for other countries on our Internet site

<http://www.siemens.com/automation/service&support>

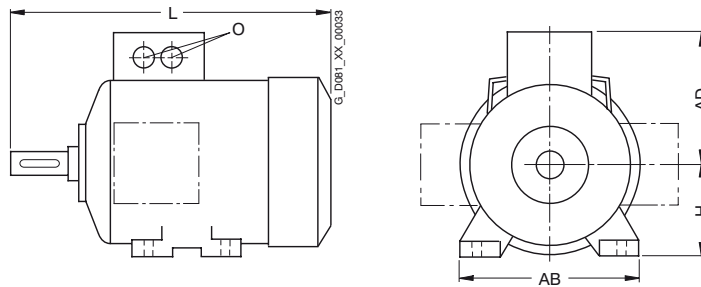
IEC Squirrel-Cage Motors

Explosion-proof motors

Dimensions

Overview

Overall dimensions



| Frame size | Type | Number of poles | Dimensions | | | | | O |
|-----------------|-----------------|-----------------|------------|-------|-----|--------------------------------|--------------------------------|---------------|
| | | | L | AD | H | AB | | |
| 56 M | 1LA7 | | 169 | 101 | 56 | 110 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1LA9 050 | | 169 | 101 | 56 | 110 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1LA9 053 | | 195 | 101 | 56 | 110 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| 63 M | 1LA7 | | 202.5 | 101 | 63 | 120 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1LA9 063 | | 202.5 | 101 | 63 | 120 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1LA9 061 | | 228.5 | 101 | 63 | 120 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1MA7 | | 202.5 | 135 | 63 | 120 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| 71 M | 1LA7 | | 240 | 111 | 71 | 132 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1LA9 | | 240 | 111 | 71 | 132 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1MA7 | | 240 | 145 | 71 | 132 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1MJ6 | | 299 | 201 | 71 | 140 | 1 x M25 x 1.5 1 x M25 x 1.5 | |
| 80 M | 1LA7 | | 273.5 | 120 | 80 | 150 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1LA9 080 | | 273.5 | 120 | 80 | 150 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1LA9 083 | | 308.5 | 120 | 80 | 150 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1MA7 | | 273.5 | 154 | 80 | 150 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1MA7 083-6. | | 308.5 | 154 | 80 | 150 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1MJ6 | | 336 | 209 | 80 | 160 | 1 x M25 x 1.5 1 x M25 x 1.5 | |
| 90 S/ 90 L | 1LA7 | | 331 | 128 | 90 | 165 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1LA9 | | 331 | 128 | 90 | 165 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1LA9 096-6K. | | 376 | 128 | 90 | 165 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1LA9 096-2... | | 358 | 128 | 90 | 165 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1LA9 096-4... | | 358 | 128 | 90 | 165 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1MA7 | | 331 | 162 | 90 | 165 | 1 x M16 x 1.5 1 x M25 x 1.5 | |
| | 1MJ6 | | 383 | 218 | 90 | 168 | 1 x M25 x 1.5 1 x M25 x 1.5 | |
| | 100 L | 1LA6 | | 372 | 164 | 100 | 196 | 2 x M32 x 1.5 |
| | 1LA7 | | 372 | 135 | 100 | 196 | 2 x M32 x 1.5 | |
| | 1LA9 | | 407 | 135 | 100 | 196 | 2 x M32 x 1.5 | |
| | 1LA9 107-4KA. | | 442 | 135 | 100 | 196 | 2 x M32 x 1.5 | |
| | 1MA6 | | 372 | 164 | 100 | 196 | 2 x M32 x 1.5 | |
| | 1MA7 | | 372 | 135 | 100 | 196 | 2 x M32 x 1.5 | |
| | 1MJ6 | | 426 | 223 | 100 | 196 | 2 x M32 x 1.5 1 x M16 x 1.5 | |
| 112 M | 1LA6 | | 393 | 178 | 112 | 226 | 2 x M32 x 1.5 | |
| | 1LA7 | | 393 | 148 | 112 | 226 | 2 x M32 x 1.5 | |
| | 1LA9 | | 431 | 148 | 112 | 226 | 2 x M32 x 1.5 | |
| | 1MA6 | | 393 | 178 | 112 | 226 | 2 x M32 x 1.5 | |
| | 1MA7 | | 393 | 148 | 112 | 226 | 2 x M32 x 1.5 | |
| | 1MJ6 | | 428 | 238 | 112 | 226 | 2 x M32 x 1.5 1 x M16 x 1.5 | |
| | 132 S/ 132 M | 1LA6 | | 453 | 194 | 132 | 256 | 2 x M32 x 1.5 |
| | | 1LA7 | | 452.5 | 167 | 132 | 256 | 2 x M32 x 1.5 |
| | | 1LA9 | | 452.5 | 167 | 132 | 256 | 2 x M32 x 1.5 |
| | | 1LA9 131 | | 490.5 | 167 | 132 | 256 | 2 x M32 x 1.5 |
| 1LA9 133 | | 4 | 490.5 | 167 | 132 | 256 | 2 x M32 x 1.5 | |
| 1LA9 134 | | | 490.5 | 167 | 132 | 256 | 2 x M32 x 1.5 | |
| 1MA6 | | | 453 | 194 | 132 | 256 | 2 x M32 x 1.5 | |
| 1MA7 | | | 452.5 | 167 | 132 | 256 | 2 x M32 x 1.5 | |
| 1MA7 133-4 | | 490 | 167 | 132 | 256 | 2 x M32 x 1.5 | | |
| 1MJ6 | | 515 | 258 | 132 | 256 | 2 x M32 x 1.5 1 x M16 x 1.5 | | |
| 160 M/ 160 L | 1LA6 | | 588 | 226 | 160 | 300 | 2 x M40 x 1.5 | |
| | 1LA7 | | 588 | 197 | 160 | 300 | 2 x M40 x 1.5 | |
| | 1LA9 | | 588 | 197 | 160 | 300 | 2 x M40 x 1.5 | |
| | 1LA9 166 | | 628 | 197 | 160 | 300 | 2 x M40 x 1.5 | |
| | 1MA6 | | 588 | 226 | 160 | 300 | 2 x M40 x 1.5 | |
| | 1MA7 | | 588 | 197 | 160 | 300 | 2 x M40 x 1.5 | |
| | 1MA7 166-4 | | 628 | 197 | 160 | 300 | 2 x M40 x 1.5 | |
| | 1MA7 166-6 | | 628 | 197 | 160 | 300 | 2 x M40 x 1.5 | |
| 1MJ6 | | 641 | 280 | 160 | 300 | 2 x M40 x 1.5 1 x M16 x 1.5 | | |
| 180 M/ 180 L | 1LA5 | | 712 | 258 | 180 | 339 | 2 x M40 x 1.5 | |
| | 1LA9 | | 712 | 258 | 180 | 339 | 2 x M40 x 1.5 | |
| | 1LG4 | | 669 | 262 | 180 | 339 | 2 x M40 x 1.5 | |
| | 1LG4 188 | | 720 | 262 | 180 | 339 | 2 x M40 x 1.5 | |
| | 1LG6 183 | 2 | 720 | 262 | 180 | 339 | 2 x M40 x 1.5 | |
| | 1LG6 183 | 4 | 669 | 262 | 180 | 339 | 2 x M40 x 1.5 | |
| | 1LG6 186 | 4, 6, 8 | 720 | 262 | 180 | 339 | 2 x M40 x 1.5 | |
| 1MJ6 | | 715 | 306 | 180 | 339 | 2 x M40 x 1.5 | | |
| 200 L | 1LA5 | | 769.5 | 305 | 200 | 388 | 2 x M50 x 1.5 | |
| | 1LA9 | | 768.5 | 305 | 200 | 388 | 2 x M50 x 1.5 | |
| | 1LG4 | | 720 | 300 | 200 | 378 | 2 x M50 x 1.5 | |
| | 1LG4 208 | 2, 6 | 777 | 300 | 200 | 378 | 2 x M50 x 1.5 | |
| | 1LG6 206 | | 720 | 300 | 200 | 378 | 2 x M50 x 1.5 | |
| | 1LG6 207 | 2, 6 | 777 | 300 | 200 | 378 | 2 x M50 x 1.5 | |
| | 1LG6 207 | 4, 8 | 720 | 300 | 200 | 378 | 2 x M50 x 1.5 | |
| | 1MJ6 | | 771.5 | 349 | 200 | 398 | 2 x M50 x 1.5 | |

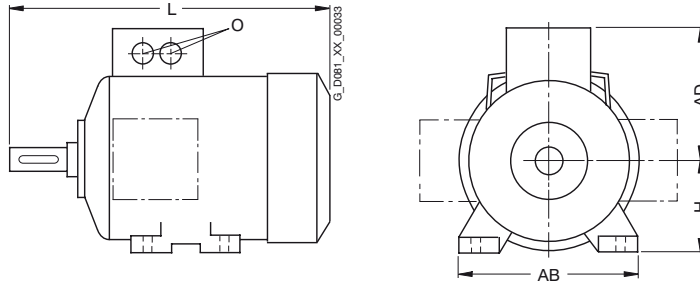
IEC Squirrel-Cage Motors

Explosion-proof motors

Dimensions

Overview (continued)

Overall dimensions



| Frame size | Type | Number of poles | Dimensions | | | | |
|------------|----------|-----------------|------------|-----|-----|-----|---------------|
| | | | L | AD | H | AB | O |
| 225 S/ | 1LA5 | 2 | 806 | 305 | 225 | 426 | 2 x M50 x 1.5 |
| 225 M | 1LA5 | | 776 | 305 | 225 | 426 | 2 x M50 x 1.5 |
| | 1LG4 | 2 | 789 | 325 | 225 | 436 | 2 x M50 x 1.5 |
| | 1LG4 223 | | 759 | 325 | 225 | 436 | 2 x M50 x 1.5 |
| | 1LG4 228 | 2 | 819 | 325 | 225 | 436 | 2 x M50 x 1.5 |
| | 1LG4 228 | 4, 6, 8 | 849 | 325 | 225 | 436 | 2 x M50 x 1.5 |
| | 1LG6 220 | 4, 8 | 789 | 325 | 225 | 436 | 2 x M50 x 1.5 |
| | 1LG6 223 | 2 | 819 | 325 | 225 | 436 | 2 x M50 x 1.5 |
| | 1LG6 223 | 4, 6, 8 | 849 | 325 | 225 | 436 | 2 x M50 x 1.5 |
| | 1LG6 228 | 2 | 869 | 325 | 225 | 436 | 2 x M50 x 1.5 |
| | 1LG6 228 | 4, 6 | 899 | 325 | 225 | 436 | 2 x M50 x 1.5 |
| | 1MJ7 | 2 | 839 | 377 | 225 | 436 | 2 x M50 x 1.5 |
| | 1MJ7 223 | | 809 | 377 | 225 | 436 | 2 x M50 x 1.5 |
| 250 M | 1LG4 | 4 | 887 | 392 | 250 | 490 | 2 x M63 x 1.5 |
| | 1LG4 258 | | 957 | 392 | 250 | 490 | 2 x M63 x 1.5 |
| | 1LG6 253 | 2, 6, 8 | 887 | 392 | 250 | 490 | 2 x M63 x 1.5 |
| | 1LG6 253 | 4 | 957 | 392 | 250 | 490 | 2 x M63 x 1.5 |
| | 1LG6 258 | 2, 4, 6 | 957 | 392 | 250 | 490 | 2 x M63 x 1.5 |
| | 1MJ7 | 2 | 930 | 466 | 250 | 506 | 2 x M63 x 1.5 |
| | 1MJ7 | | 930 | 466 | 250 | 506 | 2 x M63 x 1.5 |
| 280 S/ | 1LG4 | 2, 4 | 960 | 432 | 280 | 540 | 2 x M63 x 1.5 |
| 280 M | 1LG4 288 | | 1070 | 432 | 280 | 540 | 2 x M63 x 1.5 |
| | 1LG6 280 | 2, 4, 6, 8 | 960 | 432 | 280 | 540 | 2 x M63 x 1.5 |
| | 1LG6 283 | 2, 4 | 1070 | 432 | 280 | 540 | 2 x M63 x 1.5 |
| | 1LG6 283 | 6, 8 | 960 | 432 | 280 | 540 | 2 x M63 x 1.5 |
| | 1LG6 288 | 2, 4, 6 | 1070 | 432 | 280 | 540 | 2 x M63 x 1.5 |
| | 1MJ7 | 2 | 1010 | 491 | 280 | 557 | 2 x M63 x 1.5 |
| | 1MJ7 | | 1010 | 491 | 280 | 557 | 2 x M63 x 1.5 |
| 315 S/ | 1LG4 | 4, 6, 8 | 1072 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| 315 M/ | 1LG4 310 | | 1102 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| 315 L | 1LG4 313 | 4, 6, 8 | 1102 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG4 316 | 2 | 1232 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG4 316 | 4, 6, 8 | 1262 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG4 317 | 2 | 1232 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG4 317 | 4, 6, 8 | 1262 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG4 318 | 8 | 1262 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG4 318 | 6 | 1402 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 310 | 2 | 1072 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 310 | 4, 6, 8 | 1102 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 313 | 2 | 1232 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 313 | 4, 6 | 1262 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 313 | 8 | 1102 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 316 | 2 | 1232 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 316 | 4, 6, 8 | 1262 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 317 | 2 | 1372 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 317 | 4, 6 | 1402 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 317 | 8 | 1262 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 318 | 2 | 1372 | 651 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 318 | 4 | 1402 | 651 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 318 | 6, 8 | 1402 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1MJ7 | 2 | 1114 | 558 | 315 | 628 | 2 x M63 x 1.5 |
| | 1MJ7 | 4, 6, 8 | 1140 | 558 | 315 | 628 | 2 x M63 x 1.5 |

Overview (continued)

Notes on the dimensions

■ Dimension designations according to DIN EN 50347 and IEC 60072.

■ Fits

The shaft extensions specified in the dimension tables (DIN 748) and centering spigot diameters (DIN EN 50347) are machined with the following fits:

| Dimension designation | ISO fit DIN ISO 286-2 | |
|-----------------------|-----------------------|-----|
| D, DA | up to 30 | j6 |
| | over 30 to 50 | k6 |
| | over 50 | m6 |
| N | up to 250 | j6 |
| | over 250 | h6 |
| F, FA | | h9 |
| K | | H17 |
| S | flange (FF) | H17 |

The drilled holes of couplings and belt pulleys should have an ISO fit of at least H7.

■ Dimension tolerances

For the following dimensions, the admissible deviations are given below:

| Dimension designation | Dimension | Admissible deviation |
|-----------------------|-----------|----------------------|
| H | up to 250 | - 0.5 |
| | over 250 | - 1.0 |
| E, EA | | - 0.5 |

Keyways and feather keyways (dimensions GA, GC, F and FA) are made in compliance with DIN 6885 Part 1.

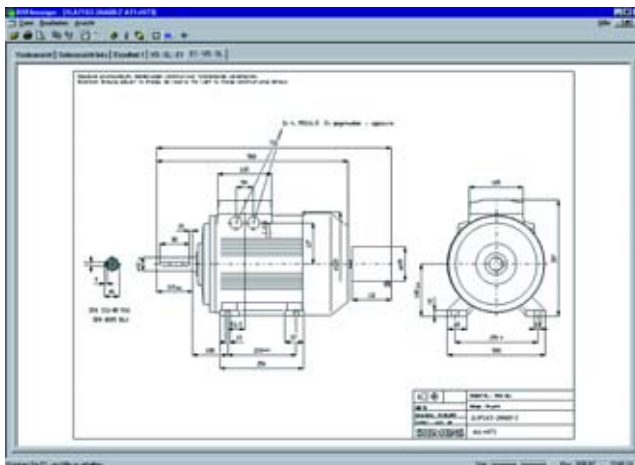
■ All dimensions are specified in mm.

More information

Dimension sheet generator

(part of the SD configurator)

A dimension drawing can be created in the SD configurator for every configurable motor. A dimension drawing can be requested for every other motor.



When a complete Order No. is entered with or without order codes, a dimension drawing can be called up under the "Documentation" tab.

These dimension drawings can be presented in different views and sections and printed.

The corresponding dimension sheets can be exported, saved and processed further in DXF format (interchange/import format for CAD systems) or as bitmap graphics.

The SD configurator has been integrated into the electronic Catalog CA 01 as a selection aid (for more information, see catalog part 11 "Appendix", "Selection tool SD-configurator").

The interactive Catalog CA 01 can be ordered from your local Siemens sales representative or on the Internet at

<http://www.siemens.com/automation/CA01>

At this address, you will also find links to Tips & Tricks and to downloads for function or content updates.

Order number for CA 01 10/2008, English International:
DVD: E86060-D4001-A510-C7-7600

IEC Squirrel-Cage Motors

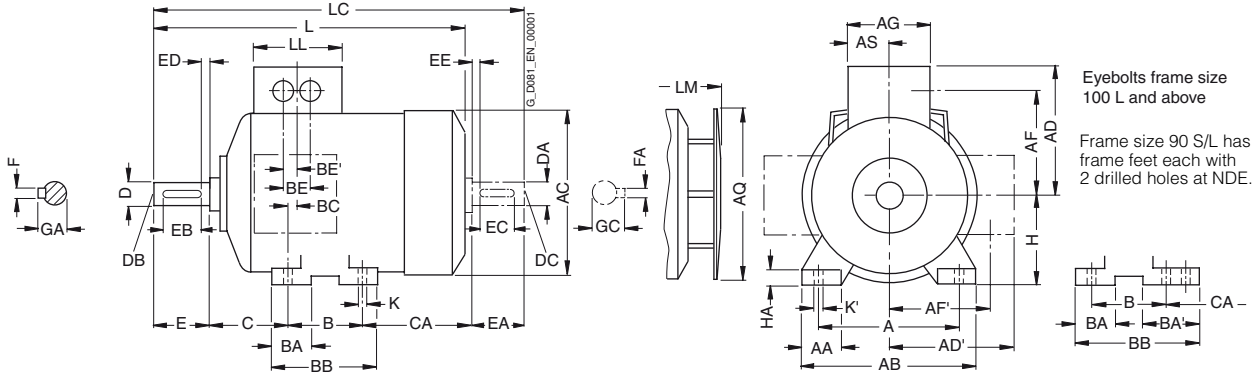
Explosion-proof motors

Dimensions

Dimensional drawings

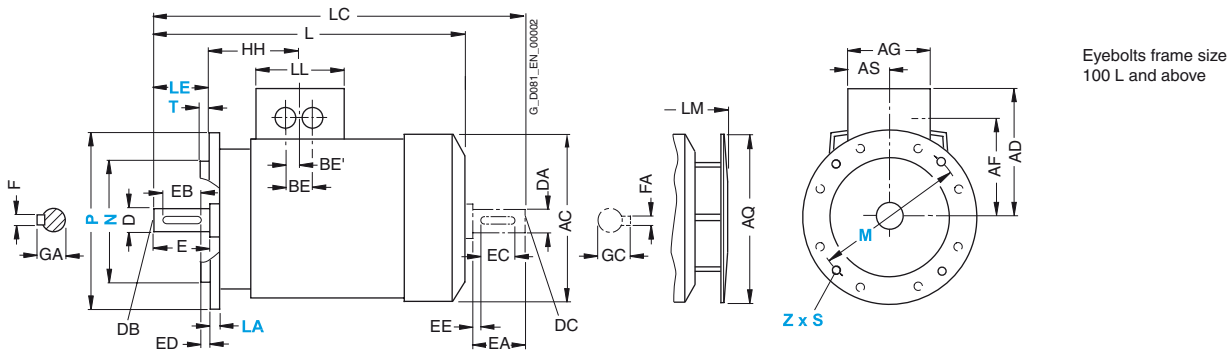
Aluminum series 1MA7, frame sizes 63 M to 160 L

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 4/152 (Z = the number of retaining holes)



| For motor | | | Dimension designation acc. to IEC | | | | | | | | | | | | | | | | | | | | | |
|--------------|----------------------|--------------------|-----------------------------------|------|-----|------------------|-----|-----|-----|-----|-----|-----|------|------------|----|-----|-----|------|----|-----|-----|------------------------------|-----|----|
| Frame size | Type | Number of poles | A | AA | AB | AC ¹⁾ | AD | AD' | AF | AF' | AG | AQ | AS | B* | BA | BA' | BB | BC | BE | BE' | C | CA* | H | HA |
| 63 M | 1MA7 060 1MA7 063 | 2, 4, 6 | 100 | 27 | 120 | 124 | 135 | 101 | 95 | 78 | 120 | 124 | 60 | 80 | 28 | - | 96 | 52.5 | 32 | 16 | 40 | 66 | 63 | 7 |
| 71 M | 1MA7 070 1MA7 073 | 2, 4, 6, 8 | 112 | 27 | 132 | 145 | 145 | 111 | 105 | 88 | 120 | 124 | 60 | 90 | 27 | - | 106 | 41.5 | 32 | 16 | 45 | 83 | 71 | 7 |
| 80 M | 1MA7 080 1MA7 083 | 2, 4, 6, 8 | 125 | 30.5 | 150 | 163 | 154 | 154 | 114 | 114 | 120 | 124 | 60 | 100 | 32 | - | 118 | 36 | 32 | 16 | 50 | 94 134 ²⁾ | 80 | 8 |
| 90 S 90 L | 1MA7 090 1MA7 096 | 2, 4, 6, 8 | 140 | 30.5 | 165 | 180 | 162 | 162 | 122 | 122 | 120 | 170 | 60 | 100 125 | 33 | 54 | 143 | 46 | 32 | 16 | 56 | 143 118 | 90 | 10 |
| 100 L | 1MA7 106 1MA7 107 | 2, 4, 6, 8 4, 8 | 160 | 42 | 196 | 203 | 135 | 163 | 78 | 123 | 120 | 170 | 60 | 140 | 47 | - | 176 | 39 | 42 | 21 | 63 | 125 | 100 | 12 |
| 112 M | 1MA7 113 | 2, 4, 6, 8 | 190 | 46 | 226 | 227 | 148 | 176 | 91 | 136 | 120 | 170 | 60 | 140 | 47 | - | 176 | 32 | 42 | 21 | 70 | 141 | 112 | 12 |
| 132 S | 1MA7 130 1MA7 131 | 2, 4, 6, 8 2 | 216 | 53 | 256 | 267 | 167 | 194 | 107 | 154 | 140 | 250 | 70 | 140 | 49 | - | 180 | 39 | 42 | 21 | 89 | 162.5 | 132 | 15 |
| 132 M | 1MA7 133 1MA7 134 | 4, 6, 8 6 | 216 | 53 | 256 | 267 | 167 | 194 | 107 | 154 | 140 | 250 | 70 | 178 | 49 | - | 218 | 39 | 42 | 21 | 89 | 124.5 162.5 ³⁾ | 132 | 15 |
| 160 M | 1MA7 163 1MA7 164 | 2, 4, 6, 8 2, 8 | 254 | 60 | 300 | 320 | 197 | 226 | 127 | 183 | 165 | 250 | 82.5 | 210 | 57 | - | 256 | 52.5 | 54 | 27 | 108 | 183 | 160 | 18 |
| 160 L | 1MA7 166 | 2, 4, 6, 8 | 254 | 60 | 300 | 320 | 197 | 226 | 127 | 183 | 165 | 250 | 82.5 | 254 | 57 | - | 300 | 52.5 | 54 | 27 | 108 | 139 179 ⁴⁾ | 160 | 18 |

* This dimension is assigned in DIN EN 50347 to the frame size listed.

1) Measured across the bolt heads.

2) For 1MA7 083-6.

3) For 1MA7 133-4.

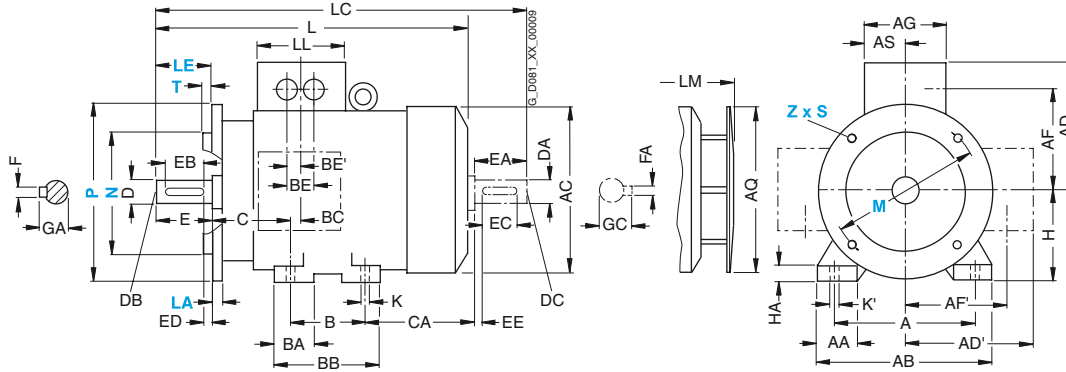
4) For 1MA7 166-4 and 1MA7 166-6.

Dimensional drawings

Cast-iron series 1MA6, frame sizes 100 L to 160 L

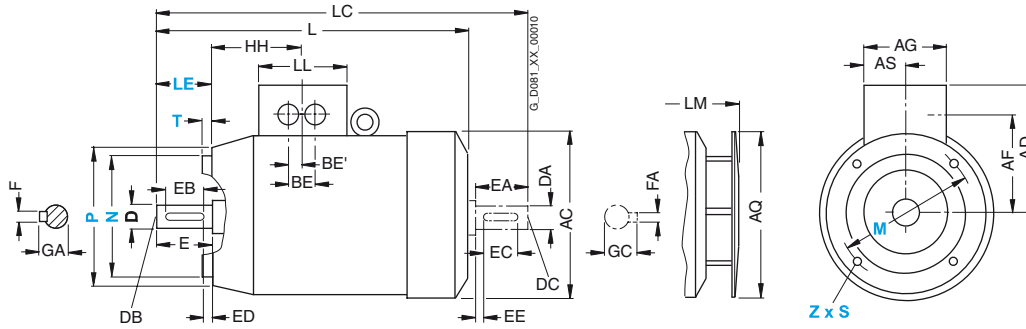
Type of construction IM B35

For flange dimensions, see Page 4/152 (Z = the number of retaining holes)



Type of construction IM B14

For flange dimensions, see Page 4/152 (Z = the number of retaining holes)



| For motor Frame size | Type | Number of poles | Dimension designation acc. to IEC | | | | | | | | DE shaft extension | | | | | NDE shaft extension | | | | | | | |
|-------------------------|----------------------|--------------------|-----------------------------------|------|----|-------|-------|-----|-------|----|--------------------|-----|----|----|----|---------------------|----|-----|-----|----|----|----|----|
| | | | HH | K | K' | L | LC | LL | LM | D | DB | E | EB | ED | F | GA | DA | DC | EA | EC | EE | FA | GC |
| 100 L | 1MA6 106 1MA6 107 | 2, 4, 6, 8 4, 8 | 104.5 | 12 | 16 | 372 | 438 | 121 | 423.5 | 28 | M10 | 60 | 50 | 5 | 8 | 31 | 24 | M8 | 50 | 40 | 5 | 8 | 27 |
| 112 M | 1MA6 113 | 2, 4, 6, 8 | 104.5 | 12 | 16 | 393 | 461 | 121 | 444.5 | 28 | M10 | 60 | 50 | 5 | 8 | 31 | 24 | M8 | 50 | 40 | 5 | 8 | 27 |
| 132 S | 1MA6 130 1MA6 131 | 2, 4, 6, 8 2 | 130.5 | 12 | 16 | 453.5 | 551.5 | 141 | 506 | 38 | M12 | 80 | 70 | 5 | 10 | 41 | 38 | M12 | 80 | 70 | 5 | 10 | 41 |
| 132 M | 1MA6 133 1MA6 134 | 4, 6, 8 6 | 130.5 | 12 | 16 | 453.5 | 551.5 | 141 | 506 | 38 | M12 | 80 | 70 | 5 | 10 | 41 | 38 | M12 | 80 | 70 | 5 | 10 | 41 |
| 160 M | 1MA6 163 1MA6 164 | 2, 4, 6, 8 2, 8 | 160 | 14.5 | 18 | 588 | 721 | 166 | 640.5 | 42 | M16 | 110 | 90 | 10 | 12 | 45 | 42 | M16 | 110 | 90 | 10 | 12 | 45 |
| 160 L | 1MA6 166 | 2, 4, 6, 8 | 160 | 14.5 | 18 | 588 | 721 | 166 | 640.5 | 42 | M16 | 110 | 90 | 10 | 12 | 45 | 42 | M16 | 110 | 90 | 10 | 12 | 45 |

IEC Squirrel-Cage Motors Explosion-proof motors

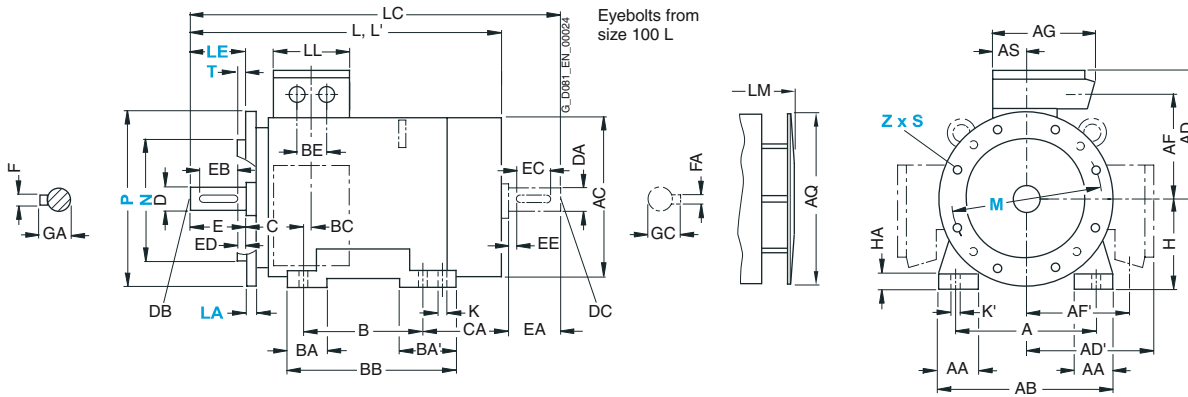
Dimensions

Dimensional drawings

Cast-iron series 1MA6, frame sizes 180 M to 315 L

Type of construction IM B35

For flange dimensions, see Page 4/152 (Z = the number of retaining holes)



| For motor | | Dimension designation acc. to IEC | | | | | | | | | | DE shaft extension | | | | | NDE shaft extension | | | | | | | | |
|------------|----------|-----------------------------------|-----|----|----|-------|------------------|-------------------|-----|-------|-------------------|--------------------|-----|-----|-----|----|---------------------|------|----|-----|-----|-----|----|----|-------|
| Frame size | Type | Number of poles | HH | K | K' | L | L ⁽¹⁾ | LC ⁽²⁾ | LL | LM | LM ⁽¹⁾ | D | DB | E | EB | ED | F | GA | DA | DC | EA | EC | EE | FA | GC |
| 180 M | 1MA6 183 | 2 | 156 | 15 | 20 | 715 | 770 | 841 | 164 | 796.5 | 855 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| | | 4 | | | | | | | | | | | | | | | | | | | | | | | |
| 180 L | 1MA6 186 | 4, 6, 8 | 156 | 15 | 20 | 715 | — | 841 | 164 | 796.5 | — | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| 200 L | 1MA6 206 | 2 | 175 | 19 | 25 | | 819.5 | 897 | 197 | 853 | 901 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| | | 6 | | | | 771.5 | — | | | | | | | | | | | | 55 | M20 | | | | | 16 59 |
| | 1MA6 207 | 2 | 175 | 19 | 25 | 771.5 | 819.5 | 897 | 197 | 853 | 901 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| | | 4, 6, 8 | | | | | | | | | | | | | | | | | 55 | M20 | | | | | 16 59 |
| 225 S | 1MA6 220 | 4, 8 | 174 | 19 | 25 | 839 | — | 954 | 200 | 935 | — | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 10 | 16 | 59 |
| 225 M | 1MA6 223 | 2 | 174 | 19 | 25 | 809 | 855 | 924 | 200 | 909 | 955 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| | | 4, 6, 8 | | | | 839 | — | 954 | | 935 | — | 60 | | 140 | 125 | 10 | 18 | 64 | 55 | M20 | | 100 | 10 | 16 | 59 |
| 250 M | 1MA6 253 | 2 | 207 | 24 | 30 | 935 | 1010 | 1050 | 234 | 1035 | 1110 | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| | | 4, 6, 8 | | | | | — | 1080 | | | — | 65 | | | | | | 69 | 60 | | 140 | 125 | | 18 | 64 |
| 280 S | 1MA6 280 | 2 | 220 | 24 | 30 | 1010 | 1080 | 1155 | 234 | 1120 | 1230 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 4, 6, 8 | | | | | — | | | | 75 | | | | | | 20 | 79.5 | 65 | | | | | 69 | |
| 280 M | 1MA6 283 | 2 | 220 | 24 | 30 | 1010 | 1080 | 1155 | 234 | 1120 | 1230 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 4, 6, 8 | | | | | — | | | | 75 | | | | | | 20 | 79.5 | 65 | | | | | 69 | |
| 315 S | 1MA6 310 | 2 | 248 | 28 | 35 | 1114 | 1185 | 1260 | 266 | 1224 | 1295 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 4, 6, 8 | | | | 1144 | — | 1290 | | 1254 | — | 80 | | 170 | 140 | | 22 | 85 | 70 | | | | | 20 | 74.5 |
| 315 M | 1MA6 313 | 2 | 248 | 28 | 35 | 1114 | 1185 | 1260 | 266 | 1224 | 1295 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 4, 6, 8 | | | | 1144 | — | 1290 | | 1254 | — | 80 | | 170 | 140 | | 22 | 85 | 70 | | | | | 20 | 74.5 |
| 315 L | 1MA6 316 | 2 | 248 | 28 | 35 | 1254 | 1325 | 1400 | 266 | 1364 | 1435 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | 1MA6 317 | 4, 6, 8 | | | | 1284 | — | 1430 | | 1394 | — | 80 | | 170 | 140 | | 22 | 85 | 70 | | | | | 20 | 74.5 |
| | 1MA6 318 | 6, 8 | | | | 1284 | — | 1430 | | 1394 | — | 80 | | 170 | 140 | | 22 | 85 | 70 | | | | | 20 | 74.5 |

1) For version with low-noise fan.

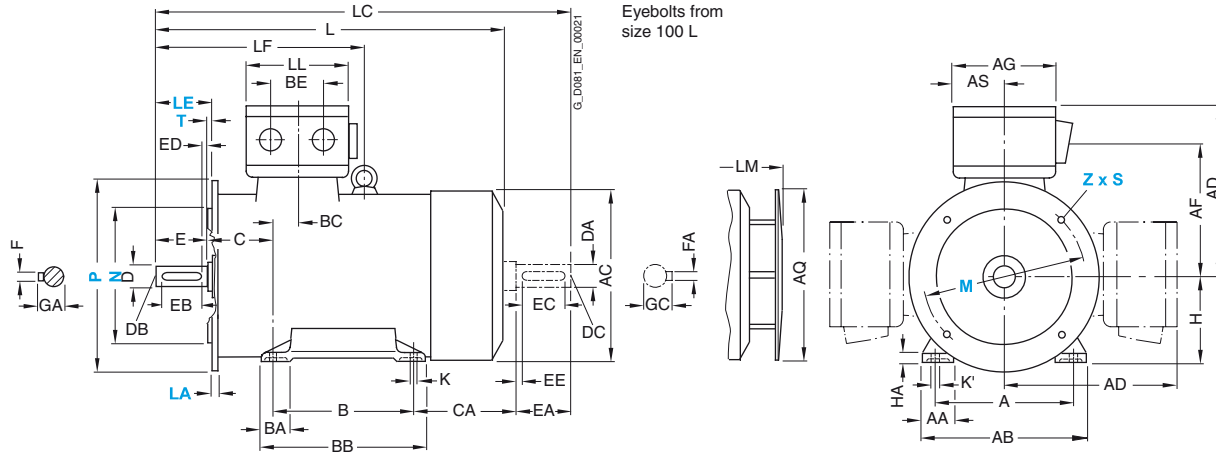
2) In the low-noise version, a second shaft extension is not possible.

Dimensional drawings

Cast-iron series 1MJ6, frame sizes 71 M to 160 L

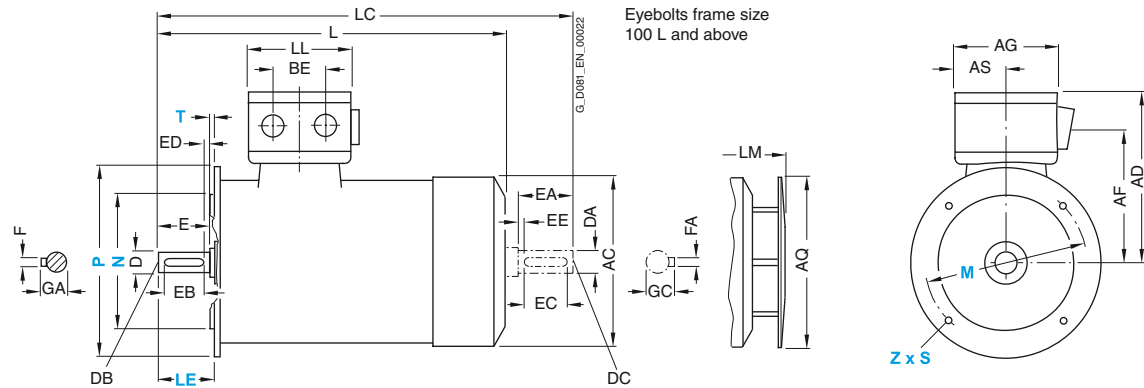
Type of construction IM B35

For flange dimensions, see Page 4/152 (Z = the number of retaining holes)



Type of construction IM B14 – only for frame sizes 71 M to 90 L

For flange dimensions, see Page 4/152 (Z = the number of retaining holes)



| For motor Frame size | Type | Number of poles | Dimension designation acc. to IEC | | | | | | | | | | DE shaft extension | | | | | | | NDE shaft extension | | | | | | |
|-------------------------|----------|-----------------|-----------------------------------|-----|-----|-------|----|-----|-----|----|----|----|--------------------|----|-----|-----|----|----|----|---------------------|--|--|--|--|--|--|
| | | | LC | LF | LL | LM | D | DB | E | EB | ED | F | GA | DA | DC | EA | EC | EE | FA | GC | | | | | | |
| 71 M | 1MJ6 070 | 2, 4 | 339 | - | 132 | 327 | 14 | M5 | 30 | 22 | 4 | 5 | 16 | 14 | M5 | 30 | 22 | 4 | 5 | 16 | | | | | | |
| | 1MJ6 073 | 2, 4, 6 | | | | | | | | | | | | | | | | | | | | | | | | |
| 80 M | 1MJ6 080 | 2, 4, 6 | 386 | - | 132 | 362 | 19 | M6 | 40 | 32 | 4 | 6 | 21.5 | 19 | M6 | 40 | 32 | 4 | 6 | 21.5 | | | | | | |
| | 1MJ6 083 | 2, 4, 6 | | | | | | | | | | | | | | | | | | | | | | | | |
| 90 L | 1MJ6 096 | 2, 4, 6, 8 | 458 | - | 162 | 434.5 | 24 | M8 | 50 | 40 | 5 | 8 | 27 | 24 | M8 | 50 | 40 | 5 | 8 | 27 | | | | | | |
| | 1MJ6 097 | 2, 4, 6, 8 | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 L | 1MJ6 106 | 2, 4, 6, 8 | 508 | - | 162 | 477.5 | 28 | M10 | 60 | 50 | 5 | 8 | 31 | 28 | M10 | 60 | 50 | 5 | 8 | 31 | | | | | | |
| | 1MJ6 107 | 4, 8 | | | | | | | | | | | | | | | | | | | | | | | | |
| 112 M | 1MJ6 113 | 2, 4, 6, 8 | 510 | - | 162 | 479.5 | 28 | M10 | 60 | 50 | 5 | 8 | 31 | 28 | M10 | 60 | 50 | 5 | 8 | 31 | | | | | | |
| 132 S | 1MJ6 130 | 2, 4, 6, 8 | 617 | - | 162 | 567.5 | 38 | M12 | 80 | 70 | 5 | 10 | 41 | 38 | M12 | 80 | 70 | 5 | 10 | 41 | | | | | | |
| | 1MJ6 131 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| 132 M | 1MJ6 133 | 4, 6, 8 | 617 | - | 162 | 567.5 | 38 | M12 | 80 | 70 | 5 | 10 | 41 | 38 | M12 | 80 | 70 | 5 | 10 | 41 | | | | | | |
| | 1MJ6 134 | 6 | | | | | | | | | | | | | | | | | | | | | | | | |
| 160 M | 1MJ6 163 | 2, 4, 6, 8 | 776 | 383 | 162 | 693.5 | 42 | M16 | 110 | 90 | 10 | 12 | 45 | 42 | M16 | 110 | 90 | 10 | 12 | 45 | | | | | | |
| | 1MJ6 164 | 2, 8 | | | | | | | | | | | | | | | | | | | | | | | | |
| 160 L | 1MJ6 166 | 2, 4, 6, 8 | 776 | 383 | 190 | 693.5 | 42 | M16 | 110 | 90 | 10 | 12 | 45 | 42 | M16 | 110 | 90 | 10 | 12 | 45 | | | | | | |

IEC Squirrel-Cage Motors

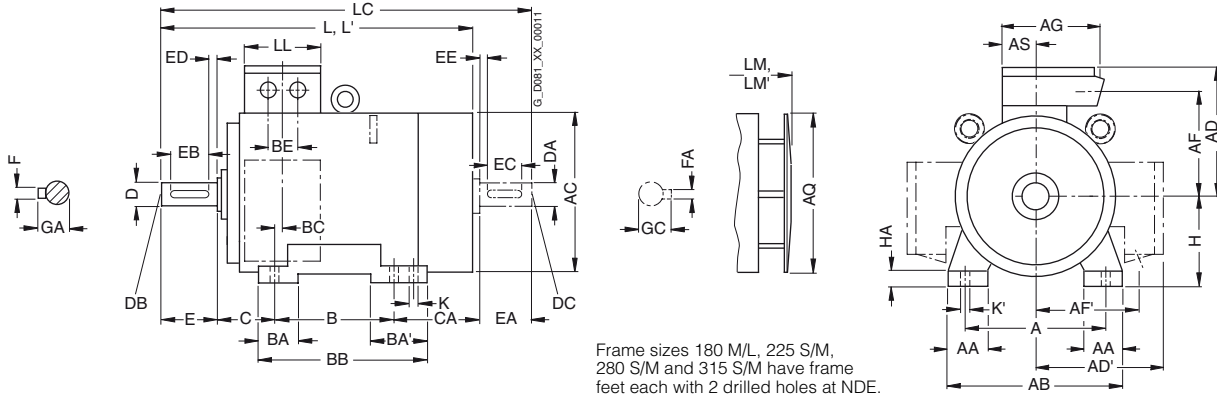
Explosion-proof motors

Dimensions

Dimensional drawings

Cast-iron series 1MJ6 and 1MJ7, frame sizes 180 M to 315 M

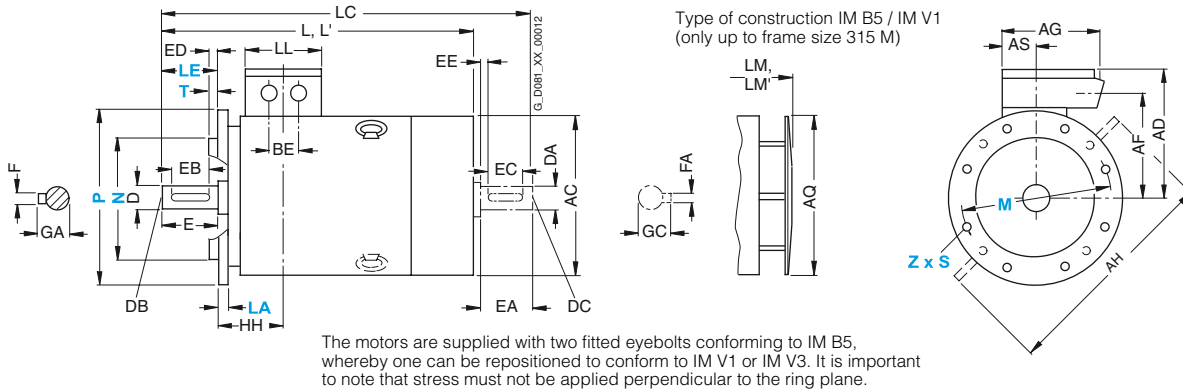
Type of construction IM B3



4

Types of construction IM B5 and IM V1

For flange dimensions, see Page 4/152 (Z = the number of retaining holes)



| For motor | | | Dimension designation acc. to IEC | | | | | | | | | | | | | | | | | | | | | | |
|------------|----------|-----------------|-----------------------------------|-----|-----|------------------|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|
| Frame size | Type | Number of poles | A | AA | AB | AC ¹⁾ | AD | AD' | AF | AF' | AG | AH | AQ | AS | B* | BA | BA' | BB | BC | BE | C | CA* | H | HH | HA |
| 180 M | 1MJ6 183 | 2, 4 | 279 | 65 | 344 | 375 | 306 | 306 | 259 | 259 | 220 | 470 | 340 | 82 | 241 | 70 | 108 | 319 | 35 | 75 | 121 | 259 | 180 | 156 | 26 |
| 180 L | 1MJ6 186 | 4, 6, 8 | 279 | 65 | 344 | 375 | 306 | 306 | 259 | 259 | 220 | 470 | 340 | 82 | 279 | 70 | 108 | 319 | 35 | 75 | 121 | 221 | 180 | 156 | 26 |
| 200 L | 1MJ6 206 | 2 | 318 | 80 | 398 | 415 | 349 | 349 | 289 | 289 | 262 | 530 | 340 | 98.5 | 305 | 85 | 85 | 355 | 42 | 85 | 133 | 239 | 200 | 175 | 34 |
| | 1MJ6 207 | 2 | 318 | 80 | 398 | 415 | 349 | 349 | 289 | 289 | 262 | 530 | 340 | 98.5 | 305 | 85 | 85 | 355 | 42 | 85 | 133 | 239 | 200 | 175 | 34 |
| 225 S | 1MJ7 220 | 4, 8 | 356 | 80 | 436 | 442 | 377 | 377 | 315 | 315 | 262 | 580 | 425 | 100 | 286 | 85 | 110 | 361 | 25 | 90 | 149 | 269 | 225 | 174 | 34 |
| | 225 M | 1MJ7 223 | 2 | 356 | 80 | 436 | 442 | 377 | 377 | 315 | 315 | 262 | 580 | 425 | 100 | 311 | 85 | 110 | 361 | 25 | 90 | 149 | 244 | 225 | 174 |
| 250 M | 1MJ7 253 | 2 | 406 | 100 | 506 | 505 | 466 | 466 | 353 | 353 | 336 | 645 | 470 | 120 | 349 | 100 | 100 | 409 | 39 | 95 | 168 | 283 | 250 | 207 | 42 |
| | 1MJ7 280 | 2 | 457 | 100 | 557 | 555 | 491 | 491 | 395 | 395 | 336 | 700 | 525 | 120 | 368 | 100 | 151 | 479 | 30 | 95 | 190 | 317 | 280 | 220 | 42 |
| 280 M | 1MJ7 283 | 2 | 457 | 100 | 557 | 555 | 491 | 491 | 395 | 395 | 336 | 700 | 525 | 120 | 419 | 100 | 151 | 479 | 30 | 95 | 190 | 266 | 280 | 220 | 42 |
| | 1MJ7 283 | 4, 6, 8 | 457 | 100 | 557 | 555 | 491 | 491 | 395 | 395 | 336 | 700 | 525 | 120 | 419 | 100 | 151 | 479 | 30 | 95 | 190 | 266 | 280 | 220 | 42 |
| 315 S | 1MJ7 310 | 2 | 508 | 120 | 628 | 620 | 558 | 558 | 448 | 448 | 410 | 805 | 590 | 135 | 406 | 125 | 171 | 527 | 32 | 90 | 216 | 358 | 315 | 248 | 56 |
| | 1MJ7 310 | 4, 6, 8 | 508 | 120 | 628 | 620 | 558 | 558 | 448 | 448 | 410 | 805 | 590 | 135 | 406 | 125 | 171 | 527 | 32 | 90 | 216 | 358 | 315 | 248 | 56 |
| 315 M | 1MJ7 313 | 2 | 508 | 120 | 628 | 620 | 558 | 558 | 448 | 448 | 410 | 805 | 590 | 135 | 457 | 125 | 171 | 527 | 32 | 90 | 216 | 307 | 315 | 248 | 56 |
| | 1MJ7 313 | 4, 6, 8 | 508 | 120 | 628 | 620 | 558 | 558 | 448 | 448 | 410 | 805 | 590 | 135 | 457 | 125 | 171 | 527 | 32 | 90 | 216 | 307 | 315 | 248 | 56 |

* This dimension is assigned in DIN EN 50347 to the frame size listed.

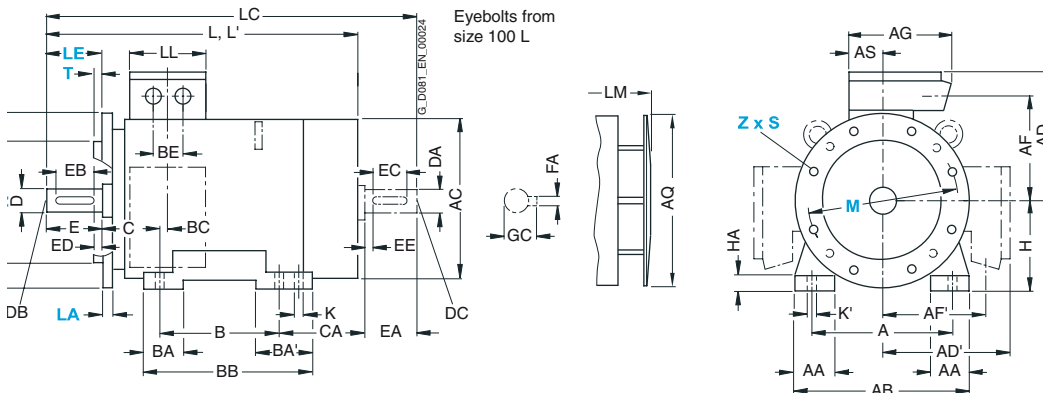
¹⁾ Measured across the bolt heads.

Dimensional drawings

Cast-iron series 1MJ6 and 1MJ7, frame sizes 180 M to 315 M

Type of construction IM B35

For flange dimensions, see Page 4/152 (Z = the number of retaining holes)



| For motor | | Number of poles | Dimension designation acc. to IEC | | | | | | | | DE shaft extension | | | | | | NDE shaft extension | | | | | | | |
|------------|----------|-----------------|-----------------------------------|----|-------|------------------|-------------------|-----|-------|-------------------|--------------------|-----|-----|-----|----|----|---------------------|----|-----|-----|-----|----|----|---------|
| Frame size | Type | | K | K' | L | L ⁽¹⁾ | LC ⁽²⁾ | LL | LM | LM ⁽¹⁾ | D | DB | E | EB | ED | F | GA | DA | DC | EA | EC | EE | FA | GC |
| 180 M | 1MJ6 183 | 2, 4 | 15 | 20 | 715 | 770 | 841 | 164 | 796.5 | 885 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| 180 L | 1MJ6 186 | 4, 6, 8 | 15 | 20 | 715 | – | 841 | 164 | 796.5 | – | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| 200 L | 1MJ6 206 | 2 | 19 | 25 | 771.5 | 825 | 897 | 197 | 853 | 910 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| | 1MJ6 207 | 6 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 55 | M20 | – | – | – | – | 16 59 |
| | | 2 | 19 | 25 | 771.5 | 825 | 897 | 197 | 853 | 910 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| | | 4, 6, 8 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 55 | M20 | – | – | – | – | 16 59 |
| 225 S | 1MJ7 220 | 4, 8 | 19 | 25 | 839 | – | 954 | 197 | 939 | – | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| 225 M | 1MJ7 223 | 2 | 19 | 25 | 809 | 855 | 924 | 197 | 909 | 955 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| | | 4, 6, 8 | – | – | 839 | – | 954 | – | 939 | – | 60 | – | 140 | 125 | 10 | 18 | 64 | 55 | M20 | – | – | – | – | 16 59 |
| 250 M | 1MJ7 253 | 2 | 24 | 30 | 930 | 1010 | 1050 | 234 | 1035 | 1110 | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| | | 4, 6, 8 | – | – | – | – | 1080 | – | – | – | 65 | – | – | – | – | 18 | 69 | 60 | – | 140 | 125 | 10 | 18 | 64 |
| 280 S | 1MJ7 280 | 2 | 24 | 30 | 1010 | 1080 | 1155 | 234 | 1120 | 1230 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 4, 6, 8 | – | – | – | – | – | – | – | – | 75 | – | – | – | – | 20 | 79.5 | 65 | – | – | – | – | – | 69 |
| 280 M | 1MJ7 283 | 2 | 24 | 30 | 1010 | 1080 | 1155 | 234 | 1120 | 1230 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 4, 6, 8 | – | – | – | – | – | – | – | – | 75 | – | – | – | – | 20 | 79.5 | 65 | – | – | – | – | – | 69 |
| 315 S | 1MJ7 310 | 2 | 28 | 35 | 1114 | 1185 | 1260 | 266 | 1224 | 1295 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 4, 6, 8 | – | – | 1140 | – | 1290 | – | 1250 | – | 80 | – | 170 | 140 | – | 22 | 85 | 70 | – | – | – | – | – | 20 74.5 |
| 315 M | 1MJ7 313 | 2 | 28 | 35 | 1114 | 1185 | 1260 | 266 | 1224 | 1295 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 4, 6, 8 | – | – | 1140 | – | 1290 | – | 1250 | – | 80 | – | 170 | 140 | – | 22 | 85 | 70 | – | – | – | – | – | 20 74.5 |

¹⁾ For version with low-noise fan.

²⁾ In the low-noise version, a second shaft extension is not possible.

IEC Squirrel-Cage Motors

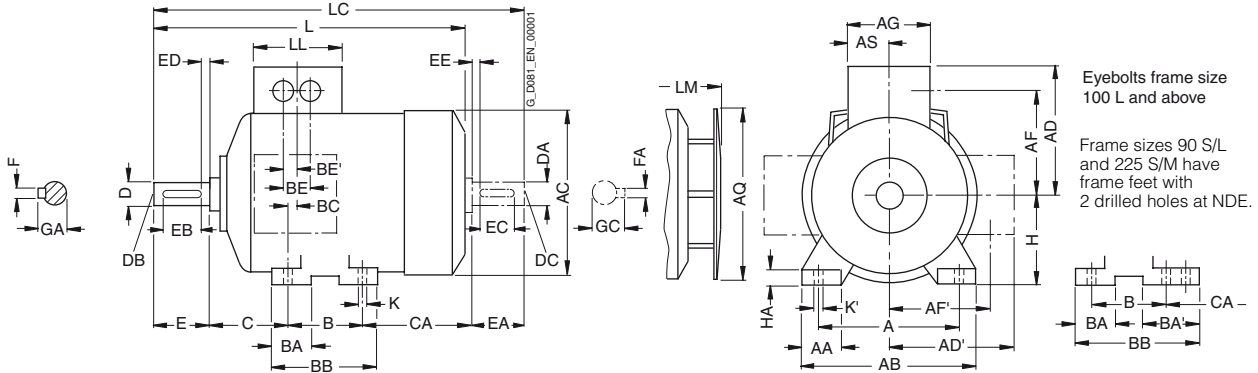
Explosion-proof motors

Dimensions

Dimensional drawings

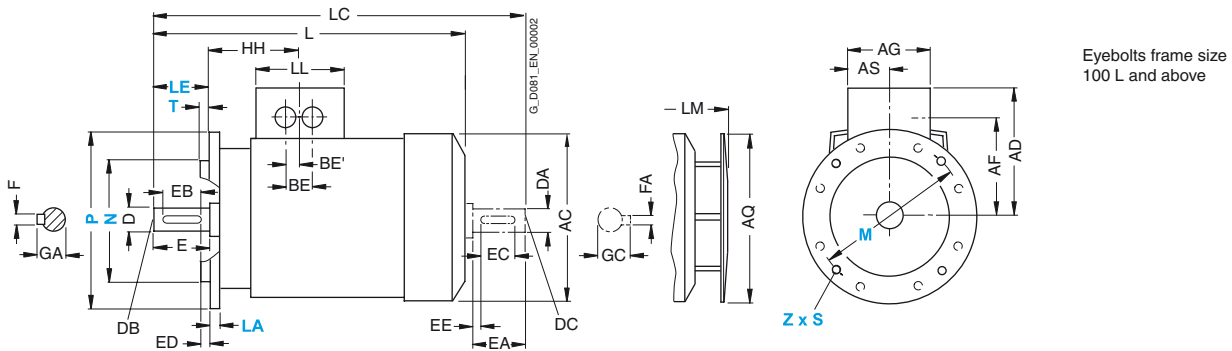
Aluminum series 1LA7 and 1LA5, frame sizes 56 M to 225 M

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 4/152 (Z = the number of retaining holes)



| For motor | | Dimension designation acc. to IEC | | | | | | | | | | | | | | | | | | | | | | |
|--------------------|---------------------------|-----------------------------------|-----|------|-----|------------------|-----|-----|-----|-----|-----|-----|------|------------|------|-----|-----|------|----|------|-----|------------|-----|----|
| Frame size | Type | Number of poles | A | AA | AB | AC ¹⁾ | AD | AD' | AF | AF' | AG | AQ | AS | B* | BA | BA' | BB | BC | BE | BE' | C | CA* | H | HA |
| 56 M ²⁾ | 1LA7 050 1LA7 053 | 2, 4 | 90 | 25 | 110 | 116 | 135 | 135 | 95 | 95 | 120 | - | 37 | 71 | 28 | - | 87 | 56 | 32 | 18 | 36 | 53 | 56 | 6 |
| 63 M | 1LA7 060 1LA7 063 | 2, 4, 6 | 100 | 27 | 120 | 124 | 135 | 135 | 95 | 95 | 120 | 124 | 37 | 80 | 28 | - | 96 | 52 | 32 | 18 | 40 | 66 | 63 | 7 |
| 71 M | 1LA7 070 1LA7 073 | 2, 4, 6, 8 | 112 | 27 | 132 | 145 | 145 | 145 | 105 | 105 | 120 | 124 | 37 | 90 | 27 | - | 106 | 41 | 32 | 18 | 45 | 83 | 71 | 7 |
| 80 M | 1LA7 080 1LA7 083 | 2, 4, 6, 8 | 125 | 30.5 | 150 | 163 | 154 | 154 | 114 | 114 | 120 | 124 | 37.5 | 100 | 32 | - | 118 | 36 | 32 | 18 | 50 | 94 | 80 | 8 |
| 90 S 90 L | 1LA7 090 1LA7 096 | 2, 4, 6, 8 | 140 | 30.5 | 165 | 180 | 162 | 162 | 122 | 122 | 120 | 170 | 37.5 | 100 125 | 33 | 54 | 143 | 45.5 | 32 | 18 | 56 | 143 118 | 90 | 10 |
| 100 L | 1LA7 106 1LA7 107 | 2, 4, 6, 8 4, 8 | 160 | 42 | 196 | 203 | 135 | 163 | 78 | 123 | 120 | 170 | 60 | 140 | 47 | - | 176 | 39 | 42 | 21 | 63 | 125 | 100 | 12 |
| 112 M | 1LA7 113 | 2, 4, 6, 8 | 190 | 46 | 226 | 227 | 148 | 176 | 91 | 136 | 120 | 170 | 60 | 140 | 47 | - | 176 | 32 | 42 | 21 | 70 | 141 | 112 | 12 |
| 132 S | 1LA7 130 1LA7 131 2 | 2, 4, 6, 8 | 216 | 53 | 256 | 267 | 167 | 194 | 107 | 154 | 140 | 250 | 70 | 140 | 49 | - | 180 | 39 | 42 | 21 | 89 | 162.5 | 132 | 15 |
| 132 M | 1LA7 133 1LA7 134 | 4, 6, 8 6 | 216 | 53 | 256 | 267 | 167 | 194 | 107 | 154 | 140 | 250 | 70 | 178 | 49 | - | 218 | 39 | 42 | 21 | 89 | 124.5 | 132 | 15 |
| 160 M | 1LA7 163 1LA7 164 | 2, 4, 6, 8 2, 8 | 254 | 60 | 300 | 320 | 197 | 226 | 127 | 183 | 165 | 250 | 82.5 | 210 | 57 | - | 256 | 52.5 | 54 | 27 | 108 | 183 | 160 | 18 |
| 160 L | 1LA7 166 | 2, 4, 6, 8 | 254 | 60 | 300 | 320 | 197 | 226 | 127 | 183 | 165 | 250 | 82.5 | 254 | 57 | - | 300 | 52.5 | 54 | 27 | 108 | 139 | 160 | 18 |
| 180 M | 1LA5 183 | 2, 4 | 279 | 69.5 | 339 | 363 | 258 | 258 | 216 | 216 | 152 | 340 | 71 | 241 | 50 | - | 287 | 38 | 54 | 27 | 121 | 259 | 180 | 18 |
| 180 L | 1LA5 186 | 4, 6, 8 | 279 | 69.5 | 339 | 363 | 258 | 258 | 216 | 216 | 152 | 340 | 71 | 279 | 50 | - | 325 | 38 | 54 | 27 | 121 | 221 | 180 | 18 |
| 200 L | 1LA5 206 1LA5 207 | 2, 6 2, 4, 6, 8 | 318 | 83 | 388 | 402 | 305 | 305 | 252 | 252 | 260 | 340 | 96 | 305 | 58.5 | - | 355 | 45 | 85 | 42.5 | 133 | 239 | 200 | 24 |
| 225 S | 1LA5 220 | 4, 8 | 356 | 103 | 426 | 402 | 305 | 305 | 252 | 252 | 260 | 340 | 96 | 286 | 58 | 83 | 361 | 36 | 85 | 42.5 | 149 | 248.5 | 225 | 24 |
| 225 M | 1LA5 223 | 2 4, 6, 8 | 356 | 103 | 426 | 402 | 305 | 305 | 252 | 252 | 260 | 340 | 96 | 311 | 58 | 83 | 361 | 36 | 85 | 42.5 | 149 | 223.5 | 225 | 24 |

* This dimension is assigned in DIN EN 50347 to the frame size listed.

²⁾ The motors of frame size 56 M are not ventilated.

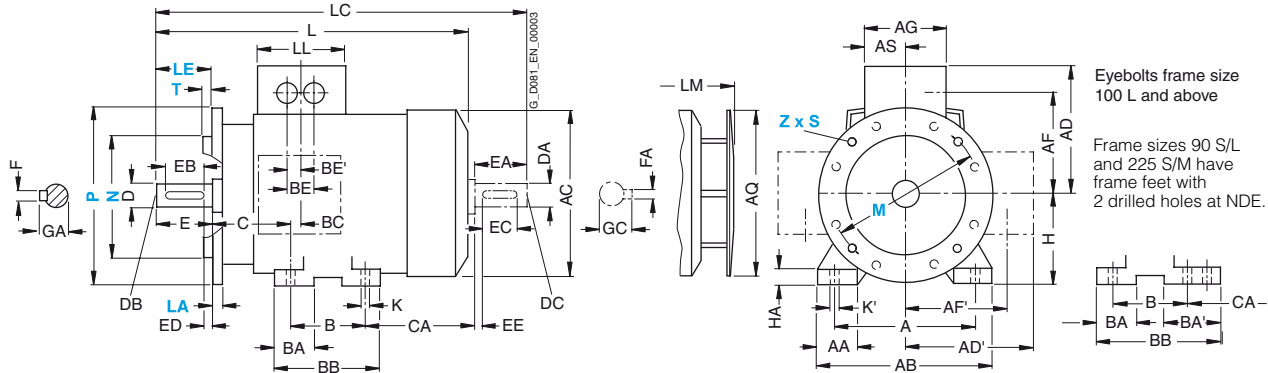
¹⁾ Measured across the bolt heads.

Dimensional drawings

Aluminum series 1LA7 and 1LA5, frame sizes 56 M to 225 M

Type of construction IM B35

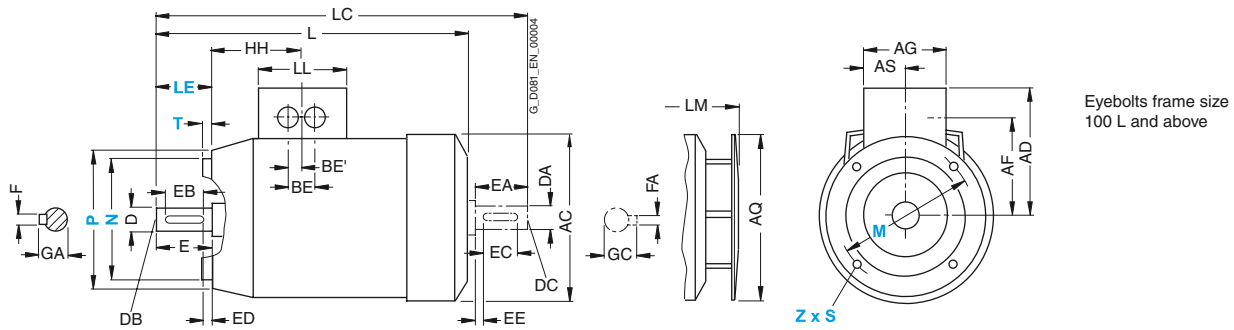
For flange dimensions, see Page 4/152 (Z = the number of retaining holes)



Type of construction IM B14

Type of construction IM B14 not possible for 1LA5 motors, frame sizes 180 M to 225 M

For flange dimensions, see Page 4/152 (Z = the number of retaining holes)



| For motor | | Dimension designation acc. to IEC | | | | | | | | DE shaft extension | | | | | NDE shaft extension | | | | | | | | |
|--------------------|--------------------------------|-----------------------------------|-------|-----|------|---------------------|-------------------|-----|---------------------|--------------------|-----|------------|------------|----------|---------------------|----------|----|-----|-----|-----|-----|----|------|
| Frame size | Type | Number of poles | HH | K | K' | L | LC | LL | LM | D | DB | E | EB | ED | F | GA | DA | DC | EA | EC | EE | FA | GC |
| 56 M ¹⁾ | 1LA7 050 1LA7 053 | 2, 4 | 69.5 | 5.8 | 9 | 169 | 200 | 120 | - | 9 | M3 | 20 | 14 | 3 | 3 | 10.2 | 9 | M3 | 20 | 14 | 3 | 3 | 10.2 |
| 63 M | 1LA7 060 1LA7 063 | 2, 4, 6 | 69.5 | 7 | 10 | 202.5 ²⁾ | 232 ²⁾ | 120 | 231.5 ²⁾ | 11 | M4 | 23 | 16 | 3.5 | 4 | 12.5 | 11 | M4 | 23 | 16 | 3.5 | 4 | 12.5 |
| 71 M | 1LA7 070 1LA7 073 | 2, 4, 6, 8 | 63.5 | 7 | 10 | 240 | 278 | 120 | 268 | 14 | M5 | 30 | 22 | 4 | 5 | 16 | 14 | M5 | 30 | 22 | 4 | 5 | 16 |
| 80 M | 1LA7 080 1LA7 083 | 2, 4, 6, 8 | 63.5 | 9.5 | 13.5 | 273.5 | 324 364 | 120 | 299.5 | 19 | M6 | 40 | 32 | 4 | 6 | 21.5 | 19 | M6 | 40 | 32 | 4 | 6 | 21.5 |
| 90 S 90 L | 1LA7 090 1LA7 096 | 2, 4, 6, 8 | 79 | 10 | 14 | 331 | 389 | 120 | 382.5 | 24 | M8 | 50 | 40 | 5 | 8 | 27 | 19 | M6 | 40 | 32 | 4 | 6 | 21.5 |
| 100 L | 1LA7 106 1LA7 107 | 2, 4, 6, 8 4, 8 | 102 | 12 | 16 | 372 | 438 | 120 | 423.5 | 28 | M10 | 60 | 50 | 5 | 8 | 31 | 24 | M8 | 50 | 40 | 5 | 8 | 27 |
| 112 M | 1LA7 113 | 2, 4, 6, 8 | 102 | 12 | 16 | 393 | 461 | 120 | 444.5 | 28 | M10 | 60 | 50 | 5 | 8 | 31 | 24 | M8 | 50 | 40 | 5 | 8 | 27 |
| 132 S | 1LA7 130 1LA7 131 2 | 2, 4, 6, 8 | 128 | 12 | 16 | 452.5 ³⁾ | 551.5 | 140 | 505 ³⁾ | 38 | M12 | 80 | 70 | 5 | 10 | 41 | 38 | M12 | 80 | 70 | 5 | 10 | 41 |
| 132 M | 1LA7 133 4 1LA7 134 6 | 4, 6, 8 | 128 | 12 | 16 | 452.5 ³⁾ | 551.5 | 140 | 505 ³⁾ | 38 | M12 | 80 | 70 | 5 | 10 | 41 | 38 | M12 | 80 | 70 | 5 | 10 | 41 |
| 160 M | 1LA7 163 1LA7 164 2, 8 | 2, 4, 6, 8 2, 8 | 160.5 | 15 | 19 | 588 | 721 | 165 | 640.5 | 42 | M16 | 110 | 90 | 10 | 12 | 45 | 42 | M16 | 110 | 90 | 10 | 12 | 45 |
| 160 L | 1LA7 166 | 2, 4, 6, 8 | 160.5 | 15 | 19 | 588 | 721 | 165 | 640.5 | 42 | M16 | 110 | 90 | 10 | 12 | 45 | 42 | M16 | 110 | 90 | 10 | 12 | 45 |
| 180 M | 1LA5 183 | 2, 4 | 159 | 15 | 19 | 712 | 841 | 132 | 793.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| 180 L | 1LA5 186 | 4, 6, 8 | 159 | 15 | 19 | 712 | 841 | 132 | 793.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| 200 L | 1LA5 206 1LA5 207 | 2, 6 2, 4, 6, 8 | 178 | 19 | 25 | 769.5 | 897 | 192 | 850 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| 225 S | 1LA5 220 | 4, 8 | 184.5 | 19 | 25 | 806 | 933.5 | 192 | 887.5 | 60 | M20 | 140 | 125 | 7.5 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| 225 M | 1LA5 223 | 2 4, 6, 8 | 184.5 | 19 | 25 | 776 806 | 903.5 933.5 | 192 | 857.5 887.5 | 55 60 | M20 | 110 140 | 100 125 | 5 7.5 | 16 18 | 59 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |

¹⁾ The motors of frame size 56 M are not ventilated.

²⁾ For 1LA7 063 with type of construction code 1 (B5, IM V1 without protective cover, IM V3) the dimensions L, LC and LM are 26 mm longer.

³⁾ In a low-noise version, the dimension L is 8 mm greater and the dimension LM is 11.5 mm greater.

IEC Squirrel-Cage Motors

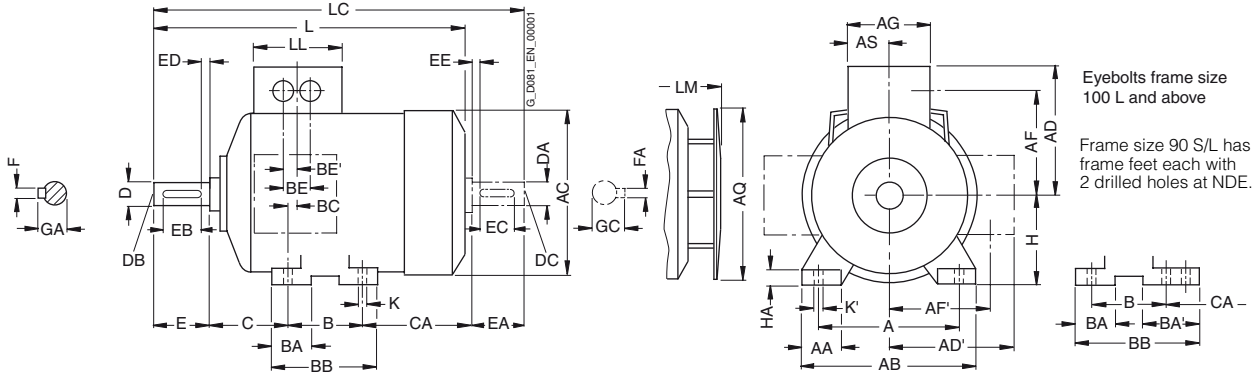
Explosion-proof motors

Dimensions

Dimensional drawings

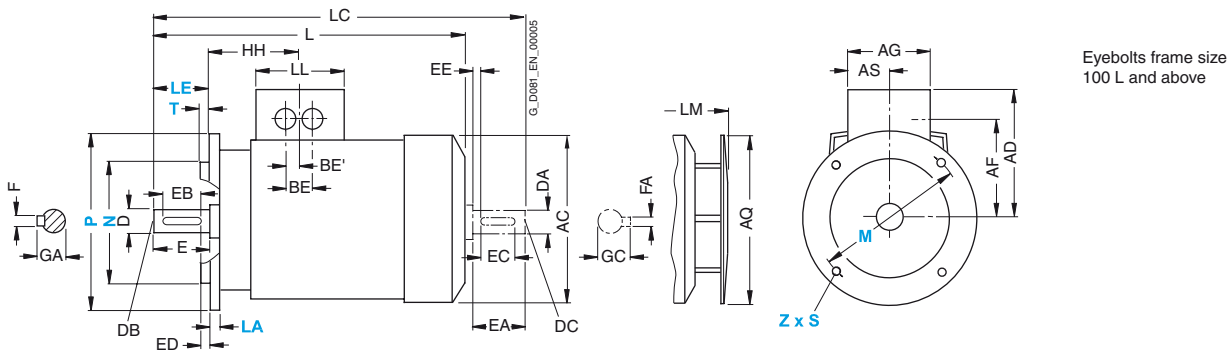
Aluminum series 1LA9, frame sizes 56 M to 200 L

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 4/152 (Z = the number of retaining holes)



| For motor | | Dimension designation acc. to IEC | | | | | | | | | | | | | | | | | | | | | | |
|--------------------|----------|-----------------------------------|-----|------|-----|------------------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|-----|------|----|------|-----|-------|-----|----|
| Frame size | Type | Number of poles | A | AA | AB | AC ¹⁾ | AD | AD' | AF | AF' | AG | AQ | AS | B* | BA | BA' | BB | BC | BE | BE' | C | CA* | H | HA |
| 56 M ²⁾ | 1LA9 050 | 2, 4 | 90 | 25 | 110 | 116 | 135 | 135 | 95 | 95 | 120 | - | 37 | 71 | 28 | - | 87 | 56 | 32 | 18 | 36 | 53 | 56 | 6 |
| | 1LA9 053 | | | | | | | | | | | | | | | | | | | | | | | |
| 63 M | 1LA9 060 | 2, 4 | 100 | 27 | 120 | 124 | 135 | 135 | 95 | 95 | 120 | 124 | 37 | 80 | 28 | - | 96 | 52 | 32 | 18 | 40 | 66 | 63 | 7 |
| | 1LA9 063 | | | | | | | | | | | | | | | | | | | | | | | |
| 71 M | 1LA9 070 | 2, 4 | 112 | 30.5 | 132 | 145 | 145 | 145 | 105 | 105 | 120 | 124 | 37 | 90 | 27 | - | 106 | 41 | 32 | 18 | 45 | 83 | 71 | 7 |
| | 1LA9 073 | | | | | | | | | | | | | | | | | | | | | | | |
| 80 M | 1LA9 080 | 2, 4 | 125 | 30.5 | 150 | 163 | 154 | 154 | 114 | 114 | 120 | 124 | 37.5 | 100 | 32 | - | 118 | 36 | 32 | 18 | 50 | 94 | 80 | 8 |
| | 1LA9 083 | | | | | | | | | | | | | | | | | | | | | | | |
| 90 S | 1LA9 090 | 2, 4, 6 | 140 | 30.5 | 165 | 180 | 162 | 162 | 122 | 122 | 120 | 170 | 37.5 | 100 | 33 | 54 | 143 | 45.5 | 32 | 18 | 56 | 143 | 90 | 10 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 L | 1LA9 106 | 2, 4, 6 | 160 | 42 | 196 | 203 | 135 | 163 | 78 | 123 | 120 | 170 | 60 | 140 | 47 | - | 176 | 39 | 42 | 21 | 63 | 160 | 100 | 12 |
| | 1LA9 107 | | | | | | | | | | | | | | | | | | | | | | | |
| 112 M | 1LA9 113 | 2, 4, 6 | 190 | 46 | 226 | 227 | 148 | 176 | 91 | 136 | 120 | 170 | 60 | 140 | 47 | - | 176 | 32 | 42 | 21 | 70 | 179 | 112 | 12 |
| 132 S | 1LA9 130 | 2, 4 | 216 | 53 | 256 | 267 | 167 | 194 | 107 | 154 | 140 | 250 | 70 | 140 | 49 | - | 180 | 39 | 42 | 21 | 89 | 162.5 | 132 | 15 |
| | 1LA9 131 | | | | | | | | | | | | | | | | | | | | | | | |
| 132 M | 1LA9 133 | 2 | 216 | 53 | 256 | 267 | 167 | 194 | 107 | 154 | 140 | 250 | 70 | 178 | 49 | - | 218 | 39 | 42 | 21 | 89 | 124.5 | 132 | 15 |
| | 1LA9 133 | 4 | | | | | | | | | | | | | | | | | | | | | | |
| | 1LA9 134 | 6 | | | | | | | | | | | | | | | | | | | | | | |
| 160 M | 1LA9 163 | 2, 4, 6 | 254 | 60 | 300 | 320 | 197 | 226 | 127 | 183 | 165 | 250 | 82.5 | 210 | 57 | - | 256 | 52.5 | 54 | 27 | 108 | 183 | 160 | 18 |
| | 1LA9 164 | | | | | | | | | | | | | | | | | | | | | | | |
| 160 L | 1LA9 166 | 2, 4, 6 | 254 | 60 | 300 | 320 | 197 | 226 | 127 | 183 | 165 | 250 | 82.5 | 254 | 57 | - | 300 | 52.5 | 54 | 27 | 108 | 179 | 160 | 18 |
| 180 M | 1LA9 183 | 2, 4 | 279 | 69.5 | 339 | 363 | 258 | 258 | 216 | 216 | 152 | 340 | 71 | 241 | 50 | - | 287 | 38 | 54 | 27 | 121 | 259 | 180 | 18 |
| 180 L | 1LA9 186 | 4, 6 | 279 | 69.5 | 339 | 363 | 258 | 258 | 216 | 216 | 152 | 340 | 71 | 279 | 50 | - | 325 | 38 | 54 | 27 | 121 | 221 | 180 | 18 |
| 200 L | 1LA9 206 | 2, 6 | 318 | 83 | 388 | 402 | 305 | 305 | 252 | 252 | 260 | 340 | 96 | 305 | 58.5 | - | 355 | 45 | 85 | 42.5 | 133 | 239 | 200 | 24 |
| | 1LA9 207 | 2, 4, 6 | | | | | | | | | | | | | | | | | | | | | | |

* This dimension is assigned in DIN EN 50347 to the frame size listed.

¹⁾ Measured across the bolt heads.

²⁾ The motors of frame size 56 M are not ventilated. Frame size 56 M is not available in IM B35.

³⁾ For 1LA9 107-4KA.

IEC Squirrel-Cage Motors

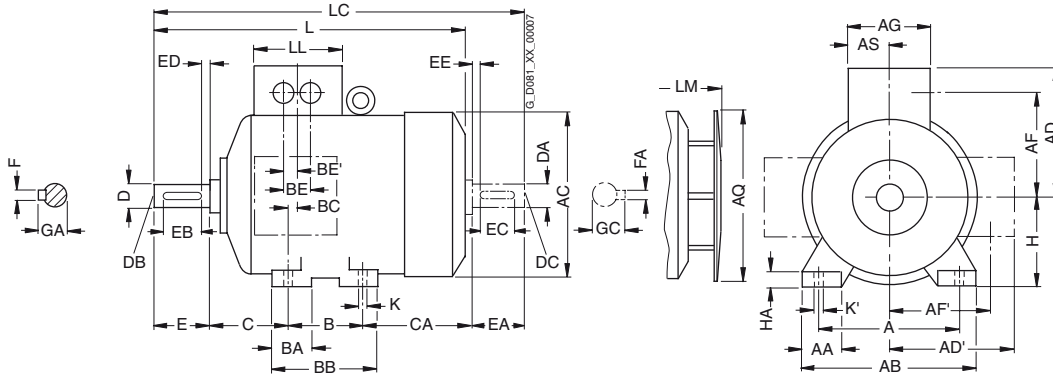
Explosion-proof motors

Dimensions

Dimensional drawings

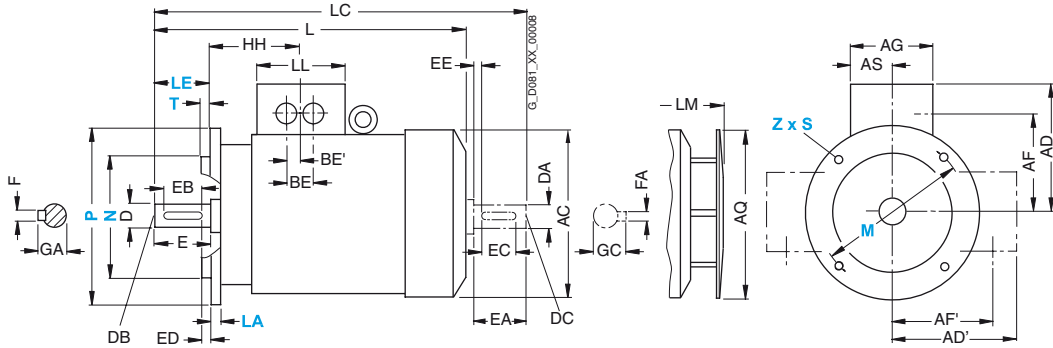
Cast-iron series 1LA6, frame sizes 100 L to 160 L

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 4/152 (Z = the number of retaining holes)



4

| For motor | | | Dimension designation acc. to IEC | | | | | | | | | | | | | | | | | | | | |
|------------|----------|-----------------|-----------------------------------|------|-----|------------------|-----|-----|-----|-----|-----|-----|------|-----|----|-----|----|----|-----|-----|-------|-----|----|
| Frame size | Type | Number of poles | A | AA | AB | AC ¹⁾ | AD | AD' | AF | AF' | AG | AQ | AS | B | BA | BB | BC | BE | BE' | C | CA | H | HA |
| 100 L | 1LA6 106 | 2, 4, 6, 8 | 160 | 40 | 196 | 201 | 164 | 164 | 124 | 124 | 121 | 170 | 60.5 | 140 | 46 | 180 | 42 | 44 | 22 | 63 | 125 | 100 | 12 |
| | 1LA6 107 | 4, 8 | | | | | | | | | | | | | | | | | | | | | |
| 112 M | 1LA6 113 | 2, 4, 6, 8 | 190 | 42.5 | 226 | 225.5 | 178 | 178 | 138 | 138 | 121 | 170 | 60.5 | 140 | 46 | 180 | 34 | 44 | 22 | 70 | 141 | 112 | 15 |
| 132 S | 1LA6 130 | 2, 4, 6, 8 | 216 | 50 | 256 | 265 | 194 | 194 | 154 | 154 | 141 | 250 | 70.5 | 140 | 47 | 180 | 42 | 44 | 22 | 89 | 162.5 | 132 | 17 |
| | 1LA6 131 | 2 | | | | | | | | | | | | | | | | | | | | | |
| 132 M | 1LA6 133 | 4, 6, 8 | 216 | 50 | 256 | 265 | 194 | 194 | 154 | 154 | 141 | 250 | 70.5 | 178 | 49 | 218 | 42 | 44 | 22 | 89 | 124.5 | 132 | 17 |
| | 1LA6 134 | 6 | | | | | | | | | | | | | | | | | | | | | |
| 160 M | 1LA6 163 | 2, 4, 6, 8 | 254 | 60 | 300 | 320 | 226 | 226 | 183 | 183 | 166 | 250 | 83 | 210 | 63 | 256 | 52 | 54 | 27 | 108 | 183 | 160 | 18 |
| | 1LA6 164 | 2, 8 | | | | | | | | | | | | | | | | | | | | | |
| 160 L | 1LA6 166 | 2, 4, 6, 8 | 254 | 60 | 300 | 320 | 226 | 226 | 183 | 183 | 166 | 250 | 83 | 254 | 63 | 300 | 52 | 54 | 27 | 108 | 139 | 160 | 18 |

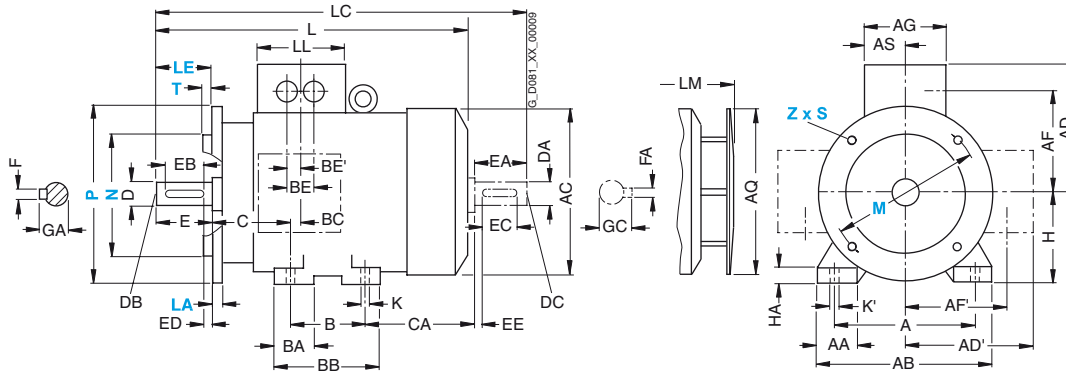
¹⁾ Measured across the bolt heads.

Dimensional drawings

Cast-iron series 1LA6, frame sizes 100 L to 160 L

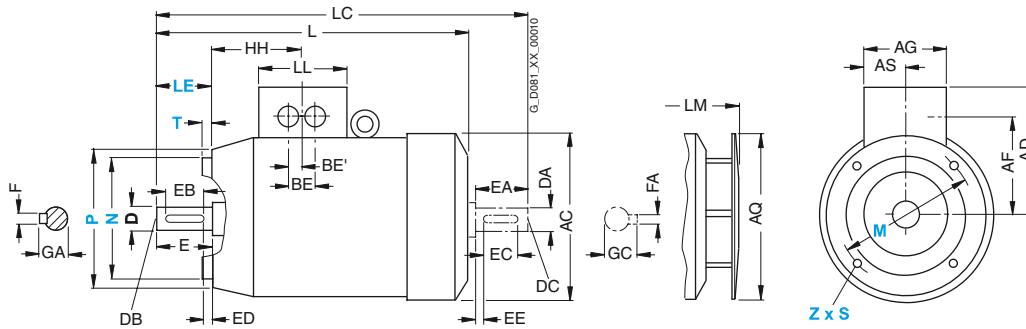
Type of construction IM B35

For flange dimensions, see Page 4/152 (Z = the number of retaining holes)



Types of construction IM B14

For flange dimensions, see Page 4/152 (Z = the number of retaining holes)



| For motor | | Number of poles | Dimension designation acc. to IEC | | | | | | | DE shaft extension | | | | | NDE shaft extension | | | | | | | | |
|------------|----------|-----------------|-----------------------------------|------|----|-------|-------|-----|-------|--------------------|-----|-----|----|----|---------------------|----|----|-----|-----|----|----|----|----|
| Frame size | Type | | HH | K | K' | L | LC | LL | LM | D | DB | E | EB | ED | F | GA | DA | DC | EA | EC | EE | FA | GC |
| 100 L | 1LA6 106 | 2, 4, 6, 8 | 104.5 | 12 | 16 | 372 | 438 | 121 | 423.5 | 28 | M10 | 60 | 50 | 5 | 8 | 31 | 24 | M8 | 50 | 40 | 5 | 8 | 27 |
| | 1LA6 107 | 4, 8 | | | | | | | | | | | | | | | | | | | | | |
| 112 M | 1LA6 113 | 2, 4, 6, 8 | 104.5 | 12 | 16 | 393 | 461 | 121 | 444.5 | 28 | M10 | 60 | 50 | 5 | 8 | 31 | 24 | M8 | 50 | 40 | 5 | 8 | 27 |
| 132 S | 1LA6 130 | 2, 4, 6, 8 | 130.5 | 12 | 16 | 453.5 | 551.5 | 141 | 506 | 38 | M12 | 80 | 70 | 5 | 10 | 41 | 38 | M12 | 80 | 70 | 5 | 10 | 41 |
| | 1LA6 131 | 2 | | | | | | | | | | | | | | | | | | | | | |
| 132 M | 1LA6 133 | 4, 6, 8 | 130.5 | 12 | 16 | 453.5 | 551.5 | 141 | 506 | 38 | M12 | 80 | 70 | 5 | 10 | 41 | 38 | M12 | 80 | 70 | 5 | 10 | 41 |
| | 1LA6 134 | 6 | | | | | | | | | | | | | | | | | | | | | |
| 160 M | 1LA6 163 | 2, 4, 6, 8 | 160 | 14.5 | 18 | 588 | 721 | 166 | 640.5 | 42 | M16 | 110 | 90 | 10 | 12 | 45 | 42 | M16 | 110 | 90 | 10 | 12 | 45 |
| | 1LA6 164 | 2, 8 | | | | | | | | | | | | | | | | | | | | | |
| 160 L | 1LA6 166 | 2, 4, 6, 8 | 160 | 14.5 | 18 | 588 | 721 | 166 | 640.5 | 42 | M16 | 110 | 90 | 10 | 12 | 45 | 42 | M16 | 110 | 90 | 10 | 12 | 45 |

IEC Squirrel-Cage Motors

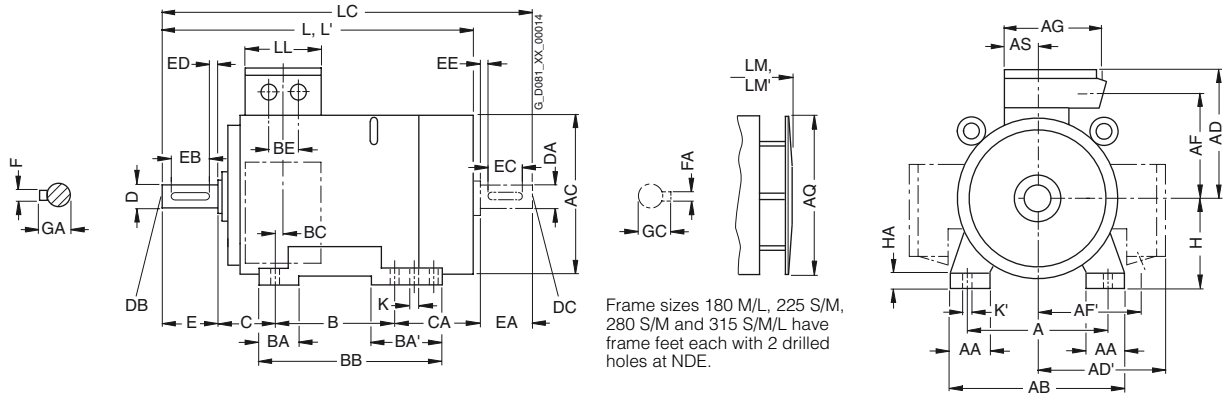
Explosion-proof motors

Dimensions

Dimensional drawings

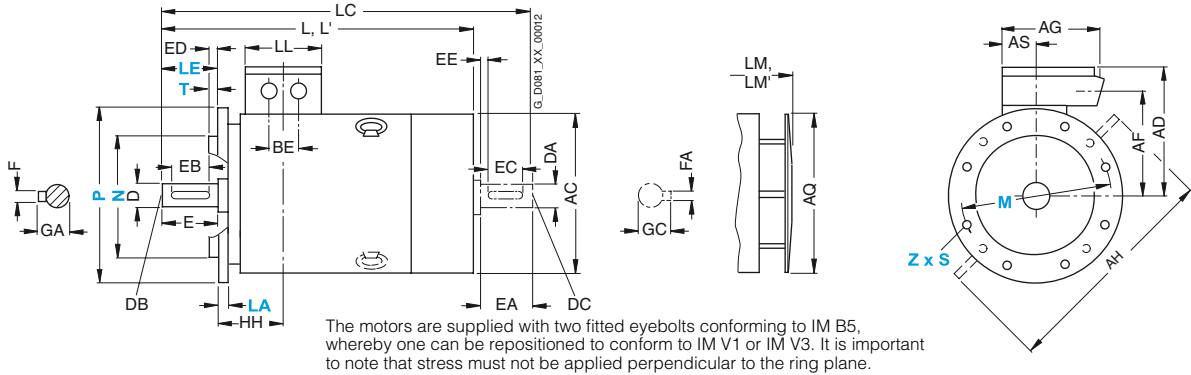
Cast-iron series 1LG4, frame sizes 180 M to 315 L

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 4/152 (Z = the number of retaining holes)



| For motor | | Dimension designation acc. to IEC | | | | | | | | | | | | | | | | | | | | | | |
|---------------------|--------------|-----------------------------------|-----|-----|-----|------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|
| Frame size | Type | Number of poles | A | AA | AB | AC ¹⁾ | AD | AD' | AF | AF' | AG | AH | AQ | AS | B* | BA | BA' | BB | BC | BE | C | CA* | H | HA |
| 180 M | 1LG4 183 | 2, 4 | 279 | 65 | 339 | 363 | 262 | 262 | 220 | 220 | 152 | 452 | 340 | 71 | 241 | 70 | 111 | 328 | 36 | 54 | 121 | 202 | 180 | 20 |
| | 180 L | 4, 6, 8 | 279 | 65 | 339 | 363 | 262 | 262 | 220 | 220 | 152 | 452 | 340 | 71 | 279 | 70 | 111 | 328 | 36 | 54 | 121 | 164 | 180 | 20 |
| | 1LG4 188 | 2, 4, 6, 8 | 279 | 65 | 339 | 363 | 262 | 262 | 220 | 220 | 152 | 452 | 340 | 71 | 279 | 70 | 111 | 328 | 36 | 54 | 121 | 215 | 180 | 20 |
| 200 L | 1LG4 206 | 2, 6 | 318 | 70 | 378 | 402 | 300 | 300 | 247 | 247 | 260 | 512 | 340 | 96 | 305 | 80 | 80 | 355 | 63 | 85 | 133 | 177 | 200 | 25 |
| | 1LG4 207 | 2, 4, 6, 8 | 318 | 70 | 378 | 402 | 300 | 300 | 247 | 247 | 260 | 512 | 340 | 96 | 305 | 80 | 80 | 355 | 63 | 85 | 133 | 177 | 200 | 25 |
| | 1LG4 208 | 2, 6, 4, 8 | 318 | 70 | 378 | 402 | 300 | 300 | 247 | 247 | 260 | 512 | 340 | 96 | 305 | 80 | 80 | 355 | 63 | 85 | 133 | 234 | 200 | 25 |
| | | | | | | | | | | | | | | | | | | | | | | | | 177 |
| 225 S | 1LG4 220 | 4, 8 | 356 | 80 | 436 | 442 | 325 | 325 | 272 | 272 | 260 | 556 | 425 | 96 | 286 | 85 | 110 | 361 | 47 | 85 | 149 | 218 | 225 | 34 |
| 225 M | 1LG4 223 | 2 | 356 | 80 | 436 | 442 | 325 | 325 | 272 | 272 | 260 | 556 | 425 | 96 | 311 | 85 | 110 | 361 | 47 | 85 | 149 | 193 | 225 | 34 |
| | 1LG4 228 | 4, 6, 8 | 356 | 80 | 436 | 442 | 325 | 325 | 272 | 272 | 260 | 556 | 425 | 96 | 311 | 85 | 110 | 361 | 47 | 85 | 149 | 253 | 225 | 34 |
| 250 M | 1LG4 253 | 2 | 406 | 100 | 490 | 495 | 392 | 392 | 308 | 308 | 300 | 620 | 470 | 118 | 349 | 100 | 100 | 409 | 69 | 110 | 168 | 235 | 250 | 40 |
| | 1LG4 258 | 4, 6, 8 | 406 | 100 | 490 | 495 | 392 | 392 | 308 | 308 | 300 | 620 | 470 | 118 | 349 | 100 | 100 | 409 | 69 | 110 | 168 | 235 | 250 | 40 |
| | | 2 | | | | | | | | | | | | | | | | | | | | | 305 | 235 |
| 280 S | 1LG4 280 | 2, 4, 6, 8 | 457 | 100 | 540 | 555 | 432 | 432 | 348 | 348 | 300 | 672 | 525 | 118 | 368 | 100 | 151 | 479 | 62 | 110 | 190 | 267 | 280 | 40 |
| 280 M | 1LG4 283 | 2 | 457 | 100 | 540 | 555 | 432 | 432 | 348 | 348 | 300 | 672 | 525 | 118 | 419 | 100 | 151 | 479 | 62 | 110 | 190 | 216 | 280 | 40 |
| | 1LG4 288 | 4, 6, 8 | 457 | 100 | 540 | 555 | 432 | 432 | 348 | 348 | 300 | 672 | 525 | 118 | 419 | 100 | 151 | 479 | 62 | 110 | 190 | 326 | 280 | 40 |
| | | 2 | | | | | | | | | | | | | | | | | | | | | | |
| 315 S | 1LG4 310 | 2 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 406 | 125 | 176 | 527 | 69 | 110 | 216 | 315 | 315 | 50 |
| | 1LG4 310 | 4, 6, 8 | | | | | | | | | | | | | | | | | | | | | | |
| 315 M ²⁾ | 1LG4 313 | 2 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 457 | 125 | 176 | 527 | 69 | 110 | 216 | 264 | 315 | 50 |
| | 1LG4 313 | 4, 6, 8 | | | | | | | | | | | | | | | | | | | | | | |
| 315 L ²⁾ | 1LG4 316/317 | 2 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 125 | 176 | 578 | 69 | 110 | 216 | 373 | 315 | 50 |
| | 1LG4 316/317 | 4, 6, 8 | | | | | | | | | | | | | | | | | | | | | | |
| | 1LG4 318 | 8 | | | | | | | | | | | | | | | | | | | | | | |
| | 1LG4 318 | 6 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 155 | 206 | 648 | 69 | 110 | 216 | 513 | 315 | 50 |

* This dimension is assigned in DIN EN 50347 to the frame size listed.

1) Measured across the bolt heads.

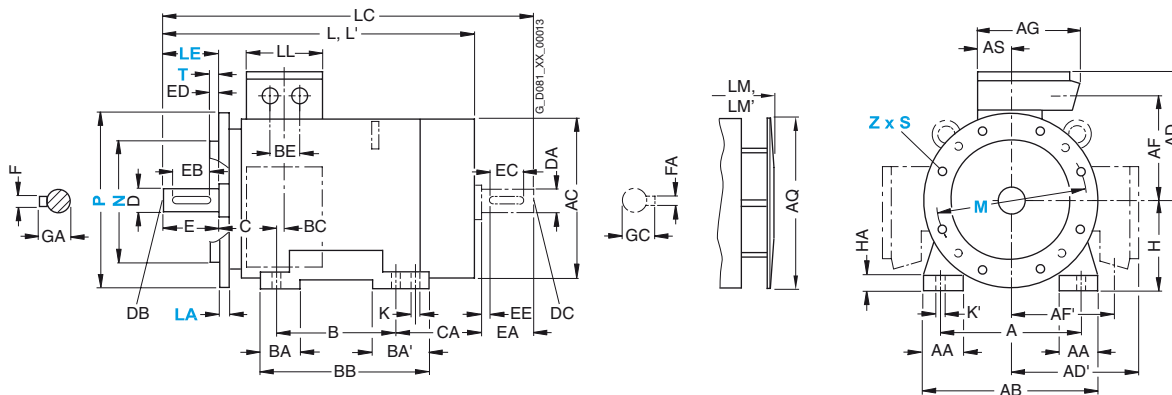
2) With order codes for connection box positions (K09, K10, K11) only fitted feet with 3 drilled holes with dimension "B" (406, 457 and 508 mm). BB will then be 666 mm.

Dimensional drawings

Cast-iron series 1LG4, frame sizes 180 M to 315 L

Type of construction IM B35

For flange dimensions, see Page 4/152 (Z = the number of retaining holes)



| For motor | | Dimension designation acc. to IEC | | | | | | | | | | DE shaft extension | | | | | NDE shaft extension | | | | | | | | |
|---------------------|--------------|-----------------------------------|-----|----|----|------|------------------|-------------------|-----|------|-------------------|--------------------|-----|-----|-----|----|---------------------|------|----|-----|-----|-----|----|----|------|
| Frame size | Type | Number of poles | HH | K | K' | L | L ⁽¹⁾ | LC ⁽²⁾ | LL | LM | LM ⁽¹⁾ | D | DB | E | EB | ED | F | GA | DA | DC | EA | EC | EE | FA | GC |
| 180 M | 1LG4 183 | 2, 4 | 157 | 15 | 19 | 669 | 669 | 784 | 132 | 759 | 759 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| 180 L | 1LG4 186 | 4, 6, 8 | 157 | 15 | 19 | 669 | – | 784 | 132 | 759 | – | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| | 1LG4 188 | 2, 4, 6, 8 | 157 | 15 | 19 | 720 | 720 | 835 | 132 | 810 | 810 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| 200 L | 1LG4 206 | 2, 6 | 196 | 19 | 25 | 720 | 754 | 835 | 192 | 810 | 844 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| | 1LG4 207 | 2, 4, 6, 8 | 196 | 19 | 25 | 720 | 754 | 835 | 192 | 810 | 844 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| | 1LG4 208 | 2, 6 | 196 | 19 | 25 | 777 | 811 | 892 | 192 | 867 | 901 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| | | 4, 8 | – | – | – | 720 | – | 835 | – | 810 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| 225 S | 1LG4 220 | 4, 8 | 196 | 19 | 25 | 789 | – | 903 | 192 | 889 | – | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| 225 M | 1LG4 223 | 2 | 196 | 19 | 25 | 759 | 793 | 873 | 192 | 859 | 893 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| | | 4, 6, 8 | – | – | – | 789 | – | 903 | – | 889 | – | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| | 1LG4 228 | 2 | 196 | 19 | 25 | 819 | 853 | 933 | 192 | 919 | 953 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| | | 4, 6, 8 | – | – | – | 849 | – | 963 | – | 949 | – | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| 250 M | 1LG4 253 | 2 | 237 | 24 | 30 | 887 | 924 | 1002 | 236 | 987 | 1024 | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| | | 4, 6, 8 | – | – | – | – | – | 1032 | – | – | – | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | 1LG4 258 | 2 | 237 | 24 | 30 | 887 | 924 | 1002 | 236 | 987 | 1024 | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| | | 4 | – | – | – | 957 | – | 1102 | – | 1057 | – | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 6, 8 | – | – | – | 887 | – | 1032 | – | 987 | – | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| 280 S | 1LG4 280 | 2 | 252 | 24 | 30 | 960 | 998 | 1105 | 236 | 1070 | 1108 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 4, 6, 8 | – | – | – | – | – | – | – | – | – | 75 | M20 | 140 | 125 | 10 | 20 | 79.5 | 65 | M20 | 140 | 125 | 10 | 18 | 69 |
| 280 M | 1LG4 283 | 2 | 252 | 24 | 30 | 960 | 998 | 1105 | 236 | 1070 | 1108 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 4, 6, 8 | – | – | – | – | – | – | – | – | – | 75 | M20 | 140 | 125 | 10 | 20 | 79.5 | 65 | M20 | 140 | 125 | 10 | 18 | 69 |
| | 1LG4 288 | 2 | 252 | 24 | 30 | 1070 | 1108 | 1215 | 236 | 1180 | 1218 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 4 | – | – | – | – | – | – | – | – | – | 75 | M20 | 140 | 125 | 10 | 20 | 79.5 | 65 | M20 | 140 | 125 | 10 | 18 | 69 |
| | | 6, 8 | – | – | – | 960 | – | 1105 | – | 1070 | – | 75 | M20 | 140 | 125 | 10 | 20 | 79.5 | 65 | M20 | 140 | 125 | 10 | 18 | 69 |
| 315 S | 1LG4 310 | 2 | 285 | 28 | 35 | 1072 | 1142 | 1217 | 307 | 1182 | 1252 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | 1LG4 310 | 4, 6, 8 | – | – | – | 1102 | – | 1247 | – | 1212 | – | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |
| 315 M ³⁾ | 1LG4 313 | 2 | 285 | 28 | 35 | 1072 | 1142 | 1217 | 307 | 1182 | 1252 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | 1LG4 313 | 4, 6, 8 | – | – | – | 1102 | – | 1247 | – | 1212 | – | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |
| 315 L ³⁾ | 1LG4 316/317 | 2 | 285 | 28 | 35 | 1232 | 1302 | 1377 | 307 | 1342 | 1412 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | 1LG4 316/317 | 4, 6, 8 | – | – | – | 1262 | – | 1407 | – | 1372 | – | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |
| | 1LG4 318 | 8 | – | – | – | – | – | – | – | – | – | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |
| | 1LG4 318 | 6 | 285 | 28 | 35 | 1402 | – | 1547 | 307 | 1512 | – | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |

¹⁾ For version with low-noise fan for 2-pole motors.

²⁾ In the low-noise version, a second shaft extension is not possible.

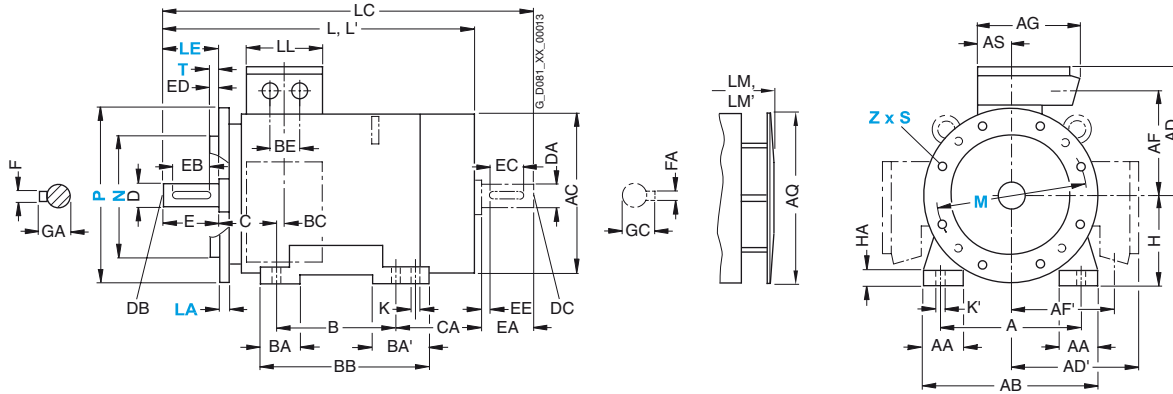
³⁾ With order codes for connection box positions (K09, K10, K11) only fitted feet with 3 drilled holes with dimension "B" (406, 457 and 508 mm). BB will then be 666 mm.

Dimensional drawings

Cast-iron series 1LG6, frame sizes 180 M to 250 M

Type of construction IM B35

For flange dimensions, see Page 4/152 (Z = the number of retaining holes)



| For motor | | | Dimension designation acc. to IEC | | | | | | | | | | | | | DE shaft extension | | | | NDE shaft extension | | | | | |
|------------|----------|-----------------|-----------------------------------|----|----|-----|------|-----|------|----|-----|-----|-----|----|----|--------------------|----|-----|-----|---------------------|----|----|------|--|--|
| Frame size | Type | Number of poles | HH | K | K' | L | LC | LL | LM | D | DB | E | EB | ED | F | GA | DA | DC | EA | EC | EE | FA | GC | | |
| 180 M | 1LG6 183 | 2 | 157 | 15 | 19 | 720 | 835 | 132 | 810 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | | |
| | | 4 | | | | 669 | 784 | | 759 | | | | | | | | | | | | | | | | |
| 180 L | 1LG6 186 | 4, 6, 8 | 157 | 15 | 19 | 720 | 835 | 132 | 810 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | | |
| | | 2, 6 | 196 | 19 | 25 | 720 | 835 | 192 | 810 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | | |
| 200 L | 1LG6 206 | 2, 6 | 196 | 19 | 25 | 777 | 892 | 192 | 867 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | | |
| | | 4, 8 | 196 | 19 | 25 | 720 | 835 | | 810 | | | | | | | | | | | | | | | | |
| 225 S | 1LG6 220 | 4, 8 | 196 | 19 | 25 | 789 | 903 | 192 | 889 | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | | |
| | | 2 | 196 | 19 | 25 | 819 | 933 | 192 | 919 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | | |
| 225 M | 1LG6 223 | 4, 6, 8 | | | | 849 | 963 | | 949 | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | | |
| | | 2 | 196 | 19 | 25 | 869 | 983 | 192 | 969 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | | |
| 250 M | 1LG6 228 | 4, 6 | | | | 899 | 1013 | | 999 | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | | |
| | | 2 | 237 | 24 | 30 | 887 | 1002 | 236 | 987 | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | | |
| 250 M | 1LG6 253 | 4 | | | | 957 | 1102 | | 1057 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 | | |
| | | 6, 8 | | | | 887 | 1032 | | 987 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 | | |
| 250 M | 1LG6 258 | 2 | 237 | 24 | 30 | 957 | 1102 | 236 | 1057 | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | | |
| | | 4, 6 | | | | | | | | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 | | |

IEC Squirrel-Cage Motors

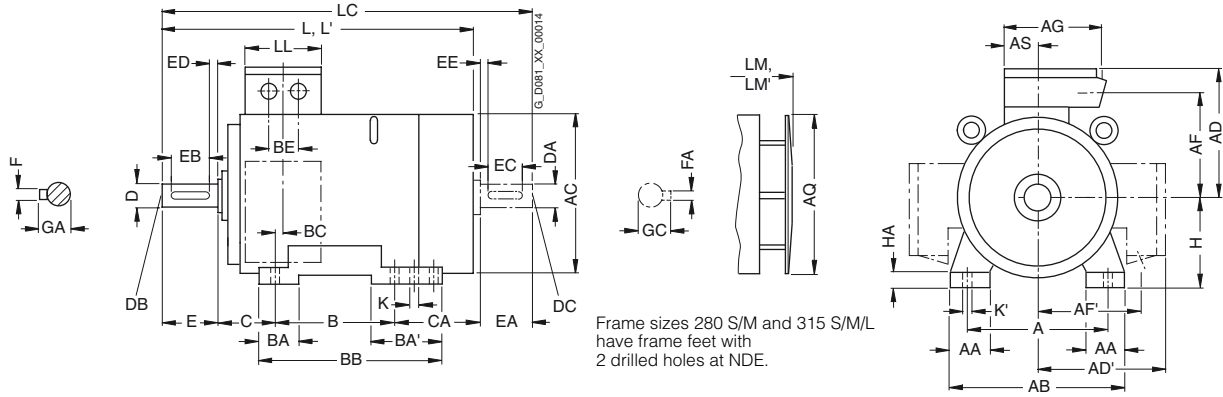
Explosion-proof motors

Dimensions

Dimensional drawings

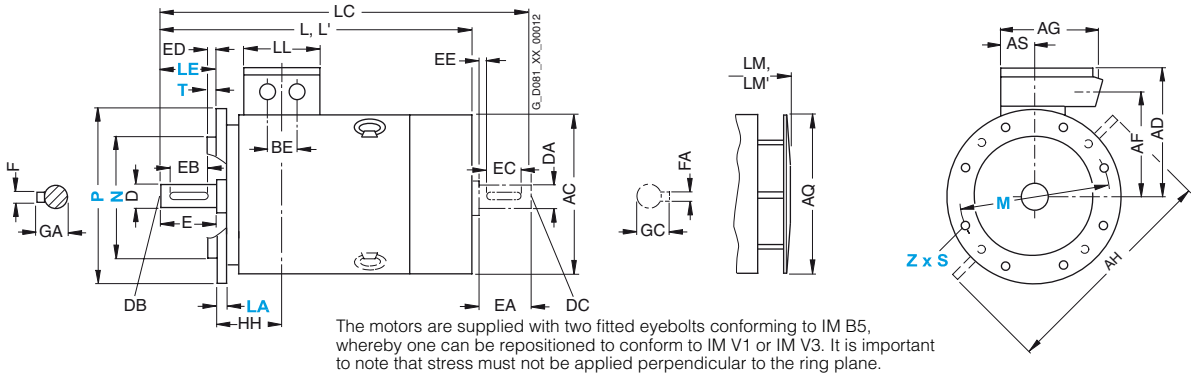
Cast-iron series 1LG6, frame sizes 280 S to 315 L

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 4/152 (Z = the number of retaining holes)



| For motor | Frame size | Type | Number of poles | Dimension designation acc. to IEC | | | | | | | | | | | | | | | | | | | | | |
|-----------|---------------------|----------|-----------------|-----------------------------------|-----|-----|------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | | A | AA | AB | AC ¹⁾ | AD | AD' | AF | AF' | AG | AH | AQ | AS | B* | BA | BA' | BB | BC | BE | C | CA* | H | HA |
| | 280 S | 1LG6 280 | 2 | 457 | 100 | 540 | 555 | 432 | 432 | 348 | 348 | 300 | 672 | 525 | 118 | 368 | 100 | 151 | 479 | 62 | 110 | 190 | 267 | 280 | 40 |
| | 280 M | 1LG6 283 | 2 | 457 | 100 | 540 | 555 | 432 | 432 | 348 | 348 | 300 | 672 | 525 | 118 | 419 | 100 | 151 | 479 | 62 | 110 | 190 | 326 | 280 | 40 |
| | | | 4 | 6, 8 | 457 | 100 | 540 | 555 | 432 | 432 | 348 | 348 | 300 | 672 | 525 | 118 | 419 | 100 | 151 | 479 | 62 | 110 | 190 | 326 | 280 |
| | | 1LG6 288 | 2 | 457 | 100 | 540 | 555 | 432 | 432 | 348 | 348 | 300 | 672 | 525 | 118 | 419 | 100 | 151 | 479 | 62 | 110 | 190 | 326 | 280 | 40 |
| | | | 4, 6 | | | | | | | | | | | | | | | | | | | 216 | 280 | 40 | |
| | 315 S | 1LG6 310 | 2 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 406 | 125 | 176 | 527 | 69 | 110 | 216 | 315 | 315 | 50 |
| | | 1LG6 310 | 4, 6, 8 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 457 | 125 | 176 | 527 | 69 | 110 | 216 | 264 | 315 | 50 |
| | 315 M ²⁾ | 1LG6 313 | 8 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 457 | 125 | 176 | 578 | 69 | 110 | 216 | 424 | 315 | 50 |
| | | | 2 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 457 | 125 | 176 | 578 | 69 | 110 | 216 | 424 | 315 | 50 |
| | 315 L ²⁾ | 1LG6 313 | 4, 6 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 125 | 176 | 578 | 69 | 110 | 216 | 373 | 315 | 50 |
| | | | 2 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 155 | 206 | 648 | 69 | 110 | 216 | 513 | 315 | 50 |
| | | 1LG6 316 | 4, 6 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 155 | 206 | 648 | 69 | 110 | 216 | 513 | 315 | 50 |
| | | 1LG6 316 | 8 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 155 | 206 | 648 | 69 | 110 | 216 | 513 | 315 | 50 |
| | | 1LG6 317 | 2 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 155 | 206 | 648 | 69 | 110 | 216 | 513 | 315 | 50 |
| | | 1LG6 317 | 4, 6 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 155 | 206 | 648 | 69 | 110 | 216 | 513 | 315 | 50 |
| | | 1LG6 317 | 8 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 155 | 206 | 648 | 69 | 110 | 216 | 513 | 315 | 50 |
| | | 1LG6 318 | 2 | 508 | 120 | 610 | 610 | 651 | 651 | 524 | 524 | 470 | 780 | 590 | 165 | 508 | 155 | 206 | 648 | 69 | 135 | 216 | 513 | 315 | 50 |
| | | 1LG6 318 | 4 | 508 | 120 | 610 | 610 | 651 | 651 | 524 | 524 | 470 | 780 | 590 | 165 | 508 | 155 | 206 | 648 | 69 | 135 | 216 | 513 | 315 | 50 |
| | | 1LG6 318 | 6, 8 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 165 | 508 | 155 | 206 | 648 | 69 | 135 | 216 | 513 | 315 | 50 |

* This dimension is assigned in DIN EN 50347 to the frame size listed.

1) Measured across the bolt heads.

2) With order codes for connection box positions (K09, K10, K11) only fitted feet with 3 drilled holes with dimension "B" (406, 457 and 508 mm). BB will then be 666 mm.

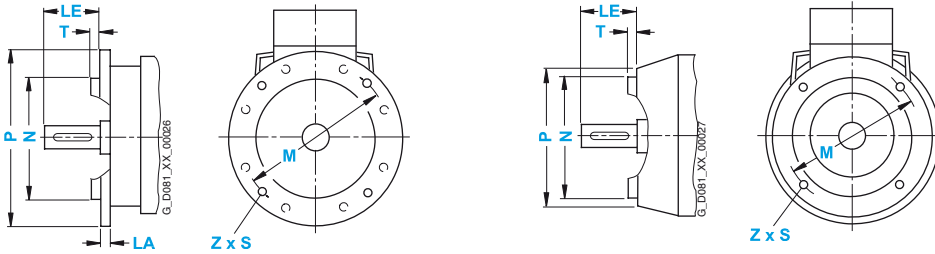
IEC Squirrel-Cage Motors

Explosion-proof motors

Dimensions

Dimensional drawings

Flange dimensions



In DIN EN 50347, the frame sizes are allocated flange FF with through holes and flange FT with tapped holes. The designation of flange A and C according to DIN 42948 (invalid since 09/2003) are also listed for information purposes. See the table below. (Z = the number of retaining holes)

| Frame size | Type of construction | Flange type | Flange with through holes (FF/A) Tapped holes (FT/C) | | Dimension designation acc. to IEC | | | | | | | |
|--|--------------------------------|-----------------|---|-------------------|-----------------------------------|-----|-----|-----|-----|------|-----|---|
| | | | According to DIN EN 50347 | Acc. to DIN 42948 | LA | LE | M | N | P | S | T | Z |
| 56 M | IM B5, IM B35, IM V1, IM V3 | Flange | FF 100 | A 120 | 8 | 20 | 100 | 80 | 120 | 7 | 3 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 65 | C 80 | – | 20 | 65 | 50 | 80 | M5 | 2.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 85 | C 105 | – | 20 | 85 | 70 | 105 | M6 | 2.5 | 4 |
| 63 M | IM B5, IM B35, IM V1, IM V3 | Flange | FF 115 | A 140 | 8 | 23 | 115 | 95 | 140 | 10 | 3 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 75 | C 90 | – | 23 | 75 | 60 | 90 | M5 | 2.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 100 | C 120 | – | 23 | 100 | 80 | 120 | M6 | 3 | 4 |
| 71 M | IM B5, IM B35, IM V1, IM V3 | Flange | FF 130 | A 160 | 9 | 30 | 130 | 110 | 160 | 10 | 3.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 85 | C 105 | – | 30 | 85 | 70 | 105 | M6 | 2.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 115 | C 140 | – | 30 | 115 | 95 | 140 | M8 | 3 | 4 |
| 80 M | IM B5, IM B35, IM V1, IM V3 | Flange | FF 165 | A 200 | 10 | 40 | 165 | 130 | 200 | 12 | 3.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 100 | C 120 | – | 40 | 100 | 80 | 120 | M6 | 3 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 130 | C 160 | – | 40 | 130 | 110 | 160 | M8 | 3.5 | 4 |
| 90 S, 90 L | IM B5, IM B35, IM V1, IM V3 | Flange | FF 165 | A 200 | 10 | 50 | 165 | 130 | 200 | 12 | 3.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 115 | C 140 | – | 50 | 115 | 95 | 140 | M8 | 3 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 130 | C 160 | – | 50 | 130 | 110 | 160 | M8 | 3.5 | 4 |
| 100 L | IM B5, IM B35, IM V1, IM V3 | Flange | FF 215 | A 250 | 11 | 60 | 215 | 180 | 250 | 14.5 | 4 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 130 | C 160 | – | 60 | 130 | 110 | 160 | M8 | 3.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 165 | C 200 | – | 60 | 165 | 130 | 200 | M10 | 3.5 | 4 |
| 112 M | IM B5, IM B35, IM V1, IM V3 | Flange | FF 215 | A 250 | 11 | 60 | 215 | 180 | 250 | 14.5 | 4 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 130 | C 160 | – | 60 | 130 | 110 | 160 | M8 | 3.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 165 | C 200 | – | 60 | 165 | 130 | 200 | M10 | 3.5 | 4 |
| 132 S, 132 M | IM B5, IM B35, IM V1, IM V3 | Flange | FF 265 | A 300 | 12 | 80 | 265 | 230 | 300 | 14.5 | 4 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 165 | C 200 | – | 80 | 165 | 130 | 200 | M10 | 3.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 215 | C 250 | – | 80 | 215 | 180 | 250 | M12 | 4 | 4 |
| 160 M, 160 L | IM B5, IM B35, IM V1, IM V3 | Flange | FF 300 | A 350 | 13 | 110 | 300 | 250 | 350 | 18.5 | 5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 215 | C 250 | – | 110 | 215 | 180 | 250 | M12 | 4 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 265 | C 300 | – | 110 | 265 | 230 | 300 | M12 | 4 | 4 |
| 180 M, 180 L | IM B5, IM V1, IM V3 | Flange | FF 300 | A 350 | 13 | 110 | 300 | 250 | 350 | 18.5 | 5 | 4 |
| 200 L | IM B5 | Flange | FF 350 | A 400 | 15 | 110 | 350 | 300 | 400 | 18.5 | 5 | 4 |
| 225 S, 225 M 2-pole 4-pole to 8-pole | IM B5, IM V1, IM V3 | Flange | FF 400 | A 450 | 16 | 110 | 400 | 350 | 450 | 18.5 | 5 | 8 |
| 250 M | IM B5, IM V1, IM V3 | Flange | FF 500 | A 550 | 18 | 140 | 500 | 450 | 550 | 18.5 | 5 | 8 |
| 280 S, 280 M | IM B5, IM V1, IM V3 | Flange | FF 500 | A 550 | 18 | 140 | 500 | 450 | 550 | 18.5 | 5 | 8 |
| 315 S, 315 M, 315 L 2-pole 4-pole to 8-pole | IM B5, IM V1, IM V3 | Flange | FF 600 | A 660 | 22 | 140 | 600 | 550 | 660 | 24 | 6 | 8 |

Motors operating with frequency converters



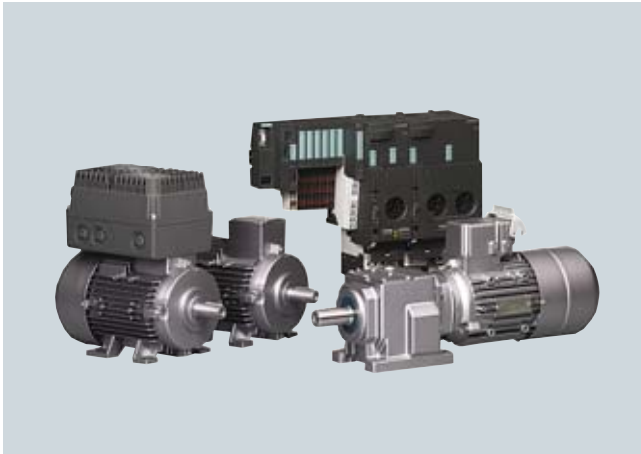
| | | | |
|------|--|------|-----------------------------|
| 5/2 | Orientation | 5/18 | Special versions |
| 5/2 | Overview | 5/18 | Overview |
| 5/2 | Benefits | 5/20 | Selection and ordering data |
| 5/2 | Application | 5/20 | • Voltages |
| 5/3 | Integration | 5/21 | • Types of construction |
| 5/5 | Technical specifications | 5/22 | • Options |
| 5/9 | Selection and ordering data | | |
| 5/9 | More information | 5/32 | Accessories |
| | | 5/32 | Overview |
| | | 5/32 | More information |
| 5/10 | Surface-cooled motors with standard insulation for voltages ≤500 V, Aluminum or cast-iron housing | 5/33 | Dimensions |
| 5/10 | Overview | 5/33 | Overview |
| | | 5/34 | Dimensional drawings |
| | | 5/40 | More information |
| 5/12 | Self-ventilated motors with special insulation for voltages up to 690 V, Aluminum series 1LA7 and 1LA5 | | |
| 5/12 | Selection and ordering data | | |
| 5/14 | Self-ventilated motors with special insulation for voltages up to 690 V, Cast-iron series 1LG6 | | |
| 5/14 | Selection and ordering data | | |
| 5/17 | Self-ventilated motors up to FS 315 with special insulation for voltages up to 690 V, Cast-iron series 1LA8 | | |
| 5/17 | Overview | | |
| 5/17 | Selection and ordering data | | |
| 5/17 | Forced ventilated motors from frame size 315 with mounted separately driven fan with special insulation for voltages up to 690 V, Cast-iron series 1PQ8 | | |
| 5/17 | Overview | | |
| 5/17 | Selection and ordering data | | |

IEC Squirrel-Cage Motors

Motors operating with frequency converters

Orientation

Overview



Converter-fed operation up to 500 V +10 % mains voltage

The standard insulation of the 1LA and 1LG motors is designed such that operation is possible on the converter at mains voltages up to 460 V +10 % (for motor series 1LA8 to 500 V +10 %). This also applies for operation with a pulse-controlled AC converter with voltage rise times of $t_{\text{e}} > 0.1 \mu\text{s}$ at the motor terminals (IGBT transistors). At higher voltages, the motors require greater insulation resistance. Please inquire in the case of converter-fed operation with motors with protruding connection cables (order codes **L44**, **L45**, **L47**, **L48**, **L49**, **L51** and **L52**).

The 1LA8 non-standard motors of the types specially identified for converter-fed operation (the 9th and 10th position of the Order No. is filled with “**PB**”, “**PC**” or “**PE**”) have an insulated motor bearing as standard at the non-drive end NDE (BS). The motors are equipped with standard insulation and standard rotors and are suitable for mains-fed and converter-fed operation.

Converter-fed operation up to 690 V +10 % mains voltage

1LA5, 1LA7 and 1LG6 standard motors as well as 1LA8 and 1PQ8 non-standard motors are also available with a higher insulation resistance for operation on the converter with supply voltages from 500 V ... 690 V (+10 %), and do not usually require a filter. These motors are identified by an “**M**” in the 10th digit of the Order No. (e.g. 1LA8315-2PM). With the reinforced insulating system, there is less space in the grooves in motor series 1LA8 and 1PQ8 for the same number of windings compared to the normal version, which slightly reduces the rated output of these motors.

Converter-fed operation for motors in type of protection “d” up to 460 V +10 % mains voltage

Siemens 1MJ asynchronous motors can be operated on the mains as well as on a converter as explosion-proof motors in type of protection Ex de IIC “Explosion-proof enclosure”. In accordance with the test specifications, 1MJ motors must be equipped with PTC thermistors. When 1MJ motors are connected to converters, like the 1LA motors of the same output, depending on their load characteristics their maximum admissible torque must be reduced. 1MJ motors have a connection box in type of protection Ex e II “Increased safety” as standard.

Note:

Special measures are necessary in the case of high-speed motors, especially when separately driven fans are used. Please contact your local Siemens office for advice.

Benefits

Motors operating with frequency converters from Siemens offer the user numerous advantages:

- The motors feature the future-oriented insulation system DURIGNIT IR 2000 (IR = Inverter Resistant). The DURIGNIT IR 2000 insulating system is made up of high-quality enamel wires and insulating materials in conjunction with a resin impregnation which does not contain any solvents.

The specially developed motors on the frequency converter with special insulation are converter-compatible from 500 V to 690 V (+10 %).

Application

The motors can be used in numerous drive applications with variable-speed drives when they are combined with converters from the MICROMASTER and SINAMICS spectrum.

The wide field of implementation includes the following applications:

- Conveyor systems such as cranes, belts and lifting gear
- High-bay warehouses
- Packaging machines
- Automation and Drives

Their large range of mains voltages enables them to be used all over the world.

IEC Squirrel-Cage Motors

Motors operating with frequency converters

Orientation

Integration

MICROMASTER 411/COMBIMASTER 411 distributed drive solutions

MICROMASTER 411/COMBIMASTER 411 is included in the DA 51.3 Catalog that includes the entire product range with ordering data, technical specifications and explanations.

Application

MICROMASTER 411 and COMBIMASTER 411 are the ideal solution for distributed drive applications that require a high degree of protection for the converter. The devices are designed for a wide drive range – for simple individual applications for pumps and fans through to multiple drives for conveyor systems in networked control systems. The ECOFAST versions of the MICROMASTER 411/COMBIMASTER 411 frequency converter series contain plug-in cables for the power supply, communications interface and motor connections. They support fast and problem-free replacement in time-critical applications and are completely compatible with the ECOFAST technology systems. They are based on the universal MICROMASTER 420 converter series and are characterized by customer-oriented performance and ease of use.

Structure

The modular structure allows MICROMASTER 411/COMBIMASTER 411 products and their accessories to be individually selected, e.g. electromechanical brake control module or PROFIBUS module.

Main features:

- Output range: 0.37 to 3.0 kW, 400 V, 3AC
- IP66 degree of protection (MICROMASTER 411), self-cooling
- Electrical isolation between the electronics and the connection terminals
- Parameter sets for fast startup and cost savings
- Modular structure with numerous accessories
- Operation without operator panel possible (using jumpers and/or control potentiometer)
- Integrated control potentiometer accessible from outside.

Accessories (overview):

- Basic Operator Panel (BOP) for parameterizing the converter
- Plain text Advanced Operator Panel (AOP) for MICROMASTER 411 and COMBIMASTER 411 with multiple-language display
- PROFIBUS module
- AS-Interface module
- DeviceNet module
- REM module (dynamic brake and control module for electro-mechanical brake)
- EM module (electromechanical brake control module)
- PC connection kit
- Mounting kits for installing the operator panels
- PC startup programs.

Note:

The application guidelines or guidelines for the design and operating performance of induction motors with squirrel-cage rotor defined in standards DIN IEC 60034-17 and DIN IEC 60034-25 must be observed for converter-fed induction motors with squirrel-cage rotor.

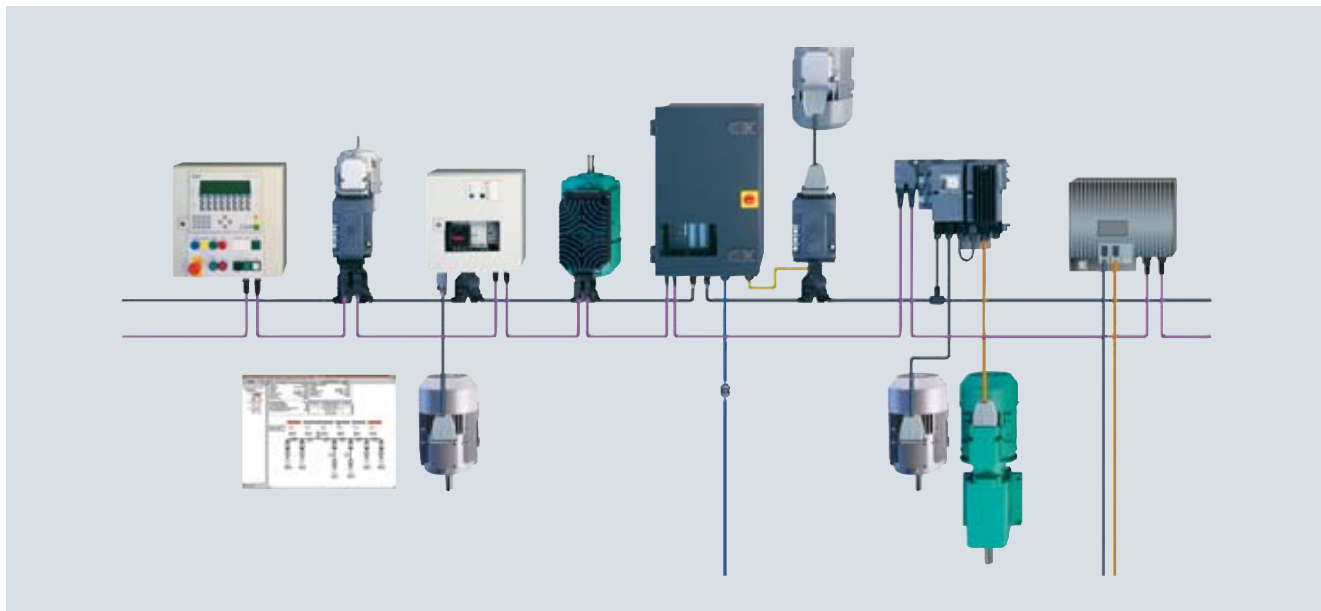
IEC Squirrel-Cage Motors

Motors operating with frequency converters

Orientation

Integration (continued)

ECOFAST system



ECOFAST is a system which permits extensive decentralization and a modular structure for installation elements on the component level.

Benefits

The main advantages of the ECOFAST motor connector over a terminal strip are as follows:

- Fast assembly of I/O devices (e.g. motor starters) from the ECOFAST system.
- Reduction of assembly and repair times at the end user
- No wiring errors due to connector technology
- Replacement of motor without intervention in the electronics.

Main features of the ECOFAST motor connector

The motor connector is mounted in the factory and replaces the connection box with terminal board. The connector is mounted towards the non-drive end (NDE). It comprises an angled motor connection casing that can be rotated by $4 \times 90^\circ$. A 10-pole (+ earth) male insert is used in the housing. In the plug-in connector, the winding connections are connected and optionally the power supply for the brake and the signal leads for the temperature sensors.

The ECOFAST motor connector is compatible with the products of the ECOFAST field device system. Further information can be found in Catalog IK PI.

The mounting dimensions of this housing match those of standard industrial connectors, so it is possible to use a complete series of different standard inserts (such as Han E, ES, ESS from Harting). The motor circuit (star or delta connection) is selected in the mating connector for motor connection. The relevant jumpers are inserted by the customer in the mating connector. As a housing for the mating connector, all standard sleeve housing with lengthwise locking, frame size 10B (e.g. from Harting) can be used.

Only one sensor (temperature sensor or PTC thermistor) can be connected.

Maximum admissible mains voltage on motor connector: ≤ 500 V

Availability of the ECOFAST motor connector

The ECOFAST motor connector can be supplied for the following motor versions with the exception of the explosion-proof motors:

- Frame sizes 56 M to 132 M
- Output range 0.06 to 5.5 kW (7.5 kW on request)
- The rated current of the ECOFAST motor connector is limited to ≤ 16 A.
- Direct on-line starting: Voltage code **1** for 230 V Δ /400 VY, 50 Hz
- Star-delta starting: Voltage code **9** with order code **L1U** for 400 V Δ , 50 Hz

More information

Further information is available in Catalog IK PI and in Catalog DA 51.3 "MICROMASTER 411/COMBIMASTER 411 distributed drive solutions" as well as on the Internet at: <http://www.siemens.com/ecofast>

Technical specifications

General note:

All the data listed in the catalog is applicable for a 50 Hz line supply. With converter-fed operation, the torque reduction factors for constant torque and drives for fans, pumps and compressors must be observed. Higher noise levels must be expected at frequencies other than 50 Hz for motors operating with converters due to the harmonic content of the supply.

Implementation of 1LA/1LG motors in areas subject to explosion hazards

Type of protection "n" (Zone 2)

II 3G Ex nA II T3
acc. to IEC/EN 60079-15

IEC/EN 60079-15 specifies that the motor and converter must be tested as a unit (individual test). Individual testing has been performed for motors of type of protection "n" operating with the MICROMASTER, SIMOVERT MASTERDRIVES, SINAMICS G110, SINAMICS S120 and SIMATIC ET 200S FC converters (partially for "Non-standard motors frame size 315" and above). For details, see factory certificate 2.1. Individual testing can be performed for non-Siemens converters on request; the customer may be required to supply the non-Siemens converter.

Design for Zone 2 for converter-fed operation, derating Ex nA II T3 acc. to IEC/EN 60079-15 ⇒ Order with order code M73

Motors protected against dust explosions (Zone 21/22)

Zone 21: II 2D Ex tD A21 IP65 T 125 °C
Zone 22: II 3D Ex tD A22 IP55 T 125 °C
acc. to EN 50281/IEC 61241

The drive system comprising motors protected against dust explosions operating on MICROMASTER, SIMOVERT MASTERDRIVE, SINAMICS G110, SINAMICS S120 and SIMATIC ET 200S FC converters has been tested. For details, see factory certificate 2.1. Please inquire about operation with non-Siemens converters.

Design for Zone 21, as well as Zone 22 for conducting dust (IP65) for converter-fed operation, derating ⇒ Order with order code M38

Design for Zone 22 for non-conducting dust (IP55) for converter-fed operation, derating ⇒ Order with order code M39

Order codes M73, M38 and M39:

The rated operating points at 5, 25, 50 Hz and f_{max} are stamped on the rating plate; (alternative rated operating points at 6, 30, 60 Hz and f_{max} when ordered with 60 Hz voltage) for operation on MICROMASTER.

Alternatively, these rated operating points can be ordered for SIMOVERT MASTERDRIVES, SINAMICS G110, SINAMICS S120 or SIMATIC ET 200S FC with order code **Y68** and "Plain text". The type of converter is specified on the rating plate. The motors already have PTC thermistors for tripping in accordance with temperature class 130 (B). The thermistors must be operated by a tripping unit certified by the relevant testing authority.

With some motors it is necessary to reduce the limit speed or to use metal fans.

When 1LA8 motors are ordered, it must be specified in plain text whether "constant torque drive" or "fan/pump/compressor drive" is required.

Rated voltage

The tolerance of the motors specially developed for converter-fed operation with special insulation up to 690 V (the 9th and 10th position of the Order No. is marked with "PM") is generally in accordance with DIN EN 60034-1 – A rated voltage range is not specified on the rating plate.

Mechanical limit speeds

When the motor is operated at its rated frequency, it is important to note that the maximum speeds are limited by the limits for the roller bearings, critical rotor speed and rigidity of the rotating parts.

Motor protection

A motor protection function can be implemented using the I^2t detection present in the converter software.

If required, more precise motor protection can be afforded by direct temperature measurement using KTY84 sensors or PTC thermistors in the motor winding. Some converters from Siemens determine the motor temperature using the resistance of the temperature sensor. They can be set to a required temperature for alarm and tripping.

Insulation

The standard insulation of 1LA and 1LG motors is designed such that converter-fed operation is possible up to 460 V +10 % (for motor serie 1LA8 up to 500 V +10 %). This also applies for operation with a pulse-controlled AC converter with voltage rise times $t_s > 0.1 \mu s$ at the motor terminals.

All motors with voltage codes 1, 3, 5, and 6 (400 V motors Δ connection) operating with a converter must be operated under these conditions. This does not apply to motors with voltages from 500 V to 690 V (+10 %), that must have special insulation for operation on a pulse-controlled AC converter (SIMOVERT MASTERDRIVES and MICROMASTER 440 for voltages between 500 and 600 V), (10th position of the Order No. = "M"). For converter-fed operation with the outputs specified in the catalog, the motors are used according to temperature class 155 (F), i.e. in this case neither a service factor > 1 nor an increased coolant temperature is possible (order codes **C11**, **C12** and **C13** cannot be ordered).

Motor connection

When connecting the motors, it is important to consider the restrictions for mains-fed machines as well as the maximum admissible conductor cross-sections for the converter.

Ventilation and noise generation

The fan noise can increase at speeds that are higher than the rated speed of self-ventilated motors. To increase motor utilization at low speeds it is recommended that forced ventilated motors are used.

Mechanical stress and grease lifetime

Due to the increased speeds above the rated speed and the thereby increased vibrations, the mechanical smooth running is changed and the bearings are used stronger mechanically. Hereby, the grease lifetime and the bearing lifetime are reduced. Further information on request.

Utilization (non-standard motors)

When temperature class 155 (F) is used according to 130 (B), derating of 15 % is necessary.

IEC Squirrel-Cage Motors

Motors operating with frequency converters

Orientation

Technical specifications (continued)

Mechanical limit speeds $n_{\max.}$ at maximum supply frequency $f_{\max.}$

Default values

The values in the following table are valid for all areas of application with the exception of explosion-proof motors (see overleaf).

The values for motor series 1 LA8, 1PQ8 and 1LL8 are listed in the selection and ordering data in catalog part "Non-standard motors frame size 315 and above".

| Motor frame size | Motor type | | 2-pole ¹⁾ | | 4-pole | | 6-pole | | 8-pole | |
|---|--|--|----------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|
| | | | $n_{\max.}$ rpm | $f_{\max.}$ Hz | $n_{\max.}$ rpm | $f_{\max.}$ Hz | $n_{\max.}$ rpm | $f_{\max.}$ Hz | $n_{\max.}$ rpm | $f_{\max.}$ Hz |
| 1LA5, 1LA6, 1LA7, 1LA9, 1LP5, 1LP7, 1PP5, 1PP7 | | | | | | | | | | |
| 56 M | 1LA7/1LA9 | 05. | 6000 | 100 | 4200 | 140 | 3600 | 180 | 3000 | 200 |
| 63 M | 1LA7/1LA9 1LP7/1PP7 | 06. | 6000 | 100 | 4200 | 140 | 3600 | 180 | 3000 | 200 |
| 71 M | 1LA7/1LA9 1LP7/1PP7 | 07. | 6000 | 100 | 4200 | 140 | 3600 | 180 | 3000 | 200 |
| 80 M | 1LA7/1LA9 1LP7/1PP7 | 08. | 6000 | 100 | 4200 | 140 | 3600 | 180 | 3000 | 200 |
| 90 L | 1LA7/1LA9 1LP7/1PP7 | 09. | 6000 | 100 | 4200 | 140 | 3600 | 180 | 3000 | 200 |
| 100 L | 1LA6/1LA7/1LA9 1LP7/1PP7/1PP6 | 10. | 6000 | 100 | 4200 | 140 | 3600 | 180 | 3000 | 200 |
| 112 M | 1LA6/1LA7/1LA9 1LP7/1PP7/1PP6 | 11. | 6000 | 100 | 4200 | 140 | 3600 | 180 | 3000 | 200 |
| 132 S/M | 1LA6/1LA7/1LA9 1LP7/1PP7/1PP6 | 13. | 5600 | 90 | 4200 | 140 | 3600 | 180 | 3000 | 200 |
| 160 M/L | 1LA6/1LA7/1LA9 1LP7/1PP7/1PP6 | 16. | 4800 | 80 | 4200 | 140 | 3600 | 180 | 3000 | 200 |
| 180 M/L | 1LA5/1LA9 1LP5/1PP5 | 18. | 5100 | 85 | 4200 | 140 | 3600 | 180 | 3000 | 200 |
| 200 L | 1LA5/1LA9 1LP5/1PP5 | 20. | 5100 | 85 | 4200 | 140 | 3600 | 180 | 3000 | 200 |
| 225 S/M | 1LA5 | 22. | 4500 | 75 | 4200 | 140 | 3600 | 180 | 3000 | 200 |
| 1LG4, 1LG6, 1LP4, 1PP4, 1PP6 | | | | | | | | | | |
| 180 M/L | 1LG4/1LG6 1LP4/1PP4/1PP6 | 18. | 4600 | 76 | 4200 | 140 | 3600 | 180 | 3000 | 200 |
| 200 L | 1LG4/1LG6 1LP4/1PP4/1PP6 | 20. | 4500 | 75 | 4200 | 140 | 3600 | 180 | 3000 | 200 |
| 225 S/M | 1LG4/1LG6 1LP4/1PP4/1PP6 | 22. | 4500 | 75 | 4500 | 150 | 4400 | 220 | 4400 | 293 |
| 250 M | 1LG4/1LG6 1LP4/1PP4/1PP6 | 25. | 3900 | 65 | 3700 | 123 | 3700 | 185 | 3700 | 247 |
| 280 S/M | 1LG4/1LG6 1LP4/1PP4/1PP6 | 28. | 3600 | 60 | 3000 | 100 | 3000 | 150 | 3000 | 200 |
| 315 S | 1LG4/1LG6 1LP4/1PP4/1PP6 | 310 | 3600 | 60 | 2600 | 87 | 2600 | 130 | 2600 | 176 |
| 315 M | 1LG4/1LG6 1LP4/1PP4/1PP6 | 313 | 3600 | 60 | 2600 | 87 | 2600 | 130 | 2600 | 173 |
| 315 L | 1LG4/1LG6 1LP4/1PP4/1PP6 | 316 317 318 | 3600 ²⁾ | 60 ²⁾ | 2600 | 87 | 2600 | 130 | 2600 | 173 |

¹⁾ Request required for continuous duty in the $f_{\max.}$ ($n_{\max.}$) range.

²⁾ For vertical mounting $n_{\max.} = 3000$ rpm, $f_{\max.} = 50$ Hz.

IEC Squirrel-Cage Motors

Motors operating with frequency converters

Orientation

Technical specifications (continued)

Explosion-proof motors in Zone 1 with type of protection “de” (motor series 1MJ)

| Motor frame size | Motor type | 2-pole ¹⁾ | | 4-pole | | 6-pole | | 8-pole | | |
|------------------|------------------|----------------------|------------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|--|
| | | n_{max} rpm | f_{max} Hz | n_{max} rpm | f_{max} Hz | n_{max} rpm | f_{max} Hz | n_{max} rpm | f_{max} Hz | |
| 1MJ6 | | | | | | | | | | |
| 71 M | 1MJ6 07 . | 6000 | 100 | 3000 | 100 | 2000 | 100 | 1500 | 100 | |
| 80 M | 1MJ6 08 . | 6000 | 100 | 3000 | 100 | 2000 | 100 | 1500 | 100 | |
| 90 L | 1MJ6 09 . | 6000 | 100 | 3000 | 100 | 2000 | 100 | 1500 | 100 | |
| 100 L | 1MJ6 10 . | 5400 | 90 | 3000 | 100 | 2000 | 100 | 1500 | 100 | |
| 112 M | 1MJ6 11 . | 5400 | 90 | 3000 | 100 | 2000 | 100 | 1500 | 100 | |
| 132 S/M | 1MJ6 13 . | 4800 | 80 | 3000 | 100 | 2000 | 100 | 1500 | 100 | |
| 160 M/L | 1MJ6 16 . | 4500 | 75 | 3000 | 100 | 2000 | 100 | 1500 | 100 | |
| 180 M/L | 1MJ6 18 . | 5100 | 85 | 3000 | 100 | 2000 | 100 | 1500 | 100 | |
| 200 L | 1MJ6 20 . | 5100 | 85 | 3000 | 100 | 2000 | 100 | 1500 | 100 | |
| 1MJ7 | | | | | | | | | | |
| 225 S/M | 1MJ7 22 . | 4500 | 75 | 3000 | 100 | 2000 | 100 | 1500 | 100 | |
| 250 M | 1MJ7 25 . | 3900 | 65 | 3700 | 100 | 2000 | 100 | 1500 | 100 | |
| 280 S | 1MJ7 28 . | 3600 | 60 | 3000 | 100 | 2000 | 100 | 1500 | 100 | |
| 315 S/M | 1MJ7 31 . | 3600 ²⁾ | 60 ²⁾ | 2600 | 87 | 2000 | 100 | 1500 | 100 | |

Explosion-proof motors in Zone 1 with type of protection “e” (motor series 1MA)

1MA motors cannot be operated with a converter.

Explosion-proof motors in Zones 2, 21 and 22 with type of protection “n” or protection against dust explosions (motor series 1LA, 1LG and 1PQ8)

The values for motor series 1LA8 and 1PQ8 in Zones 2 and 22 are listed in the selection and ordering data in catalog part “Non-standard motors frame size 315 and above”.

| Motor frame size | Motor type | 2-pole ¹⁾ | | 4-pole | | 6-pole | | 8-pole | | |
|-------------------------------|---------------------------|----------------------|------------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|--|
| | | n_{max} rpm | f_{max} Hz | n_{max} rpm | f_{max} Hz | n_{max} rpm | f_{max} Hz | n_{max} rpm | f_{max} Hz | |
| 1LA5, 1LA6, 1LA7, 1LA9 | | | | | | | | | | |
| 56 M | 1LA7/1LA9 05. | 6000 | 100 | 3000 | 100 | 2000 | 100 | 1500 | 100 | |
| 63 M | 1LA7/1LA9 06. | 6000 | 100 | 3000 | 100 | 2000 | 100 | 1500 | 100 | |
| 71 M | 1LA7/1LA9 07. | 6000 | 100 | 3000 | 100 | 2000 | 100 | 1500 | 100 | |
| 80 M | 1LA7/1LA9 08. | 6000 | 100 | 3000 | 100 | 2000 | 100 | 1500 | 100 | |
| 90 L | 1LA7/1LA9 09. | 6000 | 100 | 3000 | 100 | 2000 | 100 | 1500 | 100 | |
| 100 L | 1LA6/1LA7/1LA9 10. | 5400 | 90 | 3000 | 100 | 2000 | 100 | 1500 | 100 | |
| 112 M | 1LA6/1LA7/1LA9 11. | 5400 | 90 | 3000 | 100 | 2000 | 100 | 1500 | 100 | |
| 132 S/M | 1LA6/1LA7/1LA9 13. | 4800 | 80 | 3000 | 100 | 2000 | 100 | 1500 | 100 | |
| 160 M/L | 1LA6/1LA7/1LA9 16. | 4500 | 75 | 3000 | 100 | 2000 | 100 | 1500 | 100 | |
| 180 M/L | 1LA5/1LA9 18. | 5100 ³⁾ | 85 ³⁾ | 3000 | 100 | 2000 | 100 | 1500 | 100 | |
| 200 L | 1LA5/1LA9 20. | 5100 ³⁾ | 85 ³⁾ | 3000 | 100 | 2000 | 100 | 1500 | 100 | |
| 225 S/M | 1LA5 22. | 5100 | 85 | 3000 | 100 | 2000 | 100 | 1500 | 100 | |
| 1LG4, 1LG6 | | | | | | | | | | |
| 180 M/L | 1LG4/1LG6 18. | 4500 | 75 | 3000 | 100 | 2000 | 100 | 1500 | 100 | |
| 200 L | 1LG4/1LG6 20. | 4500 | 75 | 3000 | 100 | 2000 | 100 | 1500 | 100 | |
| 225 S/M | 1LG4/1LG6 22. | 4500 | 75 | 3000 | 100 | 2000 | 100 | 1500 | 100 | |
| 250 M | 1LG4/1LG6 25. | 3900 | 65 | 3000 | 100 | 2000 | 100 | 1500 | 100 | |
| 280 S/M | 1LG4/1LG6 28. | 3600 | 60 | 3000 | 100 | 2000 | 100 | 1500 | 100 | |
| 315 S/M/L | 1LG4/1LG6 31. | 3600 ¹⁾ | 60 ¹⁾ | 2600 | 87 | 2000 | 100 | 1500 | 100 | |

¹⁾ Request required for continuous duty in the f_{max} , (n_{max}) range.

²⁾ For vertical mounting n_{max} = 3000 rpm, f_{max} = 50 Hz.

³⁾ For 1LA9 motors frame sizes 180 M/L and 200 L, n_{max} = 4500 rpm and f_{max} = 75 Hz.

IEC Squirrel-Cage Motors

Motors operating with frequency converters

Orientation

Technical specifications (continued)

Bearings and bearing currents

When operating multiphase induction machines on a converter, an electrical bearing stress results from a capacitive induced voltage via the bearing lubricating film, depending on the principle being used. The physical cause of this is the common-mode voltage at the converter output. The sum of the three phase-to-neutral voltages is not zero at all times, unlike with direct on-line operation. The high-frequency, pulse-shaped common-mode voltage brings about a residual current, which closes back to the converter's DC link via the machine's internal capacitances, the machine housing and the earthing circuit. The machine's internal capacitances include the main insulation winding capacitance, the geometric capacitance between the rotor and stator, the lubricating film capacitance and the capacitance of any bearing insulation that may be present. The current level via the internal capacitances is proportional to the common-mode voltage regulation ($i_{(t)} = C \cdot du/dt$).

In order to apply currents to the motor which are sinusoidal as far as possible (smooth running, oscillation torques, stray losses), a high clock frequency is required for the converter's output voltage. The related (very steep) switching edges of the converter output voltage (and also, therefore, of the common-mode voltage) cause correspondingly high capacitive currents and voltages on the machine's internal capacitances.

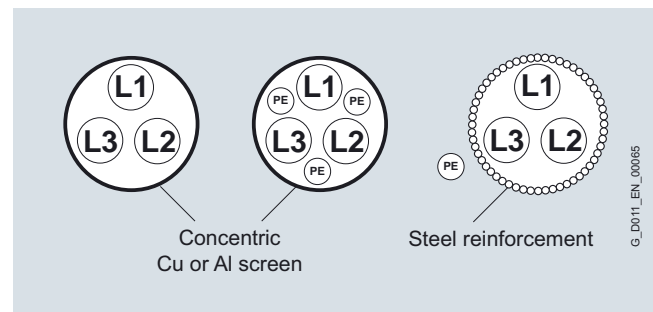
In the worst-case scenario, the capacitive voltage induced via the bearing can lead to random punctures of the bearing lubricating film, thus damaging the bearing/causing premature wear. The current pulses caused by the puncture in the lubricating film are referred to as EDM (Electrostatic Discharge Machining) currents, although this is not primarily a question of an electrostatic effect, but more of (partial) punctures of insulating material, i.e., of partial discharges.

This physical effect, which occurs in isolated cases, has mostly been observed in connection with larger motors.

EMC-compliant installation of the drive system is a basic prerequisite for preventing premature bearing damage via bearing currents.

The most important measures for reducing bearing currents:

- Insulated motor bearings at the non-drive end NDE
The insulated bearing is standard for all non-standard 1LA8 motors designated for converter operation. Furthermore it is recommended that an insulated bearing is ordered for NDE for motor series 1LG, 1PP4, 1LP4 and 1MJ7 frame size 225 and above (order code **L27**).
- Hybrid bearings with ceramic bearing elements on drive end (DE) and non-drive end (NDE)
- Earthing brush for converter-fed operation for 1LG motors (order code **M44**)
- Use of cables with a symmetrical cable cross-section:



- Use of motor reactors
- Use of earthing cables with low impedance in a large frequency range (0 Hz up to approximately 70 MHz): for example, plaited copper ribbon cables, HF litz wires
- Separate HF equipotential-bonding cable between motor housing and driven machine
- Separate HF equipotential-bonding cable between motor housing and converter PE busbar
- 360° HF contacting of the cable shield on the motor housing and the converter PE busbar. This can be achieved using EMC screwed glands on the motor end and EMC shield clips on the converter end, for example.
- Common-mode filters at the converter output (e.g. nanoperm rings).

The given measures can be required for motor series 1LA5 frame size 225 and 1LG frame size 225 and above depending on the application with converter-fed operation and are therefore recommend.

IEC Squirrel-Cage Motors

Motors operating with frequency converters

Orientation

Selection and ordering data

Preliminary selection of the motor according to motor type/series, speed or number of poles, frame size, rated output, rated torque, rated speed and rated current

Surface-cooled motors with standard insulation for voltages ≤500 V – Aluminum or cast-iron housing

See section “Surface-cooled motors with standard insulation for voltages ≤500 V – Aluminum or cast-iron housing” Pages 5/10 and 5/11.

Self-ventilated motors with special insulation for voltages up to 690 V

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 690 V | Detailed selection and ordering data |
|--------------------------------------|------------------------|--------------|---------------|---------------|------------------------|--------------------------------------|
| rpm | | kW | rpm | Nm | A | Page |
| Aluminum series 1LA7 and 1LA5 | | | | | | |
| 3000, 2-pole | 100 L ... 225 M | 3 ... 45 | 2890 ... 2960 | 9.9 ... 145 | 3.5 ... 45.0 | 5/12 ... 5/13 |
| 1500, 4-pole | 100 L ... 225 S | 2.2 ... 37 | 1420 ... 1470 | 15 ... 240 | 2.75 ... 38.5 | 5/12 ... 5/13 |
| 1000, 6-pole | 100 L ... 225 M | 1.5 ... 30 | 925 ... 978 | 15 ... 293 | 2.25 ... 35.5 | 5/12 ... 5/13 |
| Cast-iron series 1LG6 | | | | | | |
| 3000, 2-pole | 180 M ... 315 L | 22 ... 200 | 2955 ... 2982 | 71 ... 641 | 22.5 ... 188 | 5/14 ... 5/16 |
| 1500, 4-pole | 180 M ... 315 L | 18.5 ... 200 | 1470 ... 1490 | 120 ... 1282 | 20 ... 198 | 5/14 ... 5/16 |
| 1000, 6-pole | 180 L ... 315 L | 15 ... 160 | 975 ... 990 | 147 ... 1543 | 17.2 ... 164 | 5/14 ... 5/16 |
| 750, 8-pole | 180 L ... 315 L | 11 ... 132 | 725 ... 740 | 145 ... 1704 | 13.8 ... 140 | 5/14 ... 5/16 |
| Cast-iron series 1LA8 | | | | | | |
| 3000, 2-pole | 315 ... 450 | 240 ... 970 | 2978 ... 2987 | 770 ... 3101 | 730 ... 900 | 3/18 ... 3/19 |
| 1500, 4-pole | 315 ... 450 | 235 ... 980 | 1485 ... 1492 | 1511 ... 6273 | 235 ... 950 | 3/18 ... 3/19 |
| 1000, 6-pole | 315 ... 450 | 190 ... 780 | 990 ... 993 | 1833 ... 7502 | 196 ... 790 | 3/20 ... 3/21 |
| 750, 8-pole | 315 ... 450 | 145 ... 600 | 740 ... 745 | 1871 ... 7691 | 162 ... 660 | 3/20 ... 3/21 |

Forced ventilated motors with mounted separately driven fan with special insulation for voltages up to 690 V

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 690 V | Detailed selection and ordering data |
|------------------------------|--------------------|--------------|---------------|---------------|------------------------|--------------------------------------|
| rpm | | kW | rpm | Nm | A | Page |
| Cast-iron series 1PQ8 | | | | | | |
| 3000, 2-pole | 315 ... 450 | 240 ... 970 | 2978 ... 2987 | 770 ... 3101 | 730 ... 900 | 3/26 ... 3/27 |
| 1500, 4-pole | 315 ... 450 | 235 ... 980 | 1485 ... 1492 | 1511 ... 6273 | 235 ... 950 | 3/26 ... 3/27 |
| 1000, 6-pole | 315 ... 450 | 190 ... 780 | 990 ... 993 | 1833 ... 7502 | 196 ... 790 | 3/28 ... 3/29 |
| 750, 8-pole | 315 ... 450 | 145 ... 600 | 740 ... 745 | 1871 ... 7691 | 162 ... 660 | 3/28 ... 3/29 |

More information

Planning notes for drives with constant and square-law torque can be found in the following catalogs:

- Frequency converters – MICROMASTER 420/430/440: Catalog DA 51.2
- Frequency converters for distributed drive solutions – MICROMASTER 411/COMBIMASTER 411: Catalog DA 51.3
- SIMOVERT MASTERDRIVES Motion Control/Vector Control: Catalog series DA 65
- SINAMICS G130 and G150 frequency converters: Catalog series D 11
- Frequency converters SINAMICS G110, SINAMICS G120 and SINAMICS G120 D: Catalog D11.1
- SINAMICS S120 and S150 drive systems: Catalog series D 21

These catalogs contain tables that specify the assignment of squirrel-cage motors to converters from Siemens in accordance with the load characteristic of the driven machine.

For further information, please contact your local Siemens contact – see “Siemens Contacts Worldwide” in the Appendix.

IEC Squirrel-Cage Motors

Motors operating with frequency converters

Surface-cooled motors with standard insulation
up to 500 V – Aluminum or cast-iron housing

Overview

Standard motors up to frame size 315 L

The standard motors from Siemens are suitable for converter-fed operation at rated voltages up to 460 V. The following table shows the available motor series:

Standard motors up to frame size 315 L for converter-fed operation up to 460 V rated voltage

| Motor type | Standard type of protection | Frame design | Motor series | Motor frame sizes | Output range kW |
|---|-----------------------------|--------------|--------------|-------------------|--------------------|
| Self-ventilated motors with improved efficiency (energy-saving motors according to efficiency class EFF2 Improved Efficiency for 2-pole and 4-pole motors with outputs from 1.1 to 90 kW) | IP55 | Aluminum | 1LA7 | 56 M ... 160 L | 0.06 ... 18.5 |
| | | | 1LA5 | 180 M ... 225 M | 11 ... 45 |
| | | Cast-iron | 1LA6 | 100 L ... 160 L | 0.75 ... 18.5 |
| | | | 1LG4 | 180 M ... 315 L | 11 ... 200 |
| Self-ventilated motors with high efficiency (energy-saving motors according to efficiency class EFF1 High Efficiency for 2-pole and 4-pole motors with outputs from 1.1 to 90 kW) | IP55 | Aluminum | 1LA9 | 56 M ... 200 L | 0.06 ... 37 |
| | | Cast-iron | 1LG6 | 180 M ... 315 L | 11 ... 200 |
| Self-ventilated motors with increased output | IP55 | Aluminum | 1LA9 | 56 M ... 200 L | 0.14 ... 53 |
| | | Cast-iron | 1LG4 | 180 M ... 280 M | 15 ... 110 |
| Self-cooled motors without external fan | IP55 | Aluminum | 1LP7 | 63 M ... 160 L | 0.045 ... 7 |
| | | | 1LP5 | 180 M ... 200 L | 5.5 ... 16.5 |
| | | Cast-iron | 1LP4 | 180 L ... 315 L | 3.7 ... 67 |
| Pole-changing motors | IP55 | Aluminum | 1LA7 | 63 M ... 160 L | 0.1 ... 17 |
| | | | 1LA5 | 180 M ... 200 L | 11 ... 31 |

For technical data, selection and ordering data and special versions, see the relevant sections of "Standard motors up to frame size 315 L".

5

Non-standard motors frame size 315 and above

The non-standard motors from Siemens are suitable for converter-fed operation at rated voltages up to 500 V. The following table shows the available motor series:

Non-standard motors up to frame size 315 for converter-fed operation up to 500 V rated voltage

| Motor type | Standard type of protection | Frame design | Motor series | Motor frame sizes | Output range kW |
|---|-----------------------------|--------------|--------------|-------------------|--------------------|
| Self-ventilated motors for converter-fed operation – Cast-iron series 1LA8 | IP55 | Cast-iron | 1LA8 | 315 ... 450 | 145 ... 1000 |
| Forced ventilated motors with mounted separately driven fan for converter-fed operation – Cast-iron series 1PQ8 | IP55 | Cast-iron | 1PQ8 | 315 ... 450 | 145 ... 1000 |
| Self-ventilated motors with through ventilation for converter-fed operation – Cast-iron series 1LL8 | IP23 | Cast-iron | 1LL8 | 315 ... 450 | 200 ... 1250 |

For technical data, selection and ordering data and special versions, see the relevant sections of "Non-standard motors up to frame size 315".

IEC Squirrel-Cage Motors

Motors operating with frequency converters

Surface-cooled motors with standard insulation
up to 500 V – Aluminum or cast-iron housing

Overview (continued)

Explosion-proof motors

The explosion-proof motors from Siemens listed below up to frame size 315 L can be operated with a converter at rated voltages up to 460 V (for motor series 1LA8 and 1PQ8 up to 500 V):

Explosion-proof motors up to frame size 315 L for converter-fed operation up to 460 V (for motor series 1LA8 and 1PQ8 up to 500 V) rated voltage

| Motor type | Standard type of protection | Frame design | Motor series ¹⁾ | Motor frame sizes | Output range |
|---|-----------------------------|--------------|----------------------------|-------------------|---------------|
| | | | | | kW |
| Self-ventilated motors in Zone 1 with type of protection "d" (Zone 1 Exde IIC T4) | IP55 | Cast-iron | 1MJ6 | 71 M ... 200 L | 0.25 ... 37 |
| | | | 1MJ7 | 225 M ... 315 L | 30 ... 132 |
| Self-ventilated motors in Zone 2 with type of protection "n" or protection against dust explosions | IP55 | Aluminum | 1LA7 | 63 M ... 160 L | 0.09 ... 18.5 |
| | | | 1LA9 | 56 M ... 200 L | 0.06 ... 37 |
| | | Cast-iron | 1LA6 | 100 L ... 160 L | 0.75 ... 18.5 |
| | | | 1LG4/1LG6 | 180 M ... 315 L | 11 ... 200 |
| Self-ventilated motors in Zone 21 with type of protection "n" or protection against dust explosions | IP55 | Aluminum | 1LA7 | 56 M ... 160 L | 0.09 ... 18.5 |
| | | | 1LA5 | 180 M ... 225 M | 11 ... 45 |
| | | | 1LA9 | 56 M ... 200 L | 0.06 ... 37 |
| | | Cast-iron | 1LG4/1LG6 | 180 M ... 315 L | 11 ... 200 |
| Self-ventilated motors in Zone 22 with type of protection "n" or protection against dust explosions | IP55 | Aluminum | 1LA7 | 56 M ... 160 L | 0.09 ... 18.5 |
| | | | 1LA5 | 180 M ... 225 M | 11 ... 45 |
| | | | 1LA9 | 56 M ... 200 L | 0.06 ... 37 |
| | | Cast-iron | 1LA6 | 100 L ... 160 L | 0.75 ... 18.5 |
| | | | 1LG4/1LG6 | 180 M ... 315 L | 11 ... 200 |
| Self-ventilated motors in Zones 2 and 22 with type of protection "n" or protection against dust explosions | IP55 | Cast-iron | 1LA8 | 315 ... 450 | 145 ... 1000 |
| Forced-air cooled motors with mounted separately driven fan for converter-fed operation in Zones 2 and 22 with type of protection "n" or protection against dust explosions | IP55 | Cast-iron | 1PQ8 | 315 ... 450 | 145 ... 1000 |

For technical data, selection and ordering data and special versions, see the relevant sections of "Explosion-proof motors".

Fan motors

The fan motors from Siemens listed below are suitable for converter-fed operation at rated voltages up to 460 V :

Fan motors for converter-fed operation at 460 V rated voltage

| Motor type | Standard degree of protection | Frame design | Motor series | Motor frame sizes | Output range |
|---|-------------------------------|--------------|--------------|-------------------|---------------|
| | | | | | kW |
| Self-ventilated motors in pole-changing version | IP55 | Aluminum | 1LA7 | 80 M ... 160 L | 0.15 ... 17 |
| | | | 1LA5 | 180 M ... 200 L | 18 ... 31 |
| | | Cast-iron | 1LG4 | 180 M ... 315 L | 11 ... 200 |
| Forced-air cooled motors without external fan and fan cover | IP55 | Aluminum | 1PP7 | 63 M ... 160 L | 0.09 ... 18.5 |
| | | | 1PP5 | 180 M ... 200 L | 15 ... 37 |
| | | Cast-iron | 1PP4 | 180 M ... 315 L | 11 ... 200 |

For technical data, selection and ordering data and special versions, see the relevant sections of "Fan motors".

¹⁾ For converter-fed operation with frame size 225 and above, it is recommended that an "Insulated bearing cartridge" – order code **L27** – is used. For motor series 1LA8 and 1PQ8, the insulated bearing cartridge is standard.

IEC Squirrel-Cage Motors

Motors operating with frequency converters

Self-ventilated motors with special insulation
up to 690 V – Aluminum series 1LA7 and 1LA5

Selection and ordering data

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | | | | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight Type of construction IM B3 approx. m kg |
|--|------------|----------------------------------|-----------------------|------------------------------|------------------------------|--------------------------------|--------------------------------|-------------------------------|-------------------------------|--|-------|---|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Efficiency at 50 Hz 3/4-load | Power factor at 50 Hz 4/4-load | Power factor at 50 Hz 3/4-load | Rated current at 400 V, 50 Hz | Rated current at 690 V, 50 Hz | | | |
| P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{rated}$ | $\cos\phi_{rated}$ | I_{rated} A | I_{rated} A | | | |
| 2-pole, 3000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, specially for operation on SIMOVERT MASTERDRIVES | | | | | | | | | | | | |
| 3 | 100 L | 2890 | 9.9 | 84 | 84 | 0.85 | 0.81 | 6.1 | 3.5 | 1LA7 106-2PM00 | | 21 |
| 4 | 112 M | 2905 | 13 | 86 | 86 | 0.86 | 0.83 | 7.8 | 4.55 | 1LA7 113-2PM00 | | 27 |
| 5.5 | 132 S | 2925 | 18 | 86.5 | 86.5 | 0.89 | 0.86 | 10.4 | 6 | 1LA7 130-2PM00 | | 37 |
| 7.5 | 132 S | 2930 | 24 | 88 | 88 | 0.89 | 0.86 | 13.8 | 8 | 1LA7 131-2PM00 | | 42 |
| 11 | 160 M | 2930 | 36 | 89.5 | 89.5 | 0.88 | 0.85 | 20 | 11.6 | 1LA7 163-2PM00 | | 63 |
| 15 | 160 M | 2940 | 49 | 90 | 90.2 | 0.9 | 0.88 | 26.5 | 15.4 | 1LA7 164-2PM00 | | 72 |
| 18.5 | 160 L | 2940 | 60 | 91 | 91.2 | 0.91 | 0.89 | 32 | 18.6 | 1LA7 166-2PM00 | | 82 |
| 22 | 180 M | 2940 | 71 | 91.7 | 91.7 | 0.88 | 0.85 | 31.5 | 23 | 1LA5 183-2PM00 | | 113 |
| 30 | 200 L | 2945 | 97 | 92.3 | 92.3 | 0.89 | 0.86 | 53 | 30.5 | 1LA5 206-2PM00 | | 159 |
| 37 | 200 L | 2945 | 120 | 92.8 | 92.8 | 0.89 | 0.86 | 65 | 37.5 | 1LA5 207-2PM00 | | 179 |
| 45 | 225 M | 2960 | 145 | 93.6 | 93.6 | 0.89 | 0.86 | 78 | 45 | 1LA5 223-2PM00 | | 209 |
| 4-pole, 1500 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, specially for operation on SIMOVERT MASTERDRIVES | | | | | | | | | | | | |
| 2.2 | 100 L | 1420 | 15 | 82 | 82.5 | 0.82 | 0.77 | 4.7 | 2.75 | 1LA7 106-4PM00 | | 20 |
| 3 | 100 L | 1420 | 20 | 82.6 | 82.6 | 0.82 | 0.77 | 6.4 | 3.7 | 1LA7 107-4PM00 | | 23 |
| 4 | 112 M | 1440 | 27 | 85 | 85.5 | 0.83 | 0.79 | 8.2 | 4.75 | 1LA7 113-4PM00 | | 29 |
| 5.5 | 132 S | 1455 | 36 | 86 | 86 | 0.81 | 0.76 | 11.4 | 6.6 | 1LA7 130-4PM00 | | 39 |
| 7.5 | 132 M | 1455 | 49 | 87 | 87.5 | 0.82 | 0.77 | 15.2 | 8.8 | 1LA7 133-4PM00 | | 46 |
| 11 | 160 M | 1460 | 72 | 88.5 | 89 | 0.84 | 0.8 | 21.5 | 12.4 | 1LA7 163-4PM00 | | 67 |
| 15 | 160 L | 1460 | 98 | 90 | 90.2 | 0.84 | 0.8 | 28.5 | 16.6 | 1LA7 166-4PM00 | | 81 |
| 18.5 | 180 M | 1460 | 121 | 90.5 | 90.5 | 0.83 | 0.79 | 35.5 | 20.5 | 1LA5 183-4PM00 | | 113 |
| 22 | 180 L | 1460 | 144 | 91.2 | 91.2 | 0.84 | 0.8 | 41.5 | 24 | 1LA5 186-4PM00 | | 123 |
| 30 | 200 L | 1465 | 196 | 91.8 | 91.8 | 0.86 | 0.83 | 55 | 32 | 1LA5 207-4PM00 | | 157 |
| 37 | 225 S | 1470 | 240 | 92.9 | 92.9 | 0.87 | 0.84 | 66 | 38.5 | 1LA5 220-4PM00 | | 206 |
| 45 | 225 M | 1470 | 292 | 93.4 | 93.4 | 0.87 | 0.84 | 80 | 46.5 | 1LA5 223-4PM00 | | 232 |
| 6-pole, 1000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, specially for operation on SIMOVERT MASTERDRIVES | | | | | | | | | | | | |
| 1.5 | 100 L | 925 | 15 | 74 | 74 | 0.75 | 0.69 | 3.9 | 2.25 | 1LA7 106-6PM00 | | 20 |
| 2.2 | 112 M | 940 | 22 | 78 | 78.5 | 0.78 | 0.72 | 5.2 | 3.05 | 1LA7 113-6PM00 | | 24 |
| 3 | 132 S | 950 | 30 | 79 | 79.5 | 0.76 | 0.7 | 7.2 | 4.2 | 1LA7 130-6PM00 | | 34 |
| 4 | 132 M | 950 | 40 | 80.5 | 80.5 | 0.76 | 0.7 | 9.4 | 5.5 | 1LA7 133-6PM00 | | 41 |
| 5.5 | 132 M | 950 | 55 | 83 | 83 | 0.76 | 0.7 | 12.6 | 7.3 | 1LA7 134-6PM00 | | 50 |
| 7.5 | 160 M | 960 | 75 | 86 | 86 | 0.74 | 0.68 | 17 | 9.9 | 1LA7 163-6PM00 | | 70 |
| 11 | 160 L | 960 | 109 | 87.5 | 87.5 | 0.74 | 0.68 | 24.5 | 14.2 | 1LA7 166-6PM00 | | 89 |
| 15 | 180 L | 970 | 148 | 89.5 | 89.5 | 0.77 | 0.71 | 31.5 | 18.2 | 1LA5 186-6PM00 | | 126 |
| 18.5 | 200 L | 975 | 181 | 90.2 | 90.2 | 0.77 | 0.71 | 38.5 | 22.5 | 1LA5 206-6PM00 | | 161 |
| 22 | 200 L | 975 | 215 | 90.8 | 90.8 | 0.77 | 0.71 | 45.5 | 26.5 | 1LA5 207-6PM00 | | 183 |
| 30 | 225 M | 978 | 293 | 91.8 | 91.8 | 0.77 | 0.71 | 61 | 35.5 | 1LA5 223-6PM00 | | 214 |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | Final position: Type of construction code | | | With standard flange | | With special flange | |
|----------------------|---------------------------------------|--------|--------|--|-----------------|--|----------------------|---|---------------------|---|
| | 500 VY | 500 VΔ | 690 VY | Without flange | With flange | IM V1 with protective cover ^{1) 2)} | IM B35 | IM B14, IM V18 without protective cover, IM V19 | IM B34 | IM B14, IM V18 without protective cover, IM V19 |
| | 3 | 5 | 8 | 0 | 1 | 4 | 6 | 2 | 7 | 3 |
| 1LA7 10 □□ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 11 □□ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 13 □□ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 16 □□ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA5 18 □□ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | ✓ | – | – | – |
| 1LA5 20 □□ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | ✓ | – | – | – |
| 1LA5 22 □□ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | ✓ | – | – | – |

□ Standard version
○ Without additional charge

✓ With additional charge
– Not possible

For additional text and footnotes, see Page 5/13.

IEC Squirrel-Cage Motors

Motors operating with frequency converters

Self-ventilated motors with special insulation
up to 690 V – Aluminum series 1LA7 and 1LA5

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque T_{LR}/T_{rated} | Locked-rotor current as multiple of rated current I_{LR}/I_{rated} | Breakdown torque torque T_B/T_{rated} | Torque class CL | Moment of inertia J kgm ² | Noise rated output Measuring surface sound pressure level at 50 Hz $L_{p(A)}$ dB(A) | Sound pressure level at 50 Hz L_{WA} dB(A) |
|--|---|---|---|--------------------|--|--|---|
| 2-pole, 3000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, specially for operation on SIMOVERT MASTERDRIVES | | | | | | | |
| 1LA7 106-2PM□□ | 2.8 | 6.8 | 3 | 16 | 0.0035 | 62 | 74 |
| 1LA7 113-2PM□□ | 2.6 | 7.2 | 2.9 | 16 | 0.0059 | 63 | 75 |
| 1LA7 130-2PM□□ | 2 | 5.9 | 2.8 | 16 | 0.015 | 68 | 80 |
| 1LA7 131-2PM□□ | 2.3 | 6.9 | 3 | 16 | 0.019 | 68 | 80 |
| 1LA7 163-2PM□□ | 2.1 | 6.5 | 2.9 | 16 | 0.034 | 70 | 82 |
| 1LA7 164-2PM□□ | 2.2 | 6.6 | 3 | 16 | 0.043 | 70 | 82 |
| 1LA7 166-2PM□□ | 2.4 | 7 | 3.1 | 16 | 0.051 | 70 | 82 |
| 1LA5 183-2PM□□ | 2.5 | 6.9 | 3.2 | 16 | 0.077 | 70 | 83 |
| 1LA5 206-2PM□□ | 2.4 | 7.2 | 2.8 | 16 | 0.14 | 71 | 84 |
| 1LA5 207-2PM□□ | 2.4 | 7.7 | 2.8 | 16 | 0.16 | 71 | 84 |
| 1LA5 223-2PM□□ | 2.8 | 7.7 | 3.4 | 16 | 0.2 | 71 | 84 |
| 4-pole, 1500 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, specially for operation on SIMOVERT MASTERDRIVES | | | | | | | |
| 1LA7 106-4PM□□ | 2.5 | 5.6 | 2.8 | 16 | 0.0047 | 53 | 65 |
| 1LA7 107-4PM□□ | 2.7 | 5.6 | 3 | 16 | 0.0055 | 53 | 65 |
| 1LA7 113-4PM□□ | 2.7 | 6 | 3 | 16 | 0.012 | 53 | 65 |
| 1LA7 130-4PM□□ | 2.5 | 6.3 | 3.1 | 16 | 0.018 | 62 | 74 |
| 1LA7 133-4PM□□ | 2.7 | 6.7 | 3.2 | 16 | 0.023 | 62 | 74 |
| 1LA7 163-4PM□□ | 2.2 | 6.2 | 2.7 | 16 | 0.043 | 66 | 78 |
| 1LA7 166-4PM□□ | 2.6 | 6.5 | 3 | 16 | 0.055 | 66 | 78 |
| 1LA5 183-4PM□□ | 2.3 | 7.5 | 3 | 16 | 0.13 | 63 | 76 |
| 1LA5 186-4PM□□ | 2.3 | 7.5 | 3 | 16 | 0.15 | 63 | 76 |
| 1LA5 207-4PM□□ | 2.6 | 7 | 3.2 | 16 | 0.24 | 65 | 78 |
| 1LA5 220-4PM□□ | 2.8 | 7 | 3.2 | 16 | 0.32 | 65 | 78 |
| 1LA5 223-4PM□□ | 2.8 | 7.7 | 3.3 | 16 | 0.36 | 65 | 78 |
| 6-pole, 1000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, specially for operation on SIMOVERT MASTERDRIVES | | | | | | | |
| 1LA7 106-6PM□□ | 2.3 | 4 | 2.3 | 16 | 0.0047 | 47 | 59 |
| 1LA7 113-6PM□□ | 2.2 | 4.6 | 2.5 | 16 | 0.0091 | 52 | 64 |
| 1LA7 130-6PM□□ | 1.9 | 4.2 | 2.2 | 16 | 0.015 | 63 | 75 |
| 1LA7 133-6PM□□ | 2.1 | 4.5 | 2.4 | 16 | 0.019 | 63 | 75 |
| 1LA7 134-6PM□□ | 2.3 | 5 | 2.6 | 16 | 0.025 | 63 | 75 |
| 1LA7 163-6PM□□ | 2.1 | 4.6 | 2.5 | 16 | 0.044 | 66 | 78 |
| 1LA7 166-6PM□□ | 2.3 | 4.8 | 2.6 | 16 | 0.063 | 66 | 78 |
| 1LA5 186-6PM□□ | 2 | 5.2 | 2.4 | 16 | 0.15 | 66 | 78 |
| 1LA5 206-6PM□□ | 2.7 | 5.5 | 2.8 | 16 | 0.24 | 66 | 78 |
| 1LA5 207-6PM□□ | 2.8 | 5.5 | 2.9 | 16 | 0.28 | 66 | 78 |
| 1LA5 223-6PM□□ | 2.8 | 5.7 | 2.9 | 16 | 0.36 | 66 | 78 |

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

- For type of construction IM V1 with/without protective cover, motors 1LA5 183-... to 1LA5 223-... (motor series 1LA5 frame sizes 180 M to 225 M) can be supplied with two additional eyebolts. Specify order supplement **"Z"** and order code **K32**.
- The "Second shaft extension" option, order code **K16** is not possible.
- Type of construction IM V3 can only be ordered using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Motors operating with frequency converters

Self-ventilated motors with special insulation
up to 690 V – Cast-iron series 1LG6

Selection and ordering data

| Rated output at 50 Hz P_{rated} kW | Frame size FS | Operating values at rated output | | | | | | | | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight Type of construction IM B3 approx. m kg |
|--|------------------|---|---|--|--|---|---|--|--|--|-------|---|
| | | Rated speed at 50 Hz n_{rated} rpm | Rated torque at 50 Hz T_{rated} Nm | Efficiency at 50 Hz 4/4-load η_{rated} % | Efficiency at 50 Hz 3/4-load η_{rated} % | Power factor at 50 Hz 4/4-load $\cos\phi_{\text{rated}}$ | Power factor at 50 Hz 3/4-load $\cos\phi_{\text{rated}}$ | Rated current at 400 V, 50 Hz I_{rated} A | Rated current at 690 V, 50 Hz I_{rated} A | | | |
| 2-pole, 3000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, specially for operation on SIMOVERT MASTERDRIVES | | | | | | | | | | | | |
| 22 | 180 M | 2955 | 71 | 93.7 | 94.1 | 0.88 | 0.85 | 38.5 | 22.5 | 1LG6 183-2PM00 | 180 | |
| 30 | 200 L | 2960 | 97 | 93.1 | 93 | 0.89 | 0.85 | 53 | 30.5 | 1LG6 206-2PM00 | 225 | |
| 37 | 200 L | 2960 | 119 | 93.6 | 93.5 | 0.89 | 0.86 | 64 | 37 | 1LG6 207-2PM00 | 255 | |
| 45 | 225 M | 2965 | 145 | 94.4 | 94.6 | 0.89 | 0.87 | 77 | 45 | 1LG6 223-2PM00 ¹⁾ | 330 | |
| 55 | 250 M | 2975 | 177 | 95 | 95 | 0.9 | 0.88 | 93 | 54 | 1LG6 253-2PM00 ¹⁾ | 420 | |
| 75 | 280 S | 2975 | 241 | 95 | 95 | 0.89 | 0.87 | 128 | 74 | 1LG6 280-2PM00 ¹⁾ | 530 | |
| 90 | 280 M | 2978 | 289 | 95.3 | 95.4 | 0.9 | 0.88 | 150 | 88 | 1LG6 283-2PM00 ¹⁾ | 615 | |
| 110 | 315 S | 2982 | 352 | 95.5 | 95.4 | 0.91 | 0.89 | 182 | 106 | 1LG6 310-2PM00 ¹⁾ | 790 | |
| 132 | 315 M | 2982 | 423 | 95.8 | 95.7 | 0.91 | 0.91 | 220 | 126 | 1LG6 313-2PM00 ¹⁾ | 915 | |
| 160 | 315 L | 2982 | 512 | 96.2 | 96.2 | 0.92 | 0.91 | 260 | 152 | 1LG6 316-2PM00 ¹⁾ | 1055 | |
| 200 | 315 L | 2982 | 641 | 96.2 | 96.2 | 0.93 | 0.92 | 320 | 188 | 1LG6 317-2PM00 ¹⁾ | 1245 | |
| 4-pole, 1500 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, specially for operation on SIMOVERT MASTERDRIVES | | | | | | | | | | | | |
| 18.5 | 180 M | 1470 | 120 | 92.1 | 92.7 | 0.83 | 0.78 | 34.5 | 20 | 1LG6 183-4PM00 | 155 | |
| 22 | 180 L | 1470 | 143 | 92.7 | 93 | 0.84 | 0.79 | 40.5 | 23.5 | 1LG6 186-4PM00 | 180 | |
| 30 | 200 L | 1470 | 195 | 92.7 | 92.8 | 0.85 | 0.8 | 55 | 32 | 1LG6 207-4PM00 | 225 | |
| 37 | 225 S | 1480 | 239 | 93.6 | 94 | 0.85 | 0.81 | 67 | 39 | 1LG6 220-4PM00 ¹⁾ | 290 | |
| 45 | 225 M | 1480 | 290 | 94.1 | 94.3 | 0.85 | 0.82 | 81 | 47 | 1LG6 223-4PM00 ¹⁾ | 330 | |
| 55 | 250 M | 1485 | 354 | 94.8 | 95 | 0.87 | 0.83 | 96 | 56 | 1LG6 253-4PM00 ¹⁾ | 460 | |
| 75 | 280 S | 1485 | 482 | 94.7 | 94.8 | 0.87 | 0.84 | 130 | 76 | 1LG6 280-4PM00 ¹⁾ | 575 | |
| 90 | 280 M | 1486 | 578 | 95.1 | 95.2 | 0.86 | 0.83 | 158 | 92 | 1LG6 283-4PM00 ¹⁾ | 675 | |
| 110 | 315 S | 1488 | 706 | 95.6 | 95.7 | 0.87 | 0.84 | 190 | 110 | 1LG6 310-4PM00 ¹⁾ | 810 | |
| 132 | 315 M | 1488 | 847 | 95.9 | 96 | 0.88 | 0.85 | 225 | 130 | 1LG6 313-4PM00 ¹⁾ | 965 | |
| 160 | 315 L | 1490 | 1026 | 96.1 | 96.2 | 0.88 | 0.85 | 275 | 158 | 1LG6 316-4PM00 ¹⁾ | 1105 | |
| 200 | 315 L | 1490 | 1282 | 96.1 | 96.2 | 0.88 | 0.86 | 340 | 198 | 1LG6 317-4PM00 ¹⁾ | 1305 | |
| 6-pole, 1000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, specially for operation on SIMOVERT MASTERDRIVES | | | | | | | | | | | | |
| 15 | 180 L | 975 | 147 | 90 | 90.8 | 0.81 | 0.77 | 29.5 | 17.2 | 1LG6 186-6PM00 | 175 | |
| 18.5 | 200 L | 978 | 181 | 90.5 | 91.1 | 0.81 | 0.76 | 36 | 21 | 1LG6 206-6PM00 | 210 | |
| 22 | 200 L | 978 | 215 | 91.4 | 92 | 0.82 | 0.78 | 42 | 24.5 | 1LG6 207-6PM00 | 240 | |
| 30 | 225 M | 980 | 292 | 92.6 | 93.1 | 0.83 | 0.8 | 56 | 32.5 | 1LG6 223-6PM00 ¹⁾ | 325 | |
| 37 | 250 M | 985 | 359 | 93.1 | 93.5 | 0.83 | 0.79 | 69 | 40 | 1LG6 253-6PM00 ¹⁾ | 405 | |
| 45 | 280 S | 988 | 435 | 93.9 | 94.1 | 0.85 | 0.81 | 81 | 47 | 1LG6 280-6PM00 ¹⁾ | 520 | |
| 55 | 280 M | 988 | 532 | 93.9 | 94.1 | 0.85 | 0.81 | 99 | 58 | 1LG6 283-6PM00 ¹⁾ | 570 | |
| 75 | 315 S | 990 | 723 | 94.6 | 94.6 | 0.83 | 0.79 | 138 | 80 | 1LG6 310-6PM00 ¹⁾ | 760 | |
| 90 | 315 M | 990 | 868 | 94.9 | 95 | 0.85 | 0.81 | 160 | 93 | 1LG6 313-6PM00 ¹⁾ | 935 | |
| 110 | 315 L | 990 | 1061 | 95.2 | 95.3 | 0.85 | 0.82 | 196 | 114 | 1LG6 316-6PM00 ¹⁾ | 1010 | |
| 132 | 315 L | 990 | 1273 | 95.4 | 95.4 | 0.85 | 0.82 | 235 | 136 | 1LG6 317-6PM00 ¹⁾ | 1180 | |
| 160 | 315 L | 990 | 1543 | 95.3 | 95.4 | 0.86 | 0.82 | 280 | 164 | 1LG6 318-6PM00 ¹⁾ | 1245 | |
| 8-pole, 750 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, specially for operation on SIMOVERT MASTERDRIVES | | | | | | | | | | | | |
| 11 | 180 L | 725 | 145 | 88.1 | 89 | 0.76 | 0.69 | 23.5 | 13.8 | 1LG6 186-8PM00 | 165 | |
| 15 | 200 L | 725 | 198 | 88.2 | 88.7 | 0.8 | 0.73 | 30.5 | 17.8 | 1LG6 207-8PM00 | 235 | |
| 18.5 | 225 S | 730 | 242 | 89.9 | 90.6 | 0.81 | 0.75 | 36 | 21.5 | 1LG6 220-8PM00 ¹⁾ | 295 | |
| 22 | 225 M | 730 | 288 | 90.6 | 91.1 | 0.81 | 0.75 | 43 | 25 | 1LG6 223-8PM00 ¹⁾ | 335 | |
| 30 | 250 M | 735 | 390 | 91.9 | 92.4 | 0.82 | 0.77 | 57 | 33.5 | 1LG6 253-8PM00 ¹⁾ | 435 | |
| 37 | 280 S | 738 | 479 | 92.6 | 92.8 | 0.81 | 0.76 | 71 | 41.5 | 1LG6 280-8PM00 ¹⁾ | 510 | |
| 45 | 280 M | 738 | 582 | 93.3 | 93.6 | 0.81 | 0.77 | 86 | 50 | 1LG6 283-8PM00 ¹⁾ | 560 | |
| 55 | 315 S | 740 | 710 | 93.8 | 93.9 | 0.82 | 0.77 | 102 | 60 | 1LG6 310-8PM00 ¹⁾ | 750 | |
| 75 | 315 M | 740 | 968 | 93.9 | 94.1 | 0.83 | 0.78 | 138 | 81 | 1LG6 313-8PM00 ¹⁾ | 840 | |
| 90 | 315 L | 740 | 1161 | 94.2 | 94.6 | 0.84 | 0.8 | 164 | 95 | 1LG6 316-8PM00 ¹⁾ | 1005 | |
| 110 | 315 L | 740 | 1420 | 94.3 | 94.6 | 0.84 | 0.79 | 200 | 116 | 1LG6 317-8PM00 ¹⁾ | 1100 | |
| 132 | 315 L | 740 | 1704 | 94.4 | 94.7 | 0.84 | 0.8 | 240 | 140 | 1LG6 318-8PM00 ¹⁾ | 1270 | |

For Order No. supplement, see Page 5/16.

¹⁾ Insulated bearing cartridge at non-drive-end NDE is recommended (order code L27).

IEC Squirrel-Cage Motors

Motors operating with frequency converters

Self-ventilated motors with special insulation
up to 690 V – Cast-iron series 1LG6

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque | Locked-rotor current as multiple of rated current | Breakdown torque torque | Torque class CL | Moment of inertia J kgm ² | Noise at rated output Measuring surface sound pressure level at 50 Hz $L_{p(A)}$ dB(A) | Sound pressure level at 50 Hz L_{WA} DB(A) |
|--|--|--|----------------------------|--------------------|--|---|--|
| | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | | | | |
| 2-pole, 3000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, specially for operation on SIMOVERT MASTERDRIVES | | | | | | | |
| 1LG6 183-2PM□□ | 2.5 | 7.2 | 3.4 | 16 | 0.086 | 67 | 80 |
| 1LG6 206-2PM□□ | 2.4 | 7 | 3.3 | 16 | 0.15 | 71 | 84 |
| 1LG6 207-2PM□□ | 2.5 | 7.2 | 3.3 | 16 | 0.18 | 71 | 84 |
| 1LG6 223-2PM□□ | 2.5 | 7.3 | 3.2 | 16 | 0.27 | 71 | 84 |
| 1LG6 253-2PM□□ | 2.4 | 6.8 | 3 | 16 | 0.47 | 71 | 84 |
| 1LG6 280-2PM□□ | 2.5 | 7 | 3 | 13 | 0.83 | 73 | 86 |
| 1LG6 283-2PM□□ | 2.6 | 7.6 | 3.1 | 13 | 1 | 73 | 86 |
| 1LG6 310-2PM□□ | 2.4 | 6.9 | 2.8 | 13 | 1.4 | 76 | 89 |
| 1LG6 313-2PM□□ | 2.6 | 7.1 | 2.9 | 13 | 1.6 | 76 | 89 |
| 1LG6 316-2PM□□ | 2.5 | 7.1 | 2.9 | 13 | 2.1 | 76 | 89 |
| 1LG6 317-2PM□□ | 2.5 | 6.9 | 2.8 | 13 | 2.5 | 76 | 89 |
| 4-pole, 1500 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, specially for operation on SIMOVERT MASTERDRIVES | | | | | | | |
| 1LG6 183-4PM□□ | 2.5 | 6.4 | 3 | 16 | 0.12 | 60 | 73 |
| 1LG6 186-4PM□□ | 2.5 | 6.7 | 3.1 | 16 | 0.14 | 60 | 73 |
| 1LG6 207-4PM□□ | 2.6 | 6.7 | 3.3 | 16 | 0.23 | 62 | 75 |
| 1LG6 220-4PM□□ | 2.7 | 6.8 | 3 | 16 | 0.4 | 60 | 73 |
| 1LG6 223-4PM□□ | 2.8 | 6.9 | 3 | 16 | 0.49 | 60 | 73 |
| 1LG6 253-4PM□□ | 2.6 | 7.5 | 3 | 16 | 0.86 | 65 | 78 |
| 1LG6 280-4PM□□ | 2.5 | 6.8 | 2.9 | 16 | 1.4 | 67 | 80 |
| 1LG6 283-4PM□□ | 2.7 | 7.5 | 3.1 | 16 | 1.7 | 68 | 82 |
| 1LG6 310-4PM□□ | 2.7 | 7.1 | 2.9 | 16 | 2.3 | 68 | 82 |
| 1LG6 313-4PM□□ | 2.7 | 7.3 | 2.9 | 16 | 2.9 | 69 | 83 |
| 1LG6 316-4PM□□ | 3 | 7.4 | 3 | 16 | 3.5 | 69 | 83 |
| 1LG6 317-4PM□□ | 3.2 | 7.6 | 3 | 16 | 4.2 | 69 | 83 |
| 6-pole, 1000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, specially for operation on SIMOVERT MASTERDRIVES | | | | | | | |
| 1LG6 186-6PM□□ | 2.4 | 5.5 | 2.5 | 16 | 0.2 | 56 | 69 |
| 1LG6 206-6PM□□ | 2.4 | 5.6 | 2.4 | 16 | 0.29 | 59 | 72 |
| 1LG6 207-6PM□□ | 2.4 | 5.6 | 2.4 | 16 | 0.36 | 59 | 72 |
| 1LG6 223-6PM□□ | 2.8 | 6.5 | 2.9 | 16 | 0.63 | 59 | 72 |
| 1LG6 253-6PM□□ | 2.9 | 6.8 | 2.5 | 16 | 0.93 | 59 | 72 |
| 1LG6 280-6PM□□ | 3 | 6.8 | 2.7 | 16 | 1.4 | 58 | 71 |
| 1LG6 283-6PM□□ | 3.3 | 7.3 | 2.9 | 16 | 1.6 | 58 | 71 |
| 1LG6 310-6PM□□ | 2.8 | 7.3 | 3 | 16 | 2.5 | 61 | 74 |
| 1LG6 313-6PM□□ | 2.7 | 7.3 | 2.9 | 16 | 3.2 | 61 | 74 |
| 1LG6 316-6PM□□ | 2.9 | 7.4 | 2.9 | 16 | 4 | 61 | 74 |
| 1LG6 317-6PM□□ | 3.1 | 7.8 | 3.1 | 16 | 4.7 | 61 | 74 |
| 1LG6 318-6PM□□ | 3.2 | 7.8 | 3.1 | 16 | 5.4 | 64 | 77 |
| 8-pole, 750 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection, specially for operation on SIMOVERT MASTERDRIVES | | | | | | | |
| 1LG6 186-8PM□□ | 1.7 | 4.6 | 2.2 | 13 | 0.21 | 62 | 75 |
| 1LG6 207-8PM□□ | 2.3 | 5.3 | 2.6 | 13 | 0.37 | 62 | 75 |
| 1LG6 220-8PM□□ | 2.3 | 5.6 | 2.6 | 13 | 0.55 | 54 | 67 |
| 1LG6 223-8PM□□ | 2.4 | 5.8 | 2.8 | 13 | 0.66 | 58 | 71 |
| 1LG6 253-8PM□□ | 2.5 | 6 | 2.8 | 13 | 1.1 | 57 | 70 |
| 1LG6 280-8PM□□ | 2.3 | 5.7 | 2.3 | 13 | 1.4 | 58 | 71 |
| 1LG6 283-8PM□□ | 2.6 | 6.1 | 2.4 | 13 | 1.6 | 58 | 71 |
| 1LG6 310-8PM□□ | 2.5 | 6.3 | 2.9 | 13 | 2.5 | 61 | 75 |
| 1LG6 313-8PM□□ | 2.5 | 6.7 | 2.9 | 13 | 3.1 | 60 | 74 |
| 1LG6 316-8PM□□ | 2.4 | 6.3 | 2.8 | 13 | 3.9 | 64 | 77 |
| 1LG6 317-8PM□□ | 2.4 | 6.4 | 2.6 | 13 | 4.5 | 64 | 77 |
| 1LG6 318-8PM□□ | 2.5 | 6.7 | 2.9 | 13 | 5.3 | 64 | 77 |

For Order No. supplement, see Page 5/16.

IEC Squirrel-Cage Motors

Motors operating with frequency converters

Self-ventilated motors with special insulation
up to 690 V – Cast-iron series 1LG6

Selection and ordering data (continued)

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | Final position: Type of construction code | | | | | | | |
|---------------------|---------------------------------------|--------|--------|--|---|---|--|--------|---|--------|--|
| | 50 Hz 500 VY | 500 VΔ | 690 VY | Without flange IM B3/6/7/8, IM V6, IM V5 without protective cover ¹⁾ | With flange IM B5, IM V1 without protective cover ²⁾ | IM V1 without protective cover ²⁾ | IM V1 with protective cover ^{2) 3)} | IM B35 | With standard flange IM B14, IM V18 with- out protec- tive cover, IM V19 | IM B34 | With special flange IM B14, IM V18 without protective cover, IM V19 |
| | 3 | 5 | 8 | 0 | 1 | 8 | 4 | 6 | 2 | 7 | 3 |
| 1LG6 18 . . . PM□□ | ○ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 20 . . . PM□□ | ○ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 22 . . . PM□□ | ○ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 25 . . . PM□□ | ○ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 28 . . . PM□□ | ○ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 310 . . . PM□□ | ○ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 313 . . . PM□□ | ○ | ○ | ○ | □ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 316 . . . PM□□ | ○ | ○ | ○ | □ ⁴⁾ | – | ✓ ⁵⁾ | ✓ ⁵⁾ | ✓ | – | – | – |
| 1LG6 317 . . . PM□□ | ○ | ○ | ○ | □ ⁴⁾ | – | ✓ ⁵⁾ | ✓ ⁵⁾ | ✓ | – | – | – |
| 1LG6 318 . . . PM□□ | ○ | ○ | ○ | □ ⁴⁾ | – | ✓ ⁵⁾ | ✓ ⁵⁾ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see “Special versions” in the “Selection and ordering data” under “Voltages”).

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see “Special versions” in the “Selection and ordering data” under “Types of construction”).

5

¹⁾ If motors 1LG6 183-... to 1LG6 318-... (motor series 1LG6 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.

²⁾ 1LG6 220-... to 1LG6 318-... motors (motor series 1LG6 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

³⁾ The “Second shaft extension” option, order code **K16** is not possible.

⁴⁾ Type of construction IM V6/IM V5 without protective cover is only possible using type of construction code **9** and order code **M1E** and **M1D**.

⁵⁾ 2-pole motors in 60 Hz version available on request.

IEC Squirrel-Cage Motors

Motors operating with frequency converters

Self-ventilated motors FS 315 a. above, w. special insulation up to 690 V – Cast-iron series 1LA8

Overview

Recommended types:

- 1LA8 in output range from 145 to 980 kW (at 50 Hz).

Selection and ordering data

The data for motor series 1LA8 with special insulation for voltages up to 690 V for converter-fed operation can be found in the "Technical specifications" and "Selection and ordering data" in catalog part 3 "Non-standard motors frame size 315 and above". They are ordered using additional order options (special versions). These special versions for voltages, construction types or options are listed in catalog part 3 "Non-standard motors frame size 315 and above".

Forced-air cooled motors FS 315 a. above, w. fan, with special insulation up to 690 V – Cast-iron series 1PQ8

Overview

Recommended types:

- 1PQ8 in output range from 145 to 980 kW (at 50 Hz)

Selection and ordering data

The data for motor series 1PQ8 with special insulation for voltages up to 690 V for converter-fed operation can be found in the "Technical specifications" and "Selection and ordering data" in catalog part 3 "Non-standard motors frame size 315 and above". They are ordered using additional order options (special versions). These special versions for voltages, construction types or options are listed in catalog part 3 "Non-standard motors frame size 315 and above". Please inquire about 1PQ8 motors.

IEC Squirrel-Cage Motors

Motors operating with frequency converters

Special versions

Overview

Motor protection

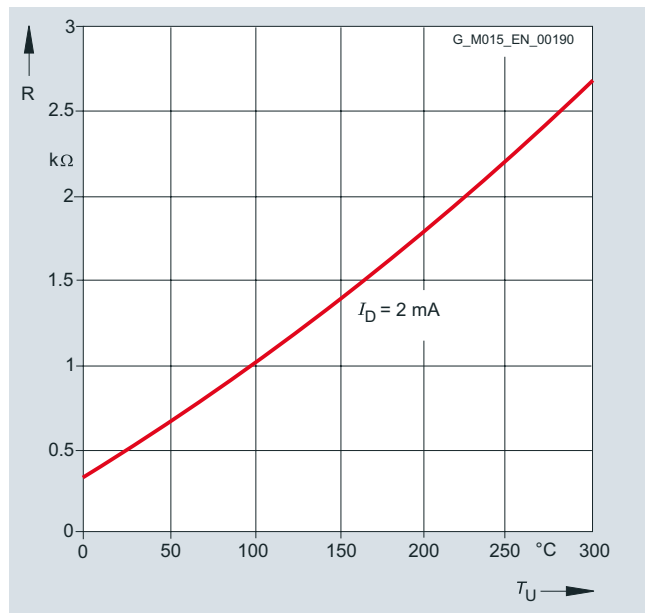
KTY 84 temperature sensor

Order code

A23: 1 x KTY 84-130

A25: 2 x KTY 84-130

This sensor is a semi-conductor that changes its resistance depending on temperature in accordance with a defined curve.



KTY 84 temperature sensor

For 1LA8 motors, the PTC thermistors supplied as standard are omitted when ordering with order code **A23**.

For mains-fed operation, the temperature monitoring device 3RS10 that is part of the protection equipment can be ordered separately. For further details, see Catalog LV1.

Motor protection for explosion-proof motors

The explosion-proof motors for Zones 2, 21 and 22 for converter-fed operation (ordered with order codes **M73**, **M38**, **M39**, **M75** or **M77**) already have PTC thermistors for tripping as standard. For converter-fed operation, thermistors can be additionally ordered for alarm (order code **A10**).

For the explosion-proof motor series of Zone 1 with type of protection "d", order codes **A15** and **A16** are available specially for converter-fed operation:

Order code **A15**: Motor protection with PTC thermistors for converter-fed operation with 3 or 4 embedded temperature sensors for tripping.

Order code **A16**: Motor protection with PTC thermistors for converter-fed operation with 6 or 8 embedded temperature sensors for alarm and tripping.

Order code **M77** (incl. order code **A15**): Design for Zones 1 and 21, as well as Zone 22 for conducting dust (IP65) for converter-fed operation, derating.

Rating plate data for motors operating with frequency converters for Zones 2, 21 and 22

"MICROMASTER DUTY S9" is stamped on the rating plate as standard, i.e. the rating data for the MICROMASTER converter series from Siemens are indicated. For other converter types (SIMOVERT MASTERDRIVES, SINAMICS G110, SINAMICS S120 or SIMATIC ET 200S FC), the converter type required must be specified in the order in plain text following the order code **Y68**. This is due to the different degree of utilization of the converter and the resulting derating of the motor.

Bearing

For converter-fed operation with frame size 225 and above, it is recommended that an "Insulated bearing cartridge" – Order code **L27** is used.

Ventilation/noise generation

The fan noise can increase at speeds that are higher than the rated speed of self-ventilated motors.

To increase motor utilization at low speeds, it is recommended that forced ventilated motors are used, in particular motor series 1LA5, 1LA7, 1LG4 and 1LG6 with order code **G17** or motor series 1PQ8.

Insulation

For converter-fed operation with the outputs specified in the catalog, the motors are used according to temperature class 155 (F), i.e. in this case neither a service factor >1 nor an increased coolant temperature is possible, that is order codes **C11**, **C12** and **C13** cannot be ordered. Explosion-proof motors for Zones 2, 21 and 22 are utilised in accordance with temperature class 130 (B).

Supply frequencies larger than 60 Hz

For converter-fed operation with frequencies greater than 60 Hz, special balancing is required for compliance with the specified limit values (plain text: Max. speed).

IEC Squirrel-Cage Motors

Motors operating with frequency converters

Special versions

Overview (continued)**ECOFAST motor connectors**

In combination with the ECOFAST versions of the MICROMASTER 411 distributed drive solutions, the following motor connectors can be ordered separately:

- ECOFAST motor connector, standard (unshielded connection): Order code **G55**.
- ECOFAST motor connector, EMC (shielded connection): Order code **G56**.
Shielded motor connection cables must be used for frequency converters and soft starters.

Maximum admissible mains voltage on motor connector: ≤500 V

Ordering example:

| Selection criteria | Requirement | Structure of the Order No. |
|-------------------------------|---|-------------------------------------|
| Motor type | Standard motor with high efficiency (EFF1), IP55 degree of protection, aluminum housing | 1LA9 000-00000 |
| No. of poles/speed | 4-pole/1500 rpm | 1LA9 090-4KA90 |
| Rated output | 1.1 kW | L1U |
| Special voltage and frequency | Star/delta starting for a mains voltage 400 VΔ, 50 Hz ¹⁾ | |
| Type of construction | IM B3 | |
| ECOFAST connector | Shielded connection | 1LA9 090-4KA90 – Z L1U + G56 |

Converter mounting

Motor series 1LA7 with standard insulation up to 500 V in catalog parts 2 "Standard motors up to frame size 315 L" and 7 "Fan motors" can be prepared for mounting an MMI (MICROMASTER Integrated). Order code **H15** is required for this purpose.

Earth brushes for converter-fed operation

Earth brushes are available for converter-fed operation for 1LG4 and 1LG6 motors with order code **M44**. Please contact your local Siemens office for advice.

Motor series with special insulation up to 690 V

For motor series 1LA7/5 and 1LG6 with special insulation up to 690 V, the following special versions are generally not possible:

| Description | Order code |
|---|------------|
| With PTC thermistors for alarm for converter-fed operation in Zones 2, 21 and 22 | A10 |
| Temperature detectors for tripping | A31 |
| Installation of 3PT100 resistance thermometers | A60 |
| Installation of 6PT100 resistance thermometers in stator winding | A61 |
| Temperature class 155 (F), used acc. to 155 (F), with service factor (SF) | C11 |
| Temperature class 155 (F), used acc. to 155 (F), with increased output | C12 |
| Temperature class 155 (F), used acc. to 155 (F), with increased coolant temperature | C13 |
| Temperature class 180 (H) at rated output and max. CT 60 °C | C18 |
| Increased air humidity/temperature with 30 to 60 g water per m ³ of air | C19 |
| Increased air humidity/temperature with 60 to 100 g water per m ³ of air | C26 |
| Stamping of Ex nA II on VIK rating plate | C27 |
| Coolant temperature –40 °C to +40 °C for EX motor | D19 |
| Design according to UL with "Recognition Mark" | D31 |
| Canadian regulations (CSA) | D40 |
| ECOFAST motor connector Han-Drive 10e for 230 VΔ/400 VY | G55 |
| ECOFAST motor connector EMC Han-Drive 10e for 230 VΔ/400 VY | G56 |
| Prepared for mounting the MICROMASTER Integrated frequency converter | H15 |
| Mounting of explosion-proof rotary pulse encoder for use in Zones 2, 21, 22 | H86 |
| VIK design (comprises Zone 2 for mains-fed operation, without Ex nA II marking on rating plate) | K30 |
| Anti-condensation heater, Ex. 115 V | M14 |
| Anti-condensation heater, Ex. 230 V | M15 |
| Design for Zone 21, as well as Zone 22 for conducting dust (IP65) for mains-fed operation | M34 |
| Design for Zone 22 for non-conducting dust (IP55) for mains-fed operation | M35 |
| Design for Zone 21, as well as Zone 22 for conducting dust (IP65) for converter-fed operation, derating | M38 |
| Design for Zone 22 for non-conducting dust (IP55) for converter-fed operation, derating | M39 |
| Design for Zone 2 for mains-fed operation Ex nA II T3 acc. to IEC/EN 60079-15 | M72 |
| Design for Zone 2 for converter-fed operation, derating acc. to IEC/EN 60079-15 | M73 |
| Design for Zones 2 and 22, for non-conducting dust (IP55), for mains-fed operation | M74 |
| Design for Zones 2 and 22, for non-conducting dust (IP55), for converter-fed operation, derating | M75 |
| Mounting of explosion-proof separately driven fan Ex nA for use in Zone 2 | M95 |
| Mounting of explosion-proof separately driven fan II 2D for use in Zone 21 | M96 |
| Mounting of explosion-proof separately driven fan II 3D for use in Zone 22 | M97 |
| Temperature class 155 (F), used acc. to 155 (F), other requirements | Y52 |
| Alternative converter (SIMOVERT MASTERDRIVES, SINAMICS G110, SINAMICS S120 or ET 200S FC) | Y68 |

¹⁾ Note: Voltage code **9** with order code **L1U** must be selected due to the 400 V voltage. With voltage code 6 (= 400 VΔ/690 VY, 50 Hz), temporary voltage peaks of 690 V can arise which can cause faults on the ECOFAST connectors.

IEC Squirrel-Cage Motors

Motors operating with frequency converters

Special versions

Selection and ordering data

Voltages

Additional order codes for other voltages or voltage codes
(without **-Z** supplement)

For some non-standard voltages at 50 or 60 Hz, order codes are specified. They are ordered by specifying the code **9** for voltage in the 11th position of the Order No. and the appropriate order code.

| Special versions | Voltage code 11th position of the Order No. | Additional identification code with order code and, if required, with plain text | Motor type frame size | | | | | | | | | | | | | |
|--|---|--|-----------------------|----|----|----|----|-----|-----|------------------------|-----|------------------------|-----|-----|-----|---------------------------|
| | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 |
| Self-ventilated motors with special insulation for voltages up to 690 V – Aluminum series 1LA7 and 1LA5 | | | | | | | | | | | | | | | | |
| | | | | | | | | | | 1LA7 (aluminum) | | 1LA5 (aluminum) | | | | |
| Non-standard voltage and/or frequencies | | | | | | | | | | | | | | | | |
| Non-standard winding for voltages between 200 and 690 V (voltages outside this range are available on request) ¹⁾ | 9 | L1Y • | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Self-ventilated motors with special insulation for voltages up to 690 V – Cast-iron series 1LG6 | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | 1LG6 (cast-iron) |
| Non-standard voltage and/or frequencies | | | | | | | | | | | | | | | | |
| Non-standard winding for voltages between 200 and 690 V (voltages outside this range are available on request) ¹⁾ | 9 | L1Y • | | | | | | | | | | | | | | ✓ ✓ ✓ ✓ ✓ ✓ ²⁾ |

- ✓ With additional charge
- This order code only determines the price of the version – Additional plain text is required.

¹⁾ Plain text must be specified in the order: Voltage, frequency, circuit, required rated output in kW.

²⁾ For voltages in the 200 V range, please contact your local Siemens representative.

IEC Squirrel-Cage Motors

Motors operating with frequency converters

Special versions

Types of construction

Additional order codes for other types of construction or type of construction codes (without **-Z** supplement)

Order codes have been defined for some special types of construction. They are ordered by specifying the code **9** for the type of construction in the 12th position of the Order No. and the appropriate order code.

| Special versions | Type of construction code 12th position of the Order No. | Additional identification code with order code and, if required, with plain text | Motor type frame size | | | | | | | | | | | | | 315 L S/M | 2-pole | 4-, 6-, 8-pole | |
|--|---|--|-------------------------|----|----|----|----|-----|------------------------|-----|-----|-----|-----|-----|-----|--------------|-----------------|----------------------|-----|
| | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | | | | 280 |
| Self-ventilated motors with special insulation for voltages up to 690 V – Aluminum series 1LA7 and 1LA5 | | | | | | | | | | | | | | | | | | | |
| | | | 1LA7 (aluminum) | | | | | | 1LA5 (aluminum) | | | | | | | | | | |
| Without flange | | | | | | | | | | | | | | | | | | | |
| IM V5 with protective cover ¹⁾ | 9 | M1F | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | | | |
| With flange | | | | | | | | | | | | | | | | | | | |
| IM V3 ²⁾ | 9 | M1G | – | – | – | – | – | ✓ | ✓ | ✓ | | | | | | | | | |
| With standard flange | | | | | | | | | | | | | | | | | | | |
| IM V18 with protective cover ¹⁾ | 9 | M2A | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | | | | | | | | | |
| With special flange | | | | | | | | | | | | | | | | | | | |
| IM V18 with protective cover ¹⁾ | 9 | M2B | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | | | | | | | | | |
| IM B34 | 9 | M2C | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | | | | | | | | | |
| Self-ventilated motors with special insulation for voltages up to 690 V – Cast-iron series 1LG6 | | | | | | | | | | | | | | | | | | | |
| | | | 1LG6 (cast-iron) | | | | | | | | | | | | | | | | |
| Without flange | | | | | | | | | | | | | | | | | | | |
| IM V5 without protective cover ⁴⁾ | 9 | M1D | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ✓ ³⁾ | ○ | |
| IM V6 ⁴⁾ | 9 | M1E | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ✓ ³⁾ | ○ | |
| IM V5 with protective cover ^{1) 4)} | 9 | M1F | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ ³⁾ | ✓ | |
| With flange | | | | | | | | | | | | | | | | | | | |
| IM V3 ⁵⁾ | 9 | M1G | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | |

- Without additional charge
- ✓ With additional charge
- Not possible

¹⁾ The "Second shaft extension" option, order code **K16** is not possible.
²⁾ For frame sizes 180 M to 225 M, the 1LA5 motors can be supplied with two additional eyebolts; state Order No. suffix "**Z**" and order code **K32**.
³⁾ 60 Hz version is possible on request

⁴⁾ If motors of frame sizes 180 M to 315 L are mounted on the wall, it is recommended that the motor feet are supported.
⁵⁾ 1LG6 motors of frame sizes 225 S to 315 M are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

IEC Squirrel-Cage Motors

Motors operating with frequency converters

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors with special insulation for voltages up to 690 V – Aluminum series 1LA7 and 1LA5 | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| Colors and paint finish | | | | | | | | | | | | | | | | |
| Special finish in RAL 7030 stone gray | | | | | | | | | | | | | | | | |
| Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y54• and special finish RAL | | | | | | | | | | | | | | | |
| Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" on Page 0/19 | Y51• and special finish RAL | | | | | | | | | | | | | | | |
| Sea air resistant special finish | M94 | | | | | | | | | | | | | | | |
| Unpainted (only cast iron parts primed) | K23 | | | | | | | | | | | | | | | |
| Unpainted, only primed | K24 | | | | | | | | | | | | | | | |
| Modular technology – Basic versions ³⁾ | | | | | | | | | | | | | | | | |
| Mounting of separately driven fan | G17 | | | | | | | | | | | | | | | |
| Mounting of brake ⁴⁾ | G26 | | | | | | | | | | | | | | | |
| Mounting of 1XP8 001-1 (HTL) rotary pulse encoder | H57 | | | | | | | | | | | | | | | |
| Mounting of 1XP8 001-2 (TTL) rotary pulse encoder | H58 | | | | | | | | | | | | | | | |
| Modular technology – Combinations of basic versions ³⁾ | | | | | | | | | | | | | | | | |
| Mounting of separately driven fan and 1XP8 001-1 rotary pulse encoder | H61 | | | | | | | | | | | | | | | |
| Mounting of brake and 1XP8 001-1 rotary pulse encoder ⁴⁾ | H62 | | | | | | | | | | | | | | | |
| Mounting of brake and separately driven fan ⁴⁾ | H63 | | | | | | | | | | | | | | | |
| Mounting of brake, separately driven fan and 1XP8 001-1 rotary pulse encoder ⁴⁾ | H64 | | | | | | | | | | | | | | | |
| Mounting of separately driven fan and 1XP8 001-2 rotary pulse encoder | H97 | | | | | | | | | | | | | | | |
| Mounting of brake and 1XP8 001-2 rotary pulse encoder ⁴⁾ | H98 | | | | | | | | | | | | | | | |
| Mounting of brake, separately driven fan and 1XP8 001-2 rotary pulse encoder ⁴⁾ | H99 | | | | | | | | | | | | | | | |

IEC Squirrel-Cage Motors

Motors operating with frequency converters

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|---|-----------------------|----|----|----|----|-----|-----|-----|-----|------------------------|-----|------------------------|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors with special insulation for voltages up to 690 V – Aluminum series 1LA7 and 1LA5 | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | 1LA7 (aluminum) | | 1LA5 (aluminum) | | | |
| Modular technology – Additional versions | | | | | | | | | | | | | | | | |
| Brake supply voltage 24 V DC | C00 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Brake supply voltage 400 V AC | C01 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Brake supply voltage 180 V DC, for operation on MM411-ECOFAST | C02 | | | | | | | | | | ✓ | ✓ | ✓ | – | – | – |
| Mechanical manual brake release with lever (no locking) | K82 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special technology ³⁾ | | | | | | | | | | | | | | | | |
| Mounting of LL 861 900 220 rotary pulse encoder | H70 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of HOG 9 D 1024 I rotary pulse encoder | H72 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of HOG 10 D 1024 I rotary pulse encoder | H73 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Prepared for mounting LL 861 900 220 | H78 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Prepared for mounting HOG 9 D 1024 I | H79 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Prepared for mounting HOG 10 D 1024 I | H80 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mechanical design and degrees of protection | | | | | | | | | | | | | | | | |
| Drive-end seal for flange-mounting motors with oil resistance up to 0.1 bar Not possible for IM V3 type of construction. | K17 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With two additional eyebolts for IM V1/IM V3 | K32 | | | | | | | | | | – | – | – | – | ✓ | ✓ |
| Low-noise version for 2-pole motors with clockwise direction of rotation | K37 | | | | | | | | | | – | – | ✓ | ✓ | ✓ | ✓ |
| Low-noise version for 2-pole motors with counter-clockwise direction of rotation | K38 | | | | | | | | | | – | – | ✓ | ✓ | ✓ | ✓ |
| IP65 degree of protection ⁵⁾ | K50 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| IP56 degree of protection (non-heavy-sea) ⁶⁾ | K52 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Vibration-proof version | L03 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Condensation drainage holes ⁷⁾ | L12 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-rusting screws (externally) | M27 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mechanical protection for encoder ⁸⁾ | M68 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature and site altitude | | | | | | | | | | | | | | | | |
| Coolant temperature –40 to +40 °C ⁹⁾ | D03 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature –30 to +40 °C ⁹⁾ | D04 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

5

For legend and footnotes, see Page 5/26.

IEC Squirrel-Cage Motors

Motors operating with frequency converters

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors with special insulation for voltages up to 690 V – Aluminum series 1LA7 and 1LA5 | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| Packaging, safety notes, documentation and test certificates | | | | | | | | | | | | | | | | |
| Without safety and commissioning note. Customer's declaration of renouncement required. | B00 | | | | | | | | | | | | | | | |
| With one safety and startup guide per box pallet | B01 | | | | | | | | | | | | | | | |
| Acceptance test certificate 3.1 according to EN 10204 | B02 | | | | | | | | | | | | | | | |
| Operating instructions German/English enclosed in print | B23 | | | | | | | | | | | | | | | |
| Wire-lattice pallet | L99 | | | | | | | | | | | | | | | |
| Connected in star for dispatch | M32 | | | | | | | | | | | | | | | |
| Connected in delta for dispatch | M33 | | | | | | | | | | | | | | | |

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- O.R. Possible on request
- ✓ With additional charge
- Not possible

5

1) Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended.

2) In combination with the PTC thermistor option or anti-condensation heating option, please inquire before ordering.

3) A second shaft extension is not possible. Please inquire for mounted brakes. The order codes listed cannot be combined within the various technologies nor with each other within the same technology system. This applies for:

- Modular technology – Basic versions
- Modular technology – Combination of basic versions
- Special technology

4) The standard brake supply voltage is 230 V AC, 50/60 Hz. Other brake supply voltages are possible with order codes **C00**, **C01** and **C02**.

5) Not possible in combination with rotary pulse encoder HOG 9 D 1024I (order code **H72**, **H79**) and/or brake 2LM8 (used for motors up to and including frame size 225, order code **G26**).

6) Not possible in combination with brake 2LM8 (used for motors up to and including frame size 225, order code **G26**).

7) Supplied with the condensation drainage holes sealed at the drive end DE and non-drive end NDE for IP55, IP56 and IP65 degrees of protection. If condensation drainage holes are required in motors of the IM B6, IM B7 or IM B8 type of construction (feet located on side or top), it is necessary to relocate the bearing plates at the drive end (DE) and non-drive end (NDE) so that the condensation drainage holes situated between the feet on delivery are underneath.

8) Not necessary when a rotary pulse encoder is combined with a separately driven fan, because in this case the rotary pulse encoder is installed under the fan cover.

9) In connection with mountings, the respective technical data must be observed; request required.

10) CCC certification is required for

- 2-pole motors ≤ 2.2 kW
- 4-pole motors ≤ 1.1 kW
- 6-pole motors ≤ 0.75 kW
- 8-pole motors ≤ 0.55 kW

11) Not possible when brake is mounted.

12) Can be combined with deep-groove bearings of series 60.., 62.. and 63.. . Not possible with parallel roller bearings (e.g. bearings for increased cantilever forces, order code **K20**) brake or encoder fitting.

13) When motors are ordered that have a longer or shorter shaft extension than normal, the required position and length of the featherkey way must be specified in a sketch. It must be ensured that only featherkeys in accordance with DIN 6885, Form A are permitted to be used. The featherkey way is positioned centrally on the shaft extension. The length is defined by the manufacturer normatively.

Not applicable for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The featherkeys are supplied in every case.

The add-on prices also apply for "Shaft extension DE without featherkey way".

For order codes **Y55** and **K16**:

- Dimensions D and DA \leq Inner diameter of roller bearing (see tables under "Dimensions")

- Dimensions E and EA $\leq 2 \times$ Length E (normal) of the shaft extension

For explanation of the order codes, see catalog part 0 "Introduction".

14) For 1LA5, 1LA6, 1LA7, 1LA9 motors and 1LG with metal external fan, converter-fed operation is permitted. The metal external fan is not possible in combination with the low-noise version – order code **K37** or **K38**.

IEC Squirrel-Cage Motors

Motors operating with frequency converters

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-------|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 | |
| Self-ventilated motors with special insulation for voltages up to 690 V – Cast-iron series 1LG6 | | | | | | | | | | | | | | | | | |
| 1LG6 (cast-iron) | | | | | | | | | | | | | | | | | |
| Motor protection | | | | | | | | | | | | | | | | | |
| Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ¹⁾ | A11 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor protection with PTC thermistors with 6 embedded temperature sensors for tripping and alarm ¹⁾ | A12 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor temperature detection with embedded temperature sensor KTY 84-130 ¹⁾ | A23 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor temperature detection with embedded temperature sensors 2 x KTY 84-130 ¹⁾ | A25 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature detectors for tripping ¹⁾ | A31 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 2 PT 100 screw-in resistance thermometers (basic circuit) for rolling-contact bearings ^{1) 2)} | A72 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 2 PT 100 screw-in resistance thermometers (3-wire circuit) for rolling-contact bearings ¹⁾ | A78 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 2 PT 100 double screw-in resistance thermometers (3-wire circuit) for rolling-contact bearings ¹⁾ | A80 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor connection and connection box | | | | | | | | | | | | | | | | | |
| Two-part plate on connection box | K06 | | | | | | | | | | | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on RHS | K09 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on LHS | K10 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on top, feet screwed on | K11 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box in cast-iron version | K15 | | | | | | | | | | | ✓ | ✓ | ✓ | – | – | – |
| One cable gland, metal | K54 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Cable gland, maximum configuration | K55 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from DE | K83 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from NDE | K84 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of connection box through 180° | K85 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Next larger connection box | L00 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 6 cables protruding, 1.5 m long ³⁾ | L48 | | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| 6 cables protruding, 3 m long ³⁾ | L49 | | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Protruding cable ends – right side ^{3) 4)} | L51 | | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Protruding cable ends – left side ^{3) 4)} | L52 | | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Auxiliary connection box 1XB3 020 | L97 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Stud terminal for cable connection, accessories pack (3 items) | M46 | | | | | | | | | | | – | – | – | ✓ | ✓ | ✓ |
| Saddle terminal for connection without cable lug, accessories pack (6 items) | M47 | | | | | | | | | | | – | – | – | ✓ | ✓ | ✓ |

IEC Squirrel-Cage Motors

Motors operating with frequency converters

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-------|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 | |
| Self-ventilated motors with special insulation for voltages up to 690 V – Cast-iron series 1LG6 | | | | | | | | | | | | | | | | | |
| 1LG6 (cast-iron) | | | | | | | | | | | | | | | | | |
| Windings and insulation | | | | | | | | | | | | | | | | | |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 % | C22 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 % | C23 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 % | C24 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 % | C25 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Colors and paint finish | | | | | | | | | | | | | | | | | |
| Standard finish in RAL 7030 stone gray | | | | | | | | | | | | □ | □ | □ | □ | □ | □ |
| Standard finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y53 • and standard finish RAL | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in RAL 7030 stone gray | K26 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y54 • and special finish RAL | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" Page 0/19 | Y51 • and special finish RAL | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Offshore special finish | M91 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Sea air resistant special finish | M94 | | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Unpainted (only cast iron parts primed) | K23 | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ○ |
| Unpainted, only primed | K24 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Modular technology – Basic versions ⁵⁾ | | | | | | | | | | | | | | | | | |
| Mounting of separately driven fan ⁶⁾ | G17 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of brake ^{6) 7)} | G26 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of 1XP8 001-1 (HTL) rotary pulse encoder | H57 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of 1XP8 001-2 (TTL) rotary pulse encoder | H58 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 5/31.

IEC Squirrel-Cage Motors

Motors operating with frequency converters

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors with special insulation for voltages up to 690 V – Cast-iron series 1LG6 | | | | | | | | | | | | | | | | |
| 1LG6 (cast-iron) | | | | | | | | | | | | | | | | |
| Modular technology – Combinations of basic versions ⁵⁾ | | | | | | | | | | | | | | | | |
| Mounting of separately driven fan and 1XP8 001-1 rotary pulse encoder | H61 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of brake and 1XP8 001-1 rotary pulse encoder ⁷⁾ | H62 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of brake and separately driven fan ⁷⁾ | H63 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of brake, separately driven fan and 1XP8 001-1 rotary pulse encoder ⁷⁾ | H64 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of separately driven fan and 1XP8 001-2 rotary pulse encoder | H97 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of brake and 1XP8 001-2 rotary pulse encoder ⁷⁾ | H98 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of brake, separately driven fan and 1XP8 001-2 rotary pulse encoder ⁷⁾ | H99 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Modular technology – Additional versions | | | | | | | | | | | | | | | | |
| Brake supply voltage 24 V DC | C00 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Brake supply voltage 400 V AC | C01 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mechanical manual brake release with lever (no locking) | K82 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special technology ⁵⁾ | | | | | | | | | | | | | | | | |
| Mounting of LL 861 900 220 rotary pulse encoder | H70 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of HOG 9 D 1024 I rotary pulse encoder | H72 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of HOG 10 D 1024 I rotary pulse encoder | H73 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Prepared for mounting LL 861 900 220 | H78 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Prepared for mounting HOG 9 D 1024 I | H79 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Prepared for mounting HOG 10 D 1024 I | H80 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mechanical design and degrees of protection | | | | | | | | | | | | | | | | |
| Drive-end seal for flange-mounting motors with oil resistance to 0.1 bar. Not possible for IM V3 type of construction and 2-pole motors. | K17 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Low-noise version for 2-pole motors with clockwise direction of rotation ⁸⁾ | K37 | | | | | | | | | | | – | – | – | – | – |
| Low-noise version for 2-pole motors with counter-clockwise direction of rotation ⁸⁾ | K38 | | | | | | | | | | | – | – | – | – | – |
| IP65 degree of protection ⁹⁾ | K50 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| IP56 degree of protection (non-heavy-sea) ¹⁰⁾ | K52 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Condensation water holes ¹¹⁾ | L12 | | | | | | | | | | | □ | □ | □ | □ | □ |
| Non-rusting screws (externally) | M27 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Earth brushes for converter-fed operation | M44 | | | | | | | | | | | – | – | – | – | O. R. O. R. |
| Mechanical protection for encoder ¹²⁾ | M68 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |

IEC Squirrel-Cage Motors

Motors operating with frequency converters

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | | |
|--|--|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------------|------------------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 | |
| Self-ventilated motors with special insulation for voltages up to 690 V – Cast-iron series 1LG6 | | | | | | | | | | | | | | | | | |
| 1LG6 (cast-iron) | | | | | | | | | | | | | | | | | |
| Coolant temperature and site altitude | | | | | | | | | | | | | | | | | |
| Coolant temperature –50 to +40 °C ¹³⁾ | D02 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature –40 to +40 °C ¹³⁾ | D03 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature –30 to +40 °C ¹³⁾ | D04 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bearings and lubrication | | | | | | | | | | | | | | | | | |
| Measuring nipple for SPM shock pulse measurement for bearing inspection | G50 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bearing design for increased cantilever forces ¹⁴⁾ | K20 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special bearing for DE and NDE, bearing size 63 | K36 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ ¹⁵⁾ | ✓ ¹⁵⁾ |
| Regreasing device | K40 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | □ | □ |
| Located bearing DE | K94 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Located bearing NDE | L04 | | | | | | | | | | | □ | □ | □ | □ | □ | □ |
| Insulated bearing cartridge ¹⁶⁾ | L27 | | | | | | | | | | | – | – | ✓ | ✓ | ✓ | ✓ |
| Balance and vibration quantity | | | | | | | | | | | | | | | | | |
| Vibration quantity level A | | | | | | | | | | | | □ | □ | □ | □ | □ | □ |
| Vibration quantity level B | K02 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Full key balancing | L68 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Balancing without key | M37 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft and rotor | | | | | | | | | | | | | | | | | |
| Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R ₁ for flange-mounting motors ¹⁷⁾ | K04 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second standard shaft extension ¹⁸⁾ | K16 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft extension with normal dimensions without feather key | K42 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Concentricity of shaft extension in accordance with DIN 42955 Tolerance R | L39 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard cylindrical shaft extension ¹⁹⁾ | Y55 • and identification code | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Heating and ventilation | | | | | | | | | | | | | | | | | |
| Metal external fan ²⁰⁾ | K35 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 230 V | K45 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 115 V | K46 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Sheet metal fan cover | L36 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Separately driven fan with non-standard voltage and/or frequency | Y81 • and identification code | | | | | | | | | | | – | – | ✓ | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 5/31.

IEC Squirrel-Cage Motors

Motors operating with frequency converters

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors with special insulation for voltages up to 690 V – Cast-iron series 1LG6 | | | | | | | | | | | | | | | | |
| 1LG6 (cast-iron) | | | | | | | | | | | | | | | | |
| Rating plate and extra rating plates | | | | | | | | | | | | | | | | |
| Second lubricating plate, supplied loose | B06 | | | | | | | | | | | | | | | |
| Second rating plate, loose | K31 | | | | | | | | | | | | | | | |
| Extra rating plate or rating plate with deviating rating plate data | Y80 • and identification code | | | | | | | | | | | | | | | |
| Extra rating plate with identification code | Y82 • and identification code | | | | | | | | | | | | | | | |
| Additional information on rating plate and on package label (max. of 20 characters) | Y84 • and identification code | | | | | | | | | | | | | | | |
| Packaging, safety notes; documentation and test certificates | | | | | | | | | | | | | | | | |
| Acceptance test certificate 3.1 according to EN 10204 | B02 | | | | | | | | | | | | | | | |
| Operating instructions German/English enclosed in print | B23 | | | | | | | | | | | | | | | |
| Connected in star for dispatch | M32 | | | | | | | | | | | | | | | |
| Connected in delta for dispatch | M33 | | | | | | | | | | | | | | | |

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- O.R. Possible on request
- ✓ With additional charge
- Not possible

- 1) Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended.
- 2) This option is not possible for frame sizes 225 to 315 in combination with the option "Insulated bearing cartridge" – order code **L27**.
- 3) In combination with the PTC thermistor option or anti-condensation heating option, please inquire before ordering.
- 4) Possible in combination with order code **L44** to **L49** or length specification in plain text.
- 5) A second shaft extension is not possible. Please inquire for mounted brakes. The order codes listed cannot be combined within the various technologies nor with each other within the same technology system. This applies for:
 - Modular technology – Basic versions
 - Modular technology – Combination of basic versions
- 6) For 1LG6 motors, order codes **G17**, **G26** and **H63** frame size 225 and above can also be combined with rotary pulse encoders, see the "Special technology" range.
- 7) The standard brake supply voltage is 230 V AC, 50/60 Hz. Other brake supply voltages are possible with order codes **C00** and **C01**.
- 8) Not necessary for 1LG6 motors because these motors are already noise optimized.
- 9) Not possible in combination with rotary pulse encoder HOG 9 D 1024I (order code **H72**, **H79**) and/or brake 2LM8 (used for motors up to and including frame size 225, order code **G26**).
- 10) Not possible in combination with brake 2LM8 (used for motors up to and including frame size 225, order code **G26**).
- 11) Supplied with the condensation drainage holes sealed at the drive end DE and non-drive end NDE (IP55, IP56, IP65). If condensation drainage holes are required in motors of the IM B6, IM B7 or IM B8 type of construction (feet located on side or top), it is necessary to relocate the bearing plates at the drive end (DE) and non-drive end (NDE) so that the condensation drainage holes situated between the feet on delivery are underneath.
- 12) Not necessary when a rotary pulse encoder is combined with a separately driven fan, because in this case the rotary pulse encoder is installed under the fan cover.
- 13) In connection with mountings, the respective technical data must be observed; request required.
- 14) Not possible for 2-pole 1LG6 motors, frame size 315 L in vertical types of construction; bearings for increased cantilever forces at vibration quantity level B available on request for 1LG6 motors. Not possible for 1LG6 motors in the combination "Concentricity of the shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors" – order code **K04**.
- 15) Additional charge for 2-pole motors. With 4-pole to 8-pole motors, standard version.
- 16) This option is not possible for frame sizes 225 to 315 in combination with the option "Installation of 2 PT 100 screw-in resistance thermometers (basic circuit) for rolling-contact bearings" – order code **A72**.
- 17) Can be combined with deep-groove bearings of series 60... 62.. and 63... . Not possible with parallel roller bearings (e.g. bearings for increased cantilever forces, order code **K20**) brake or encoder fitting.
- 18) Possible for motors of frame size 315 and above in vertical types of construction or 2-pole for version with second shaft extension on request. Version with protective cover not possible.
- 19) When motors are ordered that have a longer or shorter shaft extension than normal, the required position and length of the featherkey way must be specified in a sketch. It must be ensured that only featherkeys in accordance with DIN 6885, Form A are permitted to be used. The featherkey way is positioned centrally on the shaft extension. The length is defined by the manufacturer normatively. Not applicable for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The featherkeys are supplied in every case. For order codes **Y55** and **K16**:
 - Dimensions D and DA ≤ internal diameter of roller bearing (see dimension tables under "Dimensions")
 - Dimensions E and EA ≤ 2 x length E (normal) of the shaft extension
 For an explanation of the order codes, see catalog part 0 "Introduction".
- 20) For 1LA5/6/7/9 motors and 1LG with metal external fan, converter-fed operation is permitted. The metal external fan is not possible in combination with the low-noise version – order code **K37** or **K38**.

IEC Squirrel-Cage Motors

Motors operating with frequency converters

Accessories

Overview

Slide rails with fixing bolts and tensioning screws to DIN 42923

Slide rails are used to tension the belt of a machine easily and conveniently when a belt tightener is not available. They are fixed to the base using stone bolts or foundation blocks.

The assignment of slide rails to motor size can be found in DIN 42923. For motors of frame sizes 355 to 450, there are no standardized slide rails (please inquire).

Available from:
Lütgert & Co. GmbH
Postfach 42 51
33276 Gütersloh, Germany
Tel. +49 (0)5241-7407-0
Fax +49 (0)5241-7407-90

<http://www.luetgert-antriebe.de>
e-mail: info@luetgert-antriebe.de

Foundation block acc. to DIN 799

The foundation blocks are inserted into the stone foundation and embedded in concrete. They are used for fixing machines of medium size, slide rails, pedestal bearings, baseframes, etc. After the fixing bolts have been unscrewed, the machine can be dragged without it having to be lifted.

When the machine is initially installed, the foundation block that is bolted to the machine (without washers) and fitted with taper pins is not embedded with concrete until the machine has been fully aligned. In this case, the machine is positioned 2 to 3 mm lower. The difference in shaft height is compensated by inserting shims on final installation. The taper pins safeguard the exact position of the machine when it is repeatedly removed and replaced without the need for realignment.

Available from:
Lütgert & Co. GmbH
Postfach 42 51
33276 Gütersloh, Germany
Tel. +49 (0)5241-7407-0
Fax +49 (0)5241-7407-90

<http://www.luetgert-antriebe.de>
e-mail: info@luetgert-antriebe.de

Taper pins to DIN 258 with threaded ends and constant taper lengths

Taper pins are used for components that are repeatedly removed. The drilled hole is ground conical using a conical reamer until the pin can be pushed in by hand until the cone shoulder lies 3 to 4 mm above the rim of the hole.

It can then be driven in using a hammer until it is correctly seated. The pin is removed from the drilled hole by screwing on the nut and tightening it.

Standardized taper pins are available from general engineering suppliers.

Available from:
Otto Roth GmbH & Co. KG
Rutesheimer Straße 22
70499 Stuttgart, Germany
Tel. +49 (0)711-13880
Fax +49 (0)711-1388233

<http://www.ottoroth.de>
e-mail: info@ottoroth.de

Couplings

In most cases, the motor is connected to the driving machine through coupling.

Source of supply:
Siemens contact partner – ordering from Catalog
Siemens MD 10.1 "FLENDER Standard Couplings"

or

A. Friedr. Flender AG
Kupplungswerk Mussum
Industriepark Bocholt
Schlavenhorst 100
46395 Bocholt, Germany
Tel. +49 (0)2871-922185
Fax +49 (0)2871-922579

<http://www.flender.com>
e-mail: couplings@flender.com

Mounting of encoder

In the case of mounting by the customer.

Options H79, H80

Baumer Hübner GmbH
Planufer 92b
10967 Berlin, Germany
Tel. +49 (0)30-69003-0
Fax +49 (0)30-69003-104

<http://www.baumerhuebner.com>
e-mail: info@baumerhuebner.com

Option H78

Leine & Linde (Deutschland) GmbH
Bahnhofstraße 36
73430 Aalen, Germany
Tel. +49 (0)7361-78093-0
Fax +49 (0)7361-78093-11

<http://www.leinelinde.com>
e-mail: info@leinelinde.se

More information

Spare motors and repair parts

- Supply commitment for spare motors and repair parts following delivery of the motor
 - For up to 5 years, in the event of total motor failure, Siemens will supply a comparable motor with regard to the mounting dimensions and functions (the type series may vary).
 - Repair parts will be supplied for up to 5 years.
 - For up to 10 years, Siemens will provide information and will, if necessary, supply documentation for repair parts.
- When repair parts are ordered, the following details must be provided:
 - Designation and part number
 - Order No. and factory number of the motor

Example for ordering a fan cover 1LA7, frame size 160 M, 4-pole:

Fan cover No. 7.40, 1LA7 163-4AA60, factory number J783298901018

- For bearing types, see the "Introduction".
- Repair parts for 1MJ6, 1MJ7, 1MJ8, 1MJ1, 1ME8, 1ML8, 1LG8 motors and smoke-extraction motors are available on request.
- For standard components, a supply commitment does not apply.
- Support – Hotline
In Germany
Tel.: 0180/5050448

National telephone numbers can be found on the Internet page:
<http://www.siemens.com/automation/service&support>

IEC Squirrel-Cage Motors

Motors operating with frequency converters

Dimensions

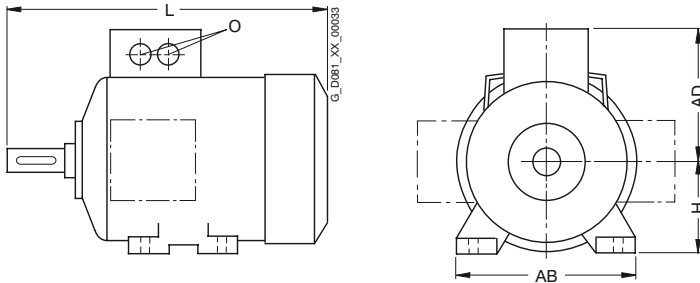
Overview

Note

The following overall dimensions and dimension drawings are only applicable for self-ventilated 1LA7/1LA5 and 1LG6 motors with special insulation for voltages up to 690 V. For overall dimensions of 1LA8/1PQ8 motors with special insulation for voltages up to 690 V, see catalog part 3 "Non-standard motors".

For overall dimensions and dimension drawings for surface-cooled motors with standard insulation for voltages up to 500 V, see the relevant catalog part.

Overall dimensions



| Frame size | Type | Number of poles | Dimensions | | | | |
|-----------------|----------|-----------------|------------|-----|-----|-----|---------------|
| | | | L | AD | H | AB | O |
| 100 L | 1LA7 | | 372 | 135 | 100 | 196 | 2 x M32 x 1.5 |
| 112 M | 1LA7 | | 393 | 148 | 112 | 226 | 2 x M32 x 1.5 |
| 132 S/ 132 M | 1LA7 | | 452.5 | 167 | 132 | 256 | 2 x M32 x 1.5 |
| 160 M/ 160 L | 1LA7 | | 588 | 197 | 160 | 300 | 2 x M40 x 1.5 |
| 180 M/ 180 L | 1LA5 | | 712 | 258 | 180 | 339 | 2 x M40 x 1.5 |
| | 1LG6 183 | 2 | 720 | 262 | 180 | 339 | 2 x M40 x 1.5 |
| | 1LG6 183 | 4 | 669 | 262 | 180 | 339 | 2 x M40 x 1.5 |
| | 1LG6 186 | 4, 6, 8 | 720 | 262 | 180 | 339 | 2 x M40 x 1.5 |
| 200 L | 1LA5 | | 769.5 | 305 | 200 | 388 | 2 x M50 x 1.5 |
| | 1LG6 206 | | 720 | 300 | 200 | 378 | 2 x M50 x 1.5 |
| | 1LG6 207 | | 777 | 300 | 200 | 378 | 2 x M50 x 1.5 |
| | 1LG6 207 | 4, 8 | 720 | 300 | 200 | 378 | 2 x M50 x 1.5 |
| 225 S/ 225 M | 1LA5 | | 806 | 305 | 225 | 426 | 2 x M50 x 1.5 |
| | 1LA5 | 2 | 776 | 305 | 225 | 426 | 2 x M50 x 1.5 |
| | 1LG6 220 | 4, 8 | 789 | 325 | 225 | 436 | 2 x M50 x 1.5 |
| | 1LG6 223 | 2 | 819 | 325 | 225 | 436 | 2 x M50 x 1.5 |
| | 1LG6 223 | 4, 6, 8 | 849 | 325 | 225 | 436 | 2 x M50 x 1.5 |
| | 1LG6 228 | 2 | 869 | 325 | 225 | 436 | 2 x M50 x 1.5 |
| | 1LG6 228 | 4, 6 | 899 | 325 | 225 | 436 | 2 x M50 x 1.5 |

| Frame size | Type | Number of poles | Dimensions | | | | |
|---------------------------|----------|-----------------|------------|-----|-----|-----|---------------|
| | | | L | AD | H | AB | O |
| 250 M | 1LG6 253 | 2, 6, 8 | 887 | 392 | 250 | 490 | 2 x M63 x 1.5 |
| | 1LG6 253 | 4 | 957 | 392 | 250 | 490 | 2 x M63 x 1.5 |
| | 1LG6 258 | 2, 4, 6 | 957 | 392 | 250 | 490 | 2 x M63 x 1.5 |
| 280 S/ 280 M | 1LG6 280 | 2, 4, 6, 8 | 960 | 432 | 280 | 540 | 2 x M63 x 1.5 |
| | 1LG6 283 | 2, 4 | 1070 | 432 | 280 | 540 | 2 x M63 x 1.5 |
| | 1LG6 283 | 6, 8 | 960 | 432 | 280 | 540 | 2 x M63 x 1.5 |
| | 1LG6 288 | 2, 4, 6 | 1070 | 432 | 280 | 540 | 2 x M63 x 1.5 |
| 315 S/ 315 M/ 315 L | 1LG6 310 | 2 | 1072 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 310 | 4, 6, 8 | 1102 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 313 | 8 | 1102 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 313 | 2 | 1232 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 313 | 4, 6 | 1262 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 316 | 2 | 1232 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 316 | 4, 6, 8 | 1262 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 317 | 8 | 1262 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 317 | 2 | 1372 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 317 | 4, 6 | 1402 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 318 | 2 | 1372 | 651 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 318 | 4 | 1402 | 651 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG6 318 | 6, 8 | 1402 | 500 | 315 | 610 | 2 x M63 x 1.5 |

Notes on the dimensions

■ Dimension designations according to DIN EN 50347 and IEC 60072.

■ Fits

The shaft extensions specified in the dimension tables (DIN 748) and centering spigot diameters (DIN EN 50347) are machined with the following fits:

| Dimension designation | ISO fit | DIN ISO 286-2 |
|-----------------------|---------------|---------------|
| D, DA | to 30 | j6 |
| | over 30 to 50 | k6 |
| | over 50 | m6 |
| N | to 250 | j6 |
| | over 250 | h6 |
| F, FA | | h9 |
| K | | H17 |
| S | Flange (FF) | H17 |

The drilled holes of couplings and belt pulleys should have an ISO fit of at least H7.

■ Dimension tolerances

For the following dimensions, the admissible deviations are given below:

| Dimension designation | Dimension | Admissible deviation |
|-----------------------|-----------|----------------------|
| H | to 250 | - 0.5 |
| | over 250 | - 1.0 |
| E, EA | | - 0.5 |

Keyways and feather keyways (dimensions GA, GC, F and FA) are made in compliance with DIN 6885 Part 1.

■ All dimensions are specified in mm.

IEC Squirrel-Cage Motors

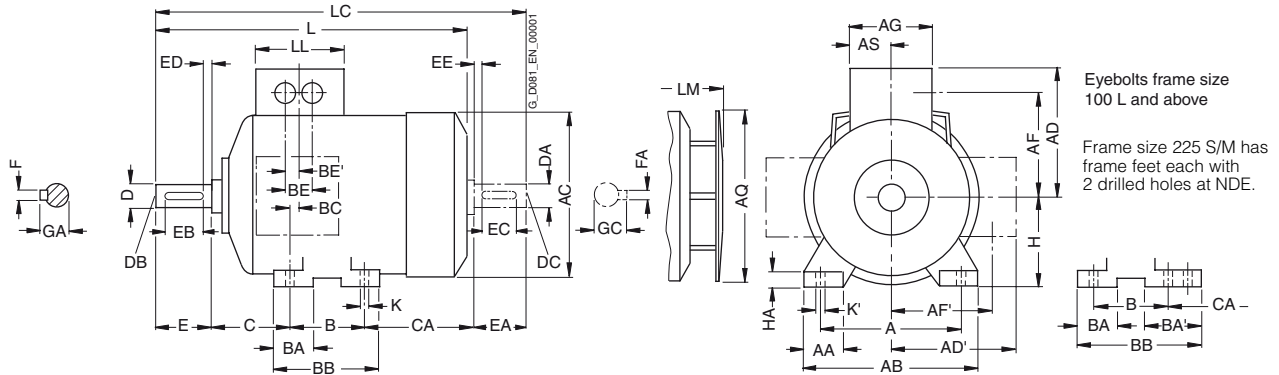
Motors operating with frequency converters

Dimensions

Dimensional drawings

Aluminum series 1LA7 and 1LA5, frame sizes 100 L to 225 M · with special insulation for voltages up to 690 V

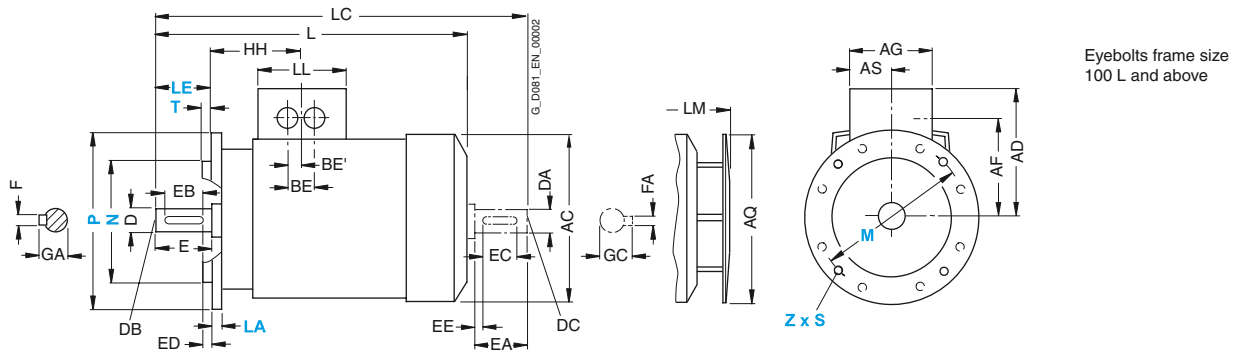
Type of construction IM B3



Eyebolts frame size 100 L and above
 Frame size 225 S/M has frame feet each with 2 drilled holes at NDE.

Types of construction IM B5 and IM V1

For flange dimensions, see Page 5/40 (Z = the number of retaining holes)



Eyebolts frame size 100 L and above

5

| For motor | Dimension designation acc. to IEC | | | | | | | | | | | | | | | | | | | | | | | |
|------------|-----------------------------------|--------------------|-----|------|-----|------------------|------------------|-----|------------------|-----|------------------|-----|------|-----|------|-----|-----|------|------------------|-------------------|-----|-------|-----|----|
| Frame size | Type | Number of poles | A | AA | AB | AC ¹⁾ | AD ²⁾ | AD' | AF ²⁾ | AF' | AG ²⁾ | AQ | AS | B* | BA | BA' | BB | BC | BE ²⁾ | BE' ²⁾ | C | CA* | H | HA |
| 100 L | 1LA7 106 1LA7 107 | 2, 4, 6, 8 4, 8 | 160 | 42 | 196 | 203 | 135 | 163 | 78 | 123 | 120 | 170 | 60 | 140 | 47 | - | 176 | 39 | 42 | 21 | 63 | 125 | 100 | 12 |
| 112 M | 1LA7 113 | 2, 4, 6, 8 | 190 | 46 | 226 | 227 | 148 | 176 | 91 | 136 | 120 | 170 | 60 | 140 | 47 | - | 176 | 32 | 42 | 21 | 70 | 141 | 112 | 12 |
| 132 S | 1LA7 130 1LA7 131 | 2, 4, 6, 8 2 | 216 | 53 | 256 | 267 | 167 | 194 | 107 | 154 | 140 | 250 | 70 | 140 | 49 | - | 180 | 39 | 42 | 21 | 89 | 162.5 | 132 | 15 |
| 132 M | 1LA7 133 1LA7 134 | 4, 6, 8 6 | 216 | 53 | 256 | 267 | 167 | 194 | 107 | 154 | 140 | 250 | 70 | 178 | 49 | - | 218 | 39 | 42 | 21 | 89 | 124.5 | 132 | 15 |
| 160 M | 1LA7 163 1LA7 164 | 2, 4, 6, 8 2, 8 | 254 | 60 | 300 | 320 | 197 | 226 | 127 | 183 | 165 | 250 | 82.5 | 210 | 57 | - | 256 | 52.5 | 54 | 27 | 108 | 183 | 160 | 18 |
| 160 L | 1LA7 166 | 2, 4, 6, 8 | 254 | 60 | 300 | 320 | 197 | 226 | 127 | 183 | 165 | 250 | 82.5 | 254 | 57 | - | 300 | 52.5 | 54 | 27 | 108 | 139 | 160 | 18 |
| 180 M | 1LA5 183 | 2, 4 | 279 | 69.5 | 339 | 363 | 258 | 258 | 216 | 216 | 152 | 340 | 71 | 241 | 50 | - | 287 | 38 | 54 | 27 | 121 | 259 | 180 | 18 |
| 180 L | 1LA5 186 | 4, 6, 8 | 279 | 69.5 | 339 | 363 | 258 | 258 | 216 | 216 | 152 | 340 | 71 | 279 | 50 | - | 325 | 38 | 54 | 27 | 121 | 221 | 180 | 18 |
| 200 L | 1LA5 206 1LA5 207 | 2, 6 2, 4, 6, 8 | 318 | 83 | 388 | 402 | 305 | 305 | 252 | 252 | 260 | 340 | 96 | 305 | 58.5 | - | 355 | 45 | 85 | 42.5 | 133 | 239 | 200 | 24 |
| 225 S | 1LA5 220 | 4, 8 | 356 | 103 | 426 | 402 | 305 | 305 | 252 | 252 | 260 | 340 | 96 | 286 | 58 | 83 | 361 | 36 | 85 | 42.5 | 149 | 248.5 | 225 | 24 |
| 225 M | 1LA5 223 | 2 4, 6, 8 | 356 | 103 | 426 | 402 | 305 | 305 | 252 | 252 | 260 | 340 | 96 | 311 | 58 | 83 | 361 | 36 | 85 | 42.5 | 149 | 223.5 | 225 | 24 |

* This dimension is assigned in DIN EN 50347 to the frame size listed.

1) Measured across the bolt heads.

2) The values increase if the connection box is rotated or if a brake is mounted. Further information is provided by the dimension sheet generator in SD configurator.

IEC Squirrel-Cage Motors

Motors operating with frequency converters

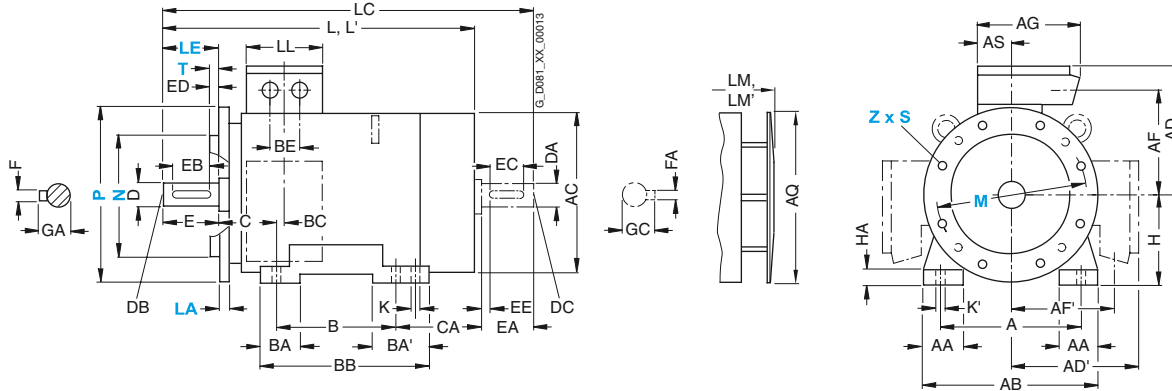
Dimensions

Dimensional drawings

Cast-iron series 1LG6, frame sizes 180 M to 250 M · with special insulation for voltages up to 690 V

Type of construction IM B35

For flange dimensions, see Page 5/40 (Z = the number of retaining holes)



| For motor | | Number of poles | Dimension designation acc. to IEC | | | | | | | DE shaft extension | | | | | NDE shaft extension | | | | | | | | | |
|------------|----------|-----------------|-----------------------------------|-----|----|-----|------|------|------|--------------------|-----|-----|-----|-----|---------------------|------|----|-----|-----|-----|-----|----|------|----|
| Frame size | Type | | HH | K | K' | L | LC | LL | LM | D | DB | E | EB | ED | F | GA | DA | DC | EA | EC | EE | FA | GC | |
| 180 M | 1LG6 183 | 2 | 157 | 15 | 19 | 720 | 835 | 132 | 810 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | |
| | | 4 | | | | 669 | 784 | 759 | | | | | | | | | | | | | | | | |
| 180 L | 1LG6 186 | 4, 6, 8 | 157 | 15 | 19 | 720 | 835 | 132 | 810 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | |
| 200 L | 1LG6 206 | 2, 6 | 196 | 19 | 25 | 720 | 835 | 192 | 810 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | |
| | | 4, 8 | | | | 720 | 835 | 810 | | | | | | | | | | | | | | | | |
| 225 S | 1LG6 220 | 4, 8 | 196 | 19 | 25 | 789 | 903 | 192 | 889 | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | |
| | | 2 | | | | 819 | 933 | 919 | | | | | | | | | | | | | | | | |
| 225 M | 1LG6 223 | 2 | 196 | 19 | 25 | 819 | 933 | 192 | 919 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | |
| | | 4, 6, 8 | | | | 849 | 963 | 949 | | | | | | | | | | | | | | | | |
| | 1LG6 228 | 2 | 196 | 19 | 25 | 869 | 983 | 192 | 969 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | |
| | | 4, 6 | | | | 899 | 1013 | 999 | | | | | | | | | | | | | | | | |
| 250 M | 1LG6 253 | 2 | 237 | 24 | 30 | 887 | 1002 | 236 | 987 | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | |
| | | 4 | | | | 957 | 1102 | 1057 | | | | | | | | | | | | | | | | |
| | 6, 8 | 1LG6 258 | 2 | 237 | 24 | 30 | 887 | 1032 | 236 | 987 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | | 4, 6 | | | | 957 | 1102 | 1057 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |

IEC Squirrel-Cage Motors

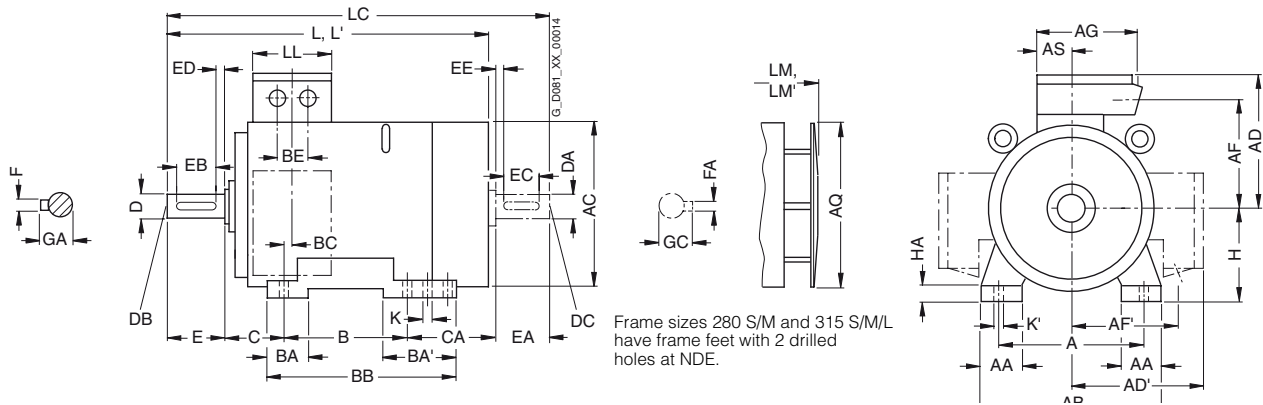
Motors operating with frequency converters

Dimensions

Dimensional drawings

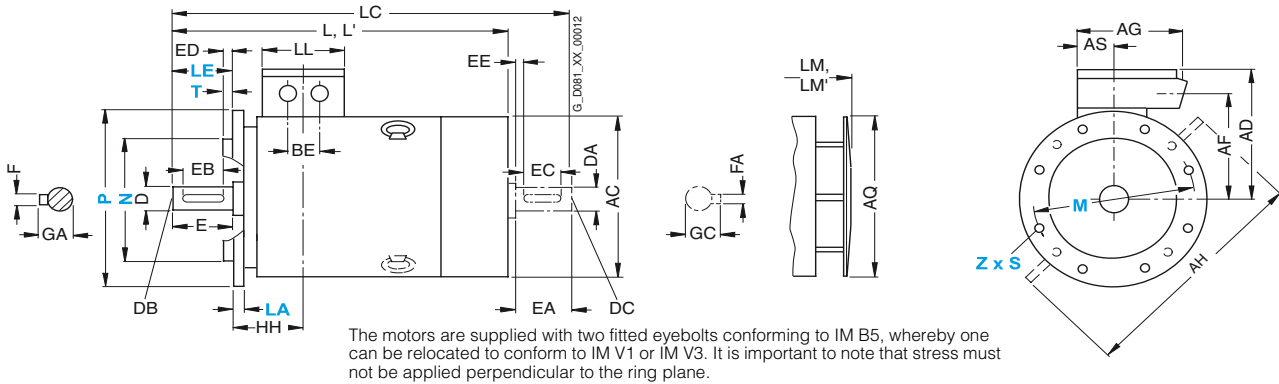
Cast-iron series 1LG6, frame sizes 280 S to 315 L · with special insulation for voltages up to 690 V

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 5/40 (Z = the number of retaining holes)



5

| For motor | Frame size | Type | Number of poles | Dimension designation acc. to IEC | | | | | | | | | | | | | | | | | | | | | |
|---------------------|------------|------|-----------------|-----------------------------------|-----|-----|------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | | A | AA | AB | AC ¹⁾ | AD | AD' | AF | AF' | AG | AH | AQ | AS | B* | BA | BA' | BB | BC | BE | C | CA* | H | HA |
| 280 S | 1LG6 280 | 2 | 2 | 457 | 100 | 540 | 555 | 432 | 432 | 348 | 348 | 300 | 672 | 525 | 118 | 368 | 100 | 151 | 479 | 62 | 110 | 190 | 267 | 280 | 40 |
| 280 M | 1LG6 283 | 2 | 4 | 457 | 100 | 540 | 555 | 432 | 432 | 348 | 348 | 300 | 672 | 525 | 118 | 419 | 100 | 151 | 479 | 62 | 110 | 190 | 326 | 280 | 40 |
| | | | 6, 8 | 457 | 100 | 540 | 555 | 432 | 432 | 348 | 348 | 300 | 672 | 525 | 118 | 419 | 100 | 151 | 479 | 62 | 110 | 190 | 216 | 326 | 280 |
| 315 S | 1LG6 310 | 2 | 4 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 406 | 125 | 176 | 527 | 69 | 110 | 216 | 315 | 315 | 50 |
| | | | 6, 8 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 457 | 125 | 176 | 527 | 69 | 110 | 216 | 264 | 315 | 50 |
| 315 M ²⁾ | 1LG6 313 | 2 | 4 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 457 | 125 | 176 | 578 | 69 | 110 | 216 | 424 | 315 | 50 |
| | | | 6, 8 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 125 | 176 | 578 | 69 | 110 | 216 | 373 | 315 | 50 |
| 315 L ²⁾ | 1LG6 316 | 2 | 4 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 155 | 206 | 648 | 69 | 110 | 216 | 513 | 315 | 50 |
| | | | 6, 8 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 155 | 206 | 648 | 69 | 110 | 216 | 513 | 315 | 50 |
| | 1LG6 316 | 2 | 4 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 155 | 206 | 648 | 69 | 110 | 216 | 513 | 315 | 50 |
| | | | 6, 8 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 155 | 206 | 648 | 69 | 110 | 216 | 513 | 315 | 50 |
| | 1LG6 317 | 2 | 4 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 155 | 206 | 648 | 69 | 110 | 216 | 513 | 315 | 50 |
| | | | 6, 8 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 155 | 206 | 648 | 69 | 110 | 216 | 513 | 315 | 50 |
| | 1LG6 317 | 2 | 4 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 155 | 206 | 648 | 69 | 110 | 216 | 513 | 315 | 50 |
| | | | 6, 8 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 155 | 206 | 648 | 69 | 110 | 216 | 513 | 315 | 50 |
| 1LG6 318 | 2 | 4 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 155 | 206 | 648 | 69 | 110 | 216 | 513 | 315 | 50 | |
| | | 6, 8 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 155 | 206 | 648 | 69 | 110 | 216 | 513 | 315 | 50 | |

* This dimension is assigned in DIN EN 50347 to the frame size listed.

1) Measured across the bolt heads.

2) With order codes for connection box positions (K09, K10, K11) only fitted feet with 3 drilled holes with dimension "B" (406, 457 and 508 mm). BB will then be 666 mm.

IEC Squirrel-Cage Motors

Motors operating with frequency converters

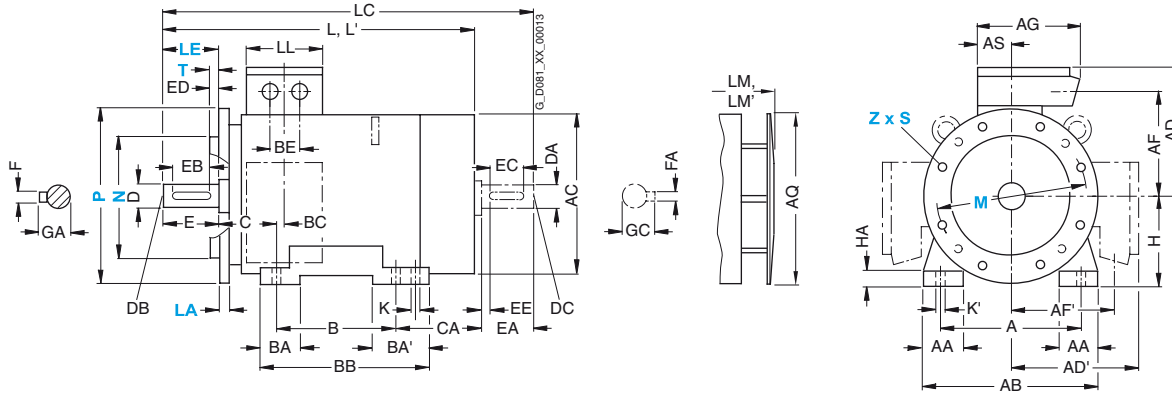
Dimensions

Dimensional drawings

Cast-iron series 1LG6, frame sizes 280 S to 315 L · with special insulation for voltages up to 690 V

Type of construction IM B35

For flange dimensions, see Page 5/40 (Z = the number of retaining holes)



| For motor | | | Dimension designation acc. to IEC | | | | | | | DE shaft extension | | | | | NDE shaft extension | | | | | | | | |
|------------|------------------|-----------------|-----------------------------------|----|------|------|------|------|------|--------------------|-----|-----|-----|----|---------------------|----|-----|-----|-----|-----|----|------|------|
| Frame size | Type | Number of poles | HH | K | K' | L | LC | LL | LM | D | DB | E | EB | ED | F | GA | DA | DC | EA | EC | EE | FA | GC |
| 280 S | 1LG6 280 | 2 | 252 | 24 | 30 | 960 | 1105 | 236 | 1070 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 75 | | | | | | | | 79.5 | | | | | | | | | | | | | |
| 280 M | 1LG6 283 | 2 | 252 | 24 | 30 | 1070 | 1215 | 236 | 1180 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 75 | | | | | | | | 79.5 | | | | | | | | | | | | | |
| | 1LG6 288 | 2 | 252 | 24 | 30 | 1070 | 1215 | 236 | 1180 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 75 | | | | | | | | 79.5 | | | | | | | | | | | | | |
| 315 S | 1LG6 310 | 2 | 285 | 28 | 35 | 1072 | 1217 | 307 | 1182 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 80 | | | | | | | | 85 | | | | | | | | | | | | | |
| 315 M | 1LG6 313 | 4, 6, 8 | 285 | 28 | 35 | 1102 | 1247 | 307 | 1212 | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |
| | | 80 | | | | | | | | 85 | | | | | | | | | | | | | |
| | 1LG6 313 | 2 | 285 | 28 | 35 | 1232 | 1377 | 307 | 1342 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 80 | | | | | | | | 85 | | | | | | | | | | | | | |
| 315 L | 1LG6 316 | 4, 6 | 285 | 28 | 35 | 1262 | 1407 | 307 | 1372 | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |
| | | 80 | | | | | | | | 85 | | | | | | | | | | | | | |
| | 1LG6 316 | 2 | 285 | 28 | 35 | 1372 | 1517 | 307 | 1482 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 80 | | | | | | | | 85 | | | | | | | | | | | | | |
| | 1LG6 317 | 4, 6 | 285 | 28 | 35 | 1402 | 1547 | 307 | 1512 | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |
| | | 80 | | | | | | | | 85 | | | | | | | | | | | | | |
| | 1LG6 317 | 2 | 285 | 28 | 35 | 1262 | 1407 | 307 | 1372 | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |
| | | 80 | | | | | | | | 85 | | | | | | | | | | | | | |
| 1LG6 318 | 8 | 285 | 28 | 35 | 1372 | 1517 | 330 | 1482 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 | |
| | 80 ¹⁾ | | | | | | | | 85 | | | | | | | | | | | | | | 70 |
| 1LG6 318 | 4 | 285 | 28 | 35 | 1402 | 1547 | 307 | 1512 | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 | |
| | 80 | | | | | | | | 85 | | | | | | | | | | | | | | 70 |
| 1LG6 318 | 6, 8 | 285 | 28 | 35 | 1402 | 1547 | 307 | 1512 | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 | |

¹⁾ Diameters up to 90 mm are possible.

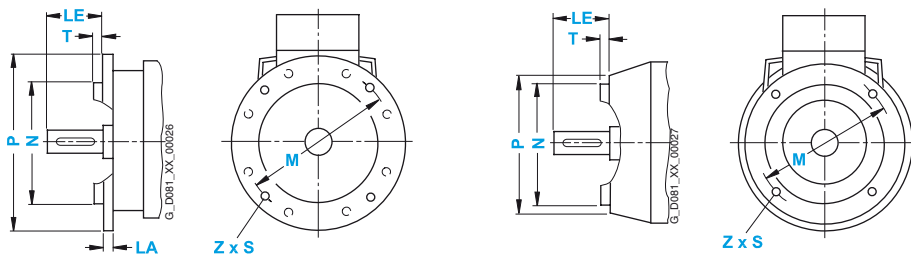
IEC Squirrel-Cage Motors

Motors operating with frequency converters

Dimensions

Dimensional drawings

Flange dimensions



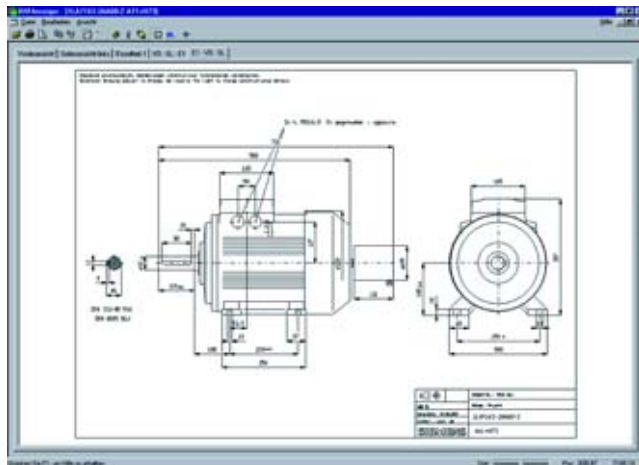
In DIN EN 50347, the frame sizes are allocated flange FF with through holes and flange FT with tapped holes. The designation of flange A and C according to DIN 42948 (invalid since 09/2003) are also listed for information purposes. See the table below. (Z = the number of retaining holes)

| Frame size | Type of construction | Flange type | Flange with through holes (FF/A) tapped holes (FT/C) According to DIN EN 50347 | Acc. to DIN 42948 | Dimension designation acc. to IEC | | | | | | | |
|--|--------------------------------|-----------------|--|-------------------|-----------------------------------|-----|-----|-----|-----|------|-----|---|
| | | | | | LA | LE | M | N | P | S | T | Z |
| 100 L | IM B5, IM B35, IM V1, IM V3 | Flange | FF 215 | A 250 | 11 | 60 | 215 | 180 | 250 | 14.5 | 4 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 130 | C 160 | – | 60 | 130 | 110 | 160 | M8 | 3.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 165 | C 200 | – | 60 | 165 | 130 | 200 | M10 | 3.5 | 4 |
| 112 M | IM B5, IM B35, IM V1, IM V3 | Flange | FF 215 | A 250 | 11 | 60 | 215 | 180 | 250 | 14.5 | 4 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 130 | C 160 | – | 60 | 130 | 110 | 160 | M8 | 3.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 165 | C 200 | – | 60 | 165 | 130 | 200 | M10 | 3.5 | 4 |
| 132 S, 132 M | IM B5, IM B35, IM V1, IM V3 | Flange | FF 265 | A 300 | 12 | 80 | 265 | 230 | 300 | 14.5 | 4 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 165 | C 200 | – | 80 | 165 | 130 | 200 | M10 | 3.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 215 | C 250 | – | 80 | 215 | 180 | 250 | M12 | 4 | 4 |
| 160 M, 160 L | IM B5, IM B35, IM V1, IM V3 | Flange | FF 300 | A 350 | 13 | 110 | 300 | 250 | 350 | 18.5 | 5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 215 | C 250 | – | 110 | 215 | 180 | 250 | M12 | 4 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 265 | C 300 | – | 110 | 265 | 230 | 300 | M12 | 4 | 4 |
| 180 M, 180 L | IM B5, IM V1, IM V3 | Flange | FF 300 | A 350 | 13 | 110 | 300 | 250 | 350 | 18.5 | 5 | 4 |
| 200 L | IM B5 | Flange | FF 350 | A 400 | 15 | 110 | 350 | 300 | 400 | 18.5 | 5 | 4 |
| 225 S, 225 M 2-pole 4-pole to 8-pole | IM B5, IM V1, IM V3 | Flange | FF 400 | A 450 | 16 | 110 | 400 | 350 | 450 | 18.5 | 5 | 8 |
| 250 M | IM B5, IM V1, IM V3 | Flange | FF 500 | A 550 | 18 | 140 | 500 | 450 | 550 | 18.5 | 5 | 8 |
| 280 S, 280 M | IM B5, IM V1, IM V3 | Flange | FF 500 | A 550 | 18 | 140 | 500 | 450 | 550 | 18.5 | 5 | 8 |
| 315 S, 315 M, 315 L 2-pole 4-pole to 8-pole | IM B5, IM V1, IM V3 | Flange | FF 600 | A 660 | 22 | 140 | 600 | 550 | 660 | 24 | 6 | 8 |

More information

Dimension sheet generator (part of the SD configurator)

A dimensional drawing can be created in the SD configurator for every configurable motor. A dimension drawing can be requested for every other motor.



When a complete Order No. is entered with or without order codes, a dimension drawing can be called up under the "Documentation" tab.

These dimensional drawings can be presented in different views and sections and printed.

The corresponding dimension sheets can be exported, saved and processed further in DXF format (interchange/import format for CAD systems) or as bitmap graphics.

The SD configurator has been integrated into the electronic Catalog CA 01 as a selection aid (for more information, see catalog part 11 "Appendix", "Selection tool SD configurator").

The interactive Catalog CA 01 can be ordered from your local Siemens sales representative or on the Internet at

<http://www.siemens.com/automation/CA01>

At this address, you will also find links to Tips & Tricks and to downloads for function or content updates.

Order number for CA 01 10/2008, english international:
DVD: E86060-D4001-A510-C7-7600

Pump motors



| | |
|------------|---|
| | |
| 6/2 | Orientation |
| 6/2 | Overview |
| 6/2 | Benefits |
| 6/2 | Application |
| 6/2 | More information |
| 6/3 | Surface-cooled motors up to frame size 315 L |
| | Aluminum and cast-iron housing |
| 6/3 | Overview |
| 6/3 | Surface-cooled motors frame size 315 and above |
| | Cast-iron housing |
| 6/3 | Overview |
| 6/3 | Special versions |
| 6/3 | Overview |
| 6/4 | Accessories |
| 6/4 | Overview |
| 6/4 | Dimensions |
| 6/4 | Overview |

IEC Squirrel-Cage Motors

Pump motors

Orientation

Overview



Pump motors are motors specially designed for use in various pump applications that can either be driven directly or through a belt drive.

The different application areas and types of construction of the pumps demand special technical characteristics of the motors and compactness through

- Using motors with increased output
- Reinforced bearings and use of a located bearing at the drive end (DE) of the motor
- Special materials for shafts, lubricants and seals as well as special flanges and special housings; these are possible on request

For converter-fed operation, winding monitoring through embedded KTY 84-130 temperature sensors is recommended as well as insulated bearings in the case of large output ranges.

Benefits

The pump motors offer the user a number of advantages and benefits:

- Pump motors with located bearings at the drive end of the motor and with embedded thermistors can, in most cases, be supplied from stock
- Motors with increased efficiency to CEMEP EFF 1 or EPACT lead to significant energy savings under typical continuous duty
- Under converter-fed operation, by setting the precise speed and therefore the operating point, a considerable energy saving can be achieved combined with reduced stress on the plant
- The motors are suitable, in general, for mains-fed operation up to 690 V and converter-fed operation up to 460 V (with motor series 1LA8 to 500 V) (voltage rise times $t_s > 0.1$ ms)
- Extensive experience is available in customized applications especially with regard to special flanges and special bearings

Application

Pump motors are particularly suitable for the following pump types:

- Close-coupled pumps
- Industrial pumps
- Submersible pumps

With regard to the ambient conditions of the pump motors, it is important to ensure that the motor is located outside the pumped medium, i.e. the motor must be selected in accordance with the degree of protection. Further requirements are available on request.

More information

For more information, please contact your local Siemens contact – see “Siemens contacts worldwide” in the Appendix.

IEC Squirrel-Cage Motors

Pump motors

Surface-cooled motors up to frame size 315 L
Aluminum and cast-iron housing

Overview

Recommended motor types:

- Self-ventilated motors with improved efficiency according to CEMEP EFF 2 – Aluminum series 1LA7 and 1LA5 in the output range from 0.06 to 45 kW
- Self-ventilated motors with improved efficiency according to CEMEP EFF2 – Aluminum series 1LE1 in the output range from 0.3 to 22 kW
- Self-ventilated motors with improved efficiency according to CEMEP EFF 2 – Cast-iron series 1LA6 and 1LG4 in the output range from 0.75 to 200 kW
- Self-ventilated motors with high efficiency according to CEMEP EFF1 – Aluminum series 1LA9 in the output range from 0.06 to 37 kW
- Self-ventilated motors with high efficiency according to CEMEP EFF1 – Aluminum series 1LE1 in the output range from 0.75 to 18.5 kW
- Self-ventilated motors with increased output – Cast-iron series 1LG4 in the output range from 15 to 100 kW
- Self-ventilated motors with improved efficiency according to CEMEP EFF2 with increased output – Aluminum series 1LE1 in the output range from 2.2 to 22 kW
- Self-ventilated motors with increased output – Aluminum series 1LA9 with outputs from 0.14 to 53 kW
- Self-ventilated motors with high efficiency according to CEMEP EFF1 with increased output – Aluminum series 1LE1 in the output range from 2.2 to 22 kW

Recommended specifications:

Most applications require a non-variable speed, i.e. it is sufficient to feed the drive motors with a fixed, unchanging rated frequency. In an ever-increasing number of applications, it is necessary to match the pump to the overall plant accurately (based on the pump characteristic). The pumps must respond quickly to changing conditions in the plant, supplying the drive motors with a variable rated frequency (converter-fed operation) is desirable.

Pole-changing motors can also be used. In this way, coarse adaptation of the pump characteristic can be achieved (in accordance with the possible motor speeds). For information about adapting the drive motors to the requirements of the pump with reference to the type of construction (e.g. flange, feet or special) as well as for a number of other options, see "Special versions".

For technical specifications, selection and ordering data and "Special versions", see catalog parts 1 "New Generation 1LE1/1PC1" and 2 "Standard motors up to frame size 315 L".

Surface-cooled motors frame size 315 and above
Cast-iron housing

Overview

Recommended motor types:

- Non-standard motors for mains-fed and converter-fed operation, cast-iron series 1LA8, with outputs from 160 to 1000 kW

For technical specifications and selection and ordering data, see catalog part 3 "Non-standard motors frame size 315 and above".

Special versions

Overview

Recommended special versions for mains-fed and converter-fed operation

- Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping – Order code **A11** for 1LE1 – 15th position of the Order No. letter **B**
- Located bearing at drive-end (DE) of motor – Order code **K94** for 1LE1 – order code **L20**
- Insulated bearing cartridge at non-drive-end (NDE) – Order code **L27**
- Bearings for increased cantilever forces – Order code **K20** for 1LE1 – order code **L22**
- Screwed-on feet for type of construction IM B35 frame size 112 and above in standard version or order code **K11** for 1LE1 – 16th position of the Order No. digit **4**

Pump version from stock – Order code X66

The pump version from stock comprises 3 embedded temperature sensors for tripping (order code **A11**), located bearing at drive-end (DE) of the motor (order code **K94**) as well as screwed-on feet (for type of construction IM B35 frame size 112 and above in standard version or order code **K11**) and is defined for the following motors:

- Self-ventilated motors with improved efficiency – Aluminum series 1LA7, 2-pole and 4-pole – Output range 0.25 to 18.5 kW
- Self-ventilated motors with improved efficiency – Cast-iron series 1LG4, 2-pole and 4-pole – Output range 18.5 to 37 kW

If other special versions are required, order codes **A11+K94+K11**, that are included in **X66**, must be specified individually in the order.

IEC Squirrel-Cage Motors

Pump motors

Special versions

Overview (continued)

Pump motors that can be supplied from stock according to CEMEP "Improved Efficiency" EFF 2, IP55 degree of protection, 50/60 Hz and temperature class F for a service factor of 1.1 with order code X66.

| Certified in accordance with | Rated output at 50 Hz | Frame size | Efficiency Class acc. to CEMEP | Pump version for | | Voltage: | | Voltage: | | Voltage: | |
|------------------------------|-----------------------|------------|--------------------------------|---------------------------------------|------------|---------------------------------------|-------|---------------------------------------|------------|---------------------------------------|------------|
| | | | | Order No. (additional charge) | Order code | 230 VΔ / 400 VY, 50 Hz, 460 VY, 60 Hz | Type: | 400 VΔ / 690 VY, 50 Hz, 460 VY, 60 Hz | Type: | 400 VΔ / 690 VY, 50 Hz, 460 VY, 60 Hz | Type: |
| | | | | IM B5, IM V1 without protective cover | IM V3 | IM B5, IM V1 without protective cover | IM V3 | IM B5, IM V1 without protective cover | IM V3 | IM B35 | |
| | | | | | | | | | | | |
| 3000 rpm, 2-pole | | | | | | | | | | | |
| CCC | 0.75 | 80 M | | 1LA7 080-2AA11-Z | X66 | – | – | – | – | – | – |
| CCC | 1.1 | | EFF 2 | 1LA7 083-2AA11-Z | X66 | – | – | – | – | – | – |
| CCC | 1.5 | 90 S | EFF 2 | 1LA7 090-2AA11-Z | X66 | – | – | – | – | – | – |
| CCC | 2.2 | 90 L | EFF 2 | 1LA7 096-2AA11-Z | X66 | – | – | – | – | – | – |
| | 3 | 100 L | EFF 2 | – | – | | | 1LA7 106-2AA61-Z | X66 | – | – |
| | 4 | 112 M | EFF 2 | – | – | | | 1LA7 113-2AA61-Z | X66 | – | – |
| | 5.5 | 132 S | EFF 2 | – | – | – | – | – | – | 1LA7 130-2AA66-Z | X66 |
| | 7.5 | | EFF 2 | – | – | – | – | – | – | 1LA7 131-2AA66-Z | X66 |
| | 11 | 160 M | EFF 2 | – | – | – | – | – | – | 1LA7 163-2AA66-Z | X66 |
| | 15 | | EFF 2 | – | – | – | – | – | – | 1LA7 164-2AA66-Z | X66 |
| | 18.5 | 160 L | EFF 2 | – | – | – | – | – | – | 1LA7 166-2AA66-Z | X66 |
| | 22 | 180 M | EFF 2 | – | – | – | – | – | – | 1LG4 183-2AA66-Z | X66 |
| | 30 | 200 L | EFF 2 | – | – | – | – | – | – | 1LG4 206-2AA66-Z | X66 |
| | 37 | | EFF 2 | – | – | – | – | – | – | 1LG4 207-2AA66-Z | X66 |
| 1500 rpm, 4-pole | | | | | | | | | | | |
| CCC | 0.25 | 71 M | | 1LA7 070-4AB11-Z | X66 | – | – | – | – | – | – |
| CCC | 0.37 | | | 1LA7 073-4AB11-Z | X66 | – | – | – | – | – | – |
| CCC | 0.55 | 80 M | | 1LA7 080-4AA11-Z | X66 | – | – | – | – | – | – |
| CCC | 0.75 | | | 1LA7 083-4AA11-Z | X66 | – | – | – | – | – | – |
| CCC | 1.1 | 90 S | EFF 2 | 1LA7 090-4AA11-Z | X66 | – | – | – | – | – | – |
| | 1.5 | 90 L | EFF 2 | 1LA7 096-4AA11-Z | X66 | – | – | – | – | – | – |
| | 2.2 | 100 L | EFF 2 | 1LA7 106-4AA11-Z | X66 | – | – | – | – | – | – |
| | 3 | | EFF 2 | – | – | | | 1LA7 107-4AA61-Z | X66 | – | – |
| | 4 | 112 M | EFF 2 | – | – | | | 1LA7 113-4AA61-Z | X66 | – | – |
| | 5.5 | 132 S | EFF 2 | – | – | – | – | – | – | 1LA7 130-4AA66-Z | X66 |
| | 7.5 | 132 M | EFF 2 | – | – | – | – | – | – | 1LA7 133-4AA66-Z | X66 |
| | 11 | 160 M | EFF 2 | – | – | – | – | – | – | 1LA7 163-4AA66-Z | X66 |
| | 15 | | EFF 2 | – | – | – | – | – | – | 1LA7 166-4AA66-Z | X66 |
| | 18.5 | 180 M | EFF 2 | – | – | – | – | – | – | 1LG4 183-4AA66-Z | X66 |
| | 22 | 180 L | EFF 2 | – | – | – | – | – | – | 1LG4 186-4AA66-Z | X66 |
| | 30 | 200 L | EFF 2 | – | – | – | – | – | – | 1LG4 207-4AA66-Z | X66 |

– Pump version (order code **X66**) not supplied from stock.

CCC (China Compulsory Certification) for export to China:

The motors supplied from stock marked with "CCC" include the order code **D01**; i.e. the "CCC" logo complete with "Factory code" is indicated on the rating plate and on the packaging.

Other special versions

For other special versions, see catalog parts 2 "Standard motors up to frame size 315 L" and 3 "Non-standard motors frame size 315 and above".

Accessories

Overview

See catalog parts 1 "New Generation 1LE1/1PC1", 2 "Standard motors frame size 315 L and above" and 3 "Non-standard motors frame size 315 and above".

Dimensions

Overview

See dimensions catalog parts 2 "Standard motors frame size 315 L and above" and 3 "Non-standard motors frame size 315 and above".

Fan motors



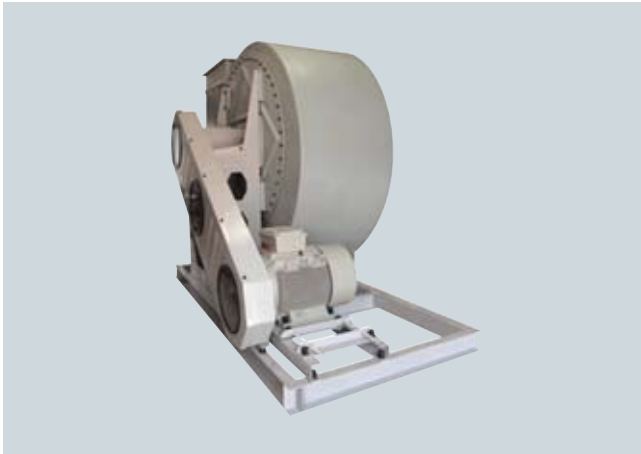
| | |
|-------------|---|
| | |
| 7/2 | Orientation |
| 7/2 | Overview |
| 7/2 | Benefits |
| 7/2 | Application |
| 7/3 | Technical specifications |
| 7/4 | Selection and ordering data |
| 7/5 | More information |
| 7/6 | Self-ventilated motors in pole-changing version Aluminum series 1LA7 and 1LA5 |
| 7/6 | Selection and ordering data |
| 7/14 | Self-ventilated motors in pole-changing version Cast-iron series 1LG4 |
| 7/14 | Selection and ordering data |
| 7/20 | Forced-air cooled motors without external fan and fan cover with improved degree of efficiency Aluminum series 1PP7 and 1PP5 |
| 7/20 | Selection and ordering data |
| 7/24 | Forced-air cooled motors without external fan and fan cover with improved degree of efficiency Cast-iron series 1PP4 |
| 7/24 | Selection and ordering data |
| 7/28 | Forced-air cooled motors without external fan and fan cover with increased output Cast-iron series 1PP4 |
| 7/28 | Selection and ordering data |
| 7/30 | Special versions |
| 7/30 | Overview |
| 7/30 | Selection and ordering data |
| 7/30 | • Voltages |
| 7/33 | • Types of construction |
| 7/34 | • Options |
| 7/53 | Accessories |
| 7/53 | Overview |
| 7/54 | More information |
| 7/55 | Dimensions |
| 7/55 | Overview |
| 7/56 | Dimensional drawings |
| 7/65 | More information |

IEC Squirrel-Cage Motors

Fan motors

Orientation

Overview



The fan motors are suitable for driving fans. The fan wheel can be located directly on the motor shaft or the fan shaft can be coupled with the motor shaft over a coupling or over a belt drive.

For fans with a belt drive, it is important to note the cantilever forces that are applied to the motor.

The different application areas for the fans demand special technical characteristics of the motors, such as:

- The use of reinforced bearings and a located bearing at the drive-end (DE) of the motor, especially with belt drive
- In confined spaces, it is recommended that the motor is ordered with the connection box located at the non-drive end (NDE) or with protruding cable ends instead of a connection box
- For flange types of construction with the shaft extension pointing upwards (e.g. IM V6) and when condensation is a possibility, a flange drainage hole is recommended
- For converter-fed operation, winding monitoring through embedded KTY 84-130 temperature sensors is recommended as well as insulated bearings in the case of large output ranges.

The resonance of mountings and reactions from driven machines can cause high levels of vibration in the overall equipment unit. This has a significant effect on the expected service life of the bearing.

For evaluation of these vibrations, vibration levels N, R and S are used in accordance with DIN EN 60034-14 (corresponding to evaluation zones A and B according to ISO 10816).

Note:

For information about motors according to EN 12101-3 for driving smoke extraction fans, see "Smoke extraction motors".

Benefits

The fan motors offer the user numerous advantages:

- Reduced construction volume and therefore lower weight thanks to motors with increased output
- Uniform forced-air cooled motor series 1PP from 0.09 to 200 kW as well as forced-air cooled motor series 1LE1 with order code F90
- Motors with increased efficiency to CEMEP EFF 1 or EPACT lead to significant energy savings under typical continuous duty; efficiency requirements that exceed this are possible on request
- Under converter-fed operation, by setting the precise speed and therefore the operating point, a considerable energy saving can be achieved combined with reduced stress on the plant
- The motors are suitable, in general, for mains-fed operation up to 690 V and converter-fed operation up to 460 V (voltage rise times $t_s > 0.1$ ms)
- Extensive experience is available in customized applications especially with regard to special bearing design.

Application

The fan motors are mainly used to drive fans:

- Axial-flow fans
- Radial-flow fans
- Side channel compressor

IEC Squirrel-Cage Motors

Fan motors

Orientation

Technical specifications

Necessary minimum cooling air flow in standard duty

| Frame size | 1LA7/ 1PP7 | 1LA5/ 1PP5 | Required cooling air flow for number of poles | | | |
|------------|---------------|---------------|---|---|--------------------------|--------------------------|
| | | | 2, 4/2 m ³ /min | 4, 6/4, 8/4, 8/6/4 m ³ /min | 6 m ³ /min | 8 m ³ /min |
| 63 | X | | 0.83 | 0.41 | 0.28 | – |
| 71 | X | | 1.40 | 0.70 | 0.47 | 0.35 |
| 80 | X | | 1.74 | 0.90 | 0.60 | 0.44 |
| 90 | X | | 3.12 | 1.56 | 1.08 | 0.78 |
| 100 | X | | 3.96 | 1.86 | 1.26 | 0.93 |
| 112 | X | | 4.98 | 3.00 | 1.98 | 1.50 |
| 132 | X | | 8.04 | 5.04 | 3.36 | 2.52 |
| 160 | X | | 12.90 | 9.54 | 6.36 | 4.80 |
| 180 | | X | 10.98 | 10.98 | 7.27 | 5.44 |
| 200 | | X | 15.12 | 13.02 | 8.58 | 6.36 |

| Frame size | 1PP4 | Required cooling air flow for number of poles | | | |
|------------|------|---|--------------------------|--------------------------|--------------------------|
| | | 2 m ³ /min | 4 m ³ /min | 6 m ³ /min | 8 m ³ /min |
| 180 | X | 12.0 | 13.0 | 8.5 | 6.5 |
| 200 | X | 20.5 | 17.0 | 11.0 | 8.0 |
| 225 | X | 20.5 | 18.5 | 12.5 | 9.5 |
| 250 | X | 25.5 | 22.5 | 17.0 | 12.5 |
| 280 | X | 24.5 | 28.0 | 21.5 | 16.0 |
| 315 | X | 47.0 | 36.0 | 26.5 | 19.0 |

In the motor version without an integrated fan (1PP5, 1PP7 and 1PP4), the motor is located in the air flow of the ventilator to be driven which must drive the minimum cooling air flow over the motor housing. For a faster air flow, the operating temperature of the motor can be reduced.

IEC Squirrel-Cage Motors

Fan motors

Orientation

Selection and ordering data

Preliminary selection of the motor according to motor type/series, speed or number of poles, frame size, rated output, rated torque, rated speed and rated current

Self-ventilated motors in pole-changing version

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|--------------------------------------|------------------------|--------------|---------------|--------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Aluminum series 1LA7 and 1LA5 | | | | | | |
| 1500/3000, 4/2-pole | 80 M ... 200 L | 0.15 ... 17 | 1385 ... 2930 | 1 ... 55 | 0.39 ... 31 | 7/6 ... 7/7 |
| 1000/1500, 6/4-pole | 80 M ... 200 L | 0.1 ... 26 | 680 ... 1470 | 1.4 ... 182 | 0.57 ... 52 | 7/8 ... 7/9 |
| 750/1500, 8/4-pole | 80 M ... 200 L | 0.12 ... 28 | 930 ... 1470 | 1.2 ... 170 | 0.51 ... 49 | 7/10 ... 7/11 |
| 750/1000/1500, 8/6/4-pole | 90 S ... 200 L | 0.15 ... 22 | 700 ... 980 | 2 ... 143 | 0.72 ... 42 | 7/12 ... 7/13 |
| Cast-iron series 1LG4 | | | | | | |
| 1500/3000, 4/2-pole | 180 M ... 315 L | 4.8 ... 170 | 1465 ... 2976 | 31 ... 546 | 9.1 ... 280 | 7/14 ... 7/15 |
| 1000/1500, 6-/4-pole | 180 M ... 315 L | 5.5 ... 170 | 960 ... 1490 | 55 ... 1092 | 12 ... 310 | 7/16 ... 7/17 |
| 750/1500, 8-/4-pole | 180 M ... 315 L | 4.5 ... 175 | 725 ... 1490 | 59 ... 1125 | 12.6 ... 315 | 7/18 ... 7/19 |

Forced-air cooled motors without external fan and fan cover with improved efficiency

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|--------------------------------------|------------------------|--------------|---------------|--------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Aluminum series 1PP7 and 1PP5 | | | | | | |
| 3000, 2-pole | 63 M ... 200 L | 0.18 ... 37 | 2820 ... 2945 | 0.61 ... 120 | 0.5 ... 65 | 7/20 |
| 1500, 4-pole | 63 M ... 200 L | 0.12 ... 30 | 1350 ... 1465 | 0.85 ... 196 | 0.42 ... 55 | 7/21 |
| 1000, 6-pole | 63 M ... 200 L | 0.09 ... 22 | 850 ... 975 | 1.0 ... 215 | 0.44 ... 5 | 7/22 |
| 750, 8-pole | 71 M ... 200 L | 0.09 ... 15 | 630 ... 725 | 1.4 ... 198 | 0.36 ... 31.5 | 7/23 |
| Cast-iron series 1PP4 | | | | | | |
| 3000, 2-pole | 180 M ... 315 L | 22 ... 200 | 2945 ... 2982 | 71 ... 641 | 40.5 ... 325 | 7/24 |
| 1500, 4-pole | 180 M ... 315 L | 18.5 ... 200 | 1465 ... 1486 | 121 ... 1285 | 35 ... 340 | 7/25 |
| 1000, 6-pole | 180 M ... 315 L | 15 ... 160 | 965 ... 988 | 148 ... 1276 | 29.5 ... 235 | 7/26 |
| 750, 8-pole | 180 M ... 315 L | 11 ... 132 | 725 ... 738 | 145 ... 1423 | 25 ... 205 | 7/27 |

Forced-air cooled motors without external fan and fan cover with increased output

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|------------------------------|------------------------|--------------|---------------|--------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Cast-iron series 1PP4 | | | | | | |
| 3000, 2-pole | 180 M ... 280 M | 30 ... 110 | 2950 ... 2975 | 97 ... 353 | 54 ... 184 | 7/28 |
| 1500, 4-pole | 180 M ... 280 M | 30 ... 110 | 1465 ... 1488 | 196 ... 706 | 59 ... 198 | 7/28 |
| 1000, 6-pole | 180 M ... 315 L | 18.5 ... 160 | 970 ... 988 | 182 ... 1547 | 37.5 ... 285 | 7/29 |
| 750, 8-pole | 180 M ... 315 L | 15 ... 132 | 720 ... 738 | 199 ... 1708 | 34 ... 245 | 7/29 |

Selection and ordering data (continued)

Forced-air cooled motors without external fan and fan cover with improved efficiency (Improved Efficiency EFF2)

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|---|------------------------|--------------|---------------|--------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Aluminum series 1LE1 (Motors without external fan and fan cover) | | | | | | |
| 3000, 2-pole | 100 L ... 160 L | 3 ... 18.5 | 2835 ... 2935 | 10 ... 60 | 6 ... 34 | 1/38 ... 1/39 |
| 1500, 4-pole | 100 L ... 160 L | 2.2 ... 15 | 1425 ... 1460 | 14.8 ... 98 | 4.85 ... 29.5 | 1/38 ... 1/39 |
| 1000, 6-pole | 100 L ... 160 L | 1.5 ... 11 | 930 ... 970 | 15.3 ... 110 | 3.95 ... 23.5 | 1/38 ... 1/39 |
| 750, 8-pole | 100 L ... 160 L | 0.75 ... 7.5 | 700 ... 720 | 10.4 ... 100 | 2.65 ... 18.6 | 1/38 ... 1/39 |

Forced-air cooled motors without external fan and fan cover with high efficiency (High Efficiency EFF1)

| Speed | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|---|------------------------|--------------|---------------|--------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Aluminum series 1LE1 (Motors without external fan and fan cover) | | | | | | |
| 3000, 2-pole | 100 L ... 160 L | 3 ... 18.5 | 2905 ... 2955 | 9.9 ... 60 | 5.9 ... 33 | 1/42 ... 1/43 |
| 1500, 4-pole | 100 L ... 160 L | 2.2 ... 15 | 1455 ... 1475 | 14 ... 97 | 4.55 ... 27.5 | 1/42 ... 1/43 |
| 1000, 6-pole | 100 L ... 160 L | 1.5 ... 11 | 965 ... 975 | 15 ... 108 | 3.5 ... 22 | 1/42 ... 1/43 |
| 750, 8-pole | 100 L ... 160 L | 0.75 ... 7.5 | 720 ... 735 | 9.9 ... 98 | 2.75 ... 17.4 | 1/42 ... 1/43 |

More information

For more information, please contact your local Siemens contact – see “Siemens Contacts Worldwide” in the Appendix.

IEC Squirrel-Cage Motors

Fan motors

Self-ventilated, in pole-changing version
Aluminum series 1LA7/5

Selection and ordering data

| Rated output at 50 Hz, | | Frame size | Rated speed at 50 Hz, | | Rated torque at 50 Hz, | | Efficiency at 50 Hz 4/4-load | | Power factor at 50 Hz 4/4-load | | Rated current at 400 V, 50 Hz | | Order No. | Price | Weight motor |
|---|----------|------------|---------------------------|----------|--------------------------|----------|------------------------------|----------|--------------------------------|----------|-------------------------------|----------|-----------------------|-------|--------------|
| 1500 rpm | 3000 rpm | | 1500 rpm | 3000 rpm | 1500 rpm | 3000 rpm | 1500 rpm | 3000 rpm | 1500 rpm | 3000 rpm | 1500 rpm | 3000 rpm | | | |
| P_{rated} kW | | FS | n_{rated} rpm | | T_{rated} Nm | | η_{rated} % | | $\cos\phi_{\text{rated}}$ | | I_{rated} A | | | | m kg |
| 4/2-pole, 1500/3000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | | | | |
| Double pole-changing for driving fans with a winding in a Dahlander circuit | | | | | | | | | | | | | | | |
| 0.15 | 0.7 | 80 M | 1400 | 2745 | 1 | 2.4 | 67 | 63 | 0.83 | 0.91 | 0.39 | 1.76 | 1LA7 080-0BAQQ | | 10 |
| 0.25 | 0.95 | 80 M | 1385 | 2780 | 1.7 | 3.3 | 67 | 64 | 0.88 | 0.89 | 0.61 | 2.4 | 1LA7 083-0BAQQ | | 11 |
| 0.33 | 1.4 | 90 S | 1420 | 2835 | 2.2 | 4.8 | 75 | 70 | 0.84 | 0.83 | 0.76 | 3.5 | 1LA7 090-0BAQQ | | 13 |
| 0.5 | 2 | 90 L | 1420 | 2835 | 3.4 | 6.8 | 77 | 70 | 0.87 | 0.86 | 1.08 | 4.8 | 1LA7 096-0BAQQ | | 16 |
| 0.65 | 2.5 | 100 L | 1430 | 2865 | 4.4 | 8.4 | 73 | 75 | 0.89 | 0.89 | 1.44 | 5.4 | 1LA7 106-0BAQQ | | 21 |
| 0.8 | 3.1 | 100 L | 1425 | 2860 | 5.4 | 10 | 79 | 77 | 0.86 | 0.83 | 1.7 | 7 | 1LA7 107-0BAQQ | | 24 |
| 1.1 | 4.4 | 112 M | 1445 | 2885 | 7.3 | 15 | 77 | 74 | 0.83 | 0.8 | 2.5 | 10.7 | 1LA7 113-0BAQQ | | 31 |
| 1.45 | 5.9 | 132 S | 1455 | 2920 | 9.5 | 19 | 83 | 80 | 0.84 | 0.83 | 3 | 12.8 | 1LA7 130-0BAQQ | | 41 |
| 2 | 8 | 132 M | 1455 | 2930 | 13 | 26 | 85 | 86 | 0.85 | 0.84 | 4 | 16 | 1LA7 133-0BAQQ | | 50 |
| 2.9 | 11.5 | 160 M | 1455 | 2930 | 19 | 37 | 85.5 | 85 | 0.86 | 0.89 | 5.7 | 22 | 1LA7 163-0BAQQ | | 74 |
| 4.3 | 17 | 160 L | 1455 | 2930 | 28 | 55 | 86 | 86 | 0.86 | 0.92 | 8.4 | 31 | 1LA7 166-0BAQQ | | 92 |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | |
|----------------------------|------------------------------------|-------|-------|-------|--|--|--|--------|---|--------|---|--|
| | 50 Hz, direct online starting | | | | Without flange | With flange | | | With standard flange | | With special flange | |
| | 230 V | 400 V | 500 V | 690 V | IM B3, IM B6/7/8, IM V6/5 without protective cover | IM B5, IM V1 without protective cover, IM V3 ¹⁾ | IM V1 with protective cover ^{1) 2)} | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover | |
| | 1 | 6 | 5 | 0 | 0 | 1 | 4 | 6 | 2 | 7 | 3 | |
| 1LA7 08 .- . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA7 09 .- . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA7 10 .- . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA7 11 .- . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA7 13 .- . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA7 16 .- . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

1) For type of construction IM V1 with/without protective cover, motors 1LA5 183-... to 1LA5 223-... (motor series 1LA5 frame sizes 180 M to 225 M) can be supplied with two additional eyebolts; specify order supplement "Z" and order code **K32**.

2) The "Second shaft extension" option, order code **K16** is not possible.

IEC Squirrel-Cage Motors

Fan motors

Self-ventilated, in pole-changing version
Aluminum series 1LA7/5

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting 1500 rpm T_{LR}/T_{rated} | Locked-rotor torque as multiple torque 3000 rpm T_{LR}/T_{rated} | Locked-rotor current of rated current 1500 rpm I_{LR}/I_{rated} | Locked-rotor current 3000 rpm I_{LR}/I_{rated} | Breakdown torque 1500 rpm T_B/T_{rated} | Breakdown torque 3000 rpm T_B/T_{rated} | Torque class CL | Moment of inertia J kgm ² | Mechanical limit speed at maximum supply frequency n_{max} rpm |
|---|---|---|--|---|--|--|--------------------|--|--|
| 4/2-pole, 1500/3000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | |
| Double pole-changing for driving fans with a winding in a Dahlander circuit | | | | | | | | | |
| 1LA7 080-0BA□□ | 1.8 | 1.6 | 3.8 | 4 | 2 | 2 | 10 | 0.0014 | 4200 |
| 1LA7 083-0BA□□ | 1.8 | 1.9 | 3.8 | 4.2 | 2 | 2 | 10 | 0.0017 | 4200 |
| 1LA7 090-0BA□□ | 1.9 | 1.8 | 4.5 | 4.3 | 2.1 | 2 | 10 | 0.0024 | 4200 |
| 1LA7 096-0BA□□ | 2.2 | 2.2 | 5.1 | 5 | 2.5 | 2.5 | 10 | 0.0033 | 4200 |
| 1LA7 106-0BA□□ | 1.7 | 2.2 | 5 | 5.5 | 2.3 | 2.3 | 10 | 0.0048 | 4200 |
| 1LA7 107-0BA□□ | 1.8 | 2.3 | 5.7 | 6.1 | 2.6 | 2.6 | 10 | 0.0055 | 4200 |
| 1LA7 113-0BA□□ | 2.1 | 2.2 | 6.2 | 6.2 | 2.4 | 2.4 | 10 | 0.011 | 4200 |
| 1LA7 130-0BA□□ | 2 | 2.1 | 6.8 | 6.5 | 2.8 | 2.8 | 10 | 0.018 | 4200 |
| 1LA7 133-0BA□□ | 1.9 | 2.1 | 7.6 | 7.5 | 2.6 | 2.6 | 10 | 0.023 | 4200 |
| 1LA7 163-0BA□□ | 1.8 | 1.8 | 6.9 | 7.4 | 2.5 | 2.4 | 10 | 0.043 | 4200 |
| 1LA7 166-0BA□□ | 1.9 | 2.2 | 7.1 | 8.5 | 2.5 | 2.6 | 10 | 0.06 | 4200 |

IEC Squirrel-Cage Motors

Fan motors

Self-ventilated, in pole-changing version
Aluminum series 1LA7/5

Selection and ordering data (continued)

| Rated output at 50 Hz, | | Frame size | Rated speed at 50 Hz, | | Rated torque at 50 Hz, | | Efficiency at 50 Hz 4/4-load | | Power factor at 50 Hz 4/4-load | | Rated current at 400 V, 50 Hz | | Order No. | Price | Weight motor |
|---|-------------------|------------|-----------------------|--------------------|------------------------|-------------------|------------------------------|---------------------|--------------------------------|--------------------|-------------------------------|------------------|-----------------------|-------|--------------|
| 1000 rpm | 1500 rpm | | 1000 rpm | 1500 rpm | 1000 rpm | 1500 rpm | 1000 rpm | 1500 rpm | 1000 rpm | 1500 rpm | 1000 rpm | 1500 rpm | | | |
| P_{rated} kW | P_{rated} kW | FS | n_{rated} rpm | n_{rated} rpm | T_{rated} Nm | T_{rated} Nm | η_{rated} % | η_{rated} % | $\cos\phi_{rated}$ | $\cos\phi_{rated}$ | I_{rated} A | I_{rated} A | | | m kg |
| 6/4-pole, 1000/1500 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | | | | |
| Double pole-changing for driving fans with two windings | | | | | | | | | | | | | | | |
| 0.12 | 0.4 | 80 M | 940 | 1430 | 1.2 | 2.7 | 45 | 55 | 0.75 | 0.76 | 0.51 | 1.38 | 1LA7 080-1BDQQ | | 9 |
| 0.18 | 0.55 | 80 M | 930 | 1420 | 1.9 | 3.7 | 49 | 66 | 0.72 | 0.74 | 0.73 | 1.62 | 1LA7 083-1BDQQ | | 10 |
| 0.29 | 0.8 | 90 S | 950 | 1430 | 2.9 | 5.3 | 55 | 68 | 0.71 | 0.81 | 1.07 | 2.1 | 1LA7 090-1BDQQ | | 13 |
| 0.38 | 1.1 | 90 L | 950 | 1430 | 3.8 | 7.3 | 58 | 74 | 0.71 | 0.81 | 1.33 | 2.65 | 1LA7 096-1BDQQ | | 16 |
| 0.6 | 1.7 | 100 L | 950 | 1410 | 6 | 11 | 67 | 75 | 0.74 | 0.86 | 1.75 | 3.8 | 1LA7 106-1BDQQ | | 21 |
| 0.75 | 2.1 | 100 L | 950 | 1420 | 7.5 | 14 | 63 | 78 | 0.75 | 0.86 | 2.3 | 4.55 | 1LA7 107-1BDQQ | | 24 |
| 0.9 | 3 | 112 M | 980 | 1450 | 8.8 | 20 | 71 | 81 | 0.61 | 0.8 | 3 | 6.7 | 1LA7 113-1BDQQ | | 31 |
| 1.2 | 3.9 | 132 S | 975 | 1460 | 12 | 26 | 72 | 81 | 0.69 | 0.83 | 3.5 | 8.4 | 1LA7 130-1BDQQ | | 41 |
| 1.7 | 5.4 | 132 M | 975 | 1460 | 17 | 35 | 75 | 82.5 | 0.72 | 0.83 | 4.55 | 11.4 | 1LA7 133-1BDQQ | | 49 |
| 2.5 | 7.2 | 160 M | 980 | 1470 | 24 | 47 | 78 | 86 | 0.72 | 0.84 | 6.4 | 14.4 | 1LA7 163-1BDQQ | | 74 |
| 3.7 | 12 | 160 L | 980 | 1470 | 36 | 78 | 77 | 89.5 | 0.75 | 0.83 | 9.3 | 23.3 | 1LA7 166-1BDQQ | | 92 |
| 5.5 | 16 | 180 M | 965 | 1470 | 54 | 104 | 84 | 90.5 | 0.8 | 0.81 | 11.8 | 31.5 | 1LA5 183-1BDQQ | | 114 |
| 6.5 | 19 | 180 L | 965 | 1460 | 64 | 124 | 84 | 88.5 | 0.81 | 0.85 | 13.8 | 36.5 | 1LA5 186-1BDQQ | | 128 |
| 9.5 | 26 | 200 L | 980 | 1470 | 93 | 170 | 87 | 92.3 | 0.79 | 0.83 | 20 | 49 | 1LA5 207-1BDQQ | | 157 |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | With standard flange | | With special flange |
|------------------------------------|------------------------------------|----------|----------|----------|--|--|--|----------|---|----------|---|
| | 50 Hz, direct online starting | | | | Without flange | With flange | | | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 230 V | 400 V | 500 V | 690 V | IM B3, IM B6/7/8, IM V6/5 without protective cover | IM B5, IM V1 without protective cover, IM V3 ¹⁾ | IM V1 with protective cover ^{1) 2)} | IM B35 | | | |
| | 1 | 6 | 5 | 0 | 0 | 1 | 4 | 6 | 2 | 7 | 3 |
| 1LA7 08 QQ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 09 QQ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 10 QQ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 11 QQ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 13 QQ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 16 QQ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA5 18 QQ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | ✓ | – | – | – |
| 1LA5 20 QQ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ For type of construction IM V1 with/without protective cover, motors 1LA5 183-... to 1LA5 223-... (motor series 1LA5 frame sizes 180 M to 225 M) can be supplied with two additional eyebolts; specify order supplement "**Z**" and order code **K32**.

²⁾ The "Second shaft extension" option, order code **K16** is not possible.

³⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Fan motors

Self-ventilated, in pole-changing version
Aluminum series 1LA7/5

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting 1000 rpm T_{LR}/T_{rated} | Locked-rotor torque as multiple torque 1500 rpm T_{LR}/T_{rated} | Locked-rotor current of rated current 1000 rpm I_{LR}/I_{rated} | Locked-rotor current 1500 rpm I_{LR}/I_{rated} | Breakdown torque 1000 rpm T_B/T_{rated} | Breakdown torque 1500 rpm T_B/T_{rated} | Torque class CL | Moment of inertia J kgm ² | Mechanical limit speed at maximum supply frequency n_{max} rpm |
|---|---|---|--|---|--|--|--------------------|--|--|
| 6/4-pole, 1000/1500 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | |
| Double pole-changing for driving fans with two windings | | | | | | | | | |
| 1LA7 080-1BD□□ | 1.7 | 1.7 | 2.8 | 4 | 1.8 | 2 | 10 | 0.0014 | 4200 |
| 1LA7 083-1BD□□ | 1.5 | 1.7 | 2.5 | 4 | 1.8 | 2 | 10 | 0.0017 | 4200 |
| 1LA7 090-1BD□□ | 1.5 | 1.5 | 3.4 | 4.3 | 2 | 2 | 10 | 0.0027 | 4200 |
| 1LA7 096-1BD□□ | 1.8 | 1.8 | 3.8 | 4.9 | 2.3 | 2.3 | 10 | 0.0033 | 4200 |
| 1LA7 106-1BD□□ | 1.8 | 1.8 | 4.2 | 5.2 | 2.2 | 2.2 | 10 | 0.0049 | 4200 |
| 1LA7 107-1BD□□ | 1.6 | 1.9 | 3.9 | 5.2 | 2 | 2.2 | 10 | 0.0057 | 4200 |
| 1LA7 113-1BD□□ | 2 | 2.1 | 4.5 | 6.1 | 2.5 | 2.5 | 10 | 0.012 | 4200 |
| 1LA7 130-1BD□□ | 1.9 | 1.7 | 5.1 | 6.1 | 2.5 | 2.2 | 10 | 0.018 | 4200 |
| 1LA7 133-1BD□□ | 2.1 | 1.9 | 5.1 | 6.6 | 2.6 | 2.5 | 10 | 0.023 | 4200 |
| 1LA7 163-1BD□□ | 1.9 | 2 | 5.6 | 7.3 | 1.9 | 2 | 10 | 0.043 | 4200 |
| 1LA7 166-1BD□□ | 1.9 | 2.4 | 5.7 | 8.1 | 2.3 | 3 | 10 | 0.06 | 4200 |
| 1LA5 183-1BD□□ | 1.8 | 1.9 | 4.3 | 5.9 | 1.9 | 2.6 | 10 | 0.081 | 4200 |
| 1LA5 186-1BD□□ | 1.8 | 1.9 | 4.3 | 5.6 | 2.1 | 2.6 | 10 | 0.094 | 4200 |
| 1LA5 207-1BD□□ | 1.9 | 1.5 | 5.3 | 5.5 | 2.1 | 2.1 | 10 | 0.16 | 4200 |

IEC Squirrel-Cage Motors

Fan motors

Self-ventilated, in pole-changing version
Aluminum series 1LA7/5

Selection and ordering data (continued)

| Rated output at 50 Hz, | | Frame size | Rated speed at 50 Hz, | | Rated torque at 50 Hz, | | Efficiency at 50 Hz 4/4-load | | Power factor at 50 Hz 4/4-load | | Rated current at 400 V, 50 Hz | | Order No. | Price | Weight motor |
|--|----------|------------|-----------------------|----------|------------------------|----------|------------------------------|----------|--------------------------------|------------------|-------------------------------|----------|-----------------------|-------|--------------|
| 750 rpm | 1500 rpm | | 750 rpm | 1500 rpm | 750 rpm | 1500 rpm | 750 rpm | 1500 rpm | 750 rpm | 1500 rpm | 750 rpm | 1500 rpm | | | |
| P_{rated} kW | kW | FS | n_{rated} rpm | rpm | T_{rated} Nm | Nm | η_{rated} % | % | $\cos\phi_{rated}$ | I_{rated} A | A | A | | | m kg |
| 8/4-pole, 750/1500 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | | | | |
| Double pole-changing for driving fans with a winding in a Dahlander circuit | | | | | | | | | | | | | | | |
| 0.1 | 0.5 | 80 M | 680 | 1375 | 1.4 | 3.5 | 42 | 69 | 0.61 | 0.82 | 0.57 | 1.28 | 1LA7 080-0BBQQ | | 9 |
| 0.15 | 0.7 | 80 M | 685 | 1380 | 2.1 | 4.8 | 46 | 70 | 0.61 | 0.82 | 0.77 | 1.76 | 1LA7 083-0BBQQ | | 10 |
| 0.22 | 1 | 90 S | 695 | 1370 | 3 | 7 | 41 | 70 | 0.62 | 0.86 | 1.25 | 2.4 | 1LA7 090-0BBQQ | | 13 |
| 0.33 | 1.5 | 90 L | 700 | 1375 | 4.5 | 10 | 43 | 75 | 0.61 | 0.88 | 1.8 | 3.3 | 1LA7 096-0BBQQ | | 16 |
| 0.5 | 2 | 100 L | 710 | 1415 | 6.7 | 13 | 51 | 79 | 0.57 | 0.85 | 2.5 | 4.3 | 1LA7 106-0BBQQ | | 21 |
| 0.65 | 2.5 | 100 L | 700 | 1400 | 8.9 | 17 | 55 | 77 | 0.61 | 0.88 | 2.8 | 5.3 | 1LA7 107-0BBQQ | | 24 |
| 0.9 | 3.6 | 112 M | 720 | 1440 | 12 | 24 | 55 | 78 | 0.5 | 0.83 | 4.7 | 11 | 1LA7 113-0BBQQ | | 31 |
| 1.1 | 4.7 | 132 S | 720 | 1455 | 15 | 31 | 76 | 79 | 0.6 | 0.78 | 3.5 | 10.3 | 1LA7 130-0BBQQ | | 41 |
| 1.4 | 6.4 | 132 M | 720 | 1455 | 19 | 42 | 77 | 83.5 | 0.6 | 0.83 | 4.4 | 13.3 | 1LA7 133-0BBQQ | | 49 |
| 2.2 | 9.5 | 160 M | 725 | 1465 | 29 | 62 | 79 | 84 | 0.62 | 0.83 | 6.5 | 19.7 | 1LA7 163-0BBQQ | | 73 |
| 3.3 | 14 | 160 L | 730 | 1470 | 43 | 91 | 85.5 | 88.5 | 0.6 | 0.8 | 9.3 | 28.6 | 1LA7 166-0BBQQ | | 91 |
| 4.5 | 16 | 180 M | 730 | 1470 | 59 | 104 | 81 | 86 | 0.59 | 0.83 | 13.1 | 32.3 | 1LA5 183-0BBQQ | | 111 |
| 5 | 18.5 | 180 L | 730 | 1470 | 65 | 120 | 80 | 88 | 0.6 | 0.83 | 15 | 36.5 | 1LA5 186-0BBQQ | | 118 |
| 7.5 | 28 | 200 L | 732 | 1470 | 98 | 182 | 85 | 90.4 | 0.62 | 0.86 | 20.5 | 52 | 1LA5 207-0BBQQ | | 157 |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | With standard flange | | With special flange |
|----------------------------------|------------------------------------|-------|-------|-------|--|--|--|--------|---|--------|---|
| | 50 Hz, direct online starting | | | | Without flange | With flange | | | IM B14, IM V19 | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 230 V | 400 V | 500 V | 690 V | IM B3, IM B6/7/8, IM V6/5 without protective cover | IM B5, IM V1 without protective cover, IM V3 ¹⁾ | IM V1 with protective cover ^{1) 2)} | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 5 | 0 | 0 | 1 | 4 | 6 | 2 | 7 | 3 |
| 1LA7 08 QQ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 09 QQ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 10 QQ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 11 QQ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 13 QQ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 16 QQ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA5 18 QQ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | ✓ | – | – | – |
| 1LA5 20 QQ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ For type of construction IM V1 with/without protective cover, motors 1LA5 183-... to 1LA5 223-... (motor series 1LA5 frame sizes 180 M to 225 M) can be supplied with two additional eyebolts; specify order supplement "**Z**" and order code **K32**.

²⁾ The "Second shaft extension" option, order code **K16** is not possible.

³⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Fan motors

Self-ventilated, in pole-changing version
Aluminum series 1LA7/5

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting torque 750 rpm T_{LR}/T_{rated} | Locked-rotor torque as multiple torque 1500 rpm T_{LR}/T_{rated} | Locked-rotor current of rated current 750 rpm I_{LR}/I_{rated} | Locked-rotor current 1500 rpm I_{LR}/I_{rated} | Breakdown torque 750 rpm T_B/T_{rated} | Breakdown torque 1500 rpm T_B/T_{rated} | Torque class CL | Moment of inertia J kgm ² | Mechanical limit speed at maximum supply frequency n_{max} rpm |
|--|---|---|---|---|---|--|--------------------|--|--|
| 8/4-pole, 750/1500 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | |
| Double pole-changing for driving fans with a winding in a Dahlander circuit | | | | | | | | | |
| 1LA7 080-0BB□□ | 1.4 | 1.7 | 2.3 | 4.1 | 1.7 | 1.8 | 10 | 0.0014 | 4200 |
| 1LA7 083-0BB□□ | 1.4 | 1.8 | 2.4 | 4.2 | 1.7 | 1.8 | 10 | 0.0017 | 4200 |
| 1LA7 090-0BB□□ | 1.3 | 1.5 | 2.4 | 3.7 | 1.8 | 2 | 10 | 0.0024 | 4200 |
| 1LA7 096-0BB□□ | 1.5 | 1.8 | 2.6 | 4.2 | 1.8 | 2 | 10 | 0.0033 | 4200 |
| 1LA7 106-0BB□□ | 1.1 | 1.9 | 3.1 | 5.2 | 1.8 | 2.1 | 10 | 0.0047 | 4200 |
| 1LA7 107-0BB□□ | 1.1 | 1.9 | 3.1 | 5.4 | 1.8 | 2.1 | 10 | 0.0054 | 4200 |
| 1LA7 113-0BB□□ | 1.6 | 2.6 | 3.2 | 6.5 | 2.4 | 2.6 | 10 | 0.012 | 4200 |
| 1LA7 130-0BB□□ | 2 | 2.3 | 4.3 | 6.4 | 2.5 | 2.9 | 10 | 0.018 | 4200 |
| 1LA7 133-0BB□□ | 2.2 | 1.9 | 4.6 | 6.8 | 2.7 | 2.5 | 10 | 0.023 | 4200 |
| 1LA7 163-0BB□□ | 1.7 | 2 | 4.1 | 7 | 2 | 2.6 | 10 | 0.043 | 4200 |
| 1LA7 166-0BB□□ | 2 | 2.6 | 4.7 | 8.1 | 2.2 | 3.1 | 10 | 0.06 | 4200 |
| 1LA5 183-0BB□□ | 1.4 | 2.3 | 3.8 | 7 | 2.1 | 2.9 | 10 | 0.13 | 4200 |
| 1LA5 186-0BB□□ | 1.5 | 2.3 | 3.8 | 7 | 2.1 | 2.7 | 10 | 0.15 | 4200 |
| 1LA5 207-0BB□□ | 1.9 | 2.5 | 4.3 | 7.1 | 2.2 | 2.5 | 10 | 0.24 | 4200 |

IEC Squirrel-Cage Motors

Fan motors

Self-ventilated, in pole-changing version
Aluminum series 1LA7/5

Selection and ordering data (continued)

| Rated output at 50 Hz | | | Frame size | Rated speed n _{rated} at 50 Hz | | | Rated torque at 50 Hz | | | Efficiency at 50 Hz 4/4-load | | | Power factor at 50 Hz 4/4-load | | | Rated current I _{rated} at 50 Hz | | | Order No. | Price | Weight motor |
|--|-----------------------|-----------------------|------------|---|------------------------|------------------------|-----------------------|-----------------------|-----------------------|------------------------------|----------------------|----------------------|--------------------------------|------------------------|------------------------|---|----------------------|----------------------|-----------------------|-------|--------------|
| 750 rpm | 1000 rpm | 1500 rpm | FS | 750 rpm | 1000 rpm | 1500 rpm | 750 rpm | 1000 rpm | 1500 rpm | 750 rpm | 1000 rpm | 1500 rpm | 750 rpm | 1000 rpm | 1500 rpm | 750 rpm | 1000 rpm | 1500 rpm | | | m |
| P _{rated} kW | P _{rated} kW | P _{rated} kW | | n _{rated} rpm | n _{rated} rpm | n _{rated} rpm | T _{rated} Nm | T _{rated} Nm | T _{rated} Nm | η _{rated} % | η _{rated} % | η _{rated} % | cos φ _{rated} | cos φ _{rated} | cos φ _{rated} | I _{rated} A | I _{rated} A | I _{rated} A | | | kg |
| 8/6/4-pole, 750/1000/1500 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | | | | | | | | | | |
| Triple pole-changing for driving fans with two windings, of which 750/1500 rpm in a Dahlander circuit | | | | | | | | | | | | | | | | | | | | | |
| 0.15 | 0.22 | 0.7 | 90 S | 705 | 960 | 1430 | 2 | 2.3 | 4.7 | 48 | 56 | 70 | 0.63 | 0.69 | 0.83 | 0.72 | 0.82 | 1.74 | 1LA7 090-1BJQQ | | 12 |
| 0.22 | 0.3 | 0.95 | 90 L | 705 | 955 | 1435 | 3 | 3 | 6.4 | 50 | 51 | 74 | 0.6 | 0.75 | 0.81 | 1.06 | 1.13 | 2.3 | 1LA7 096-1BJQQ | | 15 |
| 0.37 | 0.55 | 1.5 | 100 L | 700 | 955 | 1400 | 5 | 5.5 | 10 | 51 | 63 | 76 | 0.63 | 0.74 | 0.88 | 1.66 | 1.71 | 3.25 | 1LA7 106-1BJQQ | | 20 |
| 0.45 | 0.7 | 1.8 | 100 L | 700 | 970 | 1400 | 6.1 | 7 | 12 | 54 | 63 | 75 | 0.65 | 0.75 | 0.89 | 1.85 | 2.15 | 3.9 | 1LA7 107-1BJQQ | | 22 |
| 0.6 | 0.85 | 2.4 | 112 M | 715 | 970 | 1445 | 8 | 8.4 | 16 | 53 | 66 | 79 | 0.59 | 0.66 | 0.86 | 2.75 | 2.8 | 5.1 | 1LA7 113-1BJQQ | | 29 |
| 0.75 | 1.1 | 3.1 | 132 S | 730 | 980 | 1460 | 9.8 | 11 | 20 | 65 | 69 | 77 | 0.62 | 0.68 | 0.81 | 2.7 | 3.4 | 7.2 | 1LA7 130-1BJQQ | | 39 |
| 1 | 1.5 | 4.4 | 132 M | 730 | 980 | 1460 | 13 | 15 | 29 | 68 | 71 | 79 | 0.6 | 0.68 | 0.83 | 3.55 | 4.5 | 9.7 | 1LA7 133-1BJQQ | | 46 |
| 1.6 | 2.2 | 6.6 | 160 M | 730 | 980 | 1470 | 21 | 21 | 43 | 78 | 74 | 83 | 0.58 | 0.66 | 0.81 | 5.1 | 6.5 | 14.2 | 1LA7 163-1BJQQ | | 67 |
| 2.4 | 3.5 | 10 | 160 L | 730 | 980 | 1470 | 31 | 34 | 65 | 79 | 78 | 85 | 0.58 | 0.69 | 0.82 | 7.6 | 9.4 | 20.7 | 1LA7 166-1BJQQ | | 85 |
| 3 | 4.5 | 13 | 180 M | 730 | 980 | 1470 | 40 | 44 | 85 | 84.5 | 84 | 87.5 | 0.61 | 0.76 | 0.84 | 8.4 | 10.2 | 25.5 | 1LA5 183-1BJQQ | | 114 |
| 3.7 | 5.5 | 16 | 180 L | 725 | 975 | 1465 | 49 | 54 | 104 | 83.5 | 86.5 | 87.5 | 0.62 | 0.76 | 0.85 | 10.3 | 12.1 | 31 | 1LA5 186-1BJQQ | | 128 |
| 5 | 8 | 22 | 200 L | 730 | 975 | 1465 | 65 | 78 | 143 | 84 | 86 | 89 | 0.64 | 0.81 | 0.85 | 13.4 | 16.6 | 42 | 1LA5 207-1BJQQ | | 157 |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | With standard flange | | With special flange |
|-----------------------------|------------------------------------|-------|-------|-------|--|--|--|--------|---|--------|---|
| | 50 Hz, direct online starting | | | | Without flange | With flange | | | | | |
| | 230 V | 400 V | 500 V | 690 V | IM B3, IM B6/7/8, IM V6/5 without protective cover | IM B5, IM V1 without protective cover, IM V3 ¹⁾ | IM V1 with protective cover ^{1) 2)} | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 5 | 0 | 0 | 1 | 4 | 6 | 2 | 7 | 3 |
| 1LA7 09 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 10 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 11 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 13 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 16 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA5 18 □□ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | ✓ | – | – | – |
| 1LA5 20 □□ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ For type of construction IM V1 with/without protective cover, motors 1LA5 183-... to 1LA5 223-... (motor series 1LA5 frame sizes 180 M to 225 M) can be supplied with two additional eyebolts; specify order supplement "Z" and order code **K32**.

²⁾ The "Second shaft extension" option, order code **K16** is not possible.

³⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Fan motors

Self-ventilated, in pole-changing version
Aluminum series 1LA7/5

Selection and ordering data (continued)

| Order No. | Locked-rotor torque | Locked-rotor torque | Locked-rotor torque | Locked-rotor current | Locked-rotor current | Locked-rotor current | Break-down torque | Break-down torque | Break-down torque | Torque class | Moment of inertia | Mechanical limit speed at maximum supply frequency |
|--|--|-----------------------------|---|--------------------------|---------------------------|---------------------------|-------------------|-------------------|-------------------|--------------|-----------------------|--|
| | with direct starting torque 750 rpm | starting torque 1000 rpm | as multiple of rated torque 1500 rpm | rated current 750 rpm | rated current 1000 rpm | rated current 1500 rpm | 750 rpm | 1000 rpm | 1500 rpm | | | |
| | T_{LR}/T_{rated} | T_{LR}/T_{rated} | T_{LR}/T_{rated} | I_{LR}/I_{rated} | I_{LR}/I_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | T_B/T_{rated} | T_B/T_{rated} | CL | J kgm ² | n_{max} . rpm |
| 8/6/4-pole, 750/1000/1500 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | |
| Triple pole-changing for driving fans with two windings, of which 750/1500 rpm in a Dahlander circuit | | | | | | | | | | | | |
| 1LA7 090-1BJQQ | 1.3 | 1.3 | 1.3 | 2.5 | 2.9 | 4.3 | 1.9 | 1.9 | 1.9 | 10 | 0.0028 | 4200 |
| 1LA7 096-1BJQQ | 1.4 | 1.2 | 1.4 | 2.5 | 3.1 | 4.6 | 2.1 | 1.9 | 2.2 | 10 | 0.0035 | 4200 |
| 1LA7 106-1BJQQ | 0.9 | 1.2 | 1.5 | 2.8 | 3.8 | 4.7 | 1.9 | 1.9 | 2.1 | 7 | 0.0048 | 4200 |
| 1LA7 107-1BJQQ | 0.9 | 1.2 | 1.7 | 2.8 | 3.8 | 4.7 | 1.9 | 2 | 2.1 | 7 | 0.0058 | 4200 |
| 1LA7 113-1BJQQ | 1.1 | 1.3 | 1.9 | 3.1 | 4.4 | 6 | 2.1 | 2.3 | 2.5 | 7 | 0.011 | 4200 |
| 1LA7 130-1BJQQ | 1.7 | 1.7 | 1.5 | 3.7 | 4.5 | 5.5 | 2.3 | 2.3 | 2.5 | 10 | 0.018 | 4200 |
| 1LA7 133-1BJQQ | 1.8 | 1.9 | 1.6 | 3.9 | 4.9 | 5.8 | 2.4 | 2.4 | 2.5 | 10 | 0.024 | 4200 |
| 1LA7 163-1BJQQ | 1.4 | 1.7 | 1.7 | 3.9 | 5.1 | 7 | 2.1 | 2.4 | 2.7 | 7 | 0.04 | 4200 |
| 1LA7 166-1BJQQ | 1.6 | 1.8 | 2 | 4.1 | 5.3 | 7.7 | 2.2 | 2.3 | 3 | 7 | 0.054 | 4200 |
| 1LA5 183-1BJQQ | 1.2 | 1.8 | 1.3 | 3.9 | 5 | 5.4 | 1.6 | 2.2 | 2.3 | 7 | 0.081 | 4200 |
| 1LA5 186-1BJQQ | 1.1 | 1.9 | 1.3 | 3.9 | 5 | 5.4 | 1.6 | 2.2 | 2.3 | 7 | 0.094 | 4200 |
| 1LA5 207-1BJQQ | 1.2 | 1.9 | 1.3 | 3.6 | 5 | 5.4 | 1.8 | 2.2 | 2.6 | 7 | 0.16 | 4200 |

IEC Squirrel-Cage Motors

Fan motors

Self-ventilated, pole-changing version Cast-iron series 1LG4

Selection and ordering data

| Rated output at 50 Hz, | | Frame size | Rated speed at 50 Hz, | | Rated torque at 50 Hz, | | Efficiency at 50 Hz, 4/4-load, | | Power factor at 50 Hz, 4/4-load, | | Rated current at 400 V, 50 Hz | | Order No. | Price | Weight motor |
|---|----------|------------|-----------------------|----------|------------------------|----------|--------------------------------|----------|----------------------------------|----------|-------------------------------|----------|-----------------------|-------|--------------|
| 1500 rpm | 3000 rpm | FS | 1500 rpm | 3000 rpm | 1500 rpm | 3000 rpm | 1500 rpm | 3000 rpm | 1500 rpm | 3000 rpm | 1500 rpm | 3000 rpm | | | |
| P_{rated} | | | n_{rated} | | T_{rated} | | η_{rated} | | $\cos \phi_{rated}$ | | I_{rated} | | | | m |
| kW | kW | | rpm | rpm | Nm | Nm | % | % | | | A | A | | | kg |
| 4/2-pole, 1500/3000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | | | | |
| Double pole-changing for driving fans with a winding in a Dahlander circuit | | | | | | | | | | | | | | | |
| 4.8 | 18 | 180 M | 1465 | 2935 | 31 | 59 | 89.0 | 84.8 | 0.86 | 0.92 | 9.1 | 33.5 | 1LG4 183-0BA□□ | | 155 |
| 5.8 | 21.5 | 180 L | 1470 | 2950 | 38 | 70 | 88.1 | 87.5 | 0.85 | 0.93 | 11.2 | 38.5 | 1LG4 186-0BA□□ | | 180 |
| 8.4 | 31 | 200 L | 1475 | 2950 | 55 | 101 | 90.9 | 88.5 | 0.87 | 0.92 | 15.5 | 55 | 1LG4 207-0BA□□ | | 225 |
| 10.5 | 38 | 225 S | 1475 | 2955 | 68 | 123 | 90.8 | 87.9 | 0.85 | 0.92 | 20 | 68 | 1LG4 220-0BA□□ | | 290 |
| 13 | 45 | 225 M | 1475 | 2960 | 84 | 145 | 91.4 | 90.0 | 0.89 | 0.93 | 23 | 78 | 1LG4 223-0BA□□ | | 330 |
| 15 | 55 | 250 M | 1480 | 2960 | 97 | 177 | 91.9 | 88.0 | 0.86 | 0.89 | 27 | 102 | 1LG4 253-0BA□□ | | 390 |
| 18 | 67 | 280 S | 1490 | 2970 | 115 | 215 | 92.0 | 89.2 | 0.87 | 0.90 | 32.5 | 120 | 1LG4 280-0BA□□ | | 520 |
| 22 | 80 | 280 M | 1490 | 2975 | 141 | 257 | 92.9 | 91.2 | 0.86 | 0.91 | 39.5 | 140 | 1LG4 283-0BA□□ | | 560 |
| 26 | 90 | 315 S | 1492 | 2978 | 166 | 289 | 93.7 | 90.7 | 0.84 | 0.88 | 47 | 162 | 1LG4 310-0BA□□ | | 730 |
| 32 | 110 | 315 M | 1492 | 2976 | 205 | 353 | 93.6 | 90.5 | 0.87 | 0.93 | 57 | 190 | 1LG4 313-0BA□□ | | 810 |
| 35 | 140 | 315 L | 1492 | 2974 | 224 | 450 | 94.5 | 93.2 | 0.87 | 0.93 | 62 | 230 | 1LG4 316-0BA□□ | | 960 |
| 45 | 170 | 315 L | 1492 | 2976 | 288 | 546 | 94.9 | 93.8 | 0.88 | 0.94 | 78 | 280 | 1LG4 317-0BA□□ | | 1060 |

Order No. supplements

| Motor type | Penultimate position: Voltage code 50 Hz, direct online starting | | | | Final position: Type of construction code | | | | | With standard flange | | With special flange |
|----------------------------|---|----------|----------|----------|--|--|--|---|----------------|---|---------------------------------|---------------------|
| | 230 V | 400 V | 500 V | 690 V | Without flange | With flange | | IM B35 | IM B14, IM V19 | IM B34 | IM B14, IM V19 | |
| | | | | | IM B3/6/7/8, IM V6, IM V5 without protective cover ¹⁾ | IM B5, IM V1 without protective cover, IM V3 ²⁾ | IM V1 without protective cover ²⁾ | IM V1 with protective cover ²⁾³⁾ | | IM B14, IM V19 without protective cover | IM V18 without protective cover | |
| | 1 | 6 | 5 | 0 | 0 | 1 | 8 | 4 | 6 | 2 | 7 | 3 |
| 1LG4 18 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 20 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 22 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 25 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 28 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 310 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 313 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 316 □□ | – | ○ | ○ | ○ | □ ⁵⁾ | – | ✓ | ✓ | ✓ | – | – | – |
| 1LG4 317 □□ | – | ○ | ○ | ○ | □ ⁵⁾ | – | ✓ | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

- 1) If motors 1LG4 183-... to 1LG4 318-... (motor series 1LG4 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.
- 2) Motors 1LG4 220-... to 1LG4 318-... (motor series 1LG4 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

- 3) The "Second shaft extension" option, order code **K16** is not possible.
- 4) Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.
- 5) Type of construction IM V6/IM V5 without protective cover is only possible using type of construction code **9** and order code **M1E** and **M1D**.

IEC Squirrel-Cage Motors

Fan motors

Self-ventilated, pole-changing version
Cast-iron series 1LG4

Selection and ordering data (continued)

| Order No. | Locked-rotor torque | Locked-rotor torque | Locked-rotor current | Locked-rotor current | Break-down torque | Break-down torque | Torque class | Moment of inertia | Mechanical limit speed at maximum supply frequency |
|---|---|---|------------------------------|------------------------------|--------------------|--------------------|--------------|-------------------------|--|
| | with direct starting as multiple torque 1500 rpm | with direct starting as multiple torque 3000 rpm | of rated current 1500 rpm | of rated current 3000 rpm | torque 1500 rpm | torque 3000 rpm | | | |
| | T_{LR}/T_{rated} | T_{LR}/T_{rated} | I_{rated}/I_{rated} | I_{rated}/I_{rated} | T_B/T_{rated} | T_B/T_{rated} | CL | J kgm ² | $n_{max.}$ rpm |
| 4/2-pole, 1500/3000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | |
| Double pole-changing for driving fans with a winding in a Dahlander circuit | | | | | | | | | |
| 1LG4 183-0BA□□ | 2.3 | 2.5 | 7.5 | 8.1 | 2.8 | 3.0 | 10 | 0.12 | 4600 |
| 1LG4 186-0BA□□ | 2.0 | 2.3 | 6.8 | 7.7 | 2.8 | 3.3 | 10 | 0.14 | 4600 |
| 1LG4 207-0BA□□ | 2.5 | 2.8 | 7.6 | 8.7 | 3.1 | 3.5 | 10 | 0.23 | 4500 |
| 1LG4 220-0BA□□ | 2.3 | 2.4 | 6.7 | 7.5 | 2.8 | 3.1 | 10 | 0.40 | 4500 |
| 1LG4 223-0BA□□ | 2.2 | 2.5 | 6.2 | 8.1 | 2.6 | 3.5 | 10 | 0.49 | 4500 |
| 1LG4 253-0BA□□ | 2.2 | 2.3 | 6.2 | 6.6 | 2.0 | 3.0 | 10 | 0.69 | 3900 |
| 1LG4 280-0BA□□ | 2.5 | 2.3 | 7.0 | 7.6 | 2.8 | 3.3 | 10 | 1.20 | 3600 |
| 1LG4 283-0BA□□ | 2.2 | 2.1 | 6.1 | 7.5 | 2.4 | 2.9 | 10 | 1.40 | 3600 |
| 1LG4 310-0BA□□ | 2.4 | 1.9 | 8.4 | 8.1 | 2.9 | 3.3 | 10 | 1.90 | 3600 |
| 1LG4 313-0BA□□ | 2.3 | 1.7 | 7.6 | 6.7 | 2.9 | 2.9 | 10 | 2.30 | 3600 |
| 1LG4 316-0BA□□ | 2.2 | 1.8 | 7.6 | 7.1 | 2.6 | 2.6 | 10 | 2.90 | 3600 ¹⁾ |
| 1LG4 317-0BA□□ | 2.2 | 1.9 | 7.5 | 7.4 | 2.7 | 2.8 | 10 | 3.50 | 3600 ¹⁾ |

¹⁾ This is only valid for horizontal installation – reduction to 3000 rpm with vertical installation

IEC Squirrel-Cage Motors

Fan motors

Self-ventilated, pole-changing version Cast-iron series 1LG4

Selection and ordering data (continued)

| Rated output at 50 Hz, | | Frame size | Rated speed at 50 Hz, | | Rated torque at 50 Hz, | | Efficiency at 50 Hz 4/4-load | | Power factor at 50 Hz 4/4-load | | Rated current at 400 V, 50 Hz | | Order No. | Price | Weight motor |
|---|----------|------------|-----------------------|----------|------------------------|----------|------------------------------|----------|--------------------------------|----------|-------------------------------|----------|-----------------------|-------|--------------|
| 1000 rpm | 1500 rpm | | 1000 rpm | 1500 rpm | 1000 rpm | 1500 rpm | 1000 rpm | 1500 rpm | 1000 rpm | 1500 rpm | 1000 rpm | 1500 rpm | | | |
| P_{rated} | | FS | n_{rated} | | T_{rated} | | η_{rated} | | $\cos \phi_{rated}$ | | I_{rated} | | | | m |
| kW | kW | | rpm | rpm | Nm | Nm | % | % | | | A | A | | | kg |
| 6/4-pole, 1000/1500 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | | | | |
| Double pole-changing for driving fans with two windings | | | | | | | | | | | | | | | |
| 5.5 | 16 | 180 M | 960 | 1460 | 55 | 105 | 81.3 | 88.8 | 0.82 | 0.83 | 12 | 31.5 | 1LG4 183-1BD□□ | | 155 |
| 6.5 | 19 | 180 L | 960 | 1460 | 65 | 124 | 81.4 | 89.3 | 0.82 | 0.84 | 14 | 36.5 | 1LG4 186-1BD□□ | | 175 |
| 9.5 | 26 | 200 L | 975 | 1460 | 93 | 170 | 84 | 90.3 | 0.82 | 0.85 | 20 | 49 | 1LG4 207-1BD□□ | | 235 |
| 12 | 34 | 225 S | 980 | 1465 | 117 | 222 | 86.2 | 90.8 | 0.82 | 0.86 | 24.5 | 63 | 1LG4 220-1BD□□ | | 285 |
| 14.5 | 40 | 225 M | 980 | 1470 | 141 | 260 | 88 | 92.2 | 0.83 | 0.87 | 28.5 | 72 | 1LG4 223-1BD□□ | | 340 |
| 18 | 52 | 250 M | 980 | 1475 | 175 | 337 | 88.7 | 93.3 | 0.86 | 0.88 | 34 | 91 | 1LG4 253-1BD□□ | | 380 |
| 25 | 70 | 280 S | 980 | 1480 | 243 | 452 | 89.3 | 92.4 | 0.86 | 0.88 | 47 | 124 | 1LG4 280-1BD□□ | | 540 |
| 30 | 82 | 280 M | 985 | 1480 | 291 | 529 | 90.3 | 93 | 0.86 | 0.86 | 56 | 148 | 1LG4 283-1BD□□ | | 580 |
| 33 | 92 | 315 S | 990 | 1490 | 319 | 591 | 90.5 | 92.6 | 0.84 | 0.82 | 63 | 176 | 1LG4 310-1BD□□ | | 730 |
| 45 | 120 | 315 M | 990 | 1485 | 435 | 771 | 91.0 | 94.3 | 0.84 | 0.86 | 85 | 215 | 1LG4 313-1BD□□ | | 810 |
| 50 | 150 | 315 L | 990 | 1485 | 483 | 966 | 91.0 | 94.5 | 0.85 | 0.87 | 93 | 260 | 1LG4 316-1BD□□ | | 990 |
| 55 | 170 | 315 L | 990 | 1490 | 532 | 1092 | 90.8 | 94.6 | 0.86 | 0.84 | 102 | 310 | 1LG4 317-1BD□□ | | 1060 |

Order No. supplements

| Motor type | Penultimate position: Voltage code 50 Hz, direct online starting | | | | Final position: Type of construction code | | | | | | | |
|------------------------------|---|-------|-------|-------|--|---|--|---|----------------------|---|---------------------|---|
| | 230 V | 400 V | 500 V | 690 V | Without flange | With flange | | | With standard flange | | With special flange | |
| | | | | | IM B3, IM B6/7/8, IM V6/5 without protective cover ¹⁾ | IM B5, IM V1 without protective cover ²⁾ | IM V1 without protective cover ²⁾ | IM V1 with protective cover ²⁾³⁾ | IM B35 | IM B14, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 5 | 0 | 0 | 1 | 8 | 4 | 6 | 2 | 7 | 3 |
| 1LG4 18 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 20 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 22 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 25 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 28 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 310 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 313 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 316 □□ | – | ○ | ○ | ○ | □ ⁵⁾ | – | ✓ | ✓ | ✓ | – | – | – |
| 1LG4 317 □□ | – | ○ | ○ | ○ | □ ⁵⁾ | – | ✓ | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

- ¹⁾ If motors 1LG4 183-... to 1LG4 318-... (motor series 1LG4 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.
- ²⁾ Motors 1LG4 220-... to 1LG4 318-... (motor series 1LG4 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

- ³⁾ The "Second shaft extension" option, order code **K16** is not possible.
- ⁴⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.
- ⁵⁾ Type of construction IM V6/IM V5 without protective cover is only possible using type of construction code **9** and order code **M1E** and **M1D**.

IEC Squirrel-Cage Motors

Fan motors

Self-ventilated, pole-changing version
Cast-iron series 1LG4

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting 1000 rpm T_{LR}/T_{rated} | Locked-rotor torque as multiple torque 1500 rpm T_{LR}/T_{rated} | Locked-rotor current of rated current 1000 rpm I_{LR}/I_{rated} | Locked-rotor current 1500 rpm I_{LR}/I_{rated} | Breakdown torque 1000 rpm T_B/T_{rated} | Breakdown torque 1500 rpm T_B/T_{rated} | Torque class CL | Moment of inertia J kgm ² | Mechanical limit speed at maximum supply frequency n_{max} rpm |
|---|---|---|--|---|--|--|--------------------|--|--|
| 6/4-pole, 1000/1500 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | |
| Double pole-changing for driving fans with two windings | | | | | | | | | |
| 1LG4 183-1BD□□ | 1.6 | 1.7 | 4 | 5.3 | 1.8 | 2.5 | 10 | 0.08 | 4200 |
| 1LG4 186-1BD□□ | 1.6 | 1.7 | 4 | 5.2 | 1.8 | 2.4 | 10 | 0.08 | 4200 |
| 1LG4 207-1BD□□ | 1.9 | 1.7 | 5 | 5.1 | 2.2 | 2.4 | 10 | 0.15 | 4200 |
| 1LG4 220-1BD□□ | 2.3 | 1.7 | 5.7 | 5.6 | 2.1 | 2.3 | 10 | 0.29 | 4500 |
| 1LG4 223-1BD□□ | 2.2 | 1.9 | 5.6 | 5.8 | 2.1 | 2.3 | 10 | 0.37 | 4500 |
| 1LG4 253-1BD□□ | 2 | 2 | 4.9 | 5.9 | 2 | 2.7 | 10 | 0.44 | 3700 |
| 1LG4 280-1BD□□ | 2.1 | 2.2 | 5 | 6.2 | 1.9 | 2.6 | 10 | 1.19 | 3000 |
| 1LG4 283-1BD□□ | 2.5 | 2.4 | 5.5 | 6.6 | 2.2 | 2.8 | 10 | 1.39 | 3000 |
| 1LG4 310-1BD□□ | 2.5 | 2.4 | 5.9 | 6.7 | 2.5 | 2.9 | 10 | 1.90 | 2600 |
| 1LG4 313-1BD□□ | 2.4 | 2.3 | 5.4 | 6.4 | 2.3 | 2.8 | 10 | 2.30 | 2600 |
| 1LG4 316-1BD□□ | 2.4 | 2.0 | 5.2 | 5.9 | 2.1 | 2.3 | 10 | 2.50 | 2600 |
| 1LG4 317-1BD□□ | 2.3 | 2.7 | 5.6 | 7.9 | 2.1 | 3.1 | 10 | 3.50 | 2600 |

IEC Squirrel-Cage Motors

Fan motors

Self-ventilated, pole-changing version Cast-iron series 1LG4

Selection and ordering data (continued)

| Rated output at 50 Hz, | | Frame size | Rated speed at 50 Hz, | | Rated torque at 50 Hz, | | Efficiency at 50 Hz 4/4-load | | Power factor at 50 Hz 4/4-load | | Rated current at 400 V, 50 Hz | | Order No. | Price | Weight motor |
|--|----------|------------|-----------------------|----------|------------------------|----------|------------------------------|----------|--------------------------------|----------|-------------------------------|----------|-----------------------|-------|--------------|
| 750 rpm | 1500 rpm | | 750 rpm | 1500 rpm | 750 rpm | 1500 rpm | 750 rpm | 1500 rpm | 750 rpm | 1500 rpm | 750 rpm | 1500 rpm | | | |
| P_{rated} | | FS | n_{rated} | | T_{rated} | | η_{rated} | | $\cos\phi_{rated}$ | | I_{rated} | | | | m |
| kW | kW | | rpm | rpm | Nm | Nm | % | % | | | A | A | | | kg |
| 8/4-pole, 750/1500 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | | | | |
| Double pole-changing for driving fans with a winding in a Dahlander circuit | | | | | | | | | | | | | | | |
| 4.5 | 16 | 180 M | 725 | 1465 | 59 | 104 | 81.6 | 88.6 | 0.63 | 0.84 | 12.6 | 31 | 1LG4 183-0BB□□ | | 155 |
| 5 | 18.5 | 180 L | 725 | 1470 | 66 | 120 | 82.5 | 91 | 0.62 | 0.85 | 14.2 | 35 | 1LG4 186-0BB□□ | | 180 |
| 7.5 | 28 | 200 L | 730 | 1465 | 98 | 183 | 84.7 | 91 | 0.6 | 0.86 | 21.5 | 52 | 1LG4 207-0BB□□ | | 220 |
| 9.5 | 35 | 225 S | 738 | 1478 | 123 | 226 | 86 | 92 | 0.61 | 0.86 | 26 | 64 | 1LG4 220-0BB□□ | | 295 |
| 11.5 | 42 | 225 M | 738 | 1475 | 149 | 272 | 87.8 | 92.7 | 0.62 | 0.87 | 30.5 | 75 | 1LG4 223-0BB□□ | | 330 |
| 14.5 | 52 | 250 M | 740 | 1480 | 187 | 335 | 88.3 | 93.2 | 0.62 | 0.86 | 38 | 94 | 1LG4 253-0BB□□ | | 430 |
| 19 | 70 | 280 S | 740 | 1480 | 245 | 451 | 90.7 | 94 | 0.62 | 0.86 | 49 | 124 | 1LG4 280-0BB□□ | | 530 |
| 23 | 83 | 280 M | 740 | 1485 | 296 | 534 | 91 | 94.2 | 0.63 | 0.87 | 58 | 146 | 1LG4 283-0BB□□ | | 665 |
| 26 | 95 | 315 S | 742 | 1484 | 334 | 610 | 91.5 | 94.2 | 0.62 | 0.85 | 66 | 172 | 1LG4 310-0BB□□ | | 730 |
| 30 | 115 | 315 M | 744 | 1488 | 385 | 738 | 91.5 | 94.0 | 0.58 | 0.83 | 82 | 215 | 1LG4 313-0BB□□ | | 810 |
| 35 | 140 | 315 L | 744 | 1486 | 449 | 899 | 92.5 | 95.0 | 0.62 | 0.86 | 88 | 245 | 1LG4 316-0BB□□ | | 960 |
| 45 | 175 | 315 L | 744 | 1490 | 577 | 1125 | 92.5 | 95.0 | 0.57 | 0.84 | 124 | 315 | 1LG4 317-0BB□□ | | 1090 |

Order No. supplements

| Motor type | Penultimate position: Voltage code 50 Hz, direct online starting | | | | Final position: Type of construction code | | | | | | | |
|----------------------------|---|-------|-------|-------|--|---|--|---|----------------------|---|---------------------|---|
| | 230 V | 400 V | 500 V | 690 V | Without flange | With flange | | | With standard flange | | With special flange | |
| | | | | | IM B3, IM B6/7/8, IM V6/5 without protective cover ¹⁾ | IM B5, IM V1 without protective cover ²⁾ | IM V1 without protective cover ²⁾ | IM V1 with protective cover ²⁾³⁾ | IM B35 | IM B14, IM V19 without protective cover | IM B34 | IM B14, IM V19 without protective cover |
| | 1 | 6 | 5 | 0 | 0 | 1 | 8 | 4 | 6 | 2 | 7 | 3 |
| 1LG4 18 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 20 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 22 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 25 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 28 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 310 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 313 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | – | ✓ | ✓ | – | – | – |
| 1LG4 316 □□ | – | ○ | ○ | ○ | □ ⁵⁾ | – | ✓ | ✓ | ✓ | – | – | – |
| 1LG4 317 □□ | – | ○ | ○ | ○ | □ ⁵⁾ | – | ✓ | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

- ¹⁾ If motors 1LG4 183-... to 1LG4 318-... (motor series 1LG4 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.
- ²⁾ Motors 1LG4 220-... to 1LG4 318-... (motor series 1LG4 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

- ³⁾ The "Second shaft extension" option, order code **K16** is not possible.
- ⁴⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.
- ⁵⁾ Type of construction IM V6/IM V5 without protective cover is only possible using type of construction code **9** and order code **M1E** and **M1D**.

IEC Squirrel-Cage Motors

Fan motors

Self-ventilated, pole-changing version
Cast-iron series 1LG4

Selection and ordering data (continued)

| Order No. | Locked-rotor torque with direct starting at 750 rpm T_{LR}/T_{rated} | Locked-rotor torque as multiple of rated torque at 1500 rpm T_{LR}/T_{rated} | Locked-rotor current of rated current at 750 rpm I_{LR}/I_{rated} | Locked-rotor current at 1500 rpm I_{LR}/I_{rated} | Breakdown torque at 750 rpm T_B/T_{rated} | Breakdown torque at 1500 rpm T_B/T_{rated} | Torque class CL | Moment of inertia J kgm ² | Mechanical limit speed at maximum supply frequency n_{max} rpm |
|--|---|---|--|--|--|---|--------------------|--|--|
| 8/4-pole, 750/1500 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | |
| Double pole-changing for driving fans with a winding in a Dahlander circuit | | | | | | | | | |
| 1LG4 183-0BB□□ | 1.4 | 2.2 | 3.6 | 6.8 | 2 | 3.1 | 10 | 0.11 | 4200 |
| 1LG4 186-0BB□□ | 1.6 | 2.4 | 3.7 | 7.2 | 2.1 | 3.3 | 10 | 0.14 | 4200 |
| 1LG4 207-0BB□□ | 2.1 | 2.7 | 4.3 | 7.3 | 2.5 | 2.9 | 10 | 0.19 | 4200 |
| 1LG4 220-0BB□□ | 2 | 1.7 | 4.4 | 6.9 | 2.3 | 2.9 | 10 | 0.44 | 4500 |
| 1LG4 223-0BB□□ | 1.9 | 2.4 | 4.5 | 6.9 | 2.2 | 3 | 10 | 0.48 | 4500 |
| 1LG4 253-0BB□□ | 2 | 2.5 | 4 | 6.8 | 1.8 | 2.6 | 10 | 0.85 | 3700 |
| 1LG4 280-0BB□□ | 1.8 | 2 | 4 | 6.3 | 1.8 | 2.5 | 10 | 1.19 | 3000 |
| 1LG4 283-0BB□□ | 1.9 | 2.2 | 4.2 | 7.2 | 1.8 | 2.7 | 10 | 1.71 | 3000 |
| 1LG4 310-0BB□□ | 1.9 | 2.3 | 4.6 | 6.5 | 1.9 | 2.6 | 10 | 1.90 | 2600 |
| 1LG4 313-0BB□□ | 2.1 | 2.5 | 5.0 | 7.4 | 2.1 | 2.7 | 10 | 2.30 | 2600 |
| 1LG4 316-0BB□□ | 2.0 | 2.4 | 4.7 | 7.0 | 2.1 | 2.6 | 10 | 2.90 | 2600 |
| 1LG4 317-0BB□□ | 2.1 | 3.1 | 4.7 | 7.5 | 2.2 | 3.0 | 10 | 4.20 | 2600 |

IEC Squirrel-Cage Motors

Fan motors

Forced-air cooled, without external fan and fan cover with improved efficiency – Aluminum series 1PP7/5

Selection and ordering data

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | | Locked-rotor torque with direct starting as multiple of rated torque | Locked-rotor current | Break-down torque | Torque class | Moment of inertia | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight |
|--|------------|----------------------------------|-----------------------|---|------------------------------|--------------------------------|------------------------------|--|----------------------|-------------------|-------------------|-------------------|---|--------------------------------------|--------|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class "Improved Efficiency" according to CEMEP | Efficiency at 50 Hz 4/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | | | | | | | | |
| P_{rated} | FS | n_{rated} | T_{rated} | EFF 2 | η_{rated} | $\cos\phi_{rated}$ | I_{rated} | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | J | Phase-out model | | Type of construction IM B3 approx. m | |
| kW | | rpm | Nm | EFF 2 | % | | A | | | | kg m ² | | | kg | |
| 2-pole, 3000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | | | | |
| 0.18 | 63 M | 2820 | 0.61 | | 63.0 | 0.82 | 0.50 | 2.0 | 3.7 | 2.2 | 16 | 0.00018 | 1PP7 060-2AA□□ | 4 | |
| 0.25 | 63 M | 2830 | 0.84 | | 65.0 | 0.82 | 0.68 | 2.0 | 4.0 | 2.2 | 16 | 0.00022 | 1PP7 063-2AA□□ | 4 | |
| 0.37 | 71 M | 2740 | 1.3 | | 66.0 | 0.82 | 1.00 | 2.3 | 3.5 | 2.3 | 16 | 0.00029 | 1PP7 070-2AA□□ | 5 | |
| 0.55 | 71 M | 2800 | 1.9 | | 71.0 | 0.82 | 1.36 | 2.5 | 4.3 | 2.6 | 16 | 0.00041 | 1PP7 073-2AA□□ | 6 | |
| 0.75 | 80 M | 2855 | 2.5 | | 73.0 | 0.86 | 1.73 | 2.3 | 5.6 | 2.4 | 16 | 0.00079 | 1PP7 080-2AA□□ | 9 | |
| 1.1 | 80 M | 2845 | 3.7 | EFF 2 | 77.0 | 0.87 | 2.40 | 2.6 | 6.1 | 2.7 | 16 | 0.0010 | 1PP7 083-2AA□□ | 11 | |
| 1.5 | 90 S | 2860 | 5.0 | EFF 2 | 79.0 | 0.85 | 3.25 | 2.4 | 5.5 | 2.7 | 16 | 0.0014 | 1PP7 090-2AA□□ | 13 | |
| 2.2 | 90 L | 2880 | 7.3 | EFF 2 | 82.0 | 0.85 | 4.55 | 2.8 | 6.3 | 3.1 | 16 | 0.0018 | 1PP7 096-2AA□□ | 16 | |
| 3 | 100 L | 2890 | 9.9 | EFF 2 | 84.0 | 0.85 | 6.10 | 2.8 | 6.8 | 3.0 | 16 | 0.0035 | ▶ 1PP7 106-2AA□□ | 22 | |
| 4 | 111 M | 2905 | 13 | EFF 2 | 86.0 | 0.86 | 7.80 | 2.6 | 7.2 | 2.9 | 16 | 0.0059 | ▶ 1PP7 113-2AA□□ | 29 | |
| 5.5 | 132 S | 2925 | 18 | EFF 2 | 86.5 | 0.89 | 10.4 | 2.0 | 5.9 | 2.8 | 16 | 0.015 | ▶ 1PP7 130-2AA□□ | 39 | |
| 7.5 | 132 S | 2930 | 24 | EFF 2 | 88.0 | 0.89 | 13.8 | 2.3 | 6.9 | 3.0 | 16 | 0.019 | ▶ 1PP7 131-2AA□□ | 48 | |
| 11 | 160 M | 2940 | 36 | EFF 2 | 89.5 | 0.88 | 20.0 | 2.1 | 6.5 | 2.9 | 16 | 0.034 | ▶ 1PP7 163-2AA□□ | 68 | |
| 15 | 160 M | 2940 | 49 | EFF 2 | 90.0 | 0.90 | 26.5 | 2.2 | 6.6 | 3.0 | 16 | 0.043 | ▶ 1PP7 164-2AA□□ | 77 | |
| 18.5 | 160 L | 2940 | 60 | EFF 2 | 91.0 | 0.91 | 32.0 | 2.4 | 7.0 | 3.1 | 16 | 0.051 | ▶ 1PP7 166-2AA□□ | 86 | |
| 22 | 180 M | 2940 | 71 | EFF 2 | 91.7 | 0.88 | 39.5 ¹⁾ | 2.5 | 6.9 | 3.2 | 16 | 0.077 | 1PP5 183-2AA□□ | 111 | |
| 30 | 200 L | 2945 | 97 | EFF 2 | 92.3 | 0.89 | 53 | 2.4 | 7.2 | 2.8 | 16 | 0.14 | 1PP5 206-2AA□□ | 159 | |
| 37 | 200 L | 2945 | 120 | EFF 2 | 92.8 | 0.89 | 65.0 ¹⁾ | 2.4 | 7.7 | 2.8 | 16 | 0.16 | 1PP5 207-2AA□□ | 179 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | |
|-----------------------------|------------------------------------|---------------|--------|--------|---|----------------------------|--|----------------------|---|--------|---|
| | 50 Hz | | | | Without flange | With flange | | With standard flange | | | With special flange |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6/5 without protective cover | IM B5, IM V3 ²⁾ | IM V1 without protective cover ²⁾³⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 3 | 5 | 0 | 1 | 1 | 6 | 2 | 7 | 3 |
| 1PP7 06 □□ | ○ | ○ | ○ | - | □ | ✓ | ✓ | - | ✓ | - | ✓ |
| 1PP7 07 □□ | ○ | ○ | ○ | - | □ | ✓ | ✓ | - | ✓ | - | ✓ |
| 1PP7 08 □□ | ○ | ○ | ○ | - | □ | ✓ | ✓ | - | ✓ | - | ✓ |
| 1PP7 09 □□ | ○ | ○ | ○ | - | □ | ✓ | ✓ | - | ✓ | - | ✓ |
| 1PP7 10 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | - | ✓ | - | ✓ |
| 1PP7 11 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | - | ✓ | - | ✓ |
| 1PP7 13 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | - | ✓ | - | ✓ |
| 1PP7 16 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | - | ✓ | - | ✓ |
| 1PP5 18 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | - | - | - | - |
| 1PP5 20 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | - | - | - | - |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

▶ The Order No. for 1PP7 motors marked with this symbol are phase-out models.
1LE1 motors are the successors.
For additional information see catalog part 1 "New Generation 1LE1/1PC1" under "Forced-air cooled motors without external fan and fan cover" Pages 1/38 to 1/45.

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ For connection to 230 V, parallel feeders are necessary (see the "Technical information" section, "Connection, circuit and connection box" Page 0/38).
²⁾ Motors 1PP5 183... to 1PP5 223... (motor series 1PP5, frame size 180 M to 225 M) can be supplied with two additional eyebolts; specify supplement "Z" and order code **K32**.

³⁾ The "Second shaft extension" option, order code **K16** is not possible.
⁴⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Fan motors

Forced-air cooled, without external fan and fan cover with improved efficiency – Aluminum series 1PP7/5

Selection and ordering data (continued)

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | | Locked-rotor torque with direct starting as multiple of rated torque | Locked-rotor current | Break-down torque | Torque class | Moment of inertia | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight |
|--|------------|----------------------------------|-----------------------|---|------------------------------|--------------------------------|------------------------------|--|----------------------|-------------------|-------------------|-------------------|---|--------------------------------------|--------|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class "Improved Efficiency" according to CEMEP | Efficiency at 50 Hz 4/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | | | | | | | | |
| P_{rated} | FS | n_{rated} | T_{rated} | η_{rated} | $\cos\phi_{rated}$ | I_{rated} | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | | J | | | Type of construction IM B3 approx. m | |
| kW | | rpm | Nm | EFF2 % | | A | | | | CL | kg m ² | ► Phase-out model | | kg | |
| 4-pole, 1500 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | | | | |
| 0.12 | 63 M | 1350 | 0.85 | 55.0 | 75 | 0.42 | 1.9 | 2.8 | 2.0 | 13 | 0.00029 | 1PP7 060-4AB□□ | | 4 | |
| 0.18 | 63 M | 1350 | 1.3 | 60.0 | 77 | 0.56 | 1.9 | 3.0 | 1.9 | 13 | 0.00037 | 1PP7 063-4AB□□ | | 4 | |
| 0.25 | 71 M | 1350 | 1.8 | 60.0 | 78 | 0.77 | 1.9 | 3.0 | 1.9 | 13 | 0.00052 | 1PP7 070-4AB□□ | | 5 | |
| 0.37 | 71 M | 1370 | 2.6 | 65.0 | 78 | 1.06 | 1.9 | 3.3 | 2.1 | 13 | 0.00077 | 1PP7 073-4AB□□ | | 6 | |
| 0.55 | 80 M | 1395 | 3.8 | 67.0 | 82 | 1.44 | 2.2 | 3.9 | 2.2 | 16 | 0.0014 | 1PP7 080-4AA□□ | | 9 | |
| 0.75 | 80 M | 1395 | 5.1 | EFF 2 72.0 | 81 | 1.91 | 2.3 | 4.2 | 2.3 | 16 | 0.0017 | 1PP7 083-4AA□□ | | 10 | |
| 1.1 | 90 S | 1415 | 7.4 | EFF 2 77.0 | 81 | 2.55 | 2.3 | 4.6 | 2.4 | 16 | 0.0024 | 1PP7 090-4AA□□ | | 13 | |
| 1.5 | 90 L | 1420 | 10 | EFF 2 79.0 | 81 | 3.40 | 2.4 | 5.3 | 2.6 | 16 | 0.0033 | 1PP7 096-4AA□□ | | 16 | |
| 2.2 | 100 L | 1420 | 15 | EFF 2 82.0 | 82 | 4.70 | 2.5 | 5.6 | 2.8 | 16 | 0.0047 | ► 1PP7 106-4AA□□ | | 21 | |
| 3 | 100 L | 1420 | 20 | EFF 2 83.0 | 82 | 6.40 | 2.7 | 5.6 | 3.0 | 16 | 0.0055 | ► 1PP7 107-4AA□□ | | 24 | |
| 4 | 112 M | 1440 | 27 | EFF 2 85.0 | 83 | 8.20 | 2.7 | 6.0 | 3.0 | 16 | 0.012 | ► 1PP7 113-4AA□□ | | 31 | |
| 5.5 | 132 S | 1455 | 36 | EFF 2 86.0 | 81 | 11.4 | 2.5 | 6.3 | 3.1 | 16 | 0.018 | ► 1PP7 130-4AA□□ | | 41 | |
| 7.5 | 132 M | 1455 | 49 | EFF 2 87.0 | 82 | 15.2 | 2.7 | 6.7 | 3.2 | 16 | 0.023 | ► 1PP7 133-4AA□□ | | 49 | |
| 11 | 160 M | 1460 | 72 | EFF 2 88.5 | 84 | 21.5 | 2.2 | 6.2 | 2.7 | 16 | 0.043 | ► 1PP7 163-4AA□□ | | 73 | |
| 15 | 160 L | 1460 | 98 | EFF 2 90.0 | 84 | 28.5 | 2.6 | 6.5 | 3.0 | 16 | 0.055 | ► 1PP7 166-4AA□□ | | 85 | |
| 18.5 | 180 M | 1460 | 121 | EFF 2 90.5 | 83 | 35.5 ¹⁾ | 2.3 | 7.5 | 3.0 | 16 | 0.13 | 1PP5 183-4AA□□ | | 108 | |
| 22 | 180 L | 1460 | 144 | EFF 2 91.2 | 84 | 41.5 ¹⁾ | 2.3 | 7.5 | 3.0 | 16 | 0.15 | 1PP5 186-4AA□□ | | 118 | |
| 30 | 200 L | 1465 | 196 | EFF 2 91.8 | 86 | 55 | 2.6 | 7.0 | 3.2 | 16 | 0.24 | 1PP5 207-4AA□□ | | 157 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | |
|--------------------|------------------------------------|---------------|--------|--------|--|----------------------------|--|--------|---|--------|---|
| | 50 Hz | | | | Without flange | With flange | | | With standard flange | | With special flange |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3, IM B6/7/8, IM V6/5 without protective cover | IM B5, IM V3 ²⁾ | IM V1 without protective cover ²⁾³⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 3 | 5 | 0 | 1 | 1 | 6 | 2 | 7 | 3 |
| 1PP7 06 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | – | ✓ | – | ✓ |
| 1PP7 07 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | – | ✓ | – | ✓ |
| 1PP7 08 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | – | ✓ | – | ✓ |
| 1PP7 09 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | – | ✓ | – | ✓ |
| 1PP7 10 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | – | ✓ |
| 1PP7 11 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | – | ✓ |
| 1PP7 13 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | – | ✓ |
| 1PP7 16 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | – | ✓ |
| 1PP5 18 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | – | – | – |
| 1PP5 20 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

► The Order No. for 1PP7 motors marked with this symbol are phase-out models.
1LE1 motors are the successors.
For additional information see catalog part 1 "New Generation 1LE1/1PC1" under "Forced-air cooled motors without external fan and fan cover" Pages 1/38 to 1/45.

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ For connection to 230 V, parallel feeders are necessary (see the "Technical information" section, "Connection, circuit and connection box" Page 0/38).
²⁾ Motors 1PP5 183... to 1PP5 223... (motor series 1PP5, frame size 180 M to 225 M) can be supplied with two additional eyebolts; specify supplement "Z" and order code **K32**.

³⁾ The "Second shaft extension" option, order code **K16** is not possible.
⁴⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Fan motors

Forced-air cooled, without external fan and fan cover with improved efficiency – Aluminum series 1PP7/5

Selection and ordering data (continued)

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | Locked-rotor torque with direct starting as multiple of rated torque | Locked-rotor current as multiple of rated current | Break-down torque | Torque class | Moment of inertia | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight |
|--|------------|----------------------------------|-----------------------|------------------------------|--------------------------------|------------------------------|--|---|-------------------|--------------|--------------------------|---|---|--------|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | | | | | | | | |
| P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kg m ² | ► Phase-out model | Type of construction IM B3 approx. m kg | |
| 6-pole, 1000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | | | |
| 0.09 | 63 M | 850 | 1.0 | 45.0 | 0.66 | 0.44 | 1.8 | 2.0 | 1.9 | 13 | 0.00037 | 1PP7 063-6AA□□ | 4 | |
| 0.18 | 71 M | 850 | 2.0 | 53.0 | 0.73 | 0.67 | 2.1 | 2.3 | 1.9 | 16 | 0.00055 | 1PP7 070-6AA□□ | 5 | |
| 0.25 | 71 M | 860 | 2.8 | 60.0 | 0.76 | 0.79 | 2.2 | 2.7 | 2.0 | 16 | 0.00080 | 1PP7 073-6AA□□ | 6 | |
| 0.37 | 80 M | 920 | 3.8 | 62.0 | 0.72 | 1.20 | 1.9 | 3.1 | 2.1 | 16 | 0.0014 | 1PP7 080-6AA□□ | 9 | |
| 0.55 | 80 M | 910 | 5.8 | 67.0 | 0.74 | 1.60 | 2.1 | 3.4 | 2.2 | 16 | 0.0017 | 1PP7 083-6AA□□ | 10 | |
| 0.75 | 90 S | 915 | 7.8 | 69.0 | 0.76 | 2.05 | 2.2 | 3.7 | 2.2 | 16 | 0.0024 | 1PP7 090-6AA□□ | 13 | |
| 1.1 | 90 L | 915 | 11 | 72.0 | 0.77 | 2.85 | 2.3 | 3.8 | 2.3 | 16 | 0.0033 | 1PP7 096-6AA□□ | 16 | |
| 1.5 | 100 L | 925 | 15 | 74.0 | 0.75 | 3.90 | 2.3 | 4.0 | 2.3 | 16 | 0.0047 | ► 1PP7 106-6AA□□ | 21 | |
| 2.2 | 112 M | 940 | 22 | 78.0 | 0.78 | 5.20 | 2.2 | 4.6 | 2.5 | 16 | 0.0091 | ► 1PP7 113-6AA□□ | 26 | |
| 3 | 132 S | 950 | 30 | 79.0 | 0.76 | 7.20 | 1.9 | 4.2 | 2.2 | 16 | 0.015 | ► 1PP7 130-6AA□□ | 38 | |
| 4 | 132 M | 950 | 40 | 80.5 | 0.76 | 9.40 | 2.1 | 4.5 | 2.4 | 15 | 0.019 | ► 1PP7 133-6AA□□ | 44 | |
| 5.5 | 132 M | 950 | 55 | 83.0 | 0.76 | 12.6 | 2.3 | 5.0 | 2.6 | 16 | 0.025 | ► 1PP7 134-6AA□□ | 52 | |
| 7.5 | 160 M | 960 | 75 | 86.0 | 0.74 | 17.0 | 2.1 | 4.6 | 2.5 | 16 | 0.044 | ► 1PP7 163-6AA□□ | 74 | |
| 11 | 160 L | 960 | 109 | 87.5 | 0.74 | 24.5 | 2.3 | 4.8 | 2.6 | 16 | 0.063 | ► 1PP7 166-6AA□□ | 95 | |
| 15 | 180 M | 970 | 148 | 89.5 | 0.77 | 31.5 | 2.0 | 5.2 | 2.4 | 16 | 0.15 | 1PP5 186-6AA□□ | 124 | |
| 18.5 | 200 L | 975 | 181 | 90.2 | 0.77 | 38.5 | 2.7 | 5.5 | 2.8 | 16 | 0.24 | 1PP5 206-6AA□□ | 161 | |
| 22 | 200 L | 975 | 215 | 90.8 | 0.77 | 45.5 | 2.8 | 5.5 | 2.9 | 16 | 0.28 | 1PP5 207-6AA□□ | 183 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code 50 Hz | | | | Final position: Type of construction code | | | | | | | |
|-----------------------------|---|---------------|--------|--------|--|----------------------------|---|--------|---|--------|---|--|
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | Without flange | With flange | | | With standard flange | | With special flange | |
| | | | | | IM B3, IM B6/7/8, IM V6/5 without protective cover | IM B5, IM V3 ¹⁾ | IM V1 without protective cover ^{1) 2)} | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover | |
| | 1 | 6 | 3 | 5 | 0 | 1 | 1 | 6 | 2 | 7 | 3 | |
| 1PP7 06 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | – | ✓ | – | ✓ | |
| 1PP7 07 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | – | ✓ | – | ✓ | |
| 1PP7 08 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | – | ✓ | – | ✓ | |
| 1PP7 09 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | – | ✓ | – | ✓ | |
| 1PP7 10 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | – | ✓ | |
| 1PP7 11 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | – | ✓ | |
| 1PP7 13 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | – | ✓ | |
| 1PP7 16 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | – | ✓ | |
| 1PP5 18 □□ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | – | – | – | – | |
| 1PP5 20 □□ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | – | – | – | – | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

► The Order No. for 1PP7 motors marked with this symbol are phase-out models.
1LE1 motors are the successors.
For additional information see catalog part 1 "New Generation 1LE1/1PC1" under "Forced-air cooled motors without external fan and fan cover" Pages 1/38 to 1/45.

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

- 1) Motors 1PP5 183-... to 1PP5 223-... (motor series 1PP5, frame size 180 M to 225 M) can be supplied with two additional eyebolts; specify supplement "Z" and order code **K32**.
- 2) The "Second shaft extension" option, order code **K16** is not possible.
- 3) Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Fan motors

Forced-air cooled, without external fan and fan cover
with improved efficiency – Aluminum series 1PP7/5

Selection and ordering data (continued)

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | Locked-rotor torque with direct starting as multiple of rated torque | Locked-rotor current of rated current | Break-down torque | Torque class | Moment of inertia | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight |
|---|------------|----------------------------------|-----------------------|------------------------------|--------------------------------|------------------------------|--|---------------------------------------|-------------------|--------------|--------------------------|---|---|--------|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | | | | | | | | |
| P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kg m ² | ► Phase-out model | Type of construction IM B3 approx. m kg | |
| 8-pole, 750 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | | | |
| 0.09 | 71 M | 630 | 1.4 | 53.0 | 0.68 | 0.36 | 1.9 | 2.2 | 1.7 | 13 | 0.0008 | 1PP7 070-8AB□□ | 6 | |
| 0.12 | 71 M | 645 | 1.8 | 53.0 | 0.64 | 0.51 | 2.2 | 2.2 | 2.0 | 13 | 0.0008 | 1PP7 073-8AB□□ | 6 | |
| 0.18 | 80 M | 675 | 2.5 | 51.0 | 0.68 | 0.75 | 1.7 | 2.3 | 1.9 | 13 | 0.0014 | 1PP7 080-8AB□□ | 9 | |
| 0.25 | 80 M | 685 | 3.5 | 55.0 | 0.64 | 1.02 | 2.0 | 2.6 | 2.2 | 13 | 0.0017 | 1PP7 083-8AB□□ | 10 | |
| 0.37 | 90 S | 675 | 5.2 | 63.0 | 0.75 | 1.14 | 1.6 | 2.9 | 1.8 | 13 | 0.0023 | 1PP7 090-8AB□□ | 11 | |
| 0.55 | 90 L | 675 | 7.8 | 66.0 | 0.76 | 1.58 | 1.7 | 3.0 | 1.9 | 13 | 0.0031 | 1PP7 096-8AB□□ | 13 | |
| 0.75 | 100 L | 680 | 11 | 66.0 | 0.76 | 2.15 | 1.6 | 3.0 | 1.9 | 13 | 0.0051 | ► 1PP7 106-8AB□□ | 19 | |
| 1.1 | 100 L | 680 | 15 | 72.0 | 0.76 | 2.90 | 1.8 | 3.3 | 2.1 | 13 | 0.0063 | ► 1PP7 107-8AB□□ | 22 | |
| 1.5 | 112 M | 705 | 20 | 74.0 | 0.76 | 3.85 | 1.8 | 3.7 | 2.1 | 13 | 0.013 | ► 1PP7 113-8AB□□ | 24 | |
| 2.2 | 132 S | 700 | 30 | 75.0 | 0.74 | 5.70 | 1.9 | 3.9 | 2.3 | 13 | 0.014 | ► 1PP7 130-8AB□□ | 38 | |
| 3 | 132 M | 700 | 41 | 77.0 | 0.74 | 7.60 | 2.1 | 4.1 | 2.4 | 13 | 0.019 | ► 1PP7 133-8AB□□ | 44 | |
| 4 | 160 M | 715 | 53 | 80.0 | 0.72 | 10.0 | 2.2 | 4.5 | 2.6 | 13 | 0.036 | ► 1PP7 163-8AB□□ | 64 | |
| 5.5 | 160 L | 710 | 74 | 83.5 | 0.73 | 13.0 | 2.3 | 4.7 | 2.7 | 13 | 0.046 | ► 1PP7 164-8AB□□ | 74 | |
| 7.5 | 160 L | 715 | 100 | 85.5 | 0.72 | 17.6 | 2.7 | 5.3 | 3.0 | 13 | 0.064 | ► 1PP7 166-8AB□□ | 94 | |
| 11 | 180 M | 725 | 145 | 87.0 | 0.75 | 24.5 | 2.0 | 5.0 | 2.2 | 13 | 0.21 | 1PP5 186-8AB□□ | 126 | |
| 15 | 200 L | 725 | 198 | 87.5 | 0.78 | 31.5 | 2.1 | 5.0 | 2.2 | 13 | 0.37 | 1PP5 207-8AB□□ | 176 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code 50 Hz | | | | Final position: Type of construction code | | | | | | | |
|---------------------------|---|---------------|--------|--------|---|----------------------------|---|----------------------|---|---------------------|---|--|
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | Without flange | With flange | | With standard flange | | With special flange | | |
| | | | | | IM B3/6/7/8, IM V6/5 without protective cover | IM B5, IM V3 ¹⁾ | IM V1 without protective cover ^{1) 2)} | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover | |
| | 1 | 6 | 3 | 5 | 0 | 1 | 1 | 6 | 2 | 7 | 3 | |
| 1PP7 07 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | – | ✓ | – | ✓ | |
| 1PP7 08 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | – | ✓ | – | ✓ | |
| 1PP7 09 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | – | ✓ | – | ✓ | |
| 1PP7 10 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | – | ✓ | |
| 1PP7 11 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | – | ✓ | |
| 1PP7 13 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | – | ✓ | |
| 1PP7 16 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | – | ✓ | |
| 1PP5 18 □□ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | – | – | – | – | |
| 1PP5 20 □□ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | – | – | – | – | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

► The Order No. for 1PP7 motors marked with this symbol are phase-out models.
1LE1 motors are the successors.
For additional information see catalog part 1 "New Generation 1LE1/1PC1" under "Forced-air cooled motors without external fan and fan cover" Pages 1/38 to 1/45.

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

- 1) Motors 1PP5 183-... to 1PP5 223-... (motor series 1PP5, frame size 180 M to 225 M) can be supplied with two additional eyebolts; specify supplement "Z" and order code **K32**.
- 2) The "Second shaft extension" option, order code **K16** is not possible.
- 3) Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Fan motors

Forced-air cooled, without external fan and fan cover
with improved efficiency – Cast-iron series 1PP4

Selection and ordering data

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | | Locked-rotor torque with direct starting torque | Locked-rotor current multiple of rated current | Break-down torque | Torque class | Moment of inertia | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight |
|--|------------|----------------------------------|-----------------------|---|------------------------------|--------------------------------|------------------------------|---|--|-------------------|-------------------|-------------------|---|--------------------------------------|--------|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class "Improved Efficiency" according to CEMEP | Efficiency at 50 Hz 4/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | | | | | | | | |
| P_{rated} | FS | n_{rated} | T_{rated} | η_{rated} | $\cos\phi_{rated}$ | I_{rated} | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | | J | | | Type of construction IM B3 approx. m | |
| kW | | rpm | Nm | EFF2 % | | A | | | | | kg m ² | | | kg | |
| 2-pole, 3000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | | | | |
| 22 | 180 M | 2945 | 71 | EFF 2 | 92.1 | 0.86 | 40 | 2.5 | 6.4 | 3.4 | 16 | 0.068 | 1PP4 183-2FA□□ | 140 | |
| 30 | 200 L | 2950 | 97 | EFF 2 | 92.4 | 0.88 | 53 | 2.3 | 6.5 | 3.0 | 16 | 0.129 | 1PP4 206-2FA□□ | 195 | |
| 37 | 200 L | 2955 | 120 | EFF 2 | 93.4 | 0.89 | 64 | 2.5 | 7.2 | 3.3 | 16 | 0.153 | 1PP4 207-2FA□□ | 215 | |
| 45 | 225 M | 2960 | 145 | EFF 2 | 93.9 | 0.88 | 79 | 2.4 | 6.7 | 3.1 | 16 | 0.217 | 1PP4 223-2FA□□ | 275 | |
| 55 | 250 M | 2970 | 177 | EFF 2 | 94.1 | 0.88 | 96 | 2.1 | 6.7 | 3.1 | 13 | 0.403 | 1PP4 253-2FB□□ | 360 | |
| 75 | 280 S | 2975 | 241 | EFF 2 | 94.9 | 0.88 | 130 | 2.5 | 7.5 | 3.1 | 13 | 0.715 | 1PP4 280-2FB□□ | 480 | |
| 90 | 280 M | 2975 | 289 | EFF 2 | 95.4 | 0.89 | 152 | 2.6 | 7.2 | 3.1 | 13 | 0.832 | 1PP4 283-2FB□□ | 520 | |
| 110 | 315 S | 2982 | 352 | | 95.2 | 0.88 | 190 | 2.4 | 7.2 | 3.1 | 13 | 1.19 | 1PP4 310-2FB□□ | 700 | |
| 132 | 315 M | 2982 | 423 | | 95.6 | 0.90 | 220 | 2.4 | 6.9 | 3.0 | 13 | 1.39 | 1PP4 313-2FB□□ | 755 | |
| 160 | 315 L | 2982 | 512 | | 96.0 | 0.91 | 265 | 2.4 | 7.0 | 3.0 | 13 | 1.62 | 1PP4 316-2FB□□ | 880 | |
| 200 | 315 L | 2982 | 641 | | 96.3 | 0.92 | 325 | 2.3 | 6.7 | 2.9 | 13 | 2.09 | 1PP4 317-2FB□□ | 995 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | |
|----------------------------|------------------------------------|---------------|--------|--------|--|--|-----------------------------------|--------|---|--------|---|--|
| | 50 Hz | | | | Without flange | With flange | | | With standard flange | | With special flange | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6/5 without protective cover 1) | IM B5, IM V1 without protective cover 2) | IM V1 without protective cover 2) | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover | |
| | 1 | 6 | 3 | 5 | 0 | 1 | 8 | 6 | 2 | 7 | 3 | |
| 1PP4 18 - . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – | |
| 1PP4 20 - . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – | |
| 1PP4 22 - . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – | |
| 1PP4 25 - . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – | |
| 1PP4 28 - . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – | |
| 1PP4 310 - . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – | |
| 1PP4 313 - . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – | |
| 1PP4 316 - . . . □□ | – | ○ | – | ○ | □ ³⁾ | – | ✓ | ✓ | – | – | – | |
| 1PP4 317 - . . . □□ | – | ○ | – | ○ | □ ³⁾ | – | ✓ | ✓ | – | – | – | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

1) If motors 1PP4 183-... to 1PP4 317-... (motor series 1PP4 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.

2) Motors 1PP4 220-... to 1PP4 317-... (motor series 1PP4 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

3) Type of construction IM V6 and IM V5 without protective cover is only possible using type of construction code **9** and order code **M1E** or **M1D**.

IEC Squirrel-Cage Motors

Fan motors

Forced-air cooled, without external fan and fan cover
with improved efficiency – Cast-iron series 1PP4

Selection and ordering data (continued)

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | | Locked-rotor torque with direct starting as multiple of rated torque | Locked-rotor current | Break-down torque | Torque class | Moment of inertia | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight |
|--|------------|----------------------------------|-----------------------|---|------------------------------|--------------------------------|------------------------------|--|----------------------|-------------------|-------------------|-------------------|---|--|--------|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency Class "Improved Efficiency" according to CEMEP | Efficiency at 50 Hz 4/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | | | | | | | | |
| P_{rated} | FS | n_{rated} | T_{rated} | η_{rated} | $\cos\phi_{rated}$ | I_{rated} | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | | J | | | Type of construction IM B3 approx. m | |
| kW | | rpm | Nm | (EFF2) % | | A | | | | | kg m ² | | | kg | |
| 4-pole, 1500 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | | | | |
| 18.5 | 180 M | 1465 | 121 | EFF 2 | 90.8 | 0.84 | 35 | 2.4 | 6.7 | 3.1 | 16 | 0.099 | 1PP4 183-4FA□□ | 135 | |
| 22 | 180 L | 1465 | 143 | EFF 2 | 91.4 | 0.84 | 41.5 | 2.5 | 6.9 | 3.2 | 16 | 0.117 | 1PP4 186-4FA□□ | 150 | |
| 30 | 200 L | 1465 | 196 | EFF 2 | 92.0 | 0.85 | 55 | 2.5 | 6.7 | 3.4 | 16 | 0.191 | 1PP4 207-4FA□□ | 195 | |
| 37 | 225 S | 1475 | 240 | EFF 2 | 92.5 | 0.85 | 68 | 2.5 | 6.7 | 3.1 | 16 | 0.374 | 1PP4 220-4FA□□ | 255 | |
| 45 | 225 M | 1475 | 291 | EFF 2 | 93.4 | 0.86 | 81 | 2.7 | 7.2 | 3.2 | 16 | 0.447 | 1PP4 223-4FA□□ | 290 | |
| 55 | 250 M | 1480 | 355 | EFF 2 | 93.8 | 0.85 | 100 | 2.4 | 6.1 | 2.8 | 16 | 0.688 | 1PP4 253-4FA□□ | 375 | |
| 75 | 280 S | 1485 | 482 | EFF 2 | 94.6 | 0.85 | 134 | 2.5 | 7.1 | 3.0 | 16 | 1.19 | 1PP4 280-4FA□□ | 515 | |
| 90 | 280 M | 1485 | 579 | EFF 2 | 95.0 | 0.86 | 160 | 2.5 | 7.4 | 3.0 | 16 | 1.39 | 1PP4 283-4FA□□ | 560 | |
| 110 | 315 S | 1488 | 706 | | 95.0 | 0.85 | 196 | 2.5 | 6.4 | 2.8 | 16 | 1.94 | 1PP4 310-4FA□□ | 710 | |
| 132 | 315 M | 1488 | 847 | | 95.5 | 0.85 | 235 | 2.7 | 6.8 | 2.9 | 16 | 2.31 | 1PP4 313-4FA□□ | 790 | |
| 160 | 315 L | 1486 | 1028 | | 95.9 | 0.86 | 280 | 2.7 | 6.8 | 2.8 | 16 | 2.88 | 1PP4 316-4FA□□ | 935 | |
| 200 | 315 L | 1486 | 1285 | | 96.1 | 0.88 | 340 | 2.6 | 6.5 | 2.8 | 16 | 3.46 | 1PP4 317-4FA□□ | 1040 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | |
|----------------------------|------------------------------------|---------------|--------|--------|---|---|--|----------------------|---|---------------------|---|
| | 50 Hz | | | | Without flange | With flange | | With standard flange | | With special flange | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6/5 without protective cover ¹⁾ | IM B5, IM V1 without protective cover ²⁾ | IM V1 without protective cover ²⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 3 | 5 | 0 | 1 | 8 | 6 | 2 | 7 | 3 |
| 1PP4 18 □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – |
| 1PP4 20 □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – |
| 1PP4 22 □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – |
| 1PP4 25 □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – |
| 1PP4 28 □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – |
| 1PP4 310 □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – |
| 1PP4 313 □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – |
| 1PP4 316 □□ | – | ○ | – | ○ | □ ³⁾ | – | ✓ | ✓ | – | – | – |
| 1PP4 317 □□ | – | ○ | – | ○ | □ ³⁾ | – | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ If motors 1PP4 183-... to 1PP4 317-... (motor series 1PP4 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.

²⁾ Motors 1PP4 220-... to 1PP4 317-... (motor series 1PP4 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

³⁾ Type of construction IM V6 and IM V5 without protective cover is only possible using type of construction code **9** and order code **M1E** or **M1D**.

IEC Squirrel-Cage Motors

Fan motors

Forced-air cooled, without external fan and fan cover with improved efficiency – Cast-iron series 1PP4

Selection and ordering data (continued)

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | Locked-rotor torque with direct starting as multiple of rated torque | Locked-rotor current | Break-down torque | Torque class | Moment of inertia | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight |
|--|------------|----------------------------------|-----------------------|------------------------------|--------------------------------|------------------------------|--|----------------------|-------------------|--------------|------------------------|---|-------|--------|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | | | | | | | | |
| P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kg m ² | | | |
| 6-pole, 1000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | | | |
| 15 | 180 L | 965 | 148 | 89.1 | 0.83 | 29.5 | 2.3 | 5.3 | 2.5 | 16 | 0.175 | 1PP4 186-6FA□□ | 145 | |
| 18.5 | 200 L | 975 | 181 | 90.2 | 0.81 | 36.5 | 2.5 | 5.6 | 2.5 | 16 | 0.238 | 1PP4 206-6FA□□ | 185 | |
| 22 | 200 L | 975 | 215 | 90.6 | 0.81 | 43.5 | 2.6 | 5.7 | 2.5 | 16 | 0.287 | 1PP4 207-6FA□□ | 195 | |
| 30 | 225 M | 978 | 293 | 92.0 | 0.83 | 57 | 2.7 | 5.6 | 2.5 | 16 | 0.492 | 1PP4 223-6FA□□ | 270 | |
| 37 | 250 M | 980 | 361 | 92.7 | 0.83 | 69 | 2.7 | 6.0 | 2.3 | 16 | 0.762 | 1PP4 253-6FA□□ | 355 | |
| 45 | 280 S | 985 | 436 | 92.7 | 0.85 | 82 | 2.4 | 6.1 | 2.4 | 16 | 1.12 | 1PP4 280-6FA□□ | 455 | |
| 55 | 280 M | 985 | 533 | 93.0 | 0.86 | 99 | 2.5 | 6.3 | 2.5 | 16 | 1.37 | 1PP4 283-6FA□□ | 490 | |
| 75 | 315 S | 988 | 725 | 93.8 | 0.84 | 138 | 2.5 | 6.5 | 2.8 | 16 | 2.10 | 1PP4 310-6FA□□ | 665 | |
| 90 | 315 M | 988 | 870 | 94.2 | 0.84 | 164 | 2.6 | 6.8 | 2.9 | 16 | 2.50 | 1PP4 313-6FA□□ | 730 | |
| 110 | 315 L | 988 | 1063 | 94.5 | 0.86 | 196 | 2.5 | 6.8 | 2.9 | 16 | 3.20 | 1PP4 316-6FA□□ | 870 | |
| 132 | 315 L | 988 | 1276 | 95.0 | 0.86 | 235 | 3.1 | 7.3 | 3.0 | 16 | 4.02 | 1PP4 317-6FA□□ | 960 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | |
|--------------------------|------------------------------------|---------------|--------|--------|--|--|-----------------------------------|----------------------|---|---------------------|---|
| | 50 Hz | | | | Without flange | With flange | | With standard flange | | With special flange | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6/5 without protective cover 1) | IM B5, IM V1 without protective cover 2) | IM V1 without protective cover 2) | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 3 | 5 | 0 | 1 | 8 | 6 | 2 | 7 | 3 |
| 1PP4 18 - ... □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – |
| 1PP4 20 - ... □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – |
| 1PP4 22 - ... □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – |
| 1PP4 25 - ... □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – |
| 1PP4 28 - ... □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – |
| 1PP4 310 - ... □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – |
| 1PP4 313 - ... □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – |
| 1PP4 316 - ... □□ | – | ○ | – | ○ | □ ³⁾ | – | ✓ | ✓ | – | – | – |
| 1PP4 317 - ... □□ | – | ○ | – | ○ | □ ³⁾ | – | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

1) If motors 1PP4 183-... to 1PP4 317-... (motor series 1PP4 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.

2) Motors 1PP4 220-... to 1PP4 317-... (motor series 1PP4 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

3) Type of construction IM V6 and IM V5 without protective cover is only possible using type of construction code **9** and order code **M1E** or **M1D**.

IEC Squirrel-Cage Motors

Fan motors

Forced-air cooled, without external fan and fan cover
with improved efficiency – Cast-iron series 1PP4

Selection and ordering data (continued)

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | Locked-rotor torque with direct starting as multiple of rated torque | Locked-rotor current | Break-down torque | Torque class | Moment of inertia | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight |
|---|------------|----------------------------------|-----------------------|------------------------------|--------------------------------|------------------------------|--|----------------------|-------------------|--------------|--------------------------|---|-------|--------|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | | | | | | | | |
| P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{rated}$ | I_{rated} A | T_{LR}/T_{rated} | I_{LR}/I_{rated} | T_B/T_{rated} | CL | J kg m ² | | | |
| 8-pole, 750 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | | | |
| 11 | 180 L | 725 | 145 | 87.7 | 0.73 | 25 | 1.7 | 4.2 | 2.1 | 13 | 0.169 | 1PP4 186-8FB□□ | 145 | |
| 15 | 200 L | 725 | 198 | 87.9 | 0.76 | 32.5 | 2.2 | 4.9 | 2.6 | 13 | 0.290 | 1PP4 207-8FB□□ | 195 | |
| 18.5 | 225 S | 730 | 242 | 89.5 | 0.78 | 38.5 | 2.3 | 5.5 | 2.7 | 13 | 0.482 | 1PP4 220-8FB□□ | 260 | |
| 22 | 225 M | 730 | 288 | 89.8 | 0.79 | 45 | 2.3 | 5.6 | 2.8 | 13 | 0.551 | 1PP4 223-8FB□□ | 280 | |
| 30 | 250 M | 730 | 392 | 91.6 | 0.81 | 58 | 2.3 | 5.5 | 2.6 | 13 | 0.837 | 1PP4 253-8FB□□ | 370 | |
| 37 | 280 S | 735 | 481 | 92.2 | 0.81 | 72 | 2.2 | 5.0 | 2.1 | 13 | 1.11 | 1PP4 280-8FB□□ | 455 | |
| 45 | 280 M | 735 | 585 | 92.6 | 0.81 | 87 | 2.2 | 5.1 | 2.1 | 13 | 1.35 | 1PP4 283-8FB□□ | 495 | |
| 55 | 315 S | 740 | 710 | 93.2 | 0.81 | 106 | 2.2 | 5.8 | 2.6 | 13 | 2.08 | 1PP4 310-8FB□□ | 660 | |
| 75 | 315 M | 738 | 971 | 93.4 | 0.83 | 140 | 2.2 | 5.7 | 2.6 | 13 | 2.48 | 1PP4 313-8FB□□ | 725 | |
| 90 | 315 L | 738 | 1165 | 93.5 | 0.83 | 168 | 2.2 | 5.8 | 2.7 | 13 | 3.14 | 1PP4 316-8FB□□ | 845 | |
| 110 | 315 L | 738 | 1423 | 94.1 | 0.83 | 205 | 2.4 | 6.1 | 2.8 | 13 | 3.95 | 1PP4 317-8FB□□ | 1000 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | |
|------------------------------|------------------------------------|---------------|--------|--------|---|---|--|----------------------|---|---------------------|---|
| | 50 Hz | | | | Without flange | With flange | | With standard flange | | With special flange | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6/5 without protective cover ¹⁾ | IM B5, IM V1 without protective cover ²⁾ | IM V1 without protective cover ²⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 3 | 5 | 0 | 1 | 8 | 6 | 2 | 7 | 3 |
| 1PP4 18 - □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – |
| 1PP4 20 - □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – |
| 1PP4 22 - □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – |
| 1PP4 25 - □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – |
| 1PP4 28 - □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – |
| 1PP4 310 - □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – |
| 1PP4 313 - □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – |
| 1PP4 316 - □□ | – | ○ | – | ○ | □ ³⁾ | – | ✓ | ✓ | – | – | – |
| 1PP4 317 - □□ | – | ○ | – | ○ | □ ³⁾ | – | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ If motors 1PP4 183-... to 1PP4 317-... (motor series 1PP4 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.

²⁾ Motors 1PP4 220-... to 1PP4 317-... (motor series 1PP4 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

³⁾ Type of construction IM V6 and IM V5 without protective cover is only possible using type of construction code **9** and order code **M1E** or **M1D**.

IEC Squirrel-Cage Motors

Fan motors

Forced-air cooled, without external fan and fan cover
with increased output – Cast-iron series 1PP4

Selection and ordering data

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | | | Locked-rotor torque with direct starting as multiple of rated torque | Locked-rotor current as multiple of rated current | Break-down torque | Torque class | Moment of inertia | Order No. supplements for voltage and type of construction, see table below | Price | Weight |
|--|------------|----------------------------------|-----------------------|---------------------|----------------|------------------------|------------------------|------------------------|--|---|-------------------------|--------------|-------------------|---|-------|--------------------------------------|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz | | Power factor at 50 Hz | | Rated current at 50 Hz | | | | | | | | |
| P_{rated} | FS | n_{rated} | T_{rated} | η_{rated} | η_{rated} | $\cos \varphi_{rated}$ | $\cos \varphi_{rated}$ | I_{rated} | $\frac{T_{LR}}{I_{rated}}$ | $\frac{I_{LR}}{I_{rated}}$ | $\frac{T_B}{I_{rated}}$ | CL | J | | | Type of construction IM B3 approx. m |
| kW | rpm | Nm | % | % | % | % | A | | | | | | kg m ² | | | kg |
| 2-pole, 3000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | | | | | |
| 30 | 180 L | 2950 | 97 | 93.2 | 93.3 | 0.86 | 0.82 | 54 | 2.4 | 7.1 | 3.4 | 16 | 0.086 | 1PP4 188-2FA□□ | | 170 |
| 45 | 200 L | 2955 | 145 | 94.0 | 94.1 | 0.89 | 0.87 | 78 | 2.5 | 6.9 | 3.2 | 16 | 0.182 | 1PP4 208-2FA□□ | | 245 |
| 55 | 225 M | 2960 | 177 | 95.1 | 95.3 | 0.89 | 0.86 | 94 | 2.6 | 7.3 | 3.2 | 16 | 0.266 | 1PP4 228-2FA□□ | | 325 |
| 75 | 250 M | 2970 | 241 | 94.9 | 94.9 | 0.88 | 0.85 | 130 | 2.4 | 7.1 | 3.1 | 16 | 0.483 | 1PP4 258-2FA□□ | | 405 |
| 110 | 280 M | 2975 | 353 | 95.8 | 95.9 | 0.90 | 0.88 | 184 | 2.5 | 7.0 | 3.0 | 13 | 1.00 | 1PP4 288-2FB□□ | | 610 |
| 4-pole, 1500 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | | | | | |
| 30 | 180 L | 1465 | 196 | 92.0 | 92.2 | 0.80 | 0.76 | 59 | 2.6 | 6.3 | 2.9 | 16 | 0.144 | 1PP4 188-4FA□□ | | 175 |
| 37 | 200 L | 1465 | 241 | 92.8 | 93.1 | 0.83 | 0.78 | 70 | 2.6 | 6.5 | 3.0 | 16 | 0.234 | 1PP4 208-4FA□□ | | 220 |
| 55 | 225 M | 1475 | 356 | 93.6 | 94.1 | 0.86 | 0.83 | 99 | 2.5 | 6.5 | 2.7 | 16 | 0.486 | 1PP4 228-4FA□□ | | 320 |
| 75 | 250 M | 1482 | 483 | 94.5 | 94.6 | 0.85 | 0.81 | 136 | 2.5 | 7.0 | 3.0 | 16 | 0.856 | 1PP4 258-4FA□□ | | 445 |
| 110 | 280 M | 1488 | 706 | 95.5 | 95.2 | 0.84 | 0.78 | 198 | 2.8 | 7.9 | 3.3 | 16 | 1.71 | 1PP4 288-4FA□□ | | 660 |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | |
|--------------------------|------------------------------------|---------------|--------|--------|---|---|--------|---|--------|---|
| | 50 Hz | | | | Without flange | With flange | | With standard flange | | With special flange |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6/5 without protective cover ¹⁾ | IM B5, IM V1 without protective cover ²⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 3 | 5 | 0 | 1 | 6 | 2 | 7 | 3 |
| 1PP4 188 - ... □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | – | – |
| 1PP4 208 - ... □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | – | – |
| 1PP4 228 - ... □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | – | – |
| 1PP4 258 - ... □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | – | – |
| 1PP4 288 - ... □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ If motors 1PP4 188-... to 1PP4 318-... (motor series 1PP4 frame sizes 180 L to 315 L) in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.

²⁾ Motors 1PP4 220-... to 1PP4 318-... (motor series 1PP4 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

IEC Squirrel-Cage Motors

Fan motors

Forced-air cooled, without external fan and fan cover
with increased output – Cast-iron series 1PP4

Selection and ordering data (continued)

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | | | | Locked-rotor torque with direct starting as multiple of rated torque | Locked-rotor current as multiple of rated current | Break-down torque | Torque class | Moment of inertia | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight |
|--|------------|----------------------------------|-----------------------|---------------------|----------------|-----------------------|---------------------|------------------------|------------------------|--|---|-------------------|-------------------|-----------------------|---|--------------------------------------|--------|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz | | Power factor at 50 Hz | | Rated current at 50 Hz | Rated current at 400 V | | | | | | | | |
| P_{rated} | FS | n_{rated} | T_{rated} | η_{rated} | η_{rated} | $\cos \phi_{rated}$ | $\cos \phi_{rated}$ | I_{rated} | I_{LR}/I_{rated} | I_{LR}/I_{rated} | T_B/I_{rated} | CL | J | | | Type of construction IM B3 approx. m | |
| kW | rpm | Nm | % | % | % | % | A | | | | | | kg m ² | | | kg | |
| 6-pole, 1000 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | | | | | | |
| 18.5 | 180 L | 970 | 182 | 89.8 | 90.5 | 0.80 | 0.75 | 37.5 | 2.3 | 4.9 | 2.4 | 16 | 0.203 | 1PP4 188-6FA□□ | | 170 | |
| 30 | 200 L | 975 | 294 | 91.1 | 91.5 | 0.80 | 0.75 | 60 | 2.6 | 5.8 | 2.6 | 16 | 0.362 | 1PP4 208-6FA□□ | | 235 | |
| 37 | 225 M | 978 | 361 | 92.3 | 93.1 | 0.83 | 0.80 | 70 | 2.5 | 5.9 | 2.8 | 16 | 0.624 | 1PP4 228-6FA□□ | | 315 | |
| 45 | 250 M | 982 | 438 | 93.6 | 94.1 | 0.83 | 0.80 | 84 | 2.7 | 6.3 | 2.3 | 16 | 0.934 | 1PP4 258-6FA□□ | | 390 | |
| 75 | 280 M | 985 | 727 | 94.0 | 94.5 | 0.85 | 0.80 | 136 | 3.0 | 6.8 | 2.8 | 16 | 1.65 | 1PP4 288-6FA□□ | | 550 | |
| 160 | 315 L | 988 | 1547 | 95.2 | 95.3 | 0.86 | 0.82 | 285 | 3.0 | 7.5 | 3.0 | 16 | 4.71 | 1PP4 318-6FA□□ | | 1160 | |
| 8-pole, 750 rpm at 50 Hz, temperature class 155 (F), IP55 degree of protection | | | | | | | | | | | | | | | | | |
| 15 | 180 L | 720 | 199 | 88.0 | 88.7 | 0.73 | 0.63 | 34 | 2.0 | 4.5 | 2.4 | 13 | 0.206 | 1PP4 188-8FB□□ | | 160 | |
| 18.5 | 200 L | 725 | 244 | 88.4 | 89.3 | 0.78 | 0.72 | 39 | 2.4 | 5.2 | 2.6 | 13 | 0.367 | 1PP4 208-8FB□□ | | 220 | |
| 30 | 225 M | 730 | 392 | 90.5 | 91.3 | 0.79 | 0.74 | 61 | 2.6 | 5.6 | 2.8 | 13 | 0.658 | 1PP4 228-8FB□□ | | 330 | |
| 37 | 25 M | 730 | 484 | 92.1 | 93.0 | 0.82 | 0.77 | 71 | 2.4 | 5.6 | 2.6 | 13 | 1.06 | 1PP4 258-8FB□□ | | 415 | |
| 55 | 280 M | 735 | 715 | 93.1 | 93.9 | 0.81 | 0.77 | 106 | 2.4 | 5.6 | 2.3 | 13 | 1.63 | 1PP4 288-8FB□□ | | 545 | |
| 132 | 315 L | 738 | 1708 | 94.3 | 94.7 | 0.83 | 0.79 | 245 | 2.5 | 6.5 | 2.9 | 13 | 4.52 | 1PP4 318-8FB□□ | | 1080 | |

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | |
|--------------------------|------------------------------------|---------------|--------|--------|--|--|-----------------------------------|--------|---|--------|---|--|
| | 50 Hz | | | | Without flange | With flange | | | With standard flange | | With special flange | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6/5 without protective cover 1) | IM B5, IM V1 without protective cover 2) | IM V1 without protective cover 2) | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover | |
| | 1 | 6 | 3 | 5 | 0 | 1 | 8 | 6 | 2 | 7 | 3 | |
| 1PP4 188 - ... □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – | |
| 1PP4 208 - ... □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – | |
| 1PP4 228 - ... □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – | |
| 1PP4 258 - ... □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – | |
| 1PP4 288 - ... □□ | ○ | ○ | ○ | ○ | □ | ✓ | – | ✓ | – | – | – | |
| 1PP4 318 - ... □□ | – | ○ | – | ○ | □ ³⁾ | – | ✓ | ✓ | – | – | – | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

1) If motors 1PP4 188-... to 1PP4 318-... (motor series 1PP4 frame sizes 180 L to 315 L) in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.

2) Motors 1PP4 220-... to 1PP4 318-... (motor series 1PP4 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be relocated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

3) Type of construction IM V6 and IM V5 without protective cover is only possible using type of construction code **9** and order code **M1E** or **M1D**.

IEC Squirrel-Cage Motors

Fan motors

Special versions

Overview

Recommended special versions:

- The connection box is at the non-drive-end (NDE) – Order code **M64**
- 6 protruding cable ends
 - 0.5 m long – Order code **L47**
 - 1.5 m long – Order code **L48**
 - 3.0 m long – Order code **L49**
- Bearings for increased cantilever forces – Order code **K20**

- Special bearing for drive-end (DE) of the motor, reinforced deep-groove bearing (bearing size 63) – Order code **K36**
- Located bearing at drive-end (DE) of motor – Order code **K94**
- Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping – Order code **A11**
- Temperature detectors (bi-metal strip) in motor winding for tripping – Order code **A31**

Selection and ordering data

Voltages

Additional order codes for other voltages or voltage codes (without “-Z” supplement)

For some non-standard voltages at 50 or 60 Hz, order codes are specified. They are ordered by specifying the code digit **9** for voltage in the 11th position of the Order No. and the appropriate order code.

| Special versions | Voltage code | 11th position of Order No. | Additional identification code with order code and, if required, with plain text data | Motor type frame size | | | | | | | | | | | | | |
|--|--------------|----------------------------|---|------------------------|----|----|----|----|-----|------------------------|-----|-----|-----|-----|-----|-----|-----|
| | | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 |
| Self-ventilated motors in pole-changing version | | | | | | | | | | | | | | | | | |
| | | | | 1LA7 (aluminum) | | | | | | 1LA5 (aluminum) | | | | | | | |
| Voltage at 60 Hz | | | | | | | | | | | | | | | | | |
| 220 V; 50 Hz output | 9 | | L4A | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 220 V; 60 Hz output | 9 | | L4B | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 380 V; 50 Hz output | 9 | | L4C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 380 V; 60 Hz output | 9 | | L4D | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 V; 50 Hz output | 9 | | L4G | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 V; 60 Hz output | 9 | | L4E | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 V; 50 Hz output | 9 | | L4J | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 V; 60 Hz output | 9 | | L4H | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 V; 50 Hz output | 9 | | L4N | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 V; 60 Hz output | 9 | | L4M | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard voltage and/or frequencies | | | | | | | | | | | | | | | | | |
| Non-standard winding for voltages between 200 and 690 V (voltages outside this range are available on request) ¹⁾ | 9 | | L1Y • | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard winding for Y/Δ starting at low speed | | | L3Y • | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LG4 (cast-iron) | | | | | | | | | | | | | | | | | |
| Voltage at 60 Hz | | | | | | | | | | | | | | | | | |
| 220 V; 50 Hz output at 60 Hz | 9 | | L4A | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 220 V; 60 Hz output at 60 Hz | 9 | | L4B | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 380 V; 50 Hz output | 9 | | L4C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 380 V; 60 Hz output | 9 | | L4D | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 V; 50 Hz output | 9 | | L4G | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 V; 60 Hz output | 9 | | L4E | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 V; 50 Hz output | 9 | | L4J | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 V; 60 Hz output | 9 | | L4H | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 V; 50 Hz output | 9 | | L4N | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 V; 60 Hz output | 9 | | L4M | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard voltage and/or frequencies | | | | | | | | | | | | | | | | | |
| Non-standard winding for voltages between 200 and 690 V (voltages outside this range are available on request) ¹⁾ | 9 | | L1Y • | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 7/32.

IEC Squirrel-Cage Motors

Fan motors

Special versions

| Special versions | Voltage code | Additional identification code with order code and, if required, with plain text data | Motor type frame size | | | | | | | | | | | | | | |
|--|--------------|---|------------------------|----|----|----|----|-----|-----|-----|-----|-----|------------------------|-----|-----|-----|---------|
| | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 S/M |
| Forced-air cooled motors without external fan and fan cover | | | | | | | | | | | | | | | | | |
| | | | 1PP7 (aluminum) | | | | | | | | | | 1PP5 (aluminum) | | | | |
| Voltage at 50 Hz | | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY (440 VΔ at 60Hz) (210 ... 230 VΔ/360 ... 400 VY); 50 Hz output ²⁾ | 9 | L1R | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 230 VΔ (220 ... 240 VΔ); 50 Hz output ²⁾ | 9 | L1E | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 380 VΔ/660 VY (440 VY at 60 Hz) (360 ... 400 VΔ/625 ... 695 VY); 50 Hz output ²⁾ | 9 | L1L | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 415 VY (395 ... 435 VY); 50 Hz output ²⁾ | 9 | L1C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 415 VΔ (395 ... 435 VΔ); 50 Hz output ²⁾ | 9 | L1D | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 400 VY (380 ... 420 VY); 50 Hz output ²⁾ | 9 | L1A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 400 VΔ (380 ... 420 VΔ); 50 Hz output ²⁾ | 9 | L1B | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 400 VΔ (460 VΔ at 60 Hz) (380 ... 420 VΔ); 50 Hz output ²⁾ | 9 | L1U | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Voltage at 60 Hz | | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY; 50 Hz output | 9 | L2A | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 220 VΔ/380 VY; 60 Hz output | 9 | L2B | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 380 VΔ/660 VY; 50 Hz output | 9 | L2C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 380 VΔ/660 VY; 60 Hz output | 9 | L2D | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VY; 50 Hz output | 9 | L2Q | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VY; 60 Hz output | 9 | L2W | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VΔ; 50 Hz output | 9 | L2R | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VΔ; 60 Hz output | 9 | L2X | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VY; 50 Hz output | 9 | L2S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VY; 60 Hz output | 9 | L2E | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 460 VΔ; 50 Hz output | 9 | L2T | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VΔ; 60 Hz output | 9 | L2F | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 575 VY; 50 Hz output | 9 | L2U | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 VY; 60 Hz output | 9 | L2L | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 VΔ; 50 Hz output | 9 | L2V | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 VΔ; 60 Hz output | 9 | L2M | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Voltage changeover at 60 Hz | | | | | | | | | | | | | | | | | |
| 230 VY/460 VY 60 Hz; 50 Hz output, 9 main terminals and electrical design to NEMA | 9 | L3E | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 230 VY/460 VY 60 Hz; 60 Hz output, 9 main terminals and electrical design to NEMA | 9 | L3F | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 230 VΔ/460 VΔ 60 Hz; 50 Hz output, 12 main terminals and electrical design to NEMA | 9 | L3G | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 230 VΔ/460 VΔ 60 Hz; 60 Hz output, 12 main terminals and electrical design to NEMA | 9 | L3H | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard voltage and/or frequencies | | | | | | | | | | | | | | | | | |
| Non-standard winding for voltages between 200 and 690 V (voltages outside this range are available on request) ¹⁾ | 9 | L1Y • | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

IEC Squirrel-Cage Motors

Fan motors

Special versions

| Special versions | Voltage code | Additional identification code with order code and, if required, with plain text data | Motor type frame size | | | | | | | | | | | | | | | | | |
|--|--------------|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------|-------|---|---|
| | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 S/M | 315 L | | |
| 1PP4 (cast-iron) | | | | | | | | | | | | | | | | | | | | |
| Voltage at 50 Hz | | | | | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY (210 ... 230 VΔ/360 ... 400 VY); 50 Hz output ²⁾ | 9 | L1R | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 230 VΔ (220 ... 240 VΔ); 50 Hz output ²⁾ | 9 | L1E | | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ○ | – |
| 380 VΔ/660 VY (360 ... 400 VΔ/625 ... 695 VY); 50 Hz output ²⁾ | 9 | L1L | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 415 VY (395 ... 435 VY); 50 Hz output ²⁾ | 9 | L1C | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 415 VΔ (395 ... 435 VΔ); 50 Hz output ²⁾ | 9 | L1D | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 400 VY (380 ... 420 VY); 50 Hz output ²⁾ | 9 | L1A | | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ○ | – |
| 400 VΔ (380 ... 420 VΔ); 50 Hz output ²⁾ | 9 | L1B | | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 400 VΔ (460 VΔ at 60Hz) (380 ... 420 VΔ); 50 Hz output ²⁾ | 9 | L1U | | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Voltage at 60 Hz | | | | | | | | | | | | | | | | | | | | |
| 220 VΔ/380 VY; 50 Hz output | 9 | L2A | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 220 VΔ/380 VY; 60 Hz output | 9 | L2B | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 380 VΔ/660 VY; 50 Hz output | 9 | L2C | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 380 VΔ/660 VY; 60 Hz output | 9 | L2D | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VY; 50 Hz output | 9 | L2Q | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 440 VY; 60 Hz output | 9 | L2W | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 440 VΔ; 50 Hz output | 9 | L2R | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 440 VΔ; 60 Hz output | 9 | L2X | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VY; 50 Hz output | 9 | L2S | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 460 VY; 60 Hz output | 9 | L2E | | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ○ | – |
| 460 VΔ; 50 Hz output | 9 | L2T | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 460 VΔ; 60 Hz output | 9 | L2F | | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 575 VY; 50 Hz output | 9 | L2U | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 575 VY; 60 Hz output | 9 | L2L | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – |
| 575 VΔ; 50 Hz output | 9 | L2V | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 575 VΔ; 60 Hz output | 9 | L2M | | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Non-standard voltage and/or frequencies | | | | | | | | | | | | | | | | | | | | |
| Non-standard winding for voltages between 200 and 690 V (voltages outside this range are available on request) ¹⁾ | 9 | L1Y • | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

- Without additional charge
- ✓ With additional charge
- Not possible
- This order code only determines the price of the version – Additional plain text is required.

1) Plain text must be specified in the order: Voltage, frequency, circuit, required rated output in kW.

2) With order codes **L1A, L1B, L1C, L1D, L1E, L1L, L1R** and **L1U**, a rated voltage range is also specified on the rating plate.

IEC Squirrel-Cage Motors

Fan motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|---|-----------------------|----|----|------------------------|-------|-------|-------|-------|-------|------------------------|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors in pole-changing version | | | | | | | | | | | | | | | | |
| | | | | | 1LA7 (aluminum) | | | | | | 1LA5 (aluminum) | | | | | |
| Windings and insulation (continued) | | | | | | | | | | | | | | | | |
| Increased air humidity/temperature with 30 to 60 g water per m ³ of air | C19 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 % | C22 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 % | C23 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 % | C24 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 % | C25 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Increased air humidity/temperature with 60 to 100 g water per m ³ of air | C26 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), with increased coolant temperature and/or site altitude | Y50 • and specified output, CT... °C or SA m above sea level | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), other requirements | Y52 • and specify output, CT... °C or SA m above sea level | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Colors and paint finish | | | | | | | | | | | | | | | | |
| Special finish in RAL 7030 stone gray | | | | | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y54 • and special finish RAL | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" on Page 0/19 | Y51 • and special finish RAL | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Sea air resistant special finish | M94 | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Unpainted (only cast iron parts primed) | K23 | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Unpainted, only primed | K24 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

IEC Squirrel-Cage Motors

Fan motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|---|-----------------------|----|----|------------------------|----|-----|-----|-----|------------------------|-----|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors in pole-changing version | | | | | | | | | | | | | | | | |
| | | | | | 1LA7 (aluminum) | | | | | 1LA5 (aluminum) | | | | | | |
| Coolant temperature and site altitude | | | | | | | | | | | | | | | | |
| Coolant temperature -40 to +40 °C | D03 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature -30 to +40 °C | D04 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Designs in accordance with standards and specifications | | | | | | | | | | | | | | | | |
| CCC China Compulsory Certification ¹¹⁾ | D01 | | | | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – | – | – |
| Electrical according to NEMA MG1-12 | D30 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Design according to IUL with "Recognition Mark" ¹²⁾ | D31 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Canadian regulations (CSA) ¹³⁾ | D40 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| PSE Mark Japan ¹⁴⁾ | D46 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – | – |
| Bearings and lubrication | | | | | | | | | | | | | | | | |
| Measuring nipple for SPM shock pulse measurement for bearing inspection ¹⁵⁾ | G50 | | | | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bearing design for increased cantilever forces | K20 | | | | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Regreasing device ¹⁵⁾ | K40 | | | | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Located bearing DE | K94 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Located bearing NDE | L04 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | □ | □ | □ | □ | □ | □ |
| Balance and vibration quantity | | | | | | | | | | | | | | | | |
| Vibration quantity A | | | | | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Vibration quantity B | K02 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Full key balancing | L68 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Balancing without key | M37 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft and rotor | | | | | | | | | | | | | | | | |
| Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors ¹⁶⁾ | K04 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second standard shaft extension | K16 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft extension with normal dimensions without featherkey way | K42 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Concentricity of shaft extension in accordance with DIN 42955 Tolerance R | L39 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Standard shaft made of non-rusting steel | M65 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard cylindrical shaft extension ¹⁷⁾ | Y55 • and identification code | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Heating and ventilation | | | | | | | | | | | | | | | | |
| Fan cover for textile industry | H17 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Metal external fan ¹⁸⁾ | K35 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 230 V | K45 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 115 V | K46 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rating plate and extra rating plates | | | | | | | | | | | | | | | | |
| Second lubricating plate, supplied loose | B06 | | | | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second rating plate, loose | K31 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate or rating plate with deviating rating plate data | Y80 • and identification code | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate with identification code | Y82 • and identification code | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Additional information on rating plate and on package label (maximum of 20 characters) | Y84 • and identification code | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 7/38.

IEC Squirrel-Cage Motors

Fan motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors in pole-changing version | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| Packaging, safety notes, documentation and test certificates | | | | | | | | | | | | | | | | |
| Without safety and commissioning note. Customer's declaration of renouncement required. | B00 | | | | | | | | | | | | | | | |
| With one safety and startup guide per box pallet | B01 | | | | | | | | | | | | | | | |
| Acceptance test certificate 3.1 according to EN 10204 | B02 | | | | | | | | | | | | | | | |
| Operating instructions German/English enclosed in print | B23 | | | | | | | | | | | | | | | |
| Type test with heat run for horizontal motors, with acceptance | F83 | | | | | | | | | | | | | | | |
| Wire-lattice pallet | L99 | | | | | | | | | | | | | | | |
| Connected in star for dispatch | M32 | | | | | | | | | | | | | | | |
| Connected in delta for dispatch | M33 | | | | | | | | | | | | | | | |

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- , R. Possible on request
- ✓ With additional charge
- Not possible

7

- 1) Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended. For pole-changing motors with separate windings, the number of temperature sensors must be doubled (order code **A11**, price of **A12** or order code **A12**, price available on request).
- 2) In combination with the PTC thermistor option or anti-condensation heating option, please inquire before ordering.
- 3) Cannot be used for motors in UL version (order code **D31**). Cannot be used for motors according to CSA approval (order code **D40**) for motor series 1LA5 frame size 180 to 200. The grease lifetime specified in catalog part 0 "Introduction" refers to CT 40 °C. When the coolant temperature rises by 10 K, the grease lifetime or relubrication interval is halved.
- 4) A second shaft extension is not possible. Please inquire for mounted brakes. The order codes listed cannot be combined within the various technologies nor with each other within the same technology system. This applies for:
 - Modular technology
 - Basic versions of "Modular technology"
 - Combination of special versions "Special technology"
- 5) The standard brake supply voltage is 230 V AC, 50/60 Hz. Other brake supply voltages are possible with order codes **C00** and **C01**.
- 6) Converter mounting is possible for 230 VΔ/400 VY, please also specify Order No. of the MICROMASTER 411 according to Catalog DA 51.3.
- 7) Not possible in combination with rotary pulse encoder HOG 9 D 10241 (order code **H72**, **H79**) and / or brake 2LM8 (used for motors up to and including frame size 225, order code **G26**).
- 8) Not possible in combination with brake 2LM8 (used for motors up to and including frame size 225, order code **G26**).
- 9) Supplied with the condensation drainage holes sealed at the drive end DE and non-drive end NDE for IP55, IP56 and IP65 degrees of protection. If condensation drainage holes are required in motors of the IM B6, IM B7 or IM B8 type of construction (feet located on side or top), it is necessary to relocate the bearing plates at the drive end (DE) and non-drive end (NDE) so that the condensation drainage holes situated between the feet on delivery are underneath.
- 10) Not necessary when a rotary pulse encoder is combined with a separately driven fan, because in this case the rotary pulse encoder is installed under the fan cover.
- 11) CCC certification is required for
 - 2-pole motors ≤2.2 kW
 - 4-pole motors ≤1.1 kW
 - 6-pole motors ≤0.75 kW
 - 8-pole motors ≤0.55 kW
- 12) Possible up to 600 V max. Order with voltage code **9** and order code for voltage and frequency. The rated voltage is indicated on the rating plate.
- 13) Order with voltage code **9** and order code for voltage and frequency. The rated voltage is indicated on the rating plate.
- 14) "Small power motors" with a rated output of up to 3 kW which are exported to Japan must bear the marking.
- 15) Not possible when brake is mounted.
- 16) Can be combined with deep-groove bearings of series 60... 62... and 63... . Not possible with parallel roller bearings (e.g. bearings for increased cantilever forces, order code **K20**), brake or encoder mounting.
- 17) When motors are ordered that have a longer or shorter shaft extension than normal, the required position and length of the featherkey way must be specified in a sketch. It must be ensured that only featherkeys in accordance with DIN 6885, Form A are permitted to be used. The featherkey way is positioned centrally on the shaft extension. The length is defined by the manufacturer normatively. Not valid for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The featherkeys are supplied in every case. For order codes **Y55** and **K16**:
 - Dimensions D and DA ≤ internal diameter of roller bearing (see dimension tables under "Dimensions")
 - Dimensions E and EA ≤ 2 x length E (normal) of the shaft extension
 For an explanation of the order codes, see catalog part 0 "Introduction".
- 18) For 1LA5/6/7/9 motors and 1LG with metal external fan, converter-fed operation is permitted.

IEC Squirrel-Cage Motors

Fan motors

Special versions

Options or order codes (supplement **-Z** is required)

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-------|-----------------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors in pole-changing version | | | | | | | | | | | | | | | | |
| 1LG4 (cast-iron) | | | | | | | | | | | | | | | | |
| Motor protection | | | | | | | | | | | | | | | | |
| Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ¹⁾ | A11 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor protection with PTC thermistors with 6 embedded temperature sensors for tripping and alarm ¹⁾ | A12 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor temperature detection with embedded temperature sensor KTY 84-130 ¹⁾ | A23 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor temperature detection with embedded temperature sensors 2 x KTY 84-130 ¹⁾ | A25 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature detectors for tripping ¹⁾ | A31 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 3 PT 100 resistance thermometers ¹⁾ | A60 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 6 PT 100 resistance thermometers in stator winding ¹⁾ | A61 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 2 PT 100 screw-in resistance thermometers (basic circuit) for rolling-contact bearings ¹⁾ | A72 | | | | | | | | | | ✓ | ✓ ²⁾ | ✓ | ✓ | ✓ | ✓ |
| Installation of 2 PT 100 screw-in resistance thermometers (3-wire circuit) for rolling-contact bearings ¹⁾ | A78 | | | | | | | | | | ✓ | ✓ ²⁾ | ✓ | ✓ | ✓ | ✓ |
| Installation of 2 PT 100 double screw-in resistance thermometers (3-wire circuit) for rolling-contact bearings ¹⁾ | A80 | | | | | | | | | | ✓ | ✓ ²⁾ | ✓ | ✓ | ✓ | ✓ |
| Motor connection and connection box | | | | | | | | | | | | | | | | |
| Two-part plate on connection box | K06 | | | | | | | | | | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on RHS | K09 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on LHS | K10 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on top, feet screwed on | K11 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box in cast-iron version | K15 | | | | | | | | | | ✓ | ✓ | ✓ | □ | □ | □ |
| One cable gland, metal | K54 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Cable gland, maximum configuration | K55 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from DE | K83 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from NDE | K84 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of connection box through 180° | K85 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Next larger connection box | L00 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Undrilled entry plate | L01 | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ○ |
| External earthing | L13 | | | | | | | | | | □ | □ | □ | □ | □ | □ |
| 6 cables protruding, 1.5 m long ³⁾ | L48 | | | | | | | | | | ✓ | ✓ | ✓ | O. R. | O. R. | O. R. |
| 6 cables protruding, 3 m long ³⁾ | L49 | | | | | | | | | | ✓ | ✓ | ✓ | O. R. | O. R. | O. R. |
| Protruding cable ends – right side ³⁾⁴⁾ | L51 | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Protruding cable ends – left side ³⁾⁴⁾ | L52 | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Auxiliary connection box 1XB3 020 | L97 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend, see Page 7/43, for footnotes, see Page 7/44.

IEC Squirrel-Cage Motors

Fan motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | |
|---|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 |
| Self-ventilated motors in pole-changing version | | | | | | | | | | | | | | | |
| 1LG4 (cast-iron) | | | | | | | | | | | | | | | |
| Motor connection and connection box (continued) | | | | | | | | | | | | | | | |
| Stud terminal for cable connection, accessories pack (3 items) | M46 | | | | | | | | | | | | ✓ | ✓ | ✓ |
| Saddle terminal for connection without cable lug, accessories pack (6 items) | M47 | | | | | | | | | | | | ✓ | ✓ | ✓ |
| Windings and insulation | | | | | | | | | | | | | | | |
| Temperature class 155 (F), used acc. to 155 (F), with service factor (SF) | C11 | | | | | | | | | | | | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), with increased output ⁵⁾ | C12 | | | | | | | | | | | | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), with increased coolant temperature | C13 | | | | | | | | | | | | ✓ | ✓ | ✓ |
| Temperature class 180 (H) at rated output and max. CT 60 °C ⁶⁾ | C18 | | | | | | | | | | | | ✓ | ✓ | ✓ |
| Increased air humidity/temperature with 30 to 60 g water per m ³ of air | C19 | | | | | | | | | | | | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 % ⁵⁾ | C22 | | | | | | | | | | | | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 % ⁵⁾ | C23 | | | | | | | | | | | | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 % ⁵⁾ | C24 | | | | | | | | | | | | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 % ⁵⁾ | C25 | | | | | | | | | | | | ✓ | ✓ | ✓ |
| Increased air humidity/temperature with 60 to 100 g water per m ³ of air | C26 | | | | | | | | | | | | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), with a higher coolant temperature and/or site altitude | Y50 • and specified output, CT .. °C or SA m above sea level | | | | | | | | | | | | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), other requirements | Y52 • and specify output, CT .. °C or SA m above sea level | | | | | | | | | | | | ✓ | ✓ | ✓ |
| Colors and paint finish | | | | | | | | | | | | | | | |
| Standard finish in RAL 7030 stone gray | | | | | | | | | | | | | □ | □ | □ |
| Standard finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y53 • and standard finish RAL | | | | | | | | | | | | ✓ | ✓ | ✓ |
| Special finish in RAL 7030 stone gray | K26 | | | | | | | | | | | | ✓ | ✓ | ✓ |

For legend, see Page 7/43, for footnotes, see Page 7/44.

IEC Squirrel-Cage Motors

Fan motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-------|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors in pole-changing version | | | | | | | | | | | | | | | | |
| 1LG4 (cast-iron) | | | | | | | | | | | | | | | | |
| Colors and paint finish (continued) | | | | | | | | | | | | | | | | |
| Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y54 • and special finish RAL | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" on Page 0/19 | Y51 • and special finish RAL | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Offshore special finish | M91 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Sea air resistant special finish | M94 | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Unpainted (only cast iron parts primed) | K23 | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ○ |
| Unpainted, only primed | K24 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Modular technology – Basic versions ⁷⁾ | | | | | | | | | | | | | | | | |
| Mounting of separately driven fan ⁸⁾ | G17 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of brake ^{8) 9)} | G26 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of 1XP8 001-1 (HTL) rotary pulse encoder | H57 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of 1XP8 001-2 (TTL) rotary pulse encoder | H58 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Modular technology – Combinations of basic versions ⁷⁾ | | | | | | | | | | | | | | | | |
| Mounting of separately driven fan and 1XP8 001-1 rotary pulse encoder | H61 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of brake and 1XP8 001-1 rotary pulse encoder ⁹⁾ | H62 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of brake and separately driven fan ^{8) 9)} | H63 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of brake, separately driven fan and 1XP8 001-1 rotary pulse encoder ⁹⁾ | H64 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of separately driven fan and 1XP8 001-2 rotary pulse encoder | H97 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of brake and 1XP8 001-2 rotary pulse encoder | H98 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of brake, separately driven fan and 1XP8 001-2 rotary pulse encoder ⁹⁾ | H99 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Modular technology – Additional versions | | | | | | | | | | | | | | | | |
| Brake supply voltage 24 V DC | C00 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Brake supply voltage 400 V AC | C01 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mechanical manual release of the brake with operating lever | K82 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special technology ⁷⁾ | | | | | | | | | | | | | | | | |
| Mounting of LL 861 900 220 rotary pulse encoder | H70 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of HOG 9 D 1024 I rotary pulse encoder | H72 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mounting of HOG 10 D 1024 I rotary pulse encoder | H73 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Prepared for mounting LL 861 900 220 | H78 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Prepared for mounting HOG 9 D 1024 I | H79 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Prepared for mounting HOG 10 D 1024 I | H80 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend, see Page 7/43, for footnotes, see Page 7/44.

IEC Squirrel-Cage Motors

Fan motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | | |
|---|--|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 | |
| Self-ventilated motors in pole-changing version | | | | | | | | | | | | | | | | | |
| Mechanical design and degrees of protection | | | | | | | | | | | | | | | | | |
| Drive-end seal for flange-mounting motors with oil resistance to 0.1 bar (not possible for IM V3 type of construction) | K17 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| IP65 degree of protection ¹⁰⁾ | K50 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| IP56 degree of protection (non-heavy-sea) ¹¹⁾ | K52 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Condensation water holes ¹²⁾ | L12 | | | | | | | | | | | □ | □ | □ | □ | □ | □ |
| Non-rusting screws (externally) | M27 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Earth brushes for converter-fed operation | M44 | | | | | | | | | | | - | - | - | - | O. R. | O. R. |
| Mechanical protection for encoder ¹³⁾ | M68 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature and site altitude | | | | | | | | | | | | | | | | | |
| Coolant temperature -50 to +40 °C | D02 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature -40 to +40 °C | D03 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature -30 to +40 °C | D04 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Designs in accordance with standards and specifications | | | | | | | | | | | | | | | | | |
| Electrical according to NEMA MG1-12 | D30 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Design according to UL with "Recognition Mark" ¹⁴⁾ | D31 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Canadian regulations (CSA) ¹⁵⁾ | D40 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bearings and lubrication | | | | | | | | | | | | | | | | | |
| Measuring nipple for SPM shock pulse measurement for bearing inspection | G50 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bearing design for increased cantilever forces ¹⁶⁾ | K20 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special bearing for DE and NDE, bearing size 63 | K36 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | □ | □ |
| Regreasing device | K40 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | □ | □ |
| Located bearing DE | K94 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Located bearing NDE | L04 | | | | | | | | | | | □ | □ | □ | □ | □ | □ |
| Insulated bearing cartridge | L27 | | | | | | | | | | | - | - | ✓ | ✓ | ✓ | ✓ |
| Balance and vibration quantity | | | | | | | | | | | | | | | | | |
| Vibration quantity A | | | | | | | | | | | | □ | □ | □ | □ | □ | □ |
| Vibration quantity B | K02 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Full key balancing | L68 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Balancing without key | M37 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft and rotor | | | | | | | | | | | | | | | | | |
| Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors ¹⁷⁾ | K04 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second standard shaft extension | K16 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft extension with standard dimensions without featherkey way | K42 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Concentricity of shaft extension in accordance with DIN 42955 Tolerance R | L39 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard cylindrical shaft extension ¹⁸⁾ | Y55 • and identification code | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend, see Page 7/43, for footnotes, see Page 7/44.

IEC Squirrel-Cage Motors

Fan motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors in pole-changing version | | | | | | | | | | | | | | | | |
| 1LG4 (cast-iron) | | | | | | | | | | | | | | | | |
| Heating and ventilation | | | | | | | | | | | | | | | | |
| Metal external fan ¹⁹⁾ | K35 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 230 V | K45 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 115 V | K46 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Sheet metal fan cover | L36 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Separately driven fan with non-standard voltage and/or frequency | Y81 • and identification code | | | | | | | | | | – | – | ✓ | ✓ | ✓ | ✓ |
| Rating plate and extra rating plates | | | | | | | | | | | | | | | | |
| Second lubricating plate, supplied loose | B06 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second rating plate, loose | K31 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate or rating plate with deviating rating plate data | Y80 • and identification code | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate with identification code | Y82 • and identification code | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Additional information on rating plate and on package label (maximum of 20 characters) | Y84 • and identification code | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Packaging, safety notes, documentation and test certificates | | | | | | | | | | | | | | | | |
| Acceptance test certificate 3.1 according to EN 10204 | B02 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Operating instructions German/English enclosed in print | B23 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for horizontal motors, with acceptance | F83 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connected in star for dispatch | M32 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connected in delta for dispatch | M33 | | | | | | | | | | ✓ | ✓ | □ | □ | □ | □ |

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- , R. Possible on request
- ✓ With additional charge
- Not possible

IEC Squirrel-Cage Motors

Fan motors

Special versions

7

- 1) Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended. For pole-changing motors with separate windings, the number of temperature sensors must be doubled (order code **A11**, price of **A12** or order code **A12**, price available on request).
- 2) PT 100 bearing monitoring only possible at drive end (DE).
- 3) In combination with the PTC thermistor option or anti-condensation heating option, please inquire before ordering.
- 4) Only possible in combination with order code **L44** to **L49** or length specification in plain text.
- 5) Only the 50 Hz data are specified on the rating plate.
- 6) Cannot be used for motors in UL version (order code **D31**) or CSA approval (order code **D40**). The grease lifetime specified in catalog part 0 "Introduction" refers to CT 40 °C. When the coolant temperature rises by 10 K, the grease lifetime or relubrication interval is halved.
- 7) A second shaft extension is not possible. Please inquire for mounted brakes. The order codes listed cannot be combined within the various technologies nor with each other within the same technology system. This applies for:
 - Modular technology
 - Basic versions of "Modular technology"
 - Combination of special versions "Special technology"
- 8) For 1LG4/1LG6 motors, order codes **G17**, **G26** and **H63** frame size 225 and above can also be combined with all rotary pulse encoders in the "Special technology" range.
- 9) The standard brake supply voltage is 230 V AC, 50/60 Hz. Other brake supply voltages are possible with order codes **C00** and **C01**.
- 10) Not possible in combination with rotary pulse encoder HOG 9 D 10241 (order code **H72**, **H79**) and / or brake 2LM8 (used for motors up to and including frame size 225, order code **G26**).
- 11) Not possible in combination with brake 2LM8 (used for motors up to and including frame size 225, order code **G26**).
- 12) Supplied with the condensation drainage holes sealed at the drive end DE and non-drive end NDE (IP55, IP56, IP65). If condensation drainage holes are required in motors of the IM B6, IM B7 or IM B8 type of construction (feet located on side or top), it is necessary to relocate the bearing plates at the drive end (DE) and non-drive end (NDE) so that the condensation drainage holes situated between the feet on delivery are underneath.
- 13) Not necessary when a rotary pulse encoder is combined with a separately driven fan, because in this case the rotary pulse encoder is installed under the fan cover.
- 14) Possible up to 600 V max. Order with voltage code **9** and order code for voltage and frequency. The rated voltage is indicated on the rating plate.
- 15) Order with voltage code **9** and order code for voltage and frequency. The rated voltage is indicated on the rating plate.
- 16) Bearings for increased cantilever forces at vibration quantity level B on request for 1LG4 motors. Not possible for 1LG4 motors in the combination "Concentricity of the shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors" – order code **K04**.
- 17) Can be combined with deep-groove bearings of series 60.., 62.. and 63.. . Not possible with parallel roller bearings (e.g. bearings for increased cantilever forces, order code **K20**).
- 18) When motors are ordered that have a longer or shorter shaft extension than normal, the required position and length of the featherkey way must be specified in a sketch. It must be ensured that only featherkeys in accordance with DIN 6885, Form A are permitted to be used. The featherkey way is positioned centrally on the shaft extension. The length is defined by the manufacturer normatively. Not valid for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The featherkeys are supplied in every case. For order codes **Y55** and **K16**:
 - Dimensions D and DA ≤ internal diameter of roller bearing (see dimension tables under "Dimensions")
 - Dimensions E and EA ≤ 2 x length E (normal) of the shaft extension
 For an explanation of the order codes, see catalog part 0 "Introduction".
- 19) For 1LA5/6/7/9 motors and 1LG with metal external fan, converter-fed operation is permitted.

IEC Squirrel-Cage Motors

Fan motors

Special versions

Options or order codes (supplement **-Z** is required)

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|---|-----------------------|------------------------|----|----|----|-----|-----|-----|-----|-----|------------------------|-----|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Forced-air cooled motors without external fan and fan cover | | | | | | | | | | | | | | | | |
| | | | 1PP7 (aluminum) | | | | | | | | | 1PP5 (aluminum) | | | | |
| Motor protection | | | | | | | | | | | | | | | | |
| Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ¹⁾ | A11 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor protection with PTC thermistors with 6 embedded temperature sensors for tripping and alarm ¹⁾ | A12 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor temperature detection with embedded temperature sensor KTY 84-130 ¹⁾ | A23 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor temperature detection with embedded temperature sensors 2 x KTY 84-130 ¹⁾ | A25 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature detectors for tripping ¹⁾ | A31 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 3 PT 100 resistance thermometers ¹⁾ | A60 | | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor connection and connection box | | | | | | | | | | | | | | | | |
| ECOFAST motor plug Han-Drive 10e for 230 VΔ/400 VY ²⁾ | G55 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – |
| ECOFAST motor plug EMC Han-Drive 10e for 230 VΔ/400 VY ³⁾ | G56 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – |
| Connection box on RHS | K09 | | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on LHS | K10 | | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| One cable gland, metal | K54 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from DE | K83 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from NDE | K84 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of connection box through 180° | K85 | | ✓ | ✓ | ✓ | ✓ | ✓ | ○ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Next larger connection box | L00 | | – | – | – | – | – | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ |
| External earthing | L13 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 3 cables protruding, 0.5 m long ⁴⁾ | L44 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | O. R. | O. R. | O. R. |
| 3 cables protruding, 1.5 m long ⁴⁾ | L45 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | O. R. | O. R. | O. R. |
| 6 cables protruding, 0.5 m long ⁴⁾ | L47 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | O. R. | O. R. | O. R. |
| 6 cables protruding, 1.5 m long ⁴⁾ | L48 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on NDE | M64 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Terminal strip for main and auxiliary terminals | M69 | | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – | – | – | – |
| Windings and insulation | | | | | | | | | | | | | | | | |
| Temperature class 155 (F), used acc. to 155 (F), with service factor (SF) | C11 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), with increased output | C12 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), with increased coolant temperature | C13 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 180 (H) at rated output and max. CT 60 °C ⁵⁾ | C18 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 7/48.

IEC Squirrel-Cage Motors

Fan motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|---|-----------------------|-----------------|-------|-------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Forced-air cooled motors without external fan and fan cover | | | | | | | | | | | | | | | | |
| | | | 1PP7 (aluminum) | | | | | | | | 1PP5 (aluminum) | | | | | |
| Windings and insulation (continued) | | | | | | | | | | | | | | | | |
| Increased air humidity/temperature with 30 to 60 g water per m ³ of air | C19 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 % | C22 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 % | C23 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 % | C24 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 % | C25 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Increased air humidity/temperature with 60 to 100 g water per m ³ of air | C26 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), with a higher coolant temperature and/or site altitude | Y50 • and specified output, CT... °C or SA m above sea level | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), other requirements | Y52 • and specified output, CT... °C or SA m above sea level | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Colors and paint finish | | | | | | | | | | | | | | | | |
| Special finish in RAL 7030 stone gray | | | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y54 • and special finish RAL | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" on Page 0/19 | Y51 • and special finish RAL | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Sea air resistant special finish | M94 | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Unpainted (only cast iron parts primed) | K23 | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Unpainted, only primed | K24 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mechanical design and degrees of protection | | | | | | | | | | | | | | | | |
| Drive-end seal for flange-mounting motors with oil resistance to 0.1 bar Not possible for IM V3 type of construction | K17 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With two additional eyebolts for IM V1/IM V3 | K32 | | – | – | – | – | – | – | – | – | – | – | – | – | ✓ | ✓ |
| IP65 degree of protection | K50 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| IP56 degree of protection (non-heavy-sea) | K52 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Vibration-proof version | L03 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Condensation drainage holes ⁶⁾ | L12 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-rusting screws (externally) | M27 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 7/48.

IEC Squirrel-Cage Motors

Fan motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|---|------------------------|----|----|----|----|-----|------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Forced-air cooled motors without external fan and fan cover | | | | | | | | | | | | | | | | |
| | | 1PP7 (aluminum) | | | | | | 1PP5 (aluminum) | | | | | | | | |
| Coolant temperature and site altitude | | | | | | | | | | | | | | | | |
| Coolant temperature -40 to +40 °C | D03 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature -30 to +40 °C | D04 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Designs in accordance with standards and specifications | | | | | | | | | | | | | | | | |
| Design according to UL with "Recognition Mark" ⁷⁾ | D31 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Canadian regulations (CSA) ⁸⁾ | D40 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| PSE Mark Japan ⁹⁾ | D46 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - | - |
| Bearings and lubrication | | | | | | | | | | | | | | | | |
| Measuring nipple for SPM shock pulse measurement for bearing inspection | G50 | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bearing design for increased cantilever forces | K20 | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Regreasing device | K40 | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Located bearing DE | K94 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Located bearing NDE | L04 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - | - |
| Balance and vibration quantity | | | | | | | | | | | | | | | | |
| Vibration quantity A | | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Vibration quantity B | K02 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Full key balancing | L68 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Balancing without key | M37 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft and rotor | | | | | | | | | | | | | | | | |
| Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors ¹⁰⁾ | K04 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second standard shaft extension | K16 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft extension with standard dimensions without featherkey way | K42 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Concentricity of shaft extension in accordance with DIN 42955 Tolerance R | L39 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Standard shaft made of non-rusting steel | M65 | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard cylindrical shaft extension ¹¹⁾ | Y55 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Heating and ventilation | | | | | | | | | | | | | | | | |
| Anti-condensation heaters for 230 V | K45 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 115 V | K46 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rating plate and extra rating plates | | | | | | | | | | | | | | | | |
| Second lubricating plate, supplied loose | B06 | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second rating plate, loose | K31 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate or rating plate with deviating rating plate data | Y80 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate with identification code | Y82 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Additional information on rating plate and on package label (maximum of 20 characters) | Y84 • and identification code | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 7/48.

IEC Squirrel-Cage Motors

Fan motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|---|-----------------------|------------------------|----|----|----|-----|-----|-----|-----|------------------------|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Forced-air cooled motors without external fan and fan cover | | | | | | | | | | | | | | | | |
| | | | 1PP7 (aluminum) | | | | | | | | 1PP5 (aluminum) | | | | | |
| Packaging, safety notes, documentation and test certificates | | | | | | | | | | | | | | | | |
| Without safety and commissioning note. Customer's declaration of renunciation required. | B00 | | – | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | – | – | | | |
| With one safety and startup guide per box pallet | B01 | | – | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | – | – | | | |
| Acceptance test certificate 3.1 according to EN 10204 | B02 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| Operating instructions German/English enclosed in print | B23 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| Type test with heat run for vertical motors, with acceptance | F83 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| Wire-lattice pallet | L99 | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | – | | | |
| Connected in star for dispatch | M32 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| Connected in delta for dispatch | M33 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- R. Possible on request
- ✓ With additional charge
- Not possible

7

- 1) Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended.
- 2) Only one sensor (temperature sensor or PTC thermistor) can be connected. Only possibilities are voltage code **1** with voltage of 230 VΔ/400 VY and special voltage with voltage code **9** and order code **L1U** (400 VΔ). The following order codes cannot be used in combination with the ECOFAST plugs, order code **G55: A12, C02, C18, D31, D40, G50, H15, H17, H62, H63, H64, H90, H91, H92, H93, H94, H95, H98, H99, K04, K15, K16, K34, K35, K40, K45, K46, K52, K54, K82, L03, L44, L45, L47, L48, L49, L51, L52.**
- 3) Not possible for pole-changing motors. Only one sensor (temperature sensor or PTC thermistor) can be connected. Only possibilities are voltage code **1** with voltage of 230 VΔ/400 VY and special voltage with voltage code **9** and order code **L1U** (400 VΔ). The following order codes cannot be used in combination with the ECOFAST plugs, order code **G56: A12, A23, A31, C00, C18, D31, D40, G50, H15, H17, H90, H91, H92, H93, H94, H95, K04, K15, K16, K34, K35, K40, K45, K46, K52, K54, K82, L03, L44, L45, L47, L48, L49, L51, L52.**
- 4) In combination with the PTC thermistor option or anti-condensation heating option, please inquire before ordering.
- 5) Cannot be used for motors in UL version (order code **D31**). Cannot be used for motors according to CSA approval (order code **D40**) for motor series 1PP7 frame size 180 to 200. The grease lifetime specified in catalog part 0 "Introduction" refers to CT 40 °C. When the coolant temperature rises by 10 K, the grease lifetime or relubrication interval is halved.
- 6) Supplied with the condensation drainage holes sealed at the drive end DE and non-drive end NDE for IP55, IP56 and IP65 degrees of protection. If condensation drainage holes are required in motors of the IM B6, IM B7 or IM B8 type of construction (feet located on side or top), it is necessary to relocate the bearing plates at the drive end (DE) and non-drive end (NDE) so that the condensation drainage holes situated between the feet on delivery are underneath.
- 7) Possible up to 600 V max. The rated voltage is indicated on the rating plate without voltage range.
- 8) The rated voltage is indicated on the rating plate without voltage range.
- 9) "Small power motors" with a rated output of up to 3 kW which are exported to Japan must bear the marking.
- 10) Can be combined with deep-groove bearings of series 60.., 62.. and 63.. . Not possible with parallel roller bearings (e.g. bearings for increased cantilever forces, order code **K20**) brake or encoder mounting.
- 11) When motors are ordered that have a longer or shorter shaft extension than normal, the required position and length of the featherkey way must be specified in a sketch. It must be ensured that only featherkeys in accordance with DIN 6885, Form A are permitted to be used. The featherkey way is positioned centrally on the shaft extension. The length is defined by the manufacturer normatively. Not valid for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The featherkeys are supplied in every case. For order codes **Y55** and **K16**:
 - Dimensions D and DA ≤ internal diameter of roller bearing (see dimension tables under "Dimensions")
 - Dimensions E and EA ≤ 2 x length E (normal) of the shaft extension
 For an explanation of the order codes, see catalog part 0 "Introduction".

IEC Squirrel-Cage Motors

Fan motors

Special versions

Options or order codes (supplement **-Z** is required)

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-------|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 | |
| Forced-air cooled motors without external fan and fan cover | | | | | | | | | | | | | | | | | |
| 1PP4 (cast-iron) | | | | | | | | | | | | | | | | | |
| Motor protection | | | | | | | | | | | | | | | | | |
| Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ¹⁾ | A11 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor protection with PTC thermistors with 6 embedded temperature sensors for tripping and alarm ¹⁾ | A12 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor temperature detection with embedded temperature sensor KTY 84-130 ¹⁾ | A23 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor temperature detection with embedded temperature sensors 2 x KTY 84-130 ¹⁾ | A25 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature detectors for tripping | A31 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 3 PT 100 resistance thermometers ¹⁾ | A60 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 6 PT 100 resistance thermometers in stator winding ¹⁾ | A61 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 2 PT 100 screw-in resistance thermometers (basic circuit) for rolling-contact bearings ¹⁾ | A72 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 2 PT 100 screw-in resistance thermometers (3-wire circuit) for rolling-contact bearings ¹⁾ | A78 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 2 PT 100 double screw-in resistance thermometers (3-wire circuit) for rolling-contact bearings ¹⁾ | A80 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor connection and connection box | | | | | | | | | | | | | | | | | |
| Two-part plate on connection box | K06 | | | | | | | | | | | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on RHS | K09 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on LHS | K10 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection box on top, feet screwed on | K11 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| One cable gland, metal | K54 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Cable gland, maximum configuration | K55 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from DE | K83 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of the connection box through 90°, entry from NDE | K84 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rotation of connection box through 180° | K85 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Next larger connection box | L00 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| External earthing | L13 | | | | | | | | | | | □ | □ | □ | □ | □ | □ |
| 6 cables protruding, 1.5 m long ²⁾ | L48 | | | | | | | | | | | ✓ | ✓ | ✓ | O. R. | O. R. | O. R. |
| 6 cables protruding, 3 m long ²⁾ | L49 | | | | | | | | | | | ✓ | ✓ | ✓ | O. R. | O. R. | O. R. |
| Protruding cable ends – right side ^{2) 3)} | L51 | | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Protruding cable ends – left side ^{2) 3)} | L52 | | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Auxiliary connection box 1XB3 020 | L97 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Stud terminal for cable connection, accessories pack (3 items) | M46 | | | | | | | | | | | – | – | – | ✓ | ✓ | ✓ |
| Saddle terminal for connection without cable lug, accessories pack (6 items) | M47 | | | | | | | | | | | – | – | – | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 7/52.

IEC Squirrel-Cage Motors

Fan motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Forced-air cooled motors without external fan and fan cover | | | | | | | | | | | | | | | | |
| Windings and insulation | | | | | | | | | | | | | | | | |
| 1PP4 (cast-iron) | | | | | | | | | | | | | | | | |
| Temperature class 155 (F), used acc. to 155 (F), with service factor (SF) | C11 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), with increased output ⁴⁾ | C12 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), with increased coolant temperature | C13 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 180 (H) at rated output and max. CT 60 °C ⁵⁾ | C18 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Increased air humidity/temperature with 30 to 60 g water per m ³ of air ³⁾ | C19 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 % | C22 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 % | C23 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 % | C24 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 % | C25 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Increased air humidity/temperature with 60 to 100 g water per m ³ of air ³⁾ | C26 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 130 (B), with a higher coolant temperature and/or site altitude | Y50 • and specified output, CT ... °C or SA ... m above sea level | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Temperature class 155 (F), used acc. to 155 (F), other requirements | Y52 • and specified output, CT ... °C or SA ... m above sea level | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Colors and paint finish | | | | | | | | | | | | | | | | |
| Standard finish in RAL 7030 stone gray | | | | | | | | | | | □ | □ | □ | □ | □ | □ |
| Standard finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y53 • and standard finish RAL | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in RAL 7030 stone gray | K26 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y54 • and special finish RAL | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 7/52.

IEC Squirrel-Cage Motors

Fan motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | | |
|---|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-------|-------|-------|-------|------------------|------------------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 | |
| Forced-air cooled motors without external fan and fan cover | | | | | | | | | | | | | | | | | |
| Colors and paint finish (continued) | | | | | | | | | | | | | | | | | |
| Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" on Page 0/19 | Y51 • and special finish RAL | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Offshore special finish | M91 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Sea air resistant special finish | M94 | | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Unpainted (only cast iron parts primed) | K23 | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ○ |
| Unpainted, only primed | K24 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mechanical design and degrees of protection | | | | | | | | | | | | | | | | | |
| Drive-end seal for flange-mounting motors with oil resistance to 0.1 bar (Not possible for type of construction IM V3) ⁶⁾ | K17 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| IP65 degree of protection | K50 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| IP56 degree of protection (non-heavy-sea) | K52 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-rusting screws (externally) | M27 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature and site altitude | | | | | | | | | | | | | | | | | |
| Coolant temperature -50 to +40 °C | D02 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature -40 to +40 °C | D03 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coolant temperature -30 to +40 °C | D04 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Designs in accordance with standards and specifications | | | | | | | | | | | | | | | | | |
| Design according to UL with "Recognition Mark" ⁷⁾ | D31 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Canadian regulations (CSA) ⁸⁾ | D40 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bearings and lubrication | | | | | | | | | | | | | | | | | |
| Measuring nipple for SPM shock pulse measurement for bearing inspection | G50 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bearing design for increased cantilever forces ⁹⁾ | K20 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Special bearing for DE and NDE, bearing size 63 | K36 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ ¹⁰⁾ | ✓ ¹⁰⁾ |
| Regreasing device | K40 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | – | – |
| Located bearing DE | K94 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Located bearing NDE | L04 | | | | | | | | | | | □ | □ | □ | □ | □ | □ |
| Insulated bearing cartridge | L27 | | | | | | | | | | | – | – | ✓ | ✓ | ✓ | ✓ |
| Balance and vibration quantity | | | | | | | | | | | | | | | | | |
| Vibration quantity A | | | | | | | | | | | | □ | □ | □ | □ | □ | □ |
| Vibration quantity B | K02 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Full key balancing | L68 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Balancing without key | M37 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft and rotor | | | | | | | | | | | | | | | | | |
| Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors ¹¹⁾ | K04 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second standard shaft extension ¹²⁾ | K16 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shaft extension with standard dimensions without featherkey way | K42 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Concentricity of shaft extension in accordance with DIN 42955 Tolerance R | L39 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Non-standard cylindrical shaft extension ¹³⁾ | Y55 • and identification code | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

For legend and footnotes, see Page 7/52.

IEC Squirrel-Cage Motors

Fan motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 | |
| Forced-air cooled motors without external fan and fan cover | | | | | | | | | | | | | | | | | |
| 1PP4 (cast-iron) | | | | | | | | | | | | | | | | | |
| Heating and ventilation | | | | | | | | | | | | | | | | | |
| Anti-condensation heaters for 230 V | K45 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 115 V | K46 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rating plate and extra rating plates | | | | | | | | | | | | | | | | | |
| Second lubricating plate, supplied loose | B06 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second rating plate, loose | K31 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate or rating plate with deviating rating plate data | Y80 • and identification code | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra rating plate with identification code | Y82 • and identification code | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Additional information on rating plate and on package label (maximum of 20 characters) | Y84 • and identification code | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Packaging, safety notes, documentation and test certificates | | | | | | | | | | | | | | | | | |
| Acceptance test certificate 3.1 according to EN 10204 | B02 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, with acceptance | F83 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connected in star for dispatch | M32 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connected in delta for dispatch | M33 | | | | | | | | | | | ✓ | ✓ | □ | □ | □ | □ |

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- R. Possible on request
- ✓ With additional charge
- Not possible

7

- 1) Evaluation with appropriate tripping unit (see Catalog LV 1) recommended.
- 2) In combination with the PTC thermistor option or anti-condensation heating option, please inquire before ordering.
- 3) Possible in combination with order code **L44** to **L49** or length specification in plain text.
- 4) Only the 50 Hz data are indicated on the rating plate.
- 5) Cannot be used for motors in UL version (order code **D31**). Cannot be used for motors according to CSA approval (order code **D40**) for motor series 1PP7 frame size 180 to 200. The grease lifetime specified in catalog part 0 "Introduction" refers to CT 40 °C. When the coolant temperature rises by 10 K, the grease lifetime or relubrication interval is halved.
- 6) Not available for 2-pole motors.
- 7) Possible up to 600 V max. Order with voltage code **9** and order code for voltage and frequency. The rated voltage is indicated on the rating plate.
- 8) Order with voltage code **9** and order code for voltage and frequency. The rated voltage is indicated on the rating plate.
- 9) Not possible for 2-pole 1PP4 motors, frame size 315 L in vertical types of construction; bearings for increased cantilever forces at vibration quantity level B available on request for 1PP4 motors. Not possible for 1PP4 motors in the combination "Concentricity of the shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors" – order code **K04**.
- 10) Additional charge for 2-pole motors. With 4-pole to 8-pole motors, standard version.
- 11) Can be combined with deep-groove bearings of series 60.., 62.. and 63.. . Not possible with parallel roller bearings (e.g. bearings for increased cantilever forces, order code **K20**).
- 12) Possible for motors of frame size 315 and above in vertical types of construction or 2-pole for version with second shaft extension on request. Version with protective cover not possible.
- 13) When motors are ordered that have a longer or shorter shaft extension than normal, the required position and length of the featherkey way must be specified in a sketch. It must be ensured that only featherkeys in accordance with DIN 6885, Form A are permitted to be used. The featherkey way is positioned centrally on the shaft extension. The length is defined by the manufacturer normatively. Not valid for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The featherkeys are supplied in every case. For order codes **Y55** and **K16**:
 - Dimensions D and DA ≤ internal diameter of roller bearing (see dimension tables under "Dimensions")
 - Dimensions E and EA ≤ 2 x length E (normal) of the shaft extension
 For an explanation of the order codes, see catalog part 0 "Introduction".

Overview

Slide rails with fixing bolts and tensioning screws to DIN 42923

Slide rails are used to tension the belt of a machine easily and conveniently when a belt tightener is not available. They are fixed to the base using stone bolts or foundation blocks.

The assignment of slide rails to motor size can be found in DIN 42923. For motors of frame sizes 355 to 450, there are no standardized slide rails (please inquire).

Available from:
Lütgert & Co. GmbH
Postfach 42 51
33276 Gütersloh, Germany
Tel. +49 (0)5241-7407-0
Fax +49 (0)5241-7407-90

<http://www.luetgert-antriebe.de>
e-mail: info@luetgert-antriebe.de

Foundation block acc. to DIN 799

The foundation blocks are inserted into the stone foundation and embedded in concrete. They are used for fixing machines of medium size, slide rails, pedestal bearings, baseframes, etc. After the fixing bolts have been unscrewed, the machine can be dragged without it having to be lifted.

When the machine is initially installed, the foundation block that is bolted to the machine (without washers) and fitted with taper pins is not embedded with concrete until the machine has been fully aligned. In this case, the machine is positioned 2 to 3 mm lower. The difference in shaft height is compensated by inserting shims on final installation. The taper pins safeguard the exact position of the machine when it is repeatedly removed and replaced without the need for realignment.

Available from:
Lütgert & Co. GmbH
Postfach 42 51
33276 Gütersloh, Germany
Tel. +49 (0)5241-7407-0
Fax +49 (0)5241-7407-90

<http://www.luetgert-antriebe.de>
e-mail: info@luetgert-antriebe.de

Taper pins to DIN 258 with threaded ends and constant taper lengths

Taper pins are used for components that are repeatedly removed. The drilled hole is ground conical using a conical reamer until the pin can be pushed in by hand until the cone shoulder lies 3 to 4 mm above the rim of the hole.

It can then be driven in using a hammer until it is correctly seated. The pin is removed from the drilled hole by screwing on the nut and tightening it.

Standardized taper pins are available from general engineering suppliers.

Available from:
Otto Roth GmbH & Co. KG
Rutesheimer Straße 22
70499 Stuttgart, Germany
Tel. +49 (0)7 11-1388-0
Fax +49 (0)7 11-1388-233

<http://www.ottoroth.de>
e-mail: info@ottoroth.de

Couplings

The motor from Siemens is connected to the machine or gear unit through a coupling. Flender is an important coupling manufacturer with a wide range of products. For standard applications, Siemens recommends that elastic couplings of Flender types N-Eupex and Rupex or torsionally rigid couplings of types Arpex and Zapex are used. For special applications, Fludex and Elpex couplings are recommended.

Source of supply:
Siemens contact partner – ordering from Catalog
Siemens MD 10.1 "FLENDER Standard Couplings"

or

A. Friedr. Flender AG
Kupplungswerk Mussum
Industriepark Bocholt
Schlavenhorst 100
46395 Bocholt, Germany
Tel. +49 (0)2871-922185
Fax +49 (0)2871-922579

<http://www.flender.com>
e-mail: couplings@flender.com

IEC Squirrel-Cage Motors

Fan motors

Accessories

More information

Spare motors and repair parts

- Supply commitment for spare motors and repair parts following delivery of the motor
 - For up to 5 years, in the event of total motor failure, Siemens will supply a comparable motor with regard to the mounting dimensions and functions (the type series may vary).
 - Repair parts will be supplied for up to 5 years.
 - For up to 10 years, Siemens will provide information and will, if necessary, supply documentation for repair parts.
- When repair parts are ordered, the following details must be provided:
 - Designation and part number
 - Order No. and factory number of the motor

Example for ordering a fan cover 1LA7,
frame size 160 M, 4-pole:

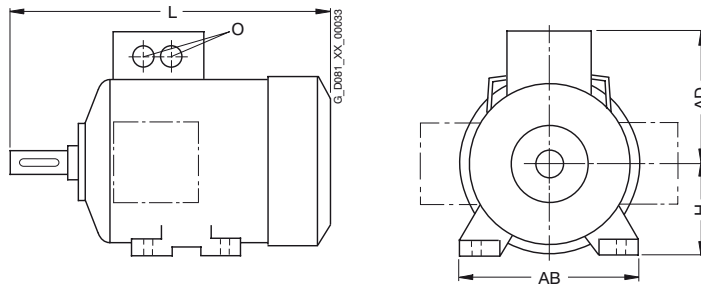
**Fan cover No. 7.40,
1LA7 163-4AA60, factory number J783298901018**

- For bearing types, see the "Introduction".
- Repair parts for 1MJ6, 1MJ7, 1MJ8, 1MJ1, 1ME8, 1ML8, 1LG8 motors and smoke-extraction motors are available on request.
- For standard components, a supply commitment does not apply.
- Support – Hotline
In Germany
Tel.: 0180/5050448

National telephone numbers can be found on the Internet page:
<http://www.siemens.com/automation/service&support>

Overview

Overall dimensions



| Frame size | Type | Number of poles | Dimensions | | | | |
|-----------------|----------|-----------------|------------|-----|-----|-----|--------------------------------|
| | | | L | AD | H | AB | O |
| 63 M | 1PP7 | | 172 | 101 | 63 | 120 | 1 x M16 x 1.5 |
| | | | | | | | 1 x M25 x 1.5 |
| 71 M | 1PP7 | | 207 | 111 | 71 | 132 | 1 x M16 x 1.5 1 x M25 x 1.5 |
| 80 M | 1LA7 | | 273.5 | 120 | 80 | 150 | 1 x M16 x 1.5 1 x M25 x 1.5 |
| | 1PP7 | | 237 | 120 | 80 | 150 | 1 x M16 x 1.5 1 x M25 x 1.5 |
| 90 S/ 90 L | 1LA7 | | 331 | 128 | 90 | 165 | 1 x M16 x 1.5 1 x M25 x 1.5 |
| | 1PP7 | | 286 | 128 | 90 | 165 | 1 x M16 x 1.5 1 x M25 x 1.5 |
| 100 L | 1LA7 | | 372 | 135 | 100 | 196 | 2 x M32 x 1.5 |
| | 1PP7 | | 331 | 135 | 100 | 196 | 2 x M32 x 1.5 |
| 112 M | 1LA7 | | 393 | 148 | 112 | 226 | 2 x M32 x 1.5 |
| | 1PP7 | | 349 | 148 | 112 | 226 | 2 x M32 x 1.5 |
| 132 S/ 132 M | 1LA7 | | 452.5 | 167 | 132 | 256 | 2 x M32 x 1.5 |
| | 1PP7 | | 397 | 167 | 132 | 256 | 2 x M32 x 1.5 |
| 160 M/ 160 L | 1LA7 | | 588 | 197 | 160 | 300 | 2 x M40 x 1.5 |
| | 1PP7 | | 529 | 197 | 160 | 300 | 2 x M40 x 1.5 |
| 180 M/ 180 L | 1LA5 | | 712 | 258 | 180 | 339 | 2 x M40 x 1.5 |
| | 1LG4 | | 669 | 262 | 180 | 339 | 2 x M40 x 1.5 |
| | 1PP4 | | 562 | 262 | 180 | 339 | 2 x M40 x 1.5 |
| | 1PP4 188 | | 613 | 262 | 180 | 339 | 2 x M40 x 1.5 |
| | 1PP5 | | 611 | 258 | 180 | 339 | 2 x M40 x 1.5 |

| Frame size | Type | Number of poles | Dimensions | | | | |
|---------------------------|----------|-----------------|------------|-----|-----|---------------|---------------|
| | | | L | AD | H | AB | O |
| 200 L | 1LA5 | | 769.5 | 305 | 200 | 388 | 2 x M50 x 1.5 |
| | 1LG4 | | 720 | 300 | 200 | 378 | 2 x M50 x 1.5 |
| | 1PP4 | | 617 | 300 | 200 | 378 | 2 x M50 x 1.5 |
| | 1PP4 208 | 2, 6 | 674 | 300 | 200 | 378 | 2 x M50 x 1.5 |
| 225 S/ 225 M | 1PP5 | | 675 | 305 | 200 | 388 | 2 x M50 x 1.5 |
| | 1LG4 | | 789 | 325 | 225 | 436 | 2 x M50 x 1.5 |
| | 1PP4 | | 670 | 325 | 225 | 436 | 2 x M50 x 1.5 |
| | 1PP4 223 | 2 | 640 | 325 | 225 | 436 | 2 x M50 x 1.5 |
| 250 M | 1PP4 228 | 2 | 700 | 325 | 225 | 436 | 2 x M50 x 1.5 |
| | 1PP4 228 | 4, 6, 8 | 730 | 325 | 225 | 436 | 2 x M50 x 1.5 |
| | 1LG4 | | 887 | 392 | 250 | 490 | 2 x M63 x 1.5 |
| 280 S/ 280 M | 1PP4 | | 764 | 392 | 250 | 490 | 2 x M63 x 1.5 |
| | 1PP4 258 | 4 | 834 | 392 | 250 | 490 | 2 x M63 x 1.5 |
| | 1LG4 | | 960 | 432 | 280 | 540 | 2 x M63 x 1.5 |
| 315 S/ 315 M/ 315 L | 1PP4 | | 830 | 432 | 280 | 540 | 2 x M63 x 1.5 |
| | 1PP4 288 | 2, 4 | 940 | 432 | 280 | 540 | 2 x M63 x 1.5 |
| | 1LG4 310 | | 1102 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1PP4 310 | 2 | 925 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1PP4 310 | 4, 6, 8 | 955 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG4 313 | | 1102 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1PP4 313 | 2 | 925 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1PP4 313 | 4, 6, 8 | 955 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG4 316 | | 1262 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1PP4 316 | 2 | 1085 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1PP4 316 | 4, 6, 8 | 1115 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| | 1LG4 317 | | 1262 | 500 | 315 | 610 | 2 x M63 x 1.5 |
| 1PP4 317 | 2 | 1085 | 500 | 315 | 610 | 2 x M63 x 1.5 | |
| 1PP4 317 | 4, 6, 8 | 1115 | 500 | 315 | 610 | 2 x M63 x 1.5 | |
| 1PP4 318 | 6 | 1255 | 500 | 315 | 610 | 2 x M63 x 1.5 | |
| 1PP4 318 | 8 | 1115 | 500 | 315 | 610 | 2 x M63 x 1.5 | |

Notes on the dimensions

■ Dimension designations according to DIN EN 50347 and IEC 60072.

■ Fits

The shaft extensions specified in the dimension tables (DIN 748) and centering spigot diameters (DIN EN 50347) are machined with the following fits:

| Dimension designation | ISO fit DIN ISO 286-2 | |
|-----------------------|-----------------------|-----|
| D, DA | to 30 | j6 |
| | over 30 to 50 | k6 |
| | over 50 | m6 |
| N | to 250 | j6 |
| | over 250 | h6 |
| F, FA | | h9 |
| K | | H17 |
| S | Flange (FF) | H17 |

The drilled holes of couplings and belt pulleys should have an ISO fit of at least H7.

■ Dimension tolerances

For the following dimension designations, the permissible deviations are given below:

| Dimension designation | Dimension | Permitted deviation |
|-----------------------|-----------|---------------------|
| H | to 250 | - 0.5 |
| | over 250 | - 1.0 |
| E, EA | | - 0.5 |

Keyways and feather keyways (dimensions GA, GC, F and FA) are made in compliance with DIN 6885 Part 1.

■ All dimensions are specified in mm.

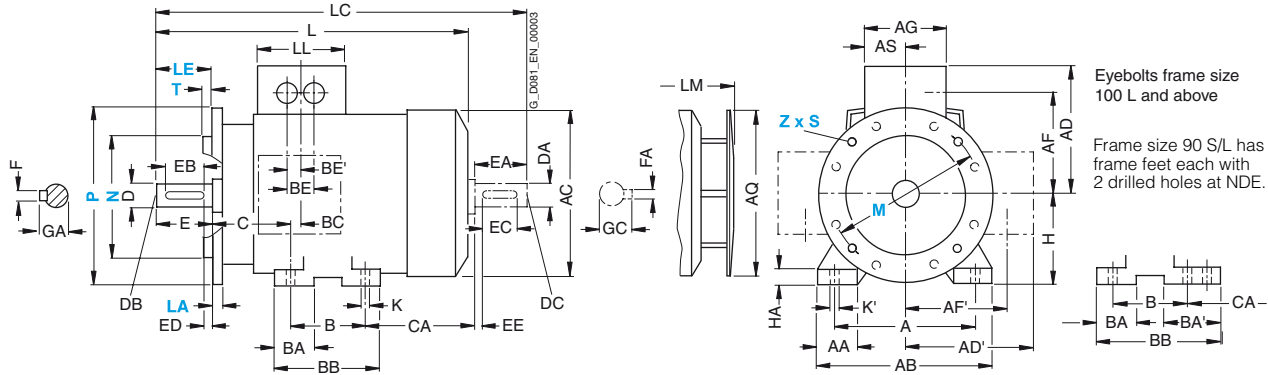


Dimensional drawings

Aluminum series 1LA7 and 1LA5, frame sizes 80 M to 200 L · pole-changing version

Type of construction IM B35

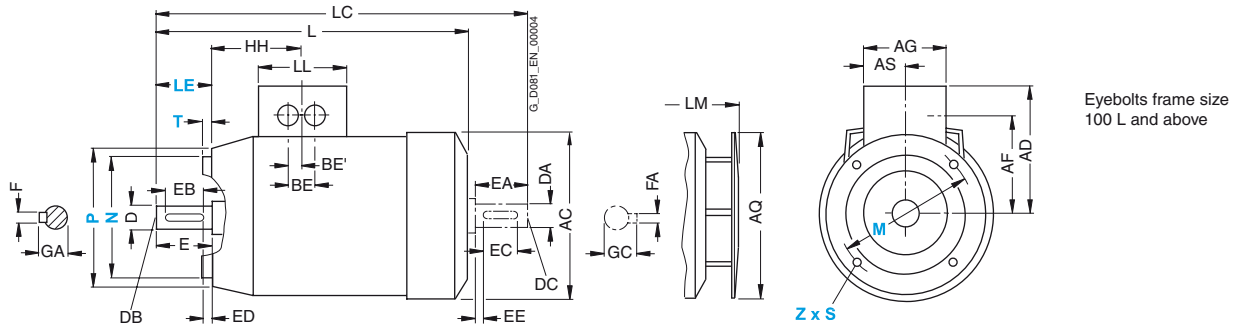
For flange dimensions, see Page 7/64 (Z = the number of retaining holes)



Type of construction IM B14

Type of construction IM B14 not possible for 1LA5 motors, frame sizes 180 M to 200 L

For flange dimensions, see Page 7/64 (Z = the number of retaining holes)



| For motor Frame size | Type | Dimension designation acc. to IEC | | | | | | DE shaft extension | | | | | | NDE shaft extension | | | | | | | | |
|-------------------------|----------|-----------------------------------|-----|------|-------|-------|-----|--------------------|----|-----|-----|-----|----|---------------------|------|----|-----|-----|-----|----|----|------|
| | | HH | K | K' | L | LC | LL | LM | D | DB | E | EB | ED | F | GA | DA | DC | EA | EC | EE | FA | GC |
| 80 M | 1LA7 080 | 63.5 | 9.5 | 13.5 | 273.5 | 324 | 75 | 299.5 | 19 | M6 | 40 | 32 | 4 | 6 | 21.5 | 19 | M6 | 40 | 32 | 4 | 6 | 21.5 |
| | 1LA7 083 | | | | | 364 | | | | | | | | | | | | | | | | |
| 90 S 90 L | 1LA7 090 | 79 | 10 | 14 | 331 | 389 | 75 | 382.5 | 24 | M8 | 50 | 40 | 5 | 8 | 27 | 19 | M6 | 40 | 32 | 4 | 6 | 21.5 |
| | 1LA7 096 | | | | | | | | | | | | | | | | | | | | | |
| 100 L | 1LA7 106 | 102 | 12 | 16 | 372 | 438 | 120 | 423.5 | 28 | M10 | 60 | 50 | 5 | 8 | 31 | 24 | M8 | 50 | 40 | 5 | 8 | 27 |
| | 1LA7 107 | | | | | | | | | | | | | | | | | | | | | |
| 112 M | 1LA7 113 | 102 | 12 | 16 | 393 | 461 | 120 | 444.5 | 28 | M10 | 60 | 50 | 5 | 8 | 31 | 24 | M8 | 50 | 40 | 5 | 8 | 27 |
| 132 S | 1LA7 130 | 128 | 12 | 16 | 452.5 | 551.5 | 140 | 505 | 38 | M12 | 80 | 70 | 5 | 10 | 41 | 38 | M12 | 80 | 70 | 5 | 10 | 41 |
| | 1LA7 131 | | | | | | | | | | | | | | | | | | | | | |
| 132 M | 1LA7 133 | 128 | 12 | 16 | 452.5 | 551.5 | 140 | 505 | 38 | M12 | 80 | 70 | 5 | 10 | 41 | 38 | M12 | 80 | 70 | 5 | 10 | 41 |
| | 1LA7 134 | | | | | | | | | | | | | | | | | | | | | |
| 160 M | 1LA7 163 | 160.5 | 15 | 19 | 588 | 721 | 165 | 640.5 | 42 | M16 | 110 | 90 | 10 | 12 | 45 | 42 | M16 | 110 | 90 | 10 | 12 | 45 |
| | 1LA7 164 | | | | | | | | | | | | | | | | | | | | | |
| 160 L | 1LA7 166 | 160.5 | 15 | 19 | 588 | 721 | 165 | 640.5 | 42 | M16 | 110 | 90 | 10 | 12 | 45 | 42 | M16 | 110 | 90 | 10 | 12 | 45 |
| 180 M | 1LA5 183 | 159 | 15 | 19 | 712 | 841 | 132 | 793.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| | 1LA5 186 | 159 | 15 | 19 | 712 | 841 | 132 | 793.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| 200 L | 1LA5 206 | 178 | 19 | 25 | 769.5 | 897 | 192 | 850 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| | 1LA5 207 | | | | | | | | | | | | | | | | | | | | | |

IEC Squirrel-Cage Motors

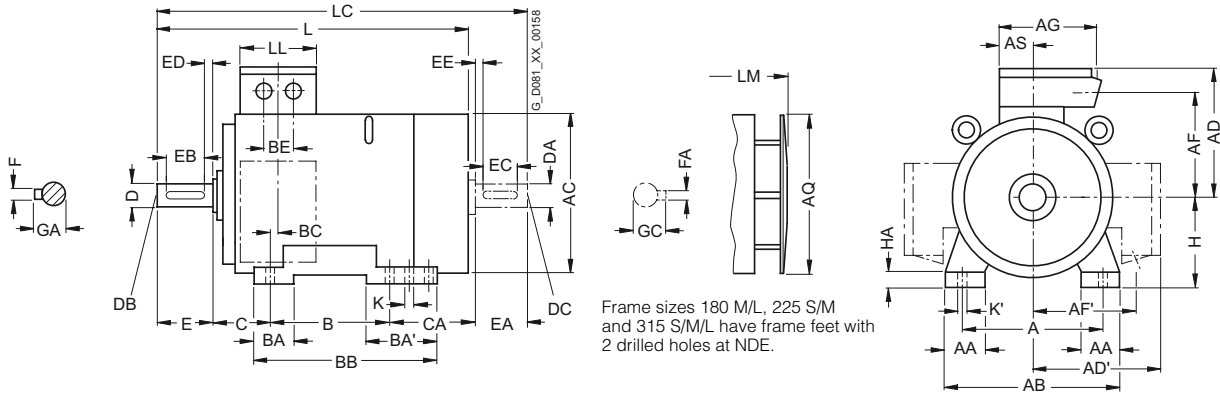
Fan motors

Dimensions

Dimensional drawings

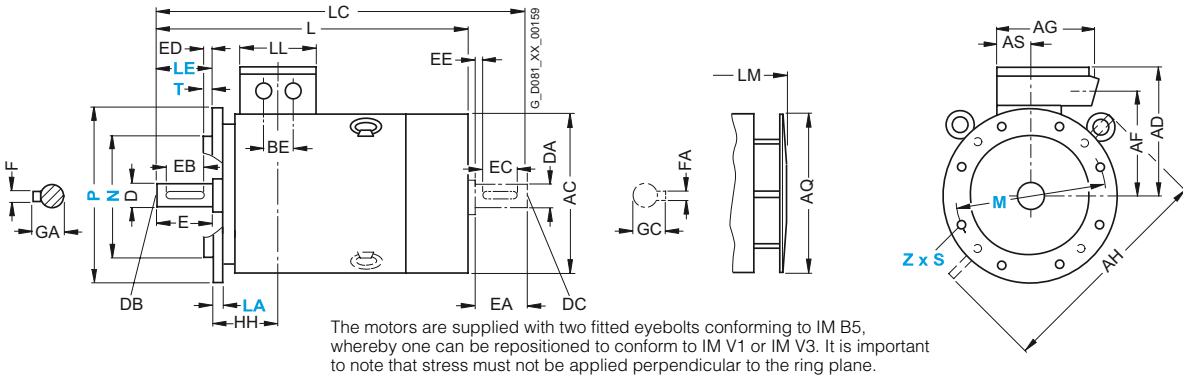
Cast-iron series 1LG4, frame sizes 180 M to 315 L · pole-changing version

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 7/64 (Z = the number of retaining holes)



| For motor Frame size | Type | Dimension designation acc. to IEC | | | | | | | | | | | | | | | | | | | | | |
|-------------------------|----------|-----------------------------------|-----|-----|------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|----|
| | | A | AA | AB | AC ¹⁾ | AD | AD' | AF | AF' | AG | AH | AQ | AS | B* | BA | BA' | BB | BC | BE | C | CA* | H | HA |
| 180 M | 1LG4 183 | 279 | 65 | 339 | 363 | 262 | 262 | 220 | 220 | 152 | 452 | 340 | 71 | 241 | 70 | 111 | 328 | 36 | 54 | 121 | 202 | 180 | 20 |
| 180 L | 1LG4 186 | 279 | 65 | 339 | 363 | 262 | 262 | 220 | 220 | 152 | 452 | 340 | 71 | 279 | 70 | 111 | 328 | 36 | 54 | 121 | 164 | 180 | 20 |
| 200 L | 1LG4 207 | 318 | 70 | 378 | 402 | 300 | 300 | 247 | 247 | 260 | 512 | 340 | 96 | 305 | 80 | 80 | 355 | 63 | 85 | 133 | 177 | 200 | 25 |
| 225 S | 1LG4 220 | 356 | 80 | 436 | 442 | 325 | 325 | 272 | 272 | 260 | 556 | 425 | 96 | 286 | 85 | 110 | 361 | 47 | 85 | 149 | 218 | 225 | 34 |
| 225 M | 1LG4 223 | 356 | 80 | 436 | 442 | 325 | 325 | 272 | 272 | 260 | 556 | 425 | 96 | 311 | 85 | 110 | 361 | 47 | 85 | 149 | 193 | 225 | 34 |
| 250 M | 1LG4 253 | 406 | 100 | 490 | 495 | 392 | 392 | 308 | 308 | 300 | 620 | 470 | 118 | 349 | 100 | 100 | 409 | 69 | 110 | 168 | 235 | 250 | 40 |
| 280 S | 1LG4 280 | 457 | 100 | 540 | 555 | 432 | 432 | 348 | 348 | 300 | 672 | 525 | 118 | 368 | 100 | 151 | 479 | 62 | 110 | 190 | 267 | 280 | 40 |
| 280 M | 1LG4 283 | 457 | 100 | 540 | 555 | 432 | 432 | 348 | 348 | 300 | 672 | 525 | 118 | 419 | 100 | 151 | 479 | 62 | 110 | 190 | 216 | 280 | 40 |
| 315 S | 1LG4310 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 406 | 125 | 176 | 527 | 69 | 110 | 216 | 315 | 315 | 50 |
| 315 M ²⁾ | 1LG4313 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 457 | 125 | 176 | 527 | 69 | 110 | 216 | 264 | 315 | 50 |
| 315 L ²⁾ | 1LG4316 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 125 | 176 | 578 | 69 | 110 | 216 | 373 | 315 | 50 |
| | 1LG4317 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 590 | 154 | 508 | 155 | 206 | 648 | 69 | 110 | 216 | 513 | 315 | 50 |

* This dimension is assigned in DIN EN 50347 to the frame size listed.

1) Measured across the bolt heads.

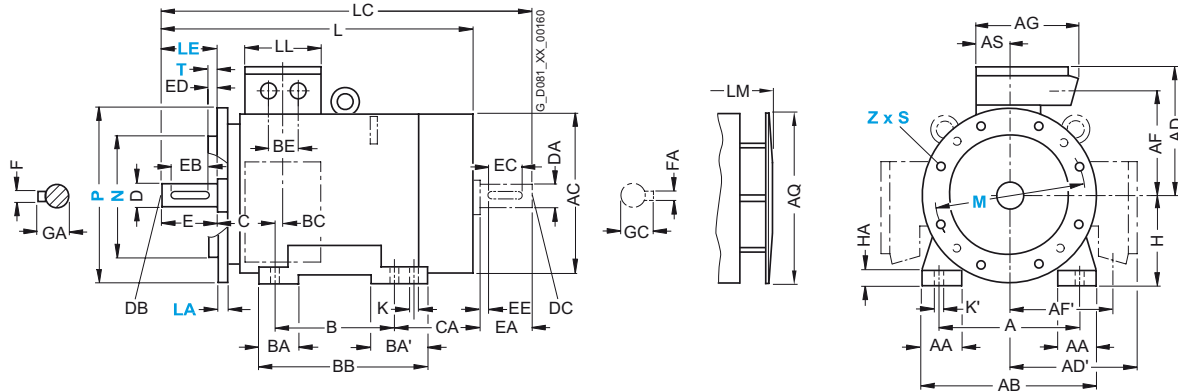
2) With order codes for connection box positions (K09, K10, K11) only fitted feet with 3 drilled holes with dimension "B" (406, 457 and 508 mm). BB will then be 666 mm.

Dimensional drawings

Cast-iron series 1LG4, frame sizes 180 M to 315 L · pole-changing version

Type of construction IM B35

For flange dimensions, see Page 7/64 (Z = the number of retaining holes)



| For motor Frame size | Type | Dimension designation acc. to IEC | | | | | | | DE shaft extension | | | | | | | NDE shaft extension | | | | | | |
|-------------------------|----------|-----------------------------------|----|----|------|------|-----|------|--------------------|-----|-----|-----|----|----|------|---------------------|-----|-----|-----|----|----|------|
| | | HH | K | K' | L | LC | LL | LM | D | DB | E | EB | ED | F | GA | DA | DC | EA | EC | EE | FA | GC |
| 180 M | 1LG4 183 | 157 | 15 | 19 | 669 | 784 | 132 | 759 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| 180 L | 1LG4 186 | 157 | 15 | 19 | 669 | 784 | 132 | 759 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| 200 L | 1LG4 207 | 196 | 19 | 25 | 720 | 835 | 192 | 810 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| 225 S | 1LG4 220 | 196 | 19 | 25 | 789 | 903 | 192 | 889 | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| 225 M | 1LG4 223 | 196 | 19 | 25 | 789 | 903 | 192 | 889 | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| 250 M | 1LG4 253 | 237 | 24 | 30 | 887 | 1032 | 236 | 987 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| 280 S | 1LG4 280 | 252 | 24 | 30 | 960 | 1105 | 236 | 1070 | 75 | M20 | 140 | 125 | 10 | 20 | 79.5 | 65 | M20 | 140 | 125 | 10 | 18 | 69 |
| 280 M | 1LG4 283 | 252 | 24 | 30 | 960 | 1105 | 236 | 1070 | 75 | M20 | 140 | 125 | 10 | 20 | 79.5 | 65 | M20 | 140 | 125 | 10 | 18 | 69 |
| 315 S | 1LG4310 | 285 | 28 | 35 | 1102 | 1247 | 307 | 1212 | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |
| 315 M ¹⁾ | 1LG4313 | 285 | 28 | 35 | 1102 | 1247 | 307 | 1212 | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |
| 315 L ¹⁾ | 1LG4316 | 285 | 28 | 35 | 1262 | 1407 | 307 | 1372 | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |
| | 1LG4317 | 285 | 28 | 35 | 1262 | 1407 | 307 | 1372 | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |

¹⁾ With order codes for connection box positions (K09, K10, K11) only fitted feet with 3 drilled holes with dimension "B" (406, 457 and 508 mm).
BB will then be 666 mm.

IEC Squirrel-Cage Motors

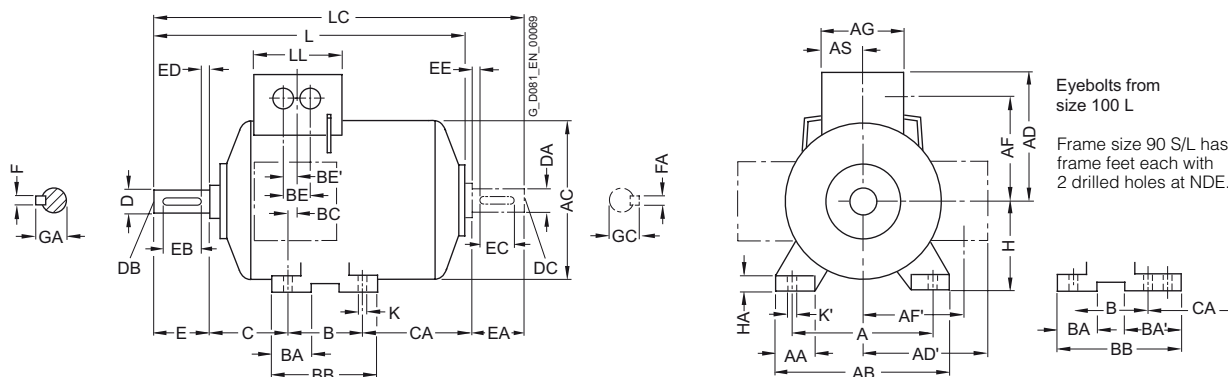
Fan motors

Dimensions

Dimensional drawings

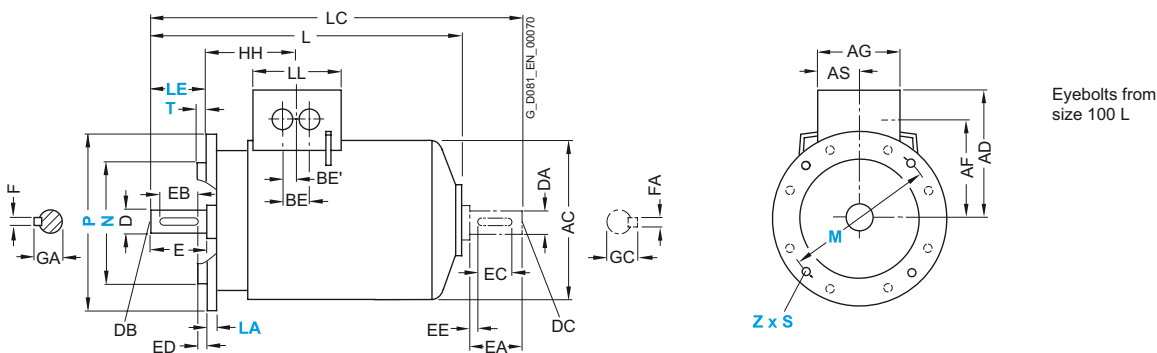
Aluminum series 1PP7 and 1PP5, frame sizes 63 M to 200 L

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 7/64 (Z = the number of retaining holes)



| For motor | | | Dimension designation acc. to IEC | | | | | | | | | | | | | | | | | | | | |
|--------------|----------------------|--------------------|-----------------------------------|------|-----|-----|-----|-----|-----|-----|-----|------|------------|------|-----|-----|------|----|------|-----|----------|-----|----|
| Frame size | Type | Number of poles | A | AA | AB | AC | AD | AD' | AF | AF' | AG | AS | B* | BA | BA' | BB | BC | BE | BE' | C | CA* | H | HA |
| 63 M | 1PP7 060 1PP7 063 | 2, 4, 6 | 100 | 27 | 120 | 124 | 101 | 101 | 78 | 78 | 75 | 37.5 | 80 | 28 | - | 96 | 30 | 32 | 18 | 40 | 40 | 63 | 7 |
| 71 M | 1PP7 070 1PP7 073 | 2, 4, 6, 8 | 112 | 27 | 132 | 145 | 111 | 111 | 88 | 88 | 75 | 37.5 | 90 | 27 | - | 106 | 18 | 32 | 18 | 45 | 42 | 71 | 7 |
| 80 M | 1PP7 080 1PP7 083 | 2, 4, 6, 8 | 125 | 30.5 | 150 | 163 | 120 | 120 | 97 | 97 | 75 | 37.5 | 100 | 32 | - | 118 | 14 | 32 | 18 | 50 | 47 | 80 | 8 |
| 90 S 90 L | 1PP7 090 1PP7 096 | 2, 4, 6, 8 | 140 | 30.5 | 165 | 180 | 128 | 128 | 105 | 105 | 75 | 37.5 | 100 125 | 33 | 54 | 143 | 23 | 32 | 18 | 56 | 80 55 | 90 | 10 |
| 100 L | 1PP7 106 1PP7 107 | 2, 4, 6, 8 4, 8 | 160 | 42 | 196 | 203 | 135 | 163 | 78 | 123 | 120 | 60 | 140 | 47 | - | 176 | 39 | 42 | 21 | 63 | 68 | 100 | 12 |
| 112 M | 1PP7 113 | 2, 4, 6, 8 | 190 | 46 | 226 | 227 | 148 | 176 | 91 | 136 | 120 | 60 | 140 | 47 | - | 176 | 32 | 42 | 21 | 70 | 79 | 112 | 12 |
| 132 S | 1PP7 130 1PP7 131 | 2, 4, 6, 8 2 | 216 | 53 | 256 | 267 | 167 | 194 | 107 | 154 | 140 | 70 | 140 | 49 | - | 180 | 39 | 42 | 21 | 89 | 96 | 132 | 15 |
| 132 M | 1PP7 133 1PP7 134 | 4, 6, 8 6 | 216 | 53 | 256 | 267 | 167 | 194 | 107 | 154 | 140 | 70 | 178 | 49 | - | 218 | 39 | 42 | 21 | 89 | 58 | 132 | 15 |
| 160 M | 1PP7 163 1PP7 164 | 2, 4, 6, 8 2, 8 | 254 | 60 | 300 | 320 | 197 | 226 | 127 | 183 | 165 | 82.5 | 210 | 57 | - | 256 | 52.5 | 54 | 27 | 108 | 107 | 160 | 18 |
| 160 L | 1PP7 166 | 2, 4, 6, 8 | 254 | 60 | 300 | 320 | 197 | 226 | 127 | 183 | 165 | 82.5 | 254 | 57 | - | 300 | 52.5 | 54 | 27 | 108 | 63 | 160 | 18 |
| 180 M | 1PP5 183 | 2, 4 | 279 | 69.5 | 339 | 363 | 258 | 258 | 216 | 216 | 152 | 71 | 241 | 50 | - | 287 | 38 | 54 | 27 | 121 | 145 | 180 | 18 |
| 180 L | 1PP5 186 | 4, 6, 8 | 279 | 69.5 | 339 | 363 | 258 | 258 | 216 | 216 | 152 | 71 | 279 | 50 | - | 325 | 38 | 54 | 27 | 121 | 107 | 180 | 18 |
| 200 L | 1PP5 206 1PP5 207 | 2, 6 2, 4, 6, 8 | 318 | 83 | 388 | 402 | 305 | 305 | 252 | 252 | 260 | 96 | 305 | 58.5 | - | 355 | 45 | 85 | 42.5 | 133 | 133 | 200 | 24 |

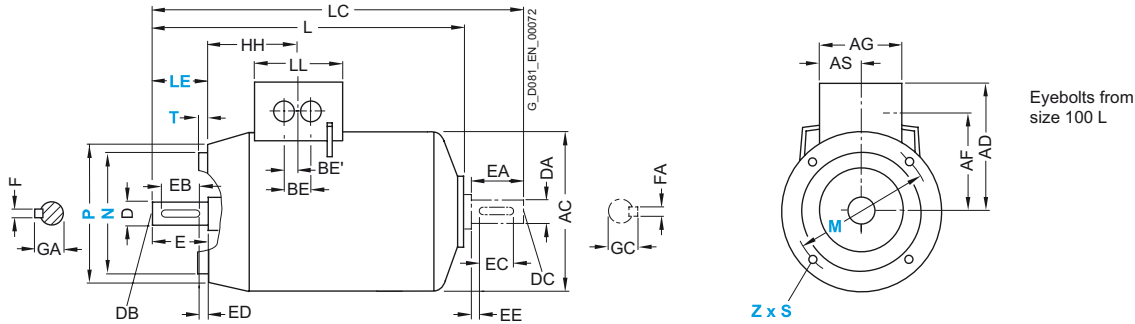
* This dimension is assigned in DIN EN 50347 to the frame size listed.

Dimensional drawings

Aluminum series 1PP7 and 1PP5, frame sizes 63 M to 200 L

Type of construction IM B14

Type of construction IM B14 not possible for 1PP5 motors, frame sizes 180 M to 200 L
For flange dimensions, see Page 7/64 (Z = the number of retaining holes)



| For motor | | Number of poles | Dimension designation acc. to IEC | | | | | | DE shaft extension | | | | | NDE shaft extension | | | | | | | | |
|--------------|----------------------|--------------------|-----------------------------------|-----|------|-------------------|-------------------|-----|--------------------|-----|-----|-----|-----|---------------------|------|----|-----|-----|-----|-----|----|------|
| Frame size | Type | | HH | K | K' | L | LC | LL | D | DB | E | EB | ED | F | GA | DA | DC | EA | EC | EE | FA | GC |
| 63 M | 1PP7 060 1PP7 063 | 2, 4, 6 | 69.5 | 7 | 10 | 172 ¹⁾ | 206 ¹⁾ | 75 | 11 | M4 | 23 | 16 | 3.5 | 4 | 12.5 | 11 | M4 | 23 | 16 | 3.5 | 4 | 12.5 |
| 71 M | 1PP7 070 1PP7 073 | 2, 4, 6, 8 | 63.5 | 7 | 10 | 207 | 240 | 75 | 14 | M5 | 30 | 22 | 4 | 5 | 16 | 14 | M5 | 30 | 22 | 4 | 5 | 16 |
| 80 M | 1PP7 080 1PP7 083 | 2, 4, 6, 8 | 63.5 | 9.5 | 13.5 | 237 | 280 | 75 | 19 | M6 | 40 | 32 | 4 | 6 | 21.5 | 19 | M6 | 40 | 32 | 4 | 6 | 21.5 |
| 90 S 90 L | 1PP7 090 1PP7 096 | 2, 4, 6, 8 | 79 | 10 | 14 | 286 | 333 | 75 | 24 | M8 | 50 | 40 | 5 | 8 | 27 | 19 | M6 | 40 | 32 | 4 | 6 | 21.5 |
| 100 L | 1PP7 106 1PP7 107 | 2, 4, 6, 8 4, 8 | 102 | 12 | 16 | 331 | 385 ²⁾ | 120 | 28 | M10 | 60 | 50 | 5 | 8 | 31 | 24 | M8 | 50 | 40 | 5 | 8 | 27 |
| 112 M | 1PP7 113 | 2, 4, 6, 8 | 102 | 12 | 16 | 349 ³⁾ | 403 ⁴⁾ | 120 | 28 | M10 | 60 | 50 | 5 | 8 | 31 | 24 | M8 | 50 | 40 | 5 | 8 | 27 |
| 132 S | 1PP7 130 1PP7 131 | 2, 4, 6, 8 2 | 128 | 12 | 16 | 397 | 485 | 140 | 38 | M12 | 80 | 70 | 5 | 10 | 41 | 38 | M12 | 80 | 70 | 5 | 10 | 41 |
| 132 M | 1PP7 133 1PP7 134 | 4, 6, 8 6 | 128 | 12 | 16 | 397 | 485 | 140 | 38 | M12 | 80 | 70 | 5 | 10 | 41 | 38 | M12 | 80 | 70 | 5 | 10 | 41 |
| 160 M | 1PP7 163 1PP7 164 | 2, 4, 6, 8 2, 8 | 160.5 | 15 | 19 | 529 | 645 | 165 | 42 | M16 | 110 | 90 | 10 | 12 | 45 | 42 | M16 | 110 | 90 | 10 | 12 | 45 |
| 160 L | 1PP7 166 | 2, 4, 6, 8 | 160.5 | 15 | 19 | 529 | 645 | 165 | 42 | M16 | 110 | 90 | 10 | 12 | 45 | 42 | M16 | 110 | 90 | 10 | 12 | 45 |
| 180 M | 1PP5 183 | 2, 4 | 159 | 15 | 19 | 611 | 727 | 132 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| 180 L | 1PP5 186 | 4, 6, 8 | 159 | 15 | 19 | 611 | 727 | 132 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| 200 L | 1PP5 206 1PP5 207 | 2, 6 2, 4, 6, 8 | 178 | 19 | 25 | 675 | 791 | 192 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |

¹⁾ For 1PP7 063 with type of construction code 1 (B5, IM V1 without protective cover, IM V3) the dimensions L and LC are 26 mm longer.

²⁾ 381 mm for IM B14 type of construction.

³⁾ 345 mm for IM B5 type of construction.

⁴⁾ 399 mm for IM B5 type of construction.

IEC Squirrel-Cage Motors

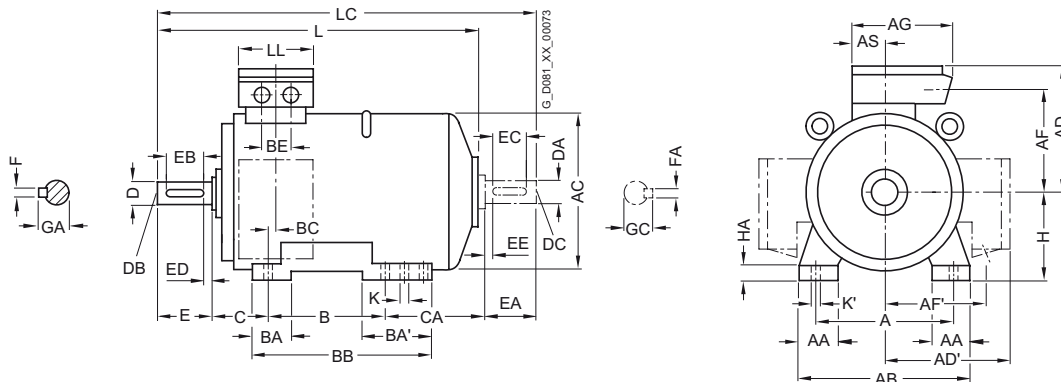
Fan motors

Dimensions

Dimensional drawings

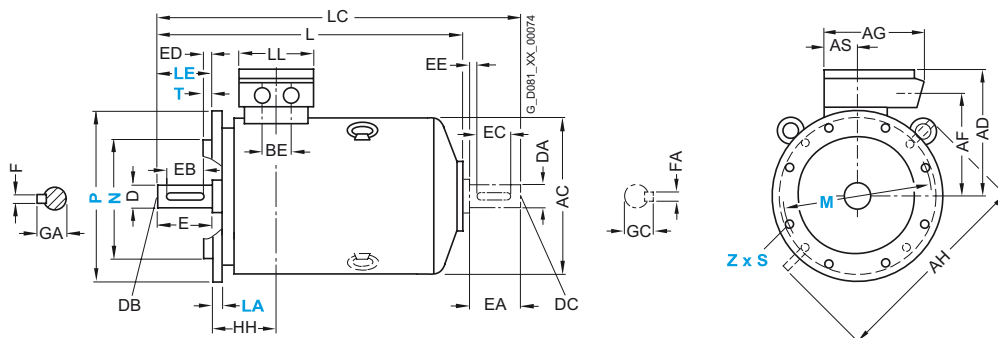
Cast-iron series 1PP4, frame sizes 180 M to 315 L

Type of construction IM B3



Types of construction IM B5 and IM V1 (IM B5 only up to frame size 315 M)

For flange dimensions, see Page 7/64 (Z = the number of retaining holes)



| For motor | | Dimension designation acc. to IEC | | | | | | | | | | | | | | | | | | | | | |
|---------------------|--------------|-----------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|----|
| Frame size | Type | Number of poles | A | AA | AB | AC | AD | AD' | AF | AF' | AG | AH | AS | B* | BA | BA' | BB | BC | BE | C | CA* | H | HA |
| 180 M | 1PP4 183 | 2, 4 | 279 | 65 | 339 | 363 | 262 | 262 | 220 | 220 | 152 | 452 | 71 | 241 | 70 | 111 | 328 | 36 | 54 | 121 | 94 | 180 | 20 |
| 180 L | 1PP4 186 | 4, 6, 8 | 279 | 65 | 339 | 363 | 262 | 262 | 220 | 220 | 152 | 452 | 71 | 279 | 70 | 111 | 328 | 36 | 54 | 121 | 56 | 180 | 20 |
| | 1PP4 188 | 2, 4, 6, 8 | 279 | 65 | 339 | 363 | 262 | 262 | 220 | 220 | 152 | 452 | 71 | 279 | 70 | 111 | 328 | 36 | 54 | 121 | 107 | 180 | 20 |
| 200 L | 1PP4 206 | 2, 6 | 318 | 70 | 378 | 402 | 300 | 300 | 247 | 247 | 260 | 512 | 96 | 305 | 80 | 80 | 355 | 63 | 85 | 133 | 76 | 200 | 25 |
| | 1PP4 207 | 2, 4, 6, 8 | 318 | 70 | 378 | 402 | 300 | 300 | 247 | 247 | 260 | 512 | 96 | 305 | 80 | 80 | 355 | 63 | 85 | 133 | 76 | 200 | 25 |
| | 1PP4 208 | 2, 6, 4, 8 | 318 | 70 | 378 | 402 | 300 | 300 | 247 | 247 | 260 | 512 | 96 | 305 | 80 | 80 | 355 | 63 | 85 | 133 | 133 | 200 | 25 |
| | | | | | | | | | | | | | | | | | | | | | 76 | | |
| 225 S | 1PP4 220 | 4, 8 | 356 | 80 | 436 | 442 | 325 | 325 | 272 | 272 | 260 | 556 | 96 | 286 | 85 | 110 | 361 | 47 | 85 | 149 | 99 | 225 | 34 |
| 225 M | 1PP4 223 | 2, 4, 6, 8 | 356 | 80 | 436 | 442 | 325 | 325 | 272 | 272 | 260 | 556 | 96 | 311 | 85 | 110 | 361 | 47 | 85 | 149 | 74 | 225 | 34 |
| | 1PP4 228 | 2, 4, 6, 8 | 356 | 80 | 436 | 442 | 325 | 325 | 272 | 272 | 260 | 556 | 96 | 311 | 85 | 110 | 361 | 47 | 85 | 149 | 134 | 225 | 34 |
| 250 M | 1PP4 253 | 2, 4, 6, 8 | 406 | 100 | 490 | 495 | 392 | 392 | 308 | 308 | 300 | 620 | 118 | 349 | 100 | 100 | 409 | 69 | 110 | 168 | 111 | 250 | 40 |
| | 1PP4 258 | 2, 4, 6, 8 | 406 | 100 | 490 | 495 | 392 | 392 | 308 | 308 | 300 | 620 | 118 | 349 | 100 | 100 | 409 | 69 | 110 | 168 | 111 | 250 | 40 |
| | | | | | | | | | | | | | | | | | | | | | 181 | | |
| | | | | | | | | | | | | | | | | | | | | | 111 | | |
| 280 S | 1PP4 280 | 2, 4, 6, 8 | 457 | 100 | 540 | 555 | 432 | 432 | 348 | 348 | 300 | 672 | 118 | 368 | 100 | 151 | 479 | 62 | 110 | 190 | 137 | 280 | 40 |
| 280 M | 1PP4 283 | 2, 4, 6, 8 | 457 | 100 | 540 | 555 | 432 | 432 | 348 | 348 | 300 | 672 | 118 | 414 | 100 | 151 | 479 | 62 | 110 | 190 | 86 | 280 | 40 |
| | 1PP4 288 | 2, 4, 6, 8 | 457 | 100 | 540 | 555 | 432 | 432 | 348 | 348 | 300 | 672 | 118 | 419 | 100 | 151 | 479 | 62 | 110 | 190 | 196 | 280 | 40 |
| | | | | | | | | | | | | | | | | | | | | | 86 | | |
| 315 S | 1PP4 310 | 2 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 154 | 406 | 125 | 176 | 527 | 69 | 110 | 216 | 168 | 315 | 50 |
| | 1PP4 310 | 4, 6, 8 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 154 | 406 | 125 | 176 | 527 | 69 | 110 | 216 | 168 | 315 | 50 |
| 315 M ¹⁾ | 1PP4 313 | 2 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 154 | 457 | 125 | 176 | 527 | 69 | 110 | 216 | 117 | 315 | 50 |
| | 1PP4 313 | 4, 6, 8 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 154 | 457 | 125 | 176 | 527 | 69 | 110 | 216 | 117 | 315 | 50 |
| 315 L ¹⁾ | 1PP4 316/317 | 2 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 154 | 508 | 125 | 176 | 578 | 69 | 110 | 216 | 226 | 315 | 50 |
| | 1PP4 316/317 | 4, 6, 8 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 154 | 508 | 125 | 176 | 578 | 69 | 110 | 216 | 226 | 315 | 50 |
| | 1PP4 318 | 8 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 154 | 508 | 155 | 206 | 648 | 69 | 110 | 216 | 366 | 315 | 50 |
| | 1PP4 318 | 6 | 508 | 120 | 610 | 610 | 500 | 500 | 400 | 400 | 380 | 780 | 154 | 508 | 155 | 206 | 648 | 69 | 110 | 216 | 366 | 315 | 50 |

* This dimension is assigned in DIN EN 50347 to the frame size listed.

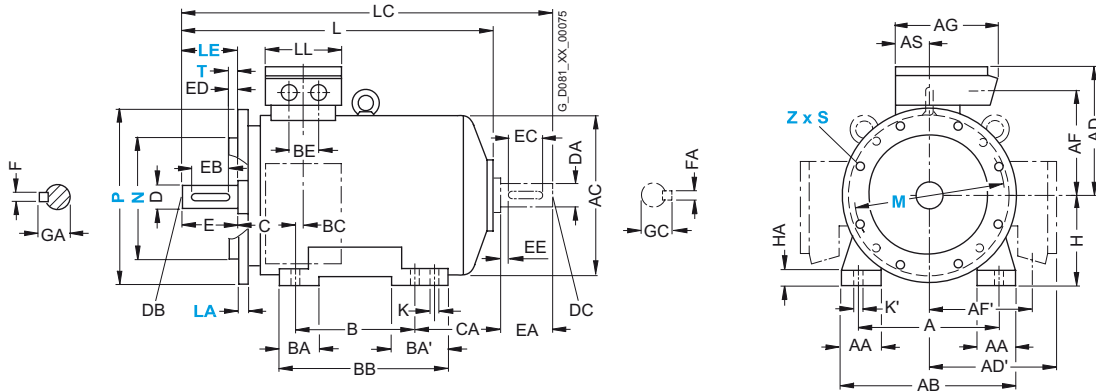
¹⁾ With order codes for connection box positions (K09, K10, K11) only fitted feet with 3 drilled holes with dimension "B" (406, 457 and 506 mm). BB will then be 666 mm.

Dimensional drawings

Cast-iron series 1PP4, frame sizes 180 M to 315 L

Type of construction IM B35

For flange dimensions, see Page 7/64 (Z = the number of retaining holes)



| For motor | | Dimension designation acc. to IEC | | | | | | | | | | DE shaft extension | | | | | NDE shaft extension | | | | | |
|---------------------|--------------|-----------------------------------|-----|----|----|------|------|-----|----|-----|-----|--------------------|----|----|------|----|---------------------|-----|-----|----|----|------|
| Frame size | Type | Number of poles | HH | K | K' | L | LC | LL | D | DB | E | EB | ED | F | GA | DA | DC | EA | EC | EE | FA | GC |
| 180 M | 1PP4 183 | 2, 4 | 157 | 15 | 19 | 562 | 676 | 132 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| 180 L | 1PP4 186 | 4, 6, 8 | 157 | 15 | 19 | 562 | 676 | 132 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| | 1PP4 188 | 2, 4, 6, 8 | 157 | 15 | 19 | 613 | 727 | 132 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| 200 L | 1PP4 206 | 2, 6 | 196 | 19 | 25 | 617 | 734 | 192 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| | 1PP4 207 | 2, 4, 6, 8 | 196 | 19 | 25 | 617 | 734 | 192 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| | 1PP4 208 | 2, 6 | 196 | 19 | 25 | 674 | 791 | 192 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| | | 4, 8 | | | | 617 | 734 | | | | | | | | | | | | | | | |
| 225 S | 1PP4 220 | 4, 8 | 196 | 19 | 25 | 670 | 784 | 192 | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| 225 M | 1PP4 223 | 2 | 196 | 19 | 25 | 640 | 754 | 192 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| | | 4, 6, 8 | | | | 670 | 784 | | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| | 1PP4 228 | 2 | 196 | 19 | 25 | 700 | 814 | 192 | 55 | M20 | 110 | 100 | 5 | 16 | 59 | 48 | M16 | 110 | 100 | 5 | 14 | 51.5 |
| | | 4, 6, 8 | | | | 730 | 844 | | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| 250 M | 1PP4 253 | 2 | 237 | 24 | 30 | 764 | 878 | 236 | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| | | 4, 6, 8 | | | | | 908 | | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | 1PP4 258 | 2 | 237 | 24 | 30 | 764 | 878 | 236 | 60 | M20 | 140 | 125 | 10 | 18 | 64 | 55 | M20 | 110 | 100 | 5 | 16 | 59 |
| | | 4 | | | | 834 | 978 | | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 6, 8 | | | | 764 | 908 | | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| 280 S | 1PP4 280 | 2 | 252 | 24 | 30 | 830 | 975 | 236 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 4, 6, 8 | | | | | 75 | | 75 | M20 | 140 | 125 | 10 | 20 | 79.5 | 65 | M20 | 140 | 125 | 10 | 18 | 69 |
| 280 M | 1PP4 283 | 2 | 252 | 24 | 30 | 830 | 975 | 236 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 4, 6, 8 | | | | | 75 | | 75 | M20 | 140 | 125 | 10 | 20 | 79.5 | 65 | M20 | 140 | 125 | 10 | 18 | 69 |
| | 1PP4 288 | 2 | 252 | 24 | 30 | 940 | 1085 | 236 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | | 4 | | | | | 75 | | 75 | M20 | 140 | 125 | 10 | 20 | 79.5 | 65 | M20 | 140 | 125 | 10 | 18 | 69 |
| | | 6, 8 | | | | 830 | 975 | | 75 | M20 | 140 | 125 | 10 | 20 | 79.5 | 65 | M20 | 140 | 125 | 10 | 18 | 69 |
| 315 S | 1PP4 310 | 2 | 285 | 28 | 35 | 925 | 1070 | 307 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | 1PP4 310 | 4, 6, 8 | | | | 955 | 1100 | | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |
| 315 M ¹⁾ | 1PP4 313 | 2 | 285 | 28 | 35 | 925 | 1070 | 307 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | 1PP4 313 | 4, 6, 8 | | | | 955 | 1100 | | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |
| 315 L ¹⁾ | 1PP4 316/317 | 2 | 285 | 28 | 35 | 1085 | 1230 | 307 | 65 | M20 | 140 | 125 | 10 | 18 | 69 | 60 | M20 | 140 | 125 | 10 | 18 | 64 |
| | 1PP4 316/317 | 4, 6, 8 | | | | 1115 | 1260 | | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |
| | 1PP4 318 | 8 | | | | | | | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |
| | 1PP4 318 | 6 | 285 | 28 | 35 | 1255 | 1400 | 307 | 80 | M20 | 170 | 140 | 25 | 22 | 85 | 70 | M20 | 140 | 125 | 10 | 20 | 74.5 |

¹⁾ With order codes for connection box positions (K09, K10, K11) only fitted feet with 3 drilled holes with dimension "B" (406, 457 and 506 mm). BB will then be 666 mm.

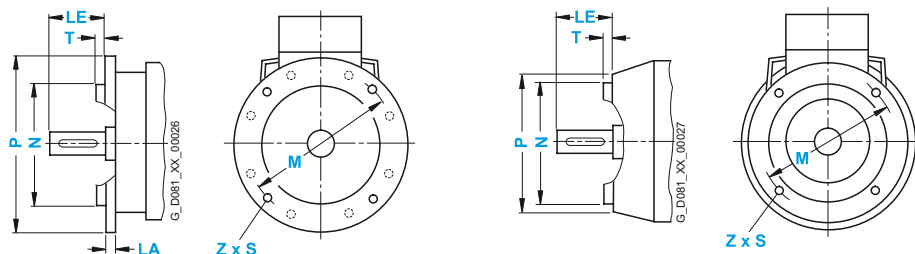
IEC Squirrel-Cage Motors

Fan motors

Dimensions

Dimensional drawings

Flange dimensions



In DIN EN 50347, the frame sizes are allocated flange FF with through holes and flange FT with tapped holes.

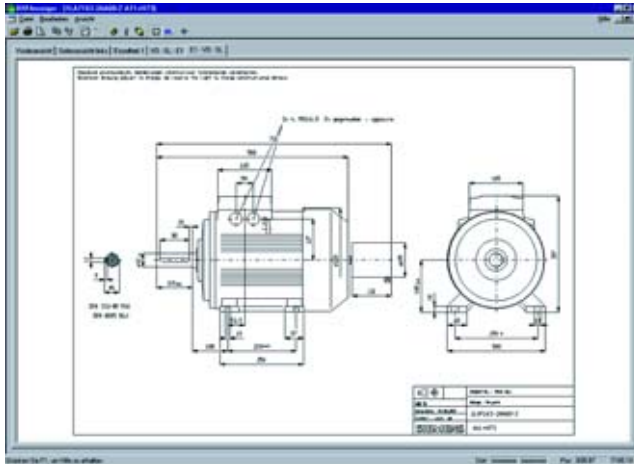
The designation of flange A and C according to DIN 42948 (invalid since 09/2003) are also listed for information purposes. See the table below. (Z = the number of retaining holes)

| Frame size | Type of construction | Flange type | Flange with through holes (FF/A) Tapped holes (FT/C) | Acc. to DIN EN 50347 | Acc. to DIN 42948 | Dimension designation acc. to IEC | | | | | | | |
|--|--------------------------------|-----------------|---|----------------------|-------------------|-----------------------------------|-----|-----|-----|-----|------|-----|---|
| | | | | | | LA | LE | M | N | P | S | T | Z |
| 63 M | IM B5, IM B35, IM V1, IM V3 | Flange | FF 115 | | A 140 | 8 | 23 | 115 | 95 | 140 | 10 | 3 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 75 | | C 90 | – | 23 | 75 | 60 | 90 | M5 | 2.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 100 | | C 120 | – | 23 | 100 | 80 | 120 | M6 | 3 | 4 |
| 71 M | IM B5, IM B35, IM V1, IM V3 | Flange | FF 130 | | A 160 | 9 | 30 | 130 | 110 | 160 | 10 | 3.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 85 | | C 105 | – | 30 | 85 | 70 | 105 | M6 | 2.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 115 | | C 140 | – | 30 | 115 | 95 | 140 | M8 | 3 | 4 |
| 80 M | IM B5, IM B35, IM V1, IM V3 | Flange | FF 165 | | A 200 | 10 | 40 | 165 | 130 | 200 | 12 | 3.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 100 | | C 120 | – | 40 | 100 | 80 | 120 | M6 | 3 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 130 | | C 160 | – | 40 | 130 | 110 | 160 | M8 | 3.5 | 4 |
| 90 S, 90 L | IM B5, IM B35, IM V1, IM V3 | Flange | FF 165 | | A 200 | 10 | 50 | 165 | 130 | 200 | 12 | 3.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 115 | | C 140 | – | 50 | 115 | 95 | 140 | M8 | 3 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 130 | | C 160 | – | 50 | 130 | 110 | 160 | M8 | 3.5 | 4 |
| 100 L | IM B5, IM B35, IM V1, IM V3 | Flange | FF 215 | | A 250 | 11 | 60 | 215 | 180 | 250 | 14.5 | 4 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 130 | | C 160 | – | 60 | 130 | 110 | 160 | M8 | 3.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 165 | | C 200 | – | 60 | 165 | 130 | 200 | M10 | 3.5 | 4 |
| 112 M | IM B5, IM B35, IM V1, IM V3 | Flange | FF 215 | | A 250 | 11 | 60 | 215 | 180 | 250 | 14.5 | 4 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 130 | | C 160 | – | 60 | 130 | 110 | 160 | M8 | 3.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 165 | | C 200 | – | 60 | 165 | 130 | 200 | M10 | 3.5 | 4 |
| 132 S, 132 M | IM B5, IM B35, IM V1, IM V3 | Flange | FF 265 | | A 300 | 12 | 80 | 265 | 230 | 300 | 14.5 | 4 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 165 | | C 200 | – | 80 | 165 | 130 | 200 | M10 | 3.5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 215 | | C 250 | – | 80 | 215 | 180 | 250 | M12 | 4 | 4 |
| 160 M, 160 L | IM B5, IM B35, IM V1, IM V3 | Flange | FF 300 | | A 350 | 13 | 110 | 300 | 250 | 350 | 18.5 | 5 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Standard flange | FT 215 | | C 250 | – | 110 | 215 | 180 | 250 | M12 | 4 | 4 |
| | IM B14, IM B34, IM V18, IM V19 | Special flange | FT 265 | | C 300 | – | 110 | 265 | 230 | 300 | M12 | 4 | 4 |
| 180 M, 180 L | IM B5, IM V1, IM V3 | Flange | FF 300 | | A 350 | 13 | 110 | 300 | 250 | 350 | 18.5 | 5 | 4 |
| 200 L | IM B5 | Flange | FF 350 | | A 400 | 15 | 110 | 350 | 300 | 400 | 18.5 | 5 | 4 |
| 225 S, 225 M 2-pole 4-pole to 8-pole | IM B5, IM V1, IM V3 | Flange | FF 400 | | A 450 | 16 | 110 | 400 | 350 | 450 | 18.5 | 5 | 8 |
| 250 M | IM B5, IM V1, IM V3 | Flange | FF 500 | | A 550 | 18 | 140 | 500 | 450 | 550 | 18.5 | 5 | 8 |
| 280 S, 280 M | IM B5, IM V1, IM V3 | Flange | FF 500 | | A 550 | 18 | 140 | 500 | 450 | 550 | 18.5 | 5 | 8 |
| 315 S, 315 M, 315 L 2-pole 4-pole to 8-pole | IM B5, IM V1, IM V3 | Flange | FF 600 | | A 660 | 22 | 140 | 600 | 550 | 660 | 24 | 6 | 8 |

More information***Dimension sheet generator***

(part of the SD configurator)

A dimension drawing can be created in the SD configurator for every configurable motor. A dimension drawing can be requested for every other motor.



When a complete Order No. is entered with or without order codes, a dimension drawing can be called up under the "Documentation" tab.

These dimension drawings can be presented in different views and sections and printed.

The corresponding dimension sheets can be exported, saved and processed further in DXF format (interchange/import format for CAD systems) or as bitmap graphics.

The SD configurator has been integrated into the electronic Catalog CA 01 as a selection aid (for further information, see catalog part 11 "Appendix", "Selection tool SD configurator").

The interactive Catalog CA 01 can be ordered from your local Siemens sales representative or on the Internet at

<http://www.siemens.com/automation/CA01>

At this address, you will also find links to Tips & Tricks and to downloads for function or content updates.

Order number for CA 01 10/2008, English International:
DVD: E86060-D4001-A510-C7-7600

IEC Squirrel-Cage Motors

Fan motors

Notes

Compressor motors



| | |
|------------|--|
| 8/2 | Orientation |
| 8/2 | Overview |
| 8/2 | Benefits |
| 8/2 | Application |
| 8/2 | More information |
| 8/3 | Surface-cooled motors up to frame size 315 L Aluminum and cast-iron housing |
| 8/3 | Overview |
| 8/3 | Surface-cooled motors frame size 315 and above Cast-iron housing |
| 8/3 | Overview |
| 8/4 | Special versions |
| 8/4 | Overview |
| 8/4 | Accessories |
| 8/4 | Overview |
| 8/4 | Dimensions |
| 8/4 | Overview |

IEC Squirrel-Cage Motors

Compressor motors

Orientation

Overview



The compressor motors are used preferentially in compressors for direct drive. In compressors with belt drive, the cantilever forces must be taken into account.

Due to the necessary compactness and confined space within the compressor, it is recommended that the following are used:

- Motors with increased output
- If required, versions with protruding cables instead of a connection box
- Special versions for high-speed applications – possible on request
- With converter-fed operation, winding monitoring with embedded KTY 84-130 temperature sensors or bimetal temperature sensors and additional insulated bearings for wide output ranges.

Benefits

The implemented motors offer the user the following advantages:

- Depending on the motor type used, service factors of up to 1.25 are possible, i.e. the motor can be continuously overloaded with 25 % of the rated output.
- Motors with increased efficiency to CEMEP EFF 1 or EPACT lead to significant energy savings under typical continuous duty. Please inquire regarding any efficiency requirements that exceed this.
- Noise-optimized versions.
- Under converter-fed operation, by setting the precise speed and therefore the operating point, a considerable energy saving can be achieved combined with reduced stress on the plant.
- The motors are suitable, in general, for mains-fed operation up to 690 V and converter-fed operation up to 460 V (with motor series 1LA8 to 500 V) (voltage rise times $t_{\text{v}} > 0.1 \text{ ms}$).
- Extensive experience is available in customized applications especially with regard to special flanges and special bearings.

Application

The motors can be used for the following compressor types:

- Screw compressors
- Reciprocating compressors
- Rotary blowers

More information

For more information, please contact your local Siemens AG contact – see “Siemens contacts worldwide” in the Appendix.

IEC Squirrel-Cage Motors

Compressor motors

Surface-cooled motors up to frame size 315 L
Aluminum and cast-iron housing

Overview

Recommended motor types:

- Self-ventilated motors with high efficiency according to CEMEP EFF1 – Aluminum series 1LA9 in the output range from 0.06 to 37 kW, 50 and 60 Hz
- Self-ventilated motors with high efficiency according to CEMEP EFF1 – Cast-iron series 1LG6 in the output range from 11 to 200 kW, 50 and 60 Hz
- Self-ventilated motors with high efficiency according to CEMEP EFF1 – Aluminum series 1LE1 in the output range from 0.75 to 18.5 kW, 50 and 60 Hz
- Self-ventilated motors with increased output – Aluminum series 1LA9 and cast-iron series 1LG4 in output range from 3 to 110 kW, 50 and 60 Hz
- Self-ventilated motors with high efficiency and increased output are available on request
- Self-ventilated motors with improved efficiency according to CEMEP EFF2 with increased output – Aluminum series 1LE1 in the output range from 2.2 to 22 kW, 50 and 60 Hz
- Self-ventilated motors with high efficiency according to CEMEP EFF1 with increased output – Aluminum series 1LE1 in the output range from 2.2 to 22 kW, 50 and 60 Hz

For technical specifications and selection and ordering data, see catalog parts 1 “New Generation 1LE1/1PC1” and 2 “Standard motors up to frame size 315 L”.

Surface-cooled motors frame size 315 and above
Cast-iron housing

Overview

Recommended motor types:

- Non-standard motor for mains-fed and converter-fed operation – cast-iron housing 1LA8

For technical specifications and selection and ordering data, see catalog part 3 “Non-standard motors frame size 315 and above”.

IEC Squirrel-Cage Motors

Compressor motors

Special versions

Overview

Recommended special versions for mains-fed and converter-fed operation

- Motor temperature sensing using built-in temperature sensor KTY 84-130 – order code **A23** for 1LE1 – 15th position of the Order No. letter **F**
- Insulated bearing cartridge at non-drive-end (NDE) – order code **L27**
- External earthing – order code **L13** for 1LE1 – order code **H04**
- 6 protruding cable ends
 - 0.5 m long – order code **L47** for 1LE1 – order code **R22**
 - 1.5 m long – order code **L48** for 1LE1 – order code **R23**
 - 3.0 m long – order code **L49** for 1LE1 – order code **R24**

Other special versions

For other special versions, see catalog parts 2 “Standard motors up to frame size 315 L” and 3 “Non-standard motors frame size 315 and above”.

Accessories

Overview

See catalog parts 1 “New Generation 1LE1/1PC1”, 2 “Standard motors up to frame size 315 L” and 3 “Non-standard motors frame size 315 and above”.

Dimensions

Overview

See dimensions under catalog parts 1 “New Generation 1LE1/1PC1”, 2 “Standard motors up to frame size 315 L” and 3 “Non-standard motors frame size 315 and above”.

Smoke-extraction motors



| | |
|-------------|--|
| 9/2 | Orientation |
| 9/2 | Overview |
| 9/3 | Benefits |
| 9/3 | Application |
| 9/4 | Technical specifications |
| 9/7 | Selection and ordering data |
| 9/7 | More information |
| 9/8 | Self-ventilated motors for temperature/time classes F200 and F300 |
| | Aluminum series 1LA7 and 1LA5, cast-iron series 1LG6 |
| 9/8 | Selection and ordering data |
| 9/14 | Forced-air cooled motors for temperature/time classes F200 and F300 |
| | Aluminum series 1PP7 and 1PP5, cast-iron series 1PP6 |
| 9/14 | Selection and ordering data |
| 9/20 | Self-ventilated motors for temperature/time class F400 |
| | Cast-iron series 1LA6 and 1LG6 |
| 9/20 | Selection and ordering data |
| 9/26 | Forced-air cooled motors for temperature/time class F400 |
| | Cast-iron series 1PP6 |
| 9/26 | Selection and ordering data |
| 9/32 | Special versions |
| 9/32 | Selection and ordering data |
| 9/32 | • Voltages |
| 9/33 | • Types of construction |
| 9/34 | • Options |
| 9/42 | Accessories |
| 9/42 | Overview |
| 9/42 | More information |
| 9/43 | Dimensions |
| 9/43 | Overview |

IEC Squirrel-Cage Motors

Smoke-extraction motors

Orientation

Overview



The low-voltage motors with squirrel-cage rotors for implementation in automatic smoke and heat extraction units to EN 12101-3 are mainly designed for driving smoke extraction fans. For this reason, they are known as smoke-extraction motors. They are mainly used in buildings or structures in which smoke control is necessary due to their shape and arrangement.

Temperature/time classification according to EN 12101-3

- F200 corresponds to 200 °C for 120 min.
- F300 corresponds to 300 °C for 60 min.
- F400 corresponds to 400 °C for 120 min.

Testing and test certificates

The smoke-extraction motors are tested by the Research and Testing Laboratory of the Department of Air-Conditioning Systems and Building Services Installations of the Technical University of Munich in accordance with EN 12101-3.

Test conditions for F200/F300:

- Temperature **300 °C**
- Time **120 min.**

The test certificates are available.



The motors are manufactured with aluminum or cast-iron housings in accordance with the smoke classes. The smoke-extraction motors are based on the standard motors and comprise the following motor types:

- Temperature/time classes F200 and F300
 - Self-ventilated motors – Aluminum series 1LA7 and 1LA5, cast-iron series 1LG6 – Version with integrated fan (metal)
 - Self-ventilated motors – Aluminum series 1LA7 and 1LA5 **double pole-changing with square-law load torque** – Version with integrated fan (metal)
 - Forced-air cooled motors – Aluminum series 1PP7 and 1PP5, cast-iron series 1PP6 – Version without integrated fan, located in air flow of fan to be driven
 - Forced-air cooled motors – Aluminum series 1PP7 and 1PP5 **double pole-changing with square-law load torque** – Version without integrated fan, located in air flow of fan to be driven
- Temperature/time classes F400
 - Self-ventilated motors – Cast-iron series 1LA6 and 1LG6 – Version with integrated fan (metal)
 - Self-ventilated motors – Cast-iron series 1LA6 **double pole-changing with square-law load torque** – Version with integrated fan (metal)
 - Forced-air cooled motors – Cast-iron series 1PP6 – Version without integrated fan, located in air flow of fan to be driven
 - Forced-air cooled motors – Cast-iron series 1PP6 **double pole-changing with square-law load torque** – Version without integrated fan, located in air flow of fan to be driven

The resonance of mountings and reactions from driven machines can cause high levels of vibration in the overall equipment unit. This has a significant effect on the expected service life of the bearing.

These vibrations are evaluated in accordance with Zones A and B according to ISO 10816.

Benefits

The smoke-extraction motors operate as so-called "Dual-function motors":

- Normal operation (no instance of fire):
Incoming/outgoing air flow
- Fault operation (in case of fire):
 - Removal of smoke from escape and access routes
 - Supporting fire fighting by creating a smoke-free zone
 - Protecting devices and equipment
 - Reducing the heat stress of components during a fire
 - Reducing secondary damage due to thermal bi-products and hot gases

The smoke-extraction motors offer the user a number of advantages:

- The assignment of standard outputs is unchanged. This means that a larger construction size is not required for smoke-extraction motors.
- Smoke-extraction motors are generally equipped with located bearings at the drive-end (DE) of the motor.
- A rating plate for conditions of fire is screwed onto the motor.
- Cables protruding from the non-drive-end (NDE) are included in the scope of supply.
- Radial-flow and axial-flow fan drive are possible.
 - Self-ventilated motors of series 1LA/1LG with a metal fan impeller can be used as radial-flow fan drives.
 - Forced-air cooled motors of series 1PP can be used as axial-flow fan drives taking into account the required volumetric flow for motor cooling. In this case the driven fan performs the ventilation.

Application

The smoke-extraction motors are designed for use in automatic smoke and heat extraction units to EN 12101-3.

Typical application examples include:

- Tunnels
- Single and multi-storey shopping centers
- Industrial buildings and warehouses
- Building complexes and atriums
- Theatres
- Indoor car parks
- Staircases

IEC Squirrel-Cage Motors

Smoke-extraction motors

Orientation

Technical specifications

Standards and specifications

In addition to the relevant standards and regulations, EN 12101-3 applies for non-portable fire-fighting systems:

Systems for controlling smoke and heat flows, part 3, specifications for smoke and heat extraction units.

Voltage and frequency

Rated voltages according to IEC 60034-1

- 230 VΔ 50 Hz
- 400 VΔ 50 Hz and 400 VY 50 Hz
- 500 VΔ 50 Hz and 500 VY 50 Hz
- 690 VY 50 Hz

Non-standard voltages (voltage code **9** and order code **L1Y**) as well as 60 Hz are available on request, only for 4, 6, 8-pole motors as well as 6/4 and 8/4-pole motors with $n_{max.} = 3000$ rpm)

The following rating plates are available for the smoke-extraction motors:

- Rating plate
For the listed rated voltages with 50 Hz output data.
- Fire event plate
Complete with number and year of issue of the European standard, temperature/time class and minimum duration of function.

All plates are resistant to corrosion. A second set of plates is included with the motor, loose.

Rated output, duty type, number of poles

The rated output applied for continuous duty (normal duty) according to IEC 60034-1, for a frequency of 50 Hz, coolant temperatures of up to 40 °C, site altitude of up to 1000 m above sea level.

Derating is necessary at higher coolant temperatures and site altitudes (reduction factor k_{HT}), see table below.

Reduction factor k_{HT} for different site altitudes and/or coolant temperatures

| Site altitude above sea level | Coolant temperature in °C | | | | | |
|-------------------------------|---------------------------|-------|------|------|------|------|
| in m | <30 | 30-40 | 45 | 50 | 55 | 60 |
| 1000 | 1.07 | 1.00 | 0.96 | 0.92 | 0.87 | 0.82 |
| 1500 | 1.04 | 0.97 | 0.93 | 0.89 | 0.84 | 0.79 |
| 2000 | 1.00 | 0.94 | 0.9 | 0.86 | 0.82 | 0.77 |
| 2500 | 0.96 | 0.90 | 0.86 | 0.83 | 0.78 | 0.74 |
| 3000 | 0.92 | 0.86 | 0.82 | 0.79 | 0.75 | 0.70 |
| 3500 | 0.88 | 0.82 | 0.79 | 0.75 | 0.71 | 0.67 |
| 4000 | 0.82 | 0.77 | 0.74 | 0.71 | 0.67 | 0.63 |

Coolant temperature and site altitude are rounded up to 5 °C or 500 m.

Operation in the event of fire

In addition to normal duty, operation in the event of a fire as specified in EN 12101-3 is available.

At the end of the fire incident, the motor may be unfit for normal duty. **It is therefore specified that the motor is removed and overhauled or replaced with a new motor.**

In the event of a fire, any "thermal motor protection" must be deactivated.

Standard number of poles

- 2, 4 and 6
- For more poles and pole-changing motors, please inquire.

Insulation system

The special insulation systems are adapted to the respective temperature/time classes.

The insulation of the smoke extraction motors is designed such that converter-fed operation is possible without limitation at voltages ≤ 460 V. This also applies for operation with a pulse-controlled AC converter with voltage rise times $t_s > 0.1 \mu s$ at the motor terminals.

In the event of fire, the motors must be switched over from converter-fed operation to mains-fed operation. If converter-fed operation is also required in the event of fire, system testing and acceptance testing must be performed in accordance with this (please inquire).

Drainage holes

Generally available, but closed if ordered according to IP55 degree of protection.

Bearing plates

All bearing plates are in cast-iron.

Termination system

Protruding cable with casing, without connection box with cover plate or "Nozzle cap". Cable length depends on the shaft height.

- Frame sizes 80 to 112: 1.0 m
- Frame sizes 132 to 200: 1.5 m
- Frame sizes 225 to 315: 2.5 m

Special versions of connecting cables are available on request.

Position of the connecting cable

- Frame sizes 80 to 160:
 - On the top at non-drive-end (NDE) as standard. Optionally left or right at non-drive-end (NDE) (for type of construction with screwed-on feet).
- Frame sizes 180 to 315:
 - Flange types of construction without feet:
 - On the top at non-drive-end (NDE) as standard. Optionally on left or right at non-drive-end (NDE).
 - All types of construction with feet:
 - On the top at drive-end (DE) as standard with connection cable routed towards the non-drive end (NDE). Optionally on left or right at drive-end (DE) with connection cable routed towards the non-drive-end (NDE) (for types of construction with screwed-on feet).

The equipment is earthed with a protruding cable.

Technical specifications (continued)

Bearings, grease

Special bearing systems are used that are matched to the respective temperature classes.

Deep-groove bearings of series 60, 62 or 63 without play are used depending on the fire classes F200/F300, F400 and the frame sizes.

The located bearing is generally at the drive-end (DE).

The nominal bearing lifetime L_{10h} (fan drive) is at least 20,000 hours at full rated load.

The motors of frame sizes 80 to 250 generally have bearings that are greased for life.

Paint finish

The motors have a two-component finish (worldwide) as standard in the color RAL 7030.

Required minimum cooling air flow in standard duty

| Frame size | 1LA7/1PP7 | 1LA5/1PP5 | 1LA6/1PP6 | Required cooling air flow for number of poles | | |
|------------|-----------|-----------|-----------|---|---------------------------|---------------------------|
| | | | | 2 m ³ /min. | 4 m ³ /min. | 6 m ³ /min. |
| 80 | X | | | 1.74 | 0.90 | 0.60 |
| 90 | X | | | 3.12 | 1.56 | 1.08 |
| 100 | X | | X | 3.96 | 1.86 | 1.26 |
| 112 | X | | X | 4.98 | 3.00 | 1.98 |
| 132 | X | | X | 8.04 | 5.04 | 3.36 |
| 160 | X | | X | 12.90 | 9.54 | 6.36 |
| 180 | | X | | 10.98 | 10.98 | 7.27 |
| 200 | | X | | 15.12 | 13.02 | 8.58 |
| 225 | | X | | 12.12 | 13.02 | 8.58 |

| Frame size | 1LG6/1PP6 | Required cooling air flow for number of poles | | |
|------------|-----------|---|---------------------------|---------------------------|
| | | 2 m ³ /min. | 4 m ³ /min. | 6 m ³ /min. |
| 180 | X | 12.0 | 13.0 | 8.5 |
| 200 | X | 20.5 | 17.0 | 11.0 |
| 225 | X | 20.5 | 18.5 | 12.5 |
| 250 | X | 25.5 | 22.5 | 17.0 |
| 280 | X | 24.5 | 28.0 | 21.5 |
| 315 | X | 47 | 36.0 | 26.5 |

In the motor version without an integrated fan (1PP5, 1PP6 and 1PP7), the motor is located in the air flow of the ventilator to be driven which must drive the minimum cooling air flow over the motor housing. For a faster air flow, the operating temperature of the motor can be reduced.

Admissible loading on the shaft extension

The values specified in the table "Admissible loading on shaft extension" are the tested and approved maximum values (test duration two hours, temperature in case of fire 300 or 400 °C).

In standard duty at coolant temperatures of up to 40 °C, a bearing lifetime $L_{10h} > 20000$ hours was achieved.

The values apply to all horizontal mounting positions and to all vertical mounting positions with shaft pointing downwards.

Please inquire in the case of :

- Higher force pairings
- Motors with more poles or pole-changing motors
- Vertical arrangement, depending on the rotor mass and mounting location (shaft pointing downwards or shaft pointing upwards) of the smoke-extraction motor. If necessary, higher forces can be approved.

IEC Squirrel-Cage Motors

Smoke-extraction motors

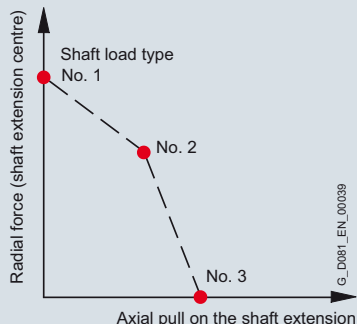
Orientation

Technical specifications (continued)

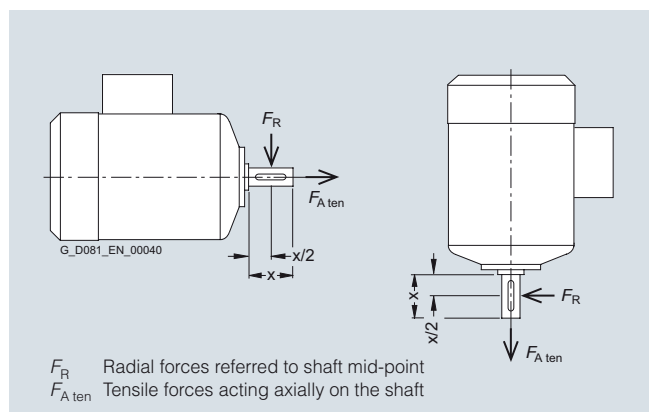
Admissible loading in the event of a fault (fire) on the shaft extension (continued)

| Frame size | Bearings | Type of loading on shaft | Horizontal shaft | | | | | | Shaft pointing vertically downwards | | | | | |
|------------|---|--------------------------------------|------------------|---------------------------|------------|---------------------------|------------|---------------------------|-------------------------------------|---------------------------|------------|---------------------------|------------|---------------------------|
| | | | 2-pole | | 4-pole | | 6-pole | | 2-pole | | 4-pole | | 6-pole | |
| | DE | No. | F_R N | $F_{A \text{ tens}}$ N | F_R N | $F_{A \text{ tens}}$ N | F_R N | $F_{A \text{ tens}}$ N | F_R N | $F_{A \text{ tens}}$ N | F_R N | $F_{A \text{ tens}}$ N | F_R N | $F_{A \text{ tens}}$ N |
| 80 | 6004 | 1 Radial force | 400 | 0 | 490 | 0 | 540 | 0 | 360 | 0 | 450 | 0 | 540 | 0 |
| | | 2 Radial force + axial tensile force | 150 | 130 | 170 | 170 | 190 | 200 | 40 | 172 | 40 | 225 | 40 | 275 |
| | | 3 Axial tensile force | 0 | 215 | 0 | 265 | 0 | 320 | 0 | 197 | 0 | 250 | 0 | 300 |
| 90 | 6205 | 1 Radial force | 650 | 0 | 730 | 0 | 795 | 0 | 590 | 0 | 730 | 0 | 795 | 0 |
| | | 2 Radial force + axial tensile force | 250 | 205 | 280 | 260 | 310 | 305 | 100 | 259 | 100 | 330 | 100 | 390 |
| | | 3 Axial tensile force | 0 | 343 | 0 | 415 | 0 | 480 | 0 | 310 | 0 | 384 | 0 | 450 |
| 100 | 6206 | 1 Radial force | 890 | 0 | 1000 | 0 | 1080 | 0 | 820 | 0 | 1000 | 0 | 1080 | 0 |
| | | 2 Radial force + axial tensile force | 400 | 265 | 500 | 325 | 600 | 345 | 300 | 265 | 300 | 385 | 300 | 455 |
| | | 3 Axial tensile force | 0 | 490 | 0 | 600 | 0 | 675 | 0 | 432 | 0 | 540 | 0 | 625 |
| 112 | 6206 | 1 Radial force | 870 | 0 | 980 | 0 | 1055 | 0 | 760 | 0 | 970 | 0 | 1055 | 0 |
| | | 2 Radial force + axial tensile force | 400 | 252 | 500 | 310 | 600 | 330 | 250 | 260 | 250 | 380 | 250 | 450 |
| | | 3 Axial tensile force | 0 | 478 | 0 | 595 | 0 | 675 | 0 | 403 | 0 | 510 | 0 | 590 |
| 132 | 6208 | 1 Radial force | 1070 | 0 | 1415 | 0 | 1530 | 0 | 810 | 0 | 1060 | 0 | 1220 | 0 |
| | | 2 Radial force + axial tensile force | 450 | 315 | 550 | 450 | 650 | 480 | 250 | 300 | 250 | 520 | 250 | 585 |
| | | 3 Axial tensile force | 0 | 580 | 0 | 775 | 0 | 850 | 0 | 450 | 0 | 640 | 0 | 820 |
| 160 | 6209 | 1 Radial force | 1440 | 0 | 1630 | 0 | 1760 | 0 | 1210 | 0 | 1580 | 0 | 1780 | 0 |
| | | 2 Radial force + axial tensile force | 700 | 450 | 800 | 570 | 900 | 650 | 500 | 335 | 500 | 525 | 500 | 665 |
| | | 3 Axial tensile force | 0 | 824 | 0 | 1015 | 0 | 1140 | 0 | 620 | 0 | 790 | 0 | 920 |
| 180 | 6210 | 1 Radial force | 1540 | 0 | 1750 | 0 | 1900 | 0 | 1020 | 0 | 1400 | 0 | 1670 | 0 |
| | | 2 Radial force + axial tensile force | 770 | 430 | 900 | 545 | 1000 | 630 | 550 | 218 | 550 | 420 | 550 | 575 |
| | | 3 Axial tensile force | 0 | 815 | 0 | 1040 | 0 | 1183 | 0 | 453 | 0 | 733 | 0 | 875 |
| 200 | 6212 | 1 Radial force | 2050 | 0 | 2380 | 0 | 2620 | 0 | 1450 | 0 | 1700 | 0 | 2090 | 0 |
| | | 2 Radial force + axial tensile force | 1200 | 770 | 1350 | 970 | 1500 | 1075 | 500 | 460 | 500 | 750 | 500 | 1600 |
| | | 3 Axial tensile force | 0 | 1350 | 0 | 1650 | 0 | 1875 | 0 | 720 | 0 | 1040 | 0 | 1905 |
| 225 | 6213 | 1 Radial force | 2460 | 0 | 2720 | 0 | 2970 | 0 | 1910 | 0 | 2450 | 0 | 2900 | 0 |
| | | 2 Radial force + axial tensile force | 1370 | 900 | 1500 | 1095 | 1700 | 1200 | 500 | 660 | 500 | 1000 | 500 | 1250 |
| | | 3 Axial tensile force | 0 | 1560 | 0 | 1910 | 0 | 2170 | 0 | 920 | 0 | 1290 | 0 | 1520 |
| 250 | 6215 | 1 Radial force | 2770 | 0 | 3230 | 0 | 3500 | 0 | 1490 | 0 | 2230 | 0 | 2700 | 0 |
| | | 2 Radial force + axial tensile force | 1400 | 840 | 1600 | 1095 | 1800 | 1340 | 500 | 460 | 500 | 815 | 500 | 1080 |
| | | 3 Axial tensile force | 0 | 1500 | 0 | 1865 | 0 | 2130 | 0 | 710 | 0 | 1090 | 0 | 1375 |
| 280 | 6217 (2-pole), 6317 (4-, 6-pole) | 1 Radial force | 3180 | 0 | 5000 | 0 | 5500 | 0 | 3000 | 0 | 5600 | 0 | 6100 | 0 |
| | | 2 Radial force + axial tensile force | 1700 | 1820 | 2000 | 2000 | 2300 | 2200 | 600 | 1085 | 600 | 2300 | 600 | 2750 |
| | | 3 Axial tensile force | 0 | 2630 | 0 | 3050 | 0 | 3500 | 0 | 1380 | 0 | 2600 | 0 | 3100 |
| 315 | 6219 (2-pole), 6319 (4-, 6-pole) | 1 Radial force | 3470 | 0 | 5300 | 0 | 5900 | 0 | 1000 | 0 | 3600 | 0 | 3850 | 0 |
| | | 2 Radial force + axial tensile force | 1750 | 2200 | 2000 | 2170 | 2300 | 2530 | 200 | 363 | 1000 | 1150 | 1000 | 1610 |
| | | 3 Axial tensile force | 0 | 3000 | 0 | 3080 | 0 | 3560 | 0 | 463 | 0 | 1690 | 0 | 2100 |

Note: In the event of a fault (fire), the reduced loads provided above must be observed and ensured by appropriate measures in the ventilation system. The permitted loads in catalog part 0 from Page 0/66 must be observed for operation under standard condition (CT 40 °C).



Load types



Forces on shaft extension

Selection and ordering data

Preliminary selection of the motor according to motor type/series, speed or number of poles, frame size, rated output, rated torque, rated speed and rated current

Self-ventilated motors for temperature/time classes F200 and F300

| Speed (No. of poles) | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|--|-----------------------|---|---------------|--------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Aluminum series 1LA7 and 1LA5, cast-iron series 1LG6 (motors with external fan) | | | | | | |
| 3000, 2-pole | 80 M ... 315 L | 0.75 ... 200 | 2830 ... 2985 | 2.5 ... 640 | 2.1 ... 325 | 9/8 |
| 1500, 4-pole | 80 M ... 315 L | 0.55 ... 200 | 1395 ... 1488 | 3.7 ... 1284 | 1.86 ... 345 | 9/8 |
| 1000, 6-pole | 80 M ... 315 L | 0.37 ... 160 | 910 ... 990 | 3.9 ... 1543 | 1.2 ... 285 | 9/10 |
| 1500/3000, 4/2-pole | 80 M ... 160 L | The electrical data can be calculated and supplied on receipt of order. | | | | 9/12 |
| 1000/1500, 6/4-pole | 80 M ... 200 L | | | | | 9/12 |
| 750/1500, 8/4-pole | 80 M ... 200 L | | | | | 9/12 |

Forced-air cooled motors for temperature/time classes F200 and F300

| Speed (No. of poles) | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|--|-----------------------|---|---------------|--------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Aluminum series 1PP7 and 1PP5, cast-iron series 1PP6 (motors without an external fan) | | | | | | |
| 3000, 2-pole | 80 M ... 315 L | 0.75 ... 200 | 2830 ... 2985 | 2.5 ... 640 | 2.1 ... 325 | 9/14 |
| 1500, 4-pole | 80 M ... 315 L | 0.55 ... 200 | 1395 ... 1488 | 3.7 ... 1284 | 1.86 ... 345 | 9/14 |
| 1000, 6-pole | 80 M ... 315 L | 0.37 ... 160 | 910 ... 990 | 3.9 ... 1543 | 1.2 ... 285 | 9/16 |
| 1500/3000, 4/2-pole | 80 M ... 160 L | The electrical data can be calculated and supplied on receipt of order. | | | | 9/18 |
| 1000/1500, 6/4-pole | 80 M ... 200 L | | | | | 9/18 |
| 750/1500, 8/4-pole | 80 M ... 200 L | | | | | 9/18 |

Self-ventilated motors for temperature/time class F400

| Speed (No. of poles) | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|--|------------------------|---|---------------|--------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Cast-iron series 1LA6 and 1LG6 (motors with external fan) | | | | | | |
| 3000, 2-pole | 100 L ... 315 L | 3 ... 190 | 2875 ... 2982 | 10 ... 608 | 6.5 ... 325 | 9/20 |
| 1500, 4-pole | 100 L ... 315 L | 2.2 ... 200 | 1410 ... 1490 | 15 ... 1284 | 5.5 ... 345 | 9/20 |
| 1000, 6-pole | 100 L ... 315 L | 1.5 ... 160 | 925 ... 990 | 15 ... 1546 | 4.5 ... 285 | 9/22 |
| 1500/3000, 4/2-pole | 100 L ... 160 L | The electrical data can be calculated and supplied on receipt of order. | | | | 9/24 |
| 1000/1500, 6/4-pole | 100 L ... 160 L | | | | | 9/24 |
| 750/1500, 8/4-pole | 100 L ... 160 L | | | | | 9/24 |

Forced-air cooled motors for temperature/time class F400

| Speed (No. of poles) | Frame size | Rated output | Rated speed | Rated torque | Rated current at 400 V | Detailed selection and ordering data Page |
|--|------------------------|---|---------------|--------------|------------------------|---|
| rpm | | kW | rpm | Nm | A | |
| Cast-iron series 1PP6 (motors without external fan) | | | | | | |
| 3000, 2-pole | 100 L ... 315 L | 3 ... 190 | 2875 ... 2982 | 10 ... 608 | 6.5 ... 325 | 9/26 |
| 1500, 4-pole | 100 L ... 315 L | 2.2 ... 200 | 1410 ... 1490 | 15 ... 1284 | 5.5 ... 345 | 9/26 |
| 1000, 6-pole | 100 L ... 315 L | 1.5 ... 160 | 925 ... 990 | 15 ... 1546 | 4.5 ... 285 | 9/28 |
| 1500/3000, 4/2-pole | 100 L ... 160 M | The electrical data can be calculated and supplied on receipt of order. | | | | 9/30 |
| 1000/1500, 6/4-pole | 100 L ... 160 L | | | | | 9/30 |
| 750/1500, 8/4-pole | 100 L ... 160 L | | | | | 9/30 |

More information

For more information, please contact your local Siemens contact – see “Siemens Contacts Worldwide” in the Appendix.

IEC Squirrel-Cage Motors

Smoke-extraction motors

Self-ventilated, for temperature/time classes F200, F300 – Aluminum series 1LA7/5, cast-iron series 1LG6

Selection and ordering data

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | | Locked-rotor torque with direct starting as multiple of rated torque | Locked-rotor current | Break-down torque | Torque class | Moment of inertia | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight |
|---|------------|----------------------------------|--------------------------|------------------------------|--------------------------------|------------------------------|----------------------------------|--|---------------------------------|-------------------|--------------------------|-------------------|---|-------|--------|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | $\cos\phi_{\text{rated}}$ | | | | | | | | |
| P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | $T_{\text{LR}}/T_{\text{rated}}$ | $I_{\text{LR}}/I_{\text{rated}}$ | $T_{\text{B}}/T_{\text{rated}}$ | CL | J kg m ² | | | | |
| 2-pole, 3000 rpm at 50 Hz, cooling method IC 411, IP55 degree of protection, with test certificate according to EN 12101-3 | | | | | | | | | | | | | | | |
| 0.75 | 80 M | 2830 | 2.5 | 63.0 | 0.83 | 2.1 | 2.3 | 5.6 | 2.4 | 16 | 0.00085 | 1LA7 080-2TAQQ | | 10.2 | |
| 1.1 | 80 M | 2845 | 3.7 | 74.0 | 0.80 | 2.7 | 2.6 | 6.1 | 2.7 | 16 | 0.0011 | 1LA7 083-2TAQQ | | 11.9 | |
| 1.5 | 90 S | 2860 | 5.0 | 73.0 | 0.80 | 3.7 | 2.4 | 5.5 | 2.7 | 16 | 0.0015 | 1LA7 090-2TAQQ | | 15.2 | |
| 2.2 | 90 L | 2880 | 7.3 | 78.0 | 0.80 | 5.1 | 2.8 | 6.3 | 3.1 | 16 | 0.002 | 1LA7 096-2TAQQ | | 18 | |
| 3 | 100 L | 2890 | 9.9 | 77.0 | 0.83 | 6.8 | 2.8 | 6.8 | 3.0 | 16 | 0.0038 | 1LA7 106-2TAQQ | | 24 | |
| 4 | 112 M | 2905 | 13 | 82.0 | 0.83 | 8.5 | 2.6 | 7.2 | 2.9 | 16 | 0.0055 | 1LA7 113-2TAQQ | | 32 | |
| 5.5 | 132 S | 2925 | 18 | 85.5 | 0.87 | 10.7 | 2.0 | 5.9 | 2.8 | 16 | 0.016 | 1LA7 130-2TAQQ | | 45 | |
| 7.5 | 132 S | 2930 | 24 | 88.0 | 0.89 | 13.8 | 2.3 | 6.9 | 3.0 | 16 | 0.021 | 1LA7 131-2TAQQ | | 53 | |
| 11 | 160 M | 2940 | 36 | 88.0 | 0.86 | 21 | 2.1 | 6.5 | 2.9 | 16 | 0.034 | 1LA7 163-2TAQQ | | 74 | |
| 15 | 160 M | 2940 | 49 | 90.8 | 0.90 | 26.5 | 2.2 | 6.6 | 3.0 | 16 | 0.04 | 1LA7 164-2TAQQ | | 85 | |
| 18.5 | 160 L | 2940 | 60 | 90.3 | 0.91 | 32.5 | 2.4 | 7.0 | 3.1 | 16 | 0.052 | 1LA7 166-2TAQQ | | 98 | |
| 22 | 180 M | 2940 | 71 | 91.1 | 0.85 | 41 | 2.5 | 6.9 | 3.2 | 16 | 0.077 | 1LA5 183-2TAQQ | | 125 | |
| 30 | 200 L | 2945 | 97 | 91.8 | 0.89 | 53 | 2.4 | 7.2 | 2.8 | 16 | 0.14 | 1LA5 206-2TAQQ | | 176 | |
| 37 | 200 L | 2945 | 120 | 92.3 | 0.89 | 65 | 2.4 | 7.7 | 2.8 | 16 | 0.16 | 1LA5 207-2TAQQ | | 199 | |
| 45 | 225 M | 2960 | 145 | 93.6 | 0.89 | 78 | 2.8 | 7.7 | 3.4 | 16 | 0.2 | 1LA5 223-2TAQQ | | 235 | |
| 55 | 250 M | 2975 | 177 | 94.2 | 0.90 | 94 | 2.5 | 7.4 | 3.3 | 13 | 0.466 | 1LG6 253-2TBQQ | | 420 | |
| 75 | 280 S | 2975 | 241 | 94.8 | 0.91 | 126 | 2.6 | 7.5 | 2.9 | 13 | 0.832 | 1LG6 280-2TBQQ | | 530 | |
| 90 | 280 M | 2975 | 289 | 95.2 | 0.90 | 152 | 3.0 | 7.5 | 3.0 | 13 | 1.00 | 1LG6 283-2TBQQ | | 615 | |
| 110 | 315 S | 2985 | 352 | 95.0 | 0.90 | 186 | 2.6 | 7.5 | 3.2 | 13 | 1.39 | 1LG6 310-2TBQQ | | 790 | |
| 132 | 315 M | 2984 | 422 | 95.3 | 0.91 | 220 | 2.7 | 7.4 | 3.0 | 13 | 1.62 | 1LG6 313-2TBQQ | | 915 | |
| 160 | 315 L | 2984 | 512 | 95.7 | 0.93 | 260 | 2.8 | 7.5 | 3.1 | 13 | 2.09 | 1LG6 316-2TBQQ | | 1055 | |
| 200 | 315 L | 2984 | 640 | 95.9 | 0.93 | 325 | 2.5 | 7.0 | 2.8 | 13 | 2.46 | 1LG6 317-2TBQQ | | 1245 | |
| 4-pole, 1500 rpm at 50 Hz, cooling method IC 411, IP55 degree of protection, with test certificate according to EN 12101-3 | | | | | | | | | | | | | | | |
| 0.55 | 80 M | 1395 | 3.7 | 57.0 | 0.75 | 1.85 | 2.2 | 3.9 | 2.2 | 16 | 0.0015 | 1LA7 080-4TAQQ | | 10 | |
| 0.75 | 80 M | 1405 | 5.1 | 63.0 | 0.73 | 2.35 | 2.3 | 4.2 | 2.3 | 16 | 0.0018 | 1LA7 083-4TAQQ | | 11.4 | |
| 1.1 | 90 S | 1415 | 7.4 | 68.0 | 0.74 | 3.15 | 2.3 | 4.6 | 2.4 | 16 | 0.0028 | 1LA7 090-4TAQQ | | 14.6 | |
| 1.5 | 90 L | 1420 | 10 | 73.0 | 0.74 | 4.0 | 2.4 | 5.3 | 2.6 | 16 | 0.0035 | 1LA7 096-4TAQQ | | 17.9 | |
| 2.2 | 100 L | 1420 | 15 | 75.0 | 0.78 | 5.4 | 2.5 | 5.6 | 2.8 | 16 | 0.0048 | 1LA7 106-4TAQQ | | 24 | |
| 3 | 100 L | 1415 | 20 | 77.0 | 0.78 | 7.2 | 2.7 | 5.6 | 3.0 | 16 | 0.0058 | 1LA7 107-4TAQQ | | 27 | |
| 4 | 112 M | 1440 | 27 | 78.0 | 0.78 | 9.2 | 2.7 | 6.5 | 3.0 | 16 | 0.011 | 1LA7 113-4TAQQ | | 34 | |
| 5.5 | 132 S | 1450 | 36 | 88.5 | 0.78 | 12 | 2.5 | 6.3 | 3.1 | 16 | 0.018 | 1LA7 130-4TAQQ | | 47 | |
| 7.5 | 132 M | 1455 | 49 | 84.0 | 0.78 | 16.5 | 2.7 | 6.7 | 3.2 | 16 | 0.024 | 1LA7 133-4TAQQ | | 53 | |
| 11 | 160 M | 1455 | 72 | 89.0 | 0.81 | 23 | 2.2 | 6.2 | 2.7 | 16 | 0.04 | 1LA7 163-4TAQQ | | 73 | |
| 15 | 160 L | 1460 | 98 | 84.5 | 0.80 | 32 | 2.6 | 6.5 | 3.0 | 16 | 0.052 | 1LA7 166-4TAQQ | | 98 | |
| 18.5 | 180 M | 1460 | 121 | 86.5 | 0.79 | 39 | 2.3 | 7.5 | 3.0 | 16 | 0.13 | 1LA5 183-4TAQQ | | 125 | |
| 22 | 180 L | 1475 | 144 | 88.0 | 0.78 | 46.5 | 2.3 | 7.5 | 3.0 | 16 | 0.15 | 1LA5 186-4TAQQ | | 139 | |
| 30 | 200 L | 1465 | 196 | 89.0 | 0.81 | 60 | 2.6 | 7.0 | 3.2 | 16 | 0.24 | 1LA5 207-4TAQQ | | 184 | |
| 37 | 225 S | 1470 | 241 | 92.1 | 0.84 | 69 | 2.8 | 7.0 | 3.2 | 16 | 0.32 | 1LA5 220-4TAQQ | | 230 | |
| 45 | 225 M | 1470 | 293 | 92.2 | 0.87 | 80 | 2.8 | 7.7 | 3.3 | 16 | 0.36 | 1LA5 223-4TAQQ | | 256 | |
| 55 | 250 M | 1485 | 354 | 94.7 | 0.86 | 97 | 2.9 | 7.5 | 3.3 | 16 | 0.856 | 1LG6 253-4TAQQ | | 460 | |
| 75 | 280 S | 1486 | 482 | 94.6 | 0.87 | 132 | 2.6 | 7.3 | 2.8 | 16 | 1.40 | 1LG6 280-4TAQQ | | 575 | |
| 90 | 280 M | 1485 | 579 | 94.6 | 0.88 | 156 | 2.5 | 7.3 | 2.8 | 16 | 1.70 | 1LG6 283-4TAQQ | | 675 | |
| 110 | 315 S | 1488 | 706 | 95.0 | 0.87 | 192 | 2.6 | 6.9 | 2.8 | 16 | 2.31 | 1LG6 310-4TAQQ | | 810 | |
| 132 | 315 M | 1488 | 847 | 95.3 | 0.87 | 230 | 2.7 | 7.0 | 2.7 | 16 | 2.88 | 1LG6 313-4TAQQ | | 965 | |
| 160 | 315 L | 1488 | 1027 | 95.7 | 0.87 | 275 | 2.9 | 7.4 | 2.9 | 16 | 3.46 | 1LG6 316-4TAQQ | | 1105 | |
| 200 | 315 L | 1488 | 1284 | 95.5 | 0.88 | 345 | 3.2 | 7.3 | 3.1 | 16 | 4.22 | 1LG6 317-4TAQQ | | 1305 | |

IEC Squirrel-Cage Motors

Smoke-extraction motors

Self-ventilated, for temperature/time classes F200, F300 – Aluminum series 1LA7/5, cast-iron series 1LG6

Selection and ordering data (continued)

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | | | |
|---------------------|------------------------------------|---------------|--------|--------|--|------------------------------|--|---|--------|---|----------------------|---|---|--|
| | 50 Hz | | | | Without flange | With flange | | | | | With standard flange | With special flange | | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6, IM V5 without protective cover ¹⁾ | IM B5, IM V3 ²⁾³⁾ | IM V1 without protective cover ²⁾³⁾ | IM V1 with protective cover ³⁾⁴⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover | | |
| | 1 | 6 | 3 | 5 | 0 | 1 | 1 | 8 | 4 | 6 | 2 | 7 | 3 | |
| 1LA7 08 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA7 09 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA7 10 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA7 11 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA7 13 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA7 16 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA5 18 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | – | ✓ | ✓ | – | – | – | |
| 1LA5 20 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | – | ✓ | ✓ | – | – | – | |
| 1LA5 22 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | – | ✓ | ✓ | – | – | – | |
| 1LG6 25 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | – | ✓ | ✓ | – | – | – | |
| 1LG6 28 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | – | ✓ | ✓ | – | – | – | |
| 1LG6 310 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | – | ✓ | ✓ | – | – | – | |
| 1LG6 313 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | – | ✓ | ✓ | – | – | – | |
| 1LG6 316 □□ | – | ○ | – | ○ | □ ⁶⁾ | – | – | ✓ | ✓ | ✓ | – | – | – | |
| 1LG6 317 □□ | – | ○ | – | ○ | □ ⁶⁾ | – | – | ✓ | ✓ | ✓ | – | – | – | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and with order code **L1Y** (see “Special versions” in the “Selection and ordering data” under “Voltages”).

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see “Special versions” in the “Selection and ordering data” under “Types of construction”).

- 1) If motors frame sizes 180 M to 315 L in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.
- 2) 1LA5 183... to 1LA5 223... motors (motor series 1LA5, frame size 180 M to 225 M) can be supplied with two additional eyebolts; specify supplement “**Z**” and order code **K32**.
- 3) 1LG6 253... to 1LG6 317... motors (motor series 1LG6 frame sizes 250 M to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be rotated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

- 4) The “Second shaft extension” option, order code **K16** is not possible.
- 5) Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.
- 6) Not possible for type of construction IM V6 and IM V5 without protective cover.

IEC Squirrel-Cage Motors

Smoke-extraction motors

Self-ventilated, for temperature/time classes F200, F300 – Aluminum series 1LA7/5, cast-iron series 1LG6

Selection and ordering data (continued)

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | | Locked-rotor torque with direct starting as multiple of rated torque | Locked-rotor current | Break-down torque | Torque class | Moment of inertia | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight |
|---|------------|----------------------------------|--------------------------|------------------------------|--------------------------------|------------------------------|----------------------------------|--|---------------------------------|-------------------|--------------------------|-----------------------|---|-------|--------|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | $\cos\phi_{\text{rated}}$ | | | | | | | | |
| P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | $T_{\text{LR}}/T_{\text{rated}}$ | $I_{\text{LR}}/I_{\text{rated}}$ | $T_{\text{B}}/T_{\text{rated}}$ | CL | J kg m ² | | | | |
| 6-pole, 1000 rpm at 50 Hz, cooling method IC 411, IP55 degree of protection, with test certificate according to EN 12101-3 | | | | | | | | | | | | | | | |
| 0.37 | 80 M | 920 | 3.9 | 62.0 | 0.72 | 1.2 | 1.9 | 3.1 | 2.1 | 16 | 0.0015 | 1LA7 080-6TA00 | | 9.5 | |
| 0.55 | 80 M | 910 | 5.8 | 67.0 | 0.74 | 1.9 | 2.1 | 3.4 | 2.2 | 16 | 0.0018 | 1LA7 083-6TA00 | | 11.4 | |
| 0.75 | 90 S | 920 | 7.8 | 68.0 | 0.76 | 2.1 | 2.2 | 3.7 | 2.2 | 16 | 0.0028 | 1LA7 090-6TA00 | | 14.8 | |
| 1.1 | 90 L | 915 | 11.5 | 71.0 | 0.77 | 2.9 | 2.3 | 3.8 | 2.3 | 16 | 0.0035 | 1LA7 096-6TA00 | | 18 | |
| 1.5 | 100 L | 925 | 15 | 74.0 | 0.70 | 4.25 | 2.3 | 4 | 2.3 | 16 | 0.0063 | 1LA7 106-6TA00 | | 26 | |
| 2.2 | 112 M | 940 | 22 | 76.0 | 0.70 | 6.0 | 2.2 | 4.6 | 2.5 | 16 | 0.011 | 1LA7 113-6TA00 | | 30 | |
| 3 | 132 S | 950 | 30 | 72.0 | 0.76 | 7.2 | 1.9 | 4.2 | 2.2 | 16 | 0.015 | 1LA7 130-6TA00 | | 45 | |
| 4 | 132 M | 950 | 40 | 81.0 | 0.76 | 9.4 | 2.1 | 4.5 | 2.4 | 16 | 0.019 | 1LA7 133-6TA00 | | 50 | |
| 5.5 | 132 M | 950 | 55 | 70.0 | 0.74 | 15.4 | 2.3 | 5 | 2.6 | 16 | 0.025 | 1LA7 134-6TA00 | | 58 | |
| 7.5 | 160 M | 960 | 75 | 83.5 | 0.72 | 18 | 2.1 | 4.6 | 2.5 | 16 | 0.041 | 1LA7 163-6TA00 | | 81 | |
| 11 | 160 L | 960 | 109 | 87.5 | 0.71 | 25.5 | 2.3 | 4.8 | 2.6 | 16 | 0.049 | 1LA7 166-6TA00 | | 107 | |
| 15 | 180 L | 970 | 148 | 89.5 | 0.70 | 34.5 | 2.0 | 5.2 | 2.4 | 16 | 0.15 | 1LA5 186-6TA00 | | 139 | |
| 18.5 | 200 L | 975 | 181 | 90.1 | 0.71 | 42.5 | 2.7 | 5.5 | 2.8 | 16 | 0.24 | 1LA5 206-6TA00 | | 184 | |
| 22 | 200 L | 975 | 215 | 93.5 | 0.77 | 45.5 | 2.8 | 5.5 | 2.9 | 16 | 0.28 | 1LA5 207-6TA00 | | 204 | |
| 30 | 225 M | 978 | 294 | 92.2 | 0.68 | 71 | 2.8 | 5.7 | 2.9 | 16 | 0.36 | 1LA5 223-6TA00 | | 246 | |
| 37 | 250 M | 984 | 359 | 92.4 | 0.84 | 69 | 2.7 | 6.4 | 2.4 | 16 | 0.934 | 1LG6 253-6TA00 | | 405 | |
| 45 | 280 S | 986 | 436 | 92.7 | 0.86 | 81 | 2.5 | 6.6 | 2.5 | 16 | 1.40 | 1LG6 280-6TA00 | | 520 | |
| 55 | 280 M | 986 | 533 | 92.6 | 0.87 | 99 | 2.5 | 6.5 | 2.5 | 16 | 1.60 | 1LG6 283-6TA00 | | 570 | |
| 75 | 315 S | 990 | 723 | 93.8 | 0.85 | 136 | 2.7 | 7.0 | 2.9 | 16 | 2.50 | 1LG6 310-6TA00 | | 760 | |
| 90 | 315 M | 990 | 868 | 94.2 | 0.86 | 160 | 2.7 | 7.3 | 3.0 | 16 | 3.20 | 1LG6 313-6TA00 | | 935 | |
| 110 | 315 L | 990 | 1061 | 94.6 | 0.87 | 192 | 2.6 | 7.4 | 3.0 | 16 | 4.02 | 1LG6 316-6TA00 | | 1010 | |
| 132 | 315 L | 988 | 1276 | 94.7 | 0.87 | 230 | 3.0 | 7.2 | 2.8 | 16 | 4.71 | 1LG6 317-6TA00 | | 1180 | |
| 160 | 315 L | 990 | 1543 | 94.9 | 0.86 | 285 | 3.1 | 7.5 | 3.0 | 16 | 5.39 | 1LG6 318-6TA00 | | 1245 | |

IEC Squirrel-Cage Motors

Smoke-extraction motors

Self-ventilated, for temperature/time classes F200, F300 – Aluminum series 1LA7/5, cast-iron series 1LG6

Selection and ordering data (continued)

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | | |
|---------------------|------------------------------------|---------------|--------|--------|--|------------------------------|--|---|--------|---|--------|---|---|
| | 50 Hz | | | | Without flange | With flange | | | | With standard flange | | With special flange | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6, IM V5 without protective cover ¹⁾ | IM B5, IM V3 ²⁾³⁾ | IM V1 without protective cover ²⁾³⁾ | IM V1 with protective cover ³⁾⁴⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover | |
| | 1 | 6 | 3 | 5 | 0 | 1 | 1 | 8 | 4 | 6 | 2 | 7 | 3 |
| 1LA7 08 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 09 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 10 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 11 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 13 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 16 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA5 18 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LA5 20 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LA5 22 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 25 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 28 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 310 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 313 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁵⁾ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 316 □□ | – | ○ | – | ○ | □ ⁶⁾ | – | – | ✓ | ✓ | ✓ | – | – | – |
| 1LG6 317 □□ | – | ○ | – | ○ | □ ⁶⁾ | – | – | ✓ | ✓ | ✓ | – | – | – |
| 1LG6 318 □□ | – | ○ | – | ○ | □ ⁶⁾ | – | – | ✓ | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and with order code **L1Y** (see “Special versions” in the “Selection and ordering data” under “Voltages”).

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see “Special versions” in the “Selection and ordering data” under “Types of construction”).

- 1) If motors frame sizes 180 M to 315 L in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.
- 2) 1LA5 183-... to 1LA5 223-... motors (motor series 1LA5, frame size 180 M to 225 M) can be supplied with two additional eyebolts; specify supplement “**Z**” and order code **K32**.
- 3) 1LG6 253-... to 1LG6 318-... motors (motor series 1LG6 frame sizes 250 M to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be rotated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

- 4) The “Second shaft extension” option, order code **K16** is not possible.
- 5) Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.
- 6) Not possible for type of construction IM V6 and IM V5 without protective cover.

IEC Squirrel-Cage Motors

Smoke-extraction motors

Self-ventilated, for temperature/time classes F200, F300 – Aluminum series 1LA7/5, cast-iron series 1LG6

Selection and ordering data (continued)

| Rated output at 50 Hz | | Frame size | Order No. | Price | Weight for type of construction IM B3 approx. <i>m</i> kg |
|--|--------------------------|------------|---|-------|--|
| 1500 rpm | 3000 rpm | | | | |
| P_{rated} kW | P_{rated} kW | FS | For Order No. supplements for voltage and type of construction, see table below | | |
| 4/2-pole, 1500/3000 rpm at 50 Hz, cooling method IC 411, IP55 degree of protection, double pole-changing for driving smoke-extraction fans with one winding in Dahlander circuit, with test certificate in accordance with EN 12101-3 | | | | | |
| 0.14 | 0.63 | 80 M | 1LA7 080-0TAQQ | | 11.0 |
| 0.23 | 0.86 | 80 M | 1LA7 083-0TAQQ | | 12.4 |
| 0.3 | 1.26 | 90 S | 1LA7 090-0TAQQ | | 14.6 |
| 0.45 | 1.8 | 90 L | 1LA7 096-0TAQQ | | 17.9 |
| 0.59 | 2.25 | 100 L | 1LA7 106-0TAQQ | | 24.0 |
| 0.72 | 2.8 | 100 L | 1LA7 107-0TAQQ | | 27.0 |
| 0.99 | 3.95 | 112 M | 1LA7 113-0TAQQ | | 34.0 |
| 1.3 | 5.3 | 132 S | 1LA7 130-0TAQQ | | 47.0 |
| 1.8 | 7.2 | 132 M | 1LA7 133-0TAQQ | | 53.0 |
| 2.6 | 10.4 | 160 M | 1LA7 163-0TAQQ | | 74.0 |
| 3.85 | 15.3 | 160 L | 1LA7 166-0TAQQ | | 105.0 |
| Rated output at 50 Hz | | | | | |
| 1000 rpm | 1500 rpm | | | | |
| P_{rated} kW | P_{rated} kW | | | | |
| 6/4-pole, 1000/1500 rpm at 50 Hz, cooling method IC 411, IP55 degree of protection, double pole-changing for driving smoke-extraction fans with two windings, with test certificate in accordance with EN 12101-3 | | | | | |
| 0.11 | 0.36 | 80 M | 1LA7 080-1TDQQ | | 10.0 |
| 0.16 | 0.5 | 80 M | 1LA7 083-1TDQQ | | 11.4 |
| 0.26 | 0.72 | 90 S | 1LA7 090-1TDQQ | | 14.6 |
| 0.34 | 0.99 | 90 L | 1LA7 096-1TDQQ | | 17.9 |
| 0.54 | 1.53 | 100 L | 1LA7 106-1TDQQ | | 24.0 |
| 0.68 | 1.89 | 100 L | 1LA7 107-1TDQQ | | 27.0 |
| 0.81 | 2.7 | 112 M | 1LA7 113-1TDQQ | | 34.0 |
| 1.08 | 3.5 | 132 S | 1LA7 130-1TDQQ | | 47.0 |
| 1.53 | 4.85 | 132 M | 1LA7 133-1TDQQ | | 53.0 |
| 2.25 | 6.5 | 160 M | 1LA7 163-1TDQQ | | 73.0 |
| 3.35 | 10.8 | 160 L | 1LA7 166-1TDQQ | | 98.0 |
| 4.95 | 14.4 | 180 M | 1LA5 183-1TDQQ | | 125.0 |
| 5.9 | 17.1 | 180 L | 1LA5 186-1TDQQ | | 139.0 |
| 8.6 | 23.5 | 200 L | 1LA5 207-1TDQQ | | 184.0 |
| Rated output at 50 Hz | | | | | |
| 750 rpm | 1500 rpm | | | | |
| P_{rated} kW | P_{rated} kW | | | | |
| 8/4-pole, 750/1500 rpm at 50 Hz, cooling method IC 411, IP55 degree of protection, double pole-changing for driving smoke-extraction fans with one winding in Dahlander circuit, with test certificate in accordance with EN 12101-3 | | | | | |
| 0.09 | 0.45 | 80 M | 1LA7 080-0TBQQ | | 10.0 |
| 0.14 | 0.63 | 80 M | 1LA7 083-0TBQQ | | 11.4 |
| 0.2 | 0.9 | 90 S | 1LA7 090-0TBQQ | | 14.6 |
| 0.3 | 1.35 | 90 L | 1LA7 096-0TBQQ | | 17.9 |
| 0.45 | 1.8 | 100 L | 1LA7 106-0TBQQ | | 24.0 |
| 0.59 | 2.25 | 100 L | 1LA7 107-0TBQQ | | 27.0 |
| 0.81 | 3.25 | 112 M | 1LA7 113-0TBQQ | | 34.0 |
| 0.99 | 4.25 | 132 S | 1LA7 130-0TBQQ | | 47.0 |
| 1.26 | 5.8 | 132 M | 1LA7 133-0TBQQ | | 53.0 |
| 1.98 | 8.6 | 160 M | 1LA7 163-0TBQQ | | 73.0 |
| 3 | 12.6 | 160 L | 1LA7 166-0TBQQ | | 98.0 |
| 4.05 | 14.4 | 180 M | 1LA5 183-0TBQQ | | 125.0 |
| 4.5 | 16.7 | 180 L | 1LA5 186-0TBQQ | | 139.0 |
| 6.8 | 25 | 200 L | 1LA5 207-0TBQQ | | 184.0 |

The rated outputs and weights may change slightly after they have been checked.

Further electrical data can be calculated and supplied on receipt of order.

IEC Squirrel-Cage Motors

Smoke-extraction motors

Self-ventilated, for temperature/time classes F200, F300 – Aluminum series 1LA7/5, cast-iron series 1LG6

Selection and ordering data (continued)

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | Final position: Type of construction code | | | | | | | | |
|----------------------|------------------------------------|----------|----------|--|----------------------------|--|--|----------|--|----------|---|---------------------|
| | 50 Hz, direct online starting | | | Without flange | With flange | | | | With standard flange | | | With special flange |
| | 230 V | 400 V | 500 V | IM B3/6/7/8, IM V6, IM V5 without protective cover | IM B5, IM V3 ¹⁾ | IM V1 without protective cover ¹⁾ | IM V1 with protective cover ^{1) 2)} | IM B35 | IM B14, IM V19/18 without protective cover | IM B34 | IM B14 IM V19/18 without protective cover | |
| | 1 | 6 | 5 | 0 | 1 | 1 | 8 | 4 | 6 | 2 | 7 | 3 |
| 1LA7 08 .-. . . . □□ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 09 .-. . . . □□ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 10 .-. . . . □□ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 11 .-. . . . □□ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 13 .-. . . . □□ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA7 16 .-. . . . □□ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA5 18 .-. . . . □□ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LA5 20 .-. . . . □□ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | – | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and with order code **L1Y** (see “Special versions” in the “Selection and ordering data” under “Voltages”).

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see “Special versions” in the “Selection and ordering data” under “Types of construction”).

- 1) 1LA5 183-... to 1LA5 223-... motors (motor series 1LA5, frame size 180 M to 225 M) can be supplied with two additional eyebolts; specify supplement “**Z**” and order code **K32**.
- 2) The “Second shaft extension” option, order code **K16** is not possible.
- 3) Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Smoke-extraction motors

Forced-air cooled, for temperature/time classes F200, F300 – Aluminum series 1PP7/5, cast-iron series 1PP6

Selection and ordering data

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | | Locked-rotor torque with direct starting as multiple of rated torque | Locked-rotor current | Break-down torque | Torque class | Moment of inertia | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight |
|---|------------|----------------------------------|--------------------------|------------------------------|--------------------------------|------------------------------|----------------------------------|--|---------------------------------|-------------------|--------------------------|-------------------|---|-------|--------|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | $\cos\phi_{\text{rated}}$ | | | | | | | | |
| P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | $T_{\text{LR}}/T_{\text{rated}}$ | $I_{\text{LR}}/I_{\text{rated}}$ | $T_{\text{B}}/T_{\text{rated}}$ | CL | J kg m ² | | | | |
| 2-pole, 3000 rpm at 50 Hz, cooling method IC 411, IP55 degree of protection, with test certificate according to EN 12101-3 | | | | | | | | | | | | | | | |
| 0.75 | 80 M | 2830 | 2.5 | 63.0 | 0.83 | 2.1 | 2.3 | 5.6 | 2.4 | 16 | 0.00085 | 1PP7 080-2TAQQ | | 9.8 | |
| 1.1 | 80 M | 2845 | 3.7 | 74.0 | 0.80 | 2.7 | 2.6 | 6.1 | 2.7 | 16 | 0.0011 | 1PP7 083-2TAQQ | | 11.5 | |
| 1.5 | 90 S | 2860 | 5.0 | 73.0 | 0.80 | 3.7 | 2.4 | 5.5 | 2.7 | 16 | 0.0015 | 1PP7 090-2TAQQ | | 14.6 | |
| 2.2 | 90 L | 2880 | 7.3 | 78.0 | 0.80 | 5.1 | 2.8 | 6.3 | 3.1 | 16 | 0.002 | 1PP7 096-2TAQQ | | 17.4 | |
| 3 | 100 L | 2890 | 9.9 | 77.0 | 0.83 | 6.8 | 2.8 | 6.8 | 3.0 | 16 | 0.0038 | 1PP7 106-2TAQQ | | 23 | |
| 4 | 112 M | 2905 | 13 | 82.0 | 0.83 | 8.5 | 2.6 | 7.2 | 2.9 | 16 | 0.0055 | 1PP7 113-2TAQQ | | 31 | |
| 5.5 | 132 S | 2925 | 18 | 85.5 | 0.87 | 10.7 | 2.0 | 5.9 | 2.8 | 16 | 0.016 | 1PP7 130-2TAQQ | | 44 | |
| 7.5 | 132 S | 2930 | 24 | 88.0 | 0.89 | 13.8 | 2.3 | 6.9 | 3.0 | 16 | 0.021 | 1PP7 131-2TAQQ | | 52 | |
| 11 | 160 M | 2940 | 36 | 88.0 | 0.86 | 21 | 2.1 | 6.5 | 2.9 | 16 | 0.034 | 1PP7 163-2TAQQ | | 71 | |
| 15 | 160 M | 2940 | 49 | 90.8 | 0.90 | 26.5 | 2.2 | 6.6 | 3.0 | 16 | 0.04 | 1PP7 164-2TAQQ | | 82 | |
| 18.5 | 160 L | 2940 | 60 | 90.3 | 0.91 | 32.5 | 2.4 | 7.0 | 3.1 | 16 | 0.052 | 1PP7 166-2TAQQ | | 95 | |
| 22 | 180 M | 2940 | 71 | 91.1 | 0.85 | 41 | 2.5 | 6.9 | 3.2 | 16 | 0.077 | 1PP5 183-2TAQQ | | 119 | |
| 30 | 200 L | 2945 | 97 | 91.8 | 0.89 | 53 | 2.4 | 7.2 | 2.8 | 16 | 0.14 | 1PP5 206-2TAQQ | | 168 | |
| 37 | 200 L | 2945 | 120 | 92.3 | 0.89 | 65 | 2.4 | 7.7 | 2.8 | 16 | 0.16 | 1PP5 207-2TAQQ | | 191 | |
| 45 | 225 M | 2960 | 145 | 93.6 | 0.89 | 78 | 2.8 | 7.7 | 3.4 | 16 | 0.2 | 1PP5 223-2TAQQ | | 226 | |
| 55 | 250 M | 2975 | 177 | 95.1 | 0.90 | 94 | 2.5 | 7.4 | 3.3 | 13 | 0.466 | 1PP6 253-2TBQQ | | 405 | |
| 75 | 280 S | 2975 | 241 | 95.3 | 0.91 | 126 | 2.6 | 7.5 | 2.9 | 13 | 0.832 | 1PP6 280-2TBQQ | | 510 | |
| 90 | 280 M | 2975 | 289 | 95.6 | 0.90 | 152 | 3.0 | 7.5 | 3.0 | 13 | 1.00 | 1PP6 283-2TBQQ | | 595 | |
| 110 | 315 S | 2985 | 352 | 95.9 | 0.90 | 186 | 2.6 | 7.5 | 3.2 | 13 | 1.39 | 1PP6 310-2TBQQ | | 770 | |
| 132 | 315 M | 2984 | 422 | 96.1 | 0.91 | 220 | 2.7 | 7.4 | 3.0 | 13 | 1.62 | 1PP6 313-2TBQQ | | 895 | |
| 160 | 315 L | 2984 | 512 | 96.3 | 0.93 | 260 | 2.8 | 7.5 | 3.1 | 13 | 2.09 | 1PP6 316-2TBQQ | | 1035 | |
| 200 | 315 L | 2984 | 640 | 96.4 | 0.93 | 325 | 2.5 | 7.0 | 2.8 | 13 | 2.46 | 1PP6 317-2TBQQ | | 1225 | |
| 4-pole, 1500 rpm at 50 Hz, cooling method IC 411, IP55 degree of protection, with test certificate according to EN 12101-3 | | | | | | | | | | | | | | | |
| 0.55 | 80 M | 1395 | 3.7 | 57.0 | 0.75 | 1.85 | 2.2 | 3.9 | 2.2 | 16 | 0.0015 | 1PP7 080-4TAQQ | | 9.6 | |
| 0.75 | 80 M | 1405 | 5.1 | 63.0 | 0.73 | 2.35 | 2.3 | 4.2 | 2.3 | 16 | 0.0018 | 1PP7 083-4TAQQ | | 11 | |
| 1.1 | 90 S | 1415 | 7.4 | 68.0 | 0.74 | 3.15 | 2.3 | 4.6 | 2.4 | 16 | 0.0028 | 1PP7 090-4TAQQ | | 14 | |
| 1.5 | 90 L | 1420 | 10 | 73.0 | 0.74 | 4.0 | 2.4 | 5.3 | 2.6 | 16 | 0.0035 | 1PP7 096-4TAQQ | | 17.3 | |
| 2.2 | 100 L | 1420 | 15 | 75.0 | 0.78 | 5.4 | 2.5 | 5.6 | 2.8 | 16 | 0.0048 | 1PP7 106-4TAQQ | | 23 | |
| 3 | 100 L | 1415 | 20 | 77.0 | 0.78 | 7.2 | 2.7 | 5.6 | 3.0 | 16 | 0.0058 | 1PP7 107-4TAQQ | | 26 | |
| 4 | 112 M | 1440 | 27 | 78.0 | 0.78 | 9.2 | 2.7 | 6.5 | 3.0 | 16 | 0.011 | 1PP7 113-4TAQQ | | 33 | |
| 5.5 | 132 S | 1450 | 36 | 88.5 | 0.78 | 12 | 2.5 | 6.3 | 3.1 | 16 | 0.018 | 1PP7 130-4TAQQ | | 46 | |
| 7.5 | 132 M | 1455 | 49 | 84.0 | 0.78 | 16.5 | 2.7 | 6.7 | 3.2 | 16 | 0.024 | 1PP7 133-4TAQQ | | 52 | |
| 11 | 160 M | 1455 | 72 | 89.0 | 0.81 | 23 | 2.2 | 6.2 | 2.7 | 16 | 0.04 | 1PP7 163-4TAQQ | | 70 | |
| 15 | 160 L | 1460 | 98 | 84.5 | 0.80 | 32 | 2.6 | 6.5 | 3.0 | 16 | 0.052 | 1PP7 166-4TAQQ | | 95 | |
| 18.5 | 180 M | 1460 | 121 | 86.5 | 0.79 | 39 | 2.3 | 7.5 | 3.0 | 16 | 0.13 | 1PP5 183-4TAQQ | | 116 | |
| 22 | 180 L | 1475 | 144 | 88.0 | 0.78 | 46.5 | 2.3 | 7.5 | 3.0 | 16 | 0.15 | 1PP5 186-4TAQQ | | 130 | |
| 30 | 200 L | 1465 | 196 | 89.0 | 0.81 | 60 | 2.6 | 7.0 | 3.2 | 16 | 0.24 | 1PP5 207-4TAQQ | | 173 | |
| 37 | 225 S | 1470 | 241 | 92.1 | 0.84 | 69 | 2.8 | 7.0 | 3.2 | 16 | 0.32 | 1PP5 220-4TAQQ | | 218 | |
| 45 | 225 M | 1470 | 293 | 92.2 | 0.87 | 80 | 2.8 | 7.7 | 3.3 | 16 | 0.36 | 1PP5 223-4TAQQ | | 244 | |
| 55 | 250 M | 1485 | 354 | 94.9 | 0.86 | 97 | 2.9 | 7.5 | 3.3 | 16 | 0.856 | 1PP6 253-4TAQQ | | 445 | |
| 75 | 280 S | 1486 | 482 | 95.0 | 0.87 | 132 | 2.6 | 7.3 | 2.8 | 16 | 1.39 | 1PP6 280-4TAQQ | | 555 | |
| 90 | 280 M | 1485 | 579 | 94.9 | 0.88 | 156 | 2.5 | 7.3 | 2.8 | 16 | 1.71 | 1PP6 283-4TAQQ | | 655 | |
| 110 | 315 S | 1488 | 706 | 95.3 | 0.87 | 192 | 2.6 | 6.9 | 2.8 | 16 | 2.31 | 1PP6 310-4TAQQ | | 790 | |
| 132 | 315 M | 1488 | 847 | 95.5 | 0.87 | 230 | 2.7 | 7.0 | 2.7 | 16 | 2.88 | 1PP6 313-4TAQQ | | 945 | |
| 160 | 315 L | 1488 | 1027 | 95.9 | 0.87 | 275 | 2.9 | 7.4 | 2.9 | 16 | 3.46 | 1PP6 316-4TAQQ | | 1085 | |
| 200 | 315 L | 1488 | 1284 | 95.7 | 0.88 | 345 | 3.2 | 7.3 | 3.1 | 16 | 4.22 | 1PP6 317-4TAQQ | | 1285 | |

IEC Squirrel-Cage Motors

Smoke-extraction motors

Forced-air cooled, for temperature/time classes F200, F300 – Aluminum series 1PP7/5, cast-iron series 1PP6

Selection and ordering data (continued)

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | |
|---------------------|------------------------------------|----------------|--------|--------|---|-------------------------------|--|--------|--|---------------------|--|---|
| | 50 Hz | | | | Without flange | With flange | | | With standard flange | With special flange | | |
| | 230 VΔ/ 400 VY | 400 VΔ/ 690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6/5 without protective cover ¹⁾ | IM B5, IM V3 ^{2) 3)} | IM V1 without protective cover ²⁾ | IM B35 | IM B14, IM V19/18 without protective cover | IM B34 | IM B14, IM V19/18 without protective cover | |
| 1 | 6 | 3 | 5 | 0 | 1 | 1 | 8 | 6 | 2 | 7 | 3 | |
| 1PP7 08 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ |
| 1PP7 09 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ |
| 1PP7 10 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ |
| 1PP7 11 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ |
| 1PP7 13 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ |
| 1PP7 16 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ |
| 1PP5 18 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | ✓ | – | – | – |
| 1PP5 20 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | ✓ | – | – | – |
| 1PP5 22 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | ✓ | – | – | – |
| 1PP6 25 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | ✓ | – | – | – |
| 1PP6 28 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | ✓ | – | – | – |
| 1PP6 310 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | ✓ | – | – | – |
| 1PP6 313 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | ✓ | – | – | – |
| 1PP6 316 □□ | – | ○ | – | ○ | □ ⁵⁾ | – | – | ✓ | ✓ | – | – | – |
| 1PP6 317 □□ | – | ○ | – | ○ | □ ⁵⁾ | – | – | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and with order code **L1Y** (see “Special versions” in the “Selection and ordering data” under “Voltages”).

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see “Special versions” in the “Selection and ordering data” under “Types of construction”).

¹⁾ If motors frame sizes 180 M to 315 L in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.

²⁾ 1PP5 183-... to 1PP5 223-... motors (motor series 1PP5, frame size 180 M to 225 M) can be supplied with two additional eyebolts; specify supplement “Z” and order code **K32**.

³⁾ 1PP6 253-... to 1PP6 318-... motors (motor series 1PP6 frame sizes 250 M to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be rotated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

⁴⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

⁵⁾ Not possible for type of construction IM V6 and IM V5 without protective cover.

IEC Squirrel-Cage Motors

Smoke-extraction motors

Forced-air cooled, for temperature/time classes F200, F300 – Aluminum series 1PP7/5, cast-iron series 1PP6

Selection and ordering data (continued)

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | | Locked-rotor torque with direct starting as multiple of rated torque | Locked-rotor current | Break-down torque | Torque class | Moment of inertia | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight |
|---|------------|----------------------------------|--------------------------|------------------------------|--------------------------------|------------------------------|----------------------------------|--|---------------------------------|-------------------|--------------------------|-----------------------|---|-------|--------|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | $\cos\phi_{\text{rated}}$ | | | | | | | | |
| P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | $T_{\text{LR}}/T_{\text{rated}}$ | $I_{\text{LR}}/I_{\text{rated}}$ | $T_{\text{B}}/T_{\text{rated}}$ | CL | J kg m ² | | | | |
| 6-pole, 1000 rpm at 50 Hz, cooling method IC 411, IP55 degree of protection, with test certificate according to EN 12101-3 | | | | | | | | | | | | | | | |
| 0.37 | 80 M | 920 | 3.9 | 62.0 | 0.72 | 1.2 | 1.9 | 3.1 | 2.1 | 16 | 0.0015 | 1PP7 080-6TAQQ | | 9.6 | |
| 0.55 | 80 M | 910 | 5.8 | 67.0 | 0.74 | 1.9 | 2.1 | 3.4 | 2.2 | 16 | 0.0018 | 1PP7 083-6TAQQ | | 11 | |
| 0.75 | 90 S | 920 | 7.8 | 68.0 | 0.76 | 2.1 | 2.2 | 3.7 | 2.2 | 16 | 0.0028 | 1PP7 090-6TAQQ | | 14.2 | |
| 1.1 | 90 L | 915 | 11.5 | 71.0 | 0.77 | 2.9 | 2.3 | 3.8 | 2.3 | 16 | 0.0035 | 1PP7 096-6TAQQ | | 17.4 | |
| 1.5 | 100 L | 925 | 15 | 74.0 | 0.70 | 4.25 | 2.3 | 4 | 2.3 | 16 | 0.0063 | 1PP7 106-6TAQQ | | 25 | |
| 2.2 | 112 M | 940 | 22 | 76.0 | 0.70 | 6.0 | 2.2 | 4.6 | 2.5 | 16 | 0.011 | 1PP7 113-6TAQQ | | 29 | |
| 3 | 132 S | 950 | 30 | 72.0 | 0.76 | 7.2 | 1.9 | 4.2 | 2.2 | 16 | 0.015 | 1PP7 130-6TAQQ | | 44 | |
| 4 | 132 M | 950 | 40 | 81.0 | 0.76 | 9.4 | 2.1 | 4.5 | 2.4 | 16 | 0.019 | 1PP7 133-6TAQQ | | 49 | |
| 5.5 | 132 M | 950 | 55 | 70.0 | 0.74 | 15.4 | 2.3 | 5 | 2.6 | 16 | 0.025 | 1PP7 134-6TAQQ | | 57 | |
| 7.5 | 160 M | 960 | 75 | 83.5 | 0.72 | 18 | 2.1 | 4.6 | 2.5 | 16 | 0.041 | 1PP7 163-6TAQQ | | 78 | |
| 11 | 160 L | 960 | 109 | 87.5 | 0.71 | 25.5 | 2.3 | 4.8 | 2.6 | 16 | 0.049 | 1PP7 166-6TAQQ | | 104 | |
| 15 | 180 L | 970 | 148 | 89.5 | 0.70 | 34.5 | 2.0 | 5.2 | 2.4 | 16 | 0.15 | 1PP5 186-6TAQQ | | 130 | |
| 18.5 | 200 L | 975 | 181 | 90.1 | 0.71 | 42.5 | 2.7 | 5.5 | 2.8 | 16 | 0.24 | 1PP5 206-6TAQQ | | 173 | |
| 22 | 200 L | 975 | 215 | 93.5 | 0.77 | 45.5 | 2.8 | 5.5 | 2.9 | 16 | 0.28 | 1PP5 207-6TAQQ | | 193 | |
| 30 | 225 M | 978 | 294 | 92.2 | 0.68 | 71 | 2.8 | 5.7 | 2.9 | 16 | 0.36 | 1PP5 223-6TAQQ | | 234 | |
| 37 | 250 M | 984 | 359 | 92.6 | 0.84 | 69 | 2.7 | 6.4 | 2.4 | 16 | 0.934 | 1PP6 253-6TAQQ | | 390 | |
| 45 | 280 S | 986 | 436 | 92.8 | 0.86 | 81 | 2.5 | 6.6 | 2.5 | 16 | 1.37 | 1PP6 280-6TAQQ | | 500 | |
| 55 | 280 M | 986 | 533 | 92.7 | 0.87 | 99 | 2.5 | 6.5 | 2.5 | 16 | 1.65 | 1PP6 283-6TAQQ | | 550 | |
| 75 | 315 S | 990 | 723 | 93.9 | 0.85 | 136 | 2.7 | 7.0 | 2.9 | 16 | 2.50 | 1PP6 310-6TAQQ | | 740 | |
| 90 | 315 M | 990 | 868 | 94.3 | 0.86 | 160 | 2.7 | 7.3 | 3.0 | 16 | 3.20 | 1PP6 313-6TAQQ | | 915 | |
| 110 | 315 L | 990 | 1061 | 94.7 | 0.87 | 192 | 2.6 | 7.4 | 3.0 | 16 | 4.02 | 1PP6 316-6TAQQ | | 990 | |
| 132 | 315 L | 988 | 1276 | 94.8 | 0.87 | 230 | 3.0 | 7.2 | 2.8 | 16 | 4.71 | 1PP6 317-6TAQQ | | 1160 | |
| 160 | 315 L | 990 | 1543 | 95.0 | 0.86 | 285 | 3.1 | 7.5 | 3.0 | 16 | 5.39 | 1PP6 318-6TAQQ | | 1225 | |

IEC Squirrel-Cage Motors

Smoke-extraction motors

Forced-air cooled, for temperature/time classes F200, F300 – Aluminum series 1PP7/5, cast-iron series 1PP6

Selection and ordering data (continued)

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | |
|---------------------|------------------------------------|----------------|--------|--------|---|-------------------------------|--|--------|--|---------------------|--|---|
| | 50 Hz | | | | Without flange | With flange | | | With standard flange | With special flange | | |
| | 230 VΔ/ 400 VY | 400 VΔ/ 690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6/5 without protective cover ¹⁾ | IM B5, IM V3 ^{2) 3)} | IM V1 without protective cover ²⁾ | IM B35 | IM B14, IM V19/18 without protective cover | IM B34 | IM B14, IM V19/18 without protective cover | |
| 1 | 6 | 3 | 5 | 0 | 1 | 1 | 8 | 6 | 2 | 7 | 3 | |
| 1PP7 08 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ |
| 1PP7 09 □□ | ○ | ○ | ○ | – | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ |
| 1PP7 10 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ |
| 1PP7 11 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ |
| 1PP7 13 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ |
| 1PP7 16 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ |
| 1PP5 18 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | ✓ | – | – | – |
| 1PP5 20 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | ✓ | – | – | – |
| 1PP5 22 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | ✓ | – | – | – |
| 1PP6 25 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | ✓ | – | – | – |
| 1PP6 28 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | ✓ | – | – | – |
| 1PP6 310 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | ✓ | – | – | – |
| 1PP6 313 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | ✓ | – | – | – |
| 1PP6 316 □□ | – | ○ | – | ○ | □ ⁵⁾ | – | – | ✓ | ✓ | – | – | – |
| 1PP6 317 □□ | – | ○ | – | ○ | □ ⁵⁾ | – | – | ✓ | ✓ | – | – | – |
| 1PP6 318 □□ | – | ○ | – | ○ | □ ⁵⁾ | – | – | ✓ | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and with order code **L1Y** (see “Special versions” in the “Selection and ordering data” under “Voltages”).

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see “Special versions” in the “Selection and ordering data” under “Types of construction”).

¹⁾ If motors frame sizes 180 M to 315 L in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.

²⁾ 1PP5 183-... to 1PP5 223-... motors (motor series 1PP5, frame size 180 M to 225 M) can be supplied with two additional eyebolts; specify supplement “Z” and order code **K32**.

³⁾ 1PP6 253-... to 1PP6 318-... motors (motor series 1PP6 frame sizes 250 M to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be rotated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

⁴⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

⁵⁾ Not possible for type of construction IM V6 and IM V5 without protective cover.

IEC Squirrel-Cage Motors

Smoke-extraction motors

Forced-air cooled, for temperature/time classes F200, F300 – Aluminum series 1PP7/5, cast-iron series 1PP6

Selection and ordering data (continued)

| Rated output at 50 Hz | | Frame size | Order No. | Price | Weight for type of construction IM B3 approx. |
|--|--------------------------|------------|---|-------|--|
| 1500 rpm | 3000 rpm | | | | |
| P_{rated} kW | P_{rated} kW | FS | For Order No. supplements for voltage and type of construction, see table below | | |
| 4/2-pole, 1500/3000 rpm at 50 Hz, cooling method IC 411, IP55 degree of protection, double pole-changing for driving smoke-extraction fans with one winding in Dahlander circuit, with test certificate in accordance with EN 12101-3 | | | | | |
| 0.14 | 0.63 | 80 M | 1PP7 080-0TAQQ | | 10.6 |
| 0.23 | 0.86 | 80 M | 1PP7 083-0TAQQ | | 12.0 |
| 0.3 | 1.26 | 90 S | 1PP7 090-0TAQQ | | 14.0 |
| 0.45 | 1.8 | 90 L | 1PP7 096-0TAQQ | | 17.3 |
| 0.59 | 2.25 | 100 L | 1PP7 106-0TAQQ | | 23.0 |
| 0.72 | 2.8 | 100 L | 1PP7 107-0TAQQ | | 26.0 |
| 0.99 | 3.95 | 112 M | 1PP7 113-0TAQQ | | 33.0 |
| 1.3 | 5.3 | 132 S | 1PP7 130-0TAQQ | | 46.0 |
| 1.8 | 7.2 | 132 M | 1PP7 133-0TAQQ | | 52.0 |
| 2.6 | 10.4 | 160 M | 1PP7 163-0TAQQ | | 70.0 |
| 3.85 | 15.3 | 160 L | 1PP7 166-0TAQQ | | 101.0 |
| Rated output at 50 Hz | | Frame size | Order No. | Price | Weight for type of construction IM B3 approx. |
| 1000 rpm | 1500 rpm | | | | |
| P_{rated} kW | P_{rated} kW | | | | |
| 6/4-pole, 1000/1500 rpm at 50 Hz, cooling method IC 411, IP55 degree of protection, double pole-changing for driving smoke-extraction fans with two windings, with test certificate in accordance with EN 12101-3 | | | | | |
| 0.11 | 0.36 | 80 M | 1PP7 080-1TDQQ | | 9.6 |
| 0.16 | 0.5 | 80 M | 1PP7 083-1TDQQ | | 11.0 |
| 0.26 | 0.72 | 90 S | 1PP7 090-1TDQQ | | 14.0 |
| 0.34 | 0.99 | 90 L | 1PP7 096-1TDQQ | | 17.3 |
| 0.54 | 1.53 | 100 L | 1PP7 106-1TDQQ | | 23.0 |
| 0.68 | 1.89 | 100 L | 1PP7 107-1TDQQ | | 26.0 |
| 0.81 | 2.7 | 112 M | 1PP7 113-1TDQQ | | 33.0 |
| 1.08 | 3.5 | 132 S | 1PP7 130-1TDQQ | | 46.0 |
| 1.53 | 4.85 | 132 M | 1PP7 133-1TDQQ | | 52.0 |
| 2.25 | 6.5 | 160 M | 1PP7 163-1TDQQ | | 70.0 |
| 3.35 | 10.8 | 160 L | 1PP7 166-1TDQQ | | 95.0 |
| 4.95 | 14.4 | 180 M | 1PP5 183-1TDQQ | | 116.0 |
| 5.9 | 17.1 | 180 L | 1PP5 186-1TDQQ | | 130.0 |
| 8.6 | 23.5 | 200 L | 1PP5 207-1TDQQ | | 173.0 |
| Rated output at 50 Hz | | Frame size | Order No. | Price | Weight for type of construction IM B3 approx. |
| 750 rpm | 1500 rpm | | | | |
| P_{rated} kW | P_{rated} kW | | | | |
| 8/4-pole, 750/1500 rpm at 50 Hz, cooling method IC 411, IP55 degree of protection, double pole-changing for driving smoke-extraction fans with one winding in Dahlander circuit, with test certificate in accordance with EN12101-3 | | | | | |
| 0.09 | 0.45 | 80 M | 1PP7 080-0TBQQ | | 9.6 |
| 0.14 | 0.63 | 80 M | 1PP7 083-0TBQQ | | 11.0 |
| 0.2 | 0.9 | 90 S | 1PP7 090-0TBQQ | | 14.0 |
| 0.3 | 1.35 | 90 L | 1PP7 096-0TBQQ | | 17.3 |
| 0.45 | 1.8 | 100 L | 1PP7 106-0TBQQ | | 23.0 |
| 0.59 | 2.25 | 100 L | 1PP7 107-0TBQQ | | 26.0 |
| 0.81 | 3.25 | 112 M | 1PP7 113-0TBQQ | | 33.0 |
| 0.99 | 4.25 | 132 S | 1PP7 130-0TBQQ | | 46.0 |
| 1.26 | 5.8 | 132 M | 1PP7 133-0TBQQ | | 52.0 |
| 1.98 | 8.6 | 160 M | 1PP7 163-0TBQQ | | 70.0 |
| 3 | 12.6 | 160 L | 1PP7 166-0TBQQ | | 95.0 |
| 4.05 | 14.4 | 180 M | 1PP5 183-0TBQQ | | 116.0 |
| 4.5 | 16.7 | 180 L | 1PP5 186-0TBQQ | | 130.0 |
| 6.8 | 25 | 200 L | 1PP5 207-0TBQQ | | 173.0 |

The rated outputs and weights may change slightly after they have been checked.

Further electrical data can be calculated and supplied on receipt of order.

IEC Squirrel-Cage Motors

Smoke-extraction motors

Forced-air cooled, for temperature/time classes F200, F300 – Aluminum series 1PP7/5, cast-iron series 1PP6

Selection and ordering data (continued)

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | Final position: Type of construction code | | | | | | | |
|----------------------|------------------------------------|----------|----------|--|----------------------------|---------------------------------|----------|--|----------|--|----------|
| | 50 Hz, direct online starting | | | Without flange | With flange | | | With standard flange | | With special flange | |
| | 230 V | 400 V | 500 V | IM B3/6/7/8, IM V6, IM V5 without protective cover | IM B5, IM V3 ¹⁾ | IM V 1 without protective cover | IM B35 | IM B14, IM V19/18 without protective cover | IM B34 | IM B14, IM V19/18 without protective cover | |
| | 1 | 6 | 5 | 0 | 1 | 1 | 8 | 6 | 2 | 7 | 3 |
| 1PP7 08 .-. . . . □□ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ |
| 1PP7 09 .-. . . . □□ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ |
| 1PP7 10 .-. . . . □□ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ |
| 1PP7 11 .-. . . . □□ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ |
| 1PP7 13 .-. . . . □□ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ |
| 1PP7 16 .-. . . . □□ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ |
| 1PP5 18 .-. . . . □□ | ○ | ○ | ○ | □ | ✓ ²⁾ | ✓ | – | ✓ | – | – | – |
| 1PP5 20 .-. . . . □□ | ○ | ○ | ○ | □ | ✓ ²⁾ | ✓ | – | ✓ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and with order code **L1Y** (see “Special versions” in the “Selection and ordering data” under “Voltages”).

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see “Special versions” in the “Selection and ordering data” under “Types of construction”).

¹⁾ 1PP5 183-... to 1PP5 223-... motors (motor series 1PP5, frame size 180 M to 225 M) can be supplied with two additional eyebolts; specify supplement “**Z**” and order code **K32**.

²⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

IEC Squirrel-Cage Motors

Smoke-extraction motors

Self-ventilated, for temperature/time class F400
Cast-iron series 1LA6, 1LG6

Selection and ordering data

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | | Locked-rotor torque with direct starting as multiple of rated torque | Locked-rotor current | Break-down torque | Torque class | Moment of inertia | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight |
|---|------------|----------------------------------|--------------------------|------------------------------|--------------------------------|------------------------------|----------------------------------|--|---------------------------------|-------------------|--------------------------|-------------------|---|-------|--------|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | $\cos\phi_{\text{rated}}$ | | | | | | | | |
| P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | $T_{\text{LR}}/T_{\text{rated}}$ | $I_{\text{LR}}/I_{\text{rated}}$ | $T_{\text{B}}/T_{\text{rated}}$ | CL | J kg m ² | | | | |
| 2-pole, 3000 rpm at 50 Hz, cooling method IC 411, IP55 degree of protection, with test certificate according to EN 12101-3 | | | | | | | | | | | | | | | |
| 3 | 100 L | 2875 | 10 | 78.0 | 0.85 | 6.5 | 2.5 | 6.2 | 2.8 | 16 | 0.0038 | 1LA6 106-2UAQQ | | 32 | |
| 4 | 112 M | 2900 | 13 | 78.0 | 0.85 | 8.7 | 2.5 | 6.8 | 2.9 | 16 | 0.0055 | 1LA6 113-2UAQQ | | 41 | |
| 5.5 | 132 S | 2920 | 18 | 82.5 | 0.89 | 10.8 | 1.9 | 5.7 | 2.7 | 16 | 0.016 | 1LA6 130-2UAQQ | | 51 | |
| 7.5 | 132 S | 2930 | 24 | 84.0 | 0.89 | 14.5 | 2.0 | 6.5 | 2.8 | 16 | 0.021 | 1LA6 131-2UAQQ | | 56 | |
| 11 | 160 M | 2930 | 36 | 88.0 | 0.85 | 21 | 1.8 | 6.4 | 2.7 | 16 | 0.034 | 1LA6 163-2UAQQ | | 93 | |
| 15 | 160 M | 2930 | 49 | 88.5 | 0.89 | 27.5 | 2.0 | 6.5 | 2.80 | 16 | 0.04 | 1LA6 164-2UAQQ | | 102 | |
| 18.5 | 160 L | 2930 | 60 | 87.5 | 0.90 | 34 | 2.0 | 7.0 | 2.70 | 16 | 0.05 | 1LA6 166-2UAQQ | | 112 | |
| 22 | 180 M | 2955 | 71 | 92.6 | 0.88 | 39 | 2.4 | 7.0 | 3.2 | 16 | 0.086 | 1LG6 183-2UAQQ | | 180 | |
| 30 | 200 L | 2955 | 97 | 92.2 | 0.88 | 53 | 2.3 | 6.7 | 3.1 | 16 | 0.151 | 1LG6 206-2UAQQ | | 225 | |
| 37 | 200 L | 2958 | 119 | 92.5 | 0.89 | 65 | 2.4 | 7.1 | 3.2 | 16 | 0.182 | 1LG6 207-2UAQQ | | 255 | |
| 45 | 225 M | 2962 | 145 | 94.6 | 0.89 | 77 | 2.4 | 7.1 | 3.1 | 16 | 0.266 | 1LG6 223-2UAQQ | | 330 | |
| 55 | 250 M | 2972 | 177 | 94.3 | 0.90 | 94 | 2.3 | 6.7 | 2.9 | 16 | 0.466 | 1LG6 253-2UAQQ | | 420 | |
| 75 | 280 S | 2975 | 241 | 94.5 | 0.89 | 128 | 2.4 | 6.8 | 2.9 | 13 | 0.832 | 1LG6 280-2UBQQ | | 530 | |
| 90 | 280 M | 2976 | 289 | 94.9 | 0.90 | 152 | 2.5 | 7.4 | 3.0 | 13 | 1.00 | 1LG6 283-2UBQQ | | 615 | |
| 110 | 315 S | 2982 | 352 | 94.7 | 0.91 | 184 | 2.4 | 6.8 | 2.7 | 13 | 1.39 | 1LG6 310-2UBQQ | | 790 | |
| 132 | 315 M | 2980 | 423 | 95.2 | 0.91 | 220 | 2.5 | 6.9 | 2.8 | 13 | 1.62 | 1LG6 313-2UBQQ | | 915 | |
| 160 | 315 L | 2982 | 512 | 95.6 | 0.92 | 265 | 2.4 | 7.1 | 2.8 | 13 | 2.09 | 1LG6 316-2UBQQ | | 1055 | |
| 190 | 315 L | 2982 | 608 | 95.9 | 0.93 | 325 | 2.6 | 7.2 | 2.9 | 13 | 2.46 | 1LG6 317-2UBQQ | | 1245 | |
| 4-pole, 1500 rpm at 50 Hz, cooling method IC 411, IP55 degree of protection, with test certificate according to EN 12101-3 | | | | | | | | | | | | | | | |
| 2.2 | 100 L | 1410 | 15 | 74.0 | 0.75 | 5.6 | 2.2 | 5.2 | 2.7 | 16 | 0.0048 | 1LA6 106-4UAQQ | | 32 | |
| 3 | 100 L | 1410 | 20 | 76.0 | 0.80 | 7.1 | 2.5 | 5.0 | 2.6 | 16 | 0.0058 | 1LA6 107-4UAQQ | | 34 | |
| 4 | 112 M | 1440 | 27 | 79.0 | 0.76 | 9.8 | 2.7 | 5.7 | 3.0 | 16 | 0.011 | 1LA6 113-4UAQQ | | 43 | |
| 5.5 | 132 S | 1455 | 36 | 78.0 | 0.75 | 13.5 | 2.5 | 6.3 | 3.0 | 16 | 0.018 | 1LA6 130-4UAQQ | | 53 | |
| 7.5 | 132 M | 1455 | 49 | 84.0 | 0.75 | 17.2 | 2.7 | 6.7 | 3.1 | 16 | 0.024 | 1LA6 133-4UAQQ | | 60 | |
| 11 | 160 M | 1460 | 72 | 82.5 | 0.80 | 24 | 2.2 | 6.2 | 2.7 | 16 | 0.04 | 1LA6 163-4UAQQ | | 97 | |
| 15 | 160 L | 1460 | 98 | 81.5 | 0.80 | 33.5 | 2.4 | 6.4 | 2.8 | 16 | 0.052 | 1LA6 166-4UAQQ | | 110 | |
| 18.5 | 180 M | 1470 | 120 | 90.7 | 0.84 | 35 | 2.4 | 6.1 | 2.8 | 16 | 0.122 | 1LG6 183-4UAQQ | | 155 | |
| 22 | 180 L | 1472 | 143 | 91.7 | 0.85 | 40.5 | 2.4 | 6.4 | 2.9 | 16 | 0.144 | 1LG6 186-4UAQQ | | 180 | |
| 30 | 200 L | 1470 | 195 | 92.2 | 0.86 | 55 | 2.4 | 6.4 | 3.1 | 16 | 0.234 | 1LG6 207-4UAQQ | | 225 | |
| 37 | 225 S | 1480 | 239 | 92.6 | 0.86 | 67 | 2.6 | 6.5 | 2.8 | 16 | 0.398 | 1LG6 220-4UAQQ | | 290 | |
| 45 | 225 M | 1480 | 290 | 93.3 | 0.86 | 81 | 2.7 | 6.6 | 2.9 | 16 | 0.486 | 1LG6 223-4UAQQ | | 330 | |
| 55 | 250 M | 1485 | 354 | 94.2 | 0.87 | 97 | 2.5 | 7.4 | 2.9 | 16 | 0.856 | 1LG6 253-4UAQQ | | 460 | |
| 75 | 280 S | 1484 | 483 | 94.2 | 0.87 | 132 | 2.4 | 6.7 | 2.8 | 16 | 1.39 | 1LG6 280-4UAQQ | | 574 | |
| 90 | 280 M | 1486 | 578 | 94.7 | 0.86 | 160 | 2.6 | 7.3 | 3.0 | 16 | 1.71 | 1LG6 283-4UAQQ | | 675 | |
| 110 | 315 S | 1488 | 706 | 95.0 | 0.87 | 192 | 2.7 | 7.0 | 2.8 | 16 | 2.31 | 1LG6 310-4UAQQ | | 810 | |
| 132 | 315 M | 1488 | 847 | 95.3 | 0.88 | 225 | 2.6 | 7.1 | 2.8 | 16 | 2.88 | 1LG6 313-4UAQQ | | 965 | |
| 160 | 315 L | 1490 | 1025 | 95.6 | 0.88 | 275 | 2.9 | 7.2 | 2.9 | 16 | 3.46 | 1LG6 316-4UAQQ | | 1105 | |
| 200 | 315 L | 1488 | 1284 | 95.7 | 0.88 | 345 | 3.1 | 7.5 | 2.9 | 16 | 4.22 | 1LG6 317-4UAQQ | | 1305 | |

IEC Squirrel-Cage Motors

Smoke-extraction motors

Self-ventilated, for temperature/time class F400
Cast-iron series 1LA6, 1LG6

Selection and ordering data (continued)

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | | | |
|---------------------|------------------------------------|---------------|--------|--------|--|----------------------------|--|---|--------|---|----------------------|---|---|--|
| | 50 Hz | | | | Without flange | With flange | | | | | With standard flange | With special flange | | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6, IM V5 without protective cover ¹⁾ | IM B5, IM V3 ²⁾ | IM V1 without protective cover ²⁾ | IM V1 with protective cover ²⁾³⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover | | |
| | 1 | 6 | 3 | 5 | 0 | 1 | 1 | 8 | 4 | 6 | 2 | 7 | 3 | |
| 1LA6 10 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA6 11 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA6 13 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA6 16 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 1LA6 18 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | ✓ | ✓ | – | – | – | |
| 1LG6 20 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | ✓ | ✓ | – | – | – | |
| 1LG6 22 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | ✓ | ✓ | – | – | – | |
| 1LG6 25 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | ✓ | ✓ | – | – | – | |
| 1LG6 28 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | ✓ | ✓ | – | – | – | |
| 1LG6 310 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | ✓ | ✓ | – | – | – | |
| 1LG6 313 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | ✓ | ✓ | – | – | – | |
| 1LG6 316 □□ | – | ○ | – | ○ | □ ⁵⁾ | – | – | ✓ | ✓ | ✓ | – | – | – | |
| 1LG6 317 □□ | – | ○ | – | ○ | □ ⁵⁾ | – | – | ✓ | ✓ | ✓ | – | – | – | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and with order code **L1Y** (see “Special versions” in the “Selection and ordering data” under “Voltages”).

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see “Special versions” in the “Selection and ordering data” under “Types of construction”).

¹⁾ If motors 1LG6 183-... to 1LG6 317-... (motor series 1LG6 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.

²⁾ 1LG6 220-... to 1LG6 317-... motors (motor series 1LG6 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be rotated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

³⁾ The “Second shaft extension” option, order code **K16** is not possible.

⁴⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

⁵⁾ Not possible for type of construction IM V6 and IM V5 without protective cover.

IEC Squirrel-Cage Motors

Smoke-extraction motors

Self-ventilated, for temperature/time class F400
Cast-iron series 1LA6, 1LG6

Selection and ordering data (continued)

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | | Locked-rotor torque with direct starting as multiple of rated torque | Locked-rotor current | Break-down torque | Torque class | Moment of inertia | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight |
|---|------------|----------------------------------|--------------------------|------------------------------|--------------------------------|------------------------------|----------------------------------|--|---------------------------------|-------------------|--------------------------|-----------------------|---|-----------|--------|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | $\cos\phi_{\text{rated}}$ | | | | | | | | |
| P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | $T_{\text{LR}}/T_{\text{rated}}$ | $I_{\text{LR}}/I_{\text{rated}}$ | $T_{\text{B}}/T_{\text{rated}}$ | CL | J kg m ² | | | m kg | |
| 6-pole, 1000 rpm at 50 Hz, cooling method IC 411, IP55 degree of protection, with test certificate according to EN 12101-3 | | | | | | | | | | | | | | | |
| 1.5 | 100 L | 925 | 15 | 69.0 | 0.70 | 4.5 | 2.3 | 4.0 | 2.3 | 16 | 0.0063 | 1LA6 106-6UAQQ | | 32 | |
| 2.2 | 112 M | 940 | 22 | 72.0 | 0.74 | 6.1 | 2.1 | 4.4 | 2.3 | 16 | 0.011 | 1LA6 113-6UAQQ | | 43 | |
| 3 | 132 S | 950 | 30 | 74.0 | 0.75 | 7.8 | 1.6 | 4.1 | 1.7 | 16 | 0.015 | 1LA6 130-6UAQQ | | 54 | |
| 4 | 132 M | 950 | 40 | 76.0 | 0.76 | 10 | 1.7 | 4.6 | 2.1 | 16 | 0.019 | 1LA6 133-6UAQQ | | 63 | |
| 5.5 | 132 M | 950 | 55 | 75.0 | 0.76 | 14 | 2.0 | 5.0 | 2.3 | 16 | 0.025 | 1LA6 134-6UAQQ | | 74 | |
| 7.5 | 160 M | 970 | 75 | 75.0 | 0.72 | 20 | 2.0 | 5.0 | 2.4 | 16 | 0.041 | 1LA6 163-6UAQQ | | 110 | |
| 11 | 160 L | 970 | 109 | 80.0 | 0.72 | 27.5 | 2.0 | 5.0 | 2.5 | 16 | 0.049 | 1LA6 166-6UAQQ | | 132 | |
| 15 | 180 L | 974 | 147 | 88.7 | 0.82 | 30 | 2.2 | 5.2 | 2.3 | 16 | 0.203 | 1LG6 186-6UAQQ | | 175 | |
| 18.5 | 200 L | 975 | 181 | 89.4 | 0.82 | 36.5 | 2.2 | 5.3 | 2.3 | 16 | 0.285 | 1LG6 206-6UAQQ | | 210 | |
| 22 | 200 L | 975 | 215 | 90.5 | 0.83 | 42.5 | 2.2 | 5.4 | 2.3 | 16 | 0.362 | 1LG6 207-6UAQQ | | 240 | |
| 30 | 225 M | 980 | 292 | 92.2 | 0.84 | 56 | 2.7 | 6.3 | 2.8 | 16 | 0.629 | 1LG6 223-6UAQQ | | 325 | |
| 37 | 250 M | 984 | 359 | 92.6 | 0.84 | 69 | 2.8 | 6.5 | 2.4 | 16 | 0.934 | 1LG6 253-6UAQQ | | 405 | |
| 45 | 280 S | 986 | 436 | 92.3 | 0.86 | 82 | 2.8 | 6.3 | 2.5 | 16 | 1.37 | 1LG6 280-6UAQQ | | 520 | |
| 55 | 280 M | 986 | 533 | 92.8 | 0.86 | 99 | 3.1 | 6.8 | 2.7 | 16 | 1.65 | 1LG6 283-6UAQQ | | 570 | |
| 75 | 315 S | 990 | 723 | 93.7 | 0.84 | 138 | 2.7 | 7.0 | 2.9 | 16 | 2.50 | 1LG6 310-6UAQQ | | 760 | |
| 90 | 315 M | 988 | 870 | 94.2 | 0.85 | 162 | 2.6 | 7.1 | 2.8 | 16 | 3.20 | 1LG6 313-6UAQQ | | 935 | |
| 110 | 315 L | 988 | 1063 | 94.5 | 0.85 | 198 | 2.8 | 7.2 | 2.8 | 16 | 4.02 | 1LG6 316-6UAQQ | | 1010 | |
| 132 | 315 L | 990 | 1273 | 94.9 | 0.85 | 235 | 3.0 | 7.5 | 3.0 | 16 | 4.71 | 1LG6 317-6UAQQ | | 1180 | |
| 160 | 315 L | 988 | 1546 | 94.9 | 0.86 | 285 | 3.1 | 7.5 | 3.0 | 16 | 5.39 | 1LG6 318-6UAQQ | | 1245 | |

IEC Squirrel-Cage Motors

Smoke-extraction motors

Self-ventilated, for temperature/time class F400
Cast-iron series 1LA6, 1LG6

Selection and ordering data (continued)

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | | |
|---------------------|------------------------------------|---------------|--------|--------|--|----------------------------|--|---|--------|---|----------------------|---|---|
| | 50 Hz | | | | Without flange | With flange | | | | | With standard flange | With special flange | |
| | 230 VΔ/400 VY | 400 VΔ/690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6, IM V5 without protective cover ¹⁾ | IM B5, IM V3 ²⁾ | IM V1 without protective cover ²⁾ | IM V1 with protective cover ²⁾³⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover | |
| | 1 | 6 | 3 | 5 | 0 | 1 | 1 | 8 | 4 | 6 | 2 | 7 | 3 |
| 1LA6 10 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 11 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 13 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 16 □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LG6 18 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 20 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 22 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 25 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 28 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 310 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 313 □□ | ○ | ○ | ○ | ○ | □ | ✓ ⁴⁾ | ✓ | – | ✓ | ✓ | – | – | – |
| 1LG6 316 □□ | – | ○ | – | ○ | □ ⁵⁾ | – | – | ✓ | ✓ | ✓ | – | – | – |
| 1LG6 317 □□ | | | | | | | | | | | | | |
| 1LG6 318 □□ | | | | | | | | | | | | | |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and with order code **L1Y** (see “Special versions” in the “Selection and ordering data” under “Voltages”).

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see “Special versions” in the “Selection and ordering data” under “Types of construction”).

1) If motors 1LG6 183-... to 1LG6 318-... (motor series 1LG6 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.

2) 1LG6 220-... to 1LG6 318-... motors (motor series 1LG6 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be rotated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

3) The “Second shaft extension” option, order code **K16** is not possible.

4) Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

5) Not possible for type of construction IM V6 and IM V5 without protective cover.

IEC Squirrel-Cage Motors

Smoke-extraction motors

Self-ventilated, for temperature/time class F400
Cast-iron series 1LA6, 1LG6

Selection and ordering data (continued)

| Rated output at 50 Hz 1500 rpm | 3000 rpm | Frame size | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight for type of construction IM B3 approx. <i>m</i> kg |
|--|--------------------------|------------|--|-------|--|
| P_{rated} kW | P_{rated} kW | FS | | | |
| 4/2-pole, 1500/3000 rpm at 50 Hz, cooling method IC 411, IP55 degree of protection, double pole-changing for driving smoke-extraction fans with one winding in Dahlander circuit, with test certificate in accordance with EN 12101-3 | | | | | |
| 0.52 | 2 | 100 L | 1LA6 106-0UAQQ | | 32 |
| 0.64 | 2.5 | 100 L | 1LA6 107-0UAQQ | | 35 |
| 0.88 | 3.5 | 112 M | 1LA6 113-0UAQQ | | 43 |
| 1.16 | 4.7 | 132 S | 1LA6 130-0UAQQ | | 53 |
| 1.6 | 6.4 | 132 M | 1LA6 133-0UAQQ | | 60 |
| 2.3 | 9.2 | 160 M | 1LA6 163-0UAQQ | | 97 |
| 3.45 | 13.6 | 160 L | 1LA6 166-0UAQQ | | 110 |
| Rated output at 50 Hz 1000 rpm | 1500 rpm | | | | |
| P_{rated} kW | P_{rated} kW | | | | |
| 6/4-pole, 1000/1500 rpm at 50 Hz, cooling method IC 411, IP55 degree of protection, double pole-changing for driving smoke-extraction fans with two windings, with test certificate in accordance with EN 12101-3 | | | | | |
| 0.48 | 1.36 | 100 L | 1LA6 106-1UDQQ | | 32 |
| 0.6 | 1.68 | 100 L | 1LA6 107-1UDQQ | | 35 |
| 0.72 | 2.4 | 112 M | 1LA6 113-1UDQQ | | 43 |
| 0.96 | 3.1 | 132 S | 1LA6 130-1UDQQ | | 53 |
| 1.36 | 4.3 | 132 M | 1LA6 133-1UDQQ | | 60 |
| 2 | 5.75 | 160 M | 1LA6 163-1UDQQ | | 97 |
| 2.95 | 9.6 | 160 L | 1LA6 166-1UDQQ | | 110 |
| Rated output at 50 Hz 750 rpm | 1500 rpm | | | | |
| P_{rated} kW | P_{rated} kW | | | | |
| 8/4-pole, 750/1500 rpm at 50 Hz, cooling method IC 411, IP55 degree of protection, double pole-changing for driving smoke-extraction fans with one winding in Dahlander circuit, with test certificate in accordance with EN 12101-3 | | | | | |
| 0.3 | 1.6 | 100 L | 1LA6 106-0UBQQ | | 32 |
| 0.52 | 2 | 100 L | 1LA6 107-0UBQQ | | 35 |
| 0.72 | 2.85 | 112 M | 1LA6 113-0UBQQ | | 43 |
| 0.88 | 3.75 | 132 S | 1LA6 130-0UBQQ | | 53 |
| 1.12 | 5.1 | 132 M | 1LA6 133-0UBQQ | | 60 |
| 1.76 | 7.6 | 160 M | 1LA6 163-0UBQQ | | 97 |
| 2.6 | 11.2 | 160 L | 1LA6 166-0UBQQ | | 110 |

The rated outputs and weights may change slightly after they have been checked.

Further electrical data can be calculated and supplied on receipt of order.

IEC Squirrel-Cage Motors

Smoke-extraction motors

Self-ventilated, for temperature/time class F400
Cast-iron series 1LA6, 1LG6

Selection and ordering data (continued)

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | Final position: Type of construction code | | | | | | | | |
|--------------------|------------------------------------|-------|-------|--|--------------|--------------------------------|---|--------|---|--------|---|---|
| | 50 Hz, direct online starting | | | Without flange | With flange | | | | With standard flange | | With special flange | |
| | 230 V | 400 V | 500 V | IM B3/6/7/8, IM V6, IM V5 without protective cover | IM B5, IM V3 | IM V1 without protective cover | IM V1 with protective cover ¹⁾ | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover | |
| | 1 | 6 | 5 | 0 | 1 | 1 | 8 | 4 | 6 | 2 | 7 | 3 |
| 1LA6 10 □□ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 11 □□ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 13 □□ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1LA6 16 □□ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ | ✓ |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and with order code **L1Y** (see “Special versions” in the “Selection and ordering data” under “Voltages”).

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see “Special versions” in the “Selection and ordering data” under “Types of construction”).

¹⁾ The “Second shaft extension” option, order code **K16** is not possible.

IEC Squirrel-Cage Motors

Smoke-extraction motors

Forced-air cooled, for temperature/time class F400
Cast-iron series 1PP6

Selection and ordering data

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | | Locked-rotor torque with direct starting as multiple of rated torque | Locked-rotor current | Break-down torque | Torque class | Moment of inertia | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight |
|---|------------|----------------------------------|--------------------------|------------------------------|--------------------------------|------------------------------|----------------------------------|--|---------------------------------|-------------------|--------------------------|-----------------------|---|-----------|--------|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | $\cos\phi_{\text{rated}}$ | | | | | | | | |
| P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | $T_{\text{LR}}/T_{\text{rated}}$ | $I_{\text{LR}}/I_{\text{rated}}$ | $T_{\text{B}}/T_{\text{rated}}$ | CL | J kg m ² | | | m kg | |
| 2-pole, 3000 rpm at 50 Hz, cooling method IC 411, IP55 degree of protection, with test certificate according to EN 12101-3 | | | | | | | | | | | | | | | |
| 3 | 100 L | 2875 | 10 | 78.0 | 0.85 | 6.5 | 2.5 | 6.2 | 2.8 | 16 | 0.0038 | 1PP6 106-2UAQQ | | 31 | |
| 4 | 112 M | 2900 | 13 | 78.0 | 0.85 | 8.7 | 2.5 | 6.8 | 2.9 | 16 | 0.0055 | 1PP6 113-2UAQQ | | 40 | |
| 5.5 | 132 S | 2920 | 18 | 82.5 | 0.89 | 10.8 | 1.9 | 5.7 | 2.7 | 16 | 0.016 | 1PP6 130-2UAQQ | | 49 | |
| 7.5 | 132 S | 2930 | 24 | 84.0 | 0.89 | 14.5 | 2.0 | 6.5 | 2.8 | 16 | 0.021 | 1PP6 131-2UAQQ | | 54 | |
| 11 | 160 M | 2930 | 36 | 88.0 | 0.85 | 21 | 1.8 | 6.4 | 2.7 | 16 | 0.034 | 1PP6 163-2UAQQ | | 91 | |
| 15 | 160 M | 2930 | 49 | 88.5 | 0.89 | 27.5 | 2.0 | 6.5 | 2.80 | 16 | 0.04 | 1PP6 164-2UAQQ | | 99 | |
| 18.5 | 160 L | 2930 | 60 | 87.5 | 0.90 | 34 | 2.0 | 7.0 | 2.70 | 16 | 0.052 | 1PP6 166-2UAQQ | | 109 | |
| 22 | 180 M | 2955 | 71 | 93.1 | 0.88 | 39 | 2.4 | 7.0 | 3.2 | 16 | 0.086 | 1PP6 183-2UAQQ | | 175 | |
| 30 | 200 L | 2955 | 97 | 92.8 | 0.88 | 53 | 2.3 | 6.7 | 3.1 | 16 | 0.151 | 1PP6 206-2UAQQ | | 215 | |
| 37 | 200 L | 2958 | 119 | 93.0 | 0.89 | 65 | 2.4 | 7.1 | 3.2 | 16 | 0.182 | 1PP6 207-2UAQQ | | 245 | |
| 45 | 225 M | 2962 | 145 | 95.0 | 0.89 | 77 | 2.4 | 7.1 | 3.1 | 16 | 0.266 | 1PP6 223-2UAQQ | | 320 | |
| 55 | 250 M | 2972 | 177 | 94.9 | 0.90 | 94 | 2.3 | 6.7 | 2.9 | 16 | 0.466 | 1PP6 253-2UAQQ | | 405 | |
| 75 | 280 S | 2975 | 241 | 94.9 | 0.89 | 128 | 2.4 | 6.8 | 2.9 | 13 | 0.832 | 1PP6 280-2UBQQ | | 510 | |
| 90 | 280 M | 2976 | 289 | 95.2 | 0.90 | 152 | 2.5 | 7.4 | 3.0 | 13 | 1.00 | 1PP6 283-2UBQQ | | 595 | |
| 110 | 315 S | 2982 | 352 | 95.3 | 0.91 | 184 | 2.4 | 6.8 | 2.7 | 13 | 1.39 | 1PP6 310-2UBQQ | | 770 | |
| 132 | 315 M | 2980 | 423 | 95.7 | 0.91 | 220 | 2.5 | 6.9 | 2.8 | 13 | 1.62 | 1PP6 313-2UBQQ | | 895 | |
| 160 | 315 L | 2982 | 512 | 96.0 | 0.92 | 265 | 2.4 | 7.1 | 2.8 | 13 | 2.09 | 1PP6 316-2UBQQ | | 1035 | |
| 190 | 315 L | 2982 | 608 | 96.3 | 0.93 | 325 | 2.6 | 7.2 | 2.9 | 13 | 2.46 | 1PP6 317-2UBQQ | | 1225 | |
| 4-pole, 1500 rpm at 50 Hz, cooling method IC 411, IP55 degree of protection, with test certificate according to EN 12101-3 | | | | | | | | | | | | | | | |
| 2.2 | 100 L | 1410 | 15 | 74.0 | 0.75 | 5.6 | 2.2 | 5.2 | 2.7 | 16 | 0.0048 | 1PP6 106-4UAQQ | | 31 | |
| 3 | 100 L | 1410 | 20 | 76.0 | 0.80 | 7.1 | 2.5 | 5.0 | 2.6 | 16 | 0.0058 | 1PP6 107-4UAQQ | | 34 | |
| 4 | 112 M | 1440 | 27 | 79.0 | 0.76 | 9.8 | 2.7 | 5.7 | 3.0 | 16 | 0.011 | 1PP6 113-4UAQQ | | 42 | |
| 5.5 | 132 S | 1455 | 36 | 78.0 | 0.75 | 13.5 | 2.5 | 6.3 | 3.0 | 16 | 0.018 | 1PP6 130-4UAQQ | | 51 | |
| 7.5 | 132 M | 1455 | 49 | 84.0 | 0.75 | 17.2 | 2.7 | 6.7 | 3.1 | 16 | 0.024 | 1PP6 133-4UAQQ | | 58 | |
| 11 | 160 M | 1460 | 72 | 82.5 | 0.80 | 24 | 2.2 | 6.2 | 2.7 | 16 | 0.04 | 1PP6 163-4UAQQ | | 95 | |
| 15 | 160 L | 1460 | 98 | 81.5 | 0.80 | 33.5 | 2.4 | 6.4 | 2.8 | 16 | 0.052 | 1PP6 166-4UAQQ | | 108 | |
| 18.5 | 180 M | 1470 | 120 | 91.2 | 0.84 | 35 | 2.4 | 6.1 | 2.8 | 16 | 0.122 | 1PP6 183-4UAQQ | | 150 | |
| 22 | 180 L | 1472 | 143 | 92.1 | 0.85 | 40.5 | 2.4 | 6.4 | 2.9 | 16 | 0.144 | 1PP6 186-4UAQQ | | 175 | |
| 30 | 200 L | 1470 | 195 | 92.6 | 0.86 | 55 | 2.4 | 6.4 | 3.1 | 16 | 0.234 | 1PP6 207-4UAQQ | | 215 | |
| 37 | 225 S | 1480 | 239 | 92.9 | 0.86 | 67 | 2.6 | 6.5 | 2.8 | 16 | 0.398 | 1PP6 220-4UAQQ | | 280 | |
| 45 | 225 M | 1480 | 290 | 93.6 | 0.86 | 81 | 2.7 | 6.6 | 2.9 | 16 | 0.486 | 1PP6 223-4UAQQ | | 320 | |
| 55 | 250 M | 1485 | 354 | 94.5 | 0.87 | 97 | 2.5 | 7.4 | 2.9 | 16 | 0.856 | 1PP6 253-4UAQQ | | 445 | |
| 75 | 280 S | 1484 | 483 | 94.6 | 0.87 | 132 | 2.4 | 6.7 | 2.8 | 16 | 1.39 | 1PP6 280-4UAQQ | | 554 | |
| 90 | 280 M | 1486 | 578 | 95.1 | 0.86 | 160 | 2.6 | 7.3 | 3.0 | 16 | 1.71 | 1PP6 283-4UAQQ | | 655 | |
| 110 | 315 S | 1488 | 706 | 95.3 | 0.87 | 192 | 2.7 | 7.0 | 2.8 | 16 | 2.31 | 1PP6 310-4UAQQ | | 790 | |
| 132 | 315 M | 1488 | 847 | 95.6 | 0.88 | 225 | 2.6 | 7.1 | 2.8 | 16 | 2.88 | 1PP6 313-4UAQQ | | 945 | |
| 160 | 315 L | 1490 | 1025 | 95.8 | 0.88 | 275 | 2.9 | 7.2 | 2.9 | 16 | 3.46 | 1PP6 316-4UAQQ | | 1085 | |
| 200 | 315 L | 1488 | 1284 | 95.9 | 0.88 | 345 | 3.1 | 7.5 | 2.9 | 16 | 4.22 | 1PP6 317-4UAQQ | | 1285 | |

IEC Squirrel-Cage Motors

Smoke-extraction motors

Forced-air cooled, for temperature/time class F400
Cast-iron series 1PP6

Selection and ordering data (continued)

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | |
|-----------------------|------------------------------------|----------------|----------|----------|--|----------------------------|--------------------------------|----------|---|---------------------|---|----------|
| | 50 Hz | | | | Without flange | With flange | | | With standard flange | With special flange | | |
| | 230 VΔ/ 400 VY | 400 VΔ/ 690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6, IM V5 without protective cover ¹⁾ | IM B5, IM V3 ²⁾ | IM V1 without protective cover | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover | |
| | 1 | 6 | 3 | 5 | 0 | 1 | 1 | 8 | 6 | 2 | 7 | 3 |
| 1PP6 10 .-. . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | - | ✓ | ✓ | ✓ | ✓ |
| 1PP6 11 .-. . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | - | ✓ | ✓ | ✓ | ✓ |
| 1PP6 13 .-. . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | - | ✓ | ✓ | ✓ | ✓ |
| 1PP6 16 .-. . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | - | ✓ | ✓ | ✓ | ✓ |
| 1PP6 18 .-. . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | - | ✓ | - | - | - |
| 1PP6 20 .-. . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | - | ✓ | - | - | - |
| 1PP6 22 .-. . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | - | ✓ | - | - | - |
| 1PP6 25 .-. . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | - | ✓ | - | - | - |
| 1PP6 28 .-. . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | - | ✓ | - | - | - |
| 1PP6 310 .-. . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | - | ✓ | - | - | - |
| 1PP6 313 .-. . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | - | ✓ | - | - | - |
| 1PP6 316 .-. . . . □□ | - | ○ | - | ○ | □ ⁴⁾ | - | - | ✓ | ✓ | - | - | - |
| 1PP6 317 .-. . . . □□ | - | ○ | - | ○ | □ ⁴⁾ | - | - | ✓ | ✓ | - | - | - |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and with order code **L1Y** (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ If motors 1PP6 183-... to 1PP6 318-... (motor series 1PP6 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.

²⁾ 1PP6 220-... to 1PP6 318-... motors (motor series 1PP6 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be rotated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

³⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

⁴⁾ Not possible for type of construction IM V6 and IM V5 without protective cover.

IEC Squirrel-Cage Motors

Smoke-extraction motors

Forced-air cooled, for temperature/time class F400
Cast-iron series 1PP6

Selection and ordering data (continued)

| Rated output at 50 Hz | Frame size | Operating values at rated output | | | | | | Locked-rotor torque with direct starting as multiple of rated torque | Locked-rotor current | Break-down torque | Torque class | Moment of inertia | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight |
|---|------------|----------------------------------|--------------------------|------------------------------|--------------------------------|------------------------------|----------------------------------|--|---------------------------------|-------------------|--------------------------|-----------------------|---|-----------|--------|
| | | Rated speed at 50 Hz | Rated torque at 50 Hz | Efficiency at 50 Hz 4/4-load | Power factor at 50 Hz 4/4-load | Rated current at 50 Hz 400 V | $\cos\phi_{\text{rated}}$ | | | | | | | | |
| P_{rated} kW | FS | n_{rated} rpm | T_{rated} Nm | η_{rated} % | $\cos\phi_{\text{rated}}$ | I_{rated} A | $T_{\text{LR}}/T_{\text{rated}}$ | $I_{\text{LR}}/I_{\text{rated}}$ | $T_{\text{B}}/T_{\text{rated}}$ | CL | J kg m ² | | | m kg | |
| 6-pole, 1000 rpm at 50 Hz, cooling method IC 411, IP55 degree of protection, with test certificate according to EN 12101-3 | | | | | | | | | | | | | | | |
| 1.5 | 100 L | 925 | 15 | 69.0 | 0.70 | 4.5 | 2.3 | 4.0 | 2.3 | 16 | 0.0063 | 1PP6 106-6UAQQ | | 31 | |
| 2.2 | 112 M | 940 | 22 | 72.0 | 0.74 | 6.0 | 2.1 | 4.4 | 2.3 | 16 | 0.011 | 1PP6 113-6UAQQ | | 42 | |
| 3 | 132 S | 950 | 30 | 74.0 | 0.75 | 7.8 | 1.6 | 4.1 | 1.7 | 16 | 0.015 | 1PP6 130-6UAQQ | | 52 | |
| 4 | 132 M | 950 | 40 | 76.0 | 0.76 | 10 | 1.7 | 4.6 | 2.1 | 16 | 0.019 | 1PP6 133-6UAQQ | | 62 | |
| 5.5 | 132 M | 950 | 55 | 75.0 | 0.76 | 14 | 2.0 | 5.0 | 2.3 | 16 | 0.025 | 1PP6 134-6UAQQ | | 72 | |
| 7.5 | 160 M | 970 | 75 | 75.0 | 0.72 | 20 | 2.0 | 5.0 | 2.4 | 16 | 0.041 | 1PP6 163-6UAQQ | | 107 | |
| 11 | 160 L | 970 | 109 | 80.0 | 0.72 | 27.5 | 2.0 | 5.0 | 2.5 | 16 | 0.049 | 1PP6 166-6UAQQ | | 129 | |
| 15 | 180 L | 975 | 147 | 88.9 | 0.82 | 30 | 2.2 | 5.2 | 2.3 | 16 | 0.203 | 1PP6 186-6UAQQ | | 170 | |
| 18.5 | 200 L | 975 | 181 | 89.8 | 0.82 | 36.5 | 2.2 | 5.3 | 2.3 | 16 | 0.285 | 1PP6 206-6UAQQ | | 200 | |
| 22 | 200 L | 975 | 215 | 90.8 | 0.83 | 42.5 | 2.2 | 5.4 | 2.3 | 16 | 0.362 | 1PP6 207-6UAQQ | | 230 | |
| 30 | 225 M | 980 | 292 | 92.3 | 0.84 | 56 | 2.7 | 6.3 | 2.8 | 16 | 0.629 | 1PP6 223-6UAQQ | | 315 | |
| 37 | 250 M | 984 | 359 | 93.0 | 0.84 | 69 | 2.8 | 6.5 | 2.4 | 16 | 0.934 | 1PP6 253-6UAQQ | | 390 | |
| 45 | 280 S | 986 | 436 | 92.6 | 0.86 | 82 | 2.8 | 6.3 | 2.5 | 16 | 1.37 | 1PP6 280-6UAQQ | | 500 | |
| 55 | 280 M | 986 | 533 | 93.1 | 0.86 | 99 | 3.1 | 6.8 | 2.7 | 16 | 1.65 | 1PP6 283-6UAQQ | | 550 | |
| 75 | 315 S | 990 | 723 | 94.0 | 0.84 | 138 | 2.7 | 7.0 | 2.9 | 16 | 2.50 | 1PP6 310-6UAQQ | | 740 | |
| 90 | 315 M | 988 | 870 | 94.5 | 0.85 | 162 | 2.6 | 7.1 | 2.8 | 16 | 2.50 | 1PP6 313-6UAQQ | | 915 | |
| 110 | 315 L | 988 | 1063 | 94.7 | 0.85 | 198 | 2.8 | 7.2 | 2.8 | 16 | 2.50 | 1PP6 316-6UAQQ | | 990 | |
| 132 | 315 L | 990 | 1273 | 95.1 | 0.85 | 235 | 3.0 | 7.5 | 3.0 | 16 | 2.50 | 1PP6 317-6UAQQ | | 1160 | |
| 160 | 315 L | 988 | 1546 | 95.1 | 0.86 | 285 | 3.1 | 7.5 | 3.0 | 16 | 2.50 | 1PP6 318-6UAQQ | | 1225 | |

IEC Squirrel-Cage Motors

Smoke-extraction motors

Forced-air cooled, for temperature/time class F400
Cast-iron series 1PP6

Selection and ordering data (continued)

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | | Final position: Type of construction code | | | | | | | |
|-----------------------|------------------------------------|----------------|--------|--------|--|----------------------------|--------------------------------|--------|---|--------|---|---|
| | 50 Hz | | | | Without flange | With flange | | | With standard flange | | With special flange | |
| | 230 VΔ/ 400 VY | 400 VΔ/ 690 VY | 500 VY | 500 VΔ | IM B3/6/7/8, IM V6, IM V5 without protective cover ¹⁾ | IM B5, IM V3 ²⁾ | IM V1 without protective cover | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover | |
| | 1 | 6 | 3 | 5 | 0 | 1 | 1 | 8 | 6 | 2 | 7 | 3 |
| 1PP6 10 .-. . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | - | ✓ | ✓ | ✓ | ✓ |
| 1PP6 11 .-. . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | - | ✓ | ✓ | ✓ | ✓ |
| 1PP6 13 .-. . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | - | ✓ | ✓ | ✓ | ✓ |
| 1PP6 16 .-. . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ | ✓ | - | ✓ | ✓ | ✓ | ✓ |
| 1PP6 18 .-. . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | - | ✓ | - | - | - |
| 1PP6 20 .-. . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | - | ✓ | - | - | - |
| 1PP6 22 .-. . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | - | ✓ | - | - | - |
| 1PP6 25 .-. . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | - | ✓ | - | - | - |
| 1PP6 28 .-. . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | - | ✓ | - | - | - |
| 1PP6 310 .-. . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | - | ✓ | - | - | - |
| 1PP6 313 .-. . . . □□ | ○ | ○ | ○ | ○ | □ | ✓ ³⁾ | ✓ | - | ✓ | - | - | - |
| 1PP6 316 .-. . . . □□ | - | ○ | - | ○ | □ ⁴⁾ | - | - | ✓ | ✓ | - | - | - |
| 1PP6 317 .-. . . . □□ | - | ○ | - | ○ | □ ⁴⁾ | - | - | ✓ | ✓ | - | - | - |
| 1PP6 318 .-. . . . □□ | - | ○ | - | ○ | □ ⁴⁾ | - | - | ✓ | ✓ | - | - | - |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and with order code **L1Y** (see "Special versions" in the "Selection and ordering data" under "Voltages").

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see "Special versions" in the "Selection and ordering data" under "Types of construction").

¹⁾ If motors 1PP6 183-... to 1PP6 318-... (motor series 1PP6 frame sizes 180 M to 315 L) in types of construction with feet IM B6, IM B7, IM V6 or IM V5 without protective cover are fixed to the wall, it is recommended that the motor feet are supported.

²⁾ 1PP6 220-... to 1PP6 318-... motors (motor series 1PP6 frame sizes 225 S to 315 L) are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be rotated in accordance with IM V1 or IM V3. It is important to note that stress must not be applied perpendicular to the ring plane.

³⁾ Type of construction IM V3 is only possible using type of construction code **9** and order code **M1G**.

⁴⁾ Not possible for type of construction IM V6 and IM V5 without protective cover.

IEC Squirrel-Cage Motors

Smoke-extraction motors

Forced-air cooled, for temperature/time class F400
Cast-iron series 1PP6

Selection and ordering data (continued)

| Rated output at 50 Hz 1500 rpm | 3000 rpm | Frame size | Order No. For Order No. supplements for voltage and type of construction, see table below | Price | Weight for type of construction IM B3 approx. <i>m</i> kg |
|--|--------------------------|------------|--|-------|--|
| P_{rated} kW | P_{rated} kW | FS | | | |
| 4/2-pole, 1500/3000 rpm at 50 Hz, cooling method IC 411, IP55 degree of protection, double pole-changing for driving smoke-extraction fans with one winding in Dahlander circuit, with test certificate in accordance with EN 12101-3 | | | | | |
| 0.52 | 2 | 100 L | 1PP6 106-0UA□□ | | 31 |
| 0.64 | 2.5 | 100 L | 1PP6 107-0UA□□ | | 34 |
| 0.88 | 3.5 | 112 M | 1PP6 113-0UA□□ | | 42 |
| 1.16 | 4.7 | 132 S | 1PP6 130-0UA□□ | | 51 |
| 1.6 | 6.4 | 132 M | 1PP6 133-0UA□□ | | 58 |
| 2.3 | 9.2 | 160 M | 1PP6 163-0UA□□ | | 95 |
| 3.45 | 13.6 | 160 M | 1PP6 166-0UA□□ | | 108 |
| Rated output at 50 Hz 1000 rpm | 1500 rpm | | | | |
| P_{rated} kW | P_{rated} kW | | | | |
| 6/4-pole, 1000/1500 rpm at 50 Hz, cooling method IC 411, IP55 degree of protection, double pole-changing for driving smoke-extraction fans with two windings, with test certificate in accordance with EN 12101-3 | | | | | |
| 0.48 | 1.36 | 100 L | 1PP6 106-1UD□□ | | 31 |
| 0.6 | 1.68 | 100 L | 1PP6 107-1UD□□ | | 34 |
| 0.72 | 2.4 | 112 M | 1PP6 113-1UD□□ | | 42 |
| 0.96 | 3.1 | 132 S | 1PP6 130-1UD□□ | | 51 |
| 1.36 | 4.3 | 132 M | 1PP6 133-1UD□□ | | 58 |
| 2 | 5.75 | 160 M | 1PP6 163-1UD□□ | | 95 |
| 2.95 | 9.6 | 160 L | 1PP6 166-1UD□□ | | 108 |
| Rated output at 50 Hz 750 rpm | 1500 rpm | | | | |
| P_{rated} kW | P_{rated} kW | | | | |
| 8/4-pole, 750/1500 rpm at 50 Hz, cooling method IC 411, IP55 degree of protection, double pole-changing for driving smoke-extraction fans with one winding in Dahlander circuit, with test certificate in accordance with EN 12101-3 | | | | | |
| 0.3 | 1.6 | 100 L | 1PP6 106-0UB□□ | | 31 |
| 0.52 | 2 | 100 L | 1PP6 107-0UB□□ | | 34 |
| 0.72 | 2.85 | 112 M | 1PP6 113-0UB□□ | | 42 |
| 0.88 | 3.75 | 132 S | 1PP6 130-0UB□□ | | 51 |
| 1.12 | 5.1 | 132 M | 1PP6 133-0UB□□ | | 58 |
| 1.76 | 7.6 | 160 M | 1PP6 163-0UB□□ | | 95 |
| 2.6 | 11.2 | 160 L | 1PP6 166-0UB□□ | | 108 |

The rated outputs and weights may change slightly after they have been checked.

Further electrical data can be calculated and supplied on receipt of order.

IEC Squirrel-Cage Motors

Smoke-extraction motors

Forced-air cooled, for temperature/time class F400
Cast-iron series 1PP6

Selection and ordering data (continued)

Order No. supplements

| Motor type | Penultimate position: Voltage code | | | Final position: Type of construction code | | | | | | | |
|--------------------|------------------------------------|-------|-------|--|--------------|--------------------------------|---|----------------------|---|---------------------|---|
| | 50 Hz, direct online starting | | | Without flange | With flange | | | With standard flange | | With special flange | |
| | 230 V | 400 V | 500 V | IM B3/6/7/8, IM V6, IM V5 without protective cover | IM B5, IM V3 | IM V1 without protective cover | | IM B35 | IM B14, IM V19, IM V18 without protective cover | IM B34 | IM B14, IM V19, IM V18 without protective cover |
| | 1 | 6 | 5 | 0 | 1 | 1 | 8 | 6 | 2 | 7 | 3 |
| 1PP6 10 □□ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ |
| 1PP6 11 □□ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ |
| 1PP6 13 □□ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ |
| 1PP6 16 □□ | ○ | ○ | ○ | □ | ✓ | ✓ | – | ✓ | ✓ | ✓ | ✓ |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible

Order other voltages with voltage code **9** in the penultimate position and with order code **L1Y** (see “Special versions” in the “Selection and ordering data” under “Voltages”).

Order other types of construction with type of construction code **9** in the final position and the corresponding order code (see “Special versions” in the “Selection and ordering data” under “Types of construction”).

IEC Squirrel-Cage Motors

Smoke-extraction motors

Special versions

Selection and ordering data

Voltages

Additional order codes for other voltages or voltage codes
(without “-Z” supplement)

For some non-standard voltages at 50 or 60 Hz, order codes are specified. They are ordered by specifying the code digit 9 for voltage in the 11th position of the Order No. and the appropriate order code.

Plain text must be specified in the order:

Voltage, frequency, circuit, required rated output in kW.

| Special versions | Voltage code 11th position of Order No. | Additional identification code with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|---|---|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| Non-standard winding for voltages between 200 V and 690 V, (voltages outside this range are available on request) ¹⁾ | 9 | L1Y • | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| Non-standard winding for voltages between 200 V and 690 V, (voltages outside this range are available on request) ¹⁾ | 9 | L1Y • | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| Forced-air cooled motors | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| Non-standard winding for voltages between 200 V and 690 V, (voltages outside this range are available on request) ¹⁾ | 9 | L1Y • | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| Non-standard winding for voltages between 200 V and 690 V, (voltages outside this range are available on request) ¹⁾ | 9 | L1Y • | | | | | | | | | | | | | | | |

- ✓ With additional charge
- This order code only determines the price of the version – Additional plain text is required.

¹⁾ When ordering, specify in plain text: Voltage, frequency, circuit, required rated output in kW

IEC Squirrel-Cage Motors

Smoke-extraction motors

Special versions

Types of construction

Additional order codes for other types of construction or type of construction codes (without "-Z" supplement)

Order codes have been defined for some special types of construction. They are ordered by specifying the code digit 9 for the type of construction in the 12th position of the Order No. and the appropriate order code.

| Special versions | Type of construction code 12th position of Order No. | Additional identification code with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | | | | |
|---------------------------------|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------|--|--|---|
| | | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 S/M | 315 L | | |
| Self-ventilated motors | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | 1LA7 (aluminum) temperature/time classes F200 and F300 | 1LA5 (aluminum) temperature/time classes F200 and F300 | |
| With flange | | | | | | | | | | | | | | | | | | | | |
| IM V3 | 9 | M1G | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ |
| With special flange | | | | | | | | | | | | | | | | | | | | |
| IM B34 | 9 | M2C | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| With flange | | | | | | | | | | | | | | | | | | | | |
| IM V3 ¹⁾ | 9 | M1G | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ |
| With special flange | | | | | | | | | | | | | | | | | | | | |
| IM B34 | 9 | M2C | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ |
| Forced-air cooled motors | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| With flange | | | | | | | | | | | | | | | | | | | | |
| IM V3 | 9 | M1G | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ |
| With special flange | | | | | | | | | | | | | | | | | | | | |
| IM B34 | 9 | M2C | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| With flange | | | | | | | | | | | | | | | | | | | | |
| IM V3 ¹⁾ | 9 | M1G | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ |
| With special flange | | | | | | | | | | | | | | | | | | | | |
| IM B34 | 9 | M2C | | | | | | | | | | | | | | | | ✓ | ✓ | ✓ |

- ✓ With additional charge
- Not possible

¹⁾ 1LG6/1PP6 motors of frame sizes 225 S to 315 M are supplied with two screw-in eyebolts in accordance with IM B5, whereby one can be rotated in accordance with IM V1; four eyebolts (instead of two) with frame size 315 L. It is important to note that stress must not be applied perpendicular to the ring plane.

IEC Squirrel-Cage Motors

Smoke-extraction motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | |
|--|--|-----------------------|----|----|---|----|-----|-----|-----|-----|---|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors | | | | | | | | | | | | | | | | |
| | | | | | 1LA7 (aluminum) temperature/time classes F200 and F300 | | | | | | 1LA5 (aluminum) temperature/time classes F200 and F300 | | | | | |
| Bearings and lubrication | | | | | | | | | | | | | | | | |
| Measuring nipple for SPM shock pulse measurement for bearing inspection | G50 | | | | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Regreasing device | K40 | | | | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Balance and vibration quantity | | | | | | | | | | | | | | | | |
| Vibration quantity A | | | | | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Vibration quantity B | K02 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Full key balancing | L68 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Balancing without key | M37 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Heating and ventilation | | | | | | | | | | | | | | | | |
| Anti-condensation heaters for 230 V | K45 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 115 V | K46 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rating plate and extra rating plates | | | | | | | | | | | | | | | | |
| Second lubricating plate, supplied loose | B06 | | | | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second rating plate, loose (standard version) | | | | | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Extra rating plate with identification code | Y82 • and identification code | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Additional information on rating plate and on package label (maximum of 20 characters) | Y84 • and identification code | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Packaging, safety notes and test certificates | | | | | | | | | | | | | | | | |
| Acceptance test certificate 3.1 according to EN 10204 | B02 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Operating instructions German/English enclosed in print | B23 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for horizontal motors, with acceptance | F83 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Wire-lattice pallet | L99 | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible
- This order code only determines the price of the version – Additional plain text is required.
- . R. Possible on request

1) Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended. Double the number of temperature sensors are required for pole-changing motors with separate windings. (Order code A11, price of A12 or order code A12, prices on request).

2) No additional charge with types of construction without feet: IM B5, IM V1, IM V3.

3) Supplied with the condensation drainage holes sealed at the drive end DE and non-drive end NDE for IP55, IP56 and IP65 degrees of protection. If condensation drainage holes are required in motors of the IM B6, IM B7 or IM B8 type of construction (feet located on side or top), it is necessary to relocate the bearing plates at the drive end (DE) and non-drive end (NDE) so that the condensation drainage holes situated between the feet on delivery are underneath.

IEC Squirrel-Cage Motors

Smoke-extraction motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 |
| Forced-air cooled motors | | | | | | | | | | | | | | | |
| 1PP6 (cast-iron) temperature/time classes F200, F300 and F400 | | | | | | | | | | | | | | | |
| Motor protection | | | | | | | | | | | | | | | |
| Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ¹⁾ | A11 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor protection with PTC thermistors with 6 embedded temperature sensors for tripping and alarm ¹⁾ | A12 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor temperature detection with embedded temperature sensor KTY 84-130 ¹⁾ | A23 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 3 PT 100 resistance thermometers ¹⁾ | A60 | | | | | | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 6 PT 100 resistance thermometers in stator winding ¹⁾ | A61 | | | | | | - | - | - | - | - | - | ✓ | ✓ | ✓ |
| Installation of 2 PT 100 screw-in resistance thermometers (basic circuit) for rolling-contact bearings ¹⁾ | A72 | | | | | | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ |
| Installation of 2 PT 100 screw-in resistance thermometers (3-wire circuit) for rolling-contact bearings ¹⁾ | A78 | | | | | | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ |
| Motor connection and connection box | | | | | | | | | | | | | | | |
| External earthing | L13 | | | | | | ✓ | ✓ | ✓ | ✓ | □ | □ | □ | □ | □ |
| Protruding cable ends – right side ²⁾ | L51 | | | | | | ✓ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Protruding cable ends – left side ²⁾ | L52 | | | | | | ✓ | ○ | ○ | ○ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Colors and paint finish | | | | | | | | | | | | | | | |
| Special finish in RAL 7030 stone gray | | | | | | | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 Page 0/18 | Y54 • and special finish RAL | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Offshore special finish | M91 | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Sea air resistant special finish | M94 | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Unpainted (only cast iron parts primed) | K23 | | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Unpainted, only primed | K24 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mechanical design and degrees of protection | | | | | | | | | | | | | | | |
| IP65 degree of protection | K50 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Condensation drainage holes ³⁾ | L12 | | | | | | ✓ | ✓ | ✓ | ✓ | □ | □ | □ | □ | □ |
| Non-rusting screws (externally) | M27 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

IEC Squirrel-Cage Motors

Smoke-extraction motors

Special versions

| Special versions | Additional identification code -Z with order code and plain text if required | Motor type frame size | | | | | | | | | | | | | | | |
|--|--|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 | |
| Forced-air cooled motors | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | 1PP6 (cast-iron) temperature/time classes F200, F300 and F400 |
| Bearings and lubrication | | | | | | | | | | | | | | | | | |
| Measuring nipple for SPM shock pulse measurement for bearing inspection | G50 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Regreasing device | K40 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | □ |
| Balance and vibration quantity | | | | | | | | | | | | | | | | | |
| Vibration quantity A | | | | | | | | | | | □ | □ | □ | □ | □ | □ | □ |
| Vibration quantity B | K02 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Full key balancing | L68 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Balancing without key | M37 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Heating and ventilation | | | | | | | | | | | | | | | | | |
| Anti-condensation heaters for 230 V | K45 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-condensation heaters for 115 V | K46 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rating plate and extra rating plates | | | | | | | | | | | | | | | | | |
| Second lubricating plate, supplied loose | B06 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Second rating plate, loose (standard version) | | | | | | | | | | | □ | □ | □ | □ | □ | □ | □ |
| Extra rating plate with identification code | Y82 • and identification code | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Additional information on rating plate and on package label (maximum of 20 characters) | Y84 • and identification code | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Packaging, safety notes and test certificates | | | | | | | | | | | | | | | | | |
| Acceptance test certificate 3.1 according to EN 10204 | B02 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Operating instructions German/English enclosed in print | B23 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | – | – | – |
| Type test with heat run for horizontal motors, with acceptance | F83 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Wire-lattice pallet | L99 | | | | | | | | | | ○ | ○ | ○ | ○ | – | – | – |

- Standard version
- Without additional charge
- ✓ With additional charge
- Not possible
- This order code only determines the price of the version – Additional plain text is required.
- O. R. Possible on request

¹⁾ Evaluation with appropriate tripping unit (see Catalog LV 1) is recommended. For pole-changing motors with separate windings, the number of temperature sensors must be doubled. (order code A11, price of A12 or order code A12, price available on request.)

²⁾ No additional charge with types of construction without feet: IM B5, IM V1, IM V3.

³⁾ Supplied with the condensation drainage holes sealed at the drive end DE and non-drive end NDE for IP55, IP56 and IP65 degrees of protection. If condensation drainage holes are required in motors of the IM B6, IM B7 or IM B8 type of construction (feet located on side or top), it is necessary to relocate the bearing plates at the drive end (DE) and non-drive end (NDE) so that the condensation drainage holes situated between the feet on delivery are underneath.

IEC Squirrel-Cage Motors

Smoke-extraction motors

Accessories

Overview

Slide rails with fixing bolts and tensioning screws to DIN 42923

Slide rails are used to tension the belt of a machine easily and conveniently when a belt tightener is not available. They are fixed to the base using stone bolts or foundation blocks.

The assignment of slide rails to motor size can be found in DIN 42923. For motors of frame sizes 355 to 450, there are no standardized slide rails (please inquire).

Available from:
Lütgert & Co. GmbH
Postfach 42 51
33276 Gütersloh, Germany
Tel. +49 (0)5241-7407-0
Fax +49 (0)5241-7407-90

<http://www.luetgert-antriebe.de>
e-mail: info@luetgert-antriebe.de

Foundation block acc. to DIN 799

The foundation blocks are inserted into the stone foundation and embedded in concrete. They are used for fixing machines of medium size, slide rails, pedestal bearings, baseframes, etc. After the fixing bolts have been unscrewed, the machine can be dragged without it having to be lifted.

When the machine is initially installed, the foundation block that is bolted to the machine (without washers) and fitted with taper pins is not embedded with concrete until the machine has been fully aligned. In this case, the machine is positioned 2 to 3 mm lower. The difference in shaft height is compensated by inserting shims on final installation. The taper pins safeguard the exact position of the machine when it is repeatedly removed and replaced without the need for realignment.

Available from:
Lütgert & Co. GmbH
Postfach 42 51
33276 Gütersloh, Germany
Tel. +49 (0)5241-7407-0
Fax +49 (0)5241-7407-90

<http://www.luetgert-antriebe.de>
e-mail: info@luetgert-antriebe.de

Taper pins to DIN 258 with threaded ends and constant taper lengths

Taper pins are used for components that are repeatedly removed. The drilled hole is ground conical using a conical reamer until the pin can be pushed in by hand until the cone shoulder lies 3 to 4 mm above the rim of the hole.

It can then be driven in using a hammer until it is correctly seated. The pin is removed from the drilled hole by screwing on the nut and tightening it.

Standardized taper pins are available from general engineering suppliers.

Available from:
Otto Roth GmbH & Co. KG
Rutesheimer Straße 22
70499 Stuttgart, Germany
Tel. +49 (0)7 11-1388-0
Fax +49 (0)7 11-1388-233

<http://www.ottoroth.de>
e-mail: info@ottoroth.de

Couplings

The motor from Siemens is connected to the machine or gear unit through a coupling. Flender is an important coupling manufacturer with a wide range of products. For standard applications, Siemens recommends that elastic couplings of Flender types N-Eupex and Rupex or torsionally rigid couplings of types Arpex and Zapex are used. For special applications, Fludex and Elpex couplings are recommended.

Source of supply:
Siemens contact partner – ordering from Catalog
Siemens MD 10.1 „FLENDER Standard Couplings“

or

A. Friedr. Flender AG
Kupplungswerk Mussum
Industriepark Bocholt
Schlavenhorst 100
46395 Bocholt, Germany
Tel. +49 (0)2871-922185
Fax +49 (0)2871-922579

<http://www.flender.com>
e-mail: couplings@flender.com

More information

Spare motors and repair parts

- Supply commitment for spare motors and repair parts following delivery of the motor
 - For up to 5 years, in the event of total motor failure, Siemens will supply a comparable motor with regard to the mounting dimensions and functions (the type series may vary).
 - Repair parts will be supplied for up to 5 years.
 - For up to 10 years, Siemens will provide information and will, if necessary, supply documentation for repair parts.
- When repair parts are ordered, the following details must be provided:
 - Designation and part number
 - Order No. and factory number of the motor

Example for ordering a fan cover 1LA7,
frame size 160 M, 4-pole:

**Fan cover No. 7.40,
1LA7 163-4AA60, factory number J783298901018**

- For bearing types, see the “Introduction”.
- Repair parts for 1MJ6, 1MJ7, 1MJ8, 1MJ1, 1ME8, 1ML8, 1LG8 motors and smoke-extraction motors are available on request.
- For standard components, a supply commitment does not apply.
- Support – Hotline
In Germany
Tel.: 0180/5050448

National telephone numbers can be found on the Internet page:
<http://www.siemens.com/automation/service&support>

IEC Squirrel-Cage Motors

Smoke-extraction motors

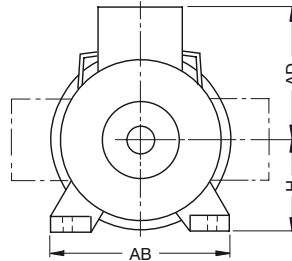
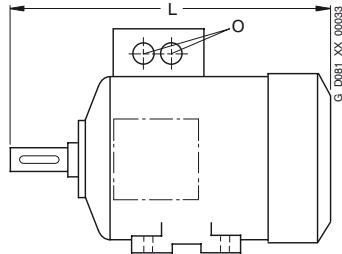
Dimensions

Overview

Overall dimensions

The overall dimensions of the smoke-extraction motors are listed below. The relevant dimensional drawings can be ordered.

Dimension O is not specified because the motors are connected to the supply by means of protruding multi-core cables.



| Frame size | Type | Dimensions | | | |
|-----------------|----------------|------------|------------------|-----|-----|
| | | L | AD ¹⁾ | H | AB |
| 80 M | 1LA7 08.-T... | 274 | 100 | 80 | 150 |
| | 1PP7 08.-T... | 240 | 100 | 80 | 150 |
| 90 S/ 90 L | 1LA7 09.-T... | 332 | 107 | 90 | 165 |
| | 1PP7 09.-T... | 240 | 107 | 90 | 165 |
| 100 L | 1LA6 10.-U... | 373 | 120 | 100 | 196 |
| | 1LA7 10.-T... | 373 | 120 | 100 | 196 |
| | 1PP6 10.-U... | 335 | 120 | 100 | 196 |
| | 1PP7 10.-T... | 335 | 120 | 100 | 196 |
| 112 M | 1LA6 11.-U... | 394 | 128 | 112 | 226 |
| | 1LA7 11.-T... | 394 | 128 | 112 | 226 |
| | 1PP6 11.-U... | 354 | 128 | 112 | 226 |
| | 1PP7 11.-T... | 354 | 128 | 112 | 226 |
| 132 S/ 132 M | 1LA6 13.-0U... | 454 | 148 | 132 | 256 |
| | 1LA6 13.-1UD.. | 454 | 148 | 132 | 256 |
| | 1LA6 13.-2UA.. | 454 | 148 | 132 | 256 |
| | 1LA6 13.-4UA.. | 454 | 148 | 132 | 256 |
| | 1LA6 13.-6UA.. | 492 | 148 | 132 | 256 |
| | 1LA7 13.-T... | 454 | 148 | 132 | 256 |
| | 1PP6 13.-0U... | 403 | 148 | 132 | 256 |
| | 1PP6 13.-1UD.. | 403 | 148 | 132 | 256 |
| | 1PP6 13.-2UA.. | 403 | 148 | 132 | 256 |
| | 1PP6 13.-4UA.. | 403 | 148 | 132 | 256 |
| | 1PP6 13.-6UA.. | 443 | 148 | 132 | 256 |
| | 1PP7 13.-T... | 403 | 148 | 132 | 256 |
| 160 M/ 160 L | 1LA6 16.-0U... | 588 | 170 | 160 | 300 |
| | 1LA6 16.-1UD.. | 588 | 170 | 160 | 300 |
| | 1LA6 16.-2UA.. | 588 | 170 | 160 | 300 |
| | 1LA6 16.-4UA.. | 588 | 170 | 160 | 300 |
| | 1LA6 16.-6UA.. | 628 | 170 | 160 | 300 |
| | 1LA7 16.-T... | 588 | 170 | 160 | 300 |
| | 1PP6 16.-0U... | 535 | 170 | 160 | 300 |
| | 1PP6 16.-1UD.. | 535 | 170 | 160 | 300 |
| | 1PP6 16.-2UA.. | 535 | 170 | 160 | 300 |
| | 1PP6 16.-4UA.. | 535 | 170 | 160 | 300 |
| | 1PP6 16.-6UA.. | 575 | 170 | 160 | 300 |
| | 1PP7 16.-T... | 535 | 170 | 160 | 300 |

| Frame size | Type | Dimensions | | | |
|-----------------|----------------|------------|------------------|-----|-----|
| | | L | AD ¹⁾ | H | AB |
| 180 M/ 180 L | 1LA5 18.-T... | 712 | 243 | 180 | 339 |
| | 1LG6 183-2UA.. | 720 | 244 | 180 | 339 |
| | 1LG6 183-4UA.. | 669 | 244 | 180 | 339 |
| | 1LG6 186-.UA.. | 720 | 244 | 180 | 339 |
| | 1PP5 18.-T... | 611 | 243 | 180 | 339 |
| | 1PP6 183-2UA.. | 613 | 244 | 180 | 339 |
| | 1PP6 183-4UA.. | 562 | 244 | 180 | 339 |
| 200 L | 1PP6 186-.UA.. | 613 | 244 | 180 | 339 |
| | 1LA5 20.-T... | 770 | 292 | 200 | 388 |
| | 1LG6 206-.UA.. | 720 | 285 | 200 | 378 |
| | 1LG6 207-2UA.. | 777 | 285 | 200 | 378 |
| | 1LG6 207-4UA.. | 720 | 285 | 200 | 378 |
| | 1LG6 207-6UA.. | 777 | 285 | 200 | 378 |
| | 1PP5 20.-T... | 675 | 292 | 200 | 388 |
| 225 S/ 225 M | 1PP6 206-.UA.. | 617 | 285 | 200 | 378 |
| | 1PP6 207-2UA.. | 674 | 285 | 200 | 378 |
| | 1PP6 207-4UA.. | 617 | 285 | 200 | 378 |
| | 1PP6 207-6UA.. | 674 | 285 | 200 | 378 |
| | 1LA5 220-4TA.. | 807 | 292 | 225 | 426 |
| | 1LA5 223-2TA.. | 777 | 292 | 225 | 426 |
| | 1LA5 223-4TA.. | 807 | 292 | 225 | 426 |
| | 1LA5 223-6TA.. | 807 | 292 | 225 | 426 |
| | 1LG6 220-4UA.. | 789 | 310 | 225 | 436 |
| | 1LG6 223-2UA.. | 819 | 310 | 225 | 436 |
| | 1LG6 223-4UA.. | 849 | 310 | 225 | 436 |
| | 1LG6 223-6UA.. | 849 | 310 | 225 | 436 |
| | 1PP5 220-4TA.. | 711 | 292 | 225 | 426 |
| | 1PP5 223-2TA.. | 681 | 292 | 225 | 426 |
| 1PP5 223-4TA.. | 711 | 292 | 225 | 426 | |
| 1PP5 223-6TA.. | 711 | 292 | 225 | 426 | |
| 250 M | 1PP6 220-4UA.. | 670 | 310 | 225 | 436 |
| | 1PP6 223-2UA.. | 700 | 310 | 225 | 436 |
| | 1PP6 223-4UA.. | 730 | 310 | 225 | 436 |
| | 1LG6 253-2.B.. | 887 | 340 | 250 | 490 |
| | 1LG6 253-4.A.. | 957 | 340 | 250 | 490 |
| | 1LG6 253-6.A.. | 887 | 340 | 250 | 490 |
| | 1PP6 253-2.... | 764 | 340 | 250 | 490 |
| | 1PP6 253-4.... | 834 | 340 | 250 | 490 |
| | 1PP6 253-6.... | 764 | 340 | 250 | 490 |

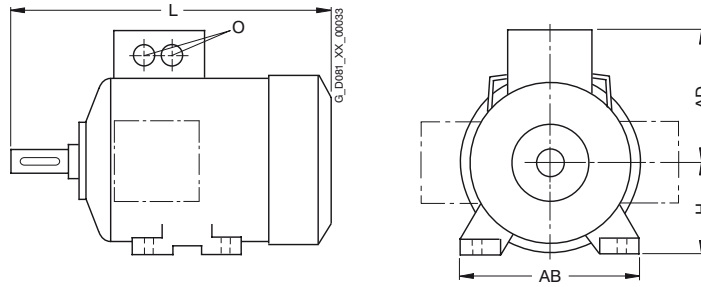
¹⁾ Dimension AD without cable gland.

IEC Squirrel-Cage Motors

Smoke-extraction motors

Dimensions

Overview (continued)



| Frame size | Type | Dimensions | | | | Frame size | Type | Dimensions | | | |
|---------------------------|----------------|------------|------------------|-----|-----|---------------------------|----------------|----------------|------------------|-----|-----|
| | | L | AD ¹⁾ | H | AB | | | L | AD ¹⁾ | H | AB |
| 280 S/ 280 M | 1LG6 280-..... | 960 | 378 | 280 | 540 | 315 S/ 315 M/ 315 L | 1PP6 310-2.B.. | 925 | 440 | 315 | 610 |
| | 1LG6 283-2.... | 1070 | 378 | 280 | 540 | | 1PP6 310-4.A.. | 955 | 440 | 315 | 610 |
| | 1LG6 283-4.... | 1070 | 378 | 280 | 540 | | 1PP6 310-6.A.. | 955 | 440 | 315 | 610 |
| | 1LG6 283-6.... | 960 | 378 | 280 | 540 | | 1PP6 313-2.B.. | 1085 | 440 | 315 | 610 |
| | 1PP6 280-..... | 830 | 378 | 280 | 540 | | 1PP6 313-4.A.. | 1115 | 440 | 315 | 610 |
| | 1PP6 283-2.... | 940 | 378 | 280 | 540 | | 1PP6 313-6.A.. | 1115 | 440 | 315 | 610 |
| | 1PP6 283-4.... | 940 | 378 | 280 | 540 | | 1PP6 316-2.B.. | 1085 | 440 | 315 | 610 |
| | 1PP6 283-6.... | 830 | 378 | 280 | 540 | | 1PP6 316-4.A.. | 1115 | 440 | 315 | 610 |
| | | | | | | | | 1PP6 316-6.A.. | 1115 | 440 | 315 |
| 315 S/ 315 M/ 315 L | 1LG6 310-2.B.. | 1072 | 440 | 315 | 610 | 1PP6 317-2.B.. | 1225 | 440 | 315 | 610 | |
| | 1LG6 310-4.A.. | 1102 | 440 | 315 | 610 | 1PP6 317-4.A.. | 1255 | 440 | 315 | 610 | |
| | 1LG6 310-6.A.. | 1102 | 440 | 315 | 610 | 1PP6 317-6.A.. | 1255 | 440 | 315 | 610 | |
| | 1LG6 313-2.B.. | 1232 | 440 | 315 | 610 | 1PP6 318-6.A.. | 1255 | 440 | 315 | 610 | |
| | 1LG6 313-4.A.. | 1262 | 440 | 315 | 610 | | | | | | |
| | 1LG6 313-6.A.. | 1262 | 440 | 315 | 610 | | | | | | |
| | 1LG6 316-2.B.. | 1232 | 440 | 315 | 610 | | | | | | |
| | 1LG6 316-4.A.. | 1262 | 440 | 315 | 610 | | | | | | |
| | 1LG6 316-4.B.. | 1262 | 440 | 315 | 610 | | | | | | |
| | 1LG6 316-6.A.. | 1262 | 440 | 315 | 610 | | | | | | |
| | 1LG6 317-2.B.. | 1372 | 440 | 315 | 610 | | | | | | |
| | 1LG6 317-4.A.. | 1402 | 440 | 315 | 610 | | | | | | |
| | 1LG6 317-6.A.. | 1402 | 440 | 315 | 610 | | | | | | |
| | 1LG6 318-6.A.. | 1402 | 440 | 315 | 610 | | | | | | |

¹⁾ Dimension AD without cable gland.

Marine motors



| | |
|--------------|---|
| 10/2 | Orientation |
| 10/2 | Overview |
| 10/3 | Benefits |
| 10/3 | Application |
| 10/3 | Technical specifications |
| 10/5 | More information |
| 10/6 | Type approved standard motors up to frame size 315 L |
| 10/6 | Overview |
| 10/7 | Type approved explosion-proof motors up to frame size 315 L |
| 10/7 | Overview |
| 10/7 | Type approved fan motors |
| 10/7 | Overview |
| 10/8 | Standard motors up to frame size 315 L (individual acceptance required) |
| 10/8 | Overview |
| 10/8 | Smoke-extraction motors (individual acceptance required) |
| 10/8 | Overview |
| 10/9 | Non-standard motors frame size 315 and above (individual acceptance required) |
| 10/9 | Overview |
| 10/9 | Explosion-proof motors frame size 315 and above (individual acceptance required) |
| 10/9 | Overview |
| 10/10 | Special versions |
| 10/10 | Overview |
| 10/10 | Selection and ordering data |
| 10/25 | Accessories |
| 10/25 | Overview |
| 10/25 | Dimensions |
| 10/25 | Overview |

IEC Squirrel-Cage Motors

Marine motors

Orientation

Overview



Low-voltage motors in the marine version can be used as main and auxiliary drives below deck on ships and in the offshore industry. The thermal utilization of the motors is matched to the generally higher ambient temperatures on board ship. If the application demands compliance with additional regulations, e.g. protection against explosion hazards, the appropriate motor series must be chosen.

The classification authorities categorize the drives on board ships into “essential services” and “non-essential services”, depending on their field of application. These include the following requirements of the classification authorities:

| | Drives for “essential services” | Drives for “non-essential services” |
|---|---|---|
| Manufacture in accordance with regulations of the classification authorities | Required | Required |
| Acceptance test certificate 3.1 according to EN 10204 | Required | Only required for motors with certificate |
| Type test certificate of the classification authority | Required up to a certain limit power | Not required |
| Individual acceptance test by classification authority | Required above a specific output | Only required for motors with certificate |
| Supervision of construction and acceptance test certificate 3.2 according to EN 10204 | Required by some classification authorities above a specific output | Not required |

Type test

All motors (with the exception of 1LA8, 1PQ8, 1LL8 and 1LH8 motors) are manufactured and type approved in accordance with the regulations of the following leading international classification authorities:

- GL (Germanischer Lloyd, Germany)



Germanischer Lloyd

- DNV (Det Norske Veritas, Norway)



- LR (Lloyds Register, United Kingdom)



- BV (Bureau Veritas, France)



Individual acceptance testing is required in general for motor series 1LA8, 1PQ8, 1LL8 and 1LH8.

As an option, we can manufacture motors in accordance with the following classification authorities:

- ABS (American Bureau of Shipping, USA)
- RINA (Registro Italiano Navale, Italy)
- CCS (Chinese Classification Society, China)

A type test certificate will however only be issued following individual acceptance testing.

Special versions that differ from the range defined in the Catalog are possible on request.

Individual acceptance and supervision of construction

Individual acceptance testing by a representative of the relevant classification authority is required for motors used in essential auxiliary drives, depending on their output:

- GL ≥ 50 kW
- LR ≥ 100 kW
- DNV ≥ 300 kW
- BV ≥ 100 kW

For individual acceptance testing of more than one identical motor in an order, a type test complete with heat run and the corresponding acceptance test must be performed for at least one motor.

In special cases, in addition to the acceptance test, supervision of construction may also be required. Supervision of construction involves monitoring of the separate manufacturing stages of a motor by an inspector from the classification authority.

Benefits

The marine motors offer the user a number of advantages:

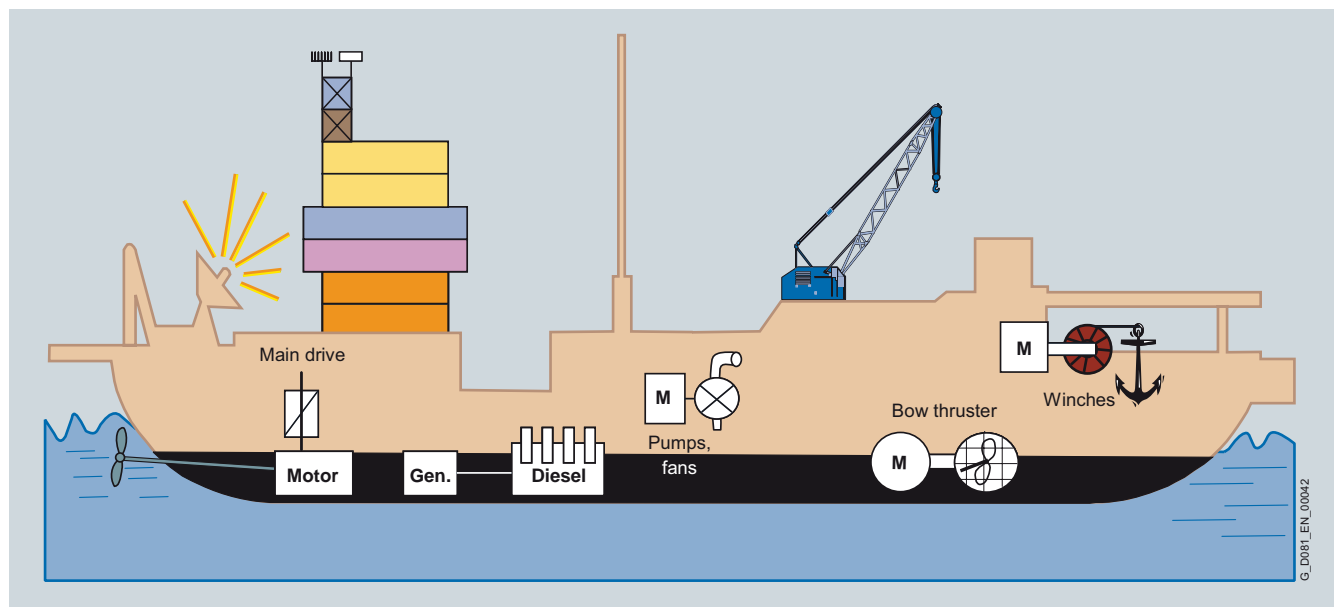
- Cast-iron versions can be supplied for corrosive atmospheres especially for high humidity levels and salty air
- Increased corrosion protection using specially designed paint finishes is available
- Certified marine motors can be supplied for use in areas to be protected against explosion

- Due to the type tests already performed, individual acceptance testing in the low-end output range is not necessary which means shorter delivery times
- Distinctive expertise for customer requirements
- Worldwide service network with 24 h service hotline for motors and converters (Tel.: +49 180 173 7373; e-mail: shipservice@siemens.com)

Application

Our type approved marine motors are specially designed for use on board ship below deck and for the offshore industry:

- Applications on board ship as main and auxiliary drives below deck, e.g.:
 - Fans (air conditioning, refrigeration plants)
 - Pumps (for fire-extinguishing water, fuels, oils)
 - Winches (anchor winches, warping winches, lifting gear)
 - Compressors
 - Bow thruster drives
 - Ex motors for areas subject to explosion hazards
- Application in the offshore industry
 - Coastal areas, e.g. production platforms, production ships



Typical areas of application

Technical specifications

Frame design

Motors can be supplied depending on the motor series in a corrosion-resistant aluminum housing and in a rugged low-vibration cast-iron version.

Motor connection

Cable glands are not included in the standard scope of supply with the exception of explosion-proof motors (see "Special versions").

All marine motors generally have an external earthing terminal.

Standards and specifications

In addition to the relevant standards and regulations, IEC 92-301 also applies for electrical installation on board ship as well as the regulations of the marine classification authorities.

Specifications of the IEC standards

| | Coolant temperature CT | Admissible temperature for temperature class | |
|----------------|---------------------------|---|---------------|
| | | 130 (B) CI | 155 (F) CI |
| IEC/EN 60034-1 | 40 | 80 | 105 |
| IEC 92-301 | 50 | 70 | 90 |

IEC Squirrel-Cage Motors

Marine motors

Orientation

Technical specifications (continued)

Specifications of the individual classification authorities with order codes for ordering

| Classification authorities | Coolant temperature CT | Admissible temperature for relevant classification authorities | | Individual acceptance for "essential services" drive | Supervision of construction for "essential services" drive | Order codes for surface-cooled motors up to frame size 315L | | Order codes for surface-cooled motors frame size 315 and above | | |
|----------------------------|------------------------|--|---------|--|--|---|-------------------------------|--|--|--|
| | | Temperature class 130 (B) | 155 (F) | Required from a rated output | Required from a rated output | With type test certificate | Without type test certificate | Without type test certificate | With type test certificate and individual acceptance | With type test certificate and individual acceptance and supervision of construction |
| | °C | CI | CI | kW | kW | | | | | |
| GL | 45 | 75 | 100 | ≥ 50 | – | E11 | – | E11 | E11+E10 | E11+E09 |
| LR | 45 | 70 | 95 | ≥100 | ≥100 | E21 | – | E21 | E21+E10 | E21+E09 |
| BV | 45 | 75 | 100 | ≥100 | – | E31 | – | E31 | E31+E10 | E31+E09 |
| DNV | 45 | 75 | 100 | ≥300 | – | E51 | – | E51 | E51+E10 | E51+E09 |
| ABS | 50 | 70 | 95 | ≥100 | ≥100 | – | E00 | E61 | E61+E10 | E61+E09 |
| RINA | 45 | 75 | 95 | ≥100 | – | – | E00 | – | – | – |
| CCS | 45 | 75 | 100 | ≥100 | – | – | E00 | E71 | E71+E10 | E71+E09 |

Type test certificates



Technical specifications (continued)

Temperature class and coolant temperature

Marine motors are designed in general for a coolant temperature CT 45 °C in temperature class 155 (F) – used according to 155 (F) – with thermal reserve. When used according to temperature class 130 (B), order code **C22**, derating of approximately 4 % (for order codes **E00** and **E21** approximately 8 %) necessary.

1MA and 1MJ motors as well as motors in Zones 2, 21 and 22 are designed in temperature class 155 (F) – used according to temperature class 130 (B) – with derating of approximately 4 % (for order code **E00** approximately 8 %). 1MA motors are designed for the maximum possible and certified outputs.

1LA9 motors with increased output in temperature class 155 (F) – used according to temperature class 155 (F) – are also derated by approximately 4 % (for order code **E00/E21** approximately 8 %).

If temperature class 155 (F) is used according to 130 (B), further derating of approximately 10 % (for non-standard motors 1LA8, 1PQ8 15 %) is required.

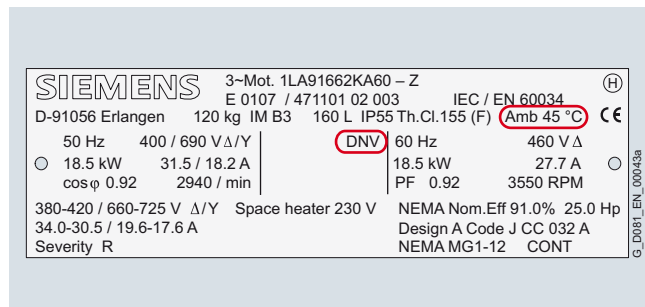
Please inquire for further details.

Coolant temperatures that exceed 45 °C require appropriate derating as shown in the table below:

| Derating factor | Coolant temperature CT (for temperature class 155 (F) used according to 155 (F)) | | | |
|-----------------|--|------|------|------|
| | 45 °C | 50 | 55 | 60 |
| | 1.00 | 0.96 | 0.92 | 0.87 |

Rating plate and acceptance test certificate

The metal rating plate indicates the relevant classification authority and the associated coolant temperature.



Rating plate for a marine motor according to DNV

In addition, an acceptance test certificate 3.1 according to EN 10204 complete with the certificate number of the marine classification authority will be supplied.

More information

For more information, please contact your local Siemens contact – see “Siemens Contacts Worldwide” in the Appendix.

Degree of protection

The standard version is IP55 degree of protection or IP23 for motors with through ventilation (series 1LL8), IP56 (non-heavy sea) – not for 1PQ8 and 1LL8) or IP65 (not possible for “Non-standard motors frame size 315 and above”) are available optionally (see “Special versions”).

Winding and motor protection

For monitoring the winding and bearings, the motors can be equipped with thermistors, temperature sensors and resistance thermometers. Anti-condensation heaters can also be fitted to the marine motors to prevent condensation building up on the winding.

Paint finish

The standard paint finish is suitable for indoor installations or outdoor installations which are roof-protected against weathering.

When standard motors are installed in sea atmospheres or in rooms that are constantly wet, the special paint finish for the “world wide” climatic group according to DIN IEC 60721-2-1 is suitable because this ensures a higher degree of corrosion protection. Most marine motors are finished in this special paint type as standard (see “Special versions”).

The sea air resistant special finish (order code **M94**) or the Off-shore special finish (order code **M91**) are recommended for excessively aggressive atmospheres.

Special finish with thicker layers are available on request.

Converter-fed operation

The standard insulation of the marine motors is implemented such that converter-fed operation is possible without limits for mains voltages of 460 V (for motor series 1LA8, 1PQ8, 1LL8 and 1LH8 up to 500 V) +10 %; exception: 1MA motors are only certified for mains operation.

At higher voltages, the motors require greater insulation resistance.

1LA5, 1LA7 and 1LG6 standard motors as well as 1LA8 and 1PQ8 non-standard motors are also available for converter-fed operation with supply voltages of up to 690 V also with improved insulation in the winding system.

It is important to note the extent to which the converter used must also be acceptance tested by the marine classification authority.

IEC Squirrel-Cage Motors

Marine motors

Type approved standard motors up to frame size 315 L

Overview

Most standard motors of Siemens AG can be used as marine motors if the appropriate order codes are used. The following table shows the standard motor series that are available with type testing up to frame size 315 L:

| Motor type | Standard degree of protection | Frame design | Motor series ¹⁾ | Motor frame sizes | Output range in kW Output data for mains-fed operation 50 Hz at CT 45 °C in temperature class 155 (F), used according to 155 (F). |
|---|-------------------------------|--------------|----------------------------|-------------------|--|
| Self-ventilated motors with improved efficiency | IP55 | Aluminum | 1LA7 | 56 M ... 160 L | 0.06 ... 18.5 |
| | | | 1LA5 | 180 M ... 225 M | 11 ... 45 |
| | | Cast-iron | 1LA6 | 100 L ... 160 L | 0.75 ... 18.5 |
| | | | 1LG4 | 180 M ... 315 L | 11 ... 200 |
| Self-ventilated motors with high efficiency | IP55 | Aluminum | 1LA9 | 56 M ... 200 L | 0.06 ... 37 |
| | | Cast-iron | 1LG6 | 180 M ... 315 L | 11 ... 200 |

The type approved and self-cooled motor series 1LP4, 1LP5, 1LP6 and 1LP7 in frame sizes 63 M to 315 L with derating without external fan and fan cover can be supplied on request.

For technical specifications and selection and ordering data, see the relevant sections of "Standard motors up to frame size 315 L".

Ordering example:

| Selection criteria | Requirement | Structure of the Order No. |
|-----------------------|---|--|
| Motor type | Standard motor with improved efficiency, IP55 degree of protection, cast-iron version | 1LG4 |
| No. of poles/speed | 4-pole/1500 rpm | 1LG4253-4AA |
| Rated output | 55 kW | |
| Voltage and frequency | 400 VΔ/690 VY, 50 Hz | 1LG4253-4AA6 |
| Type of construction | IM B3 | 1LG4253-4AA60 |
| Paint finish | Special paint finish in RAL 5007 | 1LG4253-4AA60-Z Y54 Plain text: RAL 5007 |
| Marine version | Drive for "essential services" with type test certificate according to Germanischer Lloyd with coolant temperature CT 45 °C | 1LG4253-4AA60-Z Y54+E11 Plain text: RAL 5007 |
| | Individual acceptance (by marine classification society) | 1LG4253-4AA60-Z Y54+E11+E10 Plain text: RAL 5007 |
| | Type test with heat run for horizontal motors, with acceptance | 1LG4253-4AA60-Z Y54+E11+E10+F83 Plain text: RAL 5007 |

The ordering example is valid for an order quantity of 1 item. For larger order quantities, a type test with heat run (order code **F83**) only has to be ordered for one motor. For all other identical motors, order code F83 is not required. The order must be subdivided into two order items.

Example for ordering 5 items:

| Order item | Quantity (items) | Order No. |
|------------|------------------|--|
| 1 | 1 | 1LG4253-4AA60-Z Y54+E11+E10+F83 Plain text: RAL 5007 |
| 2 | 4 | 1LG4253-4AA60-Z Y54+E11+E10 Plain text: RAL 5007 |

For further information about order codes see "Special versions".

¹⁾ For 1LA9 motors with increased output, derating is necessary. Please contact your local Siemens office for advice.

IEC Squirrel-Cage Motors

Marine motors

Type approved explosion-proof motors
up to frame size 315 L

Overview

Most explosion-proof motors up to frame size 315 L from Siemens AG can be used as marine motors if ordered with the relevant order codes. The following table shows the series of explosion-proof motors that are available with type testing up to frame size 315 L:

| Motor type | Standard degree of protection | Frame design | Motor series ¹⁾ | Motor frame sizes | Output range in kW Output data for mains-fed operation 50 Hz at CT 45 °C in temperature class 155 (F), used according to 155 (F). |
|--|-------------------------------|--------------|----------------------------|-------------------|--|
| Self-ventilated motors in Zone 1 with type of protection "e" (Zone 1 Exe II T3) | IP55 | Aluminum | 1MA7 | 63 M ... 160 L | 0.12 ... 16 |
| | | Cast-iron | 1MA6 | 100 L ... 315 L | 1.3 ... 165 |
| Self-ventilated motors in Zone 1 with type of protection "d" (Zone 1 Exde IIC T4) | IP55 | Cast-iron | 1MJ6 | 71 M ... 200 L | 0.25 ... 37 |
| | | | 1MJ7 | 225 S ... 315 M | 30 ... 132 |
| Self-ventilated motors in Zone 2 with type of protection "n" | IP55 | Aluminum | 1LA7 | 63 M ... 160 L | 0.09 ... 18.5 |
| | | | 1LA9 | 63 M ... 160 L | 0.12 ... 18.5 |
| | | Cast-iron | 1LA6 | 100 L ... 160 L | 0.75 ... 18.5 |
| | | | 1LG4/1LG6 | 180 M ... 315 L | 11 ... 200 |
| Self-ventilated motors in Zone 21 with protection against dust explosions | IP55 | Aluminum | 1LA7 | 56 M ... 160 L | 0.06 ... 18.5 |
| | | | 1LA5 | 180 M ... 225 M | 11 ... 45 |
| | | | 1LA9 | 56 M ... 200 L | 0.06 ... 37 |
| | | Cast-iron | 1LG4/1LG6 | 180 M ... 315 L | 11 ... 200 |
| Self-ventilated motors in Zone 22 with protection against dust explosions | IP55 | Aluminum | 1LA7 | 56 M ... 160 L | 0.06 ... 18.5 |
| | | | 1LA5 | 180 M ... 225 M | 11 ... 45 |
| | | | 1LA9 | 56 M ... 200 L | 0.06 ... 37 |
| | | Cast-iron | 1LA6 | 100 L ... 160 L | 0.75 ... 18.5 |
| | | | 1LG4/1LG6 | 180 M ... 315 L | 11 ... 200 |

For technical specifications and selection and ordering data, see the relevant sections of "Explosion-proof motors".

For further information about order codes see "Special versions".

Type approved fan motors

Overview

Most fan motors of Siemens AG can be used as marine motors if the appropriate order codes are used. The following table shows the series of fan motors that are available with type testing:

| Motor type | Standard degree of protection | Frame design | Motor series | Motor frame sizes | Output range in kW Output data for mains-fed operation 50 Hz at CT 45 °C in temperature class 155 (F), used according to 155 (F). |
|---|-------------------------------|--------------|--------------|-------------------|--|
| Self-ventilated motors in pole-changing version | IP55 | Aluminum | 1LA7 | 80 M ... 160 L | 0.15 ... 17 |
| | | | 1LA5 | 180 M ... 200 L | 3 ... 28 |
| | | Cast-iron | 1LG4 | 180 M ... 315 L | 4.5 ... 175 |
| Forced-air cooled motors without external fan and fan cover | IP55 | Aluminum | 1PP7 | 63 M ... 160 L | 0.09 ... 18.5 |
| | | | 1PP5 | 180 M ... 200 L | 11 ... 37 |
| | | Cast-iron | 1PP4 | 180 M ... 315 L | 11 ... 200 |

For technical specifications and selection and ordering data, see the relevant sections of "Fan motors".

For further information about order codes see "Special versions".

¹⁾ With explosion-proof motors, derating is necessary. Please contact your local Siemens office for advice.

IEC Squirrel-Cage Motors

Marine motors

Standard motors up to frame size 315 L (individual acceptance required)

Overview

Most standard motors of Siemens AG can be used as marine motors if the appropriate order codes are used. The following table shows the series of self-cooled standard motors that are available with derating without an external fan and without a fan cover:

| Motor type | Standard degree of protection | Frame design | Motor series | Motor frame sizes | Output range in kW Output data for mains-fed operation 50 Hz at CT 45 °C in temperature class 155 (F), used according to 155 (F). |
|---|-------------------------------|--------------|--------------|-------------------|--|
| Self-cooled motors without external fan | IP55 | Aluminum | 1LP7 | 63 M ... 160 L | 0.045 ... 7 |
| | | | 1LP5 | 180 M ... 200 L | 5.5 ... 16.5 |
| | | Cast-iron | 1LP4 | 180 M ... 315 L | 3.7 ... 67 |

For technical specifications and selection and ordering data, see the relevant sections of “Standard motors up to frame size 315 L”.

For further information about order codes see “Special versions”.

Smoke-extraction motors (individual acceptance required)

Overview

Most smoke-extraction motors of Siemens AG can be used as marine motors if the appropriate order codes are used. The following table shows the available series of self-ventilated motors and forced-air cooled motors:

| Motor type | Standard degree of protection | Frame design | Motor series | Motor frame sizes | Output range in kW Output data for mains-fed operation 50 Hz. |
|---|-------------------------------|--------------|--------------|-------------------|--|
| Temperature/time classes F200 and F300 | | | | | |
| Self-ventilated motors | IP55 | Aluminum | 1LA7 | 80 M ... 160 L | 0.09 ... 18.5 |
| | | | 1LA5 | 180 M ... 225 M | 4.05 ... 45 |
| | | Cast-iron | 1LG6 | 250 M ... 315 L | 37 ... 200 |
| Forced-air cooled motors | IP55 | Aluminum | 1PP7 | 80 M ... 160 L | 0.09 ... 18.5 |
| | | | 1PP5 | 180 M ... 225 M | 4.05 ... 45 |
| | | Cast-iron | 1PP6 | 250 M ... 315 L | 37 ... 200 |
| Temperature/time class F400 | | | | | |
| Self-ventilated motors | IP55 | Cast-iron | 1LA6 | 100 L ... 160 L | 0.3 ... 22 |
| | | | 1LG6 | 180 M ... 315 L | 15 ... 200 |
| Forced-air cooled motors | IP55 | Cast-iron | 1PP6 | 100 L ... 315 L | 0.3 ... 200 |

For technical specifications and selection and ordering data, see the relevant sections of “Smoke-extraction motors”.

For further information about order codes see “Special versions”.

IEC Squirrel-Cage Motors

Marine motors

**Non-standard motors frame size 315 and above
(individual acceptance required)**

Overview

Most non-standard motors frame size 315 and above of Siemens AG can be used as marine motors if the appropriate order codes are used. The following table shows the available series of non-standard motors frame size 315 and above (individual acceptance required):

| Motor type | Standard degree of protection | Frame design | Motor series | Motor frame sizes | Output range in kW Output data for mains-fed operation 50 Hz at CT 45 °C in temperature class 155 (F), used according to 155 (F). |
|---|-------------------------------|--------------|--------------|-------------------|--|
| Self-ventilated motors for mains-fed and converter-fed operation | IP55 | Cast-iron | 1LA8 | 315 ... 450 | 160 ... 1000 ¹⁾ |
| Forced-air cooled motors with mounted separately driven fan for converter-fed operation | IP55 | Cast-iron | 1PQ8 | 315 ... 450 | 160 ... 1000 ¹⁾ |
| Self-ventilated motors with through ventilation for mains-fed and converter-fed operation | IP23 | Cast-iron | 1LL8 | 315 ... 450 | 200 ... 1250 ¹⁾ |
| Water-cooled motors for mains-fed and converter-fed operation | IP55 | Steel | 1LH8 | 450 | 485 ... 1150 ¹⁾ |

Motor series 1LH8 (please inquire).

For technical specifications and selection and ordering data, see the relevant sections of “Non-standard motors frame size 315 and above”.

For further information about order codes see “Special versions”.

**Explosion-proof motors frame size 315 and above
(individual acceptance required)**

Overview

Most explosion-proof motors frame size 315 and above of Siemens AG can be used as marine motors if the appropriate order codes are used. The following table shows the available series of explosion-proof motors frame size 315 and above (individual acceptance required):

| Motor type | Standard degree of protection | Frame design | Motor series | Motor frame sizes | Output range in kW Output data for mains-fed operation 50 Hz at CT 45 °C in temperature class 155 (F) |
|--|-------------------------------|--------------|--------------|-------------------|--|
| Self-ventilated motors in Zone 2 with type of protection “n” | IP55 | Cast-iron | 1LA8 | 315 ... 450 | 160 ... 1000 ²⁾ |
| Self-ventilated motors in Zone 22 with protection against dust explosions | IP55 | Cast-iron | 1LA8 | 315 ... 450 | 160 ... 1000 ¹⁾ |

For technical specifications and selection and ordering data, see the relevant sections of “Explosion-proof motors”.

For further information about order codes see “Special versions”.

¹⁾ At a coolant temperature of 45 °C when used according to temperature class 155 (F), the output is reduced by 4 %.

²⁾ At a coolant temperature of 45 °C, the output is reduced by 4 %. When used according to with temperature class 130 (B), the output is reduced by a further 15 %.

IEC Squirrel-Cage Motors

Marine motors

Special versions

Overview

Recommended special versions:

- Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping – Order code **A11**
- Mounting of PT 100 resistance thermometers for winding temperature monitoring – Order codes **A60, A61**
- Specially for motor series 1LA8, 1PQ8 and 1LL8: Mounting of 2 screw-in PT 100 resistance thermometers in basic circuit for roller bearings – Order code **A72**
- Anti-condensation heaters for 230 V – Order code **K45**
- Anti-condensation heaters for 115 V – Order code **K46**

- IP56 degree of protection (non-heavy-sea) for protection against harmful dust deposits, protection against water jets from any direction – Order code **K52**
- IP65 degree of protection for complete protection against dust deposits, protection against water jets from any direction – Order code **K50**
Not possible for non-standard motors 1LA8, 1PQ8 and 1LL8.
- Special bearing for drive-end (DE) and non-drive-end (NDE) bearing size 63 – Order code **K36**, for non-standard motors on request
- Metal external fan for self-ventilated motors – Order code **K35**

Selection and ordering data

Order information

The fees levied by the classification authorities for individual acceptance testing are included in order code **E09/E10** for motor types 1LG4, 1LG6, 1PP4, 1LA8, 1PQ8, 1LL8 and 1LH8. For the other motor types, 1LA5, 1LA6, 1LA7, 1LA9, 1MA, 1MJ, 1PP5, 1PP7, individual acceptance testing must be ordered in plain text and will be invoiced separately (please inquire).

When ordering, add the supplement “-Z” to the Order No. as well as plain text details. For 1LA8 motors, supplement the Order No. with order code **E80** and plain text.

For other special versions, see the relevant sections under “Standard motors up to frame size 315 L”, “Non-standard motors frame size 315 and above”, “Explosion-proof motors” and “Fan motors”. In addition to this, for marine motors, the following special versions are the Standard version and therefore included in the order codes for the basic marine version.

Standard version:

| Description | Order code |
|--|------------|
| Acceptance test certificate 3.1 according to EN 10204 (not included in order code E00) | B02 |
| External earthing terminal | L13 |

Type approved standard motors up to frame size 315 L in marine version

| Special versions | Additional identification code -Z with order code or plain text | Motor type frame size | | | | | | | | | | | | | | |
|--|--|------------------------|-------|-------|-------|-------|-------|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| | | 1LA7 (aluminum) | | | | | | 1LA5 (aluminum) | | | | | | | | |
| Basic marine version ¹⁾ | | | | | | | | | | | | | | | | |
| Without type test certificate according to ABS 50 °C/CCS 45 °C/RINA 45 °C, temperature class 155 (F) used according to 155 (F) (if acceptance test certificate 3.1 according to EN 10204 is required, this must be ordered with the additional order code B02) | E00 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to GL (Germanischer Lloyd), Germany, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E11 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to LR (Lloyds Register), Great Britain, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E21 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to BV (Bureau Veritas), France, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E31 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to DNV (Det Norske Veritas), Norway, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E51 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Acceptance/certification | | | | | | | | | | | | | | | | |
| Individual acceptance by marine classification society | E10 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for horizontal motors, with acceptance | F83 ²⁾ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, with acceptance | Details in plain text ²⁾ | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |

For legend and footnotes, see Page 10/12.

IEC Squirrel-Cage Motors

Marine motors

Special versions

| Special versions | Additional identification code -Z with order code or plain text | Motor type frame size | | | | | | | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-------|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated energy-saving motors with improved efficiency | | | | | | | | | | | | | | | | |
| Basic marine version ¹⁾ | | | | | | | | | | | | | | | | |
| Without type test certificate according to ABS 50 °C/CCS 45 °C/RINA 45 °C, temperature class 155 (F) used according to 155 (F) (if acceptance test certificate 3.1 according to EN 10204 is required, this must be ordered with the additional order code B02) | E00 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to GL (Germanischer Lloyd), Germany, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E11 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to LR (Lloyds Register), Great Britain, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E21 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to BV (Bureau Veritas), France, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E31 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to DNV (Det Norske Veritas), Norway, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E51 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Acceptance/certification | | | | | | | | | | | | | | | | |
| Individual acceptance by marine classification society | E10 | | | | | | | | | | – | – | – | – | – | – |
| | Details in plain text | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Type test with heat run for horizontal motors, with acceptance | F83 ²⁾ | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, with acceptance | Details in plain text ²⁾ | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Self-ventilated energy-saving motors with high efficiency | | | | | | | | | | | | | | | | |
| Basic marine version ¹⁾ | | | | | | | | | | | | | | | | |
| Without type test certificate according to ABS 50 °C/CCS 45 °C/RINA 45 °C, temperature class 155 (F) used according to 155 (F) (if acceptance test certificate 3.1 according to EN 10204 is required, this must be ordered with the additional order code B02) | E00 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to GL (Germanischer Lloyd), Germany, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E11 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to LR (Lloyds Register), Great Britain, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E21 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to BV (Bureau Veritas), France, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E31 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to DNV (Det Norske Veritas), Norway, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E51 | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Acceptance/certification | | | | | | | | | | | | | | | | |
| Individual acceptance by marine classification society | E10 ²⁾ | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for horizontal motors, with acceptance | F83 ²⁾ | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, with acceptance | Details in plain text ²⁾ | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |

For legend and footnotes, see Page 10/12.

IEC Squirrel-Cage Motors

Marine motors

Special versions

| Special versions | Additional identification code -Z with order code or plain text | Motor type frame size | | | | | | | | | | | | | | | |
|---|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-------|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 | |
| Self-ventilated energy-saving motors with high efficiency | | | | | | | | | | | | | | | | | |
| Basic marine version ¹⁾ | | | | | | | | | | | | | | | | | |
| 1LG6 (cast-iron) | | | | | | | | | | | | | | | | | |
| Without type test certificate according to ABS 50°C/CCS 45°C/RINA 45°C, temperature class 155 (F) used according to 155 (F) (if acceptance test certificate 3.1 according to EN 10204 is required, this must be ordered with the additional order code B02) | E00 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to GL (Germanischer Lloyd), Germany, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E11 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to LR (Lloyds Register), Great Britain, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E21 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to BV (Bureau Veritas), France, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E31 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to DNV (Det Norske Veritas), Norway, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E51 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Acceptance/certification | | | | | | | | | | | | | | | | | |
| Individual acceptance by marine classification society | E10 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for horizontal motors, with acceptance | F83 ²⁾ | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, with acceptance | Details in plain text ²⁾ | | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |

- ✓ With additional charge
- Not possible
- O. R. Possible on request

¹⁾ Motor for use in shipping for higher ambient temperature and/or used as 155 (F) according to 130 (B), order with details in plain text. The order codes for the basic marine version (**E00**, **E11**, **E21**, **E31**, **E51**) cannot be combined with each other. For motor series 1LA9 with increased output, the output is reduced by 4 % with order codes **E11**, **E31** and **E51** and by 8 % with order codes **E00** and **E21**.

²⁾ Option or details in plain text only necessary for one motor when ordering several motors of the same type.

IEC Squirrel-Cage Motors

Marine motors

Special versions

Type approved explosion-proof motors up to frame size 315 L in marine version

| Special versions | Additional identification code -Z with order code or plain text | Motor type frame size | | | | | | | | | | | | | | |
|---|---|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors in Zone 1 with type of protection "e" | | | | | | | | | | | | | | | | |
| Basic marine version ¹⁾ | | | | | | | | | | | | | | | | |
| 1MA7 (aluminum) | | | | | | | | | | | | | | | | |
| Without type test certificate according to ABS 50°C/CCS 45 °C/RINA 45 °C, temperature class 155 (F) used according to 155 (F) (if acceptance test certificate 3.1 according to EN 10204 is required, this must be ordered with the additional order code B02) | E00 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to GL (Germanischer Lloyd), Germany, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E11 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to LR (Lloyds Register), Great Britain, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E21 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to BV (Bureau Veritas), France, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E31 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to DNV (Det Norske Veritas), Norway, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E51 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Acceptance/certification | | | | | | | | | | | | | | | | |
| Individual acceptance by marine classification society | Details in plain text | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Type test with heat run for horizontal motors, with acceptance | Details in plain text ²⁾ | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Type test with heat run for vertical motors, with acceptance | Details in plain text ²⁾ | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Basic marine version ¹⁾ | | | | | | | | | | | | | | | | |
| 1MA6 (cast-iron) | | | | | | | | | | | | | | | | |
| Without type test certificate according to ABS 50°C/CCS 45 °C/RINA 45 °C, temperature class 155 (F) used according to 155 (F) (if acceptance test certificate 3.1 according to EN 10204 is required, this must be ordered with the additional order code B02) | E00 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to GL (Germanischer Lloyd), Germany, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E11 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to LR (Lloyds Register), Great Britain, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E21 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to BV (Bureau Veritas), France, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E31 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to DNV (Det Norske Veritas), Norway, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E51 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Acceptance/certification | | | | | | | | | | | | | | | | |
| Individual acceptance by marine classification society | Details in plain text | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Type test with heat run for horizontal motors, with acceptance | Details in plain text ²⁾ | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Type test with heat run for vertical motors, with acceptance | Details in plain text ²⁾ | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |

For legend and footnotes, see Page 10/14.

IEC Squirrel-Cage Motors

Marine motors

Special versions

| Special versions | Additional identification code -Z with order code or plain text | Motor type frame size | | | | | | | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors in Zone 1 with type of protection “de” | | | | | | | | | | | | | | | | |
| Basic marine version ¹⁾ | | | | | | | | | | | | | | | | |
| Without type test certificate according to ABS 50 °C/CCS 45 °C/RINA 45 °C, temperature class 155 (F) used according to 155 (F) (if acceptance test certificate 3.1 according to EN 10204 is required, this must be ordered with the additional order code B02) | E00 | | | | | | | | | | | | | | | |
| With type test certificate according to GL (Germanischer Lloyd), Germany, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E11 | | | | | | | | | | | | | | | |
| With type test certificate according to LR (Lloyds Register), Great Britain, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E21 | | | | | | | | | | | | | | | |
| With type test certificate according to BV (Bureau Veritas), France, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E31 | | | | | | | | | | | | | | | |
| With type test certificate according to DNV (Det Norske Veritas), Norway, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E51 | | | | | | | | | | | | | | | |
| Acceptance/certification | | | | | | | | | | | | | | | | |
| Individual acceptance by marine classification society | Details in plain text | | | | | | | | | | | | | | | |
| Type test with heat run for horizontal motors, with acceptance | Details in plain text ²⁾ | | | | | | | | | | | | | | | |
| Type test with heat run for vertical motors, with acceptance | Details in plain text ²⁾ | | | | | | | | | | | | | | | |

✓ With additional charge
O. R. Possible on request

¹⁾ Motor for use in shipping for higher ambient temperature and/or used as 155 (F) according to 130 (B), order with details in plain text. In some cases motor series 1MA is supplied with reduced output, but is designed for the maximum possible and certified output. For motor series 1MJ output is reduced by 4 % for order codes **E11**, **E21**, **E31** and **E51** and by 8 % for order code **E00**. The order codes for the basic marine version (**E00**, **E11**, **E21**, **E31**, **E51**) cannot be combined with each other.

²⁾ Option or details in plain text only necessary for one motor when ordering several motors of the same type.

IEC Squirrel-Cage Motors

Marine motors

Special versions

| Special versions | Additional identification code -Z with order code or plain text | Motor type frame size | | | | | | | | | | | | | | |
|---|---|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors in Zones 2, 21 and 22 with type of protection “n” or protection against dust explosions | | | | | | | | | | | | | | | | |
| 1LA7 (aluminum) ¹⁾ | | | | | | | | | | | | | | | | |
| 1LA5 (aluminum) ²⁾ | | | | | | | | | | | | | | | | |
| Basic marine version ³⁾ | | | | | | | | | | | | | | | | |
| Without type test certificate according to ABS 50°C/CCS 45 °C/RINA 45 °C, temperature class 155 (F) used according to 155 (F) (if acceptance test certificate 3.1 according to EN 10204 is required, this must be ordered with the additional order code B02) | E00 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to GL (Germanischer Lloyd), Germany, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E11 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to LR (Lloyds Register), Great Britain, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E21 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to BV (Bureau Veritas), France, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E31 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to DNV (Det Norske Veritas), Norway, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E51 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Acceptance/certification | | | | | | | | | | | | | | | | |
| Individual acceptance by marine classification society | E10 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for horizontal motors, with acceptance | F83 ⁴⁾ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, with acceptance | Details in plain text ⁴⁾ | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| 1LA9 (aluminum) ⁵⁾ | | | | | | | | | | | | | | | | |
| Basic marine version ³⁾ | | | | | | | | | | | | | | | | |
| Without type test certificate according to ABS 50°C/CCS 45 °C/RINA 45 °C, temperature class 155 (F) used according to 155 (F) (if acceptance test certificate 3.1 according to EN 10204 is required, this must be ordered with the additional order code B02) | E00 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to GL (Germanischer Lloyd), Germany, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E11 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to LR (Lloyds Register), Great Britain, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E21 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to BV (Bureau Veritas), France, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E31 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to DNV (Det Norske Veritas), Norway, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E51 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Acceptance/certification | | | | | | | | | | | | | | | | |
| Individual acceptance by marine classification society | E10 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for horizontal motors, with acceptance | F83 ⁴⁾ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, with acceptance | Details in plain text ⁴⁾ | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |

IEC Squirrel-Cage Motors

Marine motors

Special versions

| Special versions | Additional identification code -Z with order code or plain text | Motor type frame size | | | | | | | | | | | | | | |
|--|---|-----------------------|----|----|----|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-ventilated motors in Zones 2, 21 and 22 with type of protection "n" or protection against dust explosions | | | | | | | | | | | | | | | | |
| Basic marine version ³⁾ | | | | | | | | | | | | | | | | |
| Without type test certificate according to ABS 50 °C/CCS 45 °C/RINA 45 °C, temperature class 155 (F) used according to 155 (F) (if acceptance test certificate 3.1 according to EN 10204 is required, this must be ordered with the additional order code B02) | E00 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to GL (Germanischer Lloyd), Germany, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E11 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to LR (Lloyds Register), Great Britain, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E21 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to BV (Bureau Veritas), France, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E31 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to DNV (Det Norske Veritas), Norway, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E51 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Acceptance/certification | | | | | | | | | | | | | | | | |
| Individual acceptance by marine classification society | E10 | | | | | | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Details in plain text | | | | | | O. R. | O. R. | O. R. | O. R. | – | – | – | – | – | – |
| Type test with heat run for horizontal motors, with acceptance | F83 ⁴⁾ | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, with acceptance | Details in plain text ⁴⁾ | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |

- ✓ With additional charge
 – Not possible
 O. R. Possible on request

¹⁾ Zone 2 for 1LA7 motors not possible in frame size 56.
²⁾ Zone 2 for 1LA5 motors not possible, for Zone 2 use 1LG4 motors instead of 1LA5 motors.
³⁾ Motor for use in shipping for higher ambient temperature and/or used as 155 (F) according to 130 (B), order with details in plain text. The output of motors is reduced by 4 % for order codes **E11**, **E21**, **E31** and **E51** and by 8 % for order code **E00**. The order codes for the basic marine version (**E00**, **E11**, **E21**, **E31**, **E51**) cannot be combined with each other.

⁴⁾ Option or details in plain text only necessary for one motor when ordering several motors of the same type.
⁵⁾ Zone 2 not possible for 1LA9 motors in frame sizes 56, 180 and 200.
⁶⁾ Zone 21 not possible for 1LA6 motors.

IEC Squirrel-Cage Motors

Marine motors

Special versions

Type approved fan motors in marine version

| Special versions | Additional identification code -Z with order code or plain text | Motor type frame size | | | | | | | | | | | | |
|------------------|--|-----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 |

Self-ventilated motors in pole-changing version

| | | 1LA7 (aluminum) | | | | | | 1LA5 (aluminum) | |
|--|-------------------------------------|-----------------|-------|-------|-------|-------|-------|-----------------|-------|
| Basic marine version ¹⁾ | | | | | | | | | |
| Without type test certificate according to ABS 50 °C/CCS 45 °C/RINA 45 °C, temperature class 155 (F) used according to 155 (F) (if acceptance test certificate 3.1 according to EN 10204 is required, this must be ordered with the additional order code B02) | E00 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to GL (Germanischer Lloyd), Germany, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E11 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to LR (Lloyds Register), Great Britain, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E21 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to BV (Bureau Veritas), France, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E31 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to DNV (Det Norske Veritas), Norway, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E51 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Acceptance/certification | | | | | | | | | |
| Individual acceptance by marine classification society | E10 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for horizontal motors, with acceptance | F83 ²⁾ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, with acceptance | Details in plain text ²⁾ | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| 1LG4 (cast-iron) | | | | | | | | | |
| Basic marine version ¹⁾ | | | | | | | | | |
| Without type test certificate according to ABS 50 °C/CCS 45 °C/RINA 45 °C, temperature class 155 (F) used according to 155 (F) (if acceptance test certificate 3.1 according to EN 10204 is required, this must be ordered with the additional order code B02) | E00 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to GL (Germanischer Lloyd), Germany, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E11 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to LR (Lloyds Register), Great Britain, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E21 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to BV (Bureau Veritas), France, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E31 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to DNV (Det Norske Veritas), Norway, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E51 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Acceptance/certification | | | | | | | | | |
| Individual acceptance by marine classification society | E10 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for horizontal motors, with acceptance | F83 ²⁾ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, with acceptance | Details in plain text ²⁾ | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |

IEC Squirrel-Cage Motors

Marine motors

Special versions

| Special versions | Additional identification code -Z with order code or plain text | Motor type frame size | | | | | | | | | | | | | | | |
|--|--|-------------------------|-------|-------|-------|-------|-------|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|--|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 | |
| Forced-air cooled motors without external fan and fan cover | | | | | | | | | | | | | | | | | |
| | | 1PP7 (aluminum) | | | | | | 1PP5 (aluminum) | | | | | | | | | |
| Basic marine version ¹⁾ | | | | | | | | | | | | | | | | | |
| Without type test certificate according to ABS 50 °C/CCS 45 °C/RINA 45 °C, temperature class 155 (F) used according to 155 (F) (if acceptance test certificate 3.1 according to EN 10204 is required, this must be ordered with the additional order code B02) | E00 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| With type test certificate according to GL (Germanischer Lloyd), Germany, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E11 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| With type test certificate according to LR (Lloyds Register), Great Britain, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E21 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| With type test certificate according to BV (Bureau Veritas), France, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E31 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| With type test certificate according to DNV (Det Norske Veritas), Norway, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E51 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Acceptance/certification | | | | | | | | | | | | | | | | | |
| Individual acceptance by marine classification society | E10 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Type test with heat run for horizontal motors, with acceptance | F83 ²⁾ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Type test with heat run for vertical motors, with acceptance | Details in plain text ²⁾ | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | |
| | | 1PP4 (cast-iron) | | | | | | | | | | | | | | | |
| Basic marine version ¹⁾ | | | | | | | | | | | | | | | | | |
| Without type test certificate according to ABS 50 °C/CCS 45 °C/RINA 45 °C, temperature class 155 (F) used according to 155 (F) (if acceptance test certificate 3.1 according to EN 10204 is required, this must be ordered with the additional order code B02) | E00 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| With type test certificate according to GL (Germanischer Lloyd), Germany, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E11 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| With type test certificate according to LR (Lloyds Register), Great Britain, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E21 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| With type test certificate according to BV (Bureau Veritas), France, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E31 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| With type test certificate according to DNV (Det Norske Veritas), Norway, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E51 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Acceptance/certification | | | | | | | | | | | | | | | | | |
| Individual acceptance by marine classification society | E10 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Type test with heat run for horizontal motors, with acceptance | F83 ²⁾ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Type test with heat run for vertical motors, with acceptance | Details in plain text ²⁾ | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | |

- ✓ With additional charge
 – Not possible
 O. R. Possible on request

¹⁾ Motor for use in shipping for higher ambient temperature and/or used as 155 (F) according to 130 (B), order with details in plain text. The order codes for the basic marine version (**E00**, **E11**, **E21**, **E31**, **E51**) cannot be combined with each other.

²⁾ Option or details in plain text only necessary for one motor when ordering several motors of the same type.

IEC Squirrel-Cage Motors

Marine motors

Special versions

Standard motors up to frame size 315 L in marine version (individual acceptance required)

| Special versions | Additional identification code -Z with order code or plain text | Motor type frame size | | | | | | | | | | | | | | |
|--|---|-----------------------|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Self-cooled motors without external fan | | | | | | | | | | | | | | | | |
| Basic marine version ^{1) 2)} | | | | | | | | | | | | | | | | |
| Without type test certificate according to ABS 50 °C/CCS 45 °C/RINA 45 °C, temperature class 155 (F) used according to 155 (F) (if acceptance test certificate 3.1 according to EN 10204 is required, this must be ordered with the additional order code B02) | E00 | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Acceptance/certification | | | | | | | | | | | | | | | | |
| Individual acceptance by marine classification society | E10 | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for horizontal motors, with acceptance | F83 ³⁾ | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, with acceptance | Details in plain text ³⁾ | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |
| Basic marine version ^{1) 2)} | | | | | | | | | | | | | | | | |
| Without type test certificate according to ABS 50 °C/CCS 45 °C/RINA 45 °C, temperature class 155 (F) used according to 155 (F) (if acceptance test certificate 3.1 according to EN 10204 is required, this must be ordered with the additional order code B02) | E00 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Acceptance/certification | | | | | | | | | | | | | | | | |
| Individual acceptance by marine classification society | E10 | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for horizontal motors, with acceptance | F83 ³⁾ | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, with acceptance | Details in plain text ³⁾ | | | | | | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. |

✓ With additional charge
O. R. Possible on request

¹⁾ Motor for use in shipping for higher ambient temperature and/or used as 155 (F) according to 130 (B), order with details in plain text. The output of motors is reduced by 8 % for order code **E00**. The order codes for the basic marine version (**E00**, **E11**, **E21**, **E31**, **E51**) cannot be combined with each other.

²⁾ Certification is possible on request according to the marine classification authorities GL, LR, BV and DNV.

³⁾ Option or details in plain text only necessary for one motor when ordering several motors of the same type.

IEC Squirrel-Cage Motors

Marine motors

Special versions

| Special versions | Additional identification code -Z with order code or plain text | Motor type frame size | | | | | | | | | | | | | | | | |
|---|---|------------------------|----|----|----|-------|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|--|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 | | |
| Forced-air ventilated motors | | | | | | | | | | | | | | | | | | |
| Basic marine version ¹⁾ | | | | | | | | | | | | | | | | | | |
| | | 1PP7 (aluminum) | | | | | 1PP5 (aluminum) | | | | | | | | | | | |
| Without type test certificate according to ABS 50°C/CCS 45 °C/RINA 45 °C, temperature class 155 (F) used according to 155 (F) (if acceptance test certificate 3.1 according to EN 10204 is required, this must be ordered with the additional order code B02) | E00 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| With type test certificate according to GL (Germanischer Lloyd), Germany, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E11 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| With type test certificate according to LR (Lloyds Register), Great Britain, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E21 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| With type test certificate according to BV (Bureau Veritas), France, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E31 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| With type test certificate according to DNV (Det Norske Veritas), Norway, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E51 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| Acceptance/certification | | | | | | | | | | | | | | | | | | |
| Individual acceptance by marine classification society | E10 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| Type test with heat run for horizontal motors, with acceptance | F83 ²⁾ | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| Type test with heat run for vertical motors, with acceptance | Details in plain text ²⁾ | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | | |

IEC Squirrel-Cage Motors

Marine motors

Special versions

| Special versions | Additional identification code -Z with order code or plain text | Motor type frame size | | | | | | | | | | | | | | |
|---|---|-------------------------|----|----|----|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 | 315 |
| Basic marine version ¹⁾ | | 1PP6 (cast-iron) | | | | | | | | | | | | | | |
| Without type test certificate according to ABS 50°C/CCS 45 °C/RINA 45 °C, temperature class 155 (F) used according to 155 (F) (if acceptance test certificate 3.1 according to EN 10204 is required, this must be ordered with the additional order code B02) | E00 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to GL (Germanischer Lloyd), Germany, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E11 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to LR (Lloyds Register), Great Britain, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E21 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to BV (Bureau Veritas), France, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E31 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| With type test certificate according to DNV (Det Norske Veritas), Norway, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E51 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Acceptance/certification | | | | | | | | | | | | | | | | |
| Individual acceptance by marine classification society | E10 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for horizontal motors, with acceptance | F83 ²⁾ | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, with acceptance | Details in plain text ²⁾ | | | | | | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. | O. R. |

- ✓ With additional charge
- Not possible
- O. R. Possible on request

¹⁾ The order codes for the basic marine version (**E00, E11, E21, E31, E51**) cannot be combined with each other.

²⁾ Option or details in plain text only necessary for one motor when ordering several motors of the same type.

IEC Squirrel-Cage Motors

Marine motors

Special versions

Non-standard motors frame size 315 and above in marine version (individual acceptance required)

| Special versions | Additional identification code -Z with order code or plain text | Motor type frame size | | | |
|--|--|-------------------------|-----|-----|-----|
| | | 315 | 355 | 400 | 450 |
| Self-ventilated motors for mains-fed and converter-fed operation | | | | | |
| | | 1LA8 (cast-iron) | | | |
| Basic marine version ¹⁾ | | | | | |
| Without type test certificate according to GL (Germanischer Lloyd), Germany, CT 45 °C, temperature class 155 (F) used according to 155 (F) | E11 | ✓ | ✓ | ✓ | ✓ |
| Without type test certificate according to LR (Lloyds Register), Great Britain, CT 45 °C, temperature class 155 (F) used according to 155 (F) | E21 | ✓ | ✓ | ✓ | ✓ |
| Without type test certificate according to BV (Bureau Veritas), France, CT 45 °C, temperature class 155 (F) used according to 155 (F) | E31 | ✓ | ✓ | ✓ | ✓ |
| Without type test certificate according to DNV (Det Norske Veritas), Norway, CT 45 °C, temperature class 155 (F) used according to 155 (F) | E51 | ✓ | ✓ | ✓ | ✓ |
| Without type test certificate according to ABS (American Bureau of Shipping), USA, CT 50 °C, temperature class 155 (F), used according to 155 (F) | E61 | ✓ | ✓ | ✓ | ✓ |
| Without type test certificate according to CCS (Chinese Classification Society), China, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E71 | ✓ | ✓ | ✓ | ✓ |
| Motor for use in shipping, higher ambient temperature and/or used as temperature class 155 (F) according to 130 (B) | E80 + plain text details | ✓ | ✓ | ✓ | ✓ |
| Acceptance/certification | | | | | |
| Individual acceptance by marine classification society | E10 | ✓ | ✓ | ✓ | ✓ |
| Individual acceptance by marine classification society with supervision of construction and acceptance test certificate 3.2 according to EN 10204 | E09 | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for horizontal motors, with acceptance | F83 ²⁾ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, with acceptance | F93 ²⁾ | ✓ | ✓ | ✓ | ✓ |
| Forced-air cooled motors with externally mounted fan for converter-fed operation | | | | | |
| | | 1PQ8 (cast-iron) | | | |
| Basic marine version ¹⁾ | | | | | |
| Without type test certificate according to GL (Germanischer Lloyd), Germany, CT 45 °C, temperature class 155 (F) used according to 155 (F) | E11 | ✓ | ✓ | ✓ | ✓ |
| Without type test certificate according to LR (Lloyds Register), Great Britain, CT 45 °C, temperature class 155 (F) used according to 155 (F) | E21 | ✓ | ✓ | ✓ | ✓ |
| Without type test certificate according to BV (Bureau Veritas), France, CT 45 °C, temperature class 155 (F) used according to 155 (F) | E31 | ✓ | ✓ | ✓ | ✓ |
| Without type test certificate according to DNV (Det Norske Veritas), Norway, CT 45 °C, temperature class 155 (F) used according to 155 (F) | E51 | ✓ | ✓ | ✓ | ✓ |
| Without type test certificate according to ABS (American Bureau of Shipping), USA, CT 50 °C, temperature class 155 (F), used according to 155 (F) | E61 | ✓ | ✓ | ✓ | ✓ |
| Without type test certificate according to CCS (Chinese Classification Society), China, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E71 | ✓ | ✓ | ✓ | ✓ |
| Motor for use in shipping, higher ambient temperature and/or used as temperature class 155 (F) according to 130 (B) | E80 + plain text details | ✓ | ✓ | ✓ | ✓ |
| Acceptance/certification | | | | | |
| Individual acceptance by marine classification society | E10 | ✓ | ✓ | ✓ | ✓ |
| Individual acceptance by marine classification society with supervision of construction and acceptance test certificate 3.2 according to EN 10204 | E09 | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for horizontal motors, with acceptance | F83 ²⁾ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, with acceptance | F93 ²⁾ | ✓ | ✓ | ✓ | ✓ |

IEC Squirrel-Cage Motors

Marine motors

Special versions

| Special versions | Additional identification code -Z with order code or plain text | Motor type frame size | | | |
|--|---|-------------------------|-----|-----|-----|
| | | 315 | 355 | 400 | 450 |
| Self-ventilated motors with through ventilation for mains-fed and converter-fed operation | | | | | |
| | | 1LL8 (cast-iron) | | | |
| Basic marine version ¹⁾ | | | | | |
| Without type test certificate according to GL (Germanischer Lloyd), Germany, CT 45 °C, temperature class 155 (F) used according to 155 (F) | E11 | ✓ | ✓ | ✓ | ✓ |
| Without type test certificate according to LR (Lloyds Register), Great Britain, CT 45 °C, temperature class 155 (F) used according to 155 (F) | E21 | ✓ | ✓ | ✓ | ✓ |
| Without type test certificate according to BV (Bureau Veritas), France, CT 45 °C, temperature class 155 (F) used according to 155 (F) | E31 | ✓ | ✓ | ✓ | ✓ |
| Without type test certificate according to DNV (Det Norske Veritas), Norway, CT 45 °C, temperature class 155 (F) used according to 155 (F) | E51 | ✓ | ✓ | ✓ | ✓ |
| Without type test certificate according to ABS (American Bureau of Shipping), USA, CT 50 °C, temperature class 155 (F), used according to 155 (F) | E61 | ✓ | ✓ | ✓ | ✓ |
| Without type test certificate according to CCS (Chinese Classification Society), China, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E71 | ✓ | ✓ | ✓ | ✓ |
| Motor for use in shipping, higher ambient temperature and/or used as temperature class 155 (F) according to 130 (B) | E80 + plain text details | ✓ | ✓ | ✓ | ✓ |
| Acceptance/certification | | | | | |
| Individual acceptance by marine classification society | E10 | ✓ | ✓ | ✓ | ✓ |
| Individual acceptance by marine classification society with supervision of construction and acceptance test certificate 3.2 according to EN 10204 | E09 | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for horizontal motors, with acceptance | F83 ²⁾ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, with acceptance | F93 ²⁾ | ✓ | ✓ | ✓ | ✓ |

✓ With additional charge

Explosion-proof motors frame size 315 and above in marine version (individual acceptance required)

| Special versions | Order No. supplement -Z with order code and/or plain text details | Motor type frame size | | | |
|--|--|-------------------------|-----|-----|-----|
| | | 315 | 355 | 400 | 450 |
| Self-ventilated motors in Zone 22 with type of protection "n" or protection against dust explosions | | | | | |
| | | 1LA8 (cast-iron) | | | |
| Basic marine version ¹⁾ | | | | | |
| Without type test certificate according to GL (Germanischer Lloyd), Germany, CT 45 °C, temperature class 155 (F) used according to 155 (F) | E11 | ✓ | ✓ | ✓ | ✓ |
| Without type test certificate according to LR (Lloyds Register), Great Britain, CT 45 °C, temperature class 155 (F) used according to 155 (F) | E21 | ✓ | ✓ | ✓ | ✓ |
| Without type test certificate according to BV (Bureau Veritas), France, CT 45 °C, temperature class 155 (F) used according to 155 (F) | E31 | ✓ | ✓ | ✓ | ✓ |
| Without type test certificate according to DNV (Det Norske Veritas), Norway, CT 45 °C, temperature class 155 (F) used according to 155 (F) | E51 | ✓ | ✓ | ✓ | ✓ |
| Without type test certificate according to ABS (American Bureau of Shipping), USA, CT 50 °C, temperature class 155 (F), used according to 155 (F) | E61 | ✓ | ✓ | ✓ | ✓ |
| Without type test certificate according to CCS (Chinese Classification Society), China, CT 45 °C, temperature class 155 (F), used according to 155 (F) | E71 | ✓ | ✓ | ✓ | ✓ |
| Motor for use in shipping, higher ambient temperature and/or used as temperature class 155 (F) according to 130 (B) | E80 + plain text details | ✓ | ✓ | ✓ | ✓ |
| Acceptance/certification | | | | | |
| Individual acceptance by marine classification society | E10 | ✓ | ✓ | ✓ | ✓ |
| Individual acceptance by marine classification society with supervision of construction and acceptance test certificate 3.2 according to EN 10204 | E09 | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for horizontal motors, with acceptance | F83 ²⁾ | ✓ | ✓ | ✓ | ✓ |
| Type test with heat run for vertical motors, with acceptance | F93 ²⁾ | ✓ | ✓ | ✓ | ✓ |

✓ With additional charge

¹⁾ The order codes for the basic marine version (**E11, E21, E31, E51, E61, E71, E80**) cannot be combined with each other.

²⁾ Option only necessary for one motor when ordering several motors of the same type. Type testing is also performed for converter-fed operation.

IEC Squirrel-Cage Motors

Marine motors

Accessories

Overview

See the relevant sections in catalog parts 2 "Standard motors up to frame size 315 L", 3 "Non-standard motors frame size 315 and above", 4 "Explosion-proof motors", 7 "Fan motors" and 9 "Smoke-extraction motors".

Dimensions

Overview

See dimensions in catalog parts 2 "Standard motors up to frame size 315 L", 3 "Non-standard motors frame size 315 and above", 4 "Explosion-proof motors" and 7 "Fan motors", 9 "Smoke-extraction motors".

IEC Squirrel-Cage Motors

Marine motors

Notes

10



Appendix



| | |
|--------------|---|
| 11/2 | Overview of products |
| 11/2 | SIMATIC ET 200S FC/ SIMATIC ET 200pro FC |
| 11/4 | SINAMICS G110 |
| 11/5 | SINAMICS G120 |
| 11/7 | SINAMICS G120D |
| 11/7 | MICROMASTER 410/420/430/440 |
| 11/8 | MICROMASTER 411/ COMBIMASTER 411 |
| 11/9 | Customized motors |
| 11/10 | Motors acc. to NEMA standard |
| 11/11 | SD configurator selection tool |
| 11/13 | Energy-saving program SinaSave |
| 11/14 | SIZER configuration tool |
| 11/15 | STARTER commissioning tool |
| 11/17 | Training |
| 11/18 | Training courses for drive systems |
| 11/18 | The courses at a glance |
| 11/19 | SD Manual Collection |
| 11/20 | Siemens Contacts Worldwide |
| 11/21 | Online Services– Information and Ordering in the Internet and on DVD |
| 11/21 | Siemens Industry Automation and Drive Technologies in the WWW |
| 11/21 | Product Selection Using the Offline Mall |
| 11/21 | Easy Shopping with the A&D Mall |
| 11/22 | Customer Support |
| 11/22 | Online Support |
| 11/22 | Technical Support |
| 11/22 | Technical Consulting |
| 11/22 | Configuration and Software Engineering |
| 11/22 | Service on Site |
| 11/22 | Repairs and Spare Parts |
| 11/22 | Optimization and Upgrading |
| 11/23 | Knowledge Base on CD-ROM |
| 11/23 | Automation Value Card |
| 11/24 | Subject index |
| 11/30 | Index of Order No. |
| 11/33 | Overview of order codes |
| 11/44 | Metal surcharges |
| 11/46 | Conditions of sale and delivery, Export regulations |

IEC Squirrel-Cage Motors

Appendix

Overview of products

Frequency converters for SIMATIC ET 200 distributed I/O

Frequency converters are available for the SIMATIC ET 200 distributed I/O that are fully system-integrated modules. Converters are available for the finely modular SIMATIC ET 200S FC system to the IP20 degree of protection as well as for the cabinet-free SIMATIC ET 200pro FC system to the IP65 degree of protection. With a broad range of possibilities, the frequency converters expand the functional scope of the modular modules that are available in both systems (e.g. inputs and outputs, technology modules, direct and soft starters). With suitable interface modules, connection to PROFIBUS and PROFINET is possible via the SIMATIC ET 200 system bus as well as integration of PLC functionality into the system. Fail-safe frequency converter functions can be activated locally or via PROFIsafe.

An overview of the features of these frequency converters is given in the tables below. The complete product spectrum including ordering data, technical data and explanations can be found in Catalog IK PI "Industrial Communication" and on the Internet at

<http://www.siemens.com/et200s-fc>

and

<http://www.siemens.com/et200pro-fc>

| SIMATIC ET 200S FC | |
|-------------------------------------|---|
| Main features | <ul style="list-style-type: none"> • Complete embedding of a frequency converter into a distributed I/O system to IP20 degree of protection • Easy assembly and low susceptibility to errors thanks to self-assembling energy and communications bus • Space-saving assembly thanks to compact dimensions and common protection • Fast, tool-free replacement of the frequency converter for a servicing requirement (hot swapping) • Frequency control (V/f), vector control with and without encoders • Line-commutated regenerative feedback by power electronics of the latest generation • Modular structure with Control Unit (closed-loop control module) and Power Module (power section) • Frequency inverter variant with integrated, autonomous, fail-safe functions without the need for complex external wiring |
| Rated outputs | 0.75 kW, 2.2 kW, 4.0 kW |
| Input voltage | 380 ... 480 V 3 AC $\pm 10\%$ |
| Overall width | Control Unit + Power Module up to 0.75 kW: 80 mm, otherwise 145 mm |
| Mains frequency | 47 ... 63 Hz |
| Overload capability | <ul style="list-style-type: none"> • Overload current $1.5 \times$ rated output current (i.e. 150 % overload) over 60 s, cycle time 300 s • Overload current $2 \times$ rated output current (i.e. 200 % overload) over 3 s, cycle time 300 s |
| Output frequency | 0 ... 650 Hz |
| Pulse frequency | 8 kHz (standard), 2 ... 16 kHz (in steps of 2 kHz) |
| Frequency bands that can be skipped | 1, programmable |
| Efficiency | $\geq 96\%$ |
| Interfaces | <ul style="list-style-type: none"> • Connection to PROFIBUS via IM151 interface module • Connection to PROFINET via IM151-3PN interface module • Integration of PLC functionality through IM151 CPU and IM151-7 F CPU interface modules • RS232 interface with USS protocol for commissioning on the PC with the STARTER commissioning software • Slot for an optional Micro Memory Card for uploading or downloading parameter settings • PTC/KTY84 interface for motor monitoring • Speed sensor interface (Sub-D connector) for unipolar HTL incremental encoder • Activation of the integrated safety functions over PROFIsafe (using the PM-D F PROFIsafe Power Module) or terminals (using the Safety Local Power Module PM-D F X1) |
| Standards conformance | UL, cUL, CE and c-tick, Low-Voltage Directive 73/23/EEC, EMC Directive 89/336/EEC |
| Functional safety | <p>Closed-loop control module with Integral safety functions to Category 3 of EN 954-1 and SIL2 of IEC 61508:</p> <ul style="list-style-type: none"> • Safety torque off • Safely limited speed • Safe stop 1 <p>The safety functions "Safely limited speed" and "Safe stop 1" are certified for encoderless asynchronous motors. These safety functions are not approved for pull-through loads as in the case of lifting gear and winders</p> |
| Degree of protection | IP20 |



SIMATIC ET 200S FC
Control Units



SIMATIC ET 200S FC
Power Modules

| SIMATIC ET 200pro FC | |
|-------------------------------------|--|
| Main features | <ul style="list-style-type: none"> • Complete embedding of a frequency converter into a distributed I/O system to IP65 degree of protection • Easy assembly and low susceptibility to errors thanks to self-assembling energy and communications bus • Fast replacement of the frequency converter during servicing without interruption of the bus communication to other modules within the SIMATIC ET 200pro FC • Frequency control (V/f), vector control without encoders • Line-commutated regenerative feedback by power electronics of the latest generation • Frequency converter variant with integrated, autonomous, fail-safe functions without the need for complex external wiring |
| Rated outputs | 1.1 kW (at 0 ... 55 °C ambient temperature) 1.5 kW (at 0 ... 45 °C ambient temperature) |
| Input voltage | 380 ... 480 V 3 AC ± 10 % |
| Overall width | 155 mm |
| Mains frequency | 47 ... 63 Hz |
| Overload capability | <ul style="list-style-type: none"> • Overload current 1.5 \times rated output current (i.e. 150 % overload) over 60 s, cycle time 300 s • Overload current 2 \times rated output current (i.e. 200 % overload) over 3 s, cycle time 300 s |
| Output frequency | 0 ... 650 Hz |
| Pulse frequency | 4 kHz (standard) 2 ... 16 kHz (in steps of 2 kHz) |
| Frequency bands that can be skipped | 1, programmable |
| Efficiency | ≥ 96 % |
| Interfaces | <ul style="list-style-type: none"> • Connection to PROFIBUS through IM154-1 and IM154-2 interface modules • Available soon connection to PROFINET over IM154-4PN interface modules and connection to IM154-8 CPU interface modules • Optical interface with USS protocol for fiber-optic RS232 connecting cable • Control signal for 180 V DC electromagnetic motor brake • Slot for an optional memory card (MMC) for uploading or downloading parameter settings • PTC/KTY84 interface for motor temperature monitoring • Activation of the integrated safety functions through the Safety Local Isolator Module F RSM or through F-Switch PROFIsafe |
| Standards conformance | UL, cUL, CE, Low-Voltage Directive 73/23/EEC, EMC Directive 89/336/EEC |
| Functional safety | <p>Variant with Integral safety functions to Category 3 of EN 954-1 and SIL2 of IEC 61508:</p> <ul style="list-style-type: none"> • Safety torque off • Safely limited speed • Safe stop 1 <p>The safety functions "Safely limited speed" and "Safe stop 1" are certified for encoderless asynchronous motors. These safety functions are not approved for pull-through loads as in the case of lifting gear and winders</p> |
| Degree of protection | IP65 |



SIMATIC ET 200pro FC
Standard frequency converter



SIMATIC ET 200pro FC-Failsafe
Frequency converter with integrated safety functions

IEC Squirrel-Cage Motors

Appendix

Overview of products

SINAMICS G110 chassis inverters

The SINAMICS G110 chassis inverter is a flexible drive. The table shows an overview of the features of this product. You will find the complete product spectrum with ordering data, technical specifications and descriptions in Catalog D 11.1

“SINAMICS G110/SINAMICS G120 Inverter Chassis Units and SINAMICS G120D Distributed Frequency Inverters” and on the Internet at <http://www.siemens.com/sinamics-g110>

| SINAMICS G110 | |
|--|---|
| Main characteristics | “ The versatile drive in the low power range ” is the frequency inverter for inverter chassis units, SINAMICS G110 which can be used for a wide range of industrial drive applications using variable speeds. The particularly compact SINAMICS G110 inverter uses voltage/frequency control (U/f) and is the ideal frequency inverter solution in the lower output and performance ranges of the SINAMICS product family. The inverter is available in three frame sizes for connection to single-phase supply systems. |
| Electrical Data | |
| Mains voltages, power range | 1 AC 200 V ... 240 V, $\pm 10\%$; 0.12 kW ... 3.0 kW |
| Network types | IT, TN, TT |
| Power frequency | 50/60 Hz |
| Output frequency | 0 Hz ... 650 Hz |
| Control methods | U/f control, linear ($M-n$) U/f control, quadratic ($M-r^2$) U/f control, programmable |
| Fixed frequencies | 3, programmable |
| Skipped frequency ranges | 1, programmable |
| Digital inputs | 3 programmable 24 V DC digital inputs |
| Analog input (for analog version) | 1 analog input for setpoints from 0 V to 10 V, scaleable or for use as 4th digital input |
| Digital output | 1 digital output 24 V DC |
| Communication interface (for USS version) | RS 485 serial interface for use with USS protocol |
| Software functions | <ul style="list-style-type: none"> • Automatic restart following interruptions in operation due to a power failure • Smooth connection of the converter to the rotating motor • Programmable ramp-up/ramp-down times • Ramp smoothing |
| Functions | |
| Protective functions | <ul style="list-style-type: none"> • Undervoltage • Overvoltage • Ground fault • Short-circuit • Stall prevention • Thermal motor protection I^2t • Converter overtemperature • Motor overtemperature |
| Connectable motors | Asynchronous motors |
| Mechanical data | |
| Degree of protection | IP20 |
| Cooling method for | |
| <ul style="list-style-type: none"> • Converters ≤ 0.75 kW • Converters > 0.75 kW | Finned heat dissipater with convection cooling; version with flat heat dissipater also available Internal air cooling (integral fan) |
| Norms | |
| Compliance with standards | CE, UL, cUL, c-tick |



SINAMICS G110 Chassis inverters

SINAMICS G120 inverter chassis units

The SINAMICS G120 inverter chassis unit is a modular drive. The table provides an overview of the features of this product. The complete range of products together with ordering data, technical data and explanations are indicated in the

Catalog D 11.1 "SINAMICS G110/SINAMICS G120 Inverter Chassis Units and SINAMICS G120D Distributed Frequency Inverters" and on the Internet at:
<http://www.siemens.com/sinamics-g120>

| SINAMICS G120 | |
|--|---|
| Main features | As "a modular single drive for low and medium outputs" , the frequency inverter of the SINAMICS G120 inverter chassis units can be used for a wide range of industrial drive applications. The SINAMICS G120 frequency inverter distinguishes itself through its modular design (Power Module and Control Unit), and the globally unique integration of numerous innovative functions in safety technology and regenerative feedback into the line supply. There are extensive system components available in the range from 0.37 to 132 kW. This means that the drive units are suitable for a multitude of drive applications. |
| Electrical data | |
| Mains voltages, output range | 3 AC 380 V ... 480 V, ±10 %; 0.37 kW ... 132 kW |
| Network types | IT, TN, TT |
| Mains frequency | 47 ... 63 Hz |
| Output frequency | 0 Hz ... 650 Hz |
| Control method | V/f control, linear ($M \sim n$) V/f control, quadratic ($M \sim n^2$) and parameterizable sensorless vector control, vector control with encoder (closed control loop) Torque control |
| Fixed frequencies | 16, programmable |
| Digital inputs | up to 9 digital inputs, depending on the Control Unit 24 V DC |
| Analog input (for the analog version) | up to 2 analog inputs (0 V to 10 V) |
| Digital output | 3 digital inputs |
| Communication interface | RS485/USS; PROFIBUS; PROFINET |
| Functions | |
| Software functions | <ul style="list-style-type: none"> • Programmable ramp-up times 0 ... 650 s, ramp rounding • Automatic restart after interruption of operation due to supply failure • Flying restart • Signals are locally pre-processed using free function blocks • 3 selectable motor data sets • High-quality internal PID controller for simple process control • Positioning ramp down • Kinetic buffering |
| Protection functions | <ul style="list-style-type: none"> • Motor temperature (PTC/KTY, Pt) • Power unit and load cycle monitoring • Overvoltage and undervoltage • Earth fault • Stall prevention • System protection functions |
| Safety Integrated Functions | STO, SS1, SLS, SBC |
| Connectable motors | Asynchronous motors |
| Mechanical data | |
| Degree of protection | IP20 |
| Cooling method | Innovative cooling concept: The power electronics are cooled by means of heat sinks with an external fan; Open-loop and closed-loop control electronics are cooled by convection |
| Standards | |
| Standards complied with | CE, UL, cUL, c-tick, Safety Integrated IEC 61508/SIL 2 |



SINAMICS G120 inverter chassis units

IEC Squirrel-Cage Motors

Appendix

Overview of products

SINAMICS G120D distributed frequency inverter

The SINAMICS G120D frequency inverter is a modular drive. The table provides an overview of the features of this product. The complete range of products together with ordering data, technical data and explanations are indicated in the

Catalog D 11.1 "SINAMICS G110/SINAMICS G120 Inverter Chassis Units and SINAMICS G120D Distributed Frequency Inverters" and on the Internet at:

<http://www.siemens.com/sinamics-g120d>

| SINAMICS G120D | |
|--|--|
| Main features | "The modular drive for low and medium outputs" – the SINAMICS G120D distributed frequency inverter can be especially used for sophisticated conveyor applications in industry as for many other high-performance applications. The distributed SINAMICS G120D frequency inverter distinguishes itself through its modular design (Power Module and Control Unit) as well as through its extremely flat type of construction, an identical drilling template for all outputs and a high degree of safety. It offers safety functions that are unique in its class. It helps to save significant amounts of energy as a result of its line-commutated regenerative feedback capability. It goes without saying that the frequency inverter is also capable of communications. |
| Electrical data | |
| Mains voltages, output range | 3 AC 380 V ... 480 V, $\pm 10\%$; 0.75 kW ... 7.5 kW |
| Network types | IT, TN, TT |
| Mains frequency | 47 ... 63 Hz |
| Output frequency | 0 Hz ... 650 Hz |
| Control method | V/f control, linear ($M \sim n$) V/f control, quadratic ($M \sim n^2$) and parameterizable sensorless vector control, vector control with encoder (closed control loop) Torque control |
| Fixed frequencies | 16, programmable |
| Digital inputs | up to 6 digital inputs, depending on the Control Unit 24 V DC |
| Analog input (for the analog version) | up to 2 analog inputs (0 V to 10 V) |
| Digital output | 3 digital inputs |
| Communication interface | PROFIBUS; PROFINET |
| Functions | |
| Software functions | <ul style="list-style-type: none"> • Programmable ramp-up times 0 ... 650 s, ramp rounding • Automatic restart after interruption of operation due to supply failure • Flying restart • Signals are locally pre-processed using free function blocks • 3 selectable motor data sets • High-quality internal PID controller for simple process control • Positioning ramp down • Kinetic buffering |
| Protection functions | <ul style="list-style-type: none"> • Motor temperature (PTC/KTY, Pt) • Power unit and load cycle monitoring • Overvoltage and undervoltage • Earth fault • Stall prevention • System protection functions |
| Safety Integrated Functions | STO, SS1, SLS |
| Connectable motors | Asynchronous motors |
| Mechanical data | |
| Degree of protection | IP65 |
| Cooling method | Convection cooling, for higher outputs with fan |
| Standards | |
| Standards complied with | CE, UL, cUL, c-tick, Safety Integrated IEC 61508/SIL 2 |



SINAMICS G120D distributed frequency inverter

MICROMASTER 410/420/430/440 frequency converters

MICROMASTER converters from Siemens perfectly complement the motors. The table shows an overview of the features of these converters. For the full range of products complete with ordering data, technical details and explanations, see Catalog DA 51.2.

For up-to-date information on MICROMASTER 420/430/440 frequency converters, visit the Internet at <http://www.siemens.com/micromaster>

| | MICROMASTER 410 | MICROMASTER 420 | MICROMASTER 430 | MICROMASTER 440 |
|----------------------------------|---|--|--|--|
| Main characteristics | "The low-price solution" for variable speeds with three-phase motors on single-phase networks, e.g. with pumps, fans, billboards, barriers, gate drives and automatic machines Discontinued model¹⁾ | "The universal converter" for three-phase networks and optional fieldbus interfacing, e.g. for conveyor belts, material transport, pumps, fans and machine tools | "The specialist for pumps and fans" with optimized OP (manual/automatic changeover), adapted software functionality and optimised output utilization | "The all-rounder" with advanced vector control (with and without encoder feedback) for versatile applications in sectors such as conveyor systems, textiles, lifts, lifting gear and machine construction |
| Output range | 0.12 kW ... 0.75 kW | 0.12 kW ... 11 kW | 7.5 kW ... 250 kW | 0.12 kW ... 250 kW |
| Voltage ranges | 1 AC 100 V ... 120 V 1 AC 200 V ... 240 V | 1 AC 200 V ... 240 V 3 AC 200 V ... 240 V 3 AC 380 V ... 480 V | 3 AC 380 V ... 480 V | 1 AC 200 V ... 240 V 3 AC 200 V ... 240 V 3 AC 380 V ... 480 V 3 AC 500 V ... 600 V |
| Closed-loop Control | <ul style="list-style-type: none"> V/f characteristic Multipoint characteristic (parameterizable V/f characteristic) FCC (Flux Current Control) | <ul style="list-style-type: none"> V/f characteristic Multipoint characteristic (parameterizable V/f characteristic) FCC (Flux Current Control) | <ul style="list-style-type: none"> V/f characteristic Multipoint characteristic (parameterizable V/f characteristic) FCC (Flux Current Control) | <ul style="list-style-type: none"> V/f characteristic Multipoint characteristic (parameterizable V/f characteristic) FCC (Flux Current Control) Vector control |
| Process control | – | Internal PI controller | Internal PID controller | Internal PID controller (autotuning) |
| Inputs | 3 Digital inputs 1 Analog input | 3 Digital inputs 1 Analog input | 6 Digital inputs 2 Analog inputs 1 PTC/KTY input | 6 Digital inputs 2 Analog inputs 1 PTC/KTY input |
| Outputs | 1 Relay output | 1 Analog output 1 Relay output | 2 Analog outputs 3 Relay outputs | 2 Analog outputs 3 Relay outputs |
| Interfacing to automation system | The PLC partner for LOGO! and SIMATIC S7-200 | The ideal partner for your automation tasks, whether with SIMATIC S7-200, SIMATIC S7-300/400 (TIA) or SIMOTION | The ideal partner for your automation tasks, whether with SIMATIC S7-200, SIMATIC S7-300/400 (TIA) or SIMOTION | The ideal partner for your automation tasks, whether with SIMATIC S7-200, SIMATIC S7-300/400 (TIA) or SIMOTION |
| Additional features | <ul style="list-style-type: none"> Self-ventilated (no fan unit) Position of connections as with conventional switching elements (e.g. contactors) Variant with flat heat sink | <ul style="list-style-type: none"> BICO technology Compound braking for controlled rapid braking | <ul style="list-style-type: none"> Energy-saving mode Load torque monitoring (detects dry run of pumps) Motor staging Bypass mode BICO technology | <ul style="list-style-type: none"> 3 selectable drive data records Integrated brake chopper (up to 75 kW) Torque control BICO technology |



Examples of MICROMASTER 410/420/430/440

¹⁾ The MICROMASTER 410 is a discontinued model since a fairly long time. The type cancellation has been executed as for the 1/10/07 (01.Oct.2007). For this reason, the MICROMASTER is only available as spare part.

IEC Squirrel-Cage Motors

Appendix

Overview of products

Distributed drive solutions – MICROMASTER 411/COMBIMASTER 411 converters and geared motors

The MICROMASTER 411/COMBIMASTER 411 converters from Siemens are available as a distributed drives solution. The table shows an overview of the features of this product. The complete product spectrum with ordering data, technical details and descriptions can be found in Catalog DA 51.3 MICROMASTER 411/COMBIMASTER 411.

For up-to-date information on MICROMASTER 411 and COMBIMASTER 411 as well as geared motors, visit the Internet at

<http://www.siemens.com/combimaster>

| | MICROMASTER 411 | COMBIMASTER 411 |
|-----------------------------------|--|--|
| Main characteristics | "The distributed converter" for a wide drive range, for simple individual applications for pumps and fans through to multiple drives for conveyor systems in networked control systems. | |
| Output range | 0.37 kW ... 3 kW | |
| Voltage ranges | 3 AC 380 V ... 480 V | |
| Case/ frame sizes | CS B CS C | 71 ... 100 90/100 |
| Types of construction | | IM B3 IM B5 IM V1 (without protective cover) IM V1 (with protective cover) IM B14 (with standard flange) IM B14 (with special flange) IM B35 |
| Degree of protection | IP65 | IP55 |
| Further technical characteristics | <ul style="list-style-type: none"> • V/f characteristic • Multipoint characteristic (parameterisable V/f characteristic) • FCC (Flux Current Control) • Internal PI controller • 3 Digital inputs • 1 Analog input • 1 Relay output • Compound braking for controlled rapid braking • ECOFAST variants with plug connector for power supply, communication interfaces and motor connections to support quick and problem-free replacement. The ECOFAST variants are totally compatible with the ECOFAST technology systems. | |



Examples of MICROMASTER 411



Examples of COMBIMASTER 411

Overview of products

Customized motors

In addition to the products offered in the catalog, our range of motors also includes "Customized motors".

We can develop individual drive solutions for your special requirements, provide samples and supply them in accordance with your logistical requirements.

Our worldwide network of Siemens offices as well as our regional offices in Germany are, of course, at your disposal for advice (see "Siemens Contacts Worldwide").

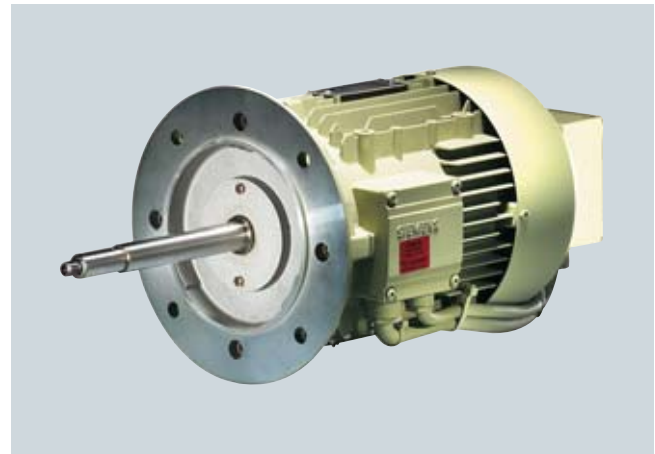
Please inquire for details.

We have listed below some of the "Customized solutions" already realized:

- High-speed motors for textile machines and compressors
- Motors with increased output/size ratio
- Liquid-cooled motors
- Synchronous generators for standby supply systems
- Motors for wood processing plants
- Built-in motors for refrigerating motors/compressors (freezer proof)
- Rolling motors for harsh conditions (e.g. roller drives)
- Pump motors with special shafts/special materials
- Single-phase motors for industrial applications
- Lifting gear motors



Built-in motor for refrigeration



Pump motor with special shaft/special materials



Roller motor for harsh conditions



Lifting gear motor

IEC Squirrel-Cage Motors

Appendix

Overview of products

NEMA motors

For compliance with the local specifications of the NAFTA markets (USA, Canada and Mexico), we manufacture low-voltage motors acc. to the NEMA standard for a wide range of different application areas. This includes motors designed in accordance with the US act, EPACT (specified minimum efficiency levels), as well as motors with NEMA premium efficiency levels: Our NEMA motor series provide the highest operating reliability and maximum service life. Designed and manufactured for rugged oper-

ation, our NEMA motors conquer even the harshest industrial conditions strictly in accordance with the ISO 9001 international quality standard; with maximum performance, reliability and efficiency.

You will find the complete product spectrum with ordering data, technical specifications and information in Catalog D 81.2 U.S./Canada on the Internet at <http://www.sea.siemens.com/motors>

| NEMA motors (NEMA = National Electrical Manufacturers Association) | |
|--|--|
| Frame size | NEMA frame size 56 ... 449 |
| Output range | 0.25 HP ... 500 HP |
| Number of poles | 2/4/6/8 |
| Voltages | 3 AC 230/460/575 V |
| Frequency | 60 Hz, 50 Hz on request |
| Type of construction | Foot-mounted, D flange, C flange, P flange |
| Casing | Cast-iron, aluminum or steel depending on the version |
| Cooling method | Surface-cooling or internal ventilation depending on the version |
| Temperature class | F used acc. to B |
| Type spectrum | <p>General purpose motors</p> <ul style="list-style-type: none"> • Legally specified minimum efficiency levels or NEMA premium efficiency levels • Standard motors for general industrial use • Aluminum or cast-iron case depending on the version <p>Severe duty motors</p> <ul style="list-style-type: none"> • Legally specified minimum efficiency levels or NEMA premium efficiency levels • Cast-iron case • Motors for use under extremely difficult environmental conditions <p>Severe duty IEEE841 motors</p> <ul style="list-style-type: none"> • Efficiency levels required by IEEE that exceed the EPACT act • Motors with increased requirements for use in the petrochemical industry (according to IEEE841) • Cast-iron case <p>Explosion-proof motors</p> <ul style="list-style-type: none"> • Efficiency levels better than or equal to EPACT • Multi label according to Division 1, Class I, Group D and Class II, Groups F&G • Single label according to Division 1, Class I, Groups C&D |



Example of NEMA motor, Severe Duty SD100, cast-iron case



Example of NEMA motor, General Purpose GP10A, aluminum case

Overview

Product description

The SD configurator has been developed to facilitate the selection of a correct motor and/or converter from the wide spectrum of Standard Drives. It is integrated as an offline "selection tool" in the interactive catalog CA01 (DVD) and is also available online in the Mall. The SD configurator is used to find the correct drive solution and delivers both the correct order number and relevant documentation.

SIEMENS
Data sheet for three-phase Squirrel-Cage-Motors
Datenblatt für Drehstrom-Käfigläufermotoren

Ordering data / Bestelldaten:
1LE1001-1AD92-2AA4

Electrical data / Elektrische Daten:

| | |
|---|---|
| rated motor voltage Nennspannung | 230/240/230 V 50 Hz, 480 V 60 Hz |
| frequency Frequenz | 50 Hz, 60 Hz |
| rated motor power Nennleistung | 1.10 kW |
| rated motor speed Nennleistungsgeschwindigkeit | 725 1/min, 875 1/min |
| rated motor torque Nennmoment | 14.0 Nm, 14.0 Nm |
| rated motor current Nennstrom | 2.3 A, 2.3 A, 3.4 A |
| starting / rated motor current Anlauf- / Nennstrom | 5.8, 4.1 |
| starting / rated motor torque Anlauf- / Nennmoment | 5.8, 5.8 |
| efficiency class Effizienzkategorie | IE3 |
| efficiency Effizienz | 87.0 %, 88.0 %, 88.0 % |
| power factor Leistungsfaktor | 0.87, 0.88, 0.87 |
| motor protection Motorschutz | without (standard) ohne (Standard) |
| terminal box position Klemmenkastenposition | terminal box on top Klemmenkasten oben |

Mechanical data / Mechanische Daten:

| | |
|--|---|
| noise 50 Hz running Schalldruckpegel (dBA) 50 Hz laufend | 86,00 dB, 83,00 dB |
| moment of inertia Trägheitsmoment | 0.01000 kg m² |
| bearing AS Lager AS | 6208 2Z/C3 |
| bearing BS Lager BS | 6208 2Z/C3 |
| cooling bearing Kühlung Lager | oil-cooled bearing MCR ölgeschmalt Lager MCR |
| strain holes Spannbohrungen | No |
| greasing device Schmierschaltung | No |
| type of insulation Isolation | Class U180V M3 Festigkeitshöhe: M3 |
| replacement interval at 40°C Ersatzintervall bei 40°C | 20000 h |
| quantity of grease for replacement at 40°C Füllmenge Schmiermittel bei 40°C | 0 |
| external earthing Außen-Erdverbindung | No |
| paintwork Anstrich | Special finish in RAL 7030 silver grey Spezialanstrich RAL 7030 silbergrau |

explosion protection / Explosionschutz:

site conditions / Umgebungsbedingungen:

| | |
|---|------------------------|
| ambient temperature Umgebungstemperatur | -25.0 °C ~ +40.0 °C |
| altitude above sea level Höhe über Meeresspiegel | 1000 m |
| standards and specifications Normen und Vorschriften | IEC, DIN, VDE, VDE, EN |

general data / Allgemeine Daten:

| | |
|--|--|
| frame size Rahmengröße | 100L |
| type of construction Aufbauform | IM B3 |
| weight in kg, without optional accessories Gewicht in kg, ohne optionale Zubehörteile | 25.0 kg |
| frame material Rahmenmaterial | Aluminum Aluminium |
| degree of protection Schutzart | IP 55 |
| method of cooling, TSEFC Kühlverfahren, TSEFC | IC 411 |
| inflation class Schwingungsstufe | A (standard) |
| insulation Isolation | 100V to 1300V 100V bis 1300V |
| body type Aufbauform | B1 + continuous operation B1 + Dauerbetrieb |
| direction of rotation Drehrichtung | reversible bidirektional |

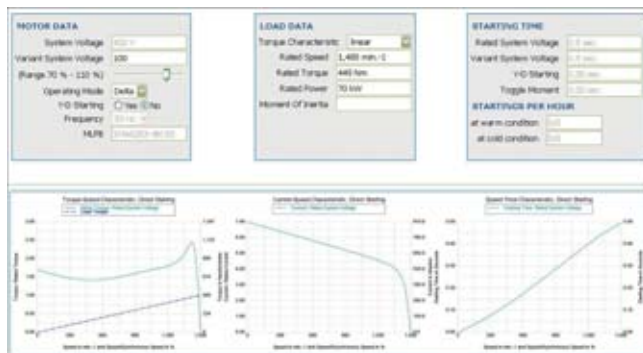
terminal box / Klemmenkasten:

| | |
|--|-----------------------|
| material of terminal box Klemmenkastenmaterial | Aluminum Aluminium |
| type Typ | TS1-F30 |
| terminal screw thread Klemmschraubengewinde | M6 |
| max. cable cross-sectional area Max. Kabelquerschnitt | 4.0 mm² |
| min. cable length Min. Kabellänge | 11.0 mm ~ 21.0 mm |
| entry cable entry Kabelzuführung | 2x40x1.5 |

special configurations / Sonderausführung:

Technical and pricing data are subject to change. They may be discontinued without notice at any time. Technische Änderungen vorbehalten.

It can display operating instructions, factory test certificates, connection box documentation, etc. and generates data sheets, dimension drawings and a start-up calculation for the relevant products. It can also be used to identify a suitable converter for the selected motor.



3D models in a wide variety of 3D formats are also available.



The comprehensive help system not only explains the program functions, but also provides access to detailed technical background knowledge.

Product range

The SD configurator covers the product range of low-voltage motors (energy-saving and explosion-proof motors) with associated documentation and dimension drawings, low-voltage converters of the MICROMASTER 4 range, SINAMICS G110 and SINAMICS G120 inverter chassis units, SINAMICS G120D distributed frequency inverters and the frequency inverters for the SIMATIC ET 200S FC and SIMATIC ET 200pro distributed I/Os.

Hardware and software requirements

- PC with 1.5 GHz CPU or faster
- Operating systems
 - Windows 98/ME
 - Windows 2000
 - Windows XP
 - Windows NT (Service Pack 6 and higher)
 - Windows Vista
- At least 1024 Mbyte RAM user memory
- Screen resolution 1024 x 768, graphics with more than 256 colors/small fonts
- CD-ROM/DVD-drive
- Windows-compatible sound card
- Windows-compatible mouse

IEC Squirrel-Cage Motors

Appendix

SD configurator selection tool

Offline access to catalog CA01 – the Offline Mall



The interactive catalog CA 01 on DVD – the offline mall of Siemens Industry Automation and Drive Technologies – contains over 100000 products with approximately 5 million potential drive system product variants.

You can install catalog CA01 on your hard disk or network directly from the DVD as a light or full version. You find the SD configurator in the main menu of catalog CA01 under the tab "Selection tool".

Online access in the Siemens Mall

Furthermore, the SD configurator can now be used on the Internet without installation. The SD configurator can be found in the Siemens Mall under the following address:

<http://www.siemens.com/sd-configurator>



Selection and ordering data

| | Order No. |
|--|----------------------------------|
| Interactive Catalog CA 01 on DVD including SD configurator selection tool, English | E86060-D4001-A510-C7-7600 |

More information

The interactive catalog CA 01 can be ordered from the relevant Siemens sales office or via the Internet:

<http://www.siemens.com/automation/CA01>

Links to hints, tricks and downloads for functional or content updates can also be found at this address.

For technical advice and hotline support, you can also contact our hotline for Catalog CA 01:

Tel.: +49 (0) 180 50 50 22 2

e-mail: adsupport@siemens.com

Overview

The energy-saving program SinaSave is suitable for applications with motors for mains-fed operation (fixed speed) and converter-fed operation (variable speed). In mains-fed operation, you can calculate the cost savings as well as the amortization time for the additional cost of the Siemens EFF1 energy-saving motors with the three bases of comparison outlined below.

In comparison to:

- Siemens EFF2 energy-saving motors – **Case 1**
- Individually selected known motors – **Case 2**
- Known motors within an overall plant analysis – **Case 3**

The individual applications are:

Case 1

Calculation of the savings in energy costs as well as the amortization time for the additional cost of the Siemens EFF1 energy-saving motors as compared to the Siemens EFF2 energy-saving motors.

In this case, the motor data for the Siemens energy-saving motors have already been stored complete with their order numbers. In addition, you are told how long it will take until the additional cost for an energy-saving motor will pay for itself.

Case 2

Calculation of the savings in energy costs as well as the amortization time for the additional cost of the Siemens EFF1 energy-saving motors in comparison with other known motors.

The calculation, however, requires exact knowledge of the technical specifications of the motor which is to be used for comparison.

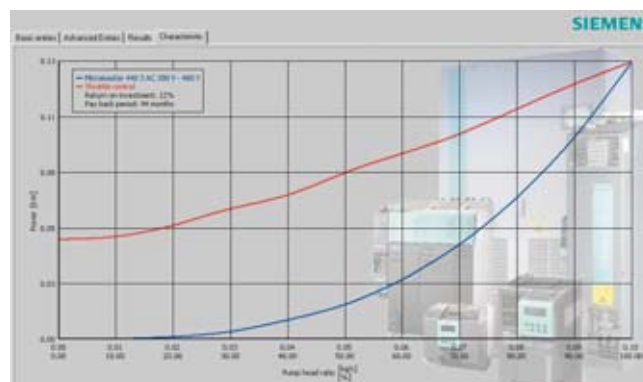
Case 3

Calculation of the savings in energy costs as well as the amortization time for the additional cost of Siemens EFF1 energy-saving motors in comparison with any number of other known motors – plant analysis.

In **converter-fed operation**, SinaSave takes into account all the necessary plant-specific parameters. Values required for the process such as pumping flowrate and height for pumps, mass flowrate and total pressure difference for fans as well as the density of the transported medium are taken into account in addition to the efficiency of the fan, pump or compressor, the electrical efficiency and the overall efficiency of the plant. Other basic data for the program include the number of working days and work shifts as well as the medium transport profile that decides the extent of the energy-saving effect throughout the day and the year.

From the entered plant-specific basic data, the program first obtains the drive system with the appropriate output and the price of the corresponding frequency converter. In a further step, the program determines the energy requirements of the variable-speed drive system for the specific application and compares it to the calculated values for all alternative concepts that can be considered for the plant in question; including for example, throttle valves, bypass, pre-forming control or pole-changing motors. The energy-saving is obtained from the difference in kilowatt hours which the program then converts into a cash saving using the currently applicable energy purchasing price for the plant.

The program calculates the amortization time from the price of the frequency converter, the decisive energy-saving and other cost-reducing effects of variable-speed operation that have also been taken into account, such as an improved power factor and smoother running of equipment.



Product range

The SinaSave program covers the product range of low-voltage motors/energy-saving motors and low-voltage converters of the MICROMASTER 430 and 440 product range, as well as the SINAMICS G150 drive converter chassis units.

More information

The program can be downloaded from the Internet using the following link:

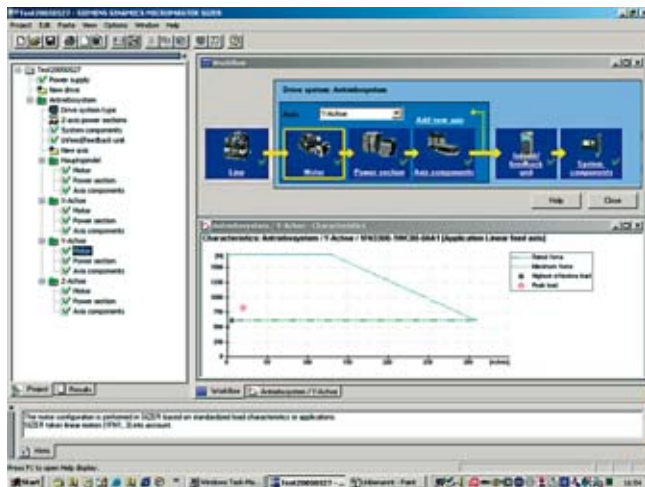
<http://www.siemens.com/energysaving>

IEC Squirrel-Cage Motors

Appendix

SIZER configuration tool

Overview



The SIZER configuration tool provides an easy-to-use means for configuring the following drives and controls:

- SINAMICS drive family
- MICROMASTER 4 drive family
- CNC control SINUMERIK solution line
- SIMOTION Motion Control
- SIMATIC technology

It provides support when setting up the technologies involved in the hardware and firmware components required for a drive task. SIZER supports the complete configuration of the drive system, from simple individual drives to complex multi-axis applications.

SIZER supports all of the engineering steps in one workflow:

- Configuring the power supply
- Motor and gearbox design, including calculation of mechanical transmission elements
- Configuring the drive components
- Selecting the required accessories
- Selecting the line-side and motor-side power options, e.g. cables, filters, and reactors

When SIZER was being designed, particular importance was placed on high usability and a universal, function-based approach to the drive task. The extensive user guidance makes using the tool easy. Status information keeps you continually informed of the progress of the configuration process.

The SIZER user interface is available in German, English, French and Italian.

The drive configuration is saved in a project. In the project, the components and functions used are displayed in a hierarchical tree structure.

The project view permits the configuration of drive systems and the copying/inserting/modifying of drives already configured.

The configuration process produces the following results:

- A parts list of the components required (export to Excel, use of the Excel data sheet for import to VSR)
- Technical specifications of the system
- Characteristic curves
- Comments on system reactions
- Location diagram of drive and control components and dimension drawings of motors

These results are displayed in a results tree and can be reused for documentation purposes.

Support is provided by the technological online help menu:

- Detailed technical data
- Information about the drive systems and their components
- Decision-making criteria for the selection of components

Online help in German, English, French, Italian, Chinese and Japanese

Minimum system requirements

PG or PC with Pentium II 400 MHz (Windows 2000), Pentium III 500 MHz (Windows XP)

512 MB RAM (1024 MB RAM recommended)

At least 2.7 GB of free hard disk space

An additional 100 MB of free hard disk space on Windows system drive

Screen resolution 1024 × 768 pixels

Windows 2000 SP4 / XP Professional SP2 / XP Home Edition SP2

Microsoft Internet Explorer 5.5 SP2

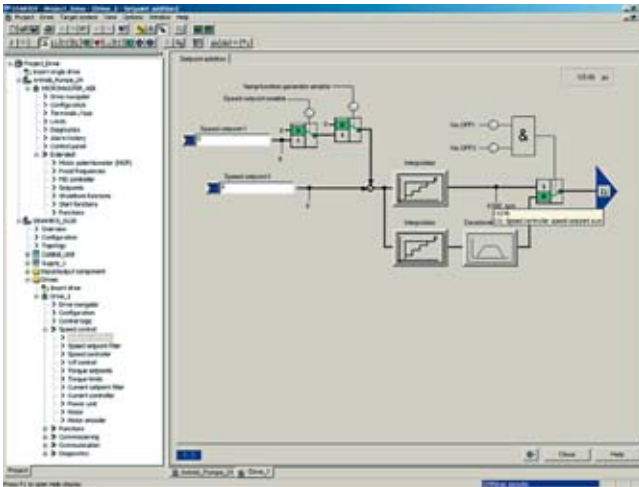
Selection and ordering data

Order No.

SINAMICS MICROMASTER SIZER configuration tool
German, English, French, Italian

6SL3070-0AA00-0AG0

Overview



The easy-to-use STARTER commissioning tool can be used to:

- Start up
- Optimize and
- Diagnose

This software can be operated either as a stand-alone PC application or can be integrated into the SCOUT engineering system (on SIMOTION) or STEP 7 (with Drive ES Basic). The basic functions and handling are the same regardless.

In addition to the SINAMICS drives, the current version of STARTER also supports MICROMASTER 4 devices and inverters for the SIMATIC ET 200S FC and SIMATIC ET 200pro FC distributed I/O system.

The project wizards can be used to create the drives within the structure of the project tree.

Beginners are supported by solution-based dialog guidance, whereby a standard graphics-based display maximizes clarity when setting the drive parameters.

First commissioning is guided by wizards, which make all the basic settings in the drive. This ensures that even though only a small number of parameter settings have been made, the drive configuration has already progressed far enough to permit axis movement.

The individual settings required are made using graphics-based parameterization screen forms, which also display the mode of operation.

Examples of individual settings that can be made include:

- Terminals
- Bus interface
- Setpoint channel (e.g. fixed setpoints)
- Closed-loop speed control (e.g. ramp-function generator, limits)
- BICO interconnections
- Diagnostics

Experts can gain rapid access to the individual parameters via the Expert List and do not have to navigate dialogs.

In addition, the following functions are available for optimization purposes:

- Self-optimization (depending on drive)
- Trace (depending on drive)

Diagnostics functions provide information about:

- Control/status Words
- Parameter status
- Operating conditions
- Communication states

Performance

- Easy to use: Only a small number of settings need to be made for successful first commissioning: Axis turning
- Solution-oriented dialog-based user guidance simplifies commissioning.
- Self-optimization functions reduce manual effort for optimization.
- The built-in trace function provides optimum support during commissioning, optimization and troubleshooting

Minimum hardware and software requirements

PG device or PC with Pentium III 1 GHz (Windows 2000), Pentium III 1 GHz (Windows XP)

512 MB RAM (1 GB RAM recommended)

Screen resolution 1024 × 768 pixels, 16-bit color depth

Free hard disk memory: 1.6 GB, 2.3 GB for SCOUT stand-alone

Windows XP Professional SP2

Microsoft Internet Explorer 6.0

IEC Squirrel-Cage Motors

Appendix

STARTER commissioning tool

Integration

Depending on the system configuration, the Control Unit (CU) or the complete converter can communicate with the programming device (PG) or PC by means of a serial interface, via PROFIBUS or PROFINET.

The following accessories are available for this purpose for the respective drive system:

SINAMICS G130/G150/S120

A PROFIBUS communications board and a connection cable are required for the communication between the PG/PC and a Control Unit.

For example a PROFIBUSCP 5512 communications board (PCMCIA card type 2 + adapter with 9-pole SUB-D socket for connection to PROFIBUS. For MS Windows 2000/XP Professional and PCMCIA 32)

Order No.: 6GK1551-2AA00

and connection cable between CP 5512 and PROFIBUS

Order No.: 6ES7901-4BD00-0XA0

SINAMICS G110/G120 and MICROMASTER 4

PC inverter connection kits are available for MICROMASTER 4, SINAMICS G110 and SINAMICS G120 for a safe point-to-point connection to the PC.

Order No. for MICROMASTER 4: 6SE6400-1PC00-0AA0 (the scope of supply includes a 9-pin Sub-D connector, an RS232 standard cable (3 m))

Order No. for SINAMICS G110 and SINAMICS G120: 6SL3255-0AA00-2AA1

(the scope of supply includes a 9-pin Sub-D connector, an RS232 standard cable (3 m) and the STARTER commissioning tool on DVD)

Selection and ordering data

| | Order No. |
|--|---------------------------|
| STARTER commissioning tool for SINAMICS and MICROMASTER German/English/French/Italian/Spanish | 6SL3072-0AA00-0AG0 |
| Drive Control Chart (DCC) option package for SINAMICS G130/G150/S120 German/English/French/Italian/Spanish, Single license Note: DCC can be used only if Version V4.1 SP1 or higher of the STARTER commissioning tool is installed | 6AU1810-1HA20-1XA0 |
| PROFIBUS CP 5512 communications board PCMCIA card type 2 + adapter with 9-pole SUB-D socket for connection to PROFIBUS. For MS Windows 2000/XP Professional and PCMCIA 32 | 6GK1551-2AA00 |
| Connection cable between CP 5512 and PROFIBUS | 6ES7901-4BD00-0XA0 |
| PC inverter connection kit for MICROMASTER 4 the scope of supply includes a 9-pin Sub-D connector, an RS232 standard cable (3 m) | 6SE6400-1PC00-0AA0 |
| PC inverter connection kit for SINAMICS G110/G120 the scope of supply includes a 9-pin Sub-D connector, an RS232 standard cable (3 m) and the STARTER commissioning tool on DVD | 6SL3255-0AA00-2AA1 |

Options

DRIVE CONTROL CHART (DCC)

Drive Control Chart (DCC) is an additional tool for the easy configuration of process-oriented functions for the SINAMICS G130 and SINAMICS G150 drives.

The user-friendly DCC editor enables easy graphics-based configuration, a clear representation of control loop structures as well as a high degree of reusability of existing diagrams.

The open-loop and closed-loop control functionality is defined by using multi-instance-enabled blocks (Drive Control Blocks (DCBs)) from a predefined library (DCB library) that are selected and graphically linked by dragging and dropping. Test and diagnostic functions allow verification of program behavior or the identification of causes in the event of faults.

The block library contains a large selection of control, arithmetic and logic blocks as well as extensive open-loop and closed-loop control functions.

Drive Control Chart also provides a convenient basis for SINAMICS S120 for resolving drive-level open-loop and closed-loop control tasks directly in the converter. This results in further adaptability of SINAMICS to specific tasks. On-site processing in the drive supports modular machine concepts and results in increased overall machine performance.

DCC is an add-on to the STARTER commissioning tool for the aforementioned drives SINAMICS G130, SINAMICS G150 and SINAMICS S120 and available as a supplementary option package.

More information

The STARTER commissioning tool can also be downloaded from the Internet at

<http://support.automation.siemens.com/WWW/view/en/10804985/133100>

Faster and more applicable know-how: Hands-on training from the manufacturer

SITRAIN® – the Siemens Training for Automation and Industrial Solutions – provides you with comprehensive support in solving your tasks.

Training by the market leader in automation and plant engineering enables you to make independent decisions with confidence. Especially where the optimum and efficient use of products and plants are concerned. You can eliminate deficiencies in existing plants, and exclude expensive faulty planning right from the beginning.



First-class know-how directly pays for itself: In shorter start-up times, high-quality end products, faster troubleshooting and reduced downtimes. In other words, increased profits and lower costs.

Achieve more with SITRAIN

- Shorter times for startup, maintenance and servicing
- Optimized production operations
- Reliable configuration and startup
- Minimization of plant downtimes
- Flexible plant adaptation to market requirements
- Compliance with quality standards in production
- Increased employee satisfaction and motivation
- Shorter familiarization times following changes in technology and staff

Contact

Visit our site on the Internet at:

www.siemens.com/sitrain

or let us advise you personally. You can request our latest training catalog from:

SITRAIN Customer Support Germany:

Phone: +49 (0)1805 / 23 56 11
(0.14 €/min. from the German landline network)

Fax: +49 (0)1805 / 23 56 12

SITRAIN highlights

Top trainers

Our trainers are skilled teachers with direct practical experience. Course developers have close contact with product development, and directly pass on their knowledge to the trainers.

Practical experience

The practical experience of our trainers enables them to teach theory effectively. But since theory can be pretty drab, we attach great importance to practical exercises which can comprise up to half of the course time. You can therefore immediately implement your new knowledge in practice. We train you on state-of-the-art methodically/didactically designed training equipment. This training approach will give you all the confidence you need.

Wide variety

With a total of about 300 local attendance courses, we train the complete range of A&D products as well as interaction of the products in systems. Telecourses, teach-yourself software and seminars with a presenter on the Web supplement our classic range of courses.

Tailor-made training

We are only a short distance away. You can find us at more than 50 locations in Germany, and in 62 countries worldwide. You wish to have individual training instead of one of our 300 courses? Our solution: We will provide a program tailored exactly to your personal requirements. Training can be carried out in our Training Centers or at your company.

The right mixture: Blended learning

“Blended learning” means a combination of various training media and sequences. For example, a local attendance course in a Training Center can be optimally supplemented by a teach-yourself program as preparation or follow-up. Additional effect: Reduced traveling costs and periods of absence.



IEC Squirrel-Cage Motors

Appendix

Training

Training courses for drive systems

This is intended to give you an overview of the training courses offered for three-phase motors and drive systems.

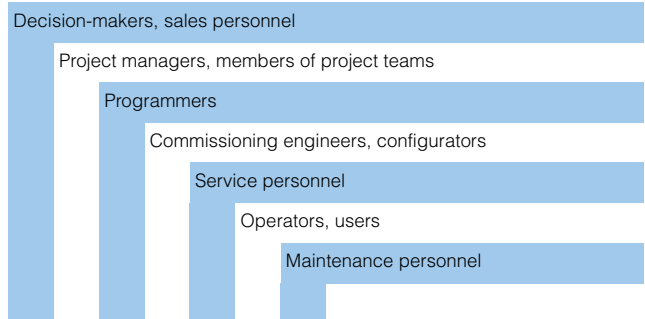
Our courses are tailored to different target groups as well as to individual customer requirements.

You can select from a range of courses on the fundamentals of drive technology and on the Micromaster drive system (converter/motor).

All courses contain as many practical exercises as possible, in order to enable intensive and direct training on the drive system and with the tools in small groups.



The courses at a glance



| Title | Target group | | | | | Duration/ Medium | Course code |
|--|----------------------------------|--|-------------|--|-------------------|---------------------|-------------|
| | Decision-makers, sales personnel | Project managers, members of project teams | Programmers | Commissioning engineers, configurators | Service personnel | | |
| Motor workshop for service | ✓ | ✓ | ✓ | ✓ | ✓ | 2 days | SD-MOT-WS |
| MICROMASTER | | | | | | | |
| MICROMASTER 4 Advanced Course, Commissioning | ✓ | ✓ | ✓ | ✓ | ✓ | 3 days | SD-MM4-AUF |
| MICROMASTER MM4/G110 Compact Course | ✓ | ✓ | ✓ | ✓ | ✓ | 1 day | SD-WSMM4 |
| Commissioning MICROMASTER 420 | ✓ | ✓ | ✓ | ✓ | ✓ | CD-ROM | SM-MM4 |
| Commissioning MICROMASTER 420 | ✓ | ✓ | ✓ | ✓ | ✓ | WBT | WT-MM4 |
| AC converters | | | | | | | |
| Handling drive faults – AC drives | | | | | ✓ | 3 days | SD-IHAC02 |
| Fundamentals of drive technology | ✓ | ✓ | ✓ | | | 5 days | SD-GAT |

Overview

The SD Manual Collection brings together all manuals of low-voltage motors, geared motors and low-voltage converters in the smallest possible package. It is eminently suitable for startup and service, replaces the space-consuming paper version in the office and provides fast access to the information.

- Keyword search within the PDF file
- Full text search in the complete DVD
- Electronic Update Service, free of charge for 1 year
- The DVD is networkable, i. e. storage of the PDFs is on the central server

The SD Manual Collection on DVD in 5 languages (English, French, German, Italian and Spanish) contains manuals of the following motors and converters:

- Low-voltage converters
 - IEC motors
 - NEMA motors
- Geared motors
- Low-Voltage converters
 - MICROMASTER 3
 - MICROMASTER 4
 - SINAMICS G110
 - SINAMICS G120, SINAMICS G120D
 - Frequency converters SIMATIC ET200

Maintenance service for 1 year

In addition, a maintenance service can be ordered, which includes the delivery of the up-to-date SD Manual Collection as well as the three following updates. This is valid for one year. If the contract isn't canceled, it automatically is renewed for one more year.

Selection and ordering data

| | Order No. |
|---|---------------------------|
| SD Manual Collection on DVD ¹⁾, 5 languages | 6SL3298-0CA00-0MG0 |

all manuals for low-voltage motors, geared motors and low-voltage converters

| | |
|--|---------------------------|
| SD Manual Collection on DVD ¹⁾, 5 languages, Update service for 1 year | 6SL3298-0CA10-0MG0 |
|--|---------------------------|

¹⁾ Subject to export regulations: AL: N and ECCN: 5D992.

IEC Squirrel-Cage Motors

Appendix

Siemens Contacts Worldwide

SIEMENS

Local Partners Worldwide

Germany

Are you looking for a local contact to help you with questions regarding Siemens Automation and Drives products, solutions and services?

O.K. First, please select the city nearest to your location:

(or to select a different country click here)

Berlin

Now select the appropriate team who you would like to deal with your enquiry:

Sales

Next >

© 2003 Siemens, Automation and Drives
[General Terms of Use and Address](#)

At

<http://www.siemens.com/automation/partner>

you can find details of Siemens contact partners worldwide responsible for particular technologies.

You can obtain in most cases a contact partner for

- Technical Support,
- Spare parts/repairs,
- Service,
- Training,
- Sales or
- Consultation/engineering.

You start by selecting a

- Country,
- Product or
- Sector.

By further specifying the remaining criteria you will find exactly the right contact partner with his/her respective expertise.

SIEMENS

Local Partners Worldwide

Please select a sector:

Select area/sector | Select city | Your contact(s)

Sectors | Search a Sector

Which sector* is your question regarding?

ADD Sectors

- Video Systems, Visualization Solutions
- Electrical Infrastructure
- Material Flow Controlling, Distribution and Logistics
- Assembly Control
- Paper Machines
- Production Automation in the Automotive Industry and Suppliers
- Production Logistics and Control Systems
- Production Machines, Tooling, Plastics, Metal Forming, Weld, Glass, Ceramic processing, Stone processing, Packaging, Printing, Coating
- Process Control Systems
- Testing/Final Assembly

* This list contains industry sectors covered by Siemens Automation and Drives products and solutions.

Please select the team who you would like to deal with your enquiry:

Sales

Next >

© 2003 Siemens, Automation and Drives
[General Terms of Use and Address](#)

SIEMENS

Local Partners Worldwide

Please select a Siemens product group:

Select area/product | Select city | Your contact(s)

Product Catalog | Search a Product

Which product* does your question refer to?

ADD Product Catalog

- Drive Technology
- Automation systems
- Communication Networks
- Low-Voltage Controls
- Electrical Installation Technology
- Process automation
- Sensor, measuring and testing technology
- Power supplies
- Safety systems - Safety Integrated
- System solutions and products for branches

* This list contains products and solutions provided by Siemens Automation and Drives.

Please select the team who you would like to deal with your enquiry:

Sales

Next >

© 2003 Siemens, Automation and Drives
[General Terms of Use and Address](#)

Siemens Industry Automation and Drive Technologies in the WWW



A detailed knowledge of the range of products and services available is essential when planning and configuring automation systems. It goes without saying that this information must always be fully up-to-date.

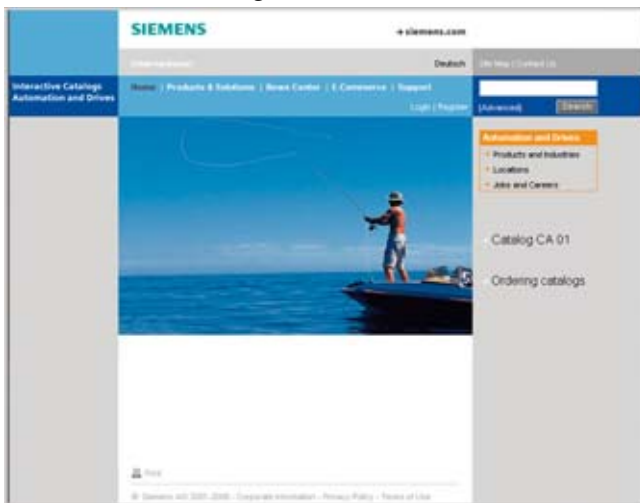
Siemens Industry Automation and Drive Technologies has therefore built up a comprehensive range of information in the World Wide Web, which offers quick and easy access to all data required.

Under the address

<http://www.siemens.com/automation>

you will find everything you need to know about products, systems and services.

Product Selection Using the Offline Mall



Detailed information together with convenient interactive functions:

The Offline Mall CA 01 covers more than 100,000 products and thus provides a full summary of the Siemens Automation and Drives product base.

Here you will find everything that you need to solve tasks in the fields of automation, switchgear, installation and drives. All information is linked into a user interface which is easy to work with and intuitive.

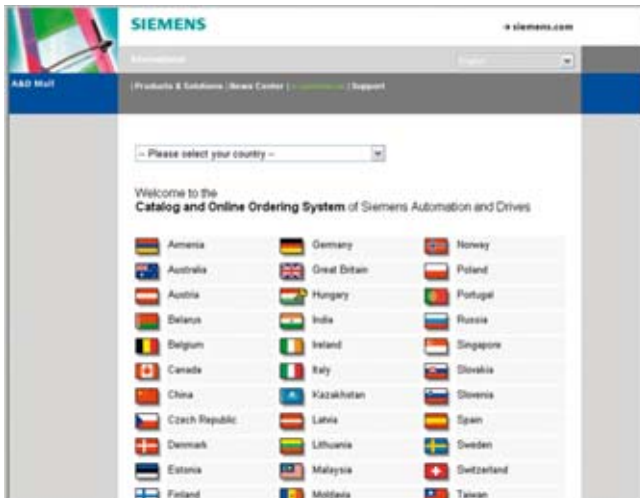
After selecting the product of your choice you can order at the press of a button, by fax or by online link.

Information on the Offline Mall CA 01 can be found in the Internet under

<http://www.siemens.com/automation/ca01>

or on DVD.

Easy Shopping with the A&D Mall



The A&D Mall is the virtual department store of Siemens AG in the Internet. Here you have access to a huge range of products presented in electronic catalogs in an informative and attractive way.

Data transfer via EDIFACT allows the whole procedure from selection through ordering to tracking of the order to be carried out online via the Internet.

Numerous functions are available to support you.

For example, powerful search functions make it easy to find the required products, which can be immediately checked for availability. Customer-specific discounts and preparation of quotes can be carried out online as well as order tracking and tracing.

Please visit the A&D Mall on the Internet under:

<http://www.siemens.com/automation/mall>

IEC Squirrel-Cage Motors

Appendix

Customer Support

Our services for every phase of your project



In the face of harsh competition you need optimum conditions to keep ahead all the time:

a strong starting position, a sophisticated strategy and team for the necessary support – in every phase. Service & Support from Siemens provides this support with a complete range of different services for automation and drives.

In every phase: from planning and commissioning to maintenance and upgrading.

Our specialists know when and where to act to keep the productivity and cost-effectiveness of your system running in top form.

Online Support



The comprehensive information system available round the clock via Internet ranging from Product Support and Service & Support services to Support Tools in the Shop.

<http://www.siemens.com/automation/service&support>

Technical Support



Competent consulting in technical questions covering a wide range of customer-oriented services for all our products and systems.

Phone: +49 (0)180 50 50 222

Fax: +49 (0)180 50 50 223

(0.14 €/min. from the German fixed network)

E-Mail: adsupport@siemens.com

In the United States, call toll-free:

Phone: +1 800 333 7421

Fax: +1 423 262 2200

E-Mail: solutions.support@sea.siemens.com

In Canada, call:

Phone: +1 888 303 3353

E-Mail: cic@siemens.ca

In Asia:

Phone: +86 10 6475 7575

Fax: +86 10 6474 7474

E-Mail:

adsupport.asia@siemens.com

Technical Consulting

Support in the planning and designing of your project from detailed actual-state analysis, target definition and consulting on product and system questions right to the creation of the automation solution. ¹⁾

Configuration and Software Engineering

Support in configuring and developing with customer-oriented services from actual configuration to implementation of the automation project. ¹⁾

Service on Site



With service on site we offer services for startup and maintenance, essential for ensuring system availability.

In Germany

Phone: +49 (0)180 50 50 444 ¹⁾

(0.14 €/min. from the German fixed network)

In the United States, call toll-free:

Phone: +1 800 333 7421

In Canada, call:

Phone: +1 888 303 3353

Repairs and Spare Parts



In the operating phase of a machine or automation system we provide a comprehensive repair and spare parts service ensuring the highest degree of operating safety and reliability.

In Germany

Phone: +49 (0)180 50 50 448 ¹⁾

(0.14 €/min. from the German fixed network)

In the United States, call toll-free:

Phone: +1 800 241 4453

In Canada, call:

Phone: +1 888 303 3353

Optimization and Upgrading



To enhance productivity and save costs in your project we offer high-quality services in optimization and upgrading. ¹⁾

¹⁾ For country-specific telephone numbers go to our Internet site at: <http://www.siemens.com/automation/service&support>

Knowledge Base on CD-ROM



For those applications in which an online link to the Internet is not available, an extract from the information area that can be accessed free of charge is available on CD-ROM (Service & Support Knowledge Base). This CD-ROM contains all the product information (FAQs, downloads, tips and tricks, news) that was available at the time the CD was generated as well as general information about service and technical support.

On the CD-ROM you will also find a full text search and our Knowledge Manager to search for specific solutions. The CD-ROM is updated every 4 months.

As is the case with our online information on the Internet, the Service & Support Knowledge Base CD is available complete with 5 languages (English, German, French, Italian and Spanish).

You can order the CD **Service and Support Knowledge Base** from your Siemens contact.

Order No.: **6ZB5310-0EP30-0BA2**

Ordering via the Internet

(with the Automation Value Card or credit card) at:

<http://www.siemens.com/automation/service&support>

in the shop.

Automation Value Card



Small card – lots of support

The Automation Value Card is an integral part of the comprehensive service concept with which Siemens Automation and Drives accompanies you in every phase of your automation project.

Whether you require certain services from our Technical Support or want to buy high-quality support tools in our online shop: You can always pay with the Automation Value Card. No costs for processing invoices, transparent and secure. With the card number that is only known to you and the associated PIN, you can check your current balance at any time as well as all the debits and credits.

Services on the card. This is how it works.

The card number and PIN are printed on the back of the Automation Value Card. When it is supplied, the PIN is covered by a scratch field so the full credit is guaranteed to be on the card.

By specifying the card number and PIN, you have complete access to the current range of Service and Support. The amount for the service obtained is deducted in the form of credits from the balance on your Automation Value Card.

All the offered services are priced in terms of credits independently of national currencies, so you can use the Automation Value Card worldwide.

Order Numbers for the Automation Value Card

| Credits | Order No. |
|---------|----------------------------|
| 200 | 6ES7 997-0BA00-0XA0 |
| 500 | 6ES7 997-0BB00-0XA0 |
| 1000 | 6ES7 997-0BC00-0XA0 |
| 10000 | 6ES7 997-0BG00-0XA0 |

For detailed information about the offered services, visit our Internet site:

<http://www.siemens.com/automation/service&support>

Service & Support à la Card: Some examples

Technical Support

| | |
|------------|--|
| "Priority" | Priority handling for urgent cases |
| "24 h" | Availability round-the-clock |
| "Extended" | Technical advice for complex questions |

Support tools in the Support Shop

| | |
|-----------------------|--|
| "System Utilities" | Ready-to-use tools for design, analysis and checking |
| "Applications" | Complete topics including fully tested software |
| "Functions & Samples" | Modifiable function blocks to speed up your developments |

IEC Squirrel-Cage Motors

Appendix

Subject index

| | Part 0 | Part 1 | Part 2 | Part 3 | Part 4 | Part 5 | Part 6 | Part 7 | Part 8 | Part 9 | Part 10 | Part 11 |
|--|-----------------|-----------|---------------------------------------|---------------|---------------------------------|---------------|---------|--------------------|---------|-------------------|-----------|----------|
| | Page 0/ | Page 1/ | Page 2/ | Page 3/ | Page 4/ | Page 5/ | Page 6/ | Page 7/ | Page 8/ | Page 9/ | Page 10/ | Page 11/ |
| A | | | | | | | | | | | | |
| A&D in the WWW | | | | | | | | | | | | 21 |
| Acceptance | | | | | | | | | | | 10 ... 24 | |
| Acceptance test certificate | | | | | | | | | | | 5 | |
| Accessories | | 64 | 120 | 62 | 125 | 32 | 4 | 53 | 4 | 42 | 25 | |
| Admissible loading on the shaft extension – Admissible cantilever forces | 66 ..., 125 ... | | | | | | | | | 5 | | |
| Appendix | | | | | | | | | | | | 1 ... |
| Application | | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | |
| Area subject to explosion hazard | | | | | 13 | | | | | | | |
| Automation Value Card | | | | | | | | | | | | 23 |
| B | | | | | | | | | | | | |
| Balance | 56, 120 | 58, 62 | 81, 86, 89, 96, 102, 109, 114, 118 | 52, 56, 60 | 94, 98, 102, 107, 112, 118, 122 | 25, 30 | | 37, 42, 47, 51 | | 35, 37, 39, 41 | | |
| Basic marine version | | | | | | | | | | | 10 ... 24 | |
| Bearing currents | | | | | | 8 | | | | | | |
| Bearing plates | 36 | | | | | | | | | 4 | | |
| Bearing selection table | 60 ..., 124 | | | | | | | | | | | |
| Bearings | 58, 122 | 58, 62 | 81, 86, 89, 96, 102, 109, 113, 118 | 5, 52, 56, 60 | 94, 97, 102, 107, 112, 118, 122 | 8, 18, 25, 30 | | 30, 37, 42, 47, 51 | | 5, 35, 37, 39, 41 | | |
| Benefits | | 3 | 4 | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | |
| Bimetal switches | 34, 110 | | | | | | | | | | | |
| Brakes | 77 ..., 130 ... | | | | | | | | | | | |
| Bureau Veritas | | | | | | | | | | | 2 | |
| C | | | | | | | | | | | | |
| Cantilever forces | 66 ..., 125 ... | | | | | | | | | | | |
| CCC | 16, 99 | | | | | | | | | | | |
| CEMEP | 15, 98 | 2 | 2 | | | | 2 | 2 | 2 | | | |
| Certification | | | | | | | | | | | 10 ... 24 | |
| Classification of explosion-protected equipment | | | | | 15 | | | | | | | |
| Colors | 17, 100 | 56, 61 | 79, 85, 89, 94, 100, 107, 113, 117 | 51, 55, 59 | 93, 97, 101, 106, 111, 117, 121 | 23, 28 | | 35, 40, 46, 50 | | 5, 34, 36, 38, 40 | 5 | |
| COMBIMASTER 411/ MICROMASTER 411 | | | 5 | | | 3 | | | | | | 8 |
| Combination of basic versions | 84 | | | | | | | | | | | |
| Compressor motors | | | | | | | | | 1 ... | | | |
| Conditions of delivery | | | | | | | | | | | | 46 |
| Configuration | | | | | | | | | | | | 22 |
| Connection box | 38 ..., 113 ... | 55, 60 | 78, 84, 88, 92, 99, 105, 112, 116 | 50, 54, 58 | 93, 96, 100, 105, 111, 116, 121 | 22, 27 | | 34, 39, 45, 49 | | 34, 36, 38, 40 | | |
| Contact Partner Worldwide | | | | | | | | | | | | 20 |
| Converted-fed operation | | | 7 | 5 | 82 | 2 | | | | | 5 | |
| Converter mounting | | | | | | 19 | | | | | | |
| Coolant temperature | 31, 107 | 4, 57, 61 | 7, 81, 86, 89, 96, 102, 109, 113, 118 | 4, 51, 55, 59 | 5, 94, 97, 107, 112, 118, 122 | 24, 30 | | 37, 42, 47, 51 | | 4 | 5 | |
| Couplings | | 64 | 121 | 62 | 125 | 32 | | 53 | | 42 | | |
| CSA | 16, 99 | | 3 | | | | | | | | | |
| Currents | 22, 103 | 5 ... | 8 ... | 11 ... | 11 ..., 18 ... | 9, 12 ... | | 4 ... | | 7 ... | | |
| Customer Support | | | | | | | | | | | | 22 |
| Customized motors | | | | | | | | | | | | 9 |
| Cut-way diagram of a low voltage motor | 13, 97 | | | | | | | | | | | |

IEC Squirrel-Cage Motors

Appendix

Subject index

| | Part 0 Page 0/ | Part 1 Page 1/ | Part 2 Page 2/ | Part 3 Page 3/ | Part 4 Page 4/ | Part 5 Page 5/ | Part 6 Page 6/ | Part 7 Page 7/ | Part 8 Page 8/ | Part 9 Page 9/ | Part 10 Page 10/ | Part 11 Page 11/ |
|---|-------------------|-------------------|------------------------------------|-------------------|---------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|---------------------|---------------------|
| D | | | | | | | | | | | | |
| Degree of protection | 54, 118 | 57, 61 | 81, 85, 89, 95, 102, 108, 113, 118 | 51, 55, 59 | 94, 97, 102, 106, 112, 117, 122 | 24, 29 | | 36, 42, 46, 51 | | 34, 36, 38, 40 | 5, 6 ... | |
| Design | | | | 3 | | | | | | | | |
| Design for Zones 2 and 22 according to ATEX | | | | 56, 60 | | | | | | | | |
| Design for Zones 2, 21 and 22 according to ATEX | | | | | 93, 96, 100, 104, 110, 115, 120 | | | | | | | |
| Designs in accordance with standards and specifications | 14, 98 | 57, 62 | 81, 86, 89, 96, 102, 109, 113, 118 | 51, 56, 60 | 94, 97, 102, 107, 112, 118, 122 | 25 | | 37, 42, 47, 51 | | | | |
| Det Norske Veritas | | | | | | | | | | | 2 | |
| Device groups | | | | 16 | | | | | | | | |
| Diagrams of bearings | 64, 65, 124 | | | | | | | | | | | |
| Dimension drawings | | 68 ... | 124 ... | 64 ... | 130 ... | 34 | | 56 | | | | |
| Dimension sheet generator | | 67 | 123 | | 129 | 40 | | 65 | | | | |
| Dimensions | | 65 ... | 122 ... | 63 ... | 127 ... | 33 ... | 4 | 55 ... | 4 | 43 ... | 25 | |
| Direction of rotation | 29, 105 | | | | | | | | | | | |
| Distributed drive solutions | | | 5 | | | 3 | | | | | | 7 |
| Documentation | 20, 102 | 59, 63 | 87, 90, 97, 103, 119 | 52, 56, 60 | 95, 98, 103, 108, 113, 119, 123 | 26, 31 | | 38, 43, 48, 52 | | | | 19 |
| Drainage holes | | | | | | | | | | 4 | | |
| Dual-function motors | | | | | | | | | | 3 | | |
| Duty type | | | | | | | | | | 4 | | |
| E | | | | | | | | | | | | |
| Earth brushes for converter-fed operation | | | | | | 19 | | | | | | |
| Easy Shopping with the A&D Mail | | | | | | | | | | | | 21 |
| ECOFAST | 51 | | 5 | | | 4, 19 | | | | | | |
| EFF1 | | 2 | 2 | | | | 2, 3 | 2, 3 | 2, 3 | | | |
| EFF2 | | 2 | 2 | | | | 3 | 3 | 3 | | | |
| EFF3 | | 2 | 2 | | | | | | | | | |
| Efficiency and efficiency requirements according to EPACT | | 2 | 3 | | | | | | | | | |
| Encoder mounting | | 64 | 121 | | 6 | 32 | | | | | | |
| Energy-saving motors | | 2 | 2 | | | | | | | | | |
| Energy-saving program SinaSave | | | | | | | | | | | | 13 |
| EPACT | 15, 98 | 2 | 3 | | | | 2 | 2 | 2 | | | |
| Explosion group | | | | | 17 | | | | | | | |
| Explosion limits | | | | | 13 | | | | | | | |
| Explosion-proof enclosure | | | | | 3, 16, 82 | | | | | | | |
| Explosion-proof motors | 14 | | | | 1 ... | | | | | | 7, 9, 13 ... 16, 24 | |
| Export regulations | | | | | | | | | | | | 46 |
| Extra rating plates | 30, 106 | 58, 63 | 82, 86, 90, 97, 103, 110, 114, 119 | 52, 56, 60 | 95, 98, 103, 108, 113, 118, 123 | 25, 31 | | 37, 43, 47, 52 | | 35, 37, 39, 41 | | |
| F | | | | | | | | | | | | |
| Fan | 36, 111 | | | | | | | | | | | |
| Fan motors | 25 | | | | | | | 1 ... | | | | |
| Feeders | 38, 113 | | | | | | | | | | | |
| Fixing bolts | | | 120 | 62 | 125 | 32 | | 53 | | 42 | | |
| Flange dimensions | | 76 | 140 | 70 | 152 | 40 | | 64 | | | | |
| Flash point | | | | | 13 | | | | | | | |
| Foundation blocks | | | 120 | 62 | 125 | 32 | | 53 | | 42 | | |
| Frame design | | | | | | | | | | | 3 | |
| Frequencies | 22, 103 | | | | | | | | | | | |

IEC Squirrel-Cage Motors

Appendix

Subject index

| | Part 0 Page 0/ | Part 1 Page 1/ | Part 2 Page 2/ | Part 3 Page 3/ | Part 4 Page 4/ | Part 5 Page 5/ | Part 6 Page 6/ | Part 7 Page 7/ | Part 8 Page 8/ | Part 9 Page 9/ | Part 10 Page 10/ | Part 11 Page 11/ |
|--|---------------------|-------------------|--|---------------------|--|-------------------|-------------------|-------------------|-------------------|-------------------|---------------------|---------------------|
| F (continue) | | | | | | | | | | | | |
| Frequency | | | | | | | | | | 4 | | |
| Frequency converters | | | | | | | | | | | | 2 |
| Frequency converters for distributed I/O | | | | | | | | | | | | 2 |
| Fundamental physical principles and definitions | | | | | 13 | | | | | | | |
| G | | | | | | | | | | | | |
| General technical data | 13, 97 | | | | | | | | | | | |
| Germanischer Lloyd | | | | | | | | | | | 2 | |
| Grease | | | | | | | | | | 5 | | |
| Grease lifetime | 58, 122 | | 7 | 5 | | 5 | | | | | | |
| Guide to selecting and ordering the motors | 2 | | | | | | | | | | | |
| H | | | | | | | | | | | | |
| Heating | 36, 111 | 58, 62 | 82, 86, 90, 96, 103, 109, 114, 118 | 52, 56, 60 | 95, 98, 102, 107, 113, 118, 123 | 25, 30 | | 37, 43, 47, 52 | | 35, 37, 39, 41 | | |
| High efficiency | | 2 | 2, 3 | | | | | | | | | |
| I | | | | | | | | | | | | |
| IEC motors | | | 2 | | | | | | | | | |
| Implementation in areas subject to explosion hazards | | | | | | 5 | | | | | | |
| Improved efficiency | | 2 | 3 | | | | | | | | | |
| Increased safety | | | | | 3 | | | | | | | |
| Index of order numbers | | | | | | | | | | | | 30 |
| Individual acceptance | | | | | | | | | | | 2 | |
| Insulation | 32, 108 | 4, 55, 60 | 7, 79, 84, 88, 93, 100, 106, 112, 117 | 4, 5, 50, 55, 59 | 93, 96, 101, 105, 111, 116, 121 | 5, 18, 22, 28 | | 34, 40, 45, 50 | | | | |
| Insulation system | | | | | | | | | | 4 | | |
| Integrated explosion protection | | | | | 13 | | | | | | | |
| Integration | | | 5 | | | 3 | | | | | | |
| Internet | | | | | | | | | | | | 21 |
| K | | | | | | | | | | | | |
| Knowledge Base on CD-ROM | | | | | | | | | | | | 23 |
| KTY 84 temperature sensor | 35, 110 | 21 ... 53 | | 46 | | 18 | | | | | | |
| L | | | | | | | | | | | | |
| Legislative basis | | | | | 14 | | | | | | | |
| Lloyds Register | | | | | | | | | | | 2 | |
| Loading on the shaft extension | | | | | | | | | | 5 | | |
| Low-voltage motor | 13, 97 | | | | | | | | | | | |
| Lubrication | 58, 59, 122, 123 | 58, 62 | 81, 86, 89, 96, 102, 109, 113, 118 | 52, 56, 60 | 94, 97, 102, 107, 112, 118, 122 | 25, 30 | | 37, 42, 47, 51 | | 35, 37, 39, 41 | | |
| M | | | | | | | | | | | | |
| Mains-fed operation | | | | | 81 | | | | | | | |
| Marine motors | | | | | | | | | | | 1 ... | |
| Axial load | 71 ..., 126 ... | | | | | | | | | | | |
| Mechanical design | 54, 118 | 57, 61 | 81, 85, 89, 95, 102, 108, 113, 118 | 51, 55, 59 | 94, 97, 102, 106, 112, 117, 122 | 24, 29 | | 36, 42, 46, 51 | | 34, 36, 38, 40 | | |
| Mechanical limit speeds | | | 7 | | | 5, 6 | | | | | | |
| Mechanical stress | | | 7 | 5 | | 5 | | | | | | |
| Metal surcharges | | | | | | | | | | | | 44 |
| MICROMASTER 410/420/430/440 | | | | | | | | | | | | 8 |
| MICROMASTER 411/ COMBIMASTER 411 | | | 5 | | | 3 | | | | | | 8 |
| Minimum cooling air flow | | | | | | | | | | 5 | | |
| Minimum efficiencies | 15, 98 | | | | | | | | | | | |
| Minimum ignition energy | | | | | 14 | | | | | | | |
| Modular technology | 75, 127 | 56 | 80, 94, 95, 101, 107, 108 | | | 23, 24, 28 | | 36, 41 | | | | |

IEC Squirrel-Cage Motors

Appendix

Subject index

| | Part 0 Page 0/ | Part 1 Page 1/ | Part 2 Page 2/ | Part 3 Page 3/ | Part 4 Page 4/ | Part 5 Page 5/ | Part 6 Page 6/ | Part 7 Page 7/ | Part 8 Page 8/ | Part 9 Page 9/ | Part 10 Page 10/ | Part 11 Page 11/ |
|---|-------------------------------|-------------------|---|----------------------|--|-------------------|-------------------|-------------------|-------------------|-------------------------|---------------------|---------------------|
| M (continue) | | | | | | | | | | | | |
| More information | | 7 | 9 | 13 | 13 | 9 | 2 | 5 | 2 | 7 | 5 | |
| Motor connection | 38, 113 | 55, 60 | 78, 84, 88, 92, 99, 105, 112, 116 | 5, 50, 54, 58 | 93, 96, 100, 105, 111, 116, 121 | 5, 22, 27 | | 34, 39, 45, 49 | | 34, 36, 38, 40 | 3 | |
| Motor protection | 34, 110 | 8 ... 53 | 78, 84, 88, 92, 99, 105, 112, 116 | 5, 46, 50, 54, 58 | 93, 96, 100, 104, 110, 115, 120 | 5, 18, 22, 27 | | 34, 39, 45, 49 | | 34, 36, 38, 40 | 5 | |
| Motors operating with frequency converters | | | | | | 1 ... | | | | | | |
| N | | | | | | | | | | | | |
| N compact | | | | 2 | | | | | | | | |
| NEMA | 15, 99 | | | | | | | | | | | |
| NEMA motors | | | 2 | | | | | | | | | 10 |
| Noise generation | | | 7 | 5 | | 5, 18 | | | | | | |
| Non-standard motors | 24, 37 | | | 1 ... | | | | | | | 9, 23 | |
| Number of poles | | | | | | | | | | 4 | | |
| O | | | | | | | | | | | | |
| Online Services | | | | | | | | | | | | 21 |
| Online Support | | | | | | | | | | | | 22 |
| Optimization | | | | | | | | | | | | 22 |
| Options | | 55 ... | 78 ... | 50 ... | 93 ... | 22 | | 34 ... | | 34 ... | | |
| Order code | 8 ..., 95 ... | | | | | | | | | | | |
| Order information | | | | | | | | | | | 10 | |
| Order No. supplements | | 20 ... 53 | 10 ... 65 | 14 ... 44 | 18 ... 79 | 12, 16 | | 6 ... 29 | | 9 ... 31 | | |
| Order No. code | 7, 94 | | | | | | | | | | | |
| Ordering in the Internet and on DVD | | | | | | | | | | | | 21 |
| Orientation | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | |
| Outputs | 28, 105 | | | | | | | | | | | |
| Overall dimensions | | 65 | 122 | 63 | 127 | 33 | | 55 | | 43 | | |
| Overview | 2, 7, 8, 13, 94, 95, 97 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | |
| Overview of products | | | | | | | | | | | | 2 |
| P | | | | | | | | | | | | |
| Packaging | 20, 102 | 59, 63 | 82, 87, 90, 97, 103, 110, 114, 119 | 52, 56, 60 | 95, 98, 103, 108, 113, 119, 123 | 26, 31 | | 38, 43, 48, 52 | | 35, 37, 39, 41 | | |
| Paint finish | 17, 100 | 56, 61 | 79, 85, 89, 94, 100, 107, 113, 117 | 51, 55, 59 | 93, 97, 101, 106, 111, 117, 121 | 23, 28 | | 35, 40, 46, 50 | | 5, 34, 36, 38, 40 | 5, 6 | |
| Power factor | 29, 105 | 8 ... | 10 ... | 10 ... | 18 ... | 12 ... | | 6 ... | | 8 ... | | |
| Preliminary selection of the motor | | 5, 6 | 8, 9 | 11, 12 | 11, 12 | 9 | | 4, 5 | | 7 | | |
| Primary explosion protection | | | | | 13 | | | | | | | |
| Product Selection Using the Offline Mall | | | | | | | | | | | | 21 |
| Protection against dust explosions in Zones 21 and 22 | | | | | 4 | | | | | | | |
| PT100 resistance thermometers | | | | 46 | | | | | | | | |
| PTC thermistors | 34, 110 | | | | | | | | | | | |
| Pump motors | | | | | | | 1 ... | | | | | |
| Pump version from stock | | | | | | | 3, 4 | | | | | |
| R | | | | | | | | | | | | |
| RAL | 18 ..., 101 ... | | | | | | | | | | | |
| Rated output | | 5 ... | 7 ... | 4 ... | 11 ... | 9 ... | | 4 ... | | 4, 7 ... | | |
| Rated speed | 29, 105 | 5 ... | 7 ... | 4 ... | 11 ... | 9 ... | | 4 ... | | 7 ... | | |
| Rated torque | 29, 105 | 5 ... | 7 ... | 4 ... | 11 ... | 9 ... | | 4 ... | | 7 ... | | |
| Rated voltage | | 20 ... | 10 ... | 5, 14 ... | 18 ... | 5, 12 ... | | 6 ... | | 8 ... | | |

IEC Squirrel-Cage Motors

Appendix

Subject index

| | Part 0 | Part 1 | Part 2 | Part 3 | Part 4 | Part 5 | Part 6 | Part 7 | Part 8 | Part 9 | Part 10 | Part 11 |
|---|--------------------|----------|--|-------------------|--|-----------------|---------|-------------------|---------|-------------------|-----------------|----------|
| | Page 0/ | Page 1/ | Page 2/ | Page 3/ | Page 4/ | Page 5/ | Page 6/ | Page 7/ | Page 8/ | Page 9/ | Page 10/ | Page 11/ |
| R (continue) | | | | | | | | | | | | |
| Rating plate | 30, 106 | 58, 63 | 3, 82, 86, 90, 97, 103, 110, 114, 119 | 5, 52, 56, 60 | 95, 98, 103, 108, 113, 118, 123 | 18, 25, 31 | | 37, 43, 47, 52 | | 35, 37, 39, 41 | 5 | |
| Rating plate data for motors operating with frequency converters | | | | | | 18 | | | | | | |
| Recommended special versions for mains-fed and converted-fed operations | | | | | | | 3 | | 4 | | | |
| Repair parts | | 64 | 121 | 62 | 126 | 32 | | 54 | | 42 | | |
| Repairs - contact partner | | | | | | | | | | | | 22 |
| Rotary pulse encoder | 75 ..., 127 ... | | | | 5 ... 7 | | | | | | | |
| Rotary pulse encoder 1XP8 001 | 75 | | | | | | | | | | | |
| Rotary pulse encoder 1XP8 012 | 127, 128 | | | | | | | | | | | |
| Rotor | 56, 121 | 58, 62 | 82, 86, 90, 96, 103, 109, 114, 118 | 52, 56, 60 | 94, 98, 102, 107, 113, 118, 122 | 25, 30 | | 37, 42, 47, 51 | | | | |
| S | | | | | | | | | | | | |
| Safety notes | 20, 102 | 59, 63 | 82, 87, 90, 97, 103, 110, 114, 119 | 52, 56, 60 | 95, 98, 103, 108, 113, 119, 123 | 26, 31 | | 38, 43, 48, 52 | | 35, 37, 39, 41 | | |
| SD configurator | | 67 | 123 | | 129 | 40 | | 65 | | | | 11 |
| Secondary explosion protection | | | | | 13 | | | | | | | |
| Selection and ordering data | | 5, 8 ... | 8, 10 ... | 11, 14 ... | 11, 18 ... | 9, 10 ... | 3, 4 | 4, 6 ... | 3 | 7, 8 ... | 6 ... | |
| Separately driven fan | 76, 129 | | | | | | | | | | | |
| Service on Site | | | | | | | | | | | | 22 |
| Shaft | 56, 121 | 58, 62 | 82, 86, 90, 96, 103, 109, 114, 118 | 52, 56, 60 | 94, 98, 102, 107, 113, 118, 122 | 25, 30 | | 37, 42, 47, 51 | | | | |
| Siemens Contacts Worldwide | | | | | | | | | | | | 20 |
| Siemens Industry Automation and Drive Technologies in the WWW | | | | | | | | | | | | 21 |
| SIMATIC ET 200S FC | | | | | | | | | | | | 2 |
| SINAMICS G110 | | | | | | | | | | | | 4 |
| SINAMICS G110 chassis inverter | | | | | | | | | | | | 4 |
| SINAMICS G120 | | | | | | | | | | | | 5 |
| SINAMICS G120D | | | | | | | | | | | | 6 |
| SinaSave | | | | | | | | | | | | 13 |
| Site altitude | 31, 107 | 57, 61 | 81, 86, 89, 96, 102, 109, 113, 118 | 51, 55, 59 | 5, 94, 97, 107, 112, 118, 122 | 24, 30 | | 37, 42, 47, 51 | | 4 | | |
| SITRAIN | | | | | | | | | | | | 17 |
| SIZER | | | | | | | | | | | | 14 |
| Slide rails | | | 120 | 62 | 125 | 32 | | 53 | | 42 | | |
| Smoke-extraction motors | | | | | | | | | | 1 ... | | |
| Software Engineering | | | | | | | | | | | | 22 |
| Spare motors | | 64 | 121 | 62 | 126 | 32 | | 54 | | 42 | | |
| Special finish | 18, 101 | | | | | | | | | | | |
| Special insulation up to 690 V | | | | 11 ... | | 5, 9, 12 ... | | | | | | |
| Special technology | 85, 134 | 57 | 80, 95, 101, 108 | 51, 55, 59 | | 24, 29 | | 36, 41 | | | | |
| Special versions | 8 ..., 95 ... | 54 ... | 66 ... | 46 ... | 81 ... | 18 ... | 3 | 30 ... | 4 | 32 ... | 10 ... | |
| Specifications | 14, 98 | 57, 62 | 81, 86, 89, 96, 102, 109, 113, 118 | 51, 56, 60 | 94, 97, 102, 107, 112, 118, 122 | 25 | | 37, 42, 47, 51 | | | | |
| SPM shock pulse measurement | 58, 122 | | | | | | | | | | | |
| Standard motors | 23, 37 | | 1 ... | | | | | | | | 6, 8, 10 ... | |
| <i>Standardline</i> | | | | 13, 50, 54, 58 | | | | | | | | |
| Standards and specifications | 14, 98 | | | | | | | | | 4 | 2 | |
| Supervision of construction | | | | | | | | | | | 2 | |
| Supply frequencies | | | | | | 18 | | | | | | |

IEC Squirrel-Cage Motors

Appendix

Subject index

| | Part 0 Page 0/ | Part 1 Page 1/ | Part 2 Page 2/ | Part 3 Page 3/ | Part 4 Page 4/ | Part 5 Page 5/ | Part 6 Page 6/ | Part 7 Page 7/ | Part 8 Page 8/ | Part 9 Page 9/ | Part 10 Page 10/ | Part 11 Page 11/ |
|---|-------------------|-------------------|--|-------------------|--|-------------------|-------------------|-------------------|-------------------|-------------------------|---------------------|---------------------|
| T | | | | | | | | | | | | |
| Taper pins | | | 121 | 62 | 125 | 32 | | 53 | | 42 | | |
| Technical Consulting | | | | | | | | | | | | 22 |
| Technical specifications | 13, 97 | 4 | 7 | 4 ... | 3 ... | 5 ... | | 3 | | 4 | 3 | |
| Technical Support | | | | | | | | | | | | 22 |
| Technology | 75, 127 | 56, 57 | 80, 94, 101, 107 | 51, 55, 59 | 5, 101, 106, 112, 117, 122 | 23, 29 | | 36, 41 | | | | |
| Temperature class | | | | | | | | | | | 5 | |
| Temperature classes | | | | | 17 | | | | | | | |
| Temperature detectors | 34, 110 | | | | | | | | | | | |
| Temperature sensor KTY 84 | 35, 110 | 21 ... 53 | | 46 | | 18 | | | | | | |
| Temperature/time classes | | | | | | | | | | 2, 7 | 8 | |
| Tensioning screws | | | 120 | 62 | 125 | 32 | | 53 | | 42 | | |
| Terminal connection | 49, 115 | | | | | | | | | | | |
| Termination system | | | | | | | | | | 4 | | |
| Terms and Conditions of Sale and Delivery | | | | | | | | | | | | 46 |
| Test certificates | 20, 102 | 59, 63 | 82, 87, 90, 97, 103, 110, 114, 119 | 52, 56, 60 | 95, 98, 103, 108, 113, 119, 123 | 26, 31 | | 38, 43, 48, 52 | | 2, 35, 37, 39, 41 | | |
| Thermal torque limits | | | | 6 | | | | | | | | |
| Torque limits | | | | 6 | | | | | | | | |
| Training | | | | | | | | | | | | 17 |
| Training courses at a glance | | | | | | | | | | | | 18 |
| Training courses for drive systems | | | | | | | | | | | | 18 |
| Type approved explosion-proof motors up to frame size 315 L in marine version | | | | | | | | | | | 13 ... | |
| Type approved fan motors in marine version | | | | | | | | | | | 17 ... | |
| Type approved standard motors up to frame size 315 L in marine motors | | | | | | | | | | | 10 ... | |
| Type test | | | | | | | | | | | 2 | |
| Type test certificate | | | | | | | | | | | 4 | |
| Types of construction | 52, 116 | 20 ... | 76 ... | 3, 10 ... | 90 ... | 21 | | 33 | | 33 | | |
| Types of protection | | | | | 16 | | | | | | | |
| U | | | | | | | | | | | | |
| UL approval | 15, 99 | | | | | | | | | | | |
| Upgrading | | | | | | | | | | | | 22 |
| V | | | | | | | | | | | | |
| Ventilation | 36, 111 | 58, 62 | 7, 82, 86, 90, 96, 103, 109, 114, 118 | 5, 52, 56, 60 | 95, 98, 102, 107, 113, 118, 123 | 5, 18, 25, 30 | | 37, 43, 47, 52 | | 35, 37, 39, 41 | | |
| Vibration quantity | 56, 120 | 58, 62 | 81, 86, 89, 96, 102, 109, 114, 118 | 52, 56, 60 | 94, 98, 102, 107, 112, 118, 122 | 25, 30 | | 37, 42, 47, 51 | | 35, 37, 39, 41 | | |
| VIK version | | | | | 83 | | | | | | | |
| Voltage | 22, 103 | 54 | 67 ... | 47 ... | 84 ... | 20 | | 30 ... | | 4, 32 | | |
| W | | | | | | | | | | | | |
| Windings and insulation | 32, 108 | 55, 60 | 79, 84, 88, 93, 100, 106, 112, 117 | 50, 55, 59 | 93, 96, 101, 105, 111, 116, 121 | 22, 28 | | 34, 40, 45, 50 | | | | |
| Z | | | | | | | | | | | | |
| Zone 1 with type of protection Ex de IIC explosion-proof enclosure "d" | | | | | 3 | | | | | | | |
| Zone 1 with type of protection Ex e II Increased Safety "e" | | | | | 3 | | | | | | | |
| Zone 2 with type of protection EX nA (non sparking) | | | | | 4 | | | | | | | |
| Zones | | | | | 16 | | | | | | | |

IEC Squirrel-Cage Motors

Appendix

Index of order numbers

| Order No. | Part 1 Page 1/ | Part 2 Page 2/ | Part 3 Page 3/ | Part 4 Page 4/ | Part 5 Page 5/ | Part 6 Page 6/ | Part 7 Page 7/ | Part 8 Page 8/ | Part 9 Page 9/ | Part 10 Page 10/ |
|--------------|----------------------|-------------------|-------------------|-------------------------|----------------------|-------------------|-------------------|-------------------|------------------------|---------------------|
| 1LA5 | | | | | | | | | | |
| 1LA5 18 ... | | 10 ... 21 | | 42 ... 49 | 10 ... 13 | 3 | 8 ... 13 | | 8 ... 13 | 6, 7, 8 |
| 1LA5 20 ... | | 10 ... 21 | | 42 ... 49 | 10 ... 13 | 3 | 8 ... 13 | | 8 ... 13 | 6, 7, 8 |
| 1LA5 22 ... | | 10 ... 17 | | 42 ... 49 | 10 ... 13 | 3 | | | 8 ... 11 | 6, 7, 8 |
| 1LA6 | | | | | | | | | | |
| 1LA6 1 ... | | 38 ... 45 | | 62 ... 69 | 10, 11 | 3 | | | 20 ... 25 | 6, 7, 8 |
| 1LA7 | | | | | | | | | | |
| 1LA7 05 ... | | 10 ... 13 | | 42 ... 45 | 10, 11 | 3 | | | | 6, 7 |
| 1LA7 06 ... | | 10 ... 19 | | 42 ... 45 | 10, 11 | 3 | | | | 6, 7 |
| 1LA7 07 ... | | 10 ... 19 | | 42 ... 49 | 10, 11 | 3 | | | | 6, 7 |
| 1LA7 08 ... | | 10 ... 19 | | 42 ... 49 | 10, 11 | 3 | 6 ... 11 | | 8 ... 12 | 6, 7 |
| 1LA7 09 ... | | 10 ... 21 | | 42 ... 49 | 10, 11 | 3 | 6 ... 13 | | 8 ... 12 | 6, 7 |
| 1LA7 1 ... | | 10 ... 21 | | 42 ... 49 | 10 ... 13 | 3 | 6 ... 13 | | 8 ... 12 | 6, 7 |
| 1LA8 | | | | | | | | | | |
| 1LA8 ... | | | 14 ... 25 | 78 | 10, 11, 17 | 3 | | 3 | | 9 |
| 1LA9 | | | | | | | | | | |
| 1LA9 05 ... | | 22 ... 37 | | 50 ... 53, 56 ... 59 | 10, 11 | 3 | | 3 | | 6, 7 |
| 1LA9 06 ... | | 22 ... 37 | | 50 ... 53, 56 ... 59 | 10, 11 | 3 | | 3 | | 6, 7 |
| 1LA9 07 ... | | 22 ... 37 | | 50 ... 53, 56 ... 59 | 10, 11 | 3 | | 3 | | 6, 7 |
| 1LA9 08 ... | | 22 ... 37 | | 50 ... 53, 56 ... 59 | 10, 11 | 3 | | 3 | | 6, 7 |
| 1LA9 09 ... | | 22 ... 37 | | 50 ... 61 | 10, 11 | 3 | | 3 | | 6, 7 |
| 1LA9 1 ... | | 22 ... 37 | | 50 ... 61 | 10, 11 | 3 | | 3 | | 6, 7 |
| 1LA9 20 ... | | 22 ... 37 | | 50 ... 61 | 10, 11 | 3 | | 3 | | 6, 7 |
| 1LE1 | | | | | | | | | | |
| 1LE1 001 ... | 22 ... 27, 34, 42 | | | | | 3 | | 3 | | |
| 1LE1 002 ... | 8 ... 19, 30, 38 | | | | | 3 | | 3 | | |
| 1LG4 | | | | | | | | | | |
| 1LG4 18 ... | | 38 ... 47 | | 62 ... 69 | 10, 11 | 3 | 14 ... 19 | 3 | | 6, 7 |
| 1LG4 20 ... | | 38 ... 47 | | 62 ... 69 | 10, 11 | 3 | 14 ... 19 | 3 | | 6, 7 |
| 1LG4 22 ... | | 38 ... 47 | | 62 ... 69 | 10, 11 | 3 | 14 ... 19 | 3 | | 6, 7 |
| 1LG4 25 ... | | 38 ... 47 | | 62 ... 69 | 10, 11 | 3 | 14 ... 19 | 3 | | 6, 7 |
| 1LG4 28 ... | | 38 ... 47 | | 62 ... 69 | 10, 11 | 3 | 14 ... 19 | 3 | | 6, 7 |
| 1LG4 310 ... | | 38 ... 45 | | 62 ... 69 | 10, 11 | 3 | 14 ... 19 | 3 | | 6, 7 |
| 1LG4 313 ... | | 38 ... 45 | | 62 ... 69 | 10, 11 | 3 | 14 ... 19 | 3 | | 6, 7 |
| 1LG4 316 ... | | 38 ... 45 | | 62 ... 69 | 10, 11 | 3 | 14 ... 19 | 3 | | 6, 7 |
| 1LG4 317 ... | | 38 ... 45 | | 62 ... 69 | 10, 11 | 3 | 14 ... 19 | 3 | | 6, 7 |
| 1LG4 318 ... | | 42 ... 45 | | 66 ... 69 | 10, 11 | 3 | | 3 | | 6, 7 |
| 1LG6 | | | | | | | | | | |
| 1LG6 18 ... | | 48 ... 57 | | 70 ... 79 | 10, 11, 14 ... 16 | | | | 20 ... 23 | 6, 7 |
| 1LG6 20 ... | | 48 ... 57 | | 70 ... 79 | 10, 11, 14 ... 16 | | | | 20 ... 23 | 6, 7 |
| 1LG6 22 ... | | 48 ... 57 | | 70 ... 79 | 10, 11, 14 ... 16 | | | | 20 ... 23 | 6, 7 |
| 1LG6 25 ... | | 48 ... 57 | | 70 ... 79 | 10, 11, 14 ... 16 | | | | 8 ... 11, 20 ... 23 | 6, 7 |
| 1LG6 28 ... | | 48 ... 57 | | 70 ... 79 | 10, 11, 14 ... 16 | | | | 8 ... 11, 20 ... 23 | 6, 7 |
| 1LG6 310 ... | | 48 ... 57 | | 70 ... 79 | 10, 11, 14 ... 16 | | | | 8 ... 11, 20 ... 23 | 6, 7 |
| 1LG6 313 ... | | 48 ... 57 | | 70 ... 79 | 10, 11, 14 ... 16 | | | | 8 ... 11, 20 ... 23 | 6, 7 |
| 1LG6 316 ... | | 48 ... 57 | | 70 ... 79 | 10, 11, 14 ... 16 | | | | 8 ... 11, 20 ... 23 | 6, 7 |
| 1LG6 317 ... | | 48 ... 57 | | 70 ... 79 | 10, 11, 14 ... 16 | | | | 8 ... 11, 20 ... 23 | 6, 7 |
| 1LG6 318 ... | | 50 ... 57 | | 72 ... 79 | 10, 11, 14 ... 16 | | | | 10, 11, 22, 23 | 6, 7 |

IEC Squirrel-Cage Motors

Appendix

Index of order numbers

| Order No. | Part 1 Page 1/ | Part 2 Page 2/ | Part 3 Page 3/ | Part 4 Page 4/ | Part 5 Page 5/ | Part 6 Page 6/ | Part 7 Page 7/ | Part 8 Page 8/ | Part 9 Page 9/ | Part 10 Page 10/ |
|--------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|---------------------|
| 1LH8 | | | | | | | | | | |
| 1LH8 45 ... | | | | | | | | | | 9 |
| 1LL8 | | | | | | | | | | |
| 1LL8 ... | | | 34 ... 45 | | 10 | | | | | 9 |
| 1LP4 | | | | | | | | | | |
| 1LP4 18 ... | | 62 ... 65 | | | 10 | | | | | 8 |
| 1LP4 20 ... | | 62 ... 65 | | | 10 | | | | | 8 |
| 1LP4 22 ... | | 62 ... 65 | | | 10 | | | | | 8 |
| 1LP4 25 ... | | 62 ... 65 | | | 10 | | | | | 8 |
| 1LP4 28 ... | | 62 ... 65 | | | 10 | | | | | 8 |
| 1LP4 3 ... | | 62 ... 65 | | | 10 | | | | | 8 |
| 1LP5 | | | | | | | | | | |
| 1LP5 ... | | 58 ... 61 | | | 10 | | | | | 8 |
| 1LP7 | | | | | | | | | | |
| 1LP7 ... | | 58 ... 61 | | | 10 | | | | | 8 |
| 1MA6 | | | | | | | | | | |
| 1MA6 10 ... | | | | 22, 26, 30 | | | | | | 7 |
| 1MA6 11 ... | | | | 22, 26, 30 | | | | | | 7 |
| 1MA6 13 ... | | | | 22 ... 27 | | | | | | 7 |
| 1MA6 16 ... | | | | 22 ... 27 | | | | | | 7 |
| 1MA6 18 ... | | | | 22 ... 31 | | | | | | 7 |
| 1MA6 20 ... | | | | 22 ... 31 | | | | | | 7 |
| 1MA6 22 ... | | | | 22, 26 ... 31 | | | | | | 7 |
| 1MA6 25 ... | | | | 22, 26 ... 31 | | | | | | 7 |
| 1MA6 28 ... | | | | 22, 26 ... 33 | | | | | | 7 |
| 1MA6 310 ... | | | | 22, 26 ... 33 | | | | | | 7 |
| 1MA6 313 ... | | | | 22, 26 ... 33 | | | | | | 7 |
| 1MA6 316 ... | | | | 22, 26 ... 33 | | | | | | 7 |
| 1MA6 317 ... | | | | 22, 26 ... 33 | | | | | | 7 |
| 1MA6 318 ... | | | | 30 ... 33 | | | | | | 7 |
| 1MA7 | | | | | | | | | | |
| 1MA7 ... | | | | 18 ... 21 | | | | | | 7 |
| 1MJ6 | | | | | | | | | | |
| 1MJ6 ... | | | | 34 ... 41 | 11 | | | | | 7 |
| 1MJ7 | | | | | | | | | | |
| 1MJ7 ... | | | | 34 ... 41 | 11 | | | | | 7 |
| 1PC1 | | | | | | | | | | |
| 1PC1 001 | 50 | | | | | | | | | |
| 1PC1 002 | 46 | | | | | | | | | |
| 1PP4 | | | | | | | | | | |
| 1PP4 18 ... | | | | | 11 | | 24 ... 29 | | | 7 |
| 1PP4 2 ... | | | | | 11 | | 24 ... 29 | | | 7 |
| 1PP4 310 ... | | | | | 11 | | 24 ... 27 | | | 7 |
| 1PP4 313 ... | | | | | 11 | | 24 ... 27 | | | 7 |
| 1PP4 316 ... | | | | | 11 | | 24 ... 27 | | | 7 |
| 1PP4 317 ... | | | | | 11 | | 24 ... 27 | | | 7 |
| 1PP4 318 ... | | | | | 11 | | 28 ... 29 | | | 7 |
| 1PP5 | | | | | | | | | | |
| 1PP5 18 ... | | | | | 11 | | 20 ... 23 | | 14 ... 19 | 7 |
| 1PP5 20 ... | | | | | 11 | | 20 ... 23 | | 14 ... 19 | 7 |
| 1PP5 22 ... | | | | | | | | | 14 ... 17 | 7 |

IEC Squirrel-Cage Motors

Appendix

Index of order numbers

| Order No. | Part 1 Page 1/ | Part 2 Page 2/ | Part 3 Page 3/ | Part 4 Page 4/ | Part 5 Page 5/ | Part 6 Page 6/ | Part 7 Page 7/ | Part 8 Page 8/ | Part 9 Page 9/ | Part 10 Page 10/ |
|--------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------------|---------------------|
| 1PP6 | | | | | | | | | | |
| 1PP6 10 ... | | | | | | | | | 26 ... 31 | |
| 1PP6 11 ... | | | | | | | | | 26 ... 31 | |
| 1PP6 13 ... | | | | | | | | | 26 ... 31 | |
| 1PP6 16 ... | | | | | | | | | 26 ... 31 | |
| 1PP6 18 ... | | | | | | | | | 26 ... 29 | |
| 1PP6 20 ... | | | | | | | | | 26 ... 29 | |
| 1PP6 22 ... | | | | | | | | | 26 ... 29 | |
| 1PP6 25 ... | | | | | | | | | 14 ... 17, 26 ... 29 | |
| 1PP6 28 ... | | | | | | | | | 14 ... 17, 26 ... 29 | |
| 1PP6 310 ... | | | | | | | | | 14 ... 17, 26 ... 29 | |
| 1PP6 313 ... | | | | | | | | | 14 ... 17, 26 ... 29 | |
| 1PP6 316 ... | | | | | | | | | 14 ... 17, 26 ... 29 | |
| 1PP6 317 ... | | | | | | | | | 14 ... 17, 26 ... 29 | |
| 1PP6 318 ... | | | | | | | | | 16, 17, 28, 29 | |
| 1PP7 | | | | | | | | | | |
| 1PP7 06 ... | | | | | 11 | | 20 ... 21 | | | 7 |
| 1PP7 07 ... | | | | | 11 | | 20 ... 23 | | | 7 |
| 1PP7 08 ... | | | | | 11 | | 20 ... 23 | | 14 ... 19 | 7 |
| 1PP7 09 ... | | | | | 11 | | 20 ... 23 | | 14 ... 19 | 7 |
| 1PP7 1 ... | | | | | 11 | | 20 ... 23 | | 14 ... 19 | 7 |
| 1PP9 | | | | | | | | | | |
| 1PP9 ... | | 120 | | | | | | | | |
| 1PQ8 | | | | | | | | | | |
| 1PQ8 ... | | | 26 ... 33 | 80 | 10, 11, 17 | | | | | 9 |
| 1XP8 | | | | | | | | | | |
| 1XP8 001 ... | | 120 | | | | | | | | |
| 2CW2 | | | | | | | | | | |
| 2CW2 ... | | 120 | | | | | | | | |

Order codes for 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP and 1PQ motors

All options are alphanumerically listed according to order codes in the following table.

A list of all available options according to categories can be found in catalog part 0 under "Introduction motors 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ", "Special versions".

| Order codes | Special versions | Category | For further information, see Page |
|-------------|--|--|-----------------------------------|
| A10 | With PTC thermistors for alarm for converter-fed operation in Zones 2, 21, 22 | Motor protection | 0/35, 4/82 |
| A11 | Motor protection through PTC thermistor with 3 embedded temperature sensors for tripping | | 0/34, 0/38 |
| A12 | Motor protection through PTC thermistor with 6 embedded temperature sensors for tripping and alarm | | 0/35 |
| A15 | Motor protection with PTC thermistors for converter-fed operation with 3 or 4 embedded temperature sensors for | | 0/35, 4/3, 4/82 |
| A16 | Motor protection with PTC thermistors for converter-fed operation with 6 or 8 embedded temperature sensors for | | 0/35, 4/3, 4/82 |
| A23 | Motor temperature detection with embedded temperature sensor KTY 84-130 | | 0/35 |
| A25 | Motor temperature detection with embedded temperature sensors 2 x KTY 84-130 | | 0/35 |
| A31 | Temperature detectors for tripping | | 0/34 |
| A60 | Installation of 3 PT 100 resistance thermometers in stator winding | | 0/36 |
| A61 | Installation of 6 PT 100 resistance thermometers in stator winding | | 0/36 |
| A72 | Installation of 2 PT 100 screw-in resistance thermometers (basic circuit) for rolling-contact bearings | 0/36 | |
| A78 | Installation of 2 PT 100 screw-in resistance thermometers (3-wire circuit) for rolling-contact bearings | 0/36 | |
| A80 | Installation of 2 PT 100 double screw-in resistance thermometers (3-wire circuit) for rolling-contact bearings | 0/36 | |
| B00 | Without safety and commissioning note. Customer's declaration of renouncement required. | Packaging, safety notes, documentation and test certificates | 0/21 |
| B01 | Complete with one set of safety and commissioning notes per wire-lattice pallet | | 0/21 |
| B02 | Acceptance test certificate 3.1 according to EN 10204 | | 0/21 |
| B06 | Second lubricating plate, supplied loose | Rating plate and extra rating plates | 0/30 |
| B20 | Standardline version | Standardline (only for motor series 1LA8) | 3/13 |
| B23 | Operating instructions German/English enclosed in print | Packaging, safety notes, documentation and test certificates | 0/21 |
| B31 | Document – Electrical data sheet | | 0/21, 3/52 ... |
| B32 | Document – Order dimension drawing | | 0/21, 3/52 ... |
| B37 | Document – Load characteristics | | 0/21, 3/52 ... |
| C00 | Brake supply voltage 24 V DC | Modular technology - Additional versions | 0/83 |
| C01 | Brake supply voltage 400 V AC | | 0/83 |
| C02 | Brake supply voltage 180 V DC, for operation on MM411-ECOFAST | | 0/83 |
| C11 | Temperature class 155 (F), used acc. to 155 (F), with service factor (SF) | Windings and insulation | 0/32 |
| C12 | Temperature class 155 (F), used acc. to 155 (F), with increased power rating | | 0/32 |
| C13 | Temperature class 155 (F), used acc. to 155 (F), with increased coolant temperature | | 0/33 |
| C18 | Temperature class 180 (H) at rated output and max. CT 60 °C | | 0/33 |
| C19 | Increased air humidity/temperature with 30 to 60 g water per m ³ of air | | 0/33 |
| C22 | Temperature class 155 (F), used acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 % | | 0/33 |
| C23 | Temperature class 155 (F), used acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 % | | 0/33 |
| C24 | Temperature class 155 (F), used acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 % | | 0/33 |
| C25 | Temperature class 155 (F), used acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 % | | 0/33 |
| C26 | Increased air humidity/temperature with 60 to 100 g water per m ³ of air | | 0/33 |
| C27 | Stamping of Ex nA II on VIK rating plate | Design for Zones 1, 2, 21 and 22 according to ATEX | 4/83 |
| C30 | Outputs T1/T2 on rating plate | | 4/81 |
| D01 | CCC China Compulsory Certification | Designs in accordance with standards and specifications | 0/16 |
| D02 | Coolant temperature –50 to +40 °C | Coolant temperature and site altitude | 0/32 |
| D03 | Coolant temperature –40 to +40 °C | | 0/32 |
| D04 | Coolant temperature –30 to +40 °C | | 0/32 |
| D11 | Coolant temperature 45 °C, derating 4 % | | 0/32 |
| D12 | Coolant temperature 50 °C, derating 8 % | | 0/32 |
| D13 | Coolant temperature 55 °C, derating 13 % | | 0/32 |
| D14 | Coolant temperature 60 °C, derating 18 % | | 0/32 |
| D19 | Coolant temperature –40 °C to + 40 °C for EX motor | | 4/5 |

IEC Squirrel-Cage Motors

Appendix

Overview of order codes 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

| Order codes | Special versions | Category | For further information, see Page | |
|-------------|---|--|--|----------------|
| D30 | Electrical according to NEMA MG1-12 | Designs in accordance with standards and specifications | 0/15 | |
| D31 | Design according to UL with "Recognition Mark" | | 0/15 | |
| D32 | Ex certification for China | | 4/83 | |
| D33 | Certified for Korea according to KS C4202 | | 0/16 | |
| D40 | Canadian regulations (CSA) | | 0/15, 0/16 | |
| D46 | PSE Mark Japan | | 0/16 | |
| E00 | Without type test certificate according to ABS 50 °C/CCS 45 °C/RINA 45 °C, temperature class 155 (F), used according to 155 (F) | Marine version – Basic marine version | 10/4 ... | |
| E09 | Individual acceptance by marine classification society with supervision of construction and acceptance test certificate 3.2 according to EN 10204 | Marine version – Acceptance/certification | 10/4 ... | |
| E10 | Individual acceptance by marine classification society | | 10/4 ... | |
| E11 | With/without type test certificate according to GL (Germanischer Lloyd), Germany, CT 45 °C, temperature class 155 (F), used according to 155 (F) | Marine version – Basic marine version | 10/4 ... | |
| E21 | With/without type test certificate according to LR (Lloyds Register), Great Britain, CT 45 °C, temperature class 155 (F), used according to 155 (F) | | 10/4 ... | |
| E31 | With/without type test certificate according to BV (Bureau Veritas), France, CT 45 °C, temperature class 155 (F), used according to 155 (F) | | 10/4 ... | |
| E51 | With/without type test certificate according to DNV (Det Norske Veritas), Norway, CT 45 °C, temperature class 155 (F), used according to 155 (F) | | 10/4 ... | |
| E61 | With/without type test certificate according to ABS (American Bureau of Shipping), USA, CT 50 °C, temperature class 155 (F), used according to 155 (F) | | 10/4 ... | |
| E71 | With/without type test certificate according to CCS (Chinese Classification Society), China, CT 45 °C, temperature class 155 (F), used according to 155 (F) | | 10/4 ... | |
| E80 | Motor for use in shipping, higher ambient temperature and/or used as 155 (F) according to 130 (B) | | 10/10 ... | |
| F01 | Standard test (routine test) with acceptance | Packaging, safety notes, documentation and test certificates | 0/21, 3/52 ... | |
| F03 | Visual acceptance and report handover with acceptance | | 0/21, 3/52 ... | |
| F04 | Temperature-rise test, without acceptance | | 0/21, 3/53 ... | |
| F05 | Temperature-rise test, with acceptance | | 0/21, 3/53 ... | |
| F28 | Noise measurement during idling, no noise analysis, no acceptance | | 0/21, 3/53 ... | |
| F29 | Noise measurement during idling, no noise analysis, with acceptance | | 0/21, 3/53 ... | |
| F34 | Recording of current and torque curves with torque metering shaft during starting, without acceptance | | 0/21, 3/53 ... | |
| F35 | Recording of current and torque curves with torque metering shaft during starting, with acceptance | | 0/21, 3/53 ... | |
| F52 | Measurement of the locked-rotor torque and locked-rotor current, without acceptance | | 0/21, 3/53 ... | |
| F53 | Measurement of the locked-rotor torque and locked-rotor current, with acceptance | | 0/21, 3/53 ... | |
| F62 | Noise analysis, without acceptance | | 0/21, 3/53 ... | |
| F63 | Noise analysis, with acceptance | | 0/21, 3/53 ... | |
| F82 | Type test with heat run for horizontal motors, without acceptance | | 0/21, 3/53 ... | |
| F83 | Type test with heat run for horizontal motors, with acceptance | | Marine version – Acceptance/certification | 10/6 ... |
| F83 | Type test with heat run for horizontal motors, with acceptance | | Packaging, safety notes, documentation and test certificates | 0/21, 3/53 ... |
| F92 | Type test with heat run for vertical motors, without acceptance | | | 0/21, 3/53 ... |
| F93 | Type test with heat run for vertical motors, with acceptance | Marine version – Acceptance/certification | 10/23 ... | |
| F93 | Type test with heat run for vertical motors, with acceptance | Packaging, safety notes, documentation and test certificates | 0/21, 3/53 ... | |
| G17 | Mounting of separately driven fan | Modular technology – Basic versions | 0/76 | |
| G26 | Mounting of brake | | 0/77 ... | |
| G50 | Measuring nipple for SPM shock pulse measurement for bearing inspection | Bearings and lubrication | 0/58 | |
| G55 | ECOFAST motor plug Han-Drive 10e for 230 VΔ/400 VY | Motor connection and connection box | 0/51 | |
| G56 | ECOFAST motor plug EMC Han-Drive 10e for 230 VΔ/400 VY | | 0/51 | |
| H15 | Prepared for mounting MMI | Special technology | 0/15, 0/85 | |
| H17 | Fan cover for textile industry | Heating and ventilation | 0/37 | |
| H47 | Mounting of brake NFA (Stomag) | Special technology | 0/85 | |
| H57 | Mounting of 1XP8 001-1 (HTL) rotary pulse encoder | Modular technology – Basic versions | 0/75 | |
| H58 | Mounting of 1XP8 001-2 (TTL) rotary pulse encoder | | 0/75 | |
| H61 | Mounting of separately driven fan and 1XP8 001-1 rotary pulse encoder | Modular technology – Combinations of basic versions | 0/84 | |
| H62 | Mounting of brake and 1XP8 001-1 rotary pulse encoder | | 0/84 | |
| H63 | Mounting of brake and separately driven fan | | 0/84 | |
| H64 | Mounting of brake, separately driven fan and 1XP8 001-1 rotary pulse encoder | | 0/84 | |

| Order codes | Special versions | Category | For further information, see Page |
|-------------|--|--|-----------------------------------|
| H70 | Mounting of LL 861 900 220 rotary pulse encoder | Special technology | 0/85 |
| H72 | Mounting of HOG 9 D 1024 I rotary pulse encoder | | 0/86 |
| H73 | Mounting of HOG 10 D 1024 I rotary pulse encoder | | 0/87 |
| H78 | Prepared for mounting LL 861 900 220 | | 0/85 |
| H79 | Prepared for mounting HOG 9 D 1024 I | | 0/86 |
| H80 | Prepared for mounting HOG 10 D 1024 I | | 0/87 |
| H86 | Mounting of explosion-proof rotary pulse encoder for use in Zones 2, 21, 22 | | 4/5, 4/6 |
| H87 | Mounting of explosion-proof rotary pulse encoder for use on Ex d/de motors in Zone 1 | 4/5, 4/6 | |
| H97 | Mounting of separately driven fan and 1XP8 001-2 rotary pulse encoder | Modular technology – Combinations of basic versions | 0/84 |
| H98 | Mounting of brake and 1XP8 001-2 rotary pulse encoder | | 0/84 |
| H99 | Mounting of brake, separately driven fan and 1XP8 001-2 rotary pulse encoder | | 0/84 |
| J15 | Mounting of explosion-proof rotary pulse encoder HOG 10 DN 1024 I, connection box protection against moisture | Special technology | 0/87 |
| J16 | Mounting of explosion-proof rotary pulse encoder HOG 10 DN 1024 I, connection box protection against dust | | 0/88 |
| K02 | Vibration quantity level B | Balance and vibration quantity | 0/56 |
| K04 | Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors | Shaft and rotor | 0/57 |
| K06 | Two-part plate on connection box | Motor connection and connection box | 0/39 |
| K09 | Connection box on RHS | | 0/38 |
| K10 | Connection box on LHS | | 0/38 |
| K11 | Connection box on top, feet screwed on | | 0/38 |
| K15 | Connection box in cast-iron version | | 0/38, 0/47 ... |
| K16 | Second standard shaft extension | Shaft and rotor | 0/56 |
| K17 | Drive-end seal for flange-mounting motors with oil resistance to 0.1 bar | Mechanical design and degrees of protection | 0/54 |
| K20 | Bearing design for increased cantilever forces | Bearings and lubrication | 0/58, 0/62 ... |
| K23 | Unpainted (only cast-iron parts primed) | Colors and paint finish | 0/17 |
| K24 | Unpainted, only primed | | 0/17 |
| K26 | Special finish in RAL 7030 stone gray | | 0/18 |
| K30 | VIK design (comprises Zone 2 for mains-fed operation, without Ex nA II marking on rating plate) | Design for Zones 1, 2, 21 and 22 according to ATEX | 4/83 |
| K31 | Second rating plate, loose | Rating plate and extra rating plates | 0/30 |
| K32 | With two additional eyebolts for IM V1/IM V3 | Mechanical design and degrees of protection | 0/54 |
| K34 | Cast-iron fan cover | Heating and ventilation | 0/37 |
| K35 | Metal external fan | | 0/37 |
| K36 | Special bearing for DE and NDE, bearing size 63 | Bearings and lubrication | 0/58, 0/63 ... |
| K37 | Low-noise version for 2-pole motors with clockwise direction of rotation | Mechanical design and degrees of protection | 0/55 |
| K38 | Low-noise version for 2-pole motors with counter-clockwise direction of rotation | | 0/55 |
| K40 | Regreasing device | Bearings and lubrication | 0/58 |
| K42 | Shaft extension with standard dimensions, without featherkey way | Shaft and rotor | 0/57 |
| K45 | Anti-condensation heaters for 230 V | Heating and ventilation | 0/36 |
| K46 | Anti-condensation heaters for 115 V | | 0/36 |
| K50 | IP65 degree of protection | Mechanical design and degrees of protection | 0/54 |
| K52 | IP56 degree of protection (non-heavy-sea) | | 0/54 |
| K53 | Explosion-proof connection box, Ex d IIC type of protection | Motor connection and connection box | 0/38, 0/47 ... |
| K54 | One cable gland, metal | | 0/39 |
| K55 | Cable gland, maximum configuration | | 0/39 |
| K57 | Cable gland DIN 89280, maximum configuration | | 0/39 |
| K82 | Manual brake release with lever | Modular technology - Additional versions | 0/83 |
| K83 | Rotation of the connection box through 90°, entry from DE | Motor connection and connection box | 0/39 |
| K84 | Rotation of the connection box through 90°, entry from NDE | | 0/39 |
| K85 | Rotation of connection box through 180° | | 0/39 |
| K94 | Located bearing DE | Bearings and lubrication | 0/58 |
| L00 | Next larger connection box | Motor connection and connection box | 0/38 |
| L01 | Undrilled entry plate | | 0/40 |
| L03 | Vibration-proof version | Mechanical design and degrees of protection | 0/55 |
| L04 | Located bearing NDE | Bearings and lubrication | 0/58 |
| L12 | Condensation drainage holes | Mechanical design and degrees of protection | 0/54 |
| L13 | External earthing | Motor connection and connection box | 0/38 |
| L27 | Insulated bearing cartridge | Bearings and lubrication | 0/58 |
| L36 | Sheet metal fan cover | Heating and ventilation | 0/37 |
| L39 | Concentricity of shaft extension in accordance with DIN 42955 Tolerance R | Shaft and rotor | 0/57 |

IEC Squirrel-Cage Motors

Appendix

Overview of order codes 1LA, 1LG, 1LL, 1LP, 1MA, 1MJ, 1PP, 1PQ

| Order codes | Special versions | Category | For further information, see Page |
|-------------|---|--|-----------------------------------|
| L44 | 3 cables protruding, 0.5 m long | Motor connection and connection box | 0/40 |
| L45 | 3 cables protruding, 1.5 m long | | 0/40 |
| L47 | 6 cables protruding, 0.5 m long | | 0/40 |
| L48 | 6 cables protruding, 1.5 m long | | 0/40 |
| L49 | 6 cables protruding, 3 m long | | 0/40 |
| L51 | Protruding cable ends – right side | | 0/40 |
| L52 | Protruding cable ends – left side | 0/40 | |
| L68 | Full key balancing | Balance and vibration quantity | 0/56 |
| L97 | Auxiliary connection box 1XB3 020 | Motor connection and connection box | 0/50 |
| L99 | Wire-lattice pallet | Packaging, safety notes, documentation and test certificates | 0/20 |
| M14 | Anti-condensation heater, Ex. 115 V | Heating and ventilation | 0/36 |
| M15 | Anti-condensation heater, Ex. 230 V | | 0/36 |
| M27 | Non-rusting screws (externally) | Mechanical design and degrees of protection | 0/55 |
| M32 | Connected in star for dispatch | Packaging, safety notes, documentation and test certificates | 0/20 |
| M33 | Connected in delta for dispatch | | 0/20 |
| M34 | Design for Zone 21, as well as Zone 22 for conducting dust (IP65) for mains-fed operation | Design for Zones 1, 2, 21 and 22 according to ATEX | 4/4, 4/81 |
| M35 | Design for Zone 22 for non-conducting dust (IP55) for mains-fed operation | | 4/4, 4/81 |
| M37 | Balancing without key | Balance and vibration quantity | 0/56 |
| M38 | Design for Zone 21, as well as Zone 22 for conducting dust (IP65) for converter-fed operation, derating | Design for Zones 1, 2, 21 and 22 according to ATEX | 4/4, 4/83 |
| M39 | Design for Zone 22 for non-conducting dust (IP55) for converter-fed operation, derating | | 4/4, 4/83 |
| M44 | Earth brushes for converter-fed operation | Mechanical design and degrees of protection | 0/55 |
| M46 | Stud terminal for cable connection, accessories pack (3 items) | Motor connection and connection box | 0/49 |
| M47 | Saddle terminal for connection without cable lug, accessories pack | | 0/49 |
| M50 | Auxiliary connection box 1XB9 016 | | 0/50 |
| M58 | Next larger connection box 1XB1 621 | | 0/38 |
| M64 | Connection box on NDE | | 0/38 |
| M65 | Standard shaft made of non-rusting steel | Shaft and rotor | 0/57 |
| M68 | Mechanical protection for encoder | Mechanical design and degrees of protection | 0/55 |
| M69 | Terminal strip for main and auxiliary terminals | Motor connection and connection box | 0/49 |
| M72 | Design for Zone 2 for mains-fed operation Ex nA II T3 to IEC/EN 60079-15 | Design for Zones 1, 2, 21 and 22 according to ATEX | 4/4, 4/81 |
| M73 | Design for Zone 2 for converter-fed operation, derating Ex nA II T3 to IEC/EN 60079-15 | | 4/4, 4/83 |
| M74 | Design for Zones 2 and 22, for non-conducting dust (IP55), for mains-fed operation | | 4/81 |
| M75 | Design for Zones 2 and 22, for non-conducting dust (IP55), for converter-fed operation, derating | | 4/83 |
| M76 | Design for Zones 1 and 21, as well as for Zone 22 for conducting dust (IP65), for mains-fed operation | | 4/81 |
| M77 | Design for Zones 1 and 21, as well as for Zone 22 for conducting dust (IP65), for converter-fed operation, derating | | 4/82 |
| M88 | Auxiliary connection box 1XB9 014 (aluminum) | Motor connection and connection box | 0/50 |
| M91 | Offshore special finish | Colors and paint finish | 0/17 |
| M94 | Sea air resistant special finish | | 0/17 |
| M95 | Mounting of explosion-proof separately driven fan Ex nA for use in Zone 2 | Special technology | 4/5, 4/8 |
| M96 | Mounting of explosion-proof separately driven fan II 2D for use in Zone 21 | | 4/5, 4/8 |
| M97 | Mounting of explosion-proof separately driven fan II 3D for use in Zone 22 | | 4/5, 4/8 |
| M98 | Mounting of explosion-proof separately driven fan Ex de for use in Zone 1 | | 4/5, 4/8 |
| Y50 | Temperature class 155 (F), used acc. to 130 (B), with increased coolant temperature and/or site altitude | Windings and insulation | 0/33 |
| Y51 | Special finish in special RAL colors | Colors and paint finish | 0/17, 0/19 |
| Y52 | Temperature class 155 (F), used acc. to 155 (F), other requirements | Windings and insulation | 0/33 |
| Y53 | Standard finish in other standard RAL colors | Colors and paint finish | 0/17, 0/18 |
| Y54 | Special finish in other standard RAL colors | | 0/17, 0/18 |

| Order codes | Special versions | Category | For further information, see Page |
|-------------|---|--|-----------------------------------|
| Y55 | Non-standard cylindrical shaft extension | Shaft and rotor | 0/57 |
| Y68 | Alternative converter (SIMOVERT MASTERDRIVES, SINAMICS G110, SINAMICS S120 or ET 200 S FC) | Design for Zones 1, 2, 21 and 22 according to ATEX | 4/82 |
| Y70 | Mounting a special type of rotary pulse encoder | Special technology | 0/85 |
| Y74 | Mounting of rotary pulse encoder HOG 10 DN 1024 I + FSL, (speed rpm), connection box protection against moisture | | 0/88 |
| Y76 | Mounting of rotary pulse encoder HOG 10 DN 1024 I + FSL, (speed rpm), connection box protection against dust | | 0/89 |
| Y79 | Mounting of rotary pulse encoder HOG 10 DN 1024 I + E SL 93, (speed rpm), connection box protection against moisture | | 0/89 |
| Y80 | Extra rating plate or rating plate with deviating rating plate data | Rating plate and extra rating plates | 0/30 |
| Y81 | Separately driven fan with non-standard voltage and/or frequency | Heating and ventilation | 0/37 |
| Y82 | Extra rating plate with identification code | Rating plate and extra rating plates | 0/30 |
| Y84 | Additional information on rating plate and on package label (maximum of 20 characters) | | 0/30 |

IEC Squirrel-Cage Motors

Appendix

Overview of order codes 1LE1, 1PC1

Order codes for 1LE1 and 1PC1 motors

All options are alphanumerically listed according to order codes in the following table.

A list of all available options according to categories can be found in catalog part 0 under "Introduction motors 1LE1, 1PC1", "Special versions".

| Order codes | Special versions | Category | For further information, see Page | |
|-------------|--|--|--|-------|
| B00 | Without safety and commissioning note. Customer's declaration of renouncement required. | Packaging, safety notes, documentation and test certificates | 0/102 | |
| B01 | Complete with one set of safety and commissioning notes per wire-lattice pallet | | 0/102 | |
| B02 | Acceptance test certificate 3.1 according to EN 10204 | | 0/102 | |
| B04 | Printed operating instructions English/German enclosed | | 0/102 | |
| B83 | Type test with heat run for horizontal motors, with acceptance | | 0/102 | |
| B99 | Wire-lattice pallet | | 0/102 | |
| D03 | Coolant temperature -40 to +40 °C | Coolant temperature and site altitude | 0/107 | |
| D04 | Coolant temperature -30 to +40 °C | | 0/107 | |
| D30 | Electrical according to NEMA MG1-12 | Designs in accordance with standards and specifications | 0/99 | |
| D31 | Design according to UL with "Recognition Mark" | | 0/99 | |
| D40 | Canadian regulations (CSA) | | 0/98, 0/99 | |
| D46 | PSE Mark Japan | | 0/99 | |
| F01 | Mounting of brake | Modular technology - Basic versions | 0/130 ... | |
| F10 | Brake supply voltage 24 V DC | | 0/133 | |
| F11 | Brake supply voltage 230 V AC, 50/60 Hz | | 0/133 | |
| F12 | Brake supply voltage 400 V AC | | 0/133 | |
| F50 | Mechanical manual brake release with lever | | 0/133 | |
| F70 | Mounting of separately driven fan | | 0/129 | |
| F74 | Sheet metal fan cover | Heating and ventilation | 0/111 | |
| F75 | Fan cover for textile industry | | 0/111 | |
| F76 | Metal external fan | | 0/111 | |
| F77 | Low-noise version for 2-pole motors with clockwise direction of rotation | Mechanical design and degrees of protection | 0/119 | |
| F78 | Low-noise version for 2-pole motors with counter-clockwise direction of rotation | | 0/119 | |
| G01 | Mounting of 1XP8012-10 (HTL) rotary pulse encoder | Modular technology - Basic versions | 0/128 | |
| G02 | Mounting of 1XP8012-20 (TTL) rotary pulse encoder | | 0/128 | |
| G04 | Anbau des Drehimpulsgebers LL 861 900 220 | | Special technology | 0/134 |
| G05 | Mounting of LL 861 900 220 rotary pulse encoder | | | 0/135 |
| G06 | Mounting of HOG 10 D 1024 I rotary pulse encoder | | | 0/136 |
| G40 | Prepared for mountings, only center hole | | Mechanical design and degrees of protection | 0/118 |
| G41 | Prepared for mountings with D12 shaft | 0/118 | | |
| G42 | Prepared for mountings with D16 shaft | 0/118 | | |
| G43 | Protective cover for encoder (loosely enclosed – only for mountings acc. to order codes G40, G41 and G42) | 0/118 | | |
| H00 | Protective cover for types of construction | | 0/119 | |
| H01 | Screwed-on feet (instead of cast) | | 0/113 | |
| H02 | Vibration-proof version | | 0/119 | |
| H03 | Condensation drainage holes | | 0/119 | |
| H04 | External earthing | Motor connection and connection box | 0/113 | |
| H07 | Non-rusting screws (externally) | Mechanical design and degrees of protection | 0/119 | |
| H08 | Connection box on NDE | Motor connection and connection box | 0/113 | |
| H20 | IP65 degree of protection | Mechanical design and degrees of protection | 0/119 | |
| H22 | IP56 degree of protection (non-heavy-sea) | | 0/119 | |
| H23 | Radial seal on DE for flange-mounting motors with oil resistance to 0.1 bar | | 0/118 | |
| L00 | Vibration quantity level B | Balance and vibration quantity | 0/120 | |
| L01 | Balancing without fitted key | | 0/120 | |
| L02 | Full-key balancing | | 0/120 | |
| L04 | Shaft extension with standard dimensions, without featherkey way | Shaft and rotor | 0/121 | |
| L05 | Second standard shaft extension | | 0/121 | |
| L06 | Standard shaft made of non-rusting steel | | 0/121 | |
| L07 | Concentricity of shaft extension in accordance with DIN 42955 Tolerance R | | 0/121 | |
| L08 | Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors | | 0/121 | |
| L20 | Located bearing at DE | Bearings and lubrication | 0/122 | |
| L21 | Located bearing at NDE | | 0/122 | |
| L22 | Bearing design for increased cantilever forces | | 0/122, 0/124 ... | |
| L23 | Regreasing device | | 0/122 | |
| L25 | Special bearing for DE and NDE, bearing size 63 | | 0/122, 0/124 ... | |
| M01 | Connected in star for dispatch | | Packaging, safety notes, documentation and test certificates | 0/102 |
| M02 | Connected in delta for dispatch | 0/102 | | |

| Order codes | Special versions | Category | For further information, see Page |
|-------------|---|--------------------------------------|-----------------------------------|
| M10 | Second rating plate, loose | Rating plate and extra rating plates | 0/106 |
| M11 | Nirosta rating plate | | 0/106 |
| N01 | Temperature class 155 (F), used acc. to 155 (F), with service factor (SF) | Windings and insulation | 0/108 |
| N02 | Temperature class 155 (F), used acc. to 155 (F), with increased output | | 0/108 |
| N03 | Temperature class 155 (F), used acc. to 155 (F), with increased coolant temperature | | 0/108 |
| N05 | Temperature class 155 (F), used acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 % | | 0/108 |
| N06 | Temperature class 155 (F), used acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 % | | 0/108 |
| N07 | Temperature class 155 (F), used acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 % | | 0/108 |
| N08 | Temperature class 155 (F), used acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 % | | 0/108 |
| N11 | Temperature class 180 (H) at rated power and max. CT 60 °C | | 0/108 |
| N20 | Increased air humidity/temperature with 30 to 60 g water per m ³ of air | | 0/108 |
| N21 | Increased air humidity/temperature with 60 to 100 g water per m ³ of air | | 0/108 |
| Q01 | Measuring nipple for SPM shock pulse measurement for bearing inspection | Bearings and lubrication | 0/122 |
| Q02 | Anti-condensation heaters for 230 V | Heating and ventilation | 0/111 |
| Q03 | Anti-condensation heaters for 115 V | | 0/111 |
| R10 | Rotation of the connection box through 90°, entry from DE | Motor connection and connection box | 0/114 |
| R11 | Rotation of the connection box through 90°, entry from NDE | | 0/114 |
| R12 | Rotation of the connection box through 180° | | 0/114 |
| R15 | One cable gland, metal | | 0/114 |
| R20 | 3 cables protruding, 0.5 m long | | 0/114 |
| R21 | 3 cables protruding, 1.5 m long | | 0/114 |
| R22 | 6 cables protruding, 0.5 m long | | 0/114 |
| R23 | 6 cables protruding, 1.5 m long | | 0/114 |
| R24 | 6 cables protruding, 3 m long | | 0/114 |
| R30 | Reduction piece for M cable gland in accordance with British standard, both cable entries mounted | | 0/114 |
| R50 | Larger connection box | | 0/113 |
| S00 | Unpainted (only cast iron parts primed) | Colors and paint finish | 0/100 |
| S01 | Unpainted, only primed | | 0/100 |
| S03 | Special finish sea air resistant | | 0/100 |
| Y51 | Special finish in special RAL colors | | 0/101 |
| Y52 | Temperature class 155 (F), used acc. to 155 (F), other requirements | Windings and insulation | 0/108 |
| Y54 | Special finish in other standard RAL colors | Colors and paint finish | 0/101 |
| Y55 | Non-standard cylindrical shaft extension | Shaft and rotor | 0/121 |
| Y80 | Extra rating plate or rating plate with deviating rating plate data | Rating plate and extra rating plates | 0/106 |
| Y82 | Extra rating plate with identification codes | | 0/106 |
| Y84 | Additional information on rating plate and on package label (max. of 20 characters) | | 0/106 |

IEC Squirrel-Cage Motors

Appendix

Notes

IEC Squirrel-Cage Motors

Appendix

Notes

IEC Squirrel-Cage Motors

Appendix

Metal surcharges

Explanation of the metal factor

Surcharges will be added to the prices of products that contain silver, copper, aluminum, lead and/or gold if the respective basic official prices for these metals are exceeded.

The surcharges will be determined based on the following criteria:

- Official price of the metal
Official price on the day prior to receipt of the order or prior to the release order (=daily price) for
 - silver (sale price of the processed material),
 - gold (sale price of the processed material)
 Source: Umicore, Hanau
(<http://www.metalsmanagement.umicore.com>)
and for
 - copper (low DEL notation + 1 %),
 - aluminum (aluminum in cables) and
 - lead (lead in cables)
 Source: German Trade Association for Cables and Conductors
(<http://www.kabelverband.de>)
- Metal factor of the products
Certain products are assigned a metal factor. The metal factor determines the official price as of which the metal surcharges are charged and the calculation method used (weight or percentage method). An exact explanation is given below.

Structure of the metal factor

The metal factor consists of several digits; the first digit indicates whether the method of calculation refers to the list price or a discounted price (customer net price) (L = list price / N = customer net price).

The remaining digits indicate the method of calculation used for the respective metal. If no surcharge is added, a "-" is used.

| 1st digit | List or customer net price using the percentage method |
|-----------|--|
| 2nd digit | for silver (AG) |
| 3rd digit | for copper (CU) |
| 4th digit | for aluminum (AL) |
| 5th digit | for lead (PB) |
| 6th digit | for gold (AU) |

Weight method

The weight method uses the basic official price, the daily price and the raw material weight. In order to calculate the surcharge, the basic official price must be subtracted from the daily price. The result is then multiplied by the raw material weight.

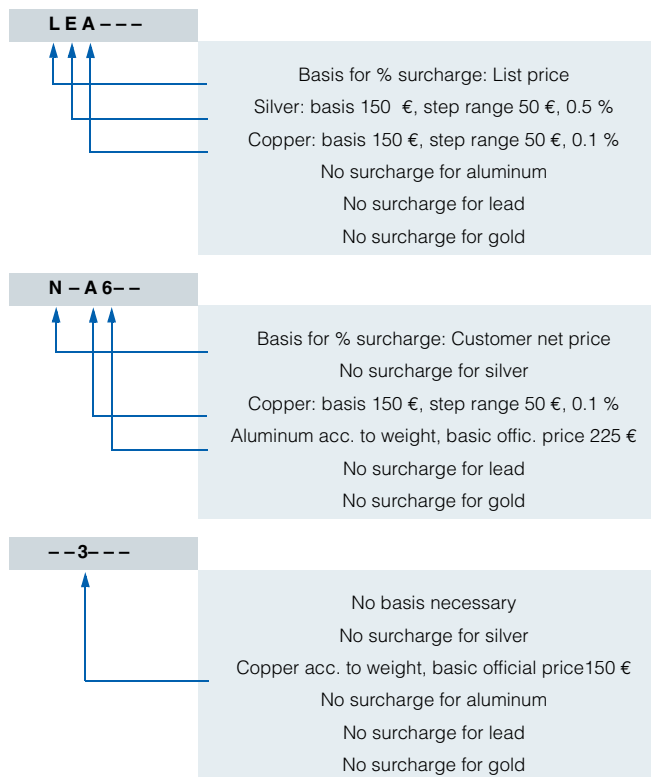
The basic official price can be found in the table below using the number (2 to 9) of the respective digit of the metal factor. The raw material weight can be found in the respective product descriptions.

Percentage method

Use of the percentage method is indicated by the letters A-Z at the respective digit of the metal factor.

The surcharge is increased – dependent on the deviation of the daily price compared with the basic official price – using the percentage method in "steps" and consequently offers surcharges that remain constant within the framework of this "step range". A higher percentage rate is charged for each new step. The respective percentage level can be found in the table below.

Metal factor examples



A&D/MZ_1/En 05.09.06

Values of the metal factor

| Percentage method | Basic official price | Step range | % surcharge | % surcharge | % surcharge | % surcharge | % surcharge per |
|-------------------|----------------------|------------|----------------|----------------|----------------|----------------|-----------------|
| | | | 1st step | 2nd step | 3rd step | 4th step | additional step |
| | | | Official price | Official price | Official price | Official price | |
| | | | 151 € – 200 € | 201 € – 250 € | 251 € – 300 € | 301 € – 350 € | |
| A | 150 | 50 | 0.1 | 0.2 | 0.3 | 0.4 | 0.1 |
| B | 150 | 50 | 0.2 | 0.4 | 0.6 | 0.8 | 0.2 |
| C | 150 | 50 | 0.3 | 0.6 | 0.9 | 1.2 | 0.3 |
| D | 150 | 50 | 0.4 | 0.8 | 1.2 | 1.6 | 0.4 |
| E | 150 | 50 | 0.5 | 1.0 | 1.5 | 2.0 | 0.5 |
| F | 150 | 50 | 0.6 | 1.2 | 1.8 | 2.4 | 0.6 |
| G | 150 | 50 | 0.7 | 1.4 | 2.1 | 2.8 | 0.7 |
| H | 150 | 50 | 1.2 | 2.4 | 3.6 | 4.8 | 1.2 |
| I | 150 | 50 | 1.6 | 3.2 | 4.8 | 6.4 | 1.6 |
| J | 150 | 50 | 1.8 | 3.6 | 5.4 | 7.2 | 1.8 |
| K | 150 | 50 | 2.0 | 3.5 | 5.0 | 6.5 | 1.5 |
| L | 150 | 50 | 2.2 | 4.4 | 6.6 | 8.8 | 2.2 |
| M | 150 | 50 | 2.5 | 5.0 | 7.5 | 10.0 | 2.5 |
| | | | 176 € – 225 € | 226 € – 275 € | 276 € – 325 € | 326 € – 375 € | |
| O | 175 | 50 | 0.1 | 0.2 | 0.3 | 0.4 | 0.1 |
| P | 175 | 50 | 0.2 | 0.4 | 0.6 | 0.8 | 0.2 |
| Q | 175 | 50 | 0.3 | 0.6 | 0.9 | 1.2 | 0.3 |
| R | 175 | 50 | 0.5 | 1.0 | 1.5 | 2.0 | 0.5 |
| | | | 226 € – 275 € | 276 € – 325 € | 326 € – 375 € | 376 € – 425 € | |
| S | 225 | 50 | 0.2 | 0.4 | 0.6 | 0.8 | 0.2 |
| T | 225 | 50 | 0.5 | 1.0 | 1.5 | 2.0 | 0.5 |
| U | 225 | 50 | 1.0 | 2.0 | 3.0 | 4.0 | 1.0 |
| V | 225 | 50 | 1.0 | 1.5 | 2.0 | 3.0 | 1.0 |
| W | 225 | 50 | 1.2 | 2.5 | 3.5 | 4.5 | 1.0 |
| | | | 126 € – 150 € | 151 € – 175 € | 176 € – 200 € | 201 € – 225 € | |
| X | 125 | 25 | 1.9 | 3.8 | 5.7 | 7.6 | 1.9 |
| | | | 151 € – 175 € | 176 € – 200 € | 201 € – 225 € | 226 € – 250 € | |
| Y | 150 | 25 | 0.3 | 0.6 | 0.9 | 1.2 | 0.3 |
| | | | 401 € – 425 € | 426 € – 450 € | 451 € – 475 € | 476 € – 500 € | |
| Z | 400 | 25 | 0.1 | 0.2 | 0.3 | 0.4 | 0.1 |

Price basis (1st digit)

L Charged on the list price

N Charged on the customer net price or discounted list price

| Weight method | Basic official price |
|---------------|----------------------|
| 2 | 100 |
| 3 | 150 |
| 4 | 175 |
| 5 | 200 |
| 6 | 225 |
| 7 | 300 |
| 8 | 400 |
| 9 | 555 |

Calculation based on raw material weight

Misc.

- No metal surcharge

IEC Squirrel-Cage Motors

Appendix

Conditions of sale and delivery

Terms and Conditions of Sale and Delivery

By using this catalog you can acquire hardware and software products described therein from Siemens AG subject to the following terms. Please note! The scope, the quality and the conditions for supplies and services, including software products, by any Siemens entity having a registered office outside of Germany, shall be subject exclusively to the General Terms and Conditions of the respective Siemens entity. The following terms apply exclusively for orders placed with Siemens AG.

For customers with a seat or registered office in Germany

The "General Terms of Payment" as well as the "General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry" shall apply.

For software products, the "General License Conditions for Software Products for Automation and Drives for Customers with a Seat or registered Office in Germany" shall apply.

For customers with a seat or registered office outside of Germany

The "General Terms of Payment" as well as the "General Conditions for Supplies of Siemens Automation and Drives for Customers with a Seat or registered Office outside of Germany" shall apply.

For software products, the "General License Conditions for Software Products for Automation and Drives for Customers with a Seat or registered Office outside of Germany" shall apply.

General

The dimensions are in mm. In Germany, according to the German law on units in measuring technology, data in inches only apply to devices for export.

Illustrations are not binding.

Insofar as there are no remarks on the corresponding pages, – especially with regard to data, dimensions and weights given – these are subject to change without prior notice.

The prices are in € (Euro) ex works, exclusive packaging.

The sales tax (value added tax) is not included in the prices. It shall be debited separately at the respective rate according to the applicable legal regulations.

Prices are subject to change without prior notice. We will debit the prices valid at the time of delivery.

Surcharges will be added to the prices of products that contain silver, copper, aluminum, lead and/or gold, if the respective basic official prices for these metals are exceeded. These surcharges will be determined based on the official price and the metal factor of the respective product.

The surcharge will be calculated on the basis of the official price on the day prior to receipt of the order or prior to the release order.

The metal factor determines the official price as of which the metal surcharges are charged and the calculation method used. The metal factor, provided it is relevant, is included with the price information of the respective products. An exact explanation of the metal factor can be found on the page entitled "Metal surcharges".

The texts of the Comprehensive Terms and Conditions of Sale and Delivery are available free of charge from your local Siemens business office under the following Order Nos.:

- 6ZB5310-0KR30-0BA1
(for customers based in Germany)
- 6ZB5310-0KS53-0BA1
(for customers based outside of Germany)

or download them from the Internet
<http://www.siemens.com/automation/mall>
(Germany: A&D Mall Online-Help System)

Export regulations

The products listed in this catalog / price list may be subject to European / German and/or US export regulations.

Therefore, any export requiring a license is subject to approval by the competent authorities.

According to current provisions, the following export regulations must be observed with respect to the products featured in this catalog / price list:

| | |
|------|---|
| AL | <p>Number of the <u>German Export List</u></p> <p>Products marked other than "N" require an export license.</p> <p>In the case of software products, the export designations of the relevant data medium must also be generally adhered to.</p> <p>Goods labeled with an "<u>AL" not equal to "N"</u> are subject to a European or German export authorization when being exported out of the EU.</p> |
| ECCN | <p><u>Export Control Classification Number</u>.</p> <p>Products marked other than "N" are subject to a reexport license to specific countries.</p> <p>In the case of software products, the export designations of the relevant data medium must also be generally adhered to.</p> <p>Goods labeled with an "<u>ECCN" not equal to "N"</u> are subject to a US re-export authorization.</p> |

Even without a label or with an "AL: N" or "ECCN: N", authorization may be required due to the final destination and purpose for which the goods are to be used.

The deciding factors are the AL or ECCN export authorization indicated on order confirmations, delivery notes and invoices.

Errors excepted and subject to change without prior notice.

A&D/VuL_mit MZ/En 05.09.06

Industry Automation, Drive Technologies and Electrical Installation Technology

Further information can be obtained from our branch offices listed in the appendix or at www.siemens.com/automation/partner

| | | | |
|--|----------------|---|----------------|
| Automation and Drives | <i>Catalog</i> | Low-Voltage | <i>Catalog</i> |
| Interactive catalog on DVD | CA 01 | Controls and Distribution – SIRIUS, SENTRON, SIVACON | LV 1 |
| Drive Systems | | Controls and Distribution – Technical Information SIRIUS, SENTRON, SIVACON | LV 1 T |
| <u>Variable-Speed Drives</u> | | SIDAC Reactors and Filters | LV 60 |
| SINAMICS G110/SINAMICS G120 Inverter Chassis Units | D 11.1 | SIVENT Fans | LV 65 |
| SINAMICS G120D | | SIVACON 8PS Busbar Trunking Systems | LV 70 |
| Distributed Frequency Inverters | | | |
| SINAMICS G130 Drive Converter Chassis Units, SINAMICS G150 Drive Converter Cabinet Units | D 11 | Motion Control | |
| SINAMICS GM150/SINAMICS SM150 Medium-Voltage Converters | D 12 | SINUMERIK & SIMODRIVE Automation Systems for Machine Tools | NC 60 |
| SINAMICS S150 Drive Converter Cabinet Units | D 21.3 | SINUMERIK & SINAMICS Automation Systems for Machine Tools | NC 61 |
| Asynchronous Motors Standardline | D 86.1 | SIMOTION, SINAMICS S120 and Motors for Production Machines | PM 21 |
| Synchronous Motors with Permanent-Magnet Technology, HT-direct | D 86.2 | | |
| DC Motors | DA 12 | Process Instrumentation and Analytics | |
| SIMOREG DC MASTER 6RA70 Digital Chassis Converters | DA 21.1 | Field Instruments for Process Automation | FI 01 |
| SIMOREG K 6RA22 Analog Chassis Converters | DA 21.2 | Measuring Instruments for Pressure, Differential Pressure, Flow, Level and Temperature, Positioners and Liquid Meters | |
| <i>PDF: SIMOREG DC MASTER 6RM70 Digital Converter Cabinet Units</i> | DA 22 | <i>PDF: Indicators for panel mounting</i> | MP 12 |
| SIMOVERT PM Modular Converter Systems | DA 45 | SIREC Recorders and Accessories | MP 20 |
| SIEMOSYN Motors | DA 48 | SIPART, Controllers and Software | MP 31 |
| MICROMASTER 420/430/440 Inverters | DA 51.2 | SIWAREX Weighing Systems | WT 01 |
| MICROMASTER 411/COMBIMASTER 411 | DA 51.3 | Continuous Weighing and Process Protection | WT 02 |
| SIMOVERT MASTERDRIVES Vector Control | DA 65.10 | Process Analytical Instruments | PA 01 |
| SIMOVERT MASTERDRIVES Motion Control | DA 65.11 | <i>PDF: Process Analytics, Components for the System Integration</i> | PA 11 |
| Synchronous and asynchronous servomotors for SIMOVERT MASTERDRIVES | DA 65.3 | | |
| SIMODRIVE 611 universal and POSMO | DA 65.4 | SIMATIC Industrial Automation Systems | |
| <u>Low-Voltage Three-Phase-Motors</u> | | Products for Totally Integrated Automation and Micro Automation | ST 70 |
| IEC Squirrel-Cage Motors | D 81.1 | SIMATIC PCS 7 Process Control System | ST PCS 7 |
| MOTOX Geared Motors | D 87.1 | Add-ons for the SIMATIC PCS 7 Process Control System | ST PCS 7.1 |
| <u>Automation Systems for Machine Tools SIMODRIVE</u> | NC 60 | Migration solutions with the SIMATIC PCS 7 Process Control System | ST PCS 7.2 |
| • Motors | | pc-based Automation | ST PC |
| • Converter Systems SIMODRIVE 611/POSMO | | SIMATIC Control Systems | ST DA |
| <u>Automation Systems for Machine Tools SINAMICS</u> | NC 61 | | |
| • Motors | | SIMATIC NET | |
| • Drive System SINAMICS S120 | | Industrial Communication | IK PI |
| SIMOTION, SINAMICS S120 and Motors for Production Machines | PM 21 | | |
| <u>Drive and Control Components for Hoisting Equipment</u> | HE 1 | SIMATIC Sensors | |
| <u>Mechanical Driving Machines</u> | | Sensors for Factory Automation | FS 10 |
| Flender Standard Couplings | MD 10.1 | | |
| Electrical Installation Technology | | Systems Engineering | |
| <i>PDF: ALPHA Small Distribution Boards and Distribution Boards, Terminal Blocks</i> | ETA 1 | Power supplies SITOP power and LOGO! Power | KT 10.1 |
| <i>PDF: ALPHA 8HP Molded-Plastic Distribution System</i> | ETA 3 | System cabling SIMATIC TOP connect | KT 10.2 |
| <i>PDF: BETA Low-Voltage Circuit Protection</i> | ET B1 | | |
| <i>PDF: DELTA Switches and Socket Outlets</i> | ET D1 | System Solutions | |
| GAMMA Building Controls | ET G1 | Applications and Products for Industry are part of the interactive catalog CA 01 | |
| Human Machine Interface Systems SIMATIC HMI | ST 80 | TELEPERM M Process Control System | |
| | | <i>PDF: AS 488/TM automation systems</i> | PLT 112 |

PDF: These catalogs are only available as pdf files.

Siemens AG
Industry Sector
Drive Technologies
Standard Drives
Postfach 31 80
91050 ERLANGEN
GERMANY

www.siemens.com/motors

Subject to change without prior notice
Order No. E86060-K5581-A111-A3-7600
Dispo 18404
KG 1208 15. E 816 En / 3P.8122.67.02
Printed in Germany
© Siemens AG 2008

The information provided in this catalog contains descriptions or characteristics of performance which in case of actual use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract. Availability and technical specifications are subject to change without notice.

All product designations may be trademarks or product names of Siemens AG or supplier companies whose use by third parties for their own purposes could violate the rights of the owners.

SIEMENS 81.1.2008 Cage Motors