

Standard motors up to frame size 315 L

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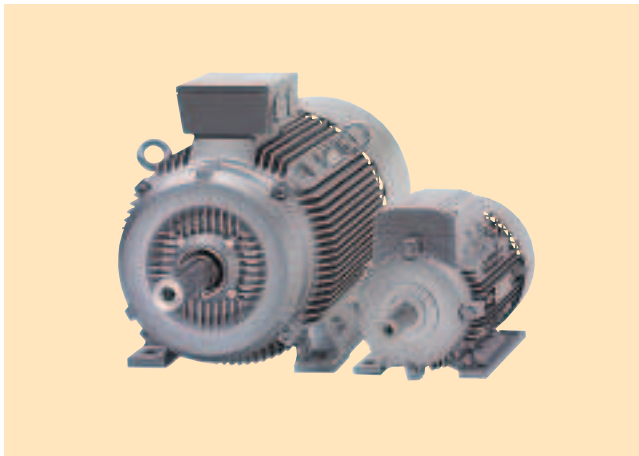
2/2	Orientation	2/46	Self-ventilated motors with increased output, cast-iron series 1LG4
2/2	Overview	2/46	Selection and ordering data
2/4	Benefits	2/48	Self-ventilated energy-saving motors with high efficiency, cast-iron series 1LG6
2/4	Application	2/48	Selection and ordering data
2/5	Integration	2/58	Self-cooled motors without external fan, aluminium series 1LP7 and 1LP5
2/7	Technical specifications	2/58	Selection and ordering data
2/8	Selection and ordering data	2/62	Self-cooled motors without external fan, cast-iron series 1LP4
2/9	More information	2/62	Selection and ordering data
2/10	Self-ventilated energy-saving motors with increased efficiency, aluminium series 1LA7 and 1LA5	2/66	Special versions
2/10	Selection and ordering data	2/66	Overview
2/22	Self-ventilated energy-saving motors with high efficiency, aluminium series 1LA9	2/67	Selection and ordering data
2/22	Selection and ordering data	2/67	• Voltages
2/34	Self-ventilated motors with increased output, aluminium series 1LA9	2/76	• Types of construction
2/34	Selection and ordering data	2/78	• Options
2/38	Self-ventilated energy-saving motors with increased efficiency, cast-iron series 1LA6 and 1LG4	2/116	Accessories and spare parts
2/38	Selection and ordering data	2/116	Overview
		2/117	More information
		2/118	Dimensions
		2/118	Overview
		2/119	More information
		2/120	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 line voltages of up to 500 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>

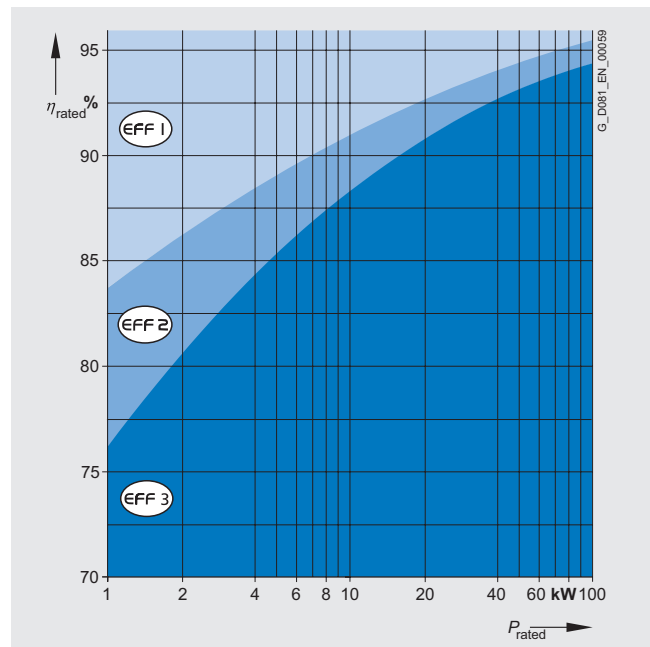
Classified energy-saving motors for an efficient energy balance

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 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_N , $\eta_{3/4}$ load and efficiency class in the documentation

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Orientation

2

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 160 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

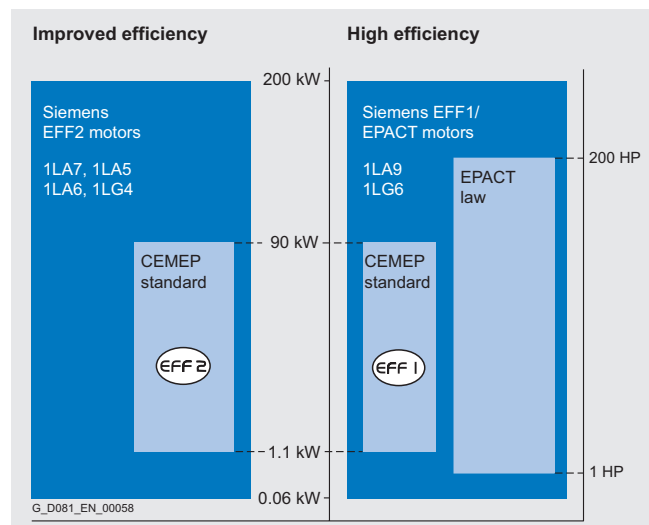
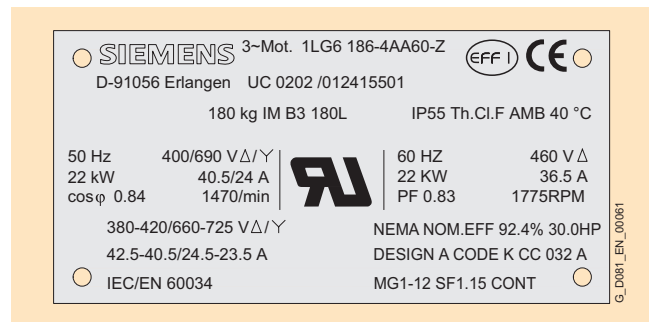
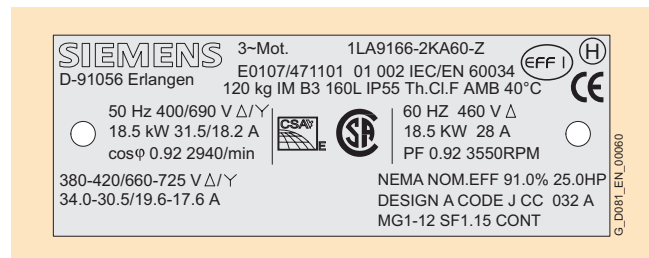
- Status
Minimum efficiencies required by law
- Covers
2-, 4- and 6-pole 60 Hz squirrel-cage motors from 1 to 200 HP (0.75 to 150 kW) for 230 V and/or 460 V 60 Hz
- Required marking
Efficiency η_N on the motor rating plate

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

2

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.

Advantages

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

Field of 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 line 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 Zertifizier GmbH (previously BVS = Bergbau Versuchsstrecke)

4) Physikalisch-Technische Bundesanstalt

5) China Quality Certification

Integration

MICROMASTER 411/ COMBIMASTER 411 distributed drive solutions

The MICROMASTER 411/COMBIMASTER 411 series is included in Catalogue 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.

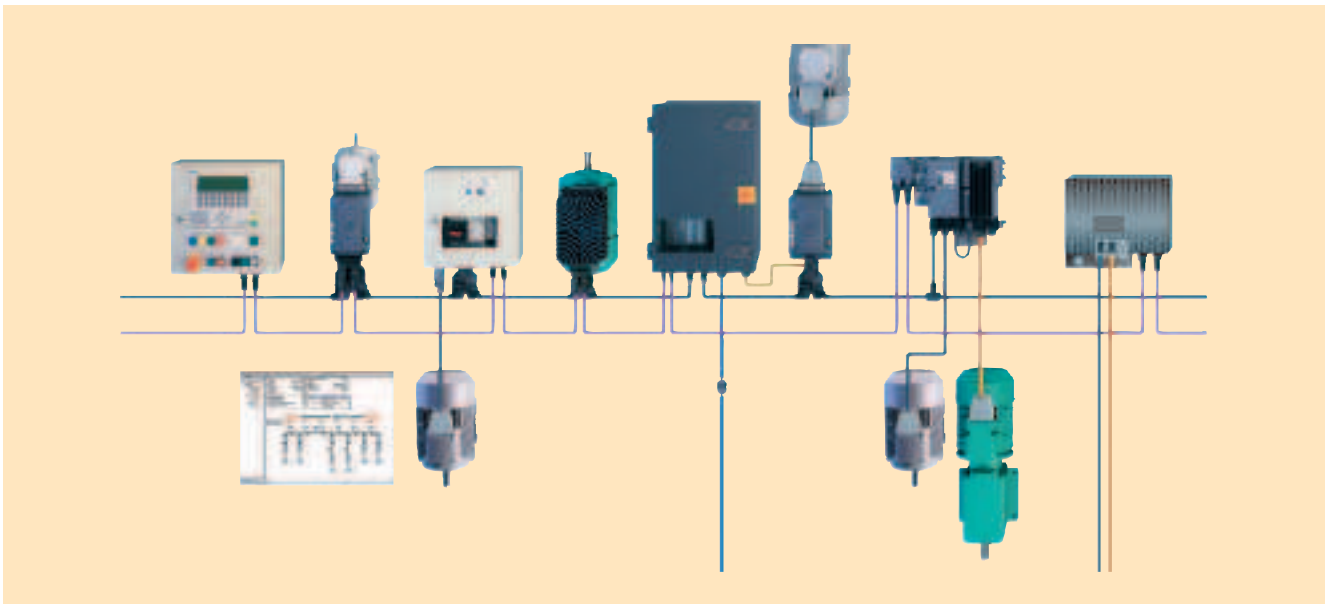
Main features:

- 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

2

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 $4 \times 90^\circ$. 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 Catalogue 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 permissible line 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 V Δ /400 VY, 50 Hz
- Star-delta starting: Voltage code **9** with order code **L1U** 400 V Δ , 50 Hz

Further information

Further information is available in the catalogues 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>

Technical specifications

The following table lists the most important technical specifications. For further information and details, see the "Introduction" section of the catalogue.

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 the section "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 F, used acc. to temperature class 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-cooled (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)
Maximum ambient temperature and site altitude	-20 °C ... +40 °C as standard, site altitude 1000 mm above sea level. See "Ambient temperature and site altitude" in the section "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 the "Introduction" section.
Vibration severity level according to EN 60034-14 (IEC 60034-14)	Level N (normal) See "Balance and vibration severity" in the "Introduction" section.
Shaft extension according to DIN 748 (IEC 60072)	Balance type: Half-key balancing See "Balance and vibration severity" in the "Introduction" section.
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 the "Introduction" section.
Rating plates	Fixed to the motor See "Rating plate" in the "Introduction" section.
Connection and connection boxes	See "Connection, circuit and connection boxes" in the "Introduction" section.
Bearing design	See "Bearings" in the "Introduction" section.
Cantilever forces	See "Maximum cantilever forces" in the "Introduction" section.
Options	See the selection and ordering data for "Special versions"

General note

All the data listed in the catalogue 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 utilisation at low speeds it is recommended that forced-air cooled 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.

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 increased 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	
Aluminium 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	
Aluminium series 1LA9 (motors with external fan)						
For implementation 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 implementation 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 implementation 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 implementation 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	
Aluminium 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

2

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	
Aluminium 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.

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with increased efficiency – Aluminium series 1LA7/1LA5

2

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 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)
2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 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	60	72
1LA7 096-2AA□□	2.8	6.3	3.1	16	0.0018	60	72
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

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with increased efficiency – Aluminium series 1LA7/1LA5

2

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	
	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)
4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 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	48	60
1LA7 096-4AA□□	2.4	5.3	2.6	16	0.0033	48	60
1LA7 106-4AA□□	2.5	5.6	2.8	16	0.0047	53	65
1LA7 107-4AA□□	2.7	5.6	3	16	0.0055	53	65
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

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with increased efficiency – Aluminium series 1LA7/1LA5

2

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	
	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, 1200 rpm at 60 Hz, temperature class 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

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with increased efficiency – Aluminium series 1LA7/1LA5

Selection and ordering data (continued)

Order No.	Locked-rotor torque	Locked-rotor current	Breakdown torque	Torque class	Moment of inertia	Noise	
	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 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

IEC Squirrel-Cage Motors

Standard motors up to frame size 315 L

Self-ventilated energy-saving motors with increased efficiency – Aluminium series 1LA7/1LA5

2

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		Efficiency 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	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
4/2-pole, 1500/3000 rpm at 50 Hz, temperature class 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 060-0AA□□		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 063-0AA□□		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 070-0AA□□		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 073-0AA□□		7
0.48	0.6	80 M	1390	2810	3.3	2	66	64	0.82	0.84	1.25	1.6	1LA7 080-0AA□□		9
0.7	0.85	80 M	1390	2810	4.8	2.9	69	70	0.84	0.83	1.75	2.1	1LA7 083-0AA□□		10
1.1	1.4	90 S	1390	2810	7.6	4.8	69	66	0.85	0.85	2.7	3.6	1LA7 090-0AA□□		13
1.5	1.9	90 L	1410	2860	10	6.4	74	72	0.86	0.85	3.4	4.5	1LA7 096-0AA□□		15.6
2	2.4	100 L	1410	2870	14	8	81	75	0.84	0.84	4.25	5.5	1LA7 106-0AA□□		21
2.6	3.1	100 L	1400	2850	18	10	79	74	0.86	0.8	5.5	7.6	1LA7 107-0AA□□		24
3.7	4.4	112 M	1420	2885	25	15	79	76	0.85	0.8	8	10.5	1LA7 113-0AA□□		31
4.7	5.9	132 S	1450	2920	31	19	83	80	0.84	0.85	9.7	12.5	1LA7 130-0AA□□		41
6.5	8	132 M	1450	2930	43	26	82	82.5	0.84	0.84	13.6	16.7	1LA7 133-0AA□□		50
9.3	11.5	160 M	1455	2930	61	37	86.5	80	0.85	0.89	18.3	23.4	1LA7 163-0AA□□		74
13	17	160 L	1455	2930	85	55	87.5	87	0.84	0.88	25.6	32	1LA7 166-0AA□□		92
15	18	180 M	1470	2950	97	58	90	86.5	0.83	0.8	29	37.5	1LA5 183-0AA□□		113
18	21.5	180 L	1465	2950	117	70	90	87	0.84	0.85	34.5	42	1LA5 186-0AA□□		123
26	31	200 L	1465	2940	169	101	90.9	86.5	0.86	0.85	48.5	61	1LA5 207-0AA□□		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 □□	○	○	○	○	□	✓	✓	✓	✓	✓	✓	
1LA7 07 □□	○	○	○	○	□	✓	✓	✓	✓	✓	✓	
1LA7 08 □□	○	○	○	○	□	✓	✓	✓	✓	✓	✓	
1LA7 09 □□	○	○	○	○	□	✓	✓	✓	✓	✓	✓	
1LA7 10 □□	○	○	○	○	□	✓	✓	✓	✓	✓	✓	
1LA7 11 □□	○	○	○	○	□	✓	✓	✓	✓	✓	✓	
1LA7 13 □□	○	○	○	○	□	✓	✓	✓	✓	✓	✓	
1LA7 16 □□	○	○	○	○	□	✓	✓	✓	✓	✓	✓	
1LA5 18 □□	○	○	○	○	□	✓ ³⁾	✓	✓	–	–	–	
1LA5 20 □□	○	○	○	○	□	✓ ³⁾	✓	✓	–	–	–	

- Standard version
- With no extra charge
- ✓ With extra 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 increased efficiency – Aluminium series 1LA7/1LA5

Selection and ordering data (continued)

Order No.	Locked-rotor torque with direct starting 1500 rpm T_{LR}/T_{rated}	Locked-rotor current as multiple of rated current 1500 rpm I_{LR}/I_{rated}	Breakdown torque 1500 rpm T_B/T_{rated}	Locked-rotor torque 3000 rpm T_{LR}/T_{rated}	Locked-rotor current 3000 rpm I_{LR}/I_{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 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 the chapter “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 increased efficiency – Aluminium series 1LA7/1LA5

2

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		Efficiency 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				m kg
8/4-pole, 750/1500 rpm at 50 Hz, temperature class 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 090-0AB□□		11
0.5	0.7	90 L	675	1380	7.1	4.9	63	62	0.72	0.78	1.6	2.1	1LA7 096-0AB□□		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 106-0AB□□		20
0.9	1.5	100 L	690	1380	13	10	69	67	0.70	0.8	2.7	4.0	1LA7 107-0AB□□		22
1.4	1.9	112 M	690	1410	19	13	69	70	0.73	0.75	4	5.2	1LA7 113-0AB□□		25
1.8	3.6	132 S	720	1430	24	24	72	80	0.57	0.9	6.3	7.2	1LA7 130-0AB□□		41
2.5	5	132 M	720	1430	33	33	73	80	0.6	0.9	8.2	10	1LA7 133-0AB□□		49
3.5	7	160 M	725	1450	46	46	77	81.5	0.56	0.89	11.7	13.9	1LA7 163-0AB□□		73
5.6	11	160 L	725	1450	74	72	78	83	0.56	0.89	18.5	21.5	1LA7 166-0AB□□		91
11	18	180 L	725	1455	144	118	83.5	83.5	0.69	0.87	27.5	35	1LA5 186-0AB□□		123
17	27	200 L	730	1465	223	177	89	89.5	0.68	0.86	40.5	50.5	1LA5 207-0AB□□		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 □□	○	○	○	○	□	✓	✓	✓	✓	✓	✓
1LA7 07 □□	○	○	○	○	□	✓	✓	✓	✓	✓	✓
1LA7 08 □□	○	○	○	○	□	✓	✓	✓	✓	✓	✓
1LA7 09 □□	○	○	○	○	□	✓	✓	✓	✓	✓	✓
1LA7 10 □□	○	○	○	○	□	✓	✓	✓	✓	✓	✓
1LA7 11 □□	○	○	○	○	□	✓	✓	✓	✓	✓	✓
1LA7 13 □□	○	○	○	○	□	✓	✓	✓	✓	✓	✓
1LA7 16 □□	○	○	○	○	□	✓	✓	✓	✓	✓	✓
1LA5 18 □□	○	○	○	○	□	✓ ³⁾	✓	✓	–	–	–
1LA5 20 □□	○	○	○	○	□	✓ ³⁾	✓	✓	–	–	–

- Standard version
- With no extra charge
- ✓ With extra 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 increased efficiency – Aluminium series 1LA7/1LA5

2

Selection and ordering data (continued)

Order No.	Locked-rotor torque with direct starting at 750 rpm T_{LR}/T_{rated}	Locked-rotor current as multiple of rated current at 750 rpm I_{LR}/I_{rated}	Breakdown torque at 750 rpm T_B/T_{rated}	Locked-rotor torque at 1500 rpm T_{LR}/T_{rated}	Locked-rotor current at 1500 rpm I_{LR}/I_{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 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 the chapter “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 – Aluminium series 1LA9

2

Selection and ordering data

Rated output at 50 Hz	Frame size	Operating values at rated output							Order No.	Price	Weight
P_{rated} kW	FS	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	For order No. supplements for voltage and type of construction, see table below		IM B3 type of construction approx. m kg
		n_{rated} rpm	T_{rated} Nm		η_{rated} %	η_{rated} %	$\text{COS}\phi_{\text{rated}}$	I_{rated} A			
2-pole, 3000 rpm at 50 Hz, temperature class F, IP55 degree of protection, for implementation according to CEMEP											
0.09	56 M	2830	0.3		70	70	0.76	0.24	1LA9 050-2KA□□		3
0.12	56 M	2830	0.4		69	69	0.81	0.31	1LA9 053-2KA□□		3.8
0.18	63 M	2839	0.61		70	70	0.78	0.48	1LA9 060-2KA□□		4.1
0.25	63 M	2840	0.84		72	72	0.8	0.63	1LA9 063-2KA□□		5.1
0.37	71 M	2839	1.2		74	74	0.77	0.94	1LA9 070-2KA□□		6
0.55	71 M	2835	1.9		75	75	0.75	1.42	1LA9 073-2KA□□		7.2
0.75	80 M	2869	2.5		80	80	0.82	1.66	1LA9 080-2KA□□		9.8
1.1	80 M	2860	3.7	EFF1	84	84	0.89	2.1	1LA9 083-2KA□□		12.3
1.5	90 S	2890	5	EFF1	85	85	0.87	2.95	1LA9 090-2KA□□		15
2.2	90 L	2890	7.3	EFF1	86.5	86.5	0.87	4.2	1LA9 096-2KA□□		18.6
3	100 L	2890	9.9	EFF1	87	87	0.88	5.7	1LA9 106-2KA□□		24
4	112 M	2905	13	EFF1	88.5	88.5	0.89	7.3	1LA9 113-2KA□□		35
5.5	132 S	2929	18	EFF1	89.5	89.5	0.9	9.9	1LA9 130-2KA□□		43
7.5	132 S	2929	24	EFF1	90.5	90.5	0.92	13	1LA9 131-2KA□□		56
11	160 M	2944	36	EFF1	91	91	0.9	19.4	1LA9 163-2KA□□		73
15	160 M	2944	49	EFF1	91.5	91.5	0.9	26.5	1LA9 164-2KA□□		82
18.5	160 L	2940	60	EFF1	92.3	92.5	0.92	31.5	1LA9 166-2KA□□		102
22	180 M	2944	71	EFF1	93	93.2	0.89	38.5 ¹⁾	1LA9 183-2WA□□		131
30	200 L	2950	97	EFF1	93.5	93.5	0.89	52	1LA9 206-2WA□□		185
37	200 L	2950	120	EFF1	94	94.1	0.89	64 ¹⁾	1LA9 207-2WA□□		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
- With no extra charge
- ✓ With extra 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 the "Introduction" section, "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 – Aluminium series 1LA9

2

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	
	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, temperature class F, IP55 degree of protection, for implementation 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 – Aluminium series 1LA9

2

Selection and ordering data (continued)

Rated output at 50 Hz	Frame size	Operating values at rated output				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	Order No.	Price	Weight
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		IM B3 type of construction approx. m kg	
4-pole, 1500 rpm at 50 Hz, temperature class F, IP55 degree of protection, for implementation according to CEMEP												
0.06	56 M	1380	0.42		61	61	0.66	0.22	1LA9 050-4KA□□		3	
0.09	56 M	1390	0.62		62	62	0.68	0.31	1LA9 053-4KA□□		3.8	
0.12	63 M	1395	0.82		66	66	0.65	0.41	1LA9 060-4KA□□		4.1	
0.18	63 M	1395	1.3		65	65	0.68	0.59	1LA9 063-4KA□□		5.1	
0.25	71 M	1410	1.7		70	70	0.64	0.81	1LA9 070-4KA□□		6	
0.37	71 M	1384	2.6		71	71	0.73	1.04	1LA9 073-4KA□□		7.2	
0.55	80 M	1410	3.7		77	77	0.78	1.32	1LA9 080-4KA□□		9.8	
0.75	80 M	1399	5.1		81	81	0.75	1.78	1LA9 083-4KA□□		12.3	
1.1	90 S	1440	7.3	EFF1	84	84	0.77	2.45	1LA9 090-4KA□□		15	
1.5	90 L	1440	9.9	EFF1	85	85	0.77	3.3	1LA9 096-4KA□□		18	
2.2	100 L	1435	15	EFF1	86.5	86.5	0.82	4.5	1LA9 106-4KA□□		25	
3	100 L	1435	20	EFF1	87.5	87.7	0.81	6.1	1LA9 107-4KA□□		30	
4	112 M	1440	27	EFF1	88.5	89	0.81	8.1	1LA9 113-4KA□□		37	
5.5	132 S	1455	36	EFF1	89.5	89.5	0.84	10.6	1LA9 130-4KA□□		45	
7.5	132 M	1455	49	EFF1	90.3	90.5	0.84	14.2	1LA9 133-4KA□□		60	
11	160 M	1459	72	EFF1	91.5	92	0.85	20.5	1LA9 163-4KA□□		81	
15	160 L	1459	98	EFF1	92	92.3	0.86	27.5	1LA9 166-4KA□□		107	
18.5	180 M	1465	121	EFF1	92.5	93	0.84	34.5 ¹⁾	1LA9 183-4WA□□		126	
22	180 L	1465	143	EFF1	93	93.4	0.84	40.5 ¹⁾	1LA9 186-4WA□□		146	
30	200 L	1465	196	EFF1	93.5	94	0.87	53	1LA9 207-4WA□□		199	

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
- With no extra charge
- ✓ With extra 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 the "Introduction" section, "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 – Aluminium series 1LA9

2

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	
	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)
4-pole, 1500 rpm at 50 Hz, temperature class F, IP55 degree of protection, for implementation 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 – Aluminium series 1LA9

Selection and ordering data (continued)

Order No.	Locked-rotor torque	Locked-rotor current	Breakdown torque	Torque class	Moment of inertia	Noise	
	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)
6-pole, 1000 rpm at 50 Hz, temperature class F, IP55 degree of protection, for implementation 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	0.0072	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 – Aluminium series 1LA9

2

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	
	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 F, IP55 degree of protection, for implementation 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 – Aluminium 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 CL	Moment of inertia J kgm ²	Noise Measuring-surface sound pressure level at 60 Hz L _{pfA} dB(A)	Sound pressure level at 60 Hz L _{WA} dB(A)
	T_{LR}/T_{rated}	I_{LR}/I_{rated}	T_B/T_{rated}				
4-pole, 1800 rpm at 60 Hz, temperature class F, IP55 degree of protection, for implementation 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 – Aluminium series 1LA9

Selection and ordering data (continued)

Rated output at 60 Hz	Frame size	Operating values at rated output			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	Order No.	Price	Weight
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		IM B3 type of construction approx. m kg
6-pole, 1200 rpm at 60 Hz, temperature class F, IP55 degree of protection, for implementation 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	1160	12	No	86.5	0.68	3.2	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 VY (see "Introduction" for outputs at 60 Hz)	460 VΔ	Without flange IM B3/6/7/8, IM V6, IM V5 without protective cover	With flange IM B5, IM V1 without protective cover IM V3	IM V1 with protective cover ¹⁾	IM B35	With standard flange IM B14, IM V19, IM V18 without protective cover	IM B34	With special flange 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
- With no extra charge
- ✓ With extra 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 – Aluminium series 1LA9

Selection and ordering data (continued)

Order No.	Locked-rotor torque	Locked-rotor current	Breakdown torque	Torque class	Moment of inertia	Noise	
	with direct starting torque	as multiple of rated current	torque	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)
	T_{LR}/T_{rated}	I_{LR}/I_{rated}	T_B/T_{rated}				
6-pole, 1200 rpm at 60 Hz, temperature class F, IP55 degree of protection, for implementation 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	0.0072	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 –
Aluminium series 1LA9

2

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	
	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 F, IP55 degree of protection, with increased output, used as temperature class 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 –
Aluminium series 1LA9

2

Selection and ordering data (continued)

Order No.	Locked-rotor torque	Locked-rotor current	Breakdown torque	Torque class	Moment of inertia	Noise	
	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 F, IP55 degree of protection, with increased output, used as temperature class 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 increased efficiency – Cast-iron series 1LA6/1LG4

2

Selection and ordering data (continued)

Order No.	Locked-rotor torque	Locked-rotor current	Breakdown torque	Torque class	Moment of inertia	Noise	
	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)
2-pole, 3000 rpm at 50 Hz, 3600 rpm at 60 Hz, temperature class 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	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

- For connection to 230 V, parallel supply cables are necessary (see the "Introduction" section, "Connection, circuit and connection boxes").
- For connection to 400 V, parallel supply cables are necessary (see the "Introduction" section, "Connection, circuit and connection boxes").
- If motors 1LG4 183-... bis 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.
- 1LG4 220-... bis 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.

- 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 and IM V5 without protective cover is only possible using type of construction code **9** and order code **M1E** or **M1D**.
- 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 increased efficiency – Cast-iron series 1LA6/1LG4

2

Selection and ordering data (continued)

Order No.	Locked-rotor torque	Locked-rotor current	Breakdown torque	Torque class	Moment of inertia	Noise	
	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)
4-pole, 1500 rpm at 50 Hz, 1800 rpm at 60 Hz, temperature class 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□□	2.5	6.7	3.1	16	0.37	66	79
1LG4 223-4AA□□	2.7	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

- 1) For connection to 230 V, parallel supply cables are necessary (see the "Introduction" section, "Connection, circuit and connection boxes").
- 2) For connection to 400 V, parallel supply cables are necessary (see the "Introduction" section, "Connection, circuit and connection boxes").
- 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 increased efficiency – Cast-iron series 1LA6/1LG4

2

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 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 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	56	69
1LG4 206-6AA□□	2.5	5.6	2.5	16	0.24	56	70
1LG4 207-6AA□□	2.6	5.7	2.5	16	0.29	57	70
1LG4 223-6AA□□	2.7	5.6	2.5	16	0.49	60	73
1LG4 253-6AA□□	2.7	6	2.3	16	0.76	59	73
1LG4 280-6AA□□	2.4	6.1	2.4	16	1.1	61	74
1LG4 283-6AA□□	2.5	6.3	2.5	16	1.4	61	74
1LG4 310-6AA□□	2.5	6.5	2.8	16	2.1	65	78
1LG4 313-6AA□□	2.6	6.8	2.9	16	2.5	65	78
1LG4 316-6AA□□	2.5	6.8	2.9	16	3.2	62	77
1LG4 317-6AA□□	3.1	7.3	3	16	4	62	76
1LG4 318-6AA□□	3	7.5	3	16	4.7	65	78

- 1) For connection to 230 V, parallel supply cables are necessary (see the "Introduction" section, "Connection, circuit and connection boxes").
- 2) For connection to 400 V, parallel supply cables are necessary (see the "Introduction" section, "Connection, circuit and connection boxes").
- 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 increased efficiency – Cast-iron series 1LA6/1LG4

2

Selection and ordering data (continued)

Order No.	Locked-rotor torque	Locked-rotor current	Breakdown torque	Torque class	Moment of inertia	Noise	Sound pressure level at 50 Hz
	with direct starting torque	as multiple of rated current	torque			Measuring-surface 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)
8-pole, 750 rpm at 50 Hz, 900 rpm at 60 Hz, temperature class 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	80
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	50	64
1LG4 253-8AB□□	2.3	5.5	2.6	13	0.84	55	68
1LG4 280-8AB□□	2.2	5	2.1	13	1.1	55	69
1LG4 283-8AB□□	2.2	5.1	2.1	13	1.4	58	71
1LG4 310-8AB□□	2.2	5.8	2.6	13	2.1	59	73
1LG4 313-8AB□□	2.2	5.7	2.6	13	2.5	57	71
1LG4 316-8AB□□	2.2	5.8	2.7	13	3.1	59	73
1LG4 317-8AB□□	2.4	6.1	2.8	13	3.9	59	73
1LG4 318-8AB□□	2.5	6.5	2.9	13	4.5	60	74

- 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**.