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Explosion-proof motors

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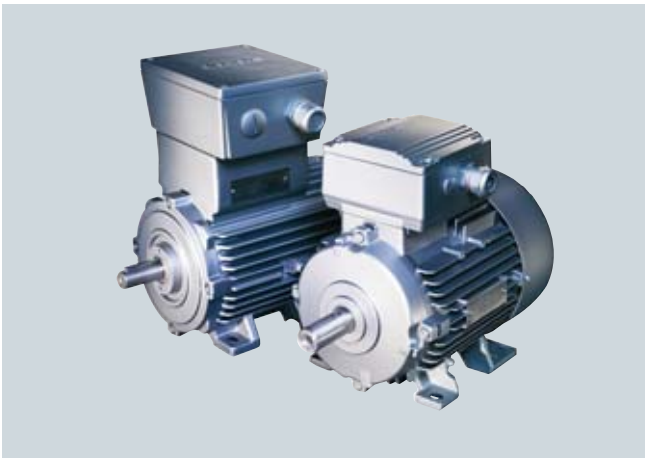
Orientation

Overview



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.

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.

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)
									Converter	A15 A16	155 (F)
				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 1LA7 1LA8, 1PQ8 [2] 1LA9 1LG4/6	Mains	M72	130 (B)
									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 1LA6 1LA7 1LA8 [3], 1PQ8 [2] 1LA9 1LG4/6	Mains	M34	130 (B)
									Converter	M38	
	3D	22	Rarely or briefly	Non-conductive dust		IP55			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).

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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:

⟨Ex⟩ 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:

⟨Ex⟩ II 2G Ex de IIC T1 – T4
or
⟨Ex⟩ II 2G Ex d IIC T1 – T4

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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:

⟨Ex⟩ 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 50281 [1]
  - Design for Zone 21 [2], as well as Zone 22 for conducting dust (IP65) for mains-fed operation (order code **M34**)
  - Design for Zone 21 [2], 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: ⟨Ex⟩ II 2D Ex tD A21 IP65 T125 °C

Zone 22: ⟨Ex⟩ 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).

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Technical specifications (continued)

Coolant temperature and site altitude

Coolant temperature –40 °C to +40 °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 seperately 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 1LG4/6… + M73	100 L ... 160 L 180 M ... 315 L	**H86:** Mounting of explosion-proof rotary pulse encoder – LL841 900 006 – for use in Zones 2, 21, 22.
Dust-Ex (Zone 21)	1LA6/7…+ M38 1LA5… + M38 1LA9… + M38 1LG4/6… + M38	100 L ... 160 L 180 M ... 225 M 100 L ... 200 L 180 M ... 315 L	
Dust-Ex (Zone 22)	1LA6/7… + M39 1LA5… + M39 1LA9… + M39 1LG4/6… + M39	100 L ... 160 L 180 M ... 225 M 100 L ... 200 L 180 M ... 315 L	
Ex nA or dust-Ex (Zone 22)	1LA6/7/9… + M75 1LG4/6… + M75	100 L ... 160 L 180 M ... 315 L	
Ex de	1MJ6… + A15/A16 1MJ7… + A15/A16	90 L ... 200 L 225 M ... 315 M	**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)

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 1LA6/7 + M39 1LA5 + M39 1LA9 + M39	180 M ... 315 L 100 L ... 160 L 180 M ... 225 M 100 L ... 200 L	**M97:** "Mounting of explosion-proof separately driven fan II 3D for use in Zone 22".
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.

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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 ΔI. For an explanationfo 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 virbration.

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 °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-cirucit 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° ±25° el.
Output amplitude	$U_{High} > U_B - 4$ V $U_{Low} < 2.5$ V
Mark space ratio	1:1 ±10 %
Edge steepness	50 V/µs (without load)
Maximum frequency	100 kHz for 350 m cable
Maximum speed	4200 rpm
Temperature range	–40 to +70 °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 °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-cirucit proof square-wave pulses A, B and A’, B’ and R, R’
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	–20 to +55 °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

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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

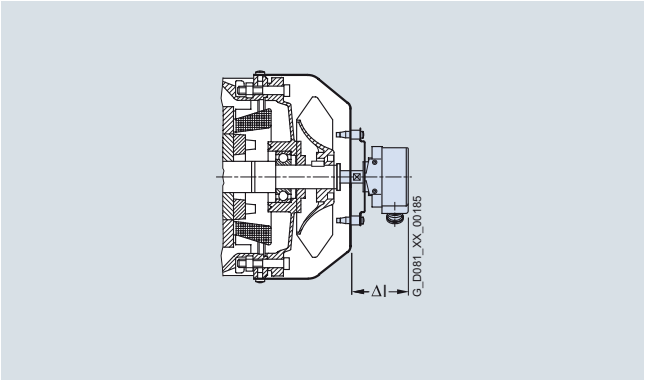
http://www.baumerhuebner.com
e-Mail: info@baumerhuebner.com

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-cirucit 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**

	Ex d/de (Zone 1)	Ex nA (Zone 2) and dust-Ex (Zone 21/22)				
	1MJ6/7	1LA5/6/7/9		1LG4/6		
Frame size	ΔI	Weight approx.	ΔI	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

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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 ΔI. For an explanation of the additional dimensions and weights, see "Technology", "Dimemsions 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.

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Technical specifications (continued)

Technical data of separately driven fan for Ex motors 1LG4/6 (frame sizes 225 to 315) n design for Zones 2 [1], 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.

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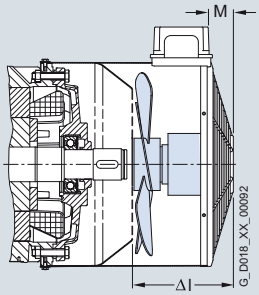
Technical specifications (continued)

Dimensions and weights of the Ex separeately driven fans

Ex rotary pulse encoder (on cover) order codes **H86**, **H87**

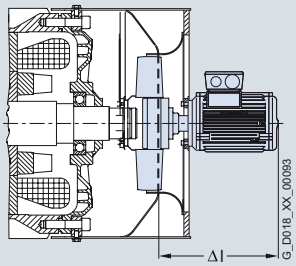
1LA frame sizes 100 ... 225, 1LG frame sizes 180 and 200

Ex separately driven fan
Order code **M97**



1LG from frame size 225 1MJ7 from frame size 225

Separately driven fan
Order codes **M95, M96, M98**



	Zone 22				Zones 2, 21		Zone 1 (Ex d/de)	
	1LA5/6/7/9		1LG4/6		1LG4/6		1MJ6/7	
Frame size	ΔI	Weight approx.	ΔI	Weight approx.	ΔI	Weight approx.	ΔI	Weight approx.
	mm	kg	mm	kg	mm	kg	mm	kg
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

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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**

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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 1LA5 [1] 50 Hz						
3000, 2-pole	**56 M [2] ... 225 M**	0.09 ... 45	2830 ... 2959	0.3 ... 145	0.26 ... 78	**4/42 ... 4/43**
1500, 4-pole	**56 M [2] ... 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 operation [3]						
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 V [3]						
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 1LA8 [3] with normal and special insulation or 1PQ8 [3] 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.

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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.

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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 Ωm 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

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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 (ElexV)
- 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 Type 07-5103-.../...	Manufacturer and type designation
Ex II 2D IP65 T 125 °C	Acc. to EN 50281-.-. Protection afforded by housing, IP65 protection class Max. surface temperature +125 °C

PTB	00	ATEX	1081	Meaning
				Serial No. of test authority
				ATEX generation
				Certified 2000
				Symbol of test authority

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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

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More information (continued)

Types of protection for dusts					Use in Zone		
Type of protection	Coding	Basic principle	Standard	Examples	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.

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Explosion-proof motors

Self-ventilated, in Zone 1 with type of protection "e" Aluminum series 1MA7

Selection and ordering data

Rated output at 50 Hz	Rated output at 60 Hz	Tempera-ture class	Frame size	Operating values at rated output: 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	Order No. For Order No. supplements for voltage and type of construction, see table below	Price	Weight IM B3 type of construc-tion approx.
P_{rated} kW	P_{rated} kW		FS	n_{rated} rpm	T_{rated} Nm	η_{rated} %	$\cos\varphi_{rated}$	I_{rated} A			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 060-2BA□□**		3.9
0.25	0.25	T1,T2,T3	63 M	2800	0.85	68	0.81	0.7	**1MA7 063-2BA□□**		4.5
0.37	0.37	T1,T2,T3	71 M	2825	1.3	73	0.8	0.93	**1MA7 070-2BA□□**		5.4
0.55	0.55	T1,T2,T3	71 M	2785	1.9	72	0.80	1.4	**1MA7 073-2BA□□**		7
0.75	0.75	T1,T2,T3	80 M	2845	2.5	73	0.85	1.81	**1MA7 080-2BA□□**		8.6
1.1	1.1	T1,T2,T3	80 M	2855	3.7	79	0.85	2.5	**1MA7 083-2BA□□**		10.3
1.3	1.3	T1,T2,T3	90 S	2850	4.4	78	0.88	2.9	**1MA7 090-2BA□□**		13.3
1.85	1.85	T1,T2,T3	90 L	2860	6.2	81	0.88	3.95	**1MA7 096-2BA□□**		16.1
2.5	2.5	T1,T2,T3	100 L	2865	8.3	82	0.87	5.3	**1MA7 106-2BA□□**		21
3.3	3.3	T1,T2,T3	112 M	2875	11	84	0.89	6.7	**1MA7 113-2BB□□**		27
4.6	4.6	T1,T2,T3	132 S	2920	15	83	0.9	9.2	**1MA7 130-2BB□□**		38
5.5	5.5	T3	132 S	2925	18	86	0.92	10.6	**1MA7 131-2BB□□** [1]		44
7.5	7.5	T3	160 M	2945	24	87.5	0.9	14.3	**1MA7 163-2BB□□** [1]		67
10	10	T3	160 M	2940	33	88.5	0.92	18.6	**1MA7 164-2BB□□** [1]		72
12.5	12.5	T3	160 L	2940	41	89	0.93	23	**1MA7 166-2BB□□** [1]		82

Rated output at 50 Hz	Rated output at 60 Hz	Tempera-ture class	Frame size	Operating values at rated output: 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	Order No. For Order No. supplements for voltage and type of construction, see table below	Price	Weight IM B3 type of construc-tion approx.
P_{rated} kW	P_{rated} kW		FS	n_{rated} rpm	T_{rated} Nm	η_{rated} %	$\cos\varphi_{rated}$	I_{rated} A			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 131-2BB□□** [1]		44
9.5	9.5	T1,T2	160 M	2920	31	87	0.91	18.1	**1MA7 163-2BB□□** [1]		67
13	13	T1,T2	160 M	2910	43	87.5	0.92	24.5	**1MA7 164-2BB□□** [1] [2]		72
16	16	T1,T2	160 L	2910	53	87	0.93	30	**1MA7 166-2BB□□** [1] [2]		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 [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]
	For delta connection, overload protection with phase-failure protection must be provided.										
	1	**6**	**3**	**5**	**0**	**1**	**4**	**6**	**2**	**7**	**3**
1MA7 06 . - . . . □□	○	–	○	–	□	✓	✓	✓	✓	✓	✓
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 4/19.

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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_E time	
						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 kgm²	L_{pfA} 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									
1MA7 060-2BA❑❑	2.3	4.4	2.3	16	0.00018	49	60	30	27
1MA7 063-2BA❑❑	2.2	4.4	2.3	16	0.00023	49	60	19	16
1MA7 070-2BA❑❑	2.3	5.6	2.1	16	0.00035	52	63	28	25
1MA7 073-2BA❑❑	3	5.2	2.6	16	0.00045	52	63	18	13
1MA7 080-2BA❑❑	2.5	6.2	2.7	16	0.00085	56	67	13	11
1MA7 083-2BA❑❑	2.8	6.4	3	16	0.0011	56	67	12	10
1MA7 090-2BA❑❑	2.6	6.2	2.8	16	0.0015	60	72	12	11
1MA7 096-2BA❑❑	2.8	7.2	2.8	16	0.002	60	72	9	8
1MA7 106-2BA❑❑	2.6	7.4	2.8	16	0.0038	62	74	9	8
1MA7 113-2BB❑❑	2.1	6.6	2.3	13	0.0055	63	75	10	9
1MA7 130-2BB❑❑	1.9	6.8	2.5	13	0.016	68	80	15	13
1MA7 131-2BB❑❑	2.2	7.7	2.7	13	0.021	68	80	15	13
1MA7 163-2BB❑❑	2.2	7.6	3.1	13	0.034	70	82	29	18
1MA7 164-2BB❑❑	2.1	7.6	2.9	13	0.04	70	82	23	12
1MA7 166-2BB❑❑	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 class	Moment of inertia	Noise at rated output		t_E time for temperature class T1/T2	t_E time for temperature class T3
						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 kgm²	L_{pfA} 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 and T2, with double rating plate (T1/T2 and T3)									
1MA7 131-2BB❑❑	1.9	6.5	2.3	13	0.021	68	80	12	7
1MA7 163-2BB❑❑	1.7	6	2.4	13	0.034	70	82	24	–
1MA7 164-2BB❑❑	1.6	5.8	2.2	13	0.04	70	82	16	–
1MA7 166-2BB❑❑	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.

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Selection and ordering data (continued)

Rated output at 50 Hz P_{rated} kW	Rated output at 60 Hz P_{rated} kW	Tempera-ture class	Frame size FS	Operating values at rated output: Rated speed at 50 Hz n_{rated} rpm	Rated torque at 50 Hz T_{rated} Nm	Efficiency at 50 Hz η_{rated} %	Power factor at 50 Hz $\cos\varphi_{rated}$	Rated current at 380 ...420 V, 50 Hz I_{rated} A	Order No. For Order No. supplements for voltage and type of construction, see table below	Price	Weight IM B3 type of construc-tion 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 060-4BB❑❑**		3.9
0.18	0.18	T1,T2,T3	63 M	1330	1.3	57	0.75	0.62	**1MA7 063-4BB❑❑**		4.5
0.25	0.25	T1,T2,T3	71 M	1310	1.8	60	0.77	0.8	**1MA7 070-4BB❑❑**		6
0.37	0.37	T3	71 M	1355	2.6	67	0.74	1.1	**1MA7 073-4BB❑❑**		6.4
0.55	0.55	T1,T2,T3	80 M	1390	3.8	73	0.73	1.59	**1MA7 080-4BA❑❑**		8.4
0.75	0.75	T1,T2,T3	80 M	1395	5.1	73	0.75	2.05	**1MA7 083-4BA❑❑**		11
1	1	T1,T2,T3	90 S	1420	6.7	77	0.78	2.5	**1MA7 090-4BA❑❑**		12.7
1.35	1.35	T1,T2,T3	90 L	1415	9.1	78	0.82	3.1	**1MA7 096-4BA❑❑**		16
2	2	T1,T2,T3	100 L	1420	14	80	0.82	4.5	**1MA7 106-4BA❑❑**		20
2.5	2.5	T1,T2,T3	100 L	1415	17	81	0.83	5.5	**1MA7 107-4BA❑❑**		23
3.6	3.6	T1,T2,T3	112 M	1435	24	85	0.83	7.5	**1MA7 113-4BA❑❑**		29
5	5	T1,T2,T3	132 S	1445	33	86	0.82	10.4	**1MA7 130-4BA❑❑**		42
6.8	6.8	T1,T2,T3	132 M	1465	44	87	0.82	14	**1MA7 133-4BA❑❑**		61
10	10	T1,T2,T3	160 M	1455	66	88	0.87	19.7	**1MA7 163-4BB❑❑**		67
13.5	13.5	T1,T2,T3	160 L	1465	88	89	0.84	27	**1MA7 166-4BB❑❑**		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 073-6BA❑❑**		6.7
0.37	0.37	T1,T2,T3	80 M	920	3.6	68	0.7	1.14	**1MA7 080-6BA❑❑**		8.3
0.55	0.55	T1,T2,T3	80 M	930	5.6	69	0.67	1.75	**1MA7 083-6BA❑❑**		12.5
0.65	0.65	T1,T2,T3	90 S	915	6.8	70	0.75	1.8	**1MA7 090-6BA❑❑**		14
0.95	0.95	T1,T2,T3	90 L	915	9.9	72	0.75	2.6	**1MA7 096-6BA❑❑**		15.7
1.3	1.3	T1,T2,T3	100 L	935	13	77	0.73	3.35	**1MA7 106-6BA❑❑**		20
1.9	1.9	T1,T2,T3	112 M	940	19	79	0.76	4.7	**1MA7 113-6BB❑❑**		24
2.6	2.6	T1,T2,T3	132 S	945	26	79	0.75	6.5	**1MA7 130-6BB❑❑**		36
3.5	3.5	T1,T2,T3	132 M	955	35	81	0.72	9	**1MA7 133-6BB❑❑**		41
4.8	4.8	T1,T2,T3	132 M	950	48	83	0.76	11.4	**1MA7 134-6BB❑❑**		50
6.6	6.6	T1,T2,T3	160 M	960	65	85	0.75	14.9	**1MA7 163-6BB❑❑**		70
9.7	9.7	T1,T2,T3	160 L	965	96	88	0.76	21	**1MA7 166-6BB❑❑**		105

Order No. supplements

Motor type	**Penultimate position: Voltage code** 50 Hz				**Final position: Type of construction code**						
					Without flange	With flange			With standard flange		With special flange
	230 VΔ/400 VY For delta connection, overload protection with phase-failure protection must be provided.	400 VΔ/690 VY	500 VY	500 VΔ	IM B3/6/7/8, IM V6 [1]	IM B5, IM V3 [1]	IM V1 with pro-tective 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.

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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_E time	
						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 kgm²	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 060-4BB❑❑	1.9	2.6	1.9	13	0.0003	42	53	35	30
1MA7 063-4BB❑❑	1.9	2.7	1.9	13	0.0004	42	53	30	25
1MA7 070-4BB❑❑	1.9	3.1	1.9	13	0.0006	44	55	50	40
1MA7 073-4BB❑❑	1.9	3.7	2.1	13	0.00083	44	55	35	29
1MA7 080-4BA❑❑	2.4	4.6	2.5	16	0.0015	47	58	24	21
1MA7 083-4BA❑❑	2.6	4.8	2.6	16	0.0018	47	58	19	16
1MA7 090-4BA❑❑	2.2	5.4	2.5	16	0.0028	48	60	16	14
1MA7 096-4BA❑❑	2.3	5.9	2.5	16	0.0035	48	60	15	13
1MA7 106-4BA❑❑	2.5	6.4	2.7	16	0.0048	53	65	13	11
1MA7 107-4BA❑❑	2.6	6.4	2.7	16	0.0058	53	65	12	10
1MA7 113-4BA❑❑	2.6	7.2	2.9	16	0.011	53	65	10	9
1MA7 130-4BA❑❑	2.7	6.6	3.2	16	0.021	62	74	10	9
1MA7 133-4BA❑❑	3	7.7	3.6	16	0.027	62	74	11	9
1MA7 163-4BB❑❑	2.3	6.5	2.7	13	0.052	66	78	17	10
1MA7 166-4BB❑❑	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 073-6BA❑❑	2.2	3	2.1	16	0.0009	39	50	130	70
1MA7 080-6BA❑❑	2.3	3.6	2.4	16	0.0015	40	51	60	55
1MA7 083-6BA❑❑	2.4	4	2.4	16	0.0025	40	51	30	27
1MA7 090-6BA❑❑	2.3	3.9	2.4	16	0.0028	43	55	35	30
1MA7 096-6BA❑❑	2.3	4.1	2.4	16	0.0038	43	55	22	19
1MA7 106-6BA❑❑	2.4	4.8	2.5	16	0.0063	47	59	26	26
1MA7 113-6BB❑❑	2.3	5	2.5	13	0.011	52	64	19	16
1MA7 130-6BB❑❑	1.8	4.4	2.4	13	0.015	63	75	21	18
1MA7 133-6BB❑❑	2.3	5.1	2.8	13	0.019	63	75	16	13
1MA7 134-6BB❑❑	2.4	5.6	2.8	13	0.025	63	75	13	11
1MA7 163-6BB❑❑	2.7	6.4	3.1	13	0.041	66	78	18	9
1MA7 166-6BB❑❑	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.

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Explosion-proof motors

Self-ventilated, in Zone 1 with type of protection "e" Cast-iron series 1MA6

Selection and ordering data

Rated output at 50 Hz P_{rated} kW	Rated output at 60 Hz P_{rated} kW	Tempera-ture class	Frame size FS	Operating values at rated output: Rated speed at 50 Hz n_{rated} rpm	Rated torque at 50 Hz T_{rated} Nm	Efficiency at 50 Hz η_{rated} %	Power factor at 50 Hz $\cos\varphi_{rated}$	Rated current at 380 ... 420 V, 50 Hz I_{rated} A	Order No. For Order No. supplements for voltage and type of construction, see table below	Price	Weight IM B3 type of construc-tion 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											
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, 50 Hz: 230 VΔ/400 VY	400 VΔ/690 VY	500 VY	500 VΔ	Final position: Type of construction code, Without flange: IM B3/6/7/8, IM V6 [4] [5]	With flange: IM B5, IM V3 [4] [6]	IM V1 with protective cover [4] [6] [7]	IM B35	With standard flange: IM B14, IM V19 [4]	IM B34	With special flange: IM B14 IM V19 [4]
	For delta connection, overload protection with phase-failure protection must be provided.										
	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 - . . . ❑❑ **1MA6 313 - . . . ❑❑**	○	○	○	○	❑	✓ [8]	✓	✓	–	–	–
1MA6 316 - . . . ❑❑ **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.

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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_E time	
						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 kgm²	L_{pfA} 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.

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Self-ventilated, in Zone 1 with type of protection "e" Cast-iron series 1MA6

Selection and ordering data (continued)

Rated output at 50 Hz	Rated output at 60 Hz	Temperature class	Frame size	Operating values at rated output: 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	Order No. For Order No. supplements for voltage and type of construction, see table below	Price	Weight IM B3 type of construction approx.
P_{rated} kW	P_{rated} kW		FS	n_{rated} rpm	T_{rated} Nm	η_{rated} %	$\cos\varphi_{rated}$	I_{rated} A			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 50 Hz: 230 VΔ/400 VY	400 VΔ/690 VY	500 VY	500 VΔ	Final position: Type of construction code: Without flange: IM B3/6/7/8, IM V6 [3] [4]	With flange: IM B5, IM V3 [3] [5]	IM V1 with protective cover [3] [5] [6]	IM B35	With standard flange: IM B14, IM V19 [3]	IM B34	With special flange: 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 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**.

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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	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 kgm²	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)							
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	–

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Self-ventilated, in Zone 1 with type of protection "e" Cast-iron series 1MA6

Selection and ordering data (continued)

Rated output at 50 Hz P_{rated} kW	Rated output at 60 Hz P_{rated} kW	Temperature class	Frame size FS	Operating values at rated output: Rated speed at 50 Hz n_{rated} rpm	Rated torque at 50 Hz T_{rated} Nm	Efficiency at 50 Hz η_{rated} %	Power factor at 50 Hz $\cos\varphi_{rated}$	Rated current at 380 ... 420 V, 50 Hz I_{rated} A	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
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 106-4BA❑❑**		33
2.5	2.5	T1,T2,T3	100 L	1415	17	81	0.83	5.5	**1MA6 107-4BA❑❑**		36
3.6	3.6	T1,T2,T3	112 M	1435	24	85	0.83	7.5	**1MA6 113-4BA❑❑**		45
5	5	T1,T2,T3	132 S	1445	33	86	0.82	10.4	**1MA6 130-4BA❑❑**		55
6.8	6.8	T1,T2,T3	132 M	1460	44	87	0.82	14	**1MA6 133-4BA❑❑**		62
10	10	T1,T2,T3	160 M	1455	66	88	0.87	19.7	**1MA6 163-4BB❑❑**		100
13.5	13.5	T1,T2,T3	160 L	1465	88	89	0.84	27	**1MA6 166-4BB❑❑**		114
15	15	T3	180 M	1470	97	90.7	0.8	31	**1MA6 183-4BC❑❑**		165
17.5	17.5	T3	180 L	1470	114	91.6	0.8	36	**1MA6 186-4BC❑❑**		177
24	24	T3	200 L	1475	155	92.5	0.82	47.5	**1MA6 207-4BC❑❑**		280
30	30	T3	225 S	1481	193	93.3	0.83	59	**1MA6 220-4BC❑❑**		300
36	36	T3	225 M	1484	232	93.8	0.84	70 [1]	**1MA6 223-4BC❑❑**		330
44	44	T3	250 M	1485	283	94	0.85	83	**1MA6 253-4BC❑❑**		435
58	58	T3	280 S	1488	372	94.6	0.84	111	**1MA6 280-4BC❑❑** [2]		610
70	70	T3	280 M	1488	449	94.8	0.85	130	**1MA6 283-4BC❑❑** [2]		660
84	84	T3	315 S	1492	538	95.4	0.84	158	**1MA6 310-4BD❑❑**		830
100	100	T3	315 M	1492	640	95.8	0.85	185	**1MA6 313-4BD❑❑** [2]		910
115	115	T3	315 L	1490	740	95.6	0.86	214	**1MA6 316-4BD❑❑** [2]		1060
135	135	T3	315 L	1492	868	95.8	0.86	245	**1MA6 317-4BD❑❑**		1200

Order No. supplements

Motor type	Penultimate position: Voltage code, 50 Hz: 230 VΔ/400 VY	400 VΔ/690 VY	500 VY	500 VΔ	Final position: Type of construction code: Without flange: IM B3/6/7/8, IM V6 [3] [4]	With flange: IM B5, IM V3 [3] [5]	IM V1 with protective cover [3] [5] [6]	IM B35	With standard flange: IM B14, IM V19 [3]	IM B34	With special flange: 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 10 . - . . . ❑❑	○	○	○	○	❑	✓	✓	✓	✓	✓	✓
1MA6 11 . - . . . ❑❑	○	○	○	○	❑	✓	✓	✓	✓	✓	✓
1MA6 13 . - . . . ❑❑	○	○	○	○	❑	✓	✓	✓	✓	✓	✓
1MA6 16 . - . . . ❑❑	○	○	○	○	❑	✓	✓	✓	✓	✓	✓
1MA6 18 . - . . . ❑❑	○	○	○	○	❑	✓ [7]	✓	✓	–	–	–
1MA6 20 . - . . . ❑❑	○	○	○	○	❑	✓ [7]	✓	✓	–	–	–
1MA6 22 . - . . . ❑❑	○	○	○	○	❑	✓ [7]	✓	✓	–	–	–
1MA6 25 . - . . . ❑❑	○	○	○	○	❑	✓ [7]	✓	✓	–	–	–
1MA6 28 . - . . . ❑❑	○	○	○	○	❑	✓ [7]	✓	✓	–	–	–
1MA6 310 - . . . ❑❑ **1MA6 313 - . . . ❑❑**	○	○	○	○	❑	✓ [7]	✓	✓	–	–	–
1MA6 316 - . . . ❑❑ **1MA6 317 - . . . ❑❑**	–	○	○	○	❑ [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.

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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_E time	
						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 kgm²	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

1) For connection to 230 V, parallel supply cables are necessary (see the "Introduction" section, "Connection, circuit and connection box").

2) Technical data and dimensions are available for VIK version (order code **K30**) on request (additional charge).

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**.

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Self-ventilated, in Zone 1 with type of protection "e" Cast-iron series 1MA6

Selection and ordering data (continued)

Rated output at 50 Hz	Rated output at 60 Hz	Temperature class	Frame size	Operating values at rated output: 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	Order No. / For Order No. supplements for voltage and type of construction, see table below	Price	Weight IM B3 type of construction approx.
P_{rated} kW	P_{rated} kW		FS	n_{rated} rpm	T_{rated} Nm	η_{rated} %	$\cos\varphi_{rated}$	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, 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

4

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 For delta connection, overload protection with phase-failure protection must be provided.	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 - . . . ❑❑ **1MA6 313 - . . . ❑❑**	○	○	○	○	■	✓ [8]	✓	✓	–	–	–
1MA6 316 - . . . ❑❑ **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**.

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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	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 kgm²	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 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	–

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Self-ventilated, in Zone 1 with type of protection "e" Cast-iron series 1MA6

Selection and ordering data (continued)

Rated output at 50 Hz	Rated output at 60 Hz	Tempera-ture class	Frame size	Operating values at rated output: 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	Order No. For Order No. supplements for voltage and type of construction, see table below	Price	Weight IM B3 type of construc-tion approx.
P_{rated} kW	P_{rated} kW		FS	n_{rated} rpm	T_{rated} Nm	η_{rated} %	$\cos\varphi_{rated}$	I_{rated} A			m kg
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 protec-tive 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 10 . - . . . ❑❑	○	○	○	○	◘	✓	✓	✓	✓	✓	✓
1MA6 11 . - . . . ❑❑	○	○	○	○	◘	✓	✓	✓	✓	✓	✓
1MA6 13 . - . . . ❑❑	○	○	○	○	◘	✓	✓	✓	✓	✓	✓
1MA6 16 . - . . . ❑❑	○	○	○	○	◘	✓	✓	✓	✓	✓	✓
1MA6 18 . - . . . ❑❑	○	○	○	○	◘	✓ [7)]	✓	✓	–	–	–
1MA6 20 . - . . . ❑❑	○	○	○	○	◘	✓ [7)]	✓	✓	–	–	–
1MA6 22 . - . . . ❑❑	○	○	○	○	◘	✓ [7)]	✓	✓	–	–	–
1MA6 25 . - . . . ❑❑	○	○	○	○	◘	✓ [7)]	✓	✓	–	–	–
1MA6 28 . - . . . ❑❑	○	○	○	○	◘	✓ [7)]	✓	✓	–	–	–
1MA6 310 - . . . ❑❑ **1MA6 313 - . . . ❑❑**	○	○	○	○	◘	✓ [7)]	✓	✓	–	–	–
1MA6 316 - . . . ❑❑ **1MA6 317 - . . . ❑❑** **1MA6 318 - . . . ❑❑**	–	○	○	○	◘ [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 4/31.

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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_E time	
						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 kgm²	L_{pfA} 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

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**.

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Self-ventilated, in Zone 1 with type of protection "e" Cast-iron series 1MA6

Selection and ordering data (continued)

Rated output at 50 Hz	Rated output at 60 Hz	Temperature class	Frame size	Operating values at rated output: 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	Order No. For Order No. supplements for voltage and type of construction, see table below	Price	Weight IM B3 type of construction approx.
P_{rated} kW	P_{rated} kW		FS	n_{rated} rpm	T_{rated} Nm	η_{rated} %	$\cos\varphi_{rated}$	I_{rated} A			m kg
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, 50 Hz: 230 VΔ/400 VY	400 VΔ/690 VY	500 VY	500 VΔ	Final position: Type of construction code, Without flange: IM B3/6/7/8, IM V6 [3] [4]	With flange: IM B5, IM V3 [3] [5]	IM V1 with protective cover [3] [5] [6]	IM B35	With standard flange: IM B14, IM V19 [3]	IM B34	With special flange: 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 - . . . ❑❑ **1MA6 313 - . . . ❑❑**	○	○	○	○	□	✓ [7]	✓	✓	–	–	–
1MA6 316 - . . . ❑❑ **1MA6 317 - . . . ❑❑** **1MA6 318 - . . . ❑❑**	–	○	○	○	□ [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").

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**.

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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	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 kgm²	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 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	–

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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 50 Hz	Rated output at 60 Hz	Frame size	Operating values at rated output: Rated speed at 50 Hz	Rated torque at 50 Hz	Efficiency at 50 Hz [1]	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.
P_{rated} kW	P_{rated} kW	FS	n_{rated} rpm	T_{rated} Nm	η_{rated} %	$\cos\varphi_{rated}$	I_{rated} A			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 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, 50 Hz: 230 VΔ/400 VY	400 VΔ/690 VY	500 VY	500 VΔ	Final position: Type of construction code, Without flange: IM B3/6/7/8, IM V6 [2] [3]	With flange: IM B5, IM V3 [2] [4]	IM V1 with protective cover [2] [4] [5]	IM B35	With standard flange: IM B14, IM V19 [2]	IM B34	With special flange: 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.

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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	
						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 kgm²	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, 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

1) For connection to 230 V, parallel feeders are necessary (see the "Introduction" section, "Connection, circuit and connection box").

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) 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.

4) 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.

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**.

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Self-ventilated in Zone 1 with type of protection "de" Cast-iron series 1MJ6 and 1MJ7

Selection and ordering data (continued)

Rated output at 50 Hz	Rated output at 60 Hz	Frame size	Operating values at rated output: Rated speed at 50 Hz	Rated torque at 50 Hz	Efficiency at 50 Hz [1]	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.
P_{rated} kW	P_{rated} kW	FS	n_{rated} rpm	T_{rated} Nm	η_{rated} %	$\cos\varphi_{rated}$	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, 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, 50 Hz: 230 VΔ/400 VY	400 VΔ/690 VY	500 VY	500 VΔ	Final position: Type of construction code, Without flange: IM B3/6/7/8, IM V6 [2] [3]	With flange: IM B5, IM V3 [2] [4]	IM V1 with protective cover [2] [4] [5]	IM B35	With standard flange: IM B14, IM V19 [2]	IM B34	With special flange: 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.

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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	
						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 kgm²	L_{pfA} dB(A)	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

1) For connection to 230 V, parallel feeders are necessary (see the "Introduction" section, "Connection, circuit and connection box").

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) 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.

4) 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.

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**.

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Self-ventilated in Zone 1 with type of protection "de" Cast-iron series 1MJ6 and 1MJ7

Selection and ordering data (continued)

Rated output at 50 Hz	Rated output at 60 Hz	Frame size	Operating values at rated output: Rated speed at 50 Hz	Rated torque at 50 Hz	Efficiency at 50 Hz [1]	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.
P_{rated} kW	P_{rated} kW	FS	n_{rated} rpm	T_{rated} Nm	η_{rated} %	$\cos\varphi_{rated}$	I_{rated} A			m kg
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 50 Hz				Final position: Type of construction code						
					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.

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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	
						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 kgm²	L_{pfA} 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 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

1) For connection to 230 V, parallel feeders are necessary (see the "Introduction" section, "Connection, circuit and connection box").

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) 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.

4) 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.

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**.

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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 50 Hz	Rated output at 60 Hz	Frame size	Operating values at rated output: Rated speed at 50 Hz	Rated torque at 50 Hz	Efficiency at 50 Hz	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.
P_{rated} kW	P_{rated} kW	FS	n_{rated} rpm	T_{rated} Nm	η_{rated} %	$\cos\varphi_{rated}$	I_{rated} A			m kg
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, 50 Hz: 230 VΔ/400 VY	400 VΔ/690 VY	500 VY	500 VΔ	Final position: Type of construction code: Without flange: IM B3/6/7/8, IM V6 [1) 2)]	With flange: IM B5, IM V3 [1) 3)]	IM V1 with protective cover [1) 3) 4)]	IM B35	With standard flange: IM B14, IM V19 [1)]	IM B34	With special flange: 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.

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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	
						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 kgm²	L_{pfA} dB(A)	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

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 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.

3) 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.

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**.

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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 50 Hz P_{rated} kW	Rated output at 60 Hz P_{rated} kW	Frame size FS	Operating values at rated output: 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 $\cos\varphi_{rated}$	Rated current at 400 V, 50 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
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	✓	✓	✓	✓	✓	✓	✓	✓
	160	✓	✓	✓	✓	✓	✓	✓	✓
1LA5	180	–	–	–	–	✓	✓	✓	✓
	200	–	–	–	–	✓	✓	✓	✓
	225	–	–	–	–	✓	✓	✓	✓

✓ 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] 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.

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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 T_B/T_{rated}	Torque class CL	Moment of inertia J kgm²	Noise at rated output: Measuring surface sound pressure level at 50 Hz L_{pfA} dB(A)	Noise at rated output: 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 (see "Introduction" for outputs at 60 Hz)	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**.

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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 50 Hz P_{rated} kW	Rated output at 60 Hz P_{rated} kW	Frame size FS	Operating values at rated output: 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 $\cos\varphi_{rated}$	Rated current at 400 V, 50 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
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	79	79	0.81	3.4	**1LA7 096-4AA❑❑**		15.6
2.2	2.55	100 L	1420	15	82	82.5	0.82	4.7	**1LA7 106-4AA❑❑**		21
3	3.45	100 L	1420	20	83	83.5	0.82	6.4	**1LA7 107-4AA❑❑**		24
4	4.6	112 M	1440	27	85	85.5	0.83	8.2	**1LA7 113-4AA❑❑**		31
5.5	6.3	132 S	1455	36	86	86	0.81	11.4	**1LA7 130-4AA❑❑**		41
7.5	8.6	132 M	1455	49	87	87.5	0.82	15.2	**1LA7 133-4AA❑❑**		49
11	12.6	160 M	1460	72	88.5	89	0.84	21.5	**1LA7 163-4AA❑❑**		73
15	17.3	160 L	1460	98	90	90.2	0.84	28.5	**1LA7 166-4AA❑❑**		85
18.5	21.3	180 M	1460	121	90.5	90.5	0.83	35.5 [1]	**1LA5 183-4AA❑❑**		113
22	25.3	180 L	1460	144	91.2	91.2	0.84	41.5 [1]	**1LA5 186-4AA❑❑**		123
30	34.5	200 L	1465	196	91.8	91.8	0.86	55	**1LA5 207-4AA❑❑**		157
37	42.5	225 S	1470	240	92.9	92.9	0.87	66 [1]	**1LA5 220-4AA❑❑**		206
45	52	225 M	1470	292	93.4	93.4	0.87	80 [1]	**1LA5 223-4AA❑❑**		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 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] 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.

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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	
						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 kgm²	L_{pfA} dB(A)	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 (see "Introduction" for outputs at 60 Hz)	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**.

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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 50 Hz P_{rated} kW	Rated output at 60 Hz P_{rated} kW	Frame size FS	Operating values at rated output: 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 $\cos\varphi_{rated}$	Rated current at 400 V, 50 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
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

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 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] 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.

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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	
						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 kgm²	L_{pfA} 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							
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 (see "Introduction" for outputs at 60 Hz)	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**.

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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 50 Hz P_{rated} kW	Rated output at 60 Hz P_{rated} kW	Frame size FS	Operating values at rated output: 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 $\cos\varphi_{rated}$	Rated current at 400 V, 50 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
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 S	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

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 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] 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.

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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	
						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 kgm²	L_{pfA} dB(A)	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 (see "Introduction" for outputs at 60 Hz)	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**.

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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	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.
P_{rated}	FS	n_{rated}	T_{rated}	η_{rated}	η_{rated}	$\cos\varphi_{rated}$	I_{rated}			m
kW		rpm	Nm	%	%		A			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 050-2KA❑❑**		3
0.12	56 M	2830	0.4	70	70	0.81	0.31	**1LA9 053-2KA❑❑**		3.8
0.18	63 M	2840	0.61	70	70	0.78	0.48	**1LA9 060-2KA❑❑**		4.1
0.25	63 M	2840	0.84	72	70	0.8	0.63	**1LA9 063-2KA❑❑**		5.1
0.37	71 M	2840	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	2870	2.5	80	80	0.82	1.66	**1LA9 080-2KA❑❑**		9.8
1.1	80 M	2860	3.7	84	84	0.89	2.1	**1LA9 083-2KA❑❑**		12.3
1.5	90 S	2890	5	85	85	0.87	2.95	**1LA9 090-2KA❑❑**		15
2.2	90 L	2890	7.3	86.5	86.5	0.87	4.2	**1LA9 096-2KA❑❑**		18.6
3	100 L	2890	9.9	87	87	0.88	5.7	**1LA9 106-2KA❑❑**		24
4	112 M	2905	13	88.5	88.5	0.89	7.3	**1LA9 113-2KA❑❑**		35
5.5	132 S	2930	18	89.5	89.5	0.9	9.9	**1LA9 130-2KA❑❑**		43
7.5	132 S	2930	24	90.5	90.5	0.92	13	**1LA9 131-2KA❑❑**		56
11	160 M	2945	36	91	91	0.9	19.4	**1LA9 163-2KA❑❑**		73
15	160 M	2945	49	91.5	91.5	0.9	26.5	**1LA9 164-2KA❑❑**		82
18.5	160 L	2940	60	92.3	92.5	0.92	31.5	**1LA9 166-2KA❑❑**		102
22	180 M	2945	71	93	93.2	0.89	38.5 [1]	**1LA9 183-2WA❑❑**		131
30	200 L	2950	97	93.5	93.5	0.89	52	**1LA9 206-2WA❑❑**		185
37	200 L	2950	120	94	94.1	0.89	64 [1]	**1LA9 207-2WA❑❑**		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 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".

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.

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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 T_B/T_{rated}	Torque class CL	Moment of inertia J kgm²	Noise at rated output: Measuring surface sound pressure level at 50 Hz L_{pfA} dB(A)	Noise at rated output: 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: 230 VΔ/400 VY	400 VΔ/690 VY	500 VY	500 VΔ	Final position: Type of construction code: 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, IM V19 [1]	IM B34	With special flange: IM B14, 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**.

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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	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.
P_{rated} kW	FS	n_{rated} rpm	T_{rated} Nm	η_{rated} %	η_{rated} %	$\cos\varphi_{rated}$	I_{rated} A			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 050-4KA❑❑**		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	1385	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	1400	5.1	81	81	0.75	1.78	**1LA9 083-4KA❑❑**		12.3
1.1	90 S	1440	7.3	84	84	0.77	2.45	**1LA9 090-4KA❑❑**		15
1.5	90 L	1440	9.9	85	85	0.77	3.3	**1LA9 096-4KA❑❑**		18
2.2	100 L	1435	15	86.5	86.5	0.82	4.5	**1LA9 106-4KA❑❑**		25
3	100 L	1435	20	87.5	87.7	0.81	6.1	**1LA9 107-4KA❑❑**		30
4	112 M	1440	27	88.5	89	0.81	8.1	**1LA9 113-4KA❑❑**		37
5.5	132 S	1455	36	89.5	89.5	0.84	10.6	**1LA9 130-4KA❑❑**		45
7.5	132 M	1455	49	90.3	90.5	0.84	14.2	**1LA9 133-4KA❑❑**		60
11	160 M	1460	72	91.5	92	0.85	20.5	**1LA9 163-4KA❑❑**		81
15	160 L	1460	98	92	92.3	0.86	27.5	**1LA9 166-4KA❑❑**		107
18.5	180 M	1465	121	92.5	93	0.84	34.5 [1]	**1LA9 183-4WA❑❑**		126
22	180 L	1465	143	93	93.4	0.84	40.5 [1]	**1LA9 186-4WA❑❑**		146
30	200 L	1465	196	93.5	94	0.87	53	**1LA9 207-4WA❑❑**		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 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".

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.

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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 T_B/T_{rated}	Torque class CL	Moment of inertia J kgm²	Noise at rated output: Measuring surface sound pressure level at 50 Hz L_{pfA} dB(A)	Noise at rated output: 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, 50 Hz: 230 VΔ/400 VY	400 VΔ/690 VY	500 VY	500 VΔ	Final position: Type of construction code, 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, IM V19 [1]	IM B34	With special flange: IM B14, 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**.

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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	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.
P_{rated}	FS	n_{rated}	T_{rated}	η_{rated}	η_{rated}	$\cos\varphi_{rated}$	I_{rated}			m
kW		rpm	Nm	%	%		A			kg
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 090-6KA❑❑**		15.7
1.1	90 L	940	11	82	82	0.7	2.75	**1LA9 096-6KA❑❑**		19
1.5	100 L	935	15	85	85	0.73	3.6	**1LA9 106-6KA❑❑**		25
2.2	112 M	955	22	84	84	0.7	5.4	**1LA9 113-6KA❑❑**		37
4	132 M	950	40	84	84	0.81	8.5	**1LA9 133-6KA❑❑**		49
5.5	132 M	960	55	86	86	0.77	12	**1LA9 134-6KA❑❑**		64
7.5	160 M	965	74	88	88	0.72	17	**1LA9 163-6KA❑❑**		98
11	160 L	960	109	88.5	88.5	0.78	23	**1LA9 166-6KA❑❑**		105
15	180 L	970	148	91	91	0.75	31.5	**1LA9 186-6WA❑❑**		144
18.5	200 L	975	181	91	91	0.77	38	**1LA9 206-6WA❑❑**		186
22	200 L	975	215	91.5	91.5	0.77	45	**1LA9 207-6WA❑❑**		217

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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 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".

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.

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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	
						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 kgm²	L_{pfA} dB(A)	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, 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**
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**.

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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	Frame size	Operating values at rated output						Order No.	Price	Weight
		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	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.
P_{rated}	FS	n_{rated}	T_{rated}		η_{rated}	$\cos\varphi_{rated}$	I_{rated}			m
HP		rpm	Nm		%		A			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 050-2KA❑❑**		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 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".

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.

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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 T_B/T_{rated}	Torque class CL	Moment of inertia J kgm²	Noise at rated output: Measuring surface sound pressure level at 60 Hz L_{pfA} dB(A)	Noise at rated output: 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 code						
	60 Hz		Without flange	With flange			With standard flange		With special flange
	460 VY (see "Introduction" for outputs at 60 Hz)	460 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**	**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**.

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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	Frame size	Operating values at rated output						Order No.	Price	Weight
		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	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.
P_{rated}	FS	n_{rated}	T_{rated}		η_{rated}	$\cos\varphi_{rated}$	I_{rated}			m
HP		rpm	Nm		%		A			kg
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 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".

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.

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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 T_B/T_{rated}	Torque class CL	Moment of inertia J kgm²	Noise at rated output: Measuring surface sound pressure level at 60 Hz L_{pfA} dB(A)	Noise at rated output: 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**						
	60 Hz		Without flange	With flange			With standard flange		With special flange
	460 VY (see "Introduction" for outputs at 60 Hz)	460 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**	**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**.

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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	Frame size	Operating values at rated output						Order No.	Price	Weight
		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	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.
P_{rated}	FS	n_{rated}	T_{rated}		η_{rated}	$\cos\varphi_{rated}$	I_{rated}			m
HP		rpm	Nm		%		A			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										
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

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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 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".

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.

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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	
						Measuring surface sound pressure level at 60 Hz	Sound pressure level at 60 Hz
	T_{LR}/T_{rated}	I_{LR}/I_{rated}	T_B/T_{rated}	CL	J kgm²	L_{pfA} dB(A)	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		Without flange	With flange			With standard flange		With special flange
	460 VY (see "Introduction" for outputs at 60 Hz)	460 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**	**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**.

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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 50 Hz	Rated output at 60 Hz	Frame size	Operating values at rated output: 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	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.
P_{rated} kW	P_{rated} kW	FS	n_{rated} rpm	T_{rated} Nm	η_{rated} %	η_{rated} %	$\cos\varphi_{rated}$	I_{rated} A			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 106-2AA❑❑**		34
4	4.6	112 M	2905	13	86	86	0.86	7.8	**1LA6 113-2AA❑❑**		43
5.5	6.3	132 S	2925	18	86.5	86.5	0.89	10.4	**1LA6 130-2AA❑❑**		53
7.5	8.6	132 S	2930	24	88	88	0.89	13.8	**1LA6 131-2AA❑❑**		58
11	12.6	160 M	2940	36	89.5	89.5	0.88	20	**1LA6 163-2AA❑❑**		96
15	17.3	160 M	2940	49	90	90.2	0.9	26.5	**1LA6 164-2AA❑❑**		105
18.5	21.3	160 L	2940	60	91	91.2	0.91	32	**1LA6 166-2AA❑❑**		115
22	24.5	180 M	2945	71	91.6	91.6	0.86	40.5 [1]	**1LG4 183-2AA❑❑**		145
30	33.5	200 L	2950	97	91.8	91.9	0.88	54 [1]	**1LG4 206-2AA❑❑**		205
37	41.5	200 L	2955	120	92.9	93.2	0.89	65 [1]	**1LG4 207-2AA❑❑**		225
45	51	225 M	2960	145	93.6	93.9	0.88	79 [1]	**1LG4 223-2AA❑❑**		285
55	62	250 M	2970	177	93.6	93.8	0.88	96	**1LG4 253-2AB❑❑**		375
75	84	280 S	2975	241	94.5	94.3	0.88	130 [1]	**1LG4 280-2AB❑❑**		500
90	101	280 M	2975	289	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

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 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.

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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	
						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 kgm²	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							
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 (see "Introduction" for outputs at 60 Hz)	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 - . . . ❑❑ **1LG4 313 - . . . ❑❑**	○	○	○	○	○	○	❑	✓ [5)]	✓	✓	–	–	–
1LG4 316 - . . . ❑❑ **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.

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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 50 Hz P_{rated} kW	Rated output at 60 Hz P_{rated} kW	Frame size FS	Operating values at rated output: 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 $\cos\varphi_{rated}$	Rated current at 400 V, 50 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
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		**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 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.

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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: Measuring surface sound pressure level at 50 Hz	Noise at rated output: Sound pressure level at 50 Hz
	T_{LR}/T_{rated}	I_{LR}/I_{rated}	T_B/T_{rated}	CL	J kgm²	L_{pfA} dB(A)	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 (see "Introduction" for outputs at 60 Hz)	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 - . . . ❑❑ **1LG4 313 - . . . ❑❑**	○	○	○	○	○	○	❑	✓ [5)]	✓	✓	–	–	–
1LG4 316 - . . . ❑❑ **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**.

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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 50 Hz	Rated output at 60 Hz	Frame size	Operating values at rated output: 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	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.
P_{rated} kW	P_{rated} kW	FS	n_{rated} rpm	T_{rated} Nm	η_{rated} %	η_{rated} %	$\cos\varphi_{rated}$	I_{rated} A			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 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.

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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: Measuring surface sound pressure level at 50 Hz	Noise at rated output: Sound pressure level at 50 Hz
	T_{LR}/T_{rated}	I_{LR}/I_{rated}	T_B/T_{rated}	CL	J kgm²	L_{pfA} 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

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)	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 - . . . ❑❑ 1LG4 313 - . . . ❑❑	○	○	○	○	○	○	❑	✓ [5)]	✓	✓	–	–	–
1LG4 316 - . . . ❑❑ 1LG4 317 - . . . ❑❑ 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**.

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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 50 Hz	Rated output at 60 Hz	Frame size	Operating values at rated output: 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	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.
P_{rated} kW	P_{rated} kW	FS	n_{rated} rpm	T_{rated} Nm	η_{rated} %	η_{rated} %	$\cos\varphi_{rated}$	I_{rated} A			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 106-8AB❑❑**		29
1.1	1.3	100 L	680	15	72	72	0.76	2.9	**1LA6 107-8AB❑❑**		32
1.5	1.75	112 M	705	20	74	74	0.76	3.85	**1LA6 113-8AB❑❑**		39
2.2	2.55	132 S	700	30	75	75	0.74	5.7	**1LA6 130-8AB❑❑**		50
3	3.45	132 M	700	41	77	77.5	0.74	7.6	**1LA6 133-8AB❑❑**		57
4	4.6	160 M	715	53	80	80	0.72	10	**1LA6 163-8AB❑❑**		91
5.5	6.3	160 M	710	74	83.5	83.5	0.73	13	**1LA6 164-8AB❑❑**		102
7.5	8.6	160 L	715	100	85.5	85.5	0.72	17.6	**1LA6 166-8AB❑❑**		122
11	13.2	180 L	725	145	87.5	88.3	0.73	25	**1LG4 186-8AB❑❑**		150
15	18	200 L	725	198	87.7	88.4	0.76	32.5	**1LG4 207-8AB❑❑**		205
18.5	22	225 S	730	242	89.4	90.4	0.78	38.5	**1LG4 220-8AB❑❑**		270
22	26.5	225 M	730	288	89.7	90.7	0.79	45	**1LG4 223-8AB❑❑**		290
30	36	250 M	730	392	91.4	92.2	0.81	58	**1LG4 253-8AB❑❑**		385
37	44.5	280 S	735	481	92	92.8	0.81	72	**1LG4 280-8AB❑❑**		475
45	54	280 M	735	585	92.4	93.3	0.81	87	**1LG4 283-8AB❑❑**		515
55	66	315 S	740	710	93	93.4	0.81	106	**1LG4 310-8AB❑❑**		680
75	90	315 M	738	971	93.3	94	0.83	140	**1LG4 313-8AB❑❑**		745
90	108	315 L	738	1165	93.4	94	0.83	168	**1LG4 316-8AB❑❑**		865
110	132	315 L	738	1423	94	94.4	0.83	205	**1LG4 317-8AB❑❑**		1020
132	158	315 L	738	1708	94.2	94.6	0.83	245	**1LG4 318-8AB❑❑**		1100

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**
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] 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.

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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	
						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 kgm²	L_{pfA} dB(A)	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 (see “Introduction” for outputs at 60 Hz)	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 - . . . ❑❑ **1LG4 313 - . . . ❑❑**	○	○	○	○	○	○	❑	✓ [5)]	✓	✓	–	–	–
1LG4 316 - . . . ❑❑ **1LG4 317 - . . . ❑❑** **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**.

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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	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	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.
P_{rated} kW	FS	n_{rated} rpm	T_{rated} Nm	η_{rated} %	η_{rated} %	$\cos\varphi_{rated}$	I_{rated} A			m kg
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		**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**
1LG6	180	✓	✓	✓	✓	✓	✓	✓	✓
	200	✓	✓	✓	✓	✓	✓	✓	✓
	225	✓	✓	✓	✓	✓	✓	✓	✓
	250	✓	✓	✓	✓	✓	✓	✓	✓
	280	✓	✓	✓	✓	✓	✓	✓	✓
	315	✓	✓	✓	✓	✓	✓	✓	✓

✓ With additional charge

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".

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.

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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 T_B/T_{rated}	Torque class CL	Moment of inertia J kgm²	Noise at rated output: Measuring surface sound pressure level at 50 Hz L_{pfA} dB(A)	Noise at rated output: 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 - . . . ❑❑ **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").

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.

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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	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	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.
P_{rated}	FS	n_{rated}	T_{rated}	η_{rated}	η_{rated}	$\cos\varphi_{rated}$	I_{rated}			m
kW		rpm	Nm	%	%		A			kg
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		**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**
1LG6	180	✓	✓	✓	✓	✓	✓	✓	✓
	200	✓	✓	✓	✓	✓	✓	✓	✓
	225	✓	✓	✓	✓	✓	✓	✓	✓
	250	✓	✓	✓	✓	✓	✓	✓	✓
	280	✓	✓	✓	✓	✓	✓	✓	✓
	315	✓	✓	✓	✓	✓	✓	✓	✓

✓ With additional charge

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".

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.

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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 T_B/T_{rated}	Torque class CL	Moment of inertia J kgm²	Noise at rated output: Measuring surface sound pressure level at 50 Hz L_{pfA} dB(A)	Noise at rated output: 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** 50 Hz				**Final position: Type of construction code** 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 - . . . ❑❑ **1LG6 317 - . . . ❑❑** **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**.

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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	Frame size	Operating values at rated output						Order No.	Price	Weight
		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	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.
P_{rated}	FS	n_{rated}	T_{rated}		η_{rated}	$\cos\varphi_{rated}$	I_{rated}			m
HP		rpm	Nm		%		A			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										
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		**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**
1LG6	180	✓	✓	✓	✓	✓	✓	✓	✓
	200	✓	✓	✓	✓	✓	✓	✓	✓
	225	✓	✓	✓	✓	✓	✓	✓	✓
	250	✓	✓	✓	✓	✓	✓	✓	✓
	280	✓	✓	✓	✓	✓	✓	✓	✓
	315	✓	✓	✓	✓	✓	✓	✓	✓

✓ With additional charge

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".

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.

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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 T_B/T_{rated}	Torque class CL	Moment of inertia J kgm²	Noise at rated output: Measuring surface sound pressure level at 60 Hz L_{pfA} dB(A)	Noise at rated output: 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

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 (see “Introduction” for outputs at 60 Hz)	460 VΔ	IM B3/6/7/8, IM V6 [1) 2)]	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 - . . . ❑❑ **1LG6 317 - . . . ❑❑** **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.

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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	Frame size	Operating values at rated output						Order No.	Price	Weight
		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	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.
P_{rated}	FS	n_{rated}	T_{rated}		η_{rated}	$\cos\varphi_{rated}$	I_{rated}			m
HP		rpm	Nm		%		A			kg
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**	
		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**
1LG6	180	✓	✓	✓	✓	✓	✓	✓	✓
	200	✓	✓	✓	✓	✓	✓	✓	✓
	225	✓	✓	✓	✓	✓	✓	✓	✓
	250	✓	✓	✓	✓	✓	✓	✓	✓
	280	✓	✓	✓	✓	✓	✓	✓	✓
	315	✓	✓	✓	✓	✓	✓	✓	✓

✓ With additional charge

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".

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.

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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 T_B/T_{rated}	Torque class CL	Moment of inertia J kgm²	Noise at rated output: Measuring surface sound pressure level at 60 Hz L_{pfA} dB(A)	Noise at rated output: 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** 60 Hz 460 VY (see “Introduction” for outputs at 60 Hz)		**Final position: Type of construction code** 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, 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 - . . . ❑❑ **1LG6 317 - . . . ❑❑** **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**.

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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	Frame size	Operating values at rated output						Order No.	Price	Weight
		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	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.
P_{rated}	FS	n_{rated}	T_{rated}		η_{rated}	$\cos\varphi_{rated}$	I_{rated}			m
HP		rpm	Nm		%		A			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

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**
1LG6	180	✓	✓	✓	✓	✓	✓	✓	✓
	200	✓	✓	✓	✓	✓	✓	✓	✓
	225	✓	✓	✓	✓	✓	✓	✓	✓
	250	✓	✓	✓	✓	✓	✓	✓	✓
	280	✓	✓	✓	✓	✓	✓	✓	✓
	315	✓	✓	✓	✓	✓	✓	✓	✓

✓ With additional charge

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".

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.

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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 T_B/T_{rated}	Torque class CL	Moment of inertia J kgm²	Noise at rated output: Measuring surface sound pressure level at 60 Hz L_{pfA} dB(A)	Noise at rated output: 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, 60 Hz, 460 VY (see “Introduction” for outputs at 60 Hz)	Penultimate position: Voltage code, 60 Hz, 460 VΔ	Final position: Type of construction code, 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, 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 - . . . ❑❑ **1LG6 317 - . . . ❑❑** **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**.

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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 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”.

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	
		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**
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 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”. 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.

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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 21 [1], 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.

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Special versions

Converter-fed operation

The motors are suitable for use with converters for voltage rise times t_s >0.1 µs for $U \leq 460$ 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 II C 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.

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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 21 [1], 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 x 90°. 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 "NEPSI [2] certificate number" and the "NEPSI" logo are stamped on the rating plate.

For motor series 1LA8, the "CQST [3] 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.

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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 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 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 voltages 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 voltages 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.

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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	315 L
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) [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.

[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.

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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
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 voltages 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.

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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
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 voltages 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.

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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	315 L
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)**						
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**						○	○	○	○	O. R.	O. R.	O. R.	O. R.	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 voltages 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.

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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	315 L
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.	O. R.	O. R.	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 voltages 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.

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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 S/M	315 L 2-pole	315 L 4-, 6-, 8-pole
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

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.

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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 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.

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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	315 S/M	315 L 2-pole	315 L 4-, 6-, 8-pole
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**						–	–	–	–	–	–	–	–	–	–	✓ [5]	○
IM V5 with protective cover [2] [3] [6]	**9**	**M1F**						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓ [5]	✓
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**										–	–	–	–	–	–	✓ [5]	○
IM V5 with protective cover [2] [3] [6]	**9**	**M1F**										✓	✓	✓	✓	✓	✓	✓ [5]	✓
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.

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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**		✓	✓	✓	✓	✓	✓	✓	✓						

For legend and footnotes, see Page 4/95.

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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.

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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.
O. 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 ≤ internal diameter of roller bearing (see dimesnion 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".

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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)									
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**						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

For legend, see Page 4/98, for footnotes, see Page 4/99.

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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**						✓	✓	✓	□	–	–	–	–	–	–

For legend, see Page 4/98, for footnotes, see Page 4/99.

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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.
O. R. Possible on request
✓ With additional charge
– Not possible

For footnotes, see Page 4/99.

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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 ≤ Inner diameter of roller bearing (see tables under "Dimensions")
– Dimensions E and EA ≤2 x Length E (normal) of the shaft extension
For explanation of the order codes, see catalog part 0 "Introduction".

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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)**			
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.

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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.
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.
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**			–	–	–	–	–	–	–	–	–	✓	✓	✓	✓

For legend and footnotes, see Page 4/103.

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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)**			
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.

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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)**			
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.
O. 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 dimesnion 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.

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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**	–	–	–	–	–	✓	✓	✓	✓	✓	✓	✓			

For legend, see Page 4/108, for footnotes, see Page 4/109.

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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.			
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	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			

For legend, see Page 4/108, for footnotes, see Page 4/109.

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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.			
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.

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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.			
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.			

For legend, see Page 4/108, for footnotes, see Page 4/109.

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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.
O. R. Possible on request
✓ With additional charge
– Not possible

For footnotes, see Page 4/109.

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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 ≤ 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".

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**.

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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.

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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.				
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.				
Unpainted (only cast iron parts primed)	**K23**	○	○	○	○	○	○	○	○	○	○	○				
Unpainted, only primed	**K24**	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				

For legend, see Page 4/113, for footnotes, see Page 4/114.

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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.

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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.				
Anti-condensation heater, Ex. 115 V	**M14**	–	–	–	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

For footnotes, see Page 4/114.

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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 ≤ internal diameter of roller bearing (see dimesnion 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 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**.

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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)**					
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**						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Installation of 6 PT 100 resistance thermometers in stator winding [7]	**A61**						–	–	–	–	✓	✓	✓	✓	✓	✓

For legend and footnotes, see Page 4/119.

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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.	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**						–	–	–	–	–	–	–	✓ [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 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.

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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)**					
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 [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.	✓	✓	✓	✓	✓	✓
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**						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
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**						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

For legend and footnotes, see Page 4/119.

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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)**					
Coolant temperature and site altitude																
Coolant temperature –40 °C to +40 °C for EX motor [19]	**D19**						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Designs in accordance with standards and specifications																
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 [20]	**K20**						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Special bearing for DE and NDE, bearing size	**K36**						–	–	–	–	✓	✓	✓	✓	✓ [21]	✓ [21]
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 [22]	**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 [23]	**K04**						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Second standard shaft extension [24]	**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 [25]	**Y55** • and identification code						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Heating and ventilation																
Fan cover for textile industry	**H17**						✓	✓	✓	✓	–	–	–	–	–	–
Metal external fan [26]	**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.
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.
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						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

For legend and footnotes, see Page 4/119.

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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)**					
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.
O. R. Possible on request
✓ With additional charge
– Not possible

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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 dimesnion 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**.

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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.

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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)					
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**										✓	✓	✓	✓	✓	✓
Auxiliary connection box	**L97**										✓	✓	✓	✓	✓	✓
Saddle terminal for connection without cable lug, accessories pack (6 items)	**M47**										–	–	–	✓ [9]	✓ [9]	✓ [9]
Windings and insulation																
Increased air humidity/temperature with 30 to 60 g water per m³ 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 m³ 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.
Unpainted (only cast-iron parts primed)	**K23**										○	○	○	○	○	○
Unpainted, only primed	**K24**										✓	✓	✓	✓	✓	✓

For legend, see Page 4/123, for footnotes, see Page 4/124.

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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.

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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)					
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.
Anti-condensation heater, Ex. 115 V	**M14**										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

For footnotes, see Page 4/124.

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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**.

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 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**.

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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)711-1388-0
Fax +49 (0)711-1388-233

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

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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

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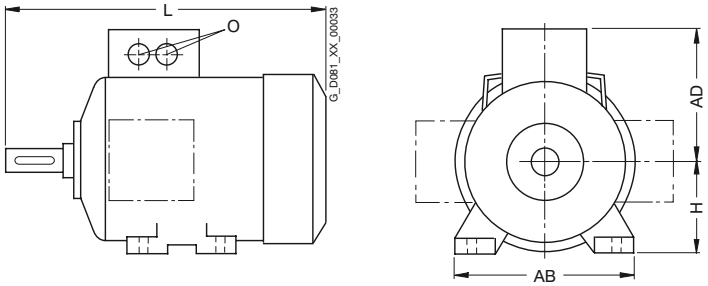
Overview

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
	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

Frame size	Type	Number of poles	Dimensions L	AD	H	AB	O
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

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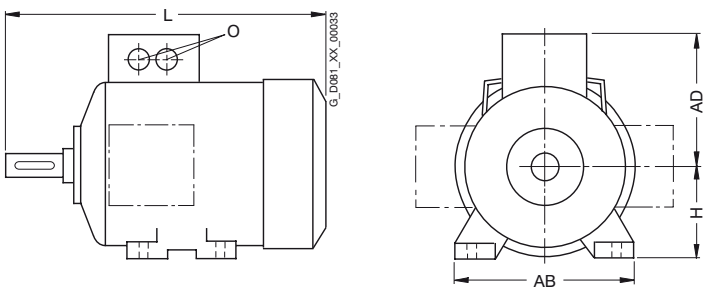
Dimensions

Overview (continued)

Overall dimensions



Frame size	Type	Number of poles	Dimensions L	AD	H	AB	O
225 S/ 225 M	1LA5 1LA5	2	806 776	305 305	225 225	426 426	2 x M50 x 1.5 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
	1MJ7		839	377	225	436	2 x M50 x 1.5
	1MJ7 223	2	809	377	225	436	2 x M50 x 1.5
250 M	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
	1MJ7		930	466	250	506	2 x M63 x 1.5
280 S/ 280 M	1LG4 1LG4 288	2, 4	960 1070	432 432	280 280	540 540	2 x M63 x 1.5 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		1010	491	280	557	2 x M63 x 1.5
315 S/ 315 M/ 315 L	1LG4		1072	500	315	610	2 x M63 x 1.5
	1LG4 310	4, 6, 8	1102	500	315	610	2 x M63 x 1.5
	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

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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.

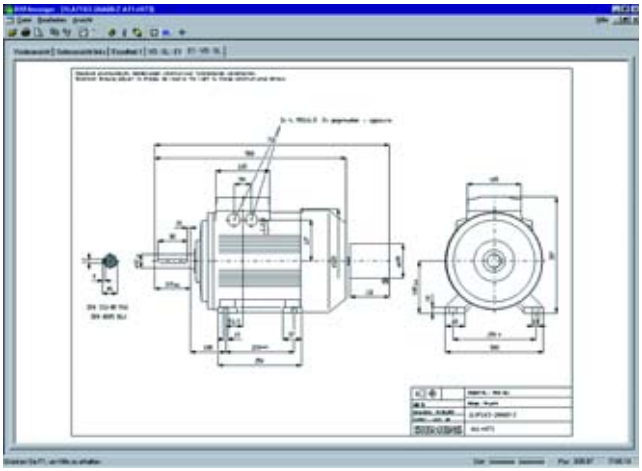
- All dimensions are specified in mm.

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

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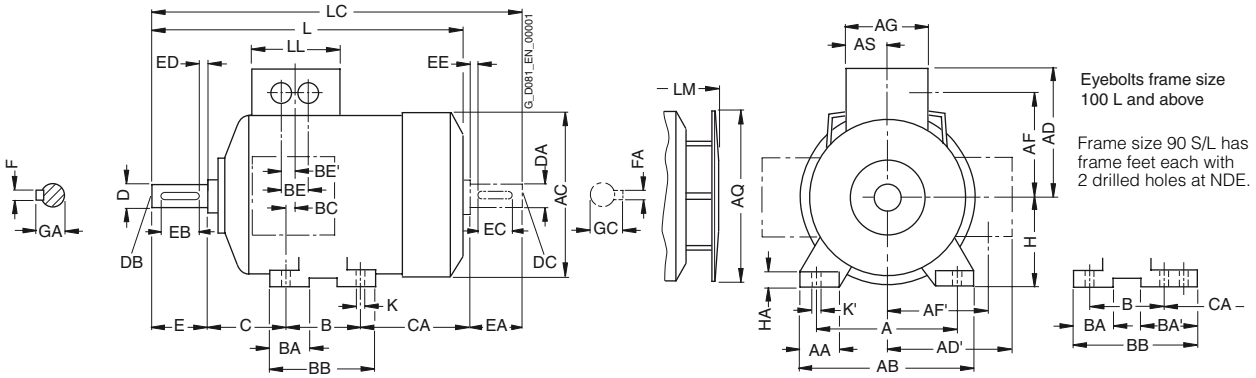
Dimensions

Dimensional drawings

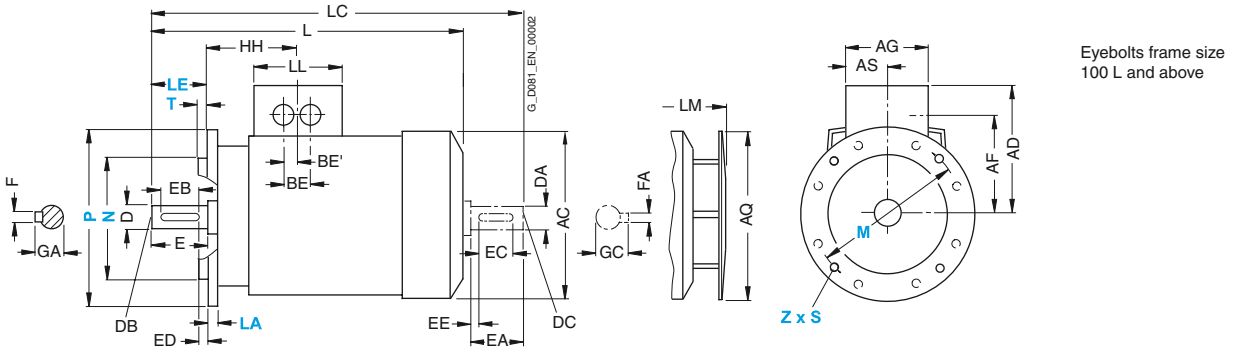
Aluminum series 1MA7, frame sizes 63 M to 160 L

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.

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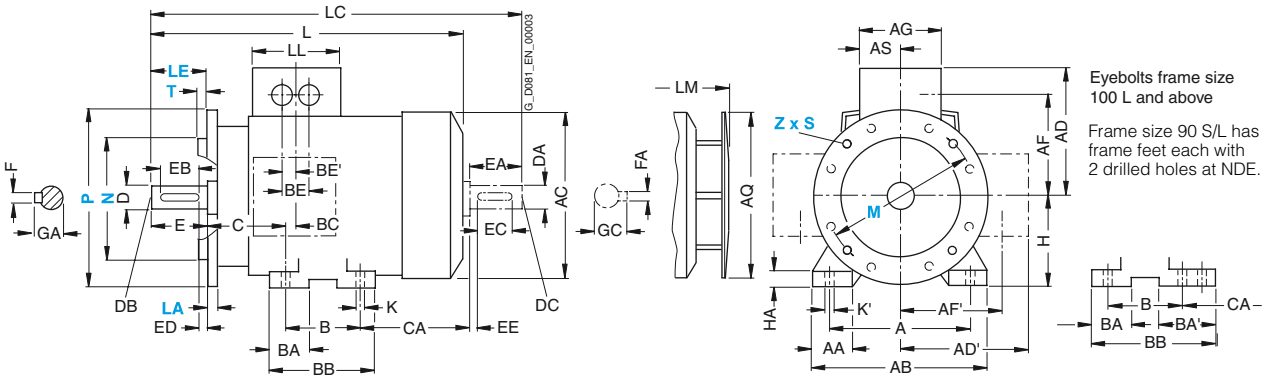
Dimensional drawings

Aluminum series 1MA7, frame sizes 63 M to 160 L

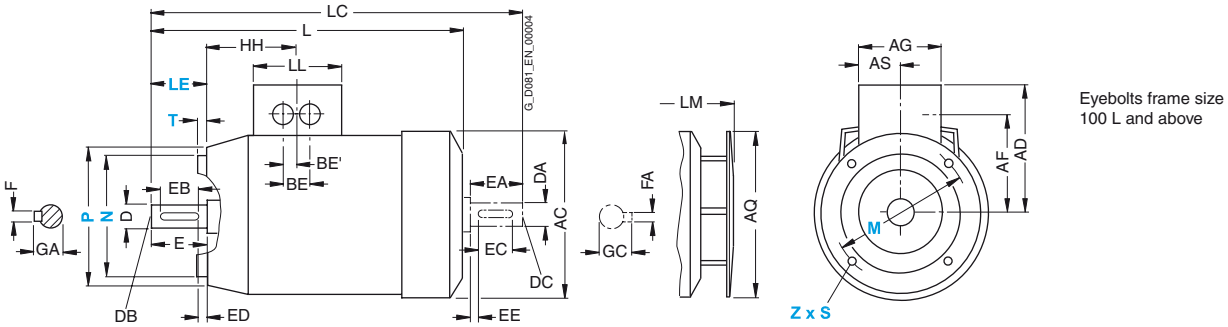
Type of construction IM B35
For flange dimensions, see Page 4/152 (Z = the number of retaining holes)



Eyebolts frame size 100 L and above

Frame size 90 S/L has frame feet each with 2 drilled holes at NDE.

Type of construction IM B14
For flange dimensions, see Page 4/152 (Z = the number of retaining holes)



Eyebolts frame size 100 L and above

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
63 M	1MA7 060 1MA7 063	2, 4, 6	92.5	7	10	202.5 [1] 	232 [1] 	120	231.5 [1] 	11	M4	23	16	3.5	4	12.5	11	M4	23	16	3.5	4	12.5
71 M	1MA7 070 1MA7 073	2, 4, 6, 8	86.5	7	10	240	278	120	268	14	M5	30	22	4	5	16	14	M5	30	22	4	5	16
80 M	1MA7 080 1MA7 083	2, 4, 6, 8	86	9.5	13.5	273.5 308.5 [2]	324 364	120	299.5 334.5 [2]	19	M6	40	32	4	6	21.5	19	M6	40	32	4	6	21.5
90 S 90 L	1MA7 090 1MA7 096	2, 4, 6, 8	101.5	10	14	331	389	120	382.5	24	M8	50	40	5	8	27	19	M6	40	32	4	6	21.5
100 L	1MA7 106 1MA7 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	1MA7 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	1MA7 130 1MA7 131	2, 4, 6, 8 2	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	1MA7 133 1MA7 134	4, 6, 8 6	128	12	16	452.5 [3] 490.5 [4]	551.5 589.5 [4]	140	505 [3] 543 [4]	38	M12	80	70	5	10	41	38	M12	80	70	5	10	41
160 M	1MA7 163 1MA7 164	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	1MA7 166	2, 4, 6, 8	160.5	15	19	588 628 [5]	721 761 [5]	165	640.5 680.5 [5]	42	M16	110	90	10	12	45	42	M16	110	90	10	12	45

[1] For 1MA7 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.

[2] For 1MA7 083-6.

[3] In a low-noise version, the dimension L is 8 mm greater and the dimension LM is 11.5 mm greater.

[4] For 1MA7 133-4.

[5] For 1MA7 166-4 and 1MA7 166-6.

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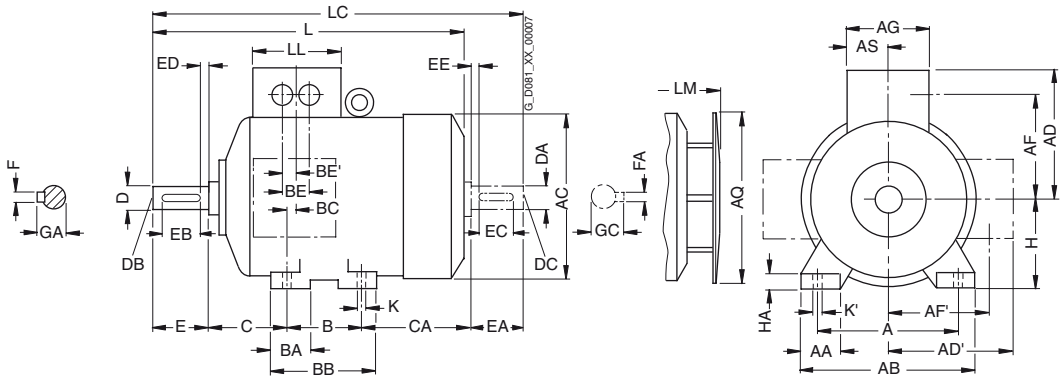
Dimensions

Dimensional drawings

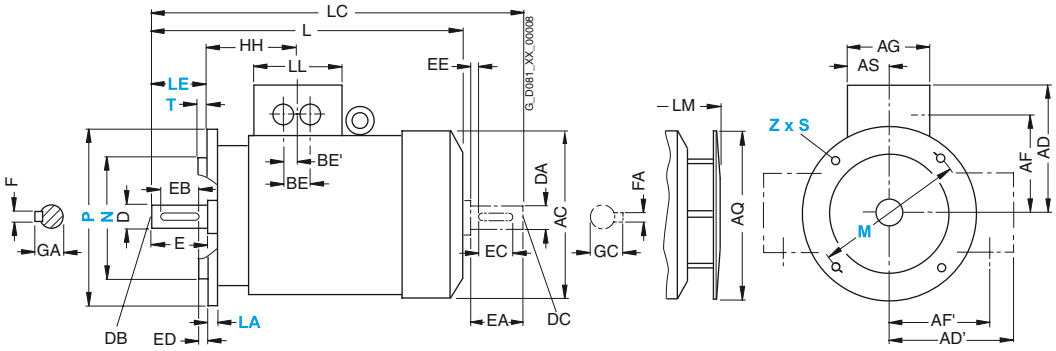
Cast-iron series 1MA6, frame sizes 100 L to 160 L

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)



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	1MA6 106 1MA6 107	2, 4, 6, 8 4, 8	160	40	196	201	164	164	124	124	121	170	60.5	140	46	180	42	44	22	63	125	100	12
112 M	1MA6 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	1MA6 130 1MA6 131	2, 4, 6, 8 2	216	50	256	265	194	194	154	154	141	250	70.5	140	47	180	42	44	22	89	162.5	132	17
132 M	1MA6 133 1MA6 134	4, 6, 8 6	216	50	256	265	194	194	154	154	141	250	70.5	178	49	218	42	44	22	89	124.5	132	17
160 M	1MA6 163 1MA6 164	2, 4, 6, 8 2, 8	254	60	300	320	226	226	183	183	166	250	83	210	63	256	52	54	27	108	183	160	18
160 L	1MA6 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.

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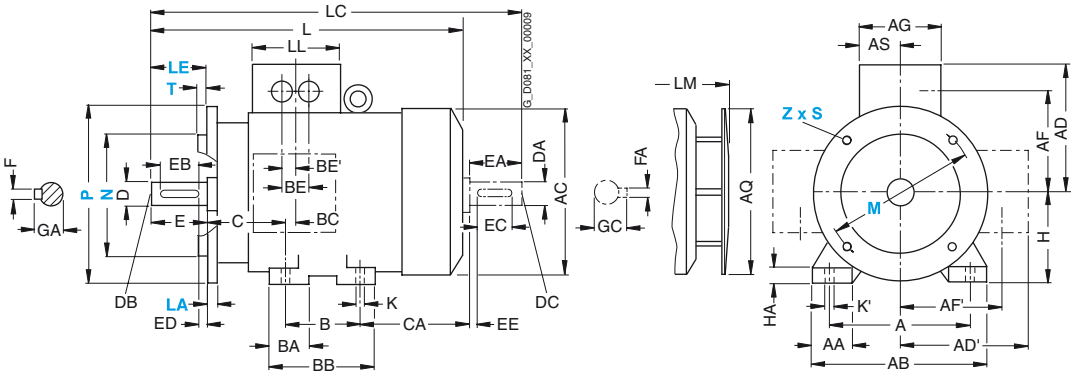
Dimensional drawings

Cast-iron series 1MA6, frame sizes 100 L to 160 L

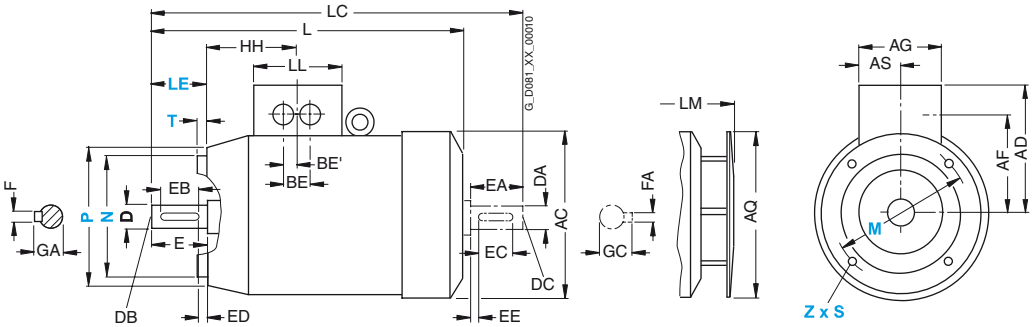
Type of construction IM B35

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			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	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

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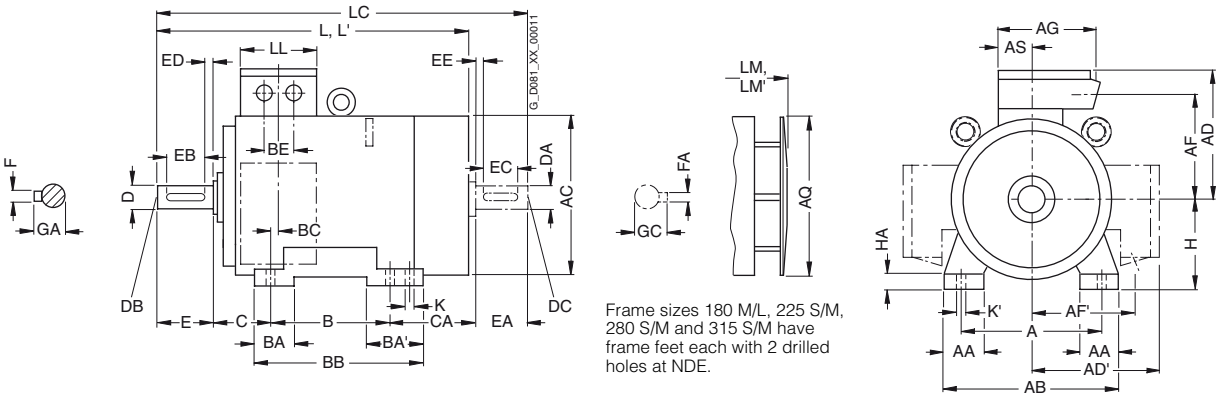
Dimensions

Dimensional drawings

Cast-iron series 1MA6, frame sizes 180 M to 315 L

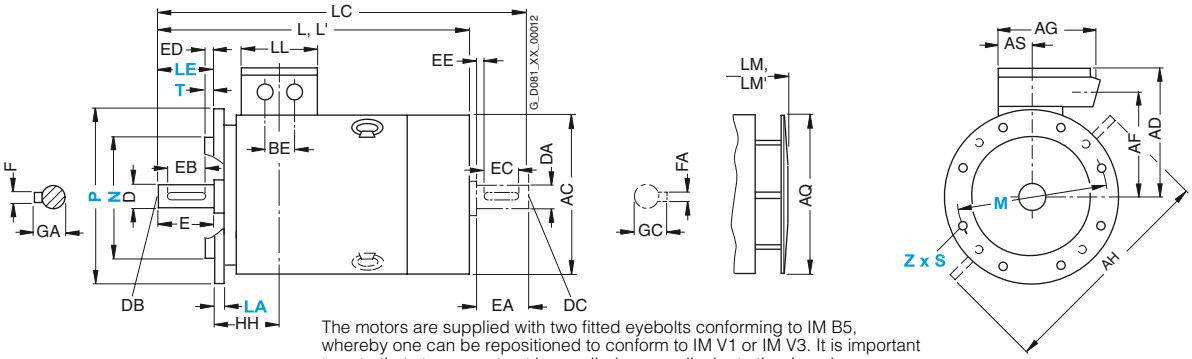
Type of construction IM B3



Frame sizes 180 M/L, 225 S/M, 280 S/M and 315 S/M have frame feet each with 2 drilled holes at NDE.

Types of construction IM B5 and IM V1

For flange dimensions, see Page 4/152 (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[1]	AD	AD'	AF	AF'	AG	AH	AQ	AS	B*	BA	BA'	BB	BC	BE	C	CA*	H	HA
180 M	1MA6 183	2 4	279	65	344	375	274	274	227	227	220	470	340	82	241	70	108	319	35	75	121	259	180	26
180 L	1MA6 186	4, 6, 8	279	65	344	375	274	274	227	227	220	470	340	82	279	70	108	319	35	75	121	221	180	26
200 L	1MA6 206	2 6	318	80	398	402	308	308	248	248	262	530	340	99	305	85	85	355	42	85	133	239	200	34
	1MA6 207	2 4, 6, 8	318	80	398	402	308	308	248	248	262	530	340	99	305	85	85	355	42	85	133	239	200	34
225 S	1MA6 220	4, 8	356	80	436	442	339	339	269	269	264	580	425	100	286	85	110	361	25	85	149	269	225	34
225 M	1MA6 223	2 4, 6, 8	356	80	436	442	339	339	269	269	264	580	425	100	311	85	110	361	25	85	149	244	225	34
250 M	1MA6 253	2 4, 6, 8	406	100	506	505	427	427	333	333	338	645	470	120	349	100	100	409	39	95	168	283	250	42
280 S	1MA6 280	2 4, 6, 8	457	100	557	555	452	452	358	358	338	700	525	120	368	100	151	471	30	95	190	317	280	42
280 M	1MA6 283	2 4, 6, 8	457	100	557	555	452	452	358	358	338	700	525	120	419	100	151	471	30	95	190	366	280	42
315 S	1MA6 310	2 4, 6, 8	508	120	628	620	515	515	395	395	405	805	590	134	406	125	171	527	32	90	216	358	315	52
315 M	1MA6 313	2 4, 6, 8	508	120	628	620	515	515	395	395	405	805	590	134	457	125	171	527	32	90	216	307	315	52
315 L	1MA6 316 1MA6 317 1MA6 318	2 4, 6, 8 6, 8	508	120	628	620	515	515	395	395	405	805	590	134	508	120	120	578	32	90	216	396	315	52

■ Dimensions for 9-terminal connection box can be supplied on request.

[1] Measured across the bolt heads.

* This dimension is assigned in DIN EN 50347 to the frame size listed.

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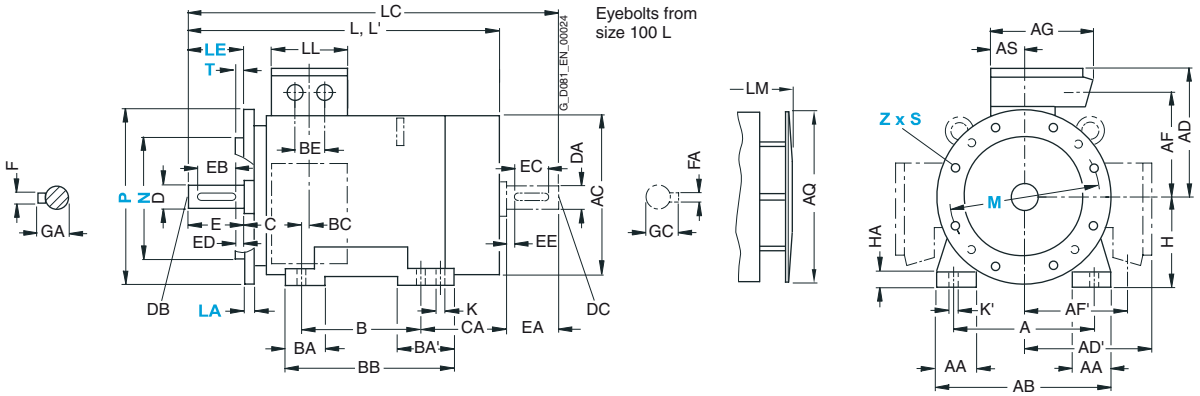
Dimensional drawings

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.

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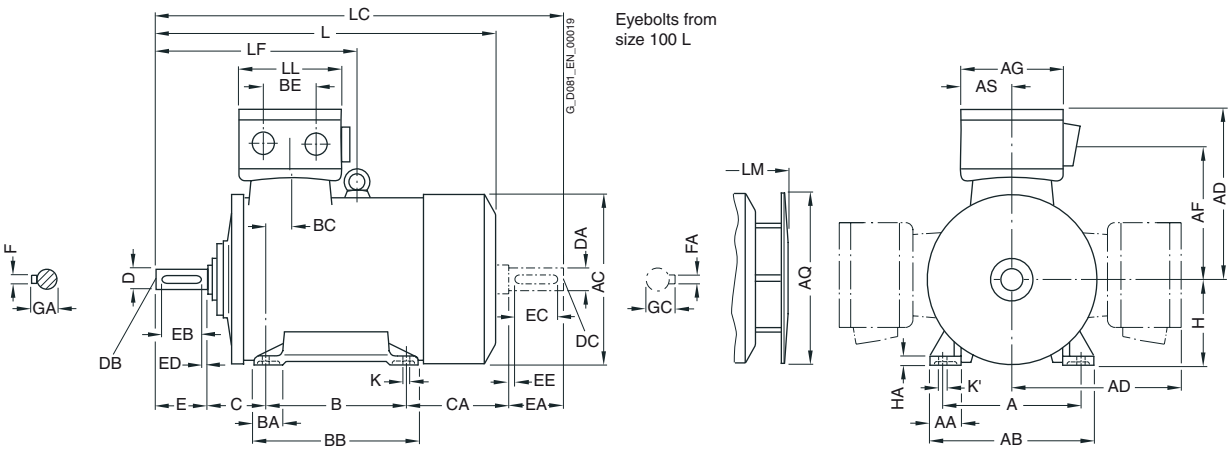
Dimensions

Dimensional drawings

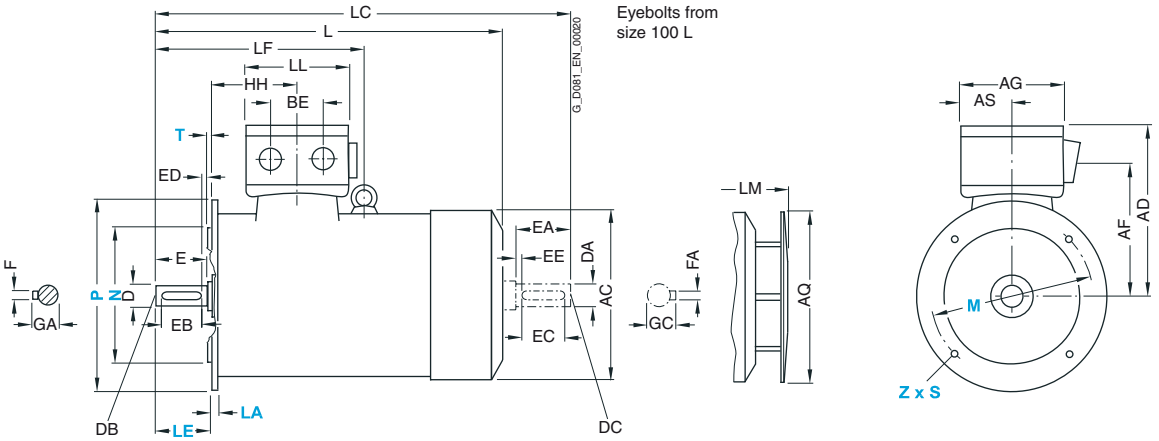
Cast-iron series 1MJ6, frame sizes 71 M to 160 L

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	AF	AG	AQ	AS	B	BA	BB	BC	BE	C	CA	H	HA	HH	K	K'	L
71 M	1MJ6 070	2, 4	112	34	140	148.5	201[2]	162	152	124	71	90	30	110	58	54	45	144	71	8	103	7	10	299
	1MJ6 073	2, 4, 6																						
80 M	1MJ6 080	2, 4, 6	125	36	160	165.5	209[2]	170	152	125	71	100	35	125	44	54	50	156	80	10	93.5	9.5	13.5	336
	1MJ6 083	2, 4, 6																						
90 L	1MJ6 096	2, 4, 6, 8	140	37	168	183	218	177	162	170	81	125	35	156	54	54	56	177	90	13	109.5	10	14	383
	1MJ6 097	2, 4, 6, 8																						
100 L	1MJ6 106	2, 4, 6, 8	160	45	196	202.5	223	182	162	170	81	140	45	176	50	54	63	185	100	14	112.5	12	16	426
	1MJ6 107	4, 8																						
112 M	1MJ6 113	2, 4, 6, 8	190	50	226	228.5	238	197	162	170	81	140	45	176	52	54	70	180	112	15	121.5	12	16	428
132 S	1MJ6 130	2, 4, 6, 8	216	53	256	267.5	258	217	162	250	81	140	49	180	55	54	89	228	132	17	144	12	16	515
	1MJ6 131	2																						
132 M	1MJ6 133	4, 6, 8	216	53	256	267.5	258	217	162	250	81	178	49	218	55	54	89	190	132	17	144	12	16	515
	1MJ6 134	6																						
160 M	1MJ6 163	2, 4, 6, 8	254	60	300	323	280	239	162	250	81	210	57	256	40	54	108	238	160	20	148	15	19	641
	1MJ6 164	2, 8																						
160 L	1MJ6 166	2, 4, 6, 8	254	60	300	323	314	246	216	250	95	254	57	300	40	96	108	194	160	20	148	15	19	641

1) Measured across the bolt heads.

2) K09 and K10 frame size 90 and above.

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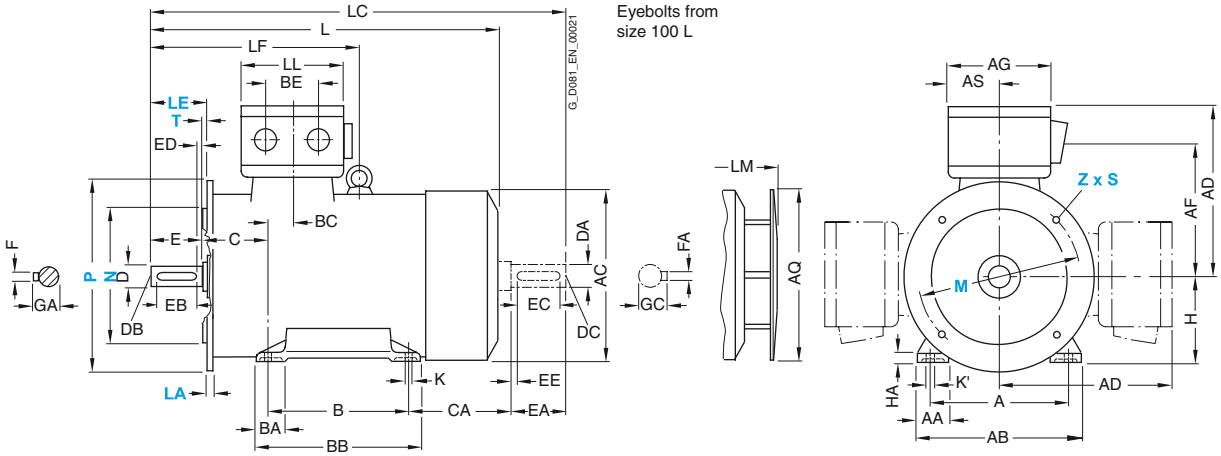
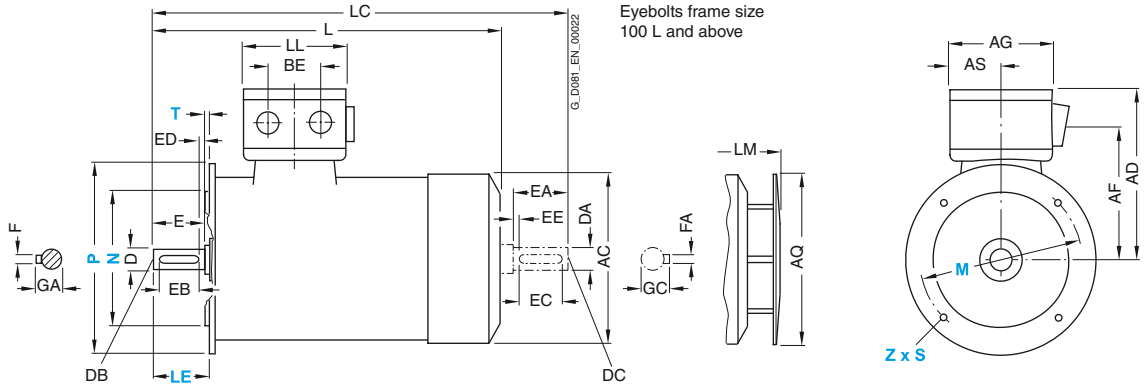
Dimensional drawings

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			Dimension designation acc. to **IEC** DE shaft extension											NDE shaft extension						
Frame size	Type	Number of poles	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

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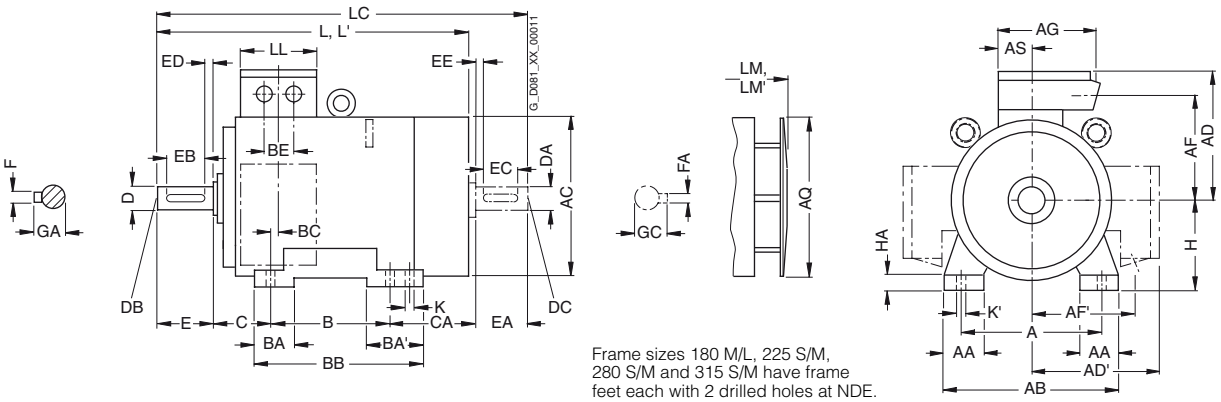
Dimensions

Dimensional drawings

Cast-iron series 1MJ6 and 1MJ7, frame sizes 180 M to 315 M

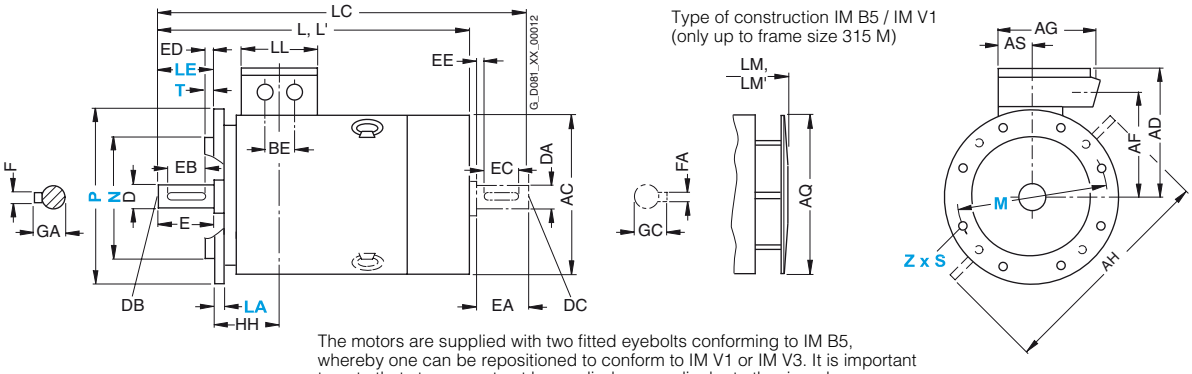
Type of construction IM B3



Frame sizes 180 M/L, 225 S/M, 280 S/M and 315 S/M have frame feet each with 2 drilled holes at NDE.

Types of construction IM B5 and IM V1

For flange dimensions, see Page 4/152 (Z = the number of retaining holes)



Type of construction IM B5 / IM V1 (only up to frame size 315 M)

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[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 6	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 4, 6, 8	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 4, 6, 8	356	80	436	442	377	377	315	315	262	580	425	100	311	85	110	361	25	90	149	244	225	174	34
250 M	1MJ7 253	2 4, 6, 8	406	100	506	505	466	466	353	353	336	645	470	120	349	100	100	409	39	95	168	283	250	207	42
280 S	1MJ7 280	2 4, 6, 8	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 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 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 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.

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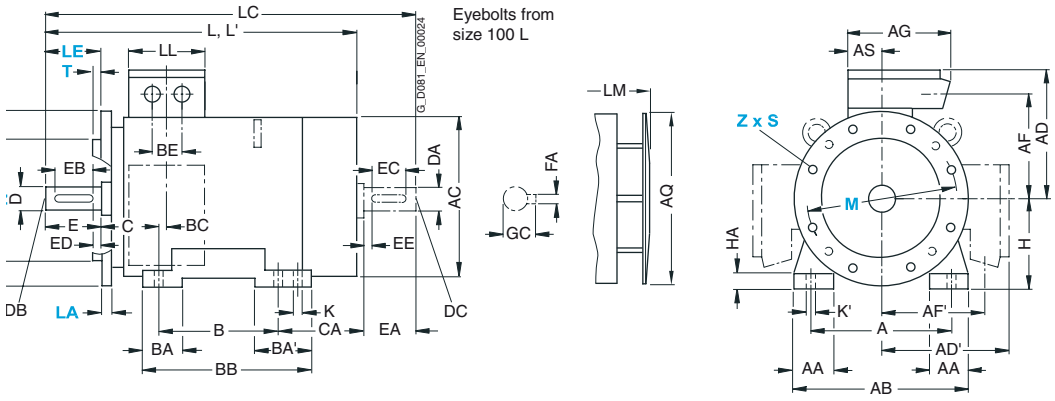
Dimensional drawings

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			Dimension designation acc. to **IEC**								DE shaft extension							NDE shaft extension						
Frame size	Type	Number of poles	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
		6				–				–								55	M20				16	59
	1MJ6 207	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						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.

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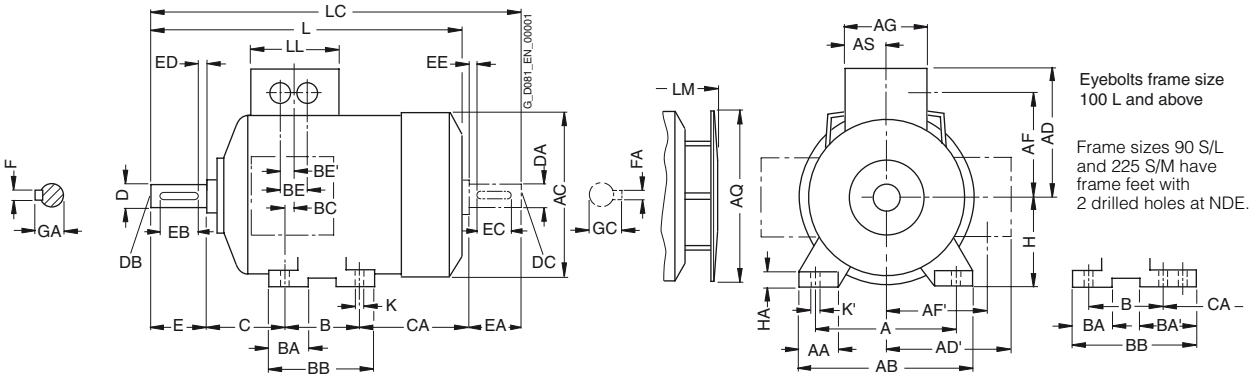
Dimensions

Dimensional drawings

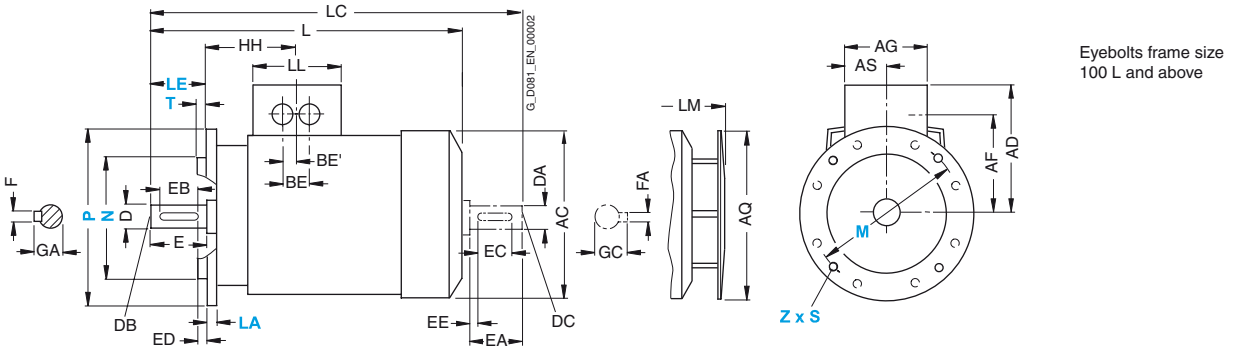
Aluminum series 1LA7 and 1LA5, frame sizes 56 M to 225 M

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, 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 225 M	1LA5 220 1LA5 223	4, 8 2 4, 6, 8	356 356	103 103	426 426	402 402	305 305	305 305	252 252	252 252	260 260	340 340	96 96	286 311	58 58	83 83	361 361	36 36	85 85	42.5 42.5	149 149	248.5 223.5	225 225	24 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.

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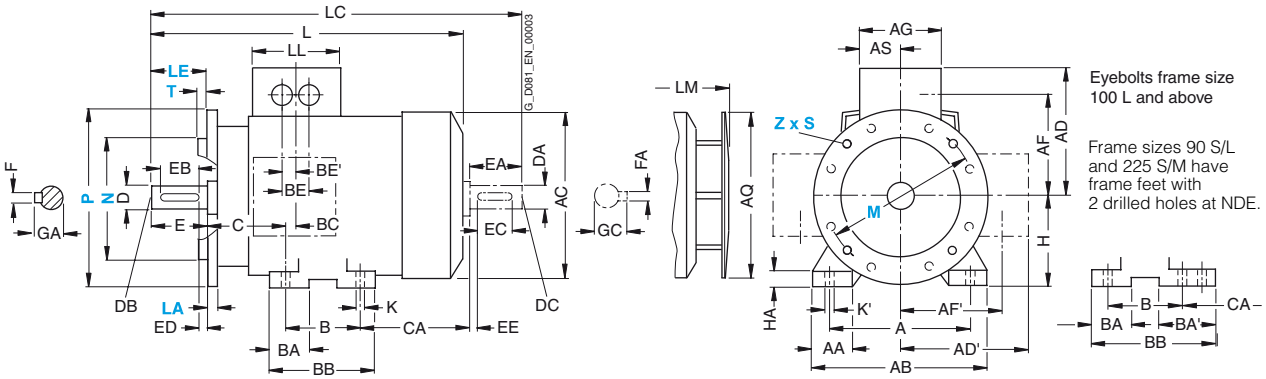
Dimensional drawings

Aluminum series 1LA7 and 1LA5, frame sizes 56 M to 225 M

Type of construction IM B35

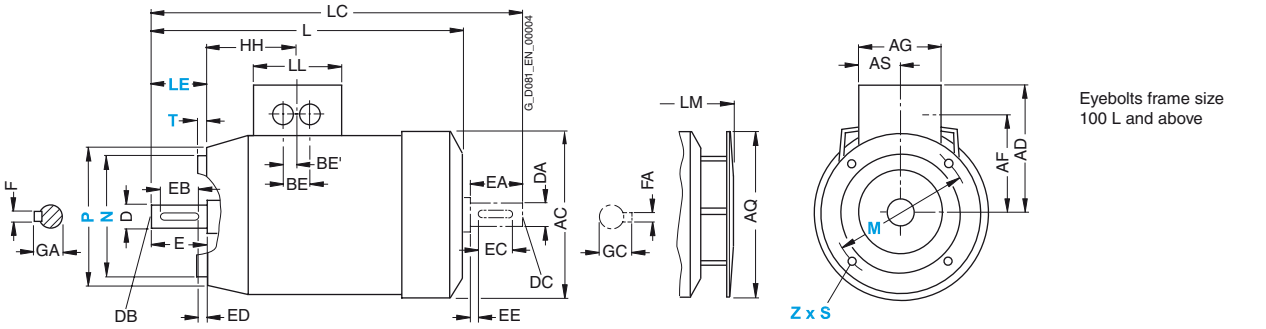
For flange dimensions, see Page 4/152 (Z = the number of retaining holes)



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, 4, 6, 8 2	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 1LA7 134	4, 6, 8 6	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, 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 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.

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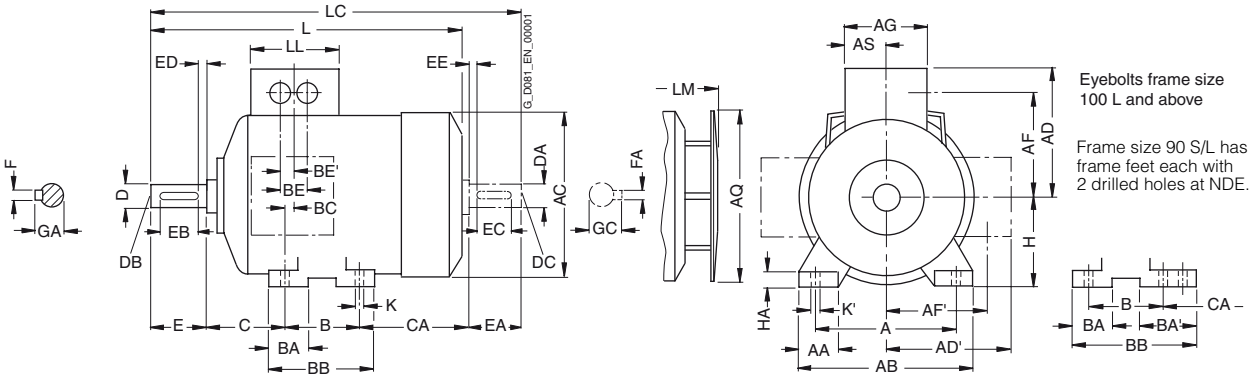
Dimensions

Dimensional drawings

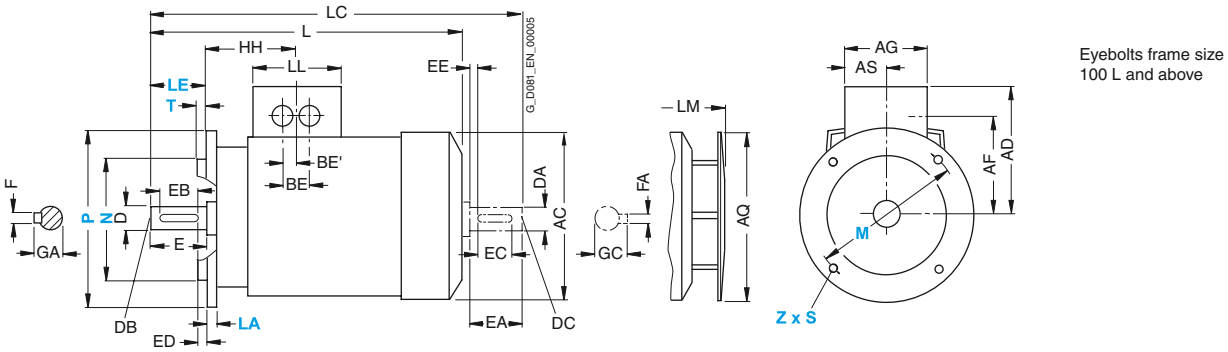
Aluminum series 1LA9, frame sizes 56 M to 200 L

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 1LA9 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	1LA9 060 1LA9 063	2, 4	100	27	120	124	135	135	95	95	120	124	37	80	28	–	96	52	32	18	40	66 92	63	7
71 M	1LA9 070 1LA9 073	2, 4	112	30.5	132	145	145	145	105	105	120	124	37	90	27	–	106	41	32	18	45	83	71	7
80 M	1LA9 080 1LA9 083	2, 4	125	30.5	150	163	154	154	114	114	120	124	37.5	100	32	–	118	36	32	18	50	94 134	80	8
90 S 90 L	1LA9 090 1LA9 096	2, 4, 6	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	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 1LA9 131	2, 4 2	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.

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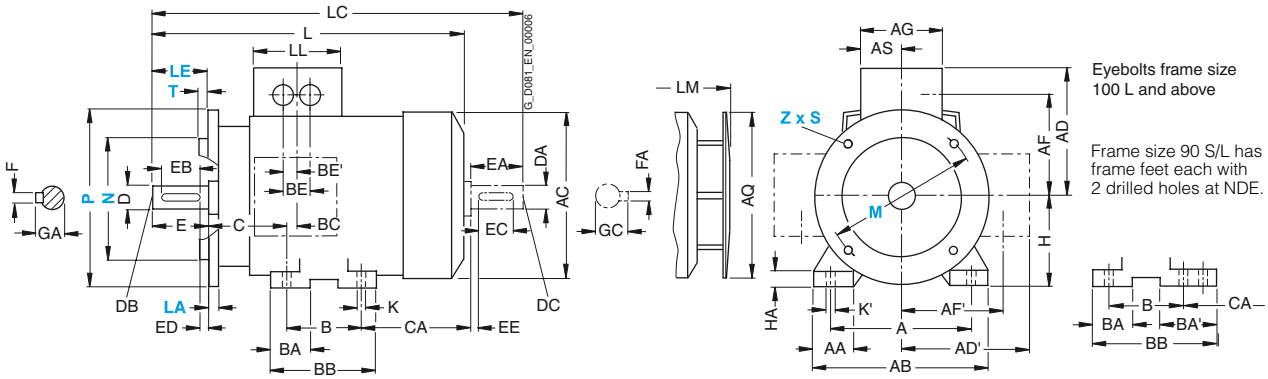
Dimensional drawings

Aluminum series 1LA9, frame sizes 56 M to 200 L

Type of construction IM B35

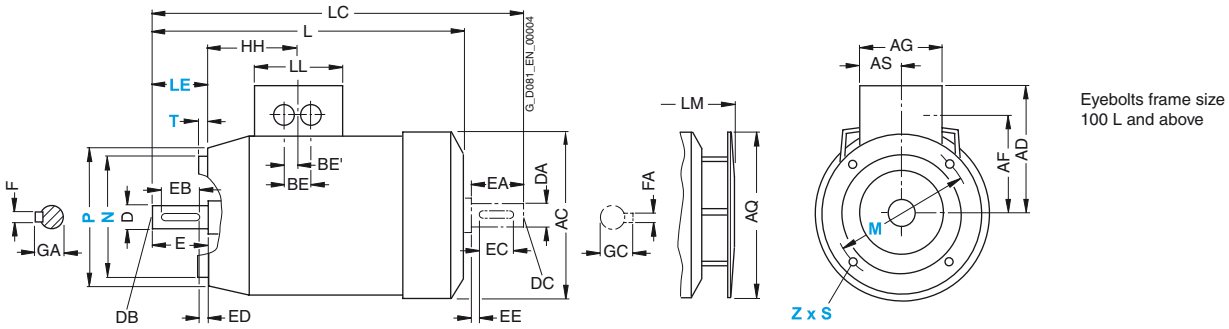
For flange dimensions, see Page 4/152 (Z = the number of retaining holes)



Type of construction IM B14

Type of construction IM B14 not possible for 1LA9 motors, frame sizes 180 M to 200 L

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]	1LA9 050 1LA9 053	2, 4	69.5	5.8	9	169[2] 	200[2] 	120	–	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	120	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	120	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	120	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]	120	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 2	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, LC and LM 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.

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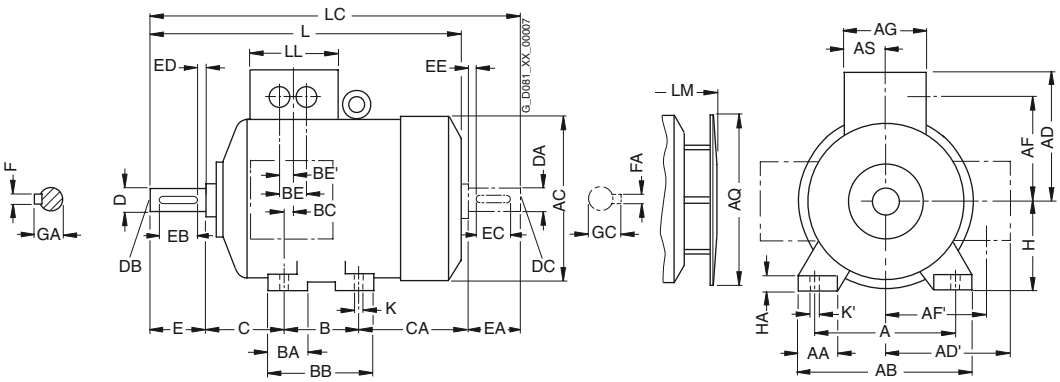
Dimensions

Dimensional drawings

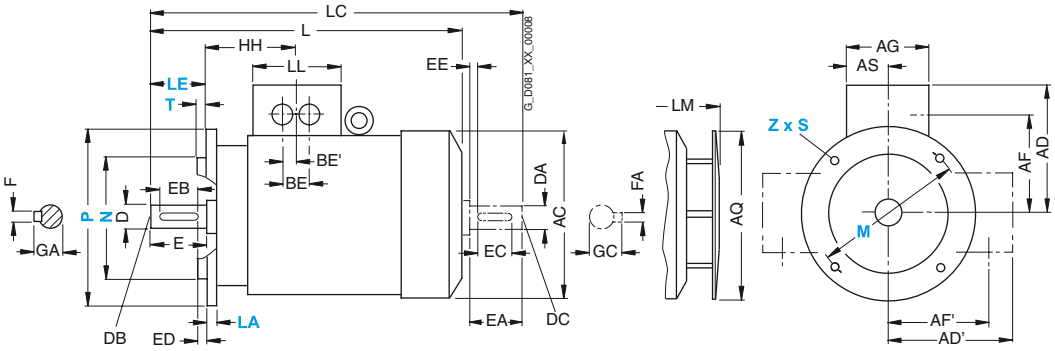
Cast-iron series 1LA6, frame sizes 100 L to 160 L

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)



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 1LA6 107	2, 4, 6, 8 4, 8	160	40	196	201	164	164	124	124	121	170	60.5	140	46	180	42	44	22	63	125	100	12
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 1LA6 131	2, 4, 6, 8 2	216	50	256	265	194	194	154	154	141	250	70.5	140	47	180	42	44	22	89	162.5	132	17
132 M	1LA6 133 1LA6 134	4, 6, 8 6	216	50	256	265	194	194	154	154	141	250	70.5	178	49	218	42	44	22	89	124.5	132	17
160 M	1LA6 163 1LA6 164	2, 4, 6, 8 2, 8	254	60	300	320	226	226	183	183	166	250	83	210	63	256	52	54	27	108	183	160	18
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.

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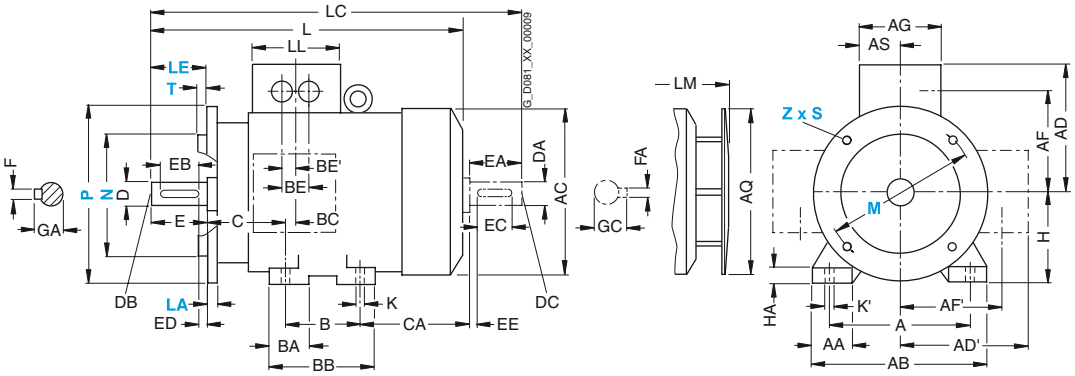
Dimensional drawings

Cast-iron series 1LA6, frame sizes 100 L to 160 L

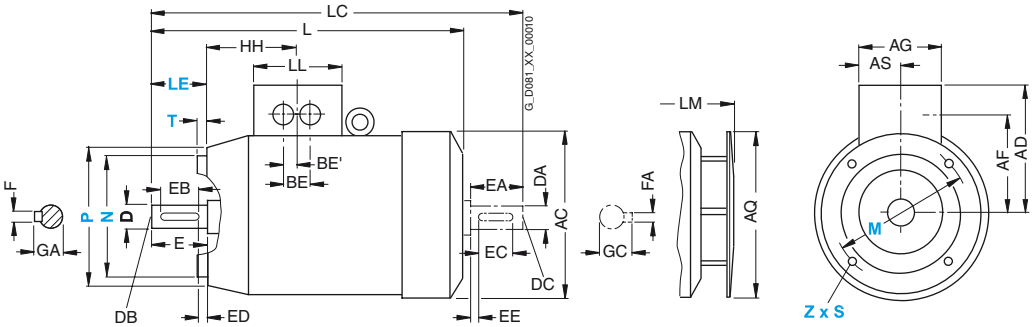
Type of construction IM B35

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			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

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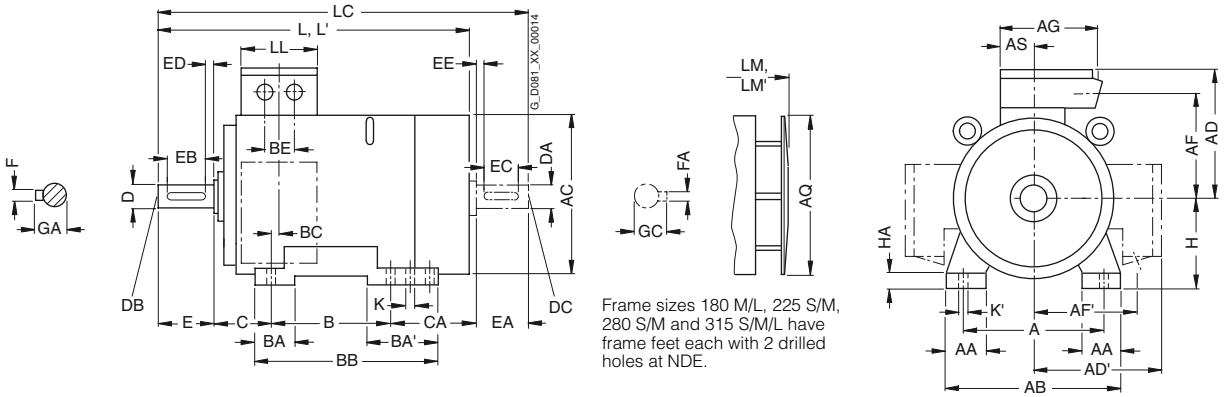
Dimensions

Dimensional drawings

Cast-iron series 1LG4, frame sizes 180 M to 315 L

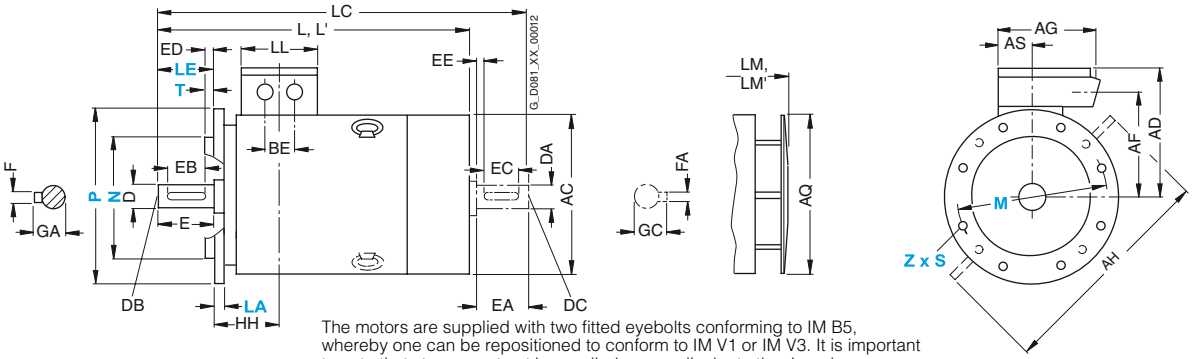
Type of construction IM B3



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

For flange dimensions, see Page 4/152 (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[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
		4, 6, 8																						
	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
		4, 6, 8																						
	1LG4 258	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		
		6, 8																				235		
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
		4, 6, 8																						
	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.

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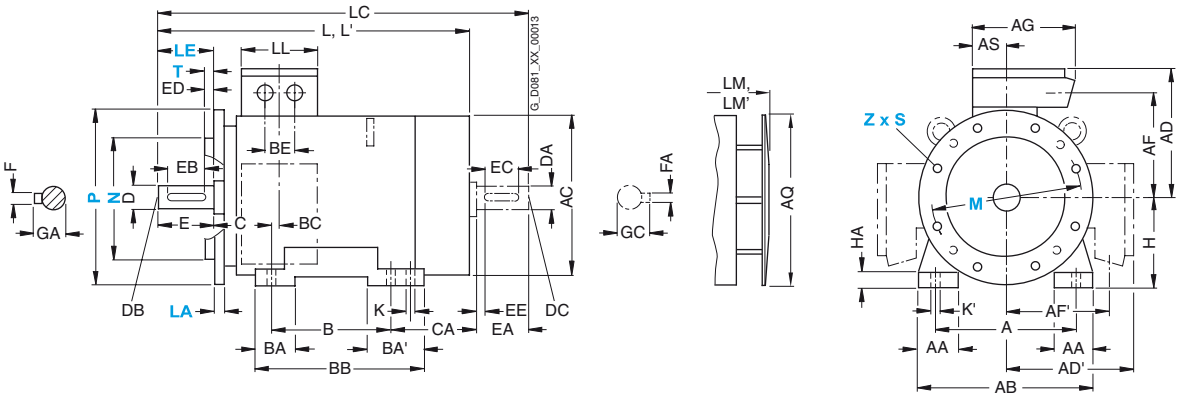
Dimensional drawings

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.

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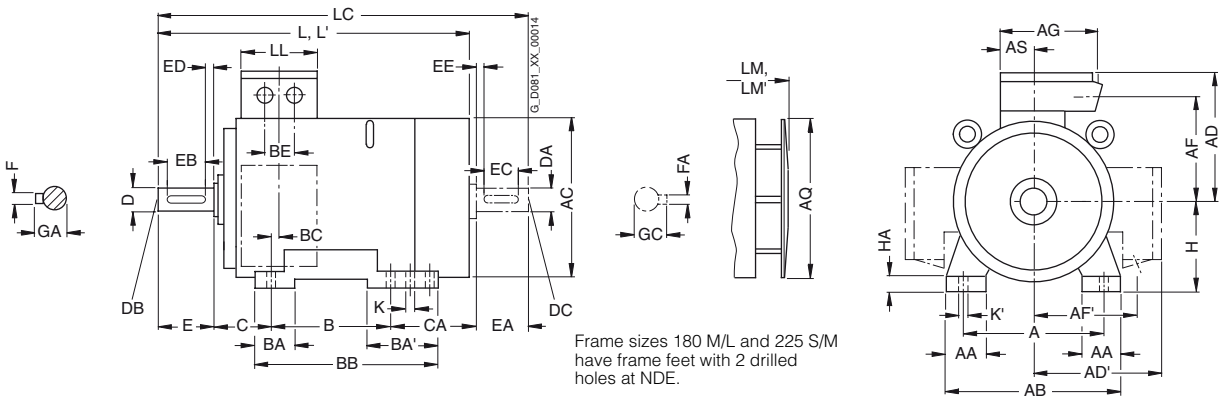
Dimensions

Dimensional drawings

Cast-iron series 1LG6, frame sizes 180 M to 250 M

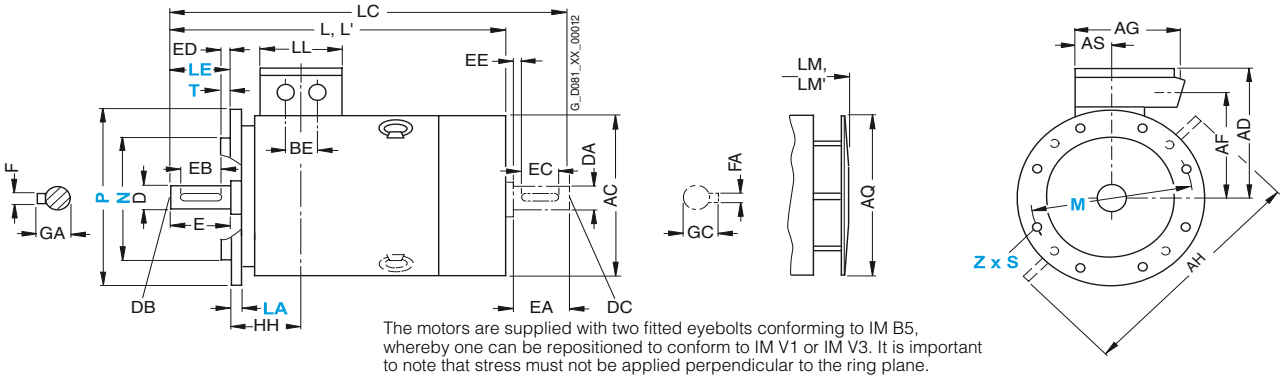
Type of construction IM B3



Frame sizes 180 M/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 4/152 (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[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
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	177	200	25
	1LG6 207	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
225 M	1LG6 223	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																						
	1LG6 228	2	356	80	436	442	325	325	272	272	260	556	425	96	311	85	110	361	47	85	149	303	225	34
		4, 6																						
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		
		6, 8																				235		
	1LG6 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, 6																						

* This dimension is assigned in DIN EN 50347 to the frame size listed.

1) Measured across the bolt heads.

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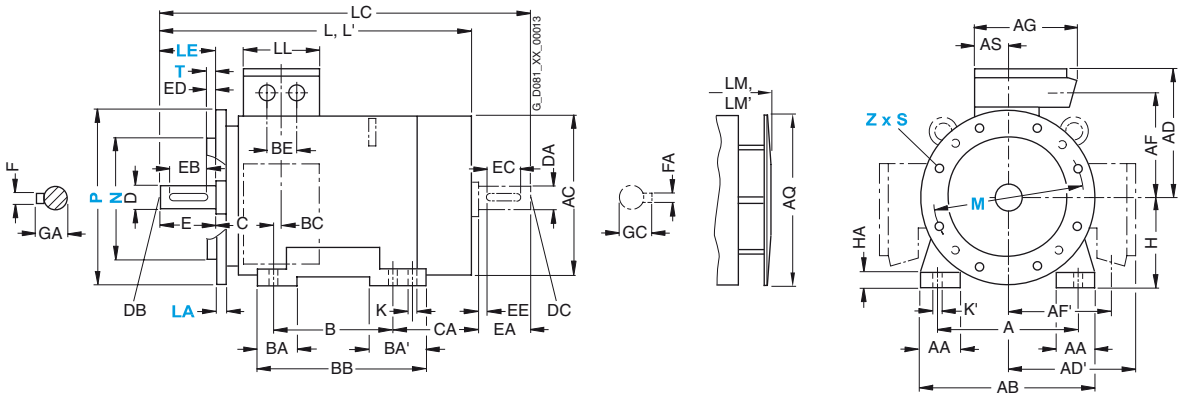
Dimensional drawings

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
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
	1LG6 207	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				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
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	60	M20	140	125	10	18	64	55	M20	110	100	5	16	59
	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	60	M20	140	125	10	18	64	55	M20	110	100	5	16	59
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	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
	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

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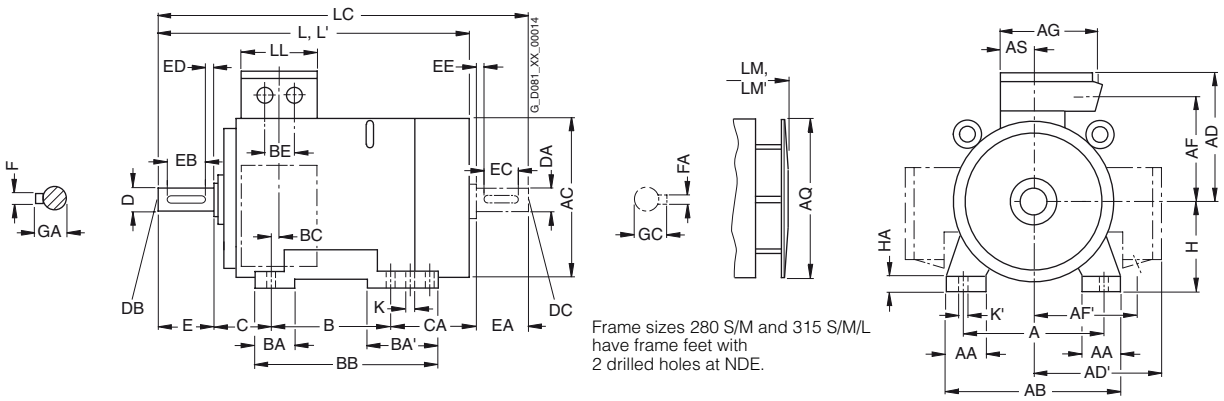
Dimensions

Dimensional drawings

Cast-iron series 1LG6, frame sizes 280 S to 315 L

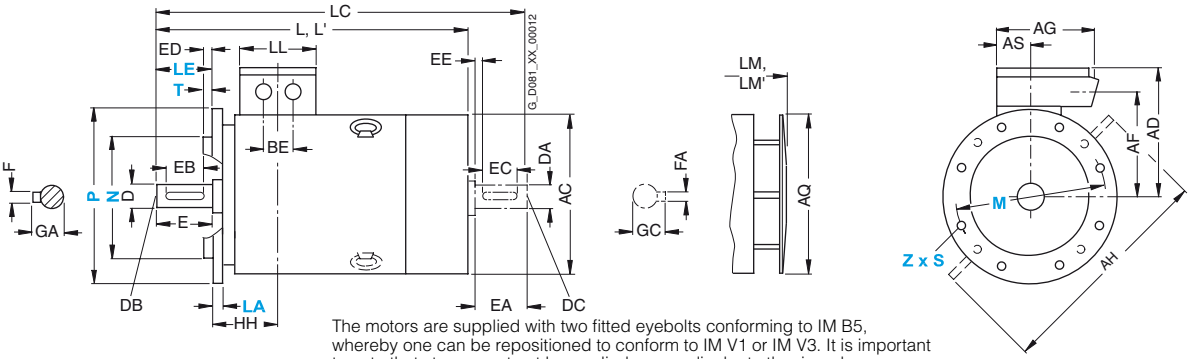
Type of construction IM B3



Frame sizes 280 S/M and 315 S/M/L have frame feet with 2 drilled holes at NDE.

Types of construction IM B5 and IM V1

For flange dimensions, see Page 4/152 (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[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																						
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																				216		
	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																						
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																						
315 M[2]	1LG6 313	8	508	120	610	610	500	500	400	400	380	780	590	154	457	125	176	527	69	110	216	264	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
	1LG6 313	4, 6																						
315 L[2]	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																						
	1LG6 316	8																						
	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																						
	1LG6 317	8																578						
	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																						
	1LG6 318	6, 8					500	500	400	400	380									110				

* 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.

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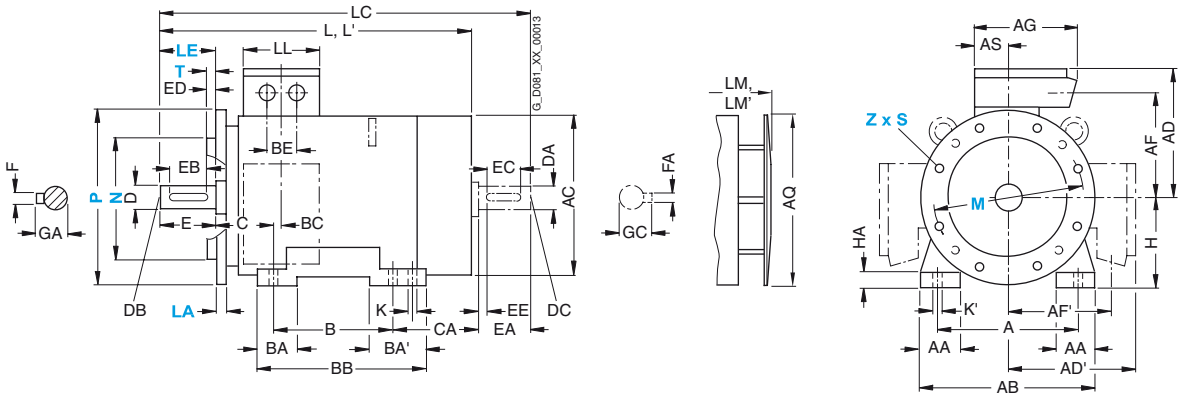
Dimensional drawings

Cast-iron series 1LG6, frame sizes 280 S 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	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
		6, 8				960	1105		1070	75	M20	140	125	10	20	79.5	65	M20	140	125	10	18	69
	1LG6 288	2	252	24	30	1070	1215	236	1180	65	M20	140	125	10	18	69	60	M20	140	125	10	18	64
		4, 6								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.

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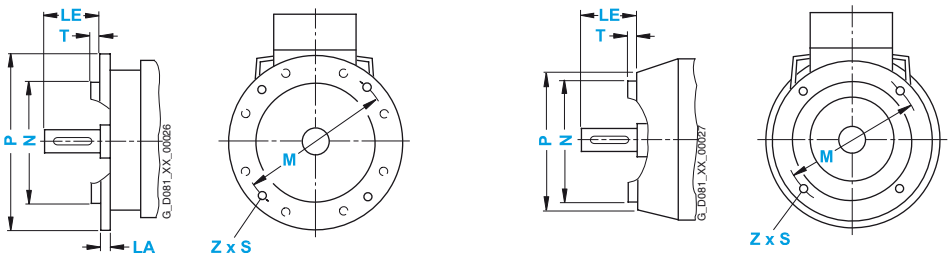
Dimensions

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	110 140	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	140 170	600	550	660	24	6	8