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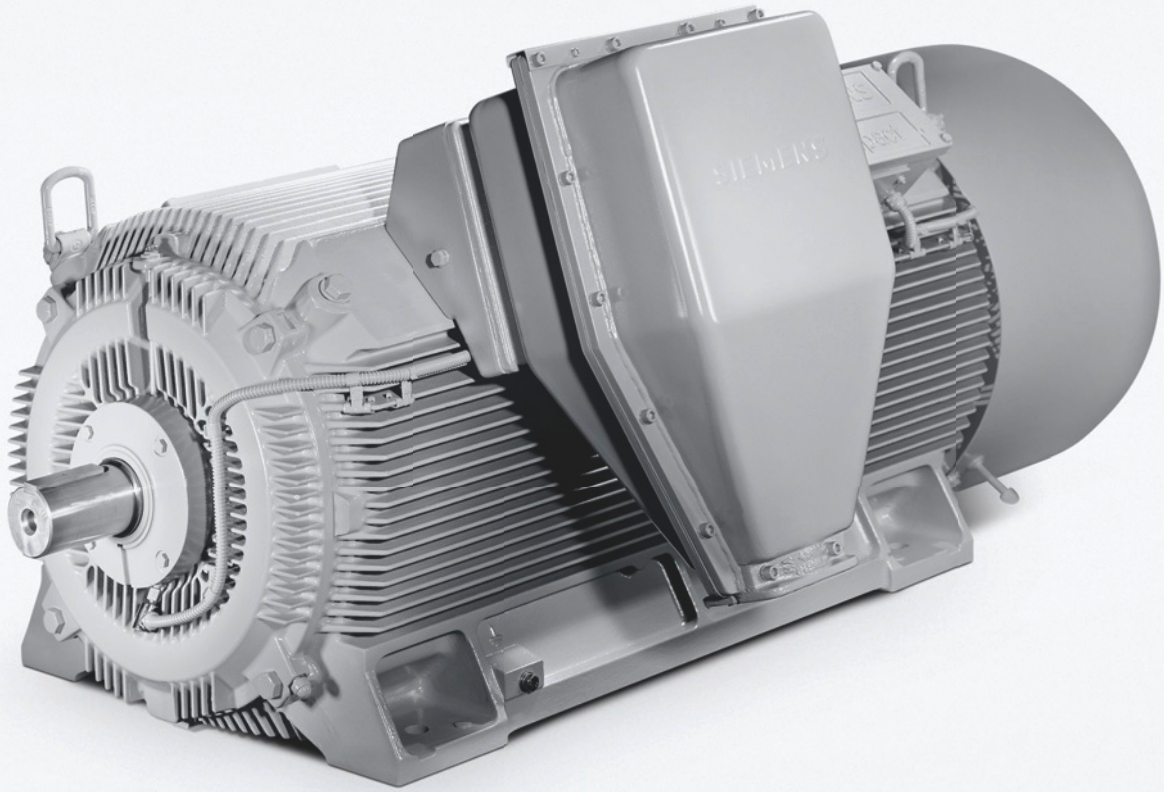


Motors

Three-Phase Induction Motors SIMOTICS HV, SIMOTICS TN Series H-compact

Catalog D 84.1

Edition 2019

siemens.com/motors

Related catalogs

High Voltage Three-phase Induction Motors D 84.9
SIMOTICS HV Series A-compact PLUS

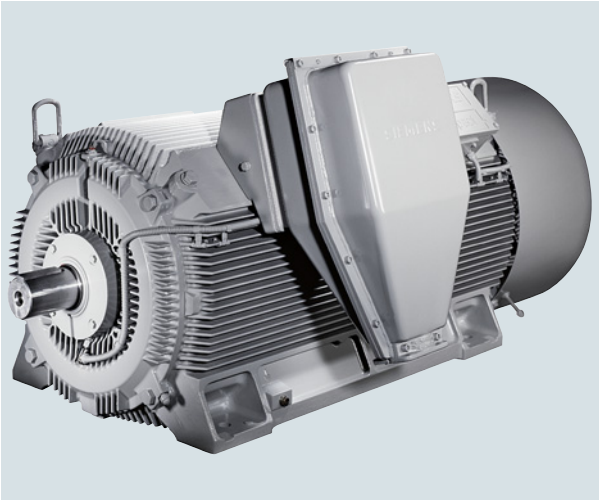
E86060-K5584-A191-A2-7600

Three-Phase Induction Motors SIMOTICS HV M D 84.3

PDF (E86060-K5583-A131-A1-7600)

Three-Phase Induction Motors
SIMOTICS HV, SIMOTICS TN Series H-compact

Motors



Catalog D 84.1 · 2019

Supersedes:
Catalog D 84.1 · July 2017

Introduction

Overview

In this catalog, the SIMOTICS HV/TN series H-compact motors in the high-voltage and low-voltage version are described.

In addition to the general technical data, this catalog includes detailed descriptions of the standard versions and the options that can be supplied by specifying order codes. It should be noted that certain order codes and combinations of order codes are not possible for all motor types. Customized solutions can be offered on request.

Article number code

The Article No. comprises a combination of digits and letters.

For options, the Article No. is supplemented by an additional hyphen and the letter **Z**. In addition, the order codes for the corresponding options must be specified.

Example:

1LA4 354-4AN60-Z H05 + K16 + L20

Ordering data:

- Complete Article No. and order code(s).
- If a quotation is available, in addition to the Article No., the quotation number should also be specified.
- When ordering a complete motor as a spare part, please specify the factory serial No. of the previously supplied motor as well as the Article No.

Overview

The following overview explains the meaning of the individual positions of the Article No. The selection tables in Chapters 2 to 4 include the motors available as standard from this range.

Structure of the Article No.:	Position:	1	2	3	4	5	6	7	-	8	9	10	11	12	-	Z
1st to 4th positions: Motor design	• Standard version															
	- Self-ventilated	1	L	A	4											
	- Force ventilated	1	P	Q	4											
	• Explosion-protected version															
	- Ex ec	1	M	S	4											
5th to 6th positions: Shaft height	• 315 mm					3	1									
	• 355 mm					3	5									
	• 400 mm					4	0									
	• 450 mm					4	5									
	• 500 mm					5	0									
	• 560 mm					5	6									
7th position: Laminated core length	• Short							0								
	• Medium							2								
	• Long							4								
	• Extra long							6								
8th position: Pole number	• 2-pole									2						
	• 4-pole									4						
	• 6-pole									6						
	• 8-pole									8						
	• 10-pole									3						
	• 12-pole									5						
9th position: Rotor version	• Standard aluminum rotor										A					
	• Special aluminum rotor										B					
	• Standard copper rotor										C					
	• Special copper rotor										D					
	• Special version (CuSi,...)										E					
10th position: Character for operation with:	• Line supply, low voltage											A				
	• Line supply, high voltage											N				
	• LV drive converter											M				
	• MV drive converter											V				
	• Converters, others (e.g. SINAMICS PERFECT HARMONY)											W				

11th position: voltage code	**Line supply, high voltage**:	**MV drive converter**:	**LV drive converter**:	
	3.3 kV, 50 Hz	2.3 kV, 50 Hz	690 V, 50 Hz	0
	6.6 kV, 60 Hz	2.3 kV, 60 Hz	–	1
	–	3.3 kV, 50 Hz	–	2
	3.0 kV, 50 Hz	3.3 kV, 60 Hz	–	3
	4.0 kV, 60 Hz	4.16 kV, 50 Hz	–	4
	5.0 kV, 50 Hz	4.16 kV, 60 Hz	–	5
	6.0 kV, 50 Hz	6.0 kV, 50 Hz	–	6
	6.6 kV, 50 Hz	6.6 kV, 50 Hz	–	7
	10 kV, 50 Hz	–	–	8
	Other voltage/frequency (additional text data)			9

12th position: Type of construction		
	• IM B3	0
	• IM V1 with canopy	4
	• IM V1 without canopy	8
	• IM B35	6
	Options: Additional order codes required.	

1

Performance features

Overview

Performance features of the H-compact series

The H-compact series of motors is characterized by:

- Extremely compact design
- Longest lifetime and highest reliability
- Globally proven Siemens MICALASTIC insulation system
- Proven over many years of use in the widest range of sectors
- Wide range of options, that allow the motor to be optimally adapted to customer requirements
- Various cooling concepts for every environment

Overview table of the H-compact series

Series	Version	Voltages	Powers	Degree of protection	Cooling method	Type of protection	Type of construction
1LA4	IEC	690 V	1150 ... 1650 kW[1)]	IP55	IC411	–	IM B3, IM B35, IM V1
		2.3 ... 11 kV	200 ... 2200 kW[2)]				
1MS4		2.3 ... 11 kV	200 ... 2200 kW[2)]			Ex ec	IM B3, IM B35, IM V1
1PQ4		690 V	1150 ... 1700 kW[1)]		IC416	–	
		2.3 ... 6.6 kV	1180 ... 2350 kW[4)]				

Cooling method	
IC411	Rib-cooled, self-ventilated
IC416	Rib-cooled, force-ventilated

Type of protection	
Ex ec	Increased safety of the motor, Zone 2

Degree of protection	
IP55	Enclosed, protected against dust and jet-water

Type of construction	
IM B3	Horizontal, with feet, without flange
IM B35	Horizontal, with feet, with flange
IM V1	Vertical, without feet, with flange

1) Only for converter operation. Values apply for 50 Hz, 4-pole version, insulation system, thermal class 155 (F), utilized to 155 (F).

2) Values apply for 2.3 to 6.6 kV, 50 Hz, 4-pole version, insulation system, thermal class 155 (F), utilized to 130 (B).

3) Values apply for 50 Hz, 4-pole version, insulation system, thermal class 155 (F), utilized to 130 (B).

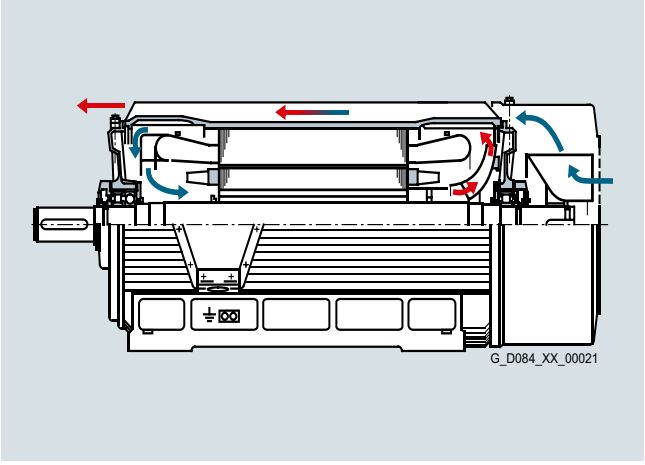
4) Values apply for 6 to 6.6 kV, 50 Hz, 4-pole version, insulation system, thermal class 155 (F), utilized to 155 (F).

Mode of operation

Self-ventilated, IC411 cooling type, 1LA4, 1MS4 series

Self-ventilated, rib-cooled motors have a technically sophisticated cooling concept that corresponds to cooling type IC411 according to DIN EN 60034-6/VDE 0530-6 (IEC 60034-6) with an additional, inner cooling air circuit with fan. As can be seen in the diagram, a fan is located at the non-drive end, which draws in the air from outside and blows it axially over the outer cooling ribs of the housing. Heat is exchanged with the inner cooling circuit at this location, which guarantees a uniform temperature distribution in the active motor and bearing areas.

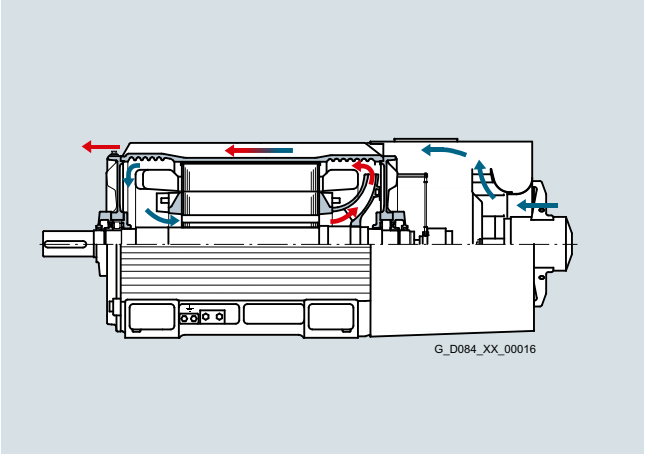
The fan impellers for the inner and outer cooling air flow are mounted on the motor shaft and play a role in achieving the significantly reduced noise level thanks to their optimized aerodynamic design.



Force-ventilated, IC416 cooling type, 1PQ4 series

For the force-ventilated motors, a fan unit is located at the non-drive end, which draws in the air from outside and blows it axially over the outer cooling ribs of the housing. Heat is exchanged with the inner cooling circuit at this location, which guarantees a uniform temperature distribution in the active motor and bearing areas.

The fan impeller for the inner cooling circuit is mounted on the motor shaft and is bidirectional. Further, the outer cooling air flow is generated from a separately-driven fan that guarantees a constant cooling power in every operating state. This means that the motor can always be operated over its complete speed control range and in both directions of rotation.



Overview

Motor protection

A series of standard and optional monitoring and protective devices are available for motor protection.

Protective device	Description
Stator winding monitoring	6 PT100 resistance thermometers for temperature monitoring as standard.
Anti-friction bearing monitoring	Measuring nipple for shock pulse measurement as standard. Optional PT100 resistance thermometer for temperature monitoring.
Sleeve bearing monitoring	Optional PT100 resistance thermometer for temperature monitoring. Optional for circulating oil cooling: Throttle valves, manometer and flowmeter in the oil intake line. Optional holes in the oil discharge line to mount a thermometer or a sight glass to monitor the oil flow.
Shaft vibration monitoring	Optional for motors with sleeve bearings.
Starting and speed monitoring	Optional rotary pulse encoder for motors for converter operation.
Anti-condensation heating	Optional for H-compact motors.

Electrical design

High voltage motors have the Siemens MICALASTIC insulation system according to thermal class 155 (F).

The rotor windings of H-compact motors are manufactured out of die cast aluminum or copper:

Shaft height	Rotor design with number of poles					
mm	2	4	6	8	10	12
315	Al	Al	Al	–	–	–
355	Al	Al	Al	Al	–	–
400	Al	Al	Al	Al	–	–
450	Al	Al	Al	Al	Al	Cu
500	Cu	Al	Cu	Cu	Cu	Cu
560	Cu	Cu	Cu	Cu	Cu	Cu

Motor connection and terminal boxes for high voltage motors

The motor terminal boxes are generously dimensioned. This design allows cables, which are generally used worldwide, to be simply and quickly connected up as well as to accommodate all of the generally used cable entry fittings.

Arrangement of the motor terminal box (standard version):

When viewing the drive side, the motor terminal box is mounted at the righthand side of the stator frame with cable entry from the bottom. When requested, it can be mounted on the lefthand side. However, it must be specified when ordering. When requested, the terminal box can be mounted, rotated through 90° or through 180° if the spatial situation at the machine permits this (except for terminal boxes with cast cable entry glands).

Terminal arrangement according to DIN 42962.

Degree of protection of the motor terminal box: IP55, IP56, IP66 – depending on the terminal box type (refer to the table).

The motor terminal boxes comprise a lower section or housing, bolted to the stator frame, and a removable cover. The 1XA8711, 1XB8911 and 1XB8751 terminal boxes that are normally used have bushings manufactured out of casting resin. All of the other terminal boxes have cast-resin post insulators with bolted busbars (exception: cable connector connection).

All motor terminal boxes are short-circuit proof. If a short-circuit occurs in the motor, all of the forces generated by the short-circuit current are reliably handled by the components in the terminal box (e.g. cast-resin post insulators).

Further, all motor terminal boxes are short-circuit proof. If arcs occur in the motor terminal box, the pressure generated is immediately dissipated using a pressure relief mechanism.

Short-circuit strength and short-circuit proof of the motor terminal boxes used as standard:

- 400 MVA at 6 kV; 0.2 s
- 700 MVA at 10 kV; 0.2 s

These values correspond to a rated peak withstand current of approx. 100 kA.

Motor connecting cable and cable entry fittings are not supplied with the motor.

Protection for line-operated high voltage motors against switching overvoltages

The motor windings are dimensioned according to the requirements of IEC 60034-15. If higher overvoltages can occur, overvoltage protection is required at the supply side or can be offered as a motor option.

Overview

Overview of the generally used motor terminal boxes

Terminal box	Rated voltage kV	Current A	Cable entries Number	Cable entry diameter, max. mm
1XB1 631	1	1230	4	75
1XA8 711	6.6	315	1	75
1XB8 751	6.6	630 (for parallel connection)	2	75
1XB8 911	11	315	1	75
1XD1 543-3AA	11	1200	–	–
1XD1 566-3AA	11	2750	–	–

Cable connector connection on request.

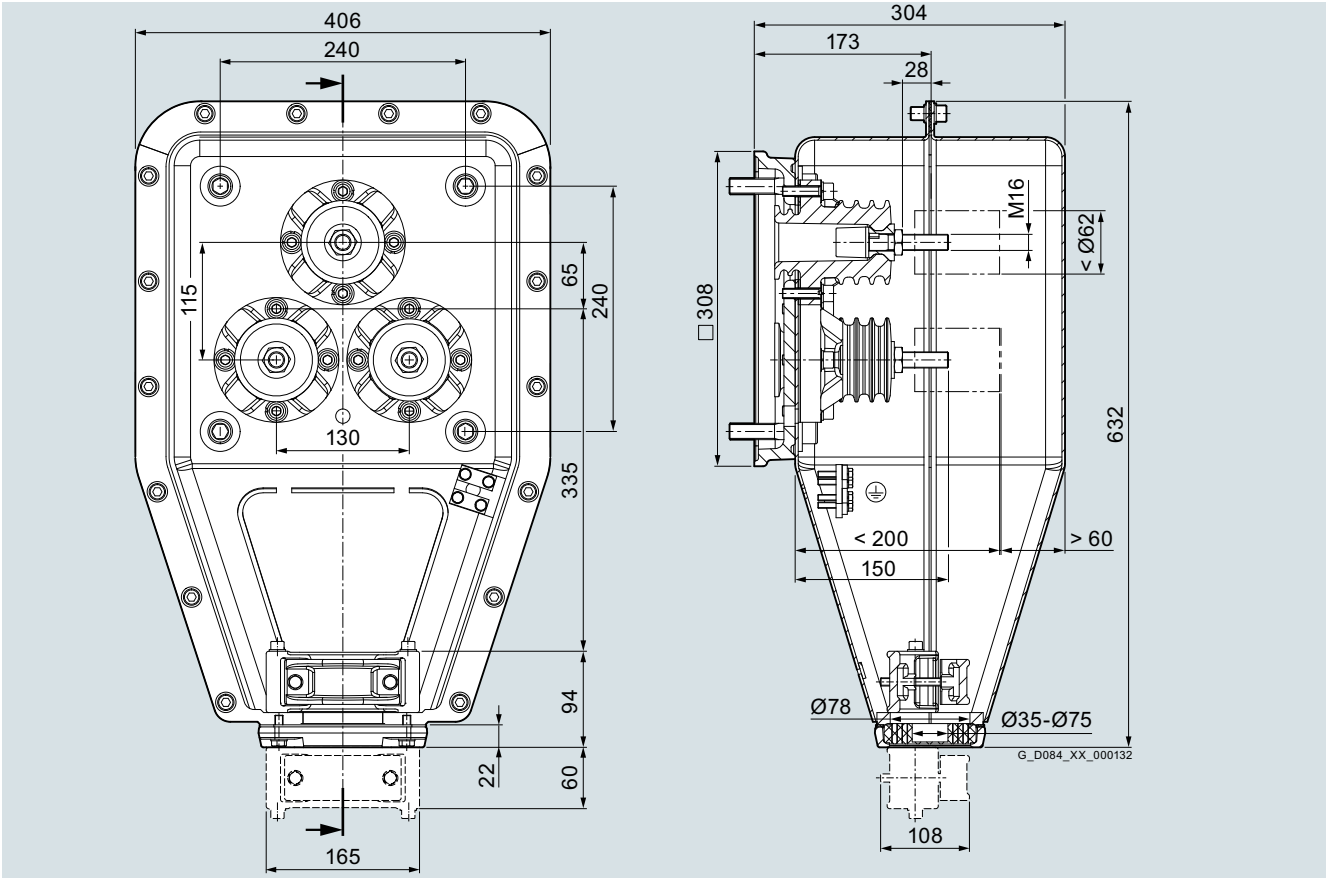
Connection options

Terminal box	Terminal element	Number of cables	Cable cross-section (Cu or Al), max. that can be introduced mm^2	Weight kg	Degree of protection to DIN EN 60529
1XB1 631	Cable lug	4 cables, 3-conductor	240	83	IP55
1XA8 711	Connecting terminal on M16 studs Connection with cable lug and two hexagon nuts	1 cable, 3-conductor	1 x 3 x 240	42	IP55[1)]
1XB8 751	Connecting terminal on M16 studs Connection with cable lug and two hexagon nuts	2 cables, 3-conductor	2 x 3 x 240	131	IP56
1XB8 911	Connecting terminal on M16 studs Connection with cable lug and two hexagon nuts	1 cable, 3-conductor	1 x 3 x 240	93	IP56
1XD1 543-3AA	Cable lug on busbar	6 cables, 1-conductor	300	230	IP55
1XD1 566-3AA	Cable lug on busbar	10 cables, 1-conductor	300	170	IP55[1)]

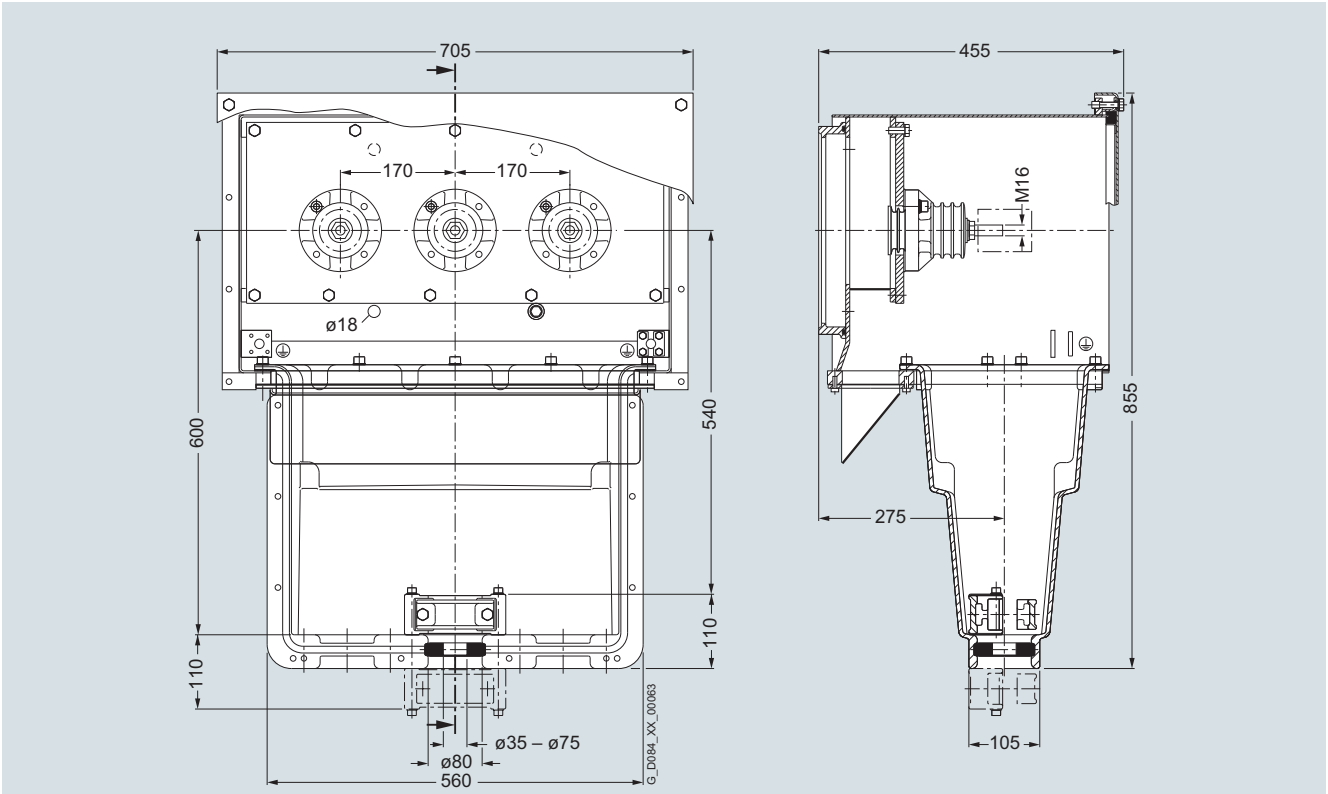
[1)] IP66 on request.

Dimension drawings

Terminal box type 1XA8 711 (up to 6.6 kV, 3 terminals)

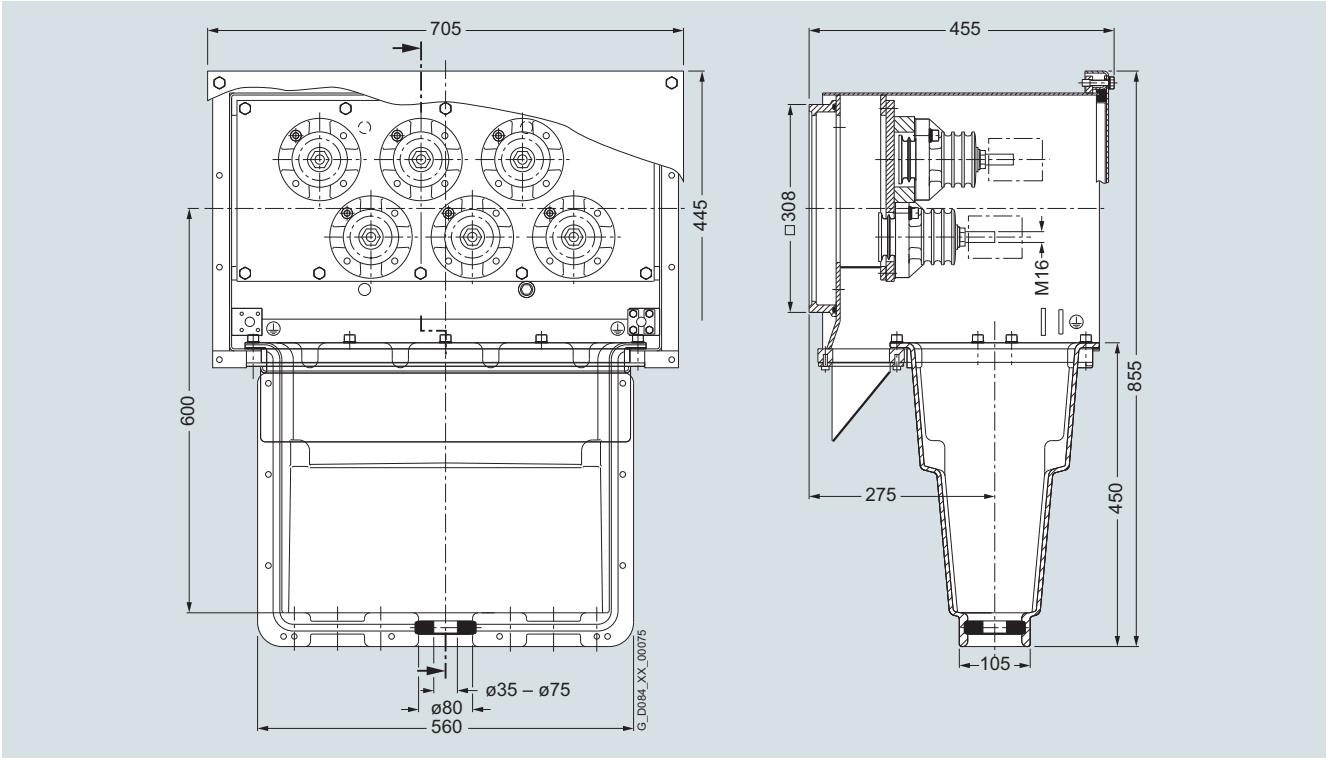


Terminal box type 1XB8 911 (up to 11 kV)

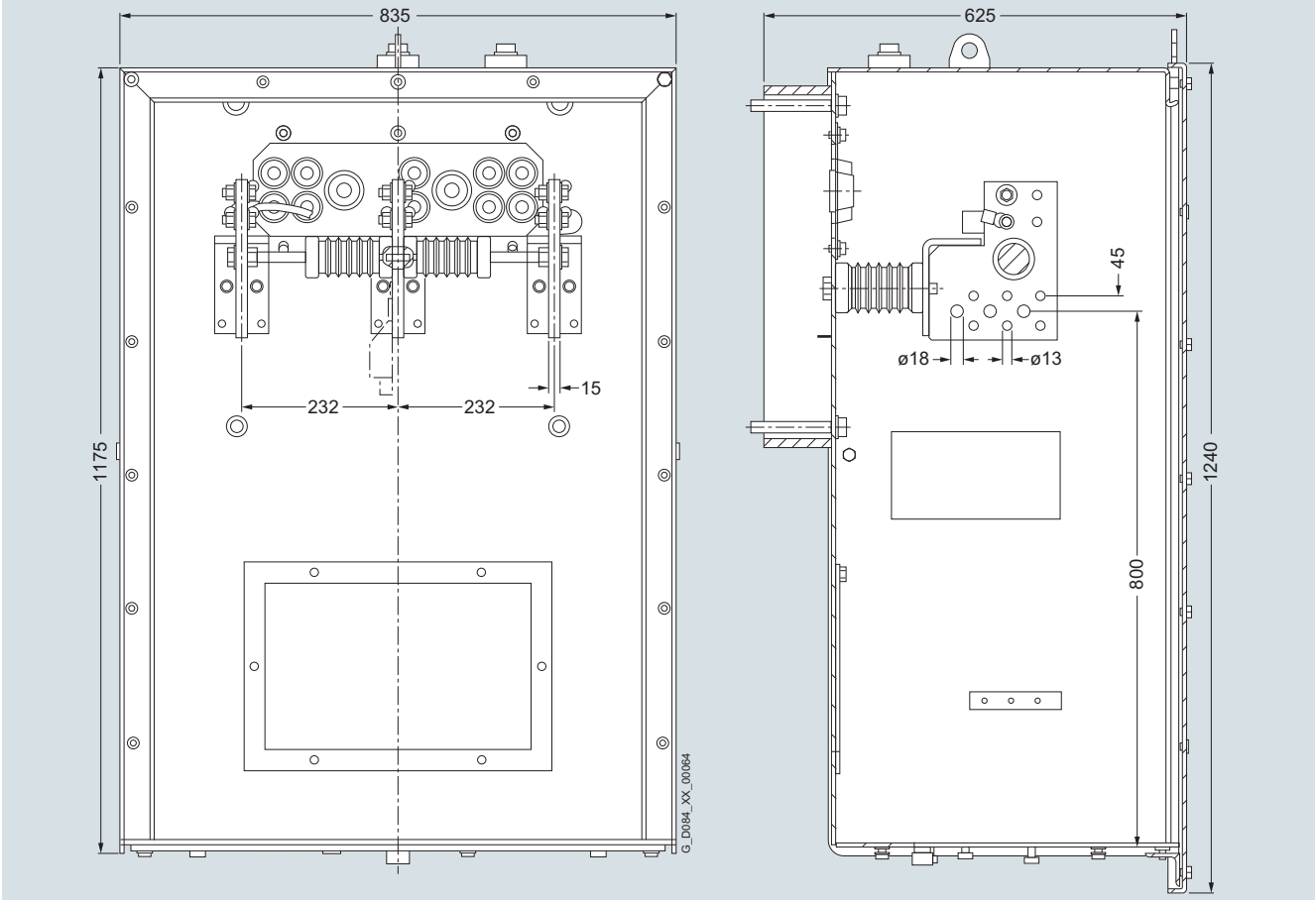


Dimension drawings (continued)

Terminal box type 1XB8 751 (up to 6.6 kV, 6 terminals)

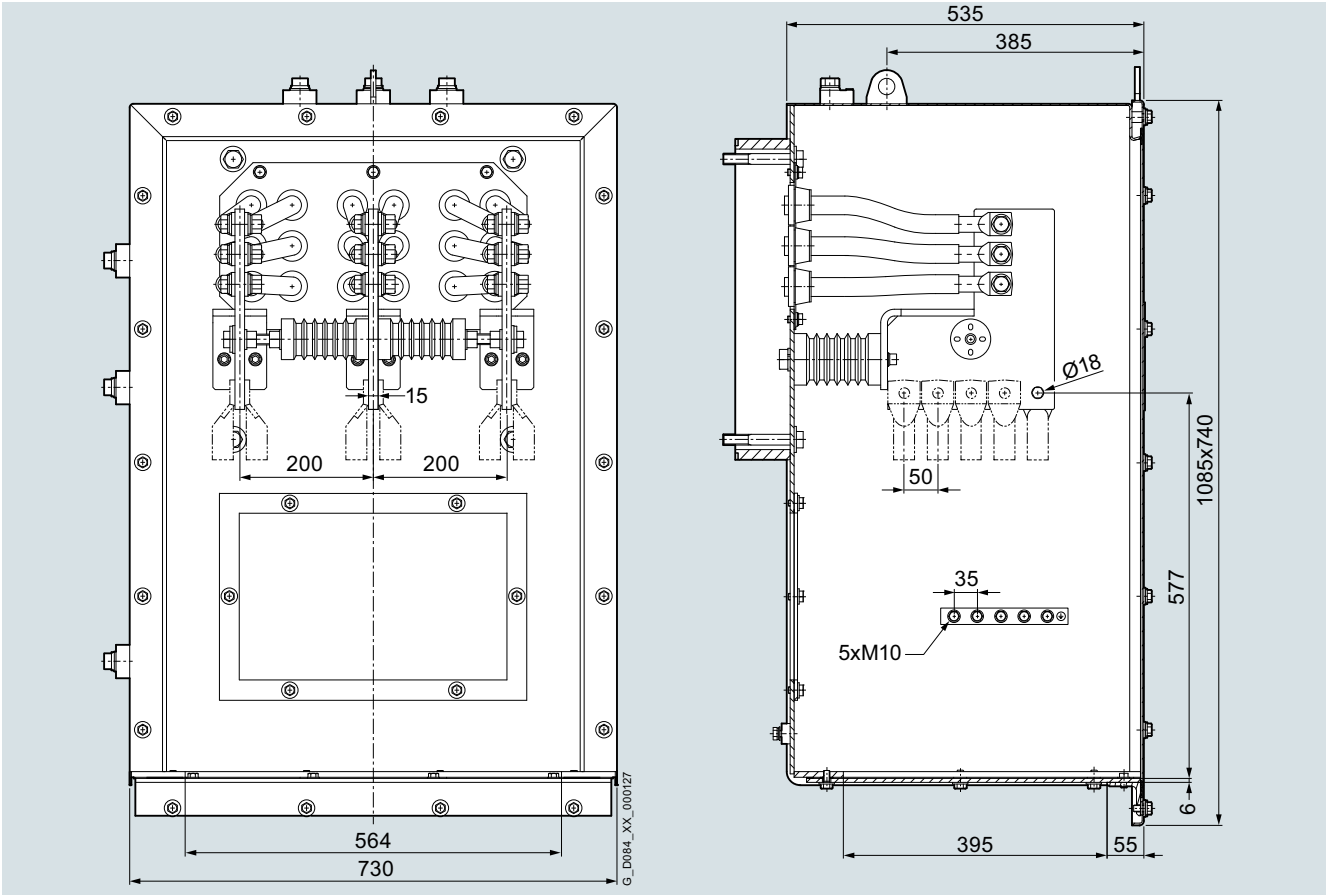


Terminal box type 1XD1 543-3AA up to 11 kV IEC and 6.6 kV NEMA

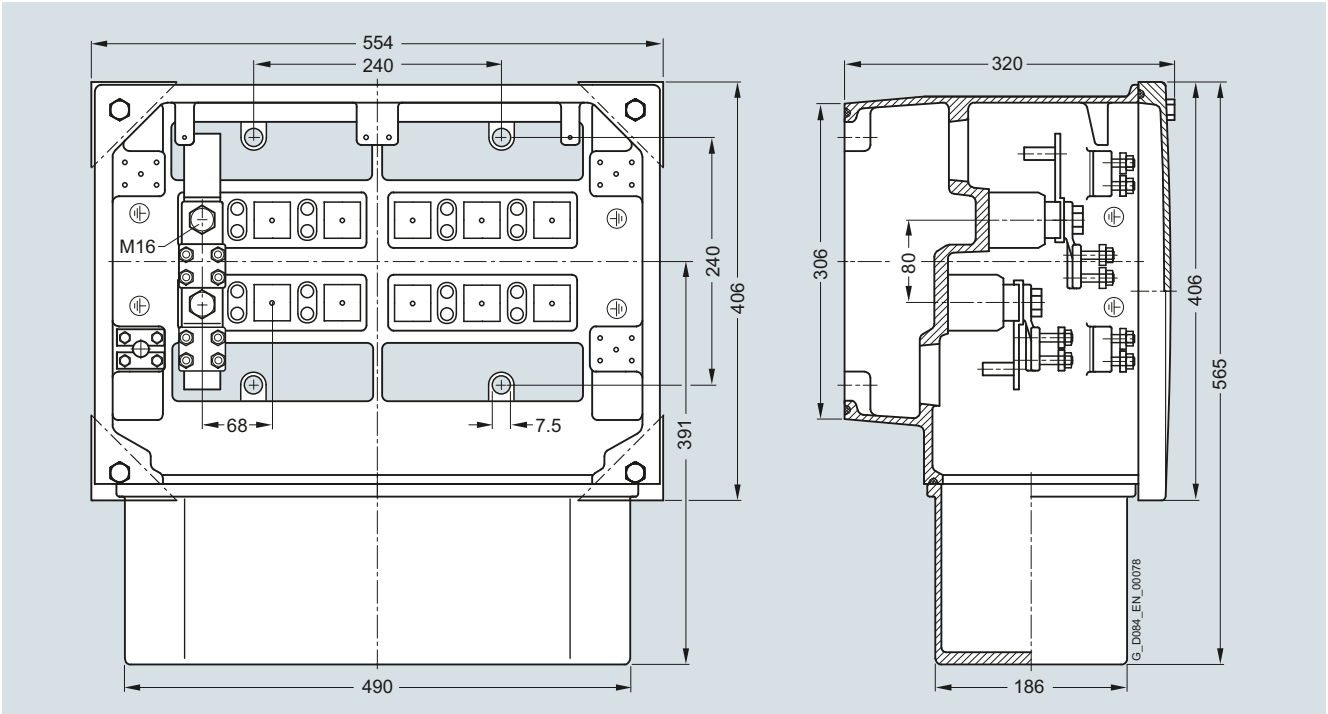


Dimension drawings (continued)

Terminal box type* 1XD1 566-3AA *(up to 11 kV, 10 terminals)



Terminal box type 1XB1 631 (up up to 1 kV, 12 terminals)



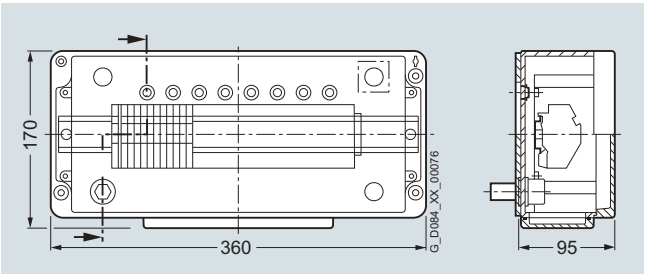
Dimension drawings (continued)

Neutral point terminal box

The motor terminal box is also used to form the neutral point of winding ends.

Auxiliary terminal box to connect monitoring elements, anti-condensation heating

The standard version 1XB9 014 comprises an aluminum enclosure. Max. cable cross-section that can be connected, 4 mm^2.



Terminal boxes manufactured out of cast iron (1XB9 016) and stainless steel (1XB9 015) can be optionally ordered.

Overview

Bearing version

Motors for connection to the line supply have anti-friction bearings or sleeve bearings as standard according to the following overview.

The bearing concepts for motors for converter operation depend on the speed control range.

Overview, bearing versions

Motor type	Bearing version IM B3, IM B35[1] Number of poles 2 50 Hz	Number of poles 2 60 Hz	Number of poles 4 50 Hz	Number of poles 4 60 Hz	Number of poles ≥ 6 50 Hz	Number of poles ≥ 6 60 Hz	IM V1
1LA4/1M.4 31.	Anti-friction bearings (sleeve bearings optional)	Anti-friction bearings (sleeve bearings optional)	Anti-friction bearings (sleeve bearings optional)	Anti-friction bearings (sleeve bearings optional)	Anti-friction bearings (sleeve bearings not available)	Anti-friction bearings (sleeve bearings not available)	Anti-friction bearings (sleeve bearings not available)
1LA4/1M.4 35.							
1LA4/1M.4 40.							
1LA4/1M.4 45.		Sleeve bearing			Anti-friction bearings (sleeve bearings optional)	Anti-friction bearings (sleeve bearings optional)	
1LA4/1M.4 50.	Sleeve bearing						
1LA4/1M.4 56.							

Anti-friction bearings

Motor series	Type of construction	Shaft height mm	Drive end	Non-drive end
1LA4/1M.4	IM B3	315 ... 450	Deep-groove ball bearings (locating bearing)	Deep-groove ball bearings (floating bearing)
		500 (converter version) 560, 4-pole (converter version)	Deep-groove ball bearings (locating bearing)	Deep-groove ball bearings (floating bearing)
		500 ... 560 (line version) 560, 6-/8-pole (converter version)	Twin bearings: Deep-groove ball bearing and cylindrical-roller bearing (locating bearing)	Cylindrical-roller bearings (floating bearing)
	IM V1	315 ... 560	Double bearings: Deep-groove ball bearings and angular-contact ball bearings (thrust bearing)	Deep-groove ball bearings (floating bearing)

[1] IM B35 only for motor types 1L. and 1M.; not available with sleeve bearings.

Overview (continued)

Sleeve bearings

For motors with sleeve bearings, lateral flange or (for shaft heights 450 and 500 mm), center flange sleeve bearings are used. Generally, these motors are equipped with two floating bearings. This means that the rotor must be axially guided by the bearings of the driven machine through a coupling with limited axial play. An appropriate sleeve bearing can be installed at the drive end if the motor rotor is to be axially guided.

H-compact

Assignment of oil-ring lubrication or circulating-oil lubrication to the shaft heights:

The bearing at the NDE is not insulated. EF side flange bearings are used as standard. With shaft height 450 mm as a mains-operated motor, side flange bearings are used in the two-pole design. Exception: With shaft height 450 mm (2-pole) in converter operation, mid flange bearings are also used.

Shaft height	No. of Poles	Oil ISO VG	CT	50 Hz				60 Hz			
				Core Length				Core Length			
mm			K	0	2	4	6	0	2	4	6
315	2	22/32	40…55	Ring				Ring			
	4	46	40…55	Ring				Ring			
355	2	22/32	40…55	Ring				Ring			
	4	46	40…55	Ring				Ring			
400	2	22/32	40…55	Ring				Ring			
	4	46	40…55	Ring				Ring			
	6	46	40…55	Ring				Ring			
450	2	22	40	Ring			–	Ring			–
			45					Ring		Forced	
			50					Forced			
			55	Ring		Forced					
	2	32	40	Ring			–	Ring		Forced	–
			45					Forced			
			50	Ring		Forced					
			55	Forced							
	4	46	40…45	Ring			–	Ring			–
			50…55					Forced			
	≥ 6…	46	40…55	Ring			–	Ring			–
500	2	22	40	Ring			–	Forced			–
			45…55	Forced							
	2	32	40…55	Forced			–	Forced			–
	4	32	40…50	Ring			–	Ring			–
			55					Ring	Forced		
	4	46	40	Ring			–	Ring			–
			45					Ring	Forced		
			50…55					Forced			
	≥ 6…	46	40…55	Ring			–	Ring			–
560	2	22/32	40…55	Forced			–	Forced			–
	4	32	40	Ring			–	Ring			–
			45					Ring		Forced	
			50					Forced			
			55	Ring		Forced					
	4	46	40	Ring			–	Ring		Forced	–
			45					Forced			
			50	Ring		Forced					
			55	Forced							
	≥ 6…	46	40…45	Ring			–	Ring			–
			50					Ring	Forced		
			55					Forced			

When electrically insulating the sleeve bearings at the NDE, shaft height 500 mm and shaft height 560 mm must be recalculated.

Overview (continued)

Bearing insulation

NDE bearing insulation

The following motor types are equipped with insulated NDE bearing as a standard feature.

Line operation (DOL):

Number of poles	2	4	6	≥ 8
Shaft height				
315	L27	L27	L27	L27
355	L27	L27	L27	Standard
400	L27	L27	L27	Standard
450	L27	Standard	Standard	Standard
500	L27	Standard	Standard	Standard
560	Standard	Standard	Standard	Standard

Converter operation (VSD):

For operation with SINAMICS LV, SINAMICS PERFECT HARMONY and SINAMICS GM150/SM150 with sine-wave filter, NDE bearing is insulated.

DE and NDE bearing insulation

For all other than the above mentioned motor types or applications (e.g. operation with GM150/SM150 without sine-wave filter), both bearings are insulated as a standard and an earthing device is necessary.

When specified by the customer, insulated bearings can be provided at the DE and NDE for any motor type.

If both bearings are insulated, an additional detachable link is provided for this bearing insulation.

Vibration response

Horizontal motors up to 3600 rpm fulfill, as standard, vibration severity level A according to IEC 60034-14. Vibration severity level B is optionally possible. Values for vertical motors on request.

Balancing quality

The motor rotors are balanced dynamically with half feather key (but without mounted coupling halves). The balancing quality according to ISO 1940 is, up to and including 1500 rpm, G 1.5 and beyond this, G1.

Direction of rotation, fan

The direction of rotation must be specified in every order.

2-pole H-compact motors have an external unidirectional fan. For higher-pole motors, for shaft heights 315 to 450 mm, external bidirectional fans are used and for shaft heights 500 and 560 mm, unidirectional external fans.

Paint finish

Unless otherwise specified in the order, the motors are supplied in the standard paint finish color RAL 7030 (stone gray). Other colors are available on request at an additional cost. Motors can be optionally supplied with a special paint finish.

The standard paint finish is classified in the "Moderate" climate group according to IEC 721-2-1. It is suitable for:

- Installed indoors or outdoors under a roof, where the motors are not exposed to any direct effects of the weather.
- Temperatures, continuously up to +100 °C, briefly up to +120 °C
- Relative air humidity up to 85 % at +25 °C continuously; briefly up to +100 % at +30 °C

The **special paint finish** is classified in the "Worldwide" climate group acc. to IEC 721-2-1. It is suitable for:

- Installed outdoors, where motors are directly exposed to the effects of the weather, e.g. direct solar radiation
- Additional temperature and humidity ranges
- Temperatures, continuously up to +120 °C, briefly up to +140 °C

Typical installation locations are industrial environments and coastal areas. For outdoor applications in salt laden atmospheres, one of the options E81, E82 or E83 should be selected.

Standards and regulations

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

Title	IEC	DIN/EN/ISO
General specifications for rotating electrical machinery	IEC 60034-1	DIN EN 60034-1
Degrees of protection for rotating electrical machinery (IP code)	IEC 60034-5	DIN EN 60034-5
Cooling methods for rotating electrical machinery (IC code)	IEC 60034-6	DIN EN 60034-6
Types of construction, mounting types and terminal box positions for rotating electrical machinery (IM code)	IEC 60034-7	DIN EN 60034-7
Terminal designations and direction of rotation for rotating electrical machinery	IEC 60034-8	DIN EN 60034-8
Mechanical vibration of rotating electrical machinery	IEC 60034-14	DIN EN 60034-14
Rated impulse voltages for rotating electrical machinery	IEC 60034-15	DIN EN 60034-15
Electrical insulation – thermal classification	IEC 60085	DIN EN 60085
Mechanical vibration – requirements on the balancing quality of rotors	–	DIN ISO 1940-1
Determining the losses and efficiency from tests	IEC 60034-2-1	DIN EN 60034-2-1

Overview

The motors in this catalog are designed for operation with a flexible coupling.The maximum half coupling weights are shown in the table below.

Maximum allowable coupling weight

Shaft end diameter	Max. weight of half coupling for 2-pole motors	Max. weight of half coupling for 4-pole and motors with higher pole numbers
mm	kg	kg
50	10	10
55	10	20
60	10	20
65	10	20
70	20	30
75	20	30
80	20	40
85	30	50
90	30	50
95	30	60
100	40	70
105	40	80
110	50	90
115	50	100
120	60	110
125	70	130
130	70	140
135	80	160
140	90	170
145	100	190
150	110	210
155	120	230
160	130	250
165	140	270
170	150	300
175	160	320
180	180	350
185	190	380
190	210	410
195	220	440
200	240	470
205	250	500
210	270	540

Note:

Motor and driven machine have to be aligned according to manual.

If the coupling weight exceeds the maximum value, feasibility has to be checked.

Notes

Overview

Normal conditions

Selection and ordering data included in this chapter are valid for standard operating and installation conditions:

- Installation altitude of the motor ≤ 1000 m above sea level
- Ambient temperature (= coolant temperature for air-cooled motors) = 40 °C
- Thermal class 155 (F) utilized to 130 (B)
- Continuous duty S1
- Permissible tolerances in compliance with IEC/EN 60034-1:
  - Rated voltage V_{rated} ± 5 %
  - Rated frequency f_{rated} ± 2 %

The SIMOTICS HV/TN H-compact series is designed to be directly switched-on when certain starting conditions are maintained.

Motor starting does not have to be separately checked if the following criteria are maintained:

- The voltage when starting does not drop below 0.9 x V_{rated}.
- The load torque increases approximately with the square of the speed ($T \sim n^2$).
- The maximum load torque does not exceed the corresponding value in the following table:

Shaft height	315		350		400		450		500		560	
Number of poles	2	4...	2	4...	2	4...	2	4...	2	4...	2	4...
H-compact max. load torque = T_{rated} x	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9

Start-up with max. permissible inertia according to "selection and ordering data" is possible either for three times from cold or two times from warm motor condition (natural coast down between consecutive starts assumed).

If limits of load characteristic and/or inertia are exceeded, the motor start-up calculation has to be checked. In this case, please contact your Siemens sales representative.

Overview

Technical data

Overview of technical data

H-compact 1LA4	
Rated voltage	2.0 … 11 kV
Rated frequency	50/60 Hz
Motor type	Induction motor with squirrel-cage rotor
Type of construction	IM B3, IM V1
Degree of protection	IP55
Cooling method	IC411
Stator winding insulation	Thermal class 155 (F), utilized to 130 (B)
Shaft height	315 … 560 mm
Bearings	Anti-friction bearings, sleeve bearings
Cage material	Die-cast aluminum or copper (dependent on the shaft height and number of poles)
Standards	IEC, EN
Frame design	Cast iron with cooling ribs

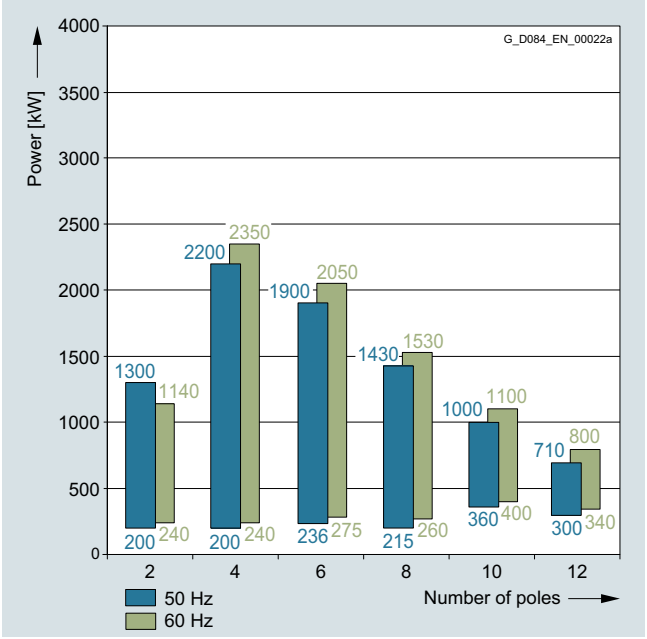
Power range for IEC motors for line operation

1LA4, 1MS4 (Ex ec) series

Insulation system, thermal class 155 (F), utilized to 130 (B).

Ambient temperature up to 40 °C, installation altitude up to 1000 m.

2.0 to 3.3 kV; 50 and 60 Hz

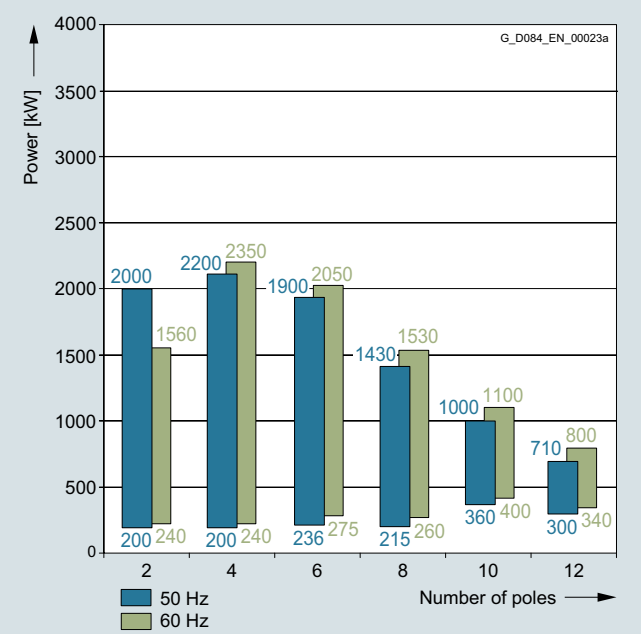


2

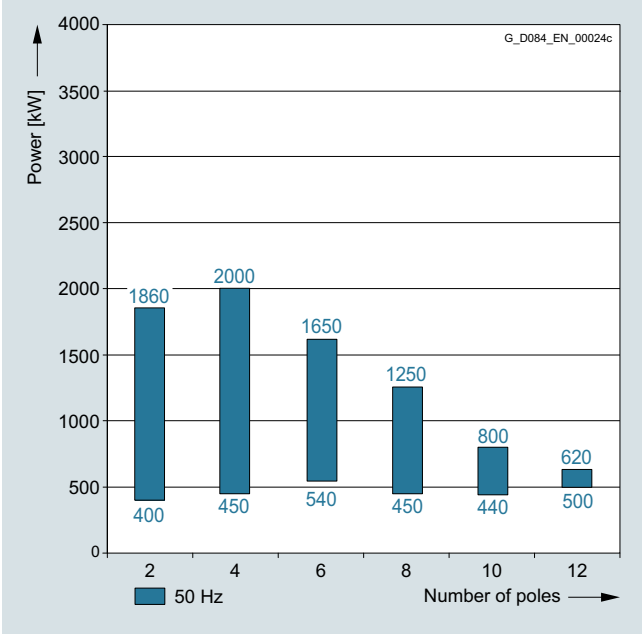
Technical data (continued)

Power range for IEC motors for line operation
(continued)

3.4 to 6.6 kV; 50 and 60 Hz



9 to 11 kV; 50 Hz



Selection and ordering data

The 1LA4 data also apply to explosion-protected 1MS4 (Ex ec) motors.

Rated power	**High voltage motor H-compact**	Speed	Rated current	Efficiency		Power factor		Torque	Break-down torque	Locked-rotor torque	Locked-rotor current	Moment of inertia	
IEC			I_{rated} at 6 kV	4/4 load	3/4 load	4/4 load	3/4 load		T_B/T_{rated}	T_{LR}/T_{rated}	I_{LR}/I_{rated}	Motor	External, max.[1]
kW	Article No.	rpm	A	%	%	cos φ	cos φ	Nm	[-]	[-]	[-]	kgm²	kgm²
2.0 ... 6.6 kV, 50 Hz													
2-pole													
200	**1LA4 310-2AN■■**	2970	23.5	94.7	94.9	0.87	0.86	643	2.30	0.90	5.0	2.2	28
236	**1LA4 312-2AN■■**	2967	27.5	94.5	94.8	0.87	0.85	760	2.30	0.90	5.0	2.2	26
300	**1LA4 314-2AN■■**	2972	34.5	95.2	95.4	0.88	0.86	964	2.40	1.05	5.2	2.7	30
355	**1LA4 316-2AN■■**	2974	40.5	95.7	95.8	0.88	0.87	1140	2.50	1.10	5.3	3.1	35
400	**1LA4 350-2AN■■**	2978	45.5	95.6	95.8	0.88	0.86	1283	2.30	1.05	5.2	4.3	38
450	**1LA4 352-2AN■■**	2978	51.0	95.9	96.0	0.88	0.87	1443	2.50	1.20	5.5	4.8	43
500	**1LA4 354-2AN■■**	2980	57.0	96.1	96.3	0.88	0.87	1602	2.50	1.20	5.5	5.2	46
560	**1LA4 400-2AN■■**	2984	64.0	96.0	96.0	0.88	0.86	1792	2.50	0.85	5.4	7.8	26
650	**1LA4 402-2AN■■**	2985	74.0	96.3	96.3	0.88	0.87	2079	2.60	0.90	5.6	8.7	27
750	**1LA4 404-2AN■■**	2985	84.0	96.5	96.5	0.89	0.88	2399	2.60	0.95	5.6	9.9	30
820	**1LA4 450-2AN■■**	2981	92	96.2	96.2	0.88	0.87	2625	2.40	0.95	6.0	13.5	68
940	**1LA4 452-2AN■■**	2982	106	96.5	96.4	0.89	0.87	3008	2.50	0.95	6.2	15.4	73
1030	**1LA4 454-2AN■■**	2982	114	96.6	96.6	0.90	0.89	3296	2.40	0.95	6.2	17.3	79
1200	**1LA4 500-2CN■0**	2985	132	96.7	96.6	0.90	0.89	3839	2.30	0.65	5.3	29.0	93
1300	**1LA4 502-2CN■0**	2986	144	96.8	96.7	0.90	0.89	4157	2.30	0.65	5.3	32.0	98
1420[2]	**1LA4 504-2CN■0**	2986	154	96.9	96.9	0.91	0.90	4541	2.40	0.70	5.5	35.0	125
1680[2]	**1LA4 560-2CN■0**	2990	184	96.9	96.7	0.91	0.90	5365	2.50	0.45	5.4	53.0	104
1900[2]	**1LA4 562-2CN■0**	2991	205	97.0	96.9	0.91	0.90	6066	2.60	0.50	5.7	58.0	131
2000[2]	**1LA4 564-2CN■0**	2990	220	97.2	97.1	0.91	0.90	6387	2.50	0.45	5	64.0	136
4-pole													
200	**1LA4 310-4AN■■**	1480	25.5	93.8	94.0	0.81	0.77	1290	2.30	1.15	5.2	2.8	159
250	**1LA4 312-4AN■■**	1480	30.5	94.5	94.8	0.84	0.81	1613	2.30	1.15	5.3	3.5	201
300	**1LA4 314-4AN■■**	1480	36.0	94.7	95.0	0.85	0.82	1936	2.40	1.25	5.5	4.0	222
365	**1LA4 316-4AN■■**	1481	43.5	95.2	95.5	0.85	0.82	2353	2.40	1.25	5.5	4.8	297
400	**1LA4 350-4AN■■**	1485	48.0	95.2	95.4	0.84	0.81	2572	2.50	1.25	5.5	6.0	224
470	**1LA4 352-4AN■■**	1484	56.0	95.4	95.6	0.85	0.82	3024	2.35	1.20	5.3	6.9	247
560	**1LA4 354-4AN■■**	1485	65.0	95.7	95.9	0.86	0.84	3601	2.40	1.30	5.5	8.1	296
600	**1LA4 400-4AN■■**	1489	71.0	95.4	95.4	0.85	0.81	3848	2.60	1.25	5.70	11.6	288
680	**1LA4 402-4AN■■**	1489	80.0	95.7	95.6	0.85	0.82	4361	2.60	1.25	5.70	12.9	330
750	**1LA4 404-4AN■■**	1489	88.0	95.8	95.7	0.86	0.83	4810	2.65	1.30	5.80	14.5	381
900	**1LA4 450-4AN■■**	1489	108	96.0	96.0	0.84	0.82	5772	2.25	0.95	5.20	22.0	438
950	**1LA4 452-4AN■■**	1489	112	96.0	96.1	0.85	0.83	6093	2.25	0.95	5.20	24.0	556

Voltage code:	
3 kV, 50 Hz	**3**
3.3 kV, 50 Hz	**0**
5 kV, 50 Hz	**5**
6 kV, 50 Hz	**6**
6.6 kV, 50 Hz	**7**
Other voltage	**9**

Type of construction:	
IM B3	**0**
IM V1 (with canopy)	**4**
IM V1 (without canopy)	**8**

Note:

Efficiencies according to IEC 60034-2-1:2007;
stray load losses determined by statistical evaluation of measurements.

[1] Max. permissible external moment of inertia for three starts from cold or two starts from warm under the conditions described on Page 2/2.

[2] Not available for ≤ 3.3 kV.

2

Selection and ordering data (continued)

Rated power	High voltage motor H-compact	Speed	Rated current	Efficiency		Power factor		Torque	Break-down torque	Locked-rotor torque	Locked-rotor current	Moment of inertia	
IEC			I_{rated} at 6 kV	4/4 load	3/4 load	4/4 load	3/4 load		T_B/T_{rated}	T_{LR}/T_{rated}	I_{LR}/I_{rated}	Motor	External, max.[1]
kW	Article No.	rpm	A	%	%	cos φ	cos φ	Nm	[-]	[-]	[-]	kgm²	kgm²
2.0 ... 6.6 kV, 50 Hz													
4-pole (continued)													
1050	**1LA4 454-4AN■■**	1489	124	96.2	96.3	0.85	0.83	6734	2.30	0.95	5.25	27.0	653
1200	**1LA4 500-4AN■■**	1492	140	96.5	96.3	0.85	0.83	7680	2.4	0.90	5.5	33.0	447
1300	**1LA4 502-4AN■■**	1492	150	96.6	96.4	0.86	0.84	8320	2.4	0.90	5.5	37.0	538
1450	**1LA4 504-4AN■■**	1492	166	96.7	96.7	0.87	0.86	9280	2.4	0.90	5.5	42.0	628
1700	**1LA4 560-4CN■■**	1494	196	96.7	96.6	0.86	0.83	10866	2.5	0.60	5.5	79.0	551
1900	**1LA4 562-4CN■■**	1494	215	96.9	96.8	0.88	0.85	12144	2.5	0.60	5.5	92.0	698
2200	**1LA4 564-4CN■■**	1494	250	97.2	97.1	0.88	0.86	14061	2.5	0.60	5.5	104.0	761
6-pole													
236	**1LA4 314-6AN■■**	986	29.5	94.1	94.5	0.82	0.78	2286	2.50	1.25	5.3	5.3	375
270	**1LA4 316-6AN■■**	985	33.5	94.3	94.8	0.82	0.80	2617	2.40	1.25	5.5	6.4	431
315	**1LA4 350-6AN■■**	989	39.0	94.8	95.1	0.82	0.79	3041	2.30	1.10	5.3	10.8	541
365	**1LA4 352-6AN■■**	989	44.5	95.1	95.4	0.83	0.80	3524	2.20	1.10	5.3	12.7	667
425	**1LA4 354-6AN■■**	990	52.0	95.3	95.5	0.82	0.79	4099	2.40	1.25	5.5	15.0	841
490	**1LA4 400-6AN■■**	991	59.0	95.4	95.6	0.84	0.81	4722	2.30	1.05	5.5	21.2	740
570	**1LA4 402-6AN■■**	992	68.0	95.7	95.9	0.84	0.81	5487	2.30	1.10	5.5	24.2	1193
630	**1LA4 404-6AN■■**	991	77.0	95.8	95.9	0.82	0.80	6071	2.40	1.20	5.5	27.3	1233
700	**1LA4 450-6AN■■**	992	84.0	95.8	95.9	0.84	0.81	6738	2.30	1.10	5.4	33.0	1417
750	**1LA4 452-6AN■■**	993	90.0	96.4	96.4	0.84	0.81	7212	2.30	1.10	5.4	37.0	1813
800	**1LA4 454-6AN■■**	993	94.0	96.0	96.1	0.85	0.82	7693	2.30	1.10	5.4	41.0	1789
1040	**1LA4 500-6CN■■**	994	120	96.5	96.6	0.87	0.85	9992	2.10	0.75	5.30	82.0	1668
1160	**1LA4 502-6CN■■**	994	132	96.6	96.7	0.88	0.86	11145	2.10	0.75	5.30	92.0	1858
1270	**1LA4 504-6CN■■**	994	144	96.8	96.9	0.88	0.86	12202	2.15	0.75	5.40	102.0	2048
1470	**1LA4 560-6CN■■**	995	168	96.9	96.9	0.87	0.85	14109	2.25	0.65	5.25	138.0	2105
1720	**1LA4 562-6CN■■**	995	196	97.0	97.1	0.87	0.85	16509	2.25	0.65	5.30	158.0	2470
1900	**1LA4 564-6CN■■**	995	215	97.1	97.2	0.88	0.86	18236	2.30	0.65	5.35	183.0	2890
8-pole													
215	**1LA4 350-8AN■■**	738	27.0	93.8	94.2	0.81	0.78	2782	2.30	1.00	5.1	10.6	826
250	**1LA4 352-8AN■■**	739	31.5	94.0	94.4	0.81	0.78	3230	2.40	1.00	5.3	12.5	986
300	**1LA4 354-8AN■■**	739	38.0	94.2	94.7	0.81	0.78	3876	2.40	1.10	5.3	14.8	1107
370	**1LA4 400-8AN■■**	741	45.5	95.0	95.3	0.82	0.79	4768	2.40	1.05	5.1	21.3	1110

Voltage code:	
3 kV, 50 Hz	**3**
3.3 kV, 50 Hz	**0**
5 kV, 50 Hz	**5**
6 kV, 50 Hz	**6**
6.6 kV, 50 Hz	**7**
Other voltage	**9**

Type of construction:	
IM B3	**0**
IM V1 (with canopy)	**4**
IM V1 (without canopy)	**8**

Note:

Efficiencies according to IEC 60034-2-1:2007;
stray load losses determined by statistical evaluation of measurements.

[1] Max. permissible external moment of inertia for three starts from cold or two starts from warm under the conditions described on Page 2/2.

Selection and ordering data (continued)

Rated power	High voltage motor H-compact	Speed	Rated current	Efficiency		Power factor		Torque	Break-down torque	Locked-rotor torque	Locked-rotor current	Moment of inertia	
IEC			I_{rated} at 6 kV	4/4 load	3/4 load	4/4 load	3/4 load		T_B/T_{rated}	T_{LR}/T_{rated}	I_{LR}/I_{rated}	Motor	External, max.[1]
kW	Article No.	rpm	A	%	%	cos φ	cos φ	Nm	[-]	[-]	[-]	kgm²	kgm²
2.0 ... 6.6 kV, 50 Hz													
8-pole (continued)													
420	**1LA4 402-8AN■■**	741	52.0	95.2	95.5	0.82	0.79	5412	2.40	1.10	5.4	24.4	1402
465	**1LA4 404-8AN■■**	741	57.0	95.2	95.5	0.82	0.79	5992	2.40	1.00	5.4	27.4	1589
530	**1LA4 450-8AN■■**	742	67.0	95.4	95.6	0.80	0.77	6821	2.50	1.00	5.4	34.0	2016
600	**1LA4 452-8AN■■**	742	75.0	95.6	95.7	0.81	0.76	7722	2.50	1.00	5.4	37.0	2563
670	**1LA4 454-8AN■■**	742	83.0	95.7	95.9	0.81	0.78	8622	2.50	1.00	5.4	42.0	2778
800	**1LA4 500-8CN■■**	746	98	96.1	96.1	0.82	0.78	10241	2.15	0.75	5.10	82.0	2820
850	**1LA4 502-8CN■■**	746	106	96.1	96.1	0.81	0.78	10881	2.20	0.80	5.25	92.0	2470
980	**1LA4 504-8CN■■**	746	122	96.2	96.2	0.81	0.78	12546	2.20	0.75	5.20	102.0	3582
1100	**1LA4 560-8CN■■**	746	132	96.4	96.4	0.83	0.80	14082	2.30	0.70	5.10	138.0	3672
1260	**1LA4 562-8CN■■**	746	152	96.6	96.6	0.83	0.81	16130	2.30	0.70	5.05	158.0	4692
1430	**1LA4 564-8CN■■**	746	172	96.7	96.7	0.83	0.80	18306	2.35	0.70	5.20	183.0	4582
10-pole													
360	**1LA4 450-3AN■■**	591	48.5	94.3	94.6	0.76	0.71	5817	2.30	1.00	4.5	34.0	3266
400	**1LA4 452-3AN■■**	591	54.0	94.6	94.9	0.76	0.71	6463	2.30	1.00	4.5	37.0	4063
450	**1LA4 454-3AN■■**	592	60.0	94.8	95.0	0.76	0.71	7259	2.30	1.00	4.5	42.0	4458
530	**1LA4 500-3CN■■**	593	68.0	95.2	95.4	0.79	0.75	8535	2.30	0.95	4.8	82.0	5280
590	**1LA4 502-3CN■■**	593	75.0	95.4	95.6	0.79	0.74	9501	2.30	0.95	4.8	92.0	6200
650	**1LA4 504-3CN■■**	593	83.0	95.5	95.6	0.79	0.74	10467	2.30	0.95	4.8	102.0	6770
770	**1LA4 560-3CN■■**	595	98.0	95.8	95.9	0.79	0.75	12358	2.20	0.75	5.0	138.0	3902
850	**1LA4 562-3CN■■**	596	108	95.9	96.0	0.79	0.75	13619	2.20	0.75	5.0	158.0	4102
1000	**1LA4 564-3CN■■**	595	126	96.1	96.2	0.80	0.75	16049	2.20	0.75	5.0	183.0	5717
12-pole													
300	**1LA4 450-5CN■■**	492	43.0	93.6	93.7	0.72	0.66	5823	2.10	0.75	4.2	34.0	3166
325	**1LA4 452-5CN■■**	492	47.0	93.7	93.7	0.71	0.64	6308	2.10	0.75	4.2	37.0	3063
350	**1LA4 454-5CN■■**	493	45.0	93.8	93.8	0.72	0.65	6779	2.10	0.75	4.2	42.0	3158
420	**1LA4 500-5CN■■**	494	59.0	94.6	94.6	0.72	0.67	8119	2.00	0.65	4.2	82.0	4500
460	**1LA4 502-5CN■■**	494	64.0	94.7	94.7	0.73	0.68	8892	2.00	0.65	4.2	92.0	5360
500	**1LA4 504-5CN■■**	494	71.0	94.7	94.7	0.72	0.67	9665	2.00	0.65	4.2	102.0	4640
580	**1LA4 560-5CN■■**	495	81.0	95.1	95.0	0.72	0.65	11189	2.00	0.65	4.4	138.0	7284
640	**1LA4 562-5CN■■**	495	90.0	95.3	95.1	0.72	0.65	12346	2.00	0.65	4.4	158.0	8862
710	**1LA4 564-5CN■■**	495	99.0	95.4	95.2	0.72	0.65	13697	2.00	0.65	4.4	183.0	10478

Voltage code:	
3 kV, 50 Hz	**3**
3.3 kV, 50 Hz	**0**
5 kV, 50 Hz	**5**
6 kV, 50 Hz	**6**
6.6 kV, 50 Hz	**7**
Other voltage	**9**

Type of construction:	
IM B3	**0**
IM V1 (with canopy)	**4**
IM V1 (without canopy)	**8**

Note:

Efficiencies according to IEC 60034-2-1:2007;
stray load losses determined by statistical evaluation of measurements.

Higher pole numbers are available on request.

[1] Max. permissible external moment of inertia for three starts from cold or two starts from warm under the conditions described on Page 2/2.

2

Selection and ordering data

Rated power	High voltage motor H-compact	Speed	Rated current	Efficiency		Power factor		Torque	Break-down torque	Locked-rotor torque	Locked-rotor current	Moment of inertia	
IEC			I_{rated} at 10 kV	4/4 load	3/4 load	4/4 load	3/4 load		T_B/T_{rated}	T_{LR}/T_{rated}	I_{LR}/I_{rated}	Motor	External, max.[1]
kW	Article No.	rpm	A	%	%	cos φ	cos φ	Nm	[-]	[-]	[-]	kgm²	kgm²
9 ... 11 kV, 50 Hz													
2-pole													
400	**1LA4 400-2AN■■**	2986	28.0	95.4	95.5	0.86	0.85	1279	2.45	0.95	5.80	7.8	13
450	**1LA4 401-2AN■■**	2985	31.5	95.6	95.7	0.86	0.86	1440	2.30	0.90	5.45	8.5	14
500	**1LA4 403-2AN■■**	2986	34.5	95.8	96.0	0.87	0.86	1599	2.45	1.00	5.90	9.3	18
720	**1LA4 450-2AN■■**	2982	48.5	95.9	95.9	0.89	0.88	2305	2.30	0.95	6.0	13.5	73
820	**1LA4 452-2AN■■**	2983	55	96.2	96.1	0.90	0.88	2624	2.40	0.95	6.2	15.4	81
900	**1LA4 454-2AN■■**	2983	60	96.3	96.3	0.90	0.89	2880	2.40	0.95	6.2	17.3	94
1120	**1LA4 500-2CN■0**	2986	75.0	96.4	96.4	0.90	0.89	3582	2.50	0.70	5.6	29.0	102
1170	**1LA4 502-2CN■0**	2987	78.0	96.5	96.5	0.90	0.89	3740	2.50	0.70	5.9	32.0	123
1290	**1LA4 504-2CN■0**	2988	85.0	96.7	96.6	0.91	0.90	4123	2.60	0.75	6.0	35.0	147
1550	**1LA4 560-2CN■0**	2991	102	96.7	96.6	0.91	0.90	4948	2.50	0.50	5.5	53.0	118
1700	**1LA4 562-2CN■0**	2991	112	96.9	96.8	0.91	0.90	5427	2.50	0.50	5.5	58.0	138
1860	**1LA4 564-2CN■0**	2991	122	97.0	96.9	0.91	0.90	5938	2.50	0.50	5.5	64.0	147
4-pole													
450	**1LA4 400-4AN■■**	1490	32.5	95.2	95.1	0.84	0.82	2884	2.6	1.2	5.95	11.6	193
500	**1LA4 401-4AN■■**	1490	35.5	95.4	95.3	0.85	0.83	3205	2.65	1.25	6.05	12.4	211
560	**1LA4 403-4AN■■**	1491	40	95.6	95.6	0.85	0.83	3587	2.65	1.2	6.05	13.8	247
800	**1LA4 450-4AN■■**	1489	57	95.6	95.6	0.85	0.83	5131	2.25	0.95	5.15	22.0	528
850	**1LA4 452-4AN■■**	1489	60	95.8	95.8	0.86	0.85	5452	2.25	0.95	5.15	24.0	626
900	**1LA4 454-4AN■■**	1489	63	95.9	96.0	0.86	0.84	5772	2.25	0.95	5.20	27.0	803
1060	**1LA4 500-4AN■■**	1492	74	96.2	96.1	0.86	0.84	6784	2.4	0.90	5.5	33.0	477
1180	**1LA4 502-4AN■■**	1492	82	96.3	96.4	0.86	0.85	7552	2.4	0.90	5.5	37.0	568
1320	**1LA4 504-4AN■■**	1492	91	96.5	96.5	0.87	0.86	8448	2.4	0.90	5.5	42.0	703
1500	**1LA4 560-4CN■■**	1494	104	96.6	96.4	0.86	0.83	9587	2.6	0.60	5.5	79.0	600
1700	**1LA4 562-4CN■■**	1494	116	96.8	96.7	0.88	0.85	10866	2.5	0.60	5.4	92.0	713
2000	**1LA4 564-4CN■■**	1494	136	97.0	96.9	0.88	0.85	12783	2.6	0.60	5.5	104.0	841
6-pole													
540	**1LA4 450-6AN■■**	993	38.5	95.3	95.4	0.85	0.82	5193	2.30	1.10	5.4	33.0	947
590	**1LA4 452-6AN■■**	993	42.0	95.4	95.5	0.85	0.82	5674	2.40	1.20	5.5	37.0	843
630	**1LA4 454-6AN■■**	993	45.0	95.5	95.6	0.85	0.83	6058	2.40	1.20	5.5	41.0	1039
950	**1LA4 500-6CN■■**	995	66	96.3	96.5	0.86	0.85	9118	2.10	0.65	5.10	82.0	1018
1050	**1LA4 502-6CN■■**	995	72	96.4	96.7	0.87	0.85	10078	2.10	0.65	5.15	92.0	1158
1170	**1LA4 504-6CN■■**	995	80	96.6	96.8	0.87	0.85	11230	2.20	0.75	5.25	102.0	1298
1250	**1LA4 560-6CN■■**	996	86.0	96.7	96.8	0.87	0.85	11984	2.45	0.65	5.6	138.0	1680
1450	**1LA4 562-6CN■■**	996	99.0	96.8	96.9	0.87	0.85	13902	2.45	0.65	5.6	158.0	2025
1650	**1LA4 564-6CN■■**	996	112	96.9	97.0	0.87	0.85	15819	2.45	0.65	5.6	183.0	2035

Voltage code:	
10 kV, 50 Hz	**8**
Other voltage	**9**
Type of construction:	
IM B3	**0**
IM V1 (with canopy)	**4**
IM V1 (without canopy)	**8**

Note:

Efficiencies according to IEC 60034-2-1:2007;
stray load losses determined by statistical evaluation of measurements.

[1] Max. permissible external moment of inertia for three starts from cold or two starts from warm under the conditions described on Page 2/2.

Selection and ordering data (continued)

Rated power	High voltage motor H-compact	Speed	Rated current	Efficiency		Power factor		Torque	Break-down torque	Locked-rotor torque	Locked-rotor current	Moment of inertia	
IEC			I_{rated} at 10 kV	4/4 load	3/4 load	4/4 load	3/4 load		T_B/T_{rated}	T_{LR}/T_{rated}	I_{LR}/I_{rated}	Motor	External, max. [1]
kW	Article No.	rpm	A	%	%	cos φ	cos φ	Nm	[-]	[-]	[-]	kgm²	kgm²
9 ... 11 kV, 50 Hz													
8-pole													
450	**1LA4 450-8AN■■**	743	34.0	94.8	95.0	0.80	0.76	5783	2.60	1.00	5.5	34.0	1286
480	**1LA4 452-8AN■■**	743	36.0	95.0	95.2	0.81	0.77	6169	2.60	1.00	5.5	37.0	1383
560	**1LA4 454-8AN■■**	743	42.0	95.3	95.4	0.81	0.77	7197	2.60	1.00	5.5	42.0	1788
700	**1LA4 500-8CN■■**	746	52.0	95.8	95.8	0.81	0.77	8960	2.20	0.75	5.5	82.0	1740
750	**1LA4 502-8CN■■**	746	55.0	95.9	95.9	0.82	0.78	9600	2.20	0.75	5.5	92.0	2020
800	**1LA4 504-8CN■■**	746	59.0	96.0	96.0	0.82	0.78	10240	2.20	0.75	5.5	102.0	2240
950	**1LA4 560-8CN■■**	746	70.0	96.2	96.1	0.81	0.77	12160	2.40	0.65	5.3	138.0	2562
1050	**1LA4 562-8CN■■**	746	77.0	96.2	96.2	0.82	0.78	13440	2.40	0.65	5.3	158.0	2282
1250	**1LA4 564-8CN■■**	746	92.0	96.5	96.3	0.81	0.77	16000	2.50	0.70	5.5	183.0	3217
10-pole													
440	**1LA4 500-3CN■■**	593	33.5	94.7	95.0	0.80	0.76	7085	2.20	0.85	4.7	82.0	3080
500	**1LA4 502-3CN■■**	593	38.0	95.0	95.2	0.80	0.75	8051	2.20	0.90	4.7	92.0	3770
530	**1LA4 504-3CN■■**	593	40.0	95.1	95.3	0.80	0.75	8535	2.20	0.90	4.7	102.0	4070
630	**1LA4 560-3CN■■**	595	47.5	95.4	95.6	0.80	0.75	10111	2.20	0.75	5.0	138.0	2382
690	**1LA4 562-3CN■■**	596	52.0	95.4	95.6	0.80	0.75	11055	2.20	0.80	5.1	158.0	2317
800	**1LA4 564-3CN■■**	596	61.0	95.6	95.7	0.79	0.75	12817	2.25	0.80	5.2	183.0	2807
12-pole													
500	**1LA4 560-5CN■■**	496	43.0	94.8	94.6	0.71	0.65	9626	2.00	0.65	4.4	138.0	4655
560	**1LA4 562-5CN■■**	496	48.0	95.0	94.8	0.71	0.64	10781	2.00	0.65	4.4	158.0	5533
620	**1LA4 564-5CN■■**	496	52.0	95.1	94.9	0.72	0.65	11936	2.00	0.65	4.4	183.0	5774

Voltage code:	
10 kV, 50 Hz	**8**
Other voltage	**9**
Type of construction:	
IM B3	**0**
IM V1 (with canopy)	**4**
IM V1 (without canopy)	**8**

Note:

Efficiencies according to IEC 60034-2-1:2007;
stray load losses determined by statistical evaluation of measurements.

Higher pole numbers are available on request.

[1] Max. permissible external moment of inertia for three starts from cold or two starts from warm under the conditions described on Page 2/2.

Selection and ordering data

The 1LA4 data also apply to explosion-protected 1MS4 (Ex ec) motors.

Rated power	**High voltage motor H-compact**	Speed	Rated current	Efficiency		Power factor		Torque	Break-down torque	Locked-rotor torque	Locked-rotor current	Moment of inertia	
IEC			I_{rated} at 4.16 kV	4/4 load	3/4 load	4/4 load	3/4 load		T_B/T_{rated}	T_{LR}/T_{rated}	I_{LR}/I_{rated}	Motor	External, max.[1]
kW	Article No.	rpm	A	%	%	cos φ	cos φ	Nm	[-]	[-]	[-]	kgm²	kgm²
2.0 ... 6.6 kV, 60 Hz													
2-pole													
240	**1LA4 310-2AN■■**	3572	40.5	94.7	94.7	0.87	0.86	642	2.3	0.95	5.0	2.2	18
285	**1LA4 312-2AN■■**	3569	48.0	94.7	94.7	0.87	0.85	763	2.2	0.85	5.0	2.2	16
350	**1LA4 314-2AN■■**	3572	59.0	95.2	95.2	0.87	0.86	936	2.4	1.00	5.3	2.7	18
410	**1LA4 316-2AN■■**	3574	68.0	95.6	95.6	0.88	0.87	1095	2.5	1.10	5.4	3.1	26
460	**1LA4 350-2AN■■**	3578	76.0	95.6	95.6	0.88	0.86	1228	2.5	1.05	5.4	4.3	25
510	**1LA4 352-2AN■■**	3580	84.0	95.9	95.8	0.88	0.87	1360	2.6	1.20	5.6	4.8	29
560	**1LA4 354-2AN■■**	3579	91.0	96.0	96.0	0.89	0.88	1494	2.5	1.25	5.6	5.2	31
630	**1LA4 400-2AN■■**	3583	104	95.9	95.6	0.88	0.87	1679	2.3	0.80	5.3	7.8	14
730	**1LA4 402-2AN■■**	3585	120	96.1	95.9	0.88	0.87	1944	2.5	0.85	5.5	8.7	16
830	**1LA4 404-2AN■■**	3585	134	96.3	96.1	0.89	0.88	2211	2.6	0.90	5.5	9.9	19
920	**1LA4 450-2CN■■**	3583	150	96.1	95.8	0.89	0.88	2452	2.40	0.70	5.5	17.0	43
1000	**1LA4 452-2CN■■**	3584	160	96.2	95.8	0.90	0.88	2664	2.45	0.70	5.7	19.0	46
1140	**1LA4 454-2CN■■**	3585	182	96.6	96.4	0.90	0.88	3037	2.55	0.75	5.9	21.0	54
1330[2]	**1LA4 500-2CN■0**	3586	215	96.3	95.9	0.90	0.89	3542	2.4	0.65	5.5	29.0	52
1380[2]	**1LA4 502-2CN■0**	3586	220	96.3	96.0	0.91	0.90	3675	2.4	0.65	5.5	32.0	58
1560[2]	**1LA4 504-2CN■0**	3586	245	96.7	96.3	0.91	0.90	4154	2.5	0.70	5.6	35.0	72
4-pole													
240	**1LA4 310-4AN■■**	1780	44.5	93.8	93.7	0.80	0.76	1288	2.40	1.15	5.3	2.8	104
300	**1LA4 312-4AN■■**	1780	52.0	94.6	94.6	0.84	0.81	1609	2.30	1.20	5.2	3.5	133
360	**1LA4 314-4AN■■**	1780	62.0	94.9	95.0	0.85	0.82	1931	2.30	1.25	5.3	4.0	145
440	**1LA4 316-4AN■■**	1780	75.0	95.3	95.4	0.85	0.82	2360	2.40	1.30	5.5	4.8	200
470	**1LA4 350-4AN■■**	1783	81.0	95.2	95.2	0.85	0.83	2517	2.30	1.15	5.2	6.0	144
550	**1LA4 352-4AN■■**	1783	93.0	95.5	95.5	0.86	0.84	2946	2.20	1.15	5.2	6.9	159
640	**1LA4 354-4AN■■**	1784	106	95.6	95.6	0.87	0.85	3426	2.30	1.20	5.5	8.1	195
680	**1LA4 400-4AN■■**	1788	116	95.1	94.8	0.86	0.83	3632	2.55	1.20	5.80	11.6	174
750	**1LA4 402-4AN■■**	1788	126	95.4	95.2	0.87	0.84	4006	2.55	1.25	5.80	12.9	206
830	**1LA4 404-4AN■■**	1789	138	96.6	95.3	0.87	0.85	4431	2.55	1.20	5.90	14.5	243
1000	**1LA4 450-4AN■■**	1789	172	95.6	95.1	0.84	0.82	5338	2.40	0.95	5.25	22.0	298

Voltage code:	
4 kV, 60 Hz	**4**
6.6 kV, 60 Hz	**1**
Other voltage	**9**

Type of construction:	
IM B3	**0**
IM V1 (with canopy)	**4**
IM V1 (without canopy)	**8**

Note:

Efficiencies according to IEC 60034-2-1:2007;
stray load losses determined by statistical evaluation of measurements.

[1] Max. permissible external moment of inertia for three starts from cold or two starts from warm under the conditions described on Page 2/2.

[2] Not available for ≤ 3.3 kV.

Selection and ordering data (continued)

Rated power	High voltage motor H-compact	Speed	Rated current	Efficiency		Power factor		Torque	Break-down torque	Locked-rotor torque	Locked-rotor current	Moment of inertia	
IEC			I_{rated} at 4.16 kV	4/4 load	3/4 load	4/4 load	3/4 load		T_B/T_{rated}	T_{LR}/T_{rated}	I_{LR}/I_{rated}	Motor	External, max. [1]
kW	Article No.	rpm	A	%	%	cos φ	cos φ	Nm	[-]	[-]	[-]	kgm²	kgm²
2.0 ... 6.6 kV, 60 Hz													
4-pole (continued)													
1050	**1LA4 452-4AN■■**	1789	178	95.7	95.4	0.86	0.84	5605	2.30	0.95	5.20	24.0	366
1150	**1LA4 454-4AN■■**	1789	194	95.9	95.6	0.86	0.84	6139	2.30	0.95	5.25	27.0	443
1350	**1LA4 500-4AN■■**	1792	230	96.1	95.8	0.85	0.83	7194	2.40	0.90	5.5	33.0	277
1450	**1LA4 502-4AN■■**	1792	245	96.2	95.9	0.86	0.84	7727	2.40	0.90	5.5	37.0	348
1600	**1LA4 504-4AN■■**	1792	260	96.3	96.2	0.88	0.86	8526	2.40	0.90	5.5	42.0	413
1870	**1LA4 560-4CN■■**	1794	315	96.4	96.0	0.86	0.84	9954	2.50	0.55	5.5	79.0	356
2090	**1LA4 562-4CN■■**	1794	345	96.6	96.3	0.87	0.84	11125	2.60	0.60	5.6	92.0	458
2350	**1LA4 564-4CN■■**	1794	385	96.8	96.6	0.88	0.85	12508	2.60	0.60	5.6	104.0	540
6-pole													
275	**1LA4 314-6AN■■**	1184	49.0	94.3	94.5	0.83	0.80	2218	2.40	1.20	5.2	5.3	247
325	**1LA4 316-6AN■■**	1185	58.0	94.7	95.0	0.82	0.80	2619	2.40	1.20	5.5	6.4	360
380	**1LA4 350-6AN■■**	1190	68.0	95.1	95.1	0.82	0.79	3049	2.40	1.15	5.3	10.8	498
430	**1LA4 352-6AN■■**	1190	75.0	95.3	95.4	0.83	0.80	3450	2.20	1.10	5.5	12.7	615
510	**1LA4 354-6AN■■**	1189	90.0	95.5	95.6	0.82	0.80	4096	2.30	1.15	5.5	15.0	689
560	**1LA4 400-6AN■■**	1192	98.0	95.6	95.5	0.83	0.80	4486	2.50	1.10	5.5	21.2	740
670	**1LA4 402-6AN■■**	1192	116	95.8	95.8	0.83	0.81	5367	2.40	1.10	5.5	24.2	780
690	**1LA4 404-6AN■■**	1191	120	95.8	95.8	0.83	0.82	5532	2.30	1.10	5.5	27.3	925
800	**1LA4 450-6AN■■**	1192	138	95.8	95.7	0.84	0.81	6409	2.30	1.10	5.4	33.0	947
850	**1LA4 452-6AN■■**	1192	144	95.9	95.9	0.85	0.83	6809	2.30	1.10	5.4	37.0	1083
900	**1LA4 454-6AN■■**	1192	154	96.0	96.0	0.85	0.83	7210	2.30	1.10	5.4	41.0	1489
1160	**1LA4 500-6CN■■**	1195	192	96.5	96.6	0.87	0.86	9270	2.10	0.75	5.30	82.0	1168
1290	**1LA4 502-6CN■■**	1195	210	96.7	96.7	0.88	0.86	10309	2.15	0.75	5.35	92.0	1308
1380	**1LA4 504-6CN■■**	1195	225	96.8	96.8	0.88	0.86	11028	2.15	0.75	5.40	102.0	1598
1570	**1LA4 560-6CN■■**	1195	260	96.7	96.7	0.87	0.86	12547	2.20	0.60	5.15	138.0	1425
1870	**1LA4 562-6CN■■**	1195	310	97.0	96.9	0.87	0.85	14944	2.25	0.65	5.30	158.0	1640
2050	**1LA4 564-6CN■■**	1195	335	97.1	97.1	0.88	0.86	16383	2.25	0.60	5.25	183.0	1980

Voltage code:	
4 kV, 60 Hz	**4**
6.6 kV, 60 Hz	**1**
Other voltage	**9**

Type of construction:	
IM B3	**0**
IM V1 (with canopy)	**4**
IM V1 (without canopy)	**8**

Note:

Efficiencies according to IEC 60034-2-1:2007;
stray load losses determined by statistical evaluation of measurements.

[1] Max. permissible external moment of inertia for three starts from cold or two starts from warm under the conditions described on Page 2/2.

2

Selection and ordering data (continued)

Rated power	High voltage motor H-compact	Speed	Rated current	Efficiency		Power factor		Torque	Break-down torque	Locked-rotor torque	Locked-rotor current	Moment of inertia	
IEC			I_{rated} at 4.16 kV	4/4 load	3/4 load	4/4 load	3/4 load		T_B/T_{rated}	T_{LR}/T_{rated}	I_{LR}/I_{rated}	Motor	External, max. [1]
kW	Article No.	rpm	A	%	%	cos φ	cos φ	Nm	[-]	[-]	[-]	kgm²	kgm²
2.0 ... 6.6 kV, 60 Hz													
8-pole													
260	**1LA4 350-8AN■■**	889	47.5	94.2	94.4	0.81	0.78	2793	2.30	0.95	5.1	10.6	683
300	**1LA4 352-8AN■■**	889	54.0	94.5	94.6	0.81	0.78	3222	2.40	1.00	5.2	12.5	824
360	**1LA4 354-8AN■■**	890	65.0	94.7	94.9	0.81	0.78	3863	2.50	1.05	5.4	14.8	879
445	**1LA4 400-8AN■■**	892	80.0	95.3	95.3	0.81	0.79	4764	2.40	1.05	5.3	21.3	1044
490	**1LA4 402-8AN■■**	891	86.0	95.3	95.3	0.83	0.80	5251	2.30	1.00	5.2	24.4	1069
540	**1LA4 404-8AN■■**	892	96.0	95.6	95.6	0.82	0.80	5781	2.40	1.05	5.4	27.4	1446
600	**1LA4 450-8AN■■**	891	108	95.4	95.5	0.81	0.78	6430	2.50	1.00	5.4	34.0	1466
670	**1LA4 452-8AN■■**	892	120	95.6	95.7	0.81	0.76	7172	2.60	1.00	5.5	37.0	1843
770	**1LA4 454-8AN■■**	892	138	95.8	95.9	0.81	0.78	8243	2.60	1.00	5.5	42.0	1958
900	**1LA4 500-8CN■■**	896	160	96.1	95.9	0.81	0.77	9593	2.35	0.75	5.25	82.0	2290
950	**1LA4 502-8CN■■**	896	170	96.1	96.0	0.81	0.78	10126	2.20	0.70	5.25	92.0	2050
1040	**1LA4 504-8CN■■**	896	182	96.2	96.2	0.82	0.81	11085	2.10	0.70	5.10	102.0	2290
1250	**1LA4 560-8CN■■**	896	220	96.4	96.2	0.82	0.78	13323	2.50	0.70	5.30	138.0	2487
1400	**1LA4 562-8CN■■**	896	240	96.6	96.5	0.83	0.81	14922	2.30	0.65	5.10	158.0	3012
1530	**1LA4 564-8CN■■**	896	265	96.7	96.5	0.83	0.79	16307	2.55	0.70	5.40	183.0	3687
10-pole													
400	**1LA4 450-3AN■■**	711	77.0	94.5	94.7	0.76	0.73	5372	2.20	1.00	4.8	34.0	2416
450	**1LA4 452-3AN■■**	711	87.0	94.7	94.8	0.76	0.72	6044	2.30	1.00	4.8	37.0	2513
500	**1LA4 454-3AN■■**	711	96.0	94.8	95.0	0.76	0.73	6715	2.30	1.00	4.8	42.0	2488
610	**1LA4 500-3CN■■**	713	112	95.4	95.5	0.79	0.75	8170	2.20	0.90	4.8	82.0	3700
670	**1LA4 502-3CN■■**	713	124	95.4	95.6	0.79	0.75	8973	2.20	0.90	4.8	92.0	4170
710	**1LA4 504-3CN■■**	714	132	95.6	95.5	0.78	0.74	9496	2.40	0.95	5.1	102.0	4840
870	**1LA4 560-3CN■■**	715	160	95.9	95.9	0.79	0.74	11619	2.30	0.75	5.1	138.0	2862
950	**1LA4 562-3CN■■**	716	176	96.0	95.9	0.78	0.73	12670	2.50	0.80	5.5	158.0	3377
1100	**1LA4 564-3CN■■**	716	200	96.1	96.1	0.79	0.75	14670	2.30	0.75	5.3	183.0	3517
12-pole													
340	**1LA4 450-5CN■■**	593	71.0	94.0	93.8	0.71	0.64	5475	2.00	0.70	4.3	34.0	2286
375	**1LA4 452-5CN■■**	592	78.0	94.2	94.1	0.71	0.66	6049	2.00	0.70	4.3	37.0	2723
410	**1LA4 454-5CN■■**	592	84.0	94.2	94.1	0.72	0.66	6613	2.00	0.70	4.3	42.0	2428
460	**1LA4 500-5CN■■**	595	95.0	94.6	94.4	0.71	0.65	7382	2.00	0.65	4.2	82.0	3200
500	**1LA4 502-5CN■■**	594	102	94.8	94.7	0.72	0.67	8038	2.00	0.65	4.2	92.0	3880
540	**1LA4 504-5CN■■**	594	110	94.9	94.8	0.72	0.67	8681	2.00	0.65	4.2	102.0	3850
650	**1LA4 560-5CN■■**	595	134	95.2	94.9	0.71	0.64	10432	2.00	0.65	4.4	138.0	5636
710	**1LA4 562-5CN■■**	596	144	95.3	95.0	0.72	0.65	11375	2.00	0.65	4.4	158.0	6123
800	**1LA4 564-5CN■■**	596	164	95.4	95.1	0.71	0.65	12817	2.00	0.65	4.4	183.0	7377

Voltage code:	
4 kV, 60 Hz	**4**
6.6 kV, 60 Hz	**1**
Other voltage	**9**

Type of construction:	
IM B3	**0**
IM V1 (with canopy)	**4**
IM V1 (without canopy)	**8**

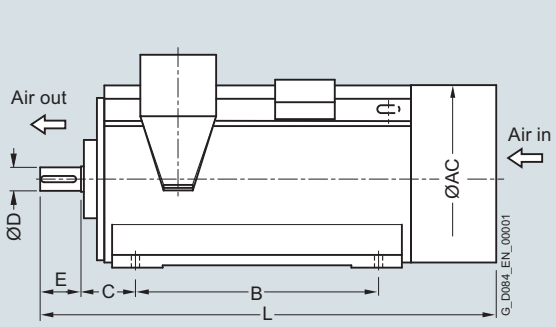
Note:

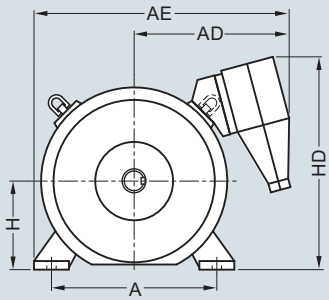
Efficiencies according to IEC 60034-2-1:2007;
stray load losses determined by statistical evaluation of measurements.

Higher pole numbers are available on request.

[1] Max. permissible external moment of inertia for three starts from cold or two starts from warm under the conditions described on Page 2/2.

Dimension drawings





Motor type	Weight	Dimensions										
		A	AC	AD[1]	AE[1]	B	C	D	E	H	HD[2]	L
	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
Up to 6.6 kV, IM B3 type of construction, anti-friction bearings[3]												
2-pole												
1LA4 310-2AN.0	1550	610	700	710	1075	710	200	70	105	315	860	1590
1LA4 312-2AN.0	1550	610	700	710	1075	710	200	70	105	315	860	1590
1LA4 314-2AN.0	1850	610	700	710	1075	900	200	70	105	315	860	1790
1LA4 316-2AN.0	2000	610	700	710	1075	900	200	70	105	315	860	1790
1LA4 350-2AN.0	2300	686	780	740	1155	1000	224	75	105	355	930	1930
1LA4 352-2AN.0	2400	686	780	740	1155	1000	224	75	105	355	930	1930
1LA4 354-2AN.0	2550	686	780	740	1155	1000	224	75	105	355	930	1930
1LA4 400-2AN.0	3150	750	870	775	1225	1120	254	85	130	400	1010	2095
1LA4 402-2AN.0	3300	750	870	775	1225	1120	254	85	130	400	1010	2095
1LA4 404-2AN.0	3550	750	870	775	1225	1120	254	85	130	400	1010	2095
1LA4 450-2AN.0[4]	4600	850	960	825	1340	1250	280	95	130	450	1100	2320
1LA4 452-2AN.0[4]	4900	850	960	825	1340	1250	280	95	130	450	1100	2320
1LA4 454-2AN.0[4]	5200	850	960	825	1340	1250	280	95	130	450	1100	2320
4-pole												
1LA4 310-4AN.0	1500	610	700	710	1075	710	200	90	130	315	860	1610
1LA4 312-4AN.0	1650	610	700	710	1075	710	200	90	130	315	860	1610
1LA4 314-4AN.0	1900	610	700	710	1075	900	200	90	130	315	860	1810
1LA4 316-4AN.0	2050	610	700	710	1075	900	200	90	130	315	860	1810
1LA4 350-4AN.0	2350	686	780	740	1155	1000	224	100	165	355	930	1985
1LA4 352-4AN.0	2550	686	780	740	1155	1000	224	100	165	355	930	1985
1LA4 354-4AN.0	2750	686	780	740	1155	1000	224	100	165	355	930	1985
1LA4 400-4AN.0	3400	750	870	775	1225	1120	254	120	165	400	1010	2125
1LA4 402-4AN.0	3600	750	870	775	1225	1120	254	120	165	400	1010	2125
1LA4 404-4AN.0	3800	750	870	775	1225	1120	254	120	165	400	1010	2125
1LA4 450-4AN.0	4700	850	960	825	1340	1250	280	130	200	450	1100	2390
1LA4 452-4AN.0	5000	850	960	825	1340	1250	280	130	200	450	1100	2390
1LA4 454-4AN.0	5300	850	960	825	1340	1250	280	130	200	450	1100	2390
1LA4 500-4AN.0	5900	950	1070	875	1440	1320	315	140	200	500	1200	2525
1LA4 502-4AN.0	6300	950	1070	875	1440	1320	315	140	200	500	1200	2525

[1] For currents I_{rated} > 315 A, the dimension changes by + 140 mm (for H = 500), by + 145 mm (for H = 560) or by + 155 mm (for H = 630).

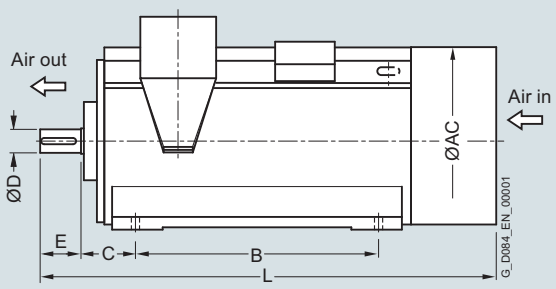
[2] For currents I_{rated} > 315 A, the dimension changes by + 70 mm.

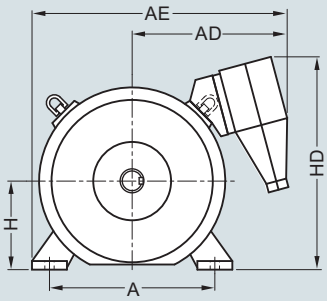
[3] The dimensions also apply for the 1MS4 series.

[4] Anti-friction bearings only for 50 Hz operation.

2

Dimension drawings (continued)





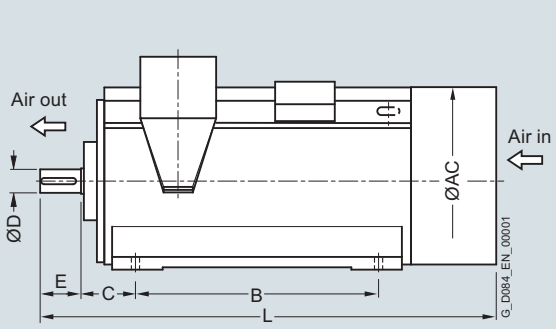
Motor type	Weight	Dimensions										
		A	AC	AD[1]	AE[1]	B	C	D	E	H	HD[2]	L
	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
Up to 6.6 kV, IM B3 type of construction, anti-friction bearings[3]												
4-pole												
1LA4 504-4AN.0	6800	950	1070	875	1440	1320	315	140	200	500	1200	2525
1LA4 560-4CN.0	8200	1060	1210	925	1560	1400	335	160	240	560	1310	2775
1LA4 562-4CN.0	8900	1060	1210	925	1560	1400	335	160	240	560	1310	2775
1LA4 564-4CN.0	9700	1060	1210	925	1560	1400	335	160	240	560	1310	2775
6-pole												
1LA4 314-6AN.0	1950	610	700	710	1075	900	200	90	130	315	860	1810
1LA4 316-6AN.0	2150	610	700	710	1075	900	200	90	130	315	860	1810
1LA4 350-6AN.0	2400	686	780	740	1155	1000	224	100	165	355	930	1985
1LA4 352-6AN.0	2600	686	780	740	1155	1000	224	100	165	355	930	1985
1LA4 354-6AN.0	2850	686	780	740	1155	1000	224	100	165	355	930	1985
1LA4 400-6AN.0	3500	750	870	775	1225	1120	254	120	165	400	1010	2125
1LA4 402-6AN.0	3750	750	870	775	1225	1120	254	120	165	400	1010	2125
1LA4 404-6AN.0	4000	750	870	775	1225	1120	254	120	165	400	1010	2125
1LA4 450-6AN.0	4600	850	960	825	1340	1250	280	130	200	450	1100	2390
1LA4 452-6AN.0	4900	850	960	825	1340	1250	280	130	200	450	1100	2390
1LA4 454-6AN.0	5200	850	960	825	1340	1250	280	130	200	450	1100	2390
1LA4 500-6CN.0	6400	950	1070	875	1440	1320	315	140	200	500	1200	2525
1LA4 502-6CN.0	6800	950	1070	875	1440	1320	315	140	200	500	1200	2525
1LA4 504-6CN.0	7300	950	1070	875	1440	1320	315	140	200	500	1200	2525
1LA4 560-6CN.0	8500	1060	1210	925	1560	1400	335	160	240	560	1310	2775
1LA4 562-6CN.0	9300	1060	1210	925	1560	1400	335	160	240	560	1310	2775
1LA4 564-6CN.0	10100	1060	1210	925	1560	1400	335	160	240	560	1310	2775

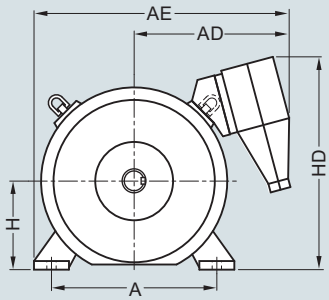
[1] For currents I_{rated} > 315 A, the dimension changes by + 140 mm (for H = 500), by + 145 mm (for H = 560) or by + 155 mm (for H = 630).

[2] For currents I_{rated} > 315 A, the dimension changes by + 70 mm.

[3] The dimensions also apply for the 1MS4 series.

Dimension drawings (continued)





Motor type	Weight	Dimensions										
		A	AC	AD[1]	AE[1]	B	C	D	E	H	HD[2]	L
	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
Up to 6.6 kV, IM B3 type of construction, anti-friction bearings[3]												
8-pole												
1LA4 350-8AN.0	2400	686	780	740	1155	1000	224	100	165	355	930	1985
1LA4 352-8AN.0	2600	686	780	740	1155	1000	224	100	165	355	930	1985
1LA4 354-8AN.0	2800	686	780	740	1155	1000	224	100	165	355	930	1985
1LA4 400-8AN.0	3450	750	870	775	1225	1120	254	120	165	400	1010	2125
1LA4 402-8AN.0	3700	750	870	775	1225	1120	254	120	165	400	1010	2125
1LA4 404-8AN.0	3950	750	870	775	1225	1120	254	120	165	400	1010	2125
1LA4 450-8AN.0	4600	850	960	825	1340	1250	280	130	200	450	1100	2390
1LA4 452-8AN.0	4900	850	960	825	1340	1250	280	130	200	450	1100	2390
1LA4 454-8AN.0	5200	850	960	825	1340	1250	280	130	200	450	1100	2390
1LA4 500-8CN.0	6400	950	1070	875	1440	1320	315	140	200	500	1200	2525
1LA4 502-8CN.0	6700	950	1070	875	1440	1320	315	140	200	500	1200	2525
1LA4 504-8CN.0	7200	950	1070	875	1440	1320	315	140	200	500	1200	2525
1LA4 560-8CN.0	8500	1060	1210	925	1560	1400	335	160	240	560	1310	2775
1LA4 562-8CN.0	9200	1060	1210	925	1560	1400	335	160	240	560	1310	2775
1LA4 564-8CN.0	10000	1060	1210	925	1560	1400	335	160	240	560	1310	2775
10-pole												
1LA4 450-3AN.0	4600	850	960	825	1340	1250	280	130	200	450	1100	2390
1LA4 452-3AN.0	4900	850	960	825	1340	1250	280	130	200	450	1100	2390
1LA4 454-3AN.0	5200	850	960	825	1340	1250	280	130	200	450	1100	2390
1LA4 500-3CN.0	6400	950	1070	875	1440	1320	315	140	200	500	1200	2525
1LA4 502-3CN.0	6700	950	1070	875	1440	1320	315	140	200	500	1200	2525
1LA4 504-3CN.0	7200	950	1070	875	1440	1320	315	140	200	500	1200	2525
1LA4 560-3CN.0	8500	1060	1210	925	1560	1400	335	160	240	560	1310	2775
1LA4 562-3CN.0	9200	1060	1210	925	1560	1400	335	160	240	560	1310	2775
1LA4 564-3CN.0	10000	1060	1210	925	1560	1400	335	160	240	560	1310	2775

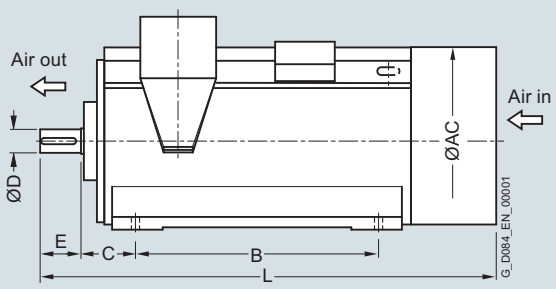
[1] For currents I_{rated} > 315 A, the dimension changes by + 140 mm (for H = 500), by + 145 mm (for H = 560) or by + 155 mm (for H = 630).

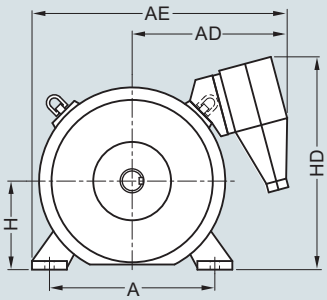
[2] For currents I_{rated} > 315 A, the dimension changes by + 70 mm.

[3] The dimensions also apply for the 1MS4 series.

2

Dimension drawings (continued)





Motor type	Weight	Dimensions										
		A	AC	AD[1]	AE[1]	B	C	D	E	H	HD[2]	L
	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
Up to 6.6 kV, IM B3 type of construction, anti-friction bearings[3]												
12-pole												
1LA4 450-5CN.0	4600	850	960	825	1340	1250	280	130	200	450	1100	2390
1LA4 452-5CN.0	4900	850	960	825	1340	1250	280	130	200	450	1100	2390
1LA4 454-5CN.0	5200	850	960	825	1340	1250	280	130	200	450	1100	2390
1LA4 500-5CN.0	6400	950	1070	875	1440	1320	315	140	200	500	1200	2525
1LA4 502-5CN.0	6700	950	1070	875	1440	1320	315	140	200	500	1200	2525
1LA4 504-5CN.0	7200	950	1070	875	1440	1320	315	140	200	500	1200	2525
1LA4 560-5CN.0	8500	1060	1210	925	1560	1400	335	160	240	560	1310	2775
1LA4 562-5CN.0	9200	1060	1210	925	1560	1400	335	160	240	560	1310	2775
1LA4 564-5CN.0	10000	1060	1210	925	1560	1400	335	160	240	560	1310	2775

Note:

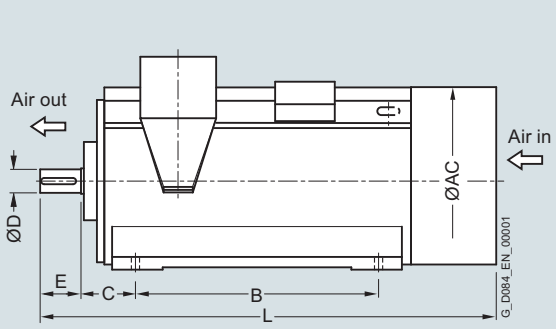
Higher pole numbers are available on request.

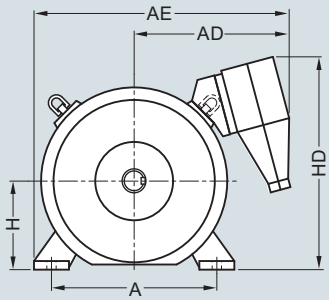
[1] For currents I_{rated} > 315 A, the dimension changes by + 140 mm (for H = 500), by + 145 mm (for H = 560) or by + 155 mm (for H = 630).

[2] For currents I_{rated} > 315 A, the dimension changes by + 70 mm.

[3] The dimensions also apply for the 1MS4 series.

Dimension drawings



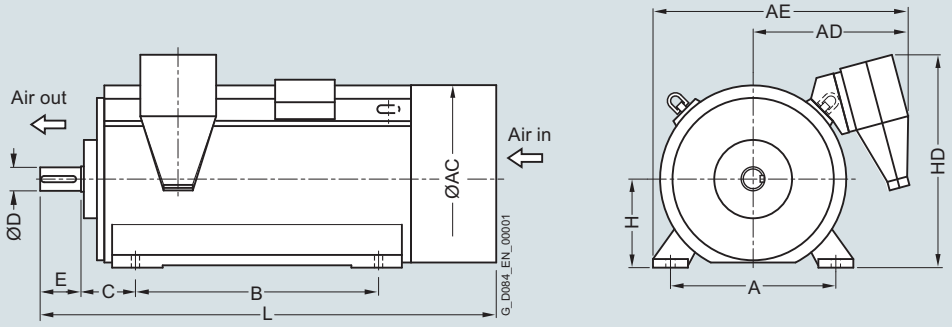


Motor type	Weight	Dimensions										
		A	AC	AD	AE	B	C	D	E	H	HD	L
	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
9 ... 11 kV, IM B3 type of construction, anti-friction bearings[1)]												
2-pole												
1LA4 400-2AN.0	3150	750	870	775	1225	1120	254	85	130	400	1010	2095
1LA4 401-2AN.0	3300	750	870	775	1225	1120	254	85	130	400	1010	2095
1LA4 403-2AN.0	3550	750	870	775	1225	1120	254	85	130	400	1010	2095
1LA4 450-2AN.0[2)]	4600	850	960	970	1485	1250	280	95	130	450	1170	2320
1LA4 452-2AN.0[2)]	4900	850	960	970	1485	1250	280	95	130	450	1170	2320
1LA4 454-2AN.0[2)]	5200	850	960	970	1485	1250	280	95	130	450	1170	2320
4-pole												
1LA4 450-4AN.0	4600	850	960	970	1485	1250	280	130	200	450	1170	2390
1LA4 452-4AN.0	4900	850	960	970	1485	1250	280	130	200	450	1170	2390
1LA4 454-4AN.0	5200	850	960	970	1485	1250	280	130	200	450	1170	2390
1LA4 500-4AN.0	5900	950	1070	1015	1580	1320	315	140	200	500	1270	2525
1LA4 502-4AN.0	6200	950	1070	1015	1580	1320	315	140	200	500	1270	2525
1LA4 504-4AN.0	6700	950	1070	1015	1580	1320	315	140	200	500	1270	2525
1LA4 560-4CN.0	8100	1060	1210	1070	1705	1400	335	160	240	560	1380	2775
1LA4 562-4CN.0	8800	1060	1210	1070	1705	1400	335	160	240	560	1380	2775
1LA4 564-4CN.0	9600	1060	1210	1070	1705	1400	335	160	240	560	1380	2775
6-pole												
1LA4 450-6AN.0	4600	850	960	970	1485	1250	280	130	200	450	1170	2390
1LA4 452-6AN.0	4800	850	960	970	1485	1250	280	130	200	450	1170	2390
1LA4 454-6AN.0	5200	850	960	970	1485	1250	280	130	200	450	1170	2390
1LA4 500-6CN.0	6300	950	1070	1015	1580	1320	315	140	200	500	1270	2525
1LA4 502-6CN.0	6800	950	1070	1015	1580	1320	315	140	200	500	1270	2525
1LA4 504-6CN.0	7200	950	1070	1015	1580	1320	315	140	200	500	1270	2525
1LA4 560-6CN.0	8500	1060	1210	1070	1705	1400	335	160	240	560	1380	2775
1LA4 562-6CN.0	9100	1060	1210	1070	1705	1400	335	160	240	560	1380	2775
1LA4 564-6CN.0	10000	1060	1210	1070	1705	1400	335	160	240	560	1380	2775

[1)] The dimensions also apply for the 1MS4 series.
[2)] Anti-friction bearings only for 50 Hz operation.

2

Dimension drawings (continued)



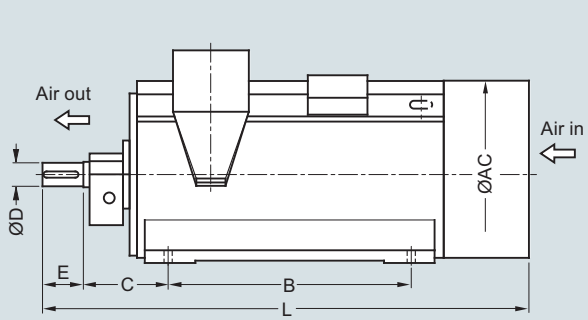
Motor type	Weight	Dimensions										
		A	AC	AD	AE	B	C	D	E	H	HD	L
	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
9 ... 11 kV, IM B3 type of construction, anti-friction bearings[1)]												
8-pole												
1LA4 450-8AN.0	4600	850	960	970	1485	1250	280	130	200	450	1170	2390
1LA4 452-8AN.0	4800	850	960	970	1485	1250	280	130	200	450	1170	2390
1LA4 454-8AN.0	5200	850	960	970	1485	1250	280	130	200	450	1170	2390
1LA4 500-8CN.0	6300	950	1070	1015	1580	1320	315	140	200	500	1270	2525
1LA4 502-8CN.0	6700	950	1070	1015	1580	1320	315	140	200	500	1270	2525
1LA4 504-8CN.0	7100	950	1070	1015	1580	1320	315	140	200	500	1270	2525
1LA4 560-8CN.0	8400	1060	1210	1070	1705	1400	335	160	240	560	1380	2775
1LA4 562-8CN.0	9100	1060	1210	1070	1705	1400	335	160	240	560	1380	2775
1LA4 564-8CN.0	10000	1060	1210	1070	1705	1400	335	160	240	560	1380	2775
10-pole												
1LA4 500-3CN.0	6300	950	1070	1015	1580	1320	315	140	200	500	1270	2525
1LA4 502-3CN.0	6700	950	1070	1015	1580	1320	315	140	200	500	1270	2525
1LA4 504-3CN.0	7100	950	1070	1015	1580	1320	315	140	200	500	1270	2525
1LA4 560-3CN.0	8400	1060	1210	1070	1705	1400	335	160	240	560	1380	2775
1LA4 562-3CN.0	9100	1060	1210	1070	1705	1400	335	160	240	560	1380	2775
1LA4 564-3CN.0	10000	1060	1210	1070	1705	1400	335	160	240	560	1380	2775
12-pole												
1LA4 560-5CN.0	8400	1060	1210	1070	1705	1400	335	160	240	560	1380	2775
1LA4 562-5CN.0	9100	1060	1210	1070	1705	1400	335	160	240	560	1380	2775
1LA4 564-5CN.0	10000	1060	1210	1070	1705	1400	335	160	240	560	1380	2775

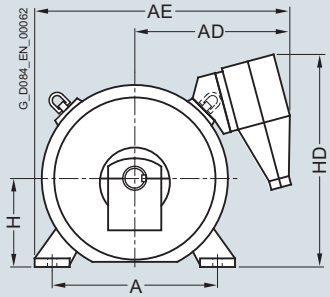
Note:

Higher pole numbers are available on request.

[1)] The dimensions also apply for the 1MS4 series.

Dimension drawings





Motor type	Weight	Dimensions										
		A	AC	AD[1]	AE[1]	B	C	D	E	H	HD[2]	L
	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
Up to 6.6 kV, IM B3 type of construction, sleeve bearings[3]												
2-pole												
1LA4 310-2AN.0-Z K96	1650	610	700	710	1075	710	375	70	105	315	860	1980
1LA4 312-2AN.0-Z K96	1650	610	700	710	1075	710	375	70	105	315	860	1980
1LA4 314-2AN.0-Z K96	1950	610	700	710	1075	900	375	70	105	315	860	2180
1LA4 316-2AN.0-Z K96	2100	610	700	710	1075	900	375	70	105	315	860	2180
1LA4 350-2AN.0-Z K96	2400	686	780	740	1155	1000	400	75	105	355	930	2340
1LA4 352-2AN.0-Z K96	2500	686	780	740	1155	1000	400	75	105	355	930	2340
1LA4 354-2AN.0-Z K96	2600	686	780	740	1155	1000	400	75	105	355	930	2340
1LA4 400-2AN.0-Z K96	3200	750	870	775	1225	1120	425	85	130	400	1010	2510
1LA4 402-2AN.0-Z K96	3350	750	870	775	1225	1120	425	85	130	400	1010	2510
1LA4 404-2AN.0-Z K96	3600	750	870	775	1225	1120	425	85	130	400	1010	2510
1LA4 450-2AN.0-Z K96[4]	4700	850	960	825	1340	1250	475	95	130	450	1100	2515
1LA4 452-2AN.0-Z K96[4]	5000	850	960	825	1340	1250	475	95	130	450	1100	2515
1LA4 454-2AN.0-Z K96[4]	5200	850	960	825	1340	1250	475	95	130	450	1100	2515
1LA4 500-2CN.0	6100	950	1070	875	1440	1320	500	110	165	500	1200	2675
1LA4 502-2CN.0	6300	950	1070	875	1440	1320	500	110	165	500	1200	2675
1LA4 504-2CN.0	6700	950	1070	875	1440	1320	500	110	165	500	1200	2675
1LA4 560-2CN.0	8200	1060	1210	925	1560	1400	500	120	165	560	1310	2865
1LA4 562-2CN.0	8600	1060	1210	925	1560	1400	500	120	165	560	1310	2865
1LA4 564-2CN.0	9100	1060	1210	925	1560	1400	500	120	165	560	1310	2865
4-pole												
1LA4 310-4AN.0-Z K96	1600	610	700	710	1075	710	375	90	130	315	860	2010
1LA4 312-4AN.0-Z K96	1750	610	700	710	1075	710	375	90	130	315	860	2010
1LA4 314-4AN.0-Z K96	2000	610	700	710	1075	900	375	90	130	315	860	2210
1LA4 316-4AN.0-Z K96	2150	610	700	710	1075	900	375	90	130	315	860	2210
1LA4 350-4AN.0-Z K96	2450	686	780	740	1155	1000	400	100	165	355	930	2400
1LA4 352-4AN.0-Z K96	2600	686	780	740	1155	1000	400	100	165	355	930	2400
1LA4 354-4AN.0-Z K96	2850	686	780	740	1155	1000	400	100	165	355	930	2400
1LA4 400-4AN.0-Z K96	3450	750	870	775	1225	1120	450	120	165	400	1010	2570
1LA4 402-4AN.0-Z K96	3650	750	870	775	1225	1120	450	120	165	400	1010	2570

[1] For currents I_{rated} > 315 A, the dimension changes by + 140 mm (for H = 500), by + 145 mm (for H = 560) or by + 155 mm (for H = 630).

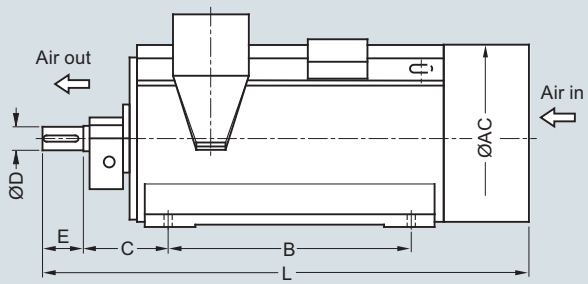
[2] For currents I_{rated} > 315 A, the dimension changes by + 70 mm.

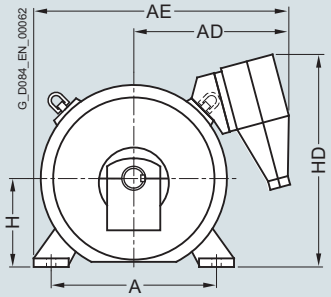
[3] The dimensions also apply for the 1MS4 series.

[4] For the 60 Hz version, sleeve bearings are standard, "-Z **K96**" not necessary.

2

Dimension drawings (continued)





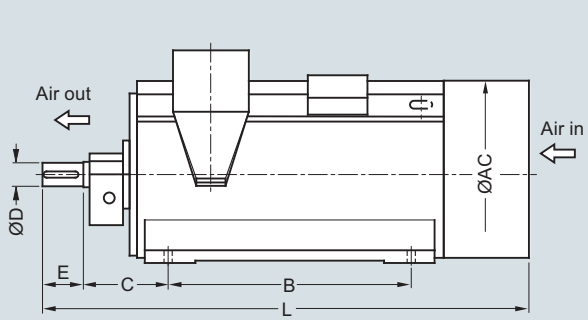
Motor type	Weight	Dimensions										
		A	AC	AD[1]	AE[1]	B	C	D	E	H	HD[2]	L
	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
Up to 6.6 kV, IM B3 type of construction, sleeve bearings[3]												
4-pole												
1LA4 404-4AN.0-Z K96	3850	750	870	775	1225	1120	450	120	165	400	1010	2570
1LA4 450-4AN.0-Z K96	4800	850	960	825	1340	1250	475	130	200	450	1100	2745
1LA4 452-4AN.0-Z K96	5100	850	960	825	1340	1250	475	130	200	450	1100	2745
1LA4 454-4AN.0-Z K96	5400	850	960	825	1340	1250	475	130	200	450	1100	2745
1LA4 500-4AN.0-Z K96	6100	950	1070	875	1440	1320	500	140	200	500	1200	2870
1LA4 502-4AN.0-Z K96	6500	950	1070	875	1440	1320	500	140	200	500	1200	2870
1LA4 504-4AN.0-Z K96	7000	950	1070	875	1440	1320	500	140	200	500	1200	2870
1LA4 560-4CN.0-Z K96	8500	1060	1210	925	1560	1400	560	160	240	560	1310	3170
1LA4 562-4CN.0-Z K96	9200	1060	1210	925	1560	1400	560	160	240	560	1310	3170
1LA4 564-4CN.0-Z K96	10000	1060	1210	925	1560	1400	560	160	240	560	1310	3170
6-pole												
1LA4 450-6AN.0-Z K96	4800	850	960	825	1340	1250	475	130	200	450	1100	2745
1LA4 452-6AN.0-Z K96	5000	850	960	825	1340	1250	475	130	200	450	1100	2745
1LA4 454-6AN.0-Z K96	5300	850	960	825	1340	1250	475	130	200	450	1100	2745
1LA4 500-6CN.0-Z K96	6600	950	1070	875	1440	1320	530	140	200	500	1200	2900
1LA4 502-6CN.0-Z K96	7000	950	1070	875	1440	1320	530	140	200	500	1200	2900
1LA4 504-6CN.0-Z K96	7500	950	1070	875	1440	1320	530	140	200	500	1200	2900
1LA4 560-6CN.0-Z K96	8800	1060	1210	925	1560	1400	560	160	240	560	1310	3170
1LA4 562-6CN.0-Z K96	9500	1060	1210	925	1560	1400	560	160	240	560	1310	3170
1LA4 564-6CN.0-Z K96	10400	1060	1210	925	1560	1400	560	160	240	560	1310	3170

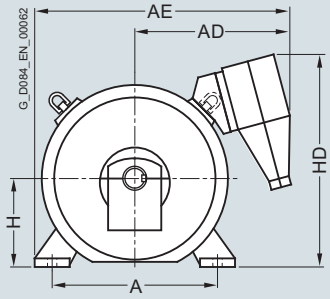
[1] For currents I_{rated} > 315 A, the dimension changes by + 140 mm (for H = 500), by + 145 mm (for H = 560) or by + 155 mm (for H = 630).

[2] For currents I_{rated} > 315 A, the dimension changes by + 70 mm.

[3] The dimensions also apply for the 1MS4 series.

Dimension drawings (continued)





Motor type	Weight	Dimensions										
		A	AC	AD[1]	AE[1]	B	C	D	E	H	HD[2]	L
	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
Up to 6.6 kV, IM B3 type of construction, sleeve bearings[3]												
8-pole												
1LA4 450-8AN.0-Z K96	4700	850	960	825	1340	1250	475	130	200	450	1100	2745
1LA4 452-8AN.0-Z K96	5000	850	960	825	1340	1250	475	130	200	450	1100	2745
1LA4 454-8AN.0-Z K96	5300	850	960	825	1340	1250	475	130	200	450	1100	2745
1LA4 500-8CN.0-Z K96	6600	950	1070	875	1440	1320	530	140	200	500	1200	2900
1LA4 502-8CN.0-Z K96	6900	950	1070	875	1440	1320	530	140	200	500	1200	2900
1LA4 504-8CN.0-Z K96	7400	950	1070	875	1440	1320	530	140	200	500	1200	2900
1LA4 560-8CN.0-Z K96	8800	1060	1210	925	1560	1400	560	160	240	560	1310	3170
1LA4 562-8CN.0-Z K96	9500	1060	1210	925	1560	1400	560	160	240	560	1310	3170
1LA4 564-8CN.0-Z K96	10300	1060	1210	925	1560	1400	560	160	240	560	1310	3170
10-pole												
1LA4 450-3AN.0-Z K96	4700	850	960	825	1340	1250	475	130	200	450	1100	2745
1LA4 452-3AN.0-Z K96	5000	850	960	825	1340	1250	475	130	200	450	1100	2745
1LA4 454-3AN.0-Z K96	5300	850	960	825	1340	1250	475	130	200	450	1100	2745
1LA4 500-3CN.0-Z K96	6600	950	1070	875	1440	1320	530	140	200	500	1200	2900
1LA4 502-3CN.0-Z K96	6900	950	1070	875	1440	1320	530	140	200	500	1200	2900
1LA4 504-3CN.0-Z K96	7400	950	1070	875	1440	1320	530	140	200	500	1200	2900
1LA4 560-3CN.0-Z K96	8800	1060	1210	925	1560	1400	560	160	240	560	1310	3170
1LA4 562-3CN.0-Z K96	9500	1060	1210	925	1560	1400	560	160	240	560	1310	3170
1LA4 564-3CN.0-Z K96	10300	1060	1210	925	1560	1400	560	160	240	560	1310	3170
12-pole												
1LA4 450-5CN.0-Z K96	4700	850	960	825	1340	1250	475	130	200	450	1100	2745
1LA4 452-5CN.0-Z K96	5000	850	960	825	1340	1250	475	130	200	450	1100	2745
1LA4 454-5CN.0-Z K96	5300	850	960	825	1340	1250	475	130	200	450	1100	2745
1LA4 500-5CN.0-Z K96	6600	950	1070	875	1440	1320	530	140	200	500	1200	2900
1LA4 502-5CN.0-Z K96	6900	950	1070	875	1440	1320	530	140	200	500	1200	2900
1LA4 504-5CN.0-Z K96	7400	950	1070	875	1440	1320	530	140	200	500	1200	2900
1LA4 560-5CN.0-Z K96	8800	1060	1210	925	1560	1400	560	160	240	560	1310	3170
1LA4 562-5CN.0-Z K96	9500	1060	1210	925	1560	1400	560	160	240	560	1310	3170
1LA4 564-5CN.0-Z K96	10300	1060	1210	925	1560	1400	560	160	240	560	1310	3170

Note:

Higher pole numbers are available on request.

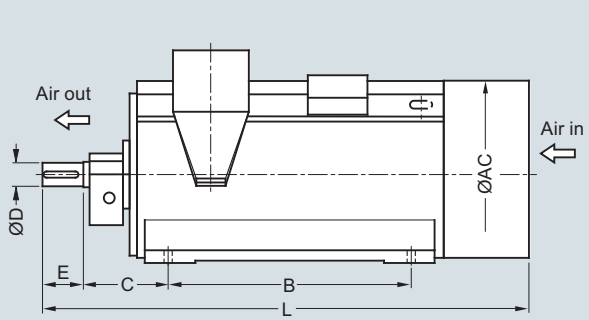
[1] For currents I_{rated} > 315 A, the dimension changes by + 140 mm (for H = 500), by + 145 mm (for H = 560) or by + 155 mm (for H = 630).

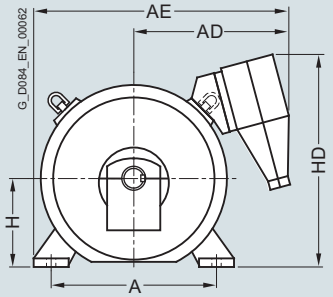
[2] For currents I_{rated} > 315 A, the dimension changes by + 70 mm.

[3] The dimensions also apply for the 1MS4 series.

2

Dimension drawings



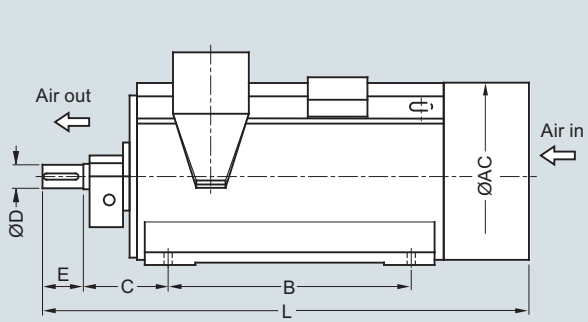


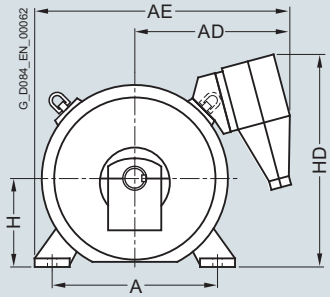
Motor type	Weight	Dimensions										
		A	AC	AD	AE	B	C	D	E	H	HD	L
	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
9 ... 11 kV, IM B3 type of construction, sleeve bearings[1)]												
2-pole												
1LA4 400-2AN.0	3150	750	870	775	1225	1120	254	85	130	400	1010	2095
1LA4 401-2AN.0	3300	750	870	775	1225	1120	254	85	130	400	1010	2095
1LA4 403-2AN.0	3550	750	870	775	1225	1120	254	85	130	400	1010	2095
1LA4 450-2AN.0-Z K96[2)]	4600	850	960	970	1485	1250	475	95	130	450	1170	2515
1LA4 452-2AN.0-Z K96[2)]	4900	850	960	970	1485	1250	475	95	130	450	1170	2515
1LA4 454-2AN.0-Z K96[2)]	5200	850	960	970	1485	1250	475	95	130	450	1170	2515
1LA4 500-2CN.0	6000	950	1070	1015	1580	1320	500	110	165	500	1270	2675
1LA4 502-2CN.0	6300	950	1070	1015	1580	1320	500	110	165	500	1270	2675
1LA4 504-2CN.0	6700	950	1070	1015	1580	1320	500	110	165	500	1270	2675
1LA4 560-2CN.0	8100	1060	1210	1070	1705	1400	500	120	165	560	1380	2865
1LA4 562-2CN.0	8600	1060	1210	1070	1705	1400	500	120	165	560	1380	2865
1LA4 564-2CN.0	9100	1060	1210	1070	1705	1400	500	120	165	560	1380	2865
4-pole												
1LA4 450-4AN.0-Z K96	4700	850	960	970	1485	1250	475	130	200	450	1170	2745
1LA4 452-4AN.0-Z K96	5000	850	960	970	1485	1250	475	130	200	450	1170	2745
1LA4 454-4AN.0-Z K96	5300	850	960	970	1485	1250	475	130	200	450	1170	2745
1LA4 500-4AN.0-Z K96	6100	950	1070	1015	1580	1320	500	140	200	500	1270	2870
1LA4 502-4AN.0-Z K96	6400	950	1070	1015	1580	1320	500	140	200	500	1270	2870
1LA4 504-4AN.0-Z K96	6900	950	1070	1015	1580	1320	500	140	200	500	1270	2870
1LA4 560-4CN.0-Z K96	8400	1060	1210	1070	1705	1400	560	160	240	560	1380	3170
1LA4 562-4CN.0-Z K96	9100	1060	1210	1070	1705	1400	560	160	240	560	1380	3170
1LA4 564-4CN.0-Z K96	9800	1060	1210	1070	1705	1400	560	160	240	560	1380	3170

[1)] The dimensions also apply for the 1MS4 series.

[2)] For the 60 Hz version, sleeve bearings are standard, "-Z **K96**" not necessary.

Dimension drawings (continued)





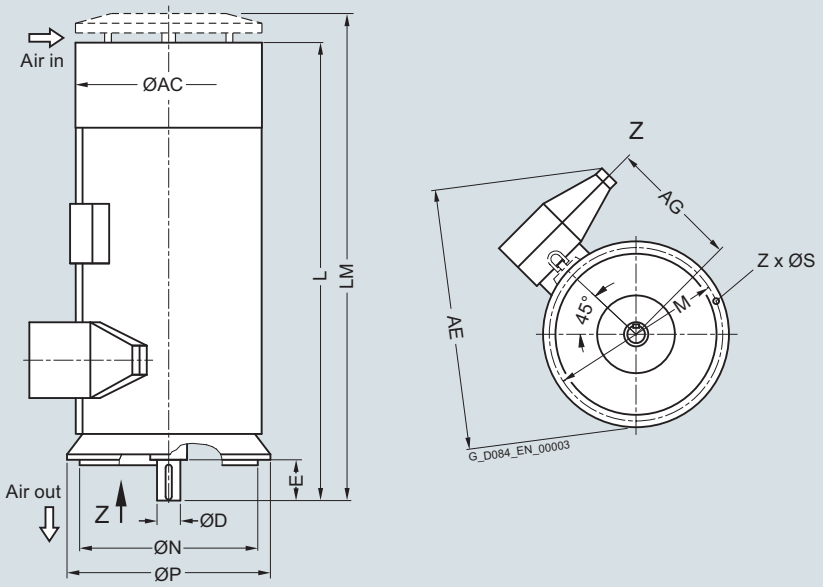
Motor type	Weight	Dimensions										
		A	AC	AD	AE	B	C	D	E	H	HD	L
	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
9 ... 11 kV, IM B3 type of construction, sleeve bearings[1)]												
6-pole												
1LA4 450-6AN.0-Z K96	4700	850	960	970	1485	1250	475	130	200	450	1170	2745
1LA4 452-6AN.0-Z K96	5000	850	960	970	1485	1250	475	130	200	450	1170	2745
1LA4 454-6AN.0-Z K96	5300	850	960	970	1485	1250	475	130	200	450	1170	2745
1LA4 500-6CN.0-Z K96	6500	950	1070	1015	1580	1320	530	140	200	500	1270	2900
1LA4 502-6CN.0-Z K96	7000	950	1070	1015	1580	1320	530	140	200	500	1270	2900
1LA4 504-6CN.0-Z K96	7400	950	1070	1015	1580	1320	530	140	200	500	1270	2900
1LA4 560-6CN.0-Z K96	8800	1060	1210	1070	1705	1400	560	160	240	560	1380	3170
1LA4 562-6CN.0-Z K96	9400	1060	1210	1070	1705	1400	560	160	240	560	1380	3170
1LA4 564-6CN.0-Z K96	10300	1060	1210	1070	1705	1400	560	160	240	560	1380	3170
8-pole												
1LA4 450-8AN.0-Z K96	4700	850	960	970	1485	1250	475	130	200	450	1170	2745
1LA4 452-8AN.0-Z K96	4900	850	960	970	1485	1250	475	130	200	450	1170	2745
1LA4 454-8AN.0-Z K96	5300	850	960	970	1485	1250	475	130	200	450	1170	2745
1LA4 500-8CN.0-Z K96	6500	950	1070	1015	1580	1320	530	140	200	500	1270	2900
1LA4 502-8CN.0-Z K96	6900	950	1070	1015	1580	1320	530	140	200	500	1270	2900
1LA4 504-8CN.0-Z K96	7400	950	1070	1015	1580	1320	530	140	200	500	1270	2900
1LA4 560-8CN.0-Z K96	8700	1060	1210	1070	1705	1400	560	160	240	560	1380	3170
1LA4 562-8CN.0-Z K96	9300	1060	1210	1070	1705	1400	560	160	240	560	1380	3170
1LA4 564-8CN.0-Z K96	10300	1060	1210	1070	1705	1400	560	160	240	560	1380	3170
10-pole												
1LA4 500-3CN.0-Z K96	6500	950	1070	1015	1580	1320	530	140	200	500	1270	2900
1LA4 502-3CN.0-Z K96	6900	950	1070	1015	1580	1320	530	140	200	500	1270	2900
1LA4 504-3CN.0-Z K96	7400	950	1070	1015	1580	1320	530	140	200	500	1270	2900
1LA4 560-3CN.0-Z K96	8700	1060	1210	1070	1705	1400	560	160	240	560	1380	3170
1LA4 562-3CN.0-Z K96	9300	1060	1210	1070	1705	1400	560	160	240	560	1380	3170
1LA4 564-3CN.0-Z K96	10300	1060	1210	1070	1705	1400	560	160	240	560	1380	3170
12-pole												
1LA4 560-5CN.0-Z K96	8700	1060	1210	1070	1705	1400	560	160	240	560	1380	3170
1LA4 562-5CN.0-Z K96	9300	1060	1210	1070	1705	1400	560	160	240	560	1380	3170
1LA4 564-5CN.0-Z K96	10300	1060	1210	1070	1705	1400	560	160	240	560	1380	3170

Note: Higher pole numbers are available on request.

[1)] The dimensions also apply for the 1MS4 series.

2

Dimension drawings



Motor type	Weight	Dimensions											
		AC	AG[1]	AE[2]	D	E	L	LM	P	N	M	S	Z
	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Quantity
Up to 6.6 kV, IM V1 type of construction, anti-friction bearings[3]													
2-pole													
1LA4 310-2AN..	1600	700	620	1225	70	105	1590	1720	800	680	740	22	8
1LA4 312-2AN..	1600	700	620	1225	70	105	1590	1720	800	680	740	22	8
1LA4 314-2AN..	1850	700	620	1225	70	105	1790	1920	800	680	740	22	8
1LA4 316-2AN..	2000	700	620	1225	70	105	1790	1920	800	680	740	22	8
1LA4 350-2AN..[4]	2350	780	660	1310	75	105	1930	2070	900	780	840	22	8
1LA4 352-2AN..[4]	2450	780	660	1310	75	105	1930	2070	900	780	840	22	8
1LA4 354-2AN..[4]	2550	780	660	1310	75	105	1930	2070	900	780	840	22	8
1LA4 400-2AN..[4]	3100	870	710	1400	85	130	2095	2245	1000	880	940	22	8
1LA4 402-2AN..[4]	3300	870	710	1400	85	130	2095	2245	1000	880	940	22	8
1LA4 404-2AN..[4]	3550	870	710	1400	85	130	2095	2245	1000	880	940	22	8
4-pole													
1LA4 310-4AN..	1500	700	620	1225	90	130	1610	1740	800	680	740	22	8
1LA4 312-4AN..	1650	700	620	1225	90	130	1610	1740	800	680	740	22	8
1LA4 314-4AN..	1900	700	620	1225	90	130	1810	1940	800	680	740	22	8
1LA4 316-4AN..	2050	700	620	1225	90	130	1810	1940	800	680	740	22	8
1LA4 350-4AN..	2400	780	660	1310	100	165	1985	2125	900	780	840	22	8
1LA4 352-4AN..	2600	780	660	1310	100	165	1985	2125	900	780	840	22	8
1LA4 354-4AN..	2800	780	660	1310	100	165	1985	2125	900	780	840	22	8
1LA4 400-4AN..	3400	870	710	1400	120	165	2125	2275	1000	880	940	22	8
1LA4 402-4AN..	3600	870	710	1400	120	165	2125	2275	1000	880	940	22	8
1LA4 404-4AN..	3800	870	710	1400	120	165	2125	2275	1000	880	940	22	8
1LA4 450-4AN..	4700	960	770	1550	130	200	2390	2550	1150	1000	1080	26	8

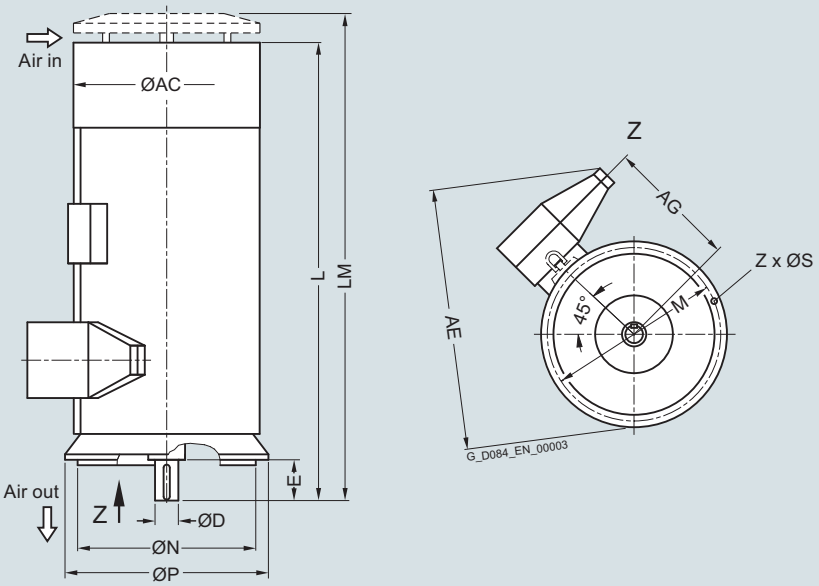
[1] For currents I_{rated} > 315 A, the dimension changes by + 45 mm.

[2] For currents I_{rated} > 315 A, the dimension changes by + 185 mm (for AC = 1070), by + 180 mm (for AC = 1210) or by + 130 mm (for AC = 1350).

[3] The dimensions also apply for the 1MS4 series.

[4] Only in the 50 Hz version.

Dimension drawings (continued)



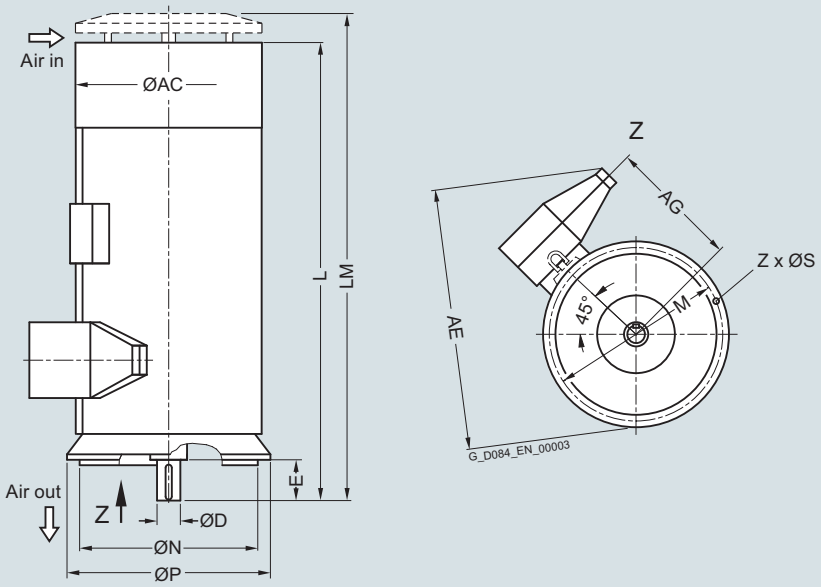
Motor type	Weight	Dimensions											
		AC	AG[1]	AE[2]	D	E	L	LM	P	N	M	S	Z
	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Quantity
Up to 6.6 kV, IM V1 type of construction, anti-friction bearings[3]													
4-pole													
1LA4 452-4AN..	5000	960	770	1550	130	200	2390	2550	1150	1000	1080	26	8
1LA4 454-4AN..	5200	960	770	1550	130	200	2390	2550	1150	1000	1080	26	8
1LA4 500-4AN..	5900	1070	840	1660	140	200	2525	2695	1250	1120	1180	26	16
1LA4 502-4AN..	6300	1070	840	1660	140	200	2525	2695	1250	1120	1180	26	16
1LA4 504-4AN..	6800	1070	840	1660	140	200	2525	2695	1250	1120	1180	26	16
1LA4 560-4CN..	8300	1210	910	1800	160	240	2775	2955	1400	1250	1320	26	16
1LA4 562-4CN..	9000	1210	910	1800	160	240	2775	2955	1400	1250	1320	26	16
1LA4 564-4CN..	9700	1210	910	1800	160	240	2775	2955	1400	1250	1320	26	16
6-pole													
1LA4 314-6AN..	1950	700	620	1225	90	130	1810	1940	800	680	740	22	8
1LA4 316-6AN..	2150	700	620	1225	90	130	1810	1940	800	680	740	22	8
1LA4 350-6AN..	2450	780	660	1310	100	165	1985	2125	900	780	840	22	8
1LA4 352-6AN..	2650	780	660	1310	100	165	1985	2125	900	780	840	22	8
1LA4 354-6AN..	2900	780	660	1310	100	165	1985	2125	900	780	840	22	8
1LA4 400-6AN..	3500	870	710	1400	120	165	2125	2275	1000	880	940	22	8
1LA4 402-6AN..	3750	870	710	1400	120	165	2125	2275	1000	880	940	22	8
1LA4 404-6AN..	4000	870	710	1400	120	165	2125	2275	1000	880	940	22	8
1LA4 450-6AN..	4600	960	770	1550	130	200	2390	2550	1150	1000	1080	26	8
1LA4 452-6AN..	4900	960	770	1550	130	200	2390	2550	1150	1000	1080	26	8
1LA4 454-6AN..	5200	960	770	1550	130	200	2390	2550	1150	1000	1080	26	8
1LA4 500-6CN..	6400	1070	840	1660	140	200	2525	2695	1250	1120	1180	26	16
1LA4 502-6CN..	6800	1070	840	1660	140	200	2525	2695	1250	1120	1180	26	16
1LA4 504-6CN..	7300	1070	840	1660	140	200	2525	2695	1250	1120	1180	26	16
1LA4 560-6CN..	8500	1210	910	1800	160	240	2775	2955	1400	1250	1320	26	16
1LA4 562-6CN..	9300	1210	910	1800	160	240	2775	2955	1400	1250	1320	26	16
1LA4 564-6CN..	10100	1210	910	1800	160	240	2775	2955	1400	1250	1320	26	16

[1] For currents I_{rated} > 315 A, the dimension changes by + 45 mm.

[2] For currents I_{rated} > 315 A, the dimension changes by + 185 mm (for AC = 1070), by + 180 mm (for AC = 1210) or by + 130 mm (for AC = 1350).

[3] The dimensions also apply for the 1MS4 series.

Dimension drawings (continued)



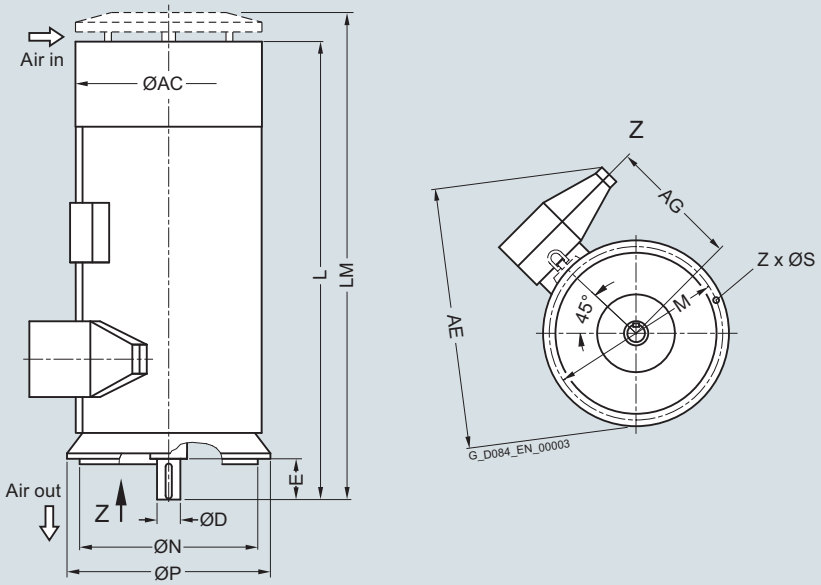
Motor type	Weight	Dimensions											
		AC	AG[1]	AE[2]	D	E	L	LM	P	N	M	S	Z
	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Quantity
Up to 6.6 kV, IM V1 type of construction, anti-friction bearings[3]													
8-pole													
1LA4 350-8AN..	2450	780	660	1310	100	165	1985	2125	900	780	840	22	8
1LA4 352-8AN..	2650	780	660	1310	100	165	1985	2125	900	780	840	22	8
1LA4 354-8AN..	2850	780	660	1310	100	165	1985	2125	900	780	840	22	8
1LA4 400-8AN..	3450	870	710	1400	120	165	2125	2275	1000	880	940	22	8
1LA4 402-8AN..	3700	870	710	1400	120	165	2125	2275	1000	880	940	22	8
1LA4 404-8AN..	3950	870	710	1400	120	165	2125	2275	1000	880	940	22	8
1LA4 450-8AN..	4600	960	770	1550	130	200	2390	2550	1150	1000	1080	26	8
1LA4 452-8AN..	4900	960	770	1550	130	200	2390	2550	1150	1000	1080	26	8
1LA4 454-8AN..	5200	960	770	1550	130	200	2390	2550	1150	1000	1080	26	8
1LA4 500-8CN..	6400	1070	840	1660	140	200	2525	2695	1250	1120	1180	26	16
1LA4 502-8CN..	6800	1070	840	1660	140	200	2525	2695	1250	1120	1180	26	16
1LA4 504-8CN..	7200	1070	840	1660	140	200	2525	2695	1250	1120	1180	26	16
1LA4 560-8CN..	8500	1210	910	1800	160	240	2775	2955	1400	1250	1320	26	16
1LA4 562-8CN..	9200	1210	910	1800	160	240	2775	2955	1400	1250	1320	26	16
1LA4 564-8CN..	10000	1210	910	1800	160	240	2775	2955	1400	1250	1320	26	16

[1] For currents I_{rated} > 315 A, the dimension changes by + 45 mm.

[2] For currents I_{rated} > 315 A, the dimension changes by + 185 mm (for AC = 1070), by + 180 mm (for AC = 1210) or by + 130 mm (for AC = 1350).

[3] The dimensions also apply for the 1MS4 series.

Dimension drawings (continued)



Motor type	Weight	Dimensions											
		AC	AG[1]	AE[2]	D	E	L	LM	P	N	M	S	Z
	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Quantity
Up to 6.6 kV, IM V1 type of construction, anti-friction bearings[3]													
10-pole													
1LA4 450-3AN..	4600	960	770	1550	130	200	2390	2550	1150	1000	1080	26	8
1LA4 452-3AN..	4900	960	770	1550	130	200	2390	2550	1150	1000	1080	26	8
1LA4 454-3AN..	5200	960	770	1550	130	200	2390	2550	1150	1000	1080	26	8
1LA4 500-3CN..	6400	1070	840	1660	140	200	2525	2695	1250	1120	1180	26	16
1LA4 502-3CN..	6800	1070	840	1660	140	200	2525	2695	1250	1120	1180	26	16
1LA4 504-3CN..	7200	1070	840	1660	140	200	2525	2695	1250	1120	1180	26	16
1LA4 560-3CN..	8500	1210	910	1800	160	240	2775	2955	1400	1250	1320	26	16
1LA4 562-3CN..	9200	1210	910	1800	160	240	2775	2955	1400	1250	1320	26	16
1LA4 564-3CN..	10000	1210	910	1800	160	240	2775	2955	1400	1250	1320	26	16
12-pole													
1LA4 450-5CN..	4600	960	770	1550	130	200	2390	2550	1150	1000	1080	26	8
1LA4 452-5CN..	4900	960	770	1550	130	200	2390	2550	1150	1000	1080	26	8
1LA4 454-5CN..	5200	960	770	1550	130	200	2390	2550	1150	1000	1080	26	8
1LA4 500-5CN..	6400	1070	840	1660	140	200	2525	2695	1250	1120	1180	26	16
1LA4 502-5CN..	6800	1070	840	1660	140	200	2525	2695	1250	1120	1180	26	16
1LA4 504-5CN..	7200	1070	840	1660	140	200	2525	2695	1250	1120	1180	26	16
1LA4 560-5CN..	8500	1210	910	1800	160	240	2775	2955	1400	1250	1320	26	16
1LA4 562-5CN..	9200	1210	910	1800	160	240	2775	2955	1400	1250	1320	26	16
1LA4 564-5CN..	10000	1210	910	1800	160	240	2775	2955	1400	1250	1320	26	16

Note:

Higher pole numbers are available on request.

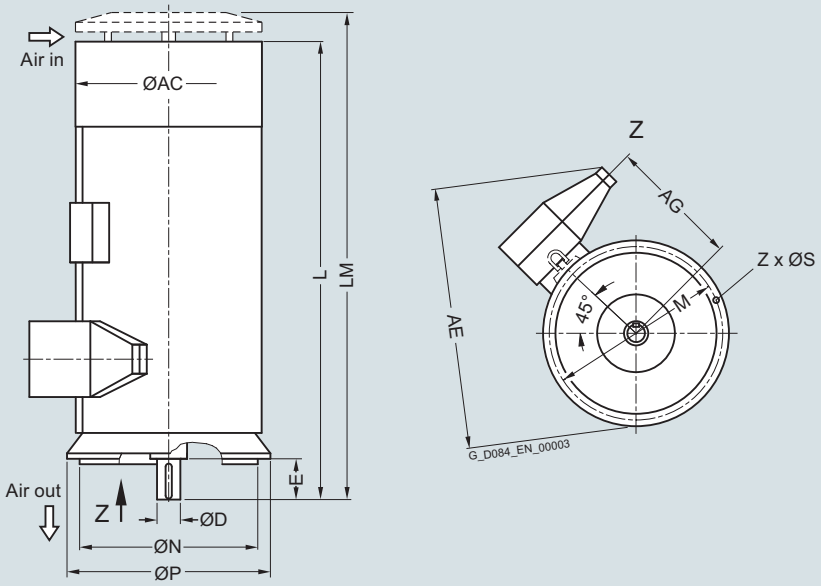
[1] For currents I_{rated} > 315 A, the dimension changes by + 45 mm.

[2] For currents I_{rated} > 315 A, the dimension changes by + 185 mm (for AC = 1070), by + 180 mm (for AC = 1210) or by + 130 mm (for AC = 1350).

[3] The dimensions also apply for the 1MS4 series.

2

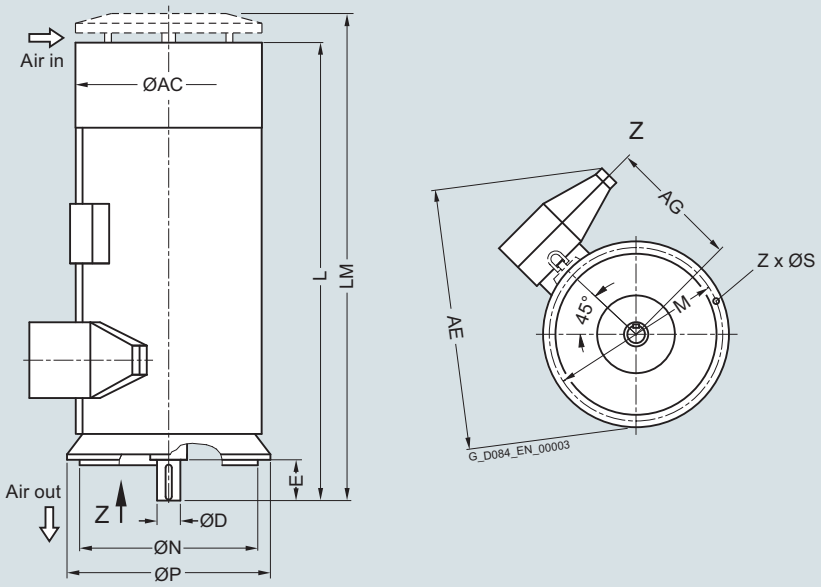
Dimension drawings



Motor type	Weight	Dimensions											
		AC	AG	AE	D	E	L	LM	P	N	M	S	Z
	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Quantity
9 ... 11 kV, IM V1 type of construction, anti-friction bearings[1)]													
4-pole													
1LA4 450-4AN..	4600	960	865	1740	130	200	2390	2550	1150	1000	1080	26	8
1LA4 452-4AN..	4900	960	865	1740	130	200	2390	2550	1150	1000	1080	26	8
1LA4 454-4AN..	5200	960	865	1740	130	200	2390	2550	1150	1000	1080	26	8
1LA4 500-4AN..	5900	1070	940	1845	140	200	2525	2695	1250	1120	1180	26	16
1LA4 502-4AN..	6300	1070	940	1845	140	200	2525	2695	1250	1120	1180	26	16
1LA4 504-4AN..	6700	1070	940	1845	140	200	2525	2695	1250	1120	1180	26	16
1LA4 560-4CN..	8100	1210	1010	1980	160	240	2775	2955	1400	1250	1320	26	16
1LA4 562-4CN..	8900	1210	1010	1980	160	240	2775	2955	1400	1250	1320	26	16
1LA4 564-4CN..	9600	1210	1010	1980	160	240	2775	2955	1400	1250	1320	26	16
6-pole													
1LA4 450-6AN..	4600	960	865	1740	130	200	2390	2550	1150	1000	1080	26	8
1LA4 452-6AN..	4800	960	865	1740	130	200	2390	2550	1150	1000	1080	26	8
1LA4 454-6AN..	5100	960	865	1740	130	200	2390	2550	1150	1000	1080	26	8
1LA4 500-6CN..	6400	1070	940	1845	140	200	2525	2695	1250	1120	1180	26	16
1LA4 502-6CN..	6800	1070	940	1845	140	200	2525	2695	1250	1120	1180	26	16
1LA4 504-6CN..	7200	1070	940	1845	140	200	2525	2695	1250	1120	1180	26	16
1LA4 560-6CN..	8500	1210	1010	1980	160	240	2775	2955	1400	1250	1320	26	16
1LA4 562-6CN..	9200	1210	1010	1980	160	240	2775	2955	1400	1250	1320	26	16
1LA4 564-6CN..	10000	1210	1010	1980	160	240	2775	2955	1400	1250	1320	26	16
8-pole													
1LA4 450-8AN..	4600	960	865	1740	130	200	2390	2550	1150	1000	1080	26	8
1LA4 452-8AN..	4800	960	865	1740	130	200	2390	2550	1150	1000	1080	26	8
1LA4 454-8AN..	5100	960	865	1740	130	200	2390	2550	1150	1000	1080	26	8
1LA4 500-8CN..	6300	1070	940	1845	140	200	2525	2695	1250	1120	1180	26	16

[1)] The dimensions also apply for the 1MS4 series.

Dimension drawings (continued)



Motor type	Weight	Dimensions											
		AC	AG	AE	D	E	L	LM	P	N	M	S	Z
	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Quantity
9 ... 11 kV, IM V1 type of construction, anti-friction bearings[1)]													
8-pole													
1LA4 502-8CN..	6800	1070	940	1845	140	200	2525	2695	1250	1120	1180	26	16
1LA4 504-8CN..	7200	1070	940	1845	140	200	2525	2695	1250	1120	1180	26	16
1LA4 560-8CN..	8400	1210	1010	1980	160	240	2775	2955	1400	1250	1320	26	16
1LA4 562-8CN..	9100	1210	1010	1980	160	240	2775	2955	1400	1250	1320	26	16
1LA4 564-8CN..	10000	1210	1010	1980	160	240	2775	2955	1400	1250	1320	26	16
10-pole													
1LA4 500-3CN..	6300	1070	940	1845	140	200	2525	2695	1250	1120	1180	26	16
1LA4 502-3CN..	6800	1070	940	1845	140	200	2525	2695	1250	1120	1180	26	16
1LA4 504-3CN..	7200	1070	940	1845	140	200	2525	2695	1250	1120	1180	26	16
1LA4 560-3CN..	8400	1210	1010	1980	160	240	2775	2955	1400	1250	1320	26	16
1LA4 562-3CN..	9100	1210	1010	1980	160	240	2775	2955	1400	1250	1320	26	16
1LA4 564-3CN..	10000	1210	1010	1980	160	240	2775	2955	1400	1250	1320	26	16
12-pole													
1LA4 560-5CN..	8400	1210	1010	1980	160	240	2775	2955	1400	1250	1320	26	16
1LA4 562-5CN..	9100	1210	1010	1980	160	240	2775	2955	1400	1250	1320	26	16
1LA4 564-5CN..	10000	1210	1010	1980	160	240	2775	2955	1400	1250	1320	26	16

Note:

Higher pole numbers are available on request.

[1)] The dimensions also apply for the 1MS4 series.

Notes

Sinusoidal and non-sinusoidal converter output

Overview

By using variable speed drives, cost savings can be achieved in many applications compared to fixed-speed operation.

H-compact motors have proven themselves many times in variable-speed applications.

They are designed for an optimized drive system with the appropriate SINAMICS converters, couplings and gear units to achieve a reliable drive train with high availability and long lifetime, which results in low lifecycle costs. The integrated drive system also features engineering tools that allow the configuration of the entire drive train and the automation environment with optimized parameters. A tailor-made service concept secures the effective operation of the whole drive train application over a long time.

Sinusoidal output

For operation with medium-voltage converters SINAMICS PERFECT HARMONY or SINAMICS GM150 and SINAMICS SM150 with sine-wave filter, as a result of the sinusoidal output, line motors for applications with square-law load characteristic are suitable. For converter operation, these motors must be equipped with electrically-isolated bearings at the NDE. The technical data can be taken from the tables in Chapter 2.

The insulation system of these motors corresponds to thermal class 155 (F) – and they are generally utilized to thermal class 130 (B).

Non-sinusoidal output

For the SIMOTICS HV/TN motor series, special versions have been designed for operation with medium-voltage SINAMICS GM150 and SINAMICS SM150 drive converters or low-voltage SINAMICS G and SINAMICS S drive converters.

These motors have, as standard, a reinforced stator winding insulation so that they can be fed from the specified drive converters without requiring a sine-wave filter. Further, for the medium-voltage version of the motors, both bearings are electrically insulated and the shaft is equipped with a grounding system.

The technical data can be taken from the tables in Chapter 3. The insulation system of these motors corresponds to thermal class 155 (F) – and they are generally utilized to thermal class 155 (F).

Overview

Technical data

Overview of technical data

H-compact 1LA4	
Rated voltage	690 V … 6.6 kV
Rated frequency	50/60 Hz
Motor type	Induction motor with squirrel-cage rotor
Type of construction	IM B3, IM V1
Degree of protection	IP55
Cooling method	IC411
Stator winding insulation	Insulation system, thermal class 155 (F), utilized to 155 (F)
Shaft height	450 … 560 mm
Bearings	Anti-friction bearings, sleeve bearings
Cage material	Die-cast aluminum or copper (dependent on the shaft height and number of poles)
Standards	IEC, EN
Frame design	Cast iron with cooling ribs

Technical data (continued)

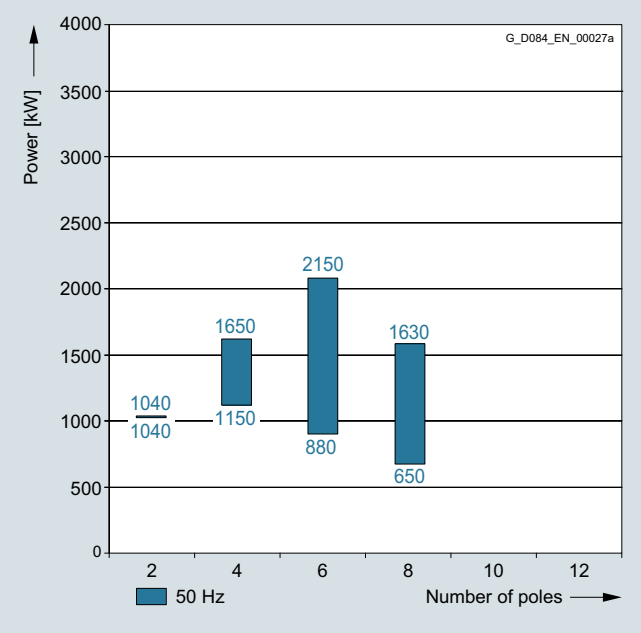
Power ranges for IEC motors with reinforced insulation for SINAMICS converters without sine-wave filter

1LA4, 1MS4 (Ex ec) series

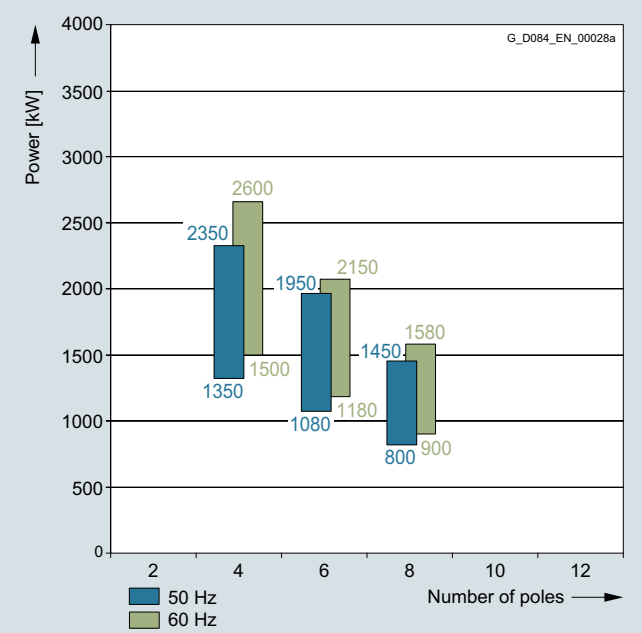
Insulation system, thermal class 155 (F), utilized to 155 (F)

The power data listed here apply for an ambient temperature of 40 °C and an installation altitude ≤ 1000 m.

690 V; 50 Hz

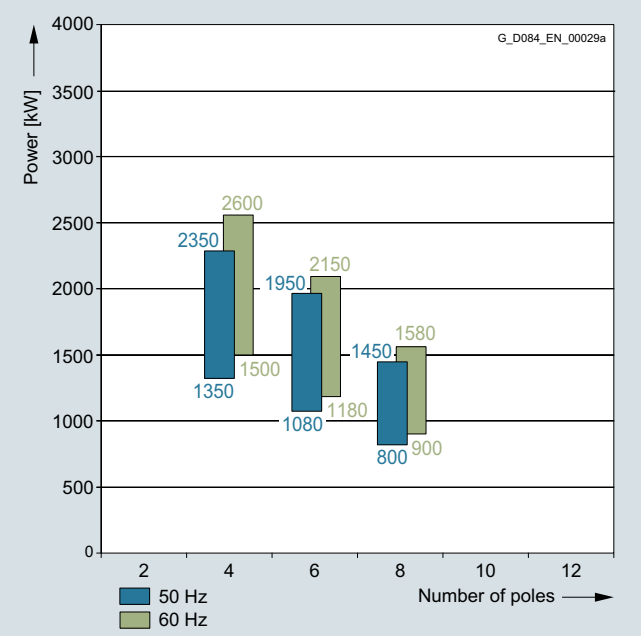


2.3 kV; 50 and 60 Hz



Technical data (continued)

3.4 to 4.16 kV; 50 and 60 Hz



Selection and ordering data

Rated power	**Low-voltage motor H-compact**	Operating values at rated output for utilization 155 (F)							
IEC		Rated speed	Efficiency	Power factor	Rated current at 690 V	Rated torque	Break-down torque	Moment of inertia	Mechanical speed limit[1]
P_{rated} 155 (F)		n_{rated}	η	cos φ	I_{rated}	T_{rated}	T_B/T_{rated}	J	n_{max}
kW	Article No.	rpm	%	[-]	A	Nm	[-]	kgm^2	rpm
690 V, 50 Hz									
2-pole									
1040	**1LA4 454-2CM00**	2981	97.2	0.92	970	3331	2.70	22.2	3000
4-pole									
1150	**1LA4 454-4AM0■**	1491	97.2	0.89	1120	7365	2.50	33.9	2400
1300	**1LA4 500-4CM0■**	1491	96.9	0.88	1280	8326	2.10	44.3	2200
1500	**1LA4 502-4CM0■**	1492	97.2	0.87	1480	9600	2.30	49.0	2200
1650	**1LA4 504-4CM0■**	1491	97.2	0.89	1600	10567	2.10	56.2	2200
6-pole									
880	**1LA4 454-6AM0■**	993	97.1	0.86	880	8462	2.50	53.5	2200
1250	**1LA4 500-6CM0■**	995	97.1	0.85	1260	11996	2.35	82.1	2100
1350	**1LA4 502-6CM0■**	995	97.1	0.86	1360	12956	2.35	92.4	2100
1500	**1LA4 504-6CM0■**	995	97.2	0.86	1500	14395	2.35	102.6	2100
1750	**1LA4 560-6CM0■**	995	97.4	0.86	1740	16795	2.60	141.5	2000
1950	**1LA4 562-6CM0■**	995	97.5	0.86	1940	18714	2.60	162.1	2000
2150	**1LA4 564-6CM0■**	995	97.6	0.86	2150	20634	2.60	188.5	2000
8-pole									
650	**1LA4 454-8AM0■**	745	96.6	0.80	700	8331	2.40	52.8	2200
900	**1LA4 500-8CM0■**	746	96.6	0.80	970	11520	2.20	81.7	2100
970	**1LA4 502-8CM0■**	746	96.7	0.80	1040	12416	2.30	91.9	2100
1080	**1LA4 504-8CM0■**	746	96.8	0.80	1160	13824	2.30	102.2	2100
1250	**1LA4 560-8CM0■**	746	96.9	0.80	1340	16000	2.60	141.6	2000
1400	**1LA4 562-8CM0■**	746	97.0	0.80	1500	17920	2.60	162.3	2000
1630	**1LA4 564-8CM0■**	746	97.1	0.81	1740	20864	2.60	188.8	2000

Type of construction:	
IM B3	**0**
IM V1 (with canopy)	**4**
IM V1 (without canopy)	**8**

Note:

The motors for converter operation with non-sinusoidal output have, among other things, a reinforced winding insulation.
Additional details see Page 3/2.
Ratings are defined for sinusoidal supply, based on IEC 60034-2-1:2007.
The ratings for converter operation depend on the converter and its settings and cannot be predetermined.

Higher pole numbers are available on request.

[1] For IM B3, anti-friction bearings.

Motor type (repeated)	Partial load values for square-law torque drive											
	P/P_{rated} 155 (F) = 75 %				P/P_{rated} 155 (F) = 50 %				P/P_{rated} 155 (F) = 25 %			
	P	*n*	η	cos φ	*P*	*n*	η	cos φ	*P*	*n*	η	cos φ
	kW	rpm	%	[-]	kW	rpm	%	[-]	kW	rpm	%	[-]
												Square-law torque drive
2-pole												
1LA4 454-2...	780	2709	97.2	0.92	520	2366	97.1	0.90	260	1878	96.6	0.83
4-pole												
1LA4 454-4...	863	1355	97.2	0.89	575	1183	97.2	0.86	288	939	96.7	0.76
1LA4 500-4...	975	1355	97.0	0.88	650	1183	96.9	0.86	325	939	96.3	0.77
1LA4 502-4...	1125	1356	97.2	0.86	750	1184	97.0	0.84	375	940	96.4	0.73
1LA4 504-4...	1238	1355	97.3	0.89	825	1183	97.2	0.87	413	939	96.7	0.79
6-pole												
1LA4 454-6...	660	902	96.9	0.85	440	788	96.8	0.81	220	626	96.0	0.69
1LA4 500-6...	938	904	97.1	0.85	625	790	96.9	0.81	313	627	96.0	0.69
1LA4 502-6...	1013	904	97.1	0.86	675	790	97.0	0.82	338	627	96.1	0.70
1LA4 504-6...	1125	904	97.2	0.86	750	790	97.0	0.83	375	627	96.2	0.72
1LA4 560-6...	1313	904	97.4	0.86	875	790	97.1	0.81	438	627	96.3	0.70
1LA4 562-6...	1463	904	97.5	0.86	975	790	97.1	0.81	488	627	96.2	0.69
1LA4 564-6...	1613	904	97.6	0.86	1075	790	97.2	0.82	538	627	96.3	0.70
8-pole												
1LA4 454-8...	488	677	96.5	0.77	325	591	96.2	0.72	163	469	95.1	0.58
1LA4 500-8...	675	678	96.6	0.78	450	592	96.2	0.73	225	470	95.0	0.60
1LA4 502-8...	728	678	96.7	0.79	485	592	96.3	0.74	243	470	95.1	0.61
1LA4 504-8...	810	678	96.8	0.79	540	592	96.3	0.74	270	470	95.2	0.60
1LA4 560-8...	938	678	96.8	0.78	625	592	96.4	0.73	313	470	95.1	0.58
1LA4 562-8...	1050	678	96.9	0.78	700	592	96.4	0.73	350	470	95.1	0.58
1LA4 564-8...	1223	678	97.0	0.79	815	592	96.4	0.73	408	470	95.2	0.59

Selection and ordering data

Rated power	**Low-voltage motor H-compact**	Operating values at rated output for utilization 155 (F)							
IEC		Rated speed	Efficiency	Power factor	Rated current at 690 V	Rated torque	Break-down torque	Moment of inertia	Mechanical speed limit[1]
P_{rated} 155 (F)		n_{rated}	η	cos φ	I_{rated}	T_{rated}	T_B/T_{rated}	J	n_{max}
kW	Article No.	rpm	%	[-]	A	Nm	[-]	kgm^2	rpm
690 V, 50 Hz									
2-pole									
1040	**1LA4 454-2CM00**	2981	97.2	0.92	970	3331	2.70	22.2	3000
4-pole									
1150	**1LA4 454-4AM0■**	1491	97.2	0.89	1120	7365	2.50	33.9	2400
1300	**1LA4 500-4CM0■**	1491	96.9	0.88	1280	8326	2.10	44.3	2200
1500	**1LA4 502-4CM0■**	1492	97.2	0.87	1480	9600	2.30	49.0	2200
1650	**1LA4 504-4CM0■**	1491	97.2	0.89	1600	10567	2.10	56.2	2200
6-pole									
880	**1LA4 454-6AM0■**	993	96.9	0.86	880	8462	2.50	53.5	2200
1250	**1LA4 500-6CM0■**	995	97.1	0.85	1260	11996	2.35	82.1	2100
1350	**1LA4 502-6CM0■**	995	97.1	0.86	1360	12956	2.35	92.4	2100
1500	**1LA4 504-6CM0■**	995	97.2	0.86	1500	14395	2.35	102.6	2100
1750	**1LA4 560-6CM0■**	995	97.4	0.86	1740	16795	2.60	141.5	2000
1950	**1LA4 562-6CM0■**	995	97.5	0.86	1940	18714	2.60	162.1	2000
2150	**1LA4 564-6CM0■**	995	97.6	0.86	2150	20634	2.60	188.5	2000
8-pole									
650	**1LA4 454-8AM0■**	745	96.6	0.80	700	8331	2.40	52.8	2200
900	**1LA4 500-8CM0■**	746	96.6	0.80	970	11520	2.20	81.7	2100
970	**1LA4 502-8CM0■**	746	96.7	0.80	1040	12416	2.30	91.9	2100
1080	**1LA4 504-8CM0■**	760	96.8	0.80	1160	13570	2.30	102.2	2100
1250	**1LA4 560-8CM0■**	746	96.9	0.80	1340	16000	2.60	141.6	2000
1400	**1LA4 562-8CM0■**	746	97.0	0.80	1500	17920	2.60	162.3	2000
1630	**1LA4 564-8CM0■**	746	97.1	0.81	1740	20864	2.60	188.8	2000

Type of construction:	
IM B3	**0**
IM V1 (with canopy)	**4**
IM V1 (without canopy)	**8**

Note:

The motors for converter operation with non-sinusoidal output have, among other things, a reinforced winding insulation.
Additional details see Page 3/2.
Ratings are defined for sinusoidal supply, based on IEC 60034-2-1:2007.
The ratings for converter operation depend on the converter and its settings and cannot be predetermined.

Higher pole numbers are available on request.

[1] For IM B3, anti-friction bearings.

Motor type (repeated)	Constant-torque drive, speed range											
	1:2				1:5				1:10			
	P_{max} kW	T_{max} Nm	η %	cos φ [-]	P_{max} kW	T_{max} Nm	η %	cos φ [-]	P_{max} kW	T_{max} Nm	η %	cos φ [-]
												Constant-torque drive
2-pole												
1LA4 454-2...	970	3107	96.9	0.91	800	2563	97.1	0.91	750	2402	97.1	0.91
4-pole												
1LA4 454-4...	1060	6789	97.1	0.88	940	6020	97.3	0.88	900	5764	97.3	0.88
1LA4 500-4...	1200	7685	96.7	0.87	1000	6404	96.9	0.87	940	6020	96.9	0.87
1LA4 502-4...	1400	8960	96.9	0.85	1170	7488	97.1	0.85	1100	7040	97.1	0.85
1LA4 504-4...	1500	9607	97.0	0.88	1250	8006	97.2	0.88	1200	7685	97.2	0.88
6-pole												
1LA4 454-6...	820	7885	97.0	0.85	700	6731	97.2	0.84	660	6347	97.2	0.84
1LA4 500-6...	1180	11324	96.8	0.84	1020	9789	97.0	0.83	960	9213	97.1	0.83
1LA4 502-6...	1280	12284	97.0	0.84	1120	10749	97.1	0.84	1040	9981	97.2	0.84
1LA4 504-6...	1430	13724	97.1	0.84	1260	12092	97.2	0.84	1180	11324	97.3	0.84
1LA4 560-6...	1650	15835	97.1	0.82	1450	13916	97.3	0.83	1350	12956	97.4	0.83
1LA4 562-6...	1850	17754	97.2	0.83	1650	15835	97.3	0.83	1550	14875	97.4	0.83
1LA4 564-6...	2100	20154	97.1	0.83	1850	17754	97.4	0.84	1800	17275	97.4	0.84
8-pole												
1LA4 454-8...	580	7434	96.4	0.79	490	6281	96.6	0.76	450	5768	96.6	0.74
1LA4 500-8...	900	11520	96.5	0.81	770	9856	96.5	0.79	710	9088	96.5	0.78
1LA4 502-8...	970	12416	96.6	0.81	850	10880	96.6	0.79	780	9984	96.6	0.78
1LA4 504-8...	1080	13570	96.7	0.81	940	11811	96.7	0.79	880	11057	96.7	0.78
1LA4 560-8...	1150	14720	96.8	0.79	980	12544	96.8	0.77	930	11904	96.8	0.76
1LA4 562-8...	1290	16512	96.9	0.79	1100	14080	96.9	0.78	1050	13440	96.9	0.77
1LA4 564-8...	1500	19200	96.9	0.80	1280	16384	97.0	0.79	1250	16000	97.0	0.78

Selection and ordering data

Rated power		**High voltage motor H-compact**	Operating values at rated output for utilization 155 (F)							
IEC			Rated speed	Efficiency	Power factor	Rated current 2.3 kV	Rated torque	Break-down torque	Moment of inertia	Mechanical speed limit[1]
P_{rated} 155 (F)	P_{rated} 130 (B)		n_{rated}	η	cos φ	I_{rated}	T_{rated}	T_B/T_{rated}	J	n_{max}
kW	kW	Article No.	rpm	%	[-]	A	Nm	[-]	kgm^2	rpm
2.3 kV, 50 Hz										
4-pole										
1350	1180	**1LA4 500-4CV0■**	1493	97.0	0.87	400	8634	2.50	42	2200
1500	1280	**1LA4 502-4CV0■**	1493	97.2	0.87	445	9594	2.60	47	2200
1650	1420	**1LA4 504-4CV0■**	1493	97.3	0.88	485	10553	2.60	54	2200
1850	1550	**1LA4 560-4CV0■**	1494	97.5	0.87	550	11824	2.40	79	2000
2100	1750	**1LA4 562-4CV0■**	1494	97.5	0.87	620	13422	2.40	92	2000
2350	1900	**1LA4 564-4CV0■**	1494	97.5	0.87	700	15020	2.40	104	2000
6-pole										
1080	940	**1LA4 500-6CV0■**	995	97.0	0.86	325	10365	2.40	82	2100
1180	1030	**1LA4 502-6CV0■**	995	97.0	0.87	350	11324	2.40	92	2100
1280	1130	**1LA4 504-6CV0■**	995	97.1	0.87	380	12284	2.40	103	2100
1500	1320	**1LA4 560-6CV0■**	995	97.3	0.86	450	14395	2.60	142	2000
1750	1500	**1LA4 562-6CV0■**	995	97.4	0.86	520	16795	2.70	162	2000
1950	1700	**1LA4 564-6CV0■**	995	97.5	0.87	580	18714	2.50	189	2000
8-pole										
800	690	**1LA4 500-8CV0■**	745	96.5	0.81	255	10254	2.10	82	2100
850	750	**1LA4 502-8CV0■**	745	96.5	0.81	275	10895	2.10	92	2100
950	800	**1LA4 504-8CV0■**	745	96.5	0.81	305	12177	2.10	102	2100
1120	980	**1LA4 560-8CV0■**	745	96.8	0.83	350	14356	2.20	142	2000
1250	1090	**1LA4 562-8CV0■**	745	96.9	0.83	390	16022	2.20	162	2000
1450	1270	**1LA4 564-8CV0■**	745	97.0	0.83	450	18585	2.20	189	2000

Type of construction:	
IM B3	**0**
IM V1 (with canopy)	**4**
IM V1 (without canopy)	**8**

Note:

The motors for converter operation with non-sinusoidal output have, among other things, a reinforced winding insulation.
Additional details see Page 3/2.
Ratings are defined for sinusoidal supply, based on IEC 60034-2-1:2007.
The ratings for converter operation depend on the converter and its settings and cannot be predetermined.

Higher pole numbers are available on request.

[1] For IM B3, anti-friction bearings.

Motor type (repeated)	Partial load values for square-law torque drive											
	P/P_{rated} 155 (F) = 75 %				P/P_{rated} 155 (F) = 50 %				P/P_{rated} 155 (F) = 25 %			
	P	n	η	cos φ	P	n	η	cos φ	P	n	η	cos φ
	kW	rpm	%	[-]	kW	rpm	%	[-]	kW	rpm	%	[-]
												Square-law torque drive
4-pole												
1LA4 500-4...	1013	1357	97.0	0.87	675	1185	96.9	0.84	338	941	96.5	0.73
1LA4 502-4...	1125	1357	97.1	0.87	750	1185	97.0	0.84	375	941	96.5	0.73
1LA4 504-4...	1238	1357	97.2	0.88	825	1185	97.1	0.86	413	941	96.8	0.77
1LA4 560-4...	1388	1357	97.4	0.85	925	1186	97.2	0.81	463	941	96.8	0.68
1LA4 562-4...	1575	1357	97.5	0.86	1050	1186	97.4	0.83	525	941	97.0	0.71
1LA4 564-4...	1763	1357	97.5	0.86	1175	1186	97.4	0.83	588	941	97.0	0.72
6-pole												
1LA4 500-6...	810	904	96.9	0.86	540	790	96.7	0.83	270	627	96.2	0.72
1LA4 502-6...	885	904	97.0	0.86	590	790	97.0	0.84	295	627	96.4	0.73
1LA4 504-6...	960	904	97.1	0.87	640	790	97.0	0.84	320	627	96.5	0.74
1LA4 560-6...	1125	904	97.3	0.85	750	790	97.2	0.81	375	627	96.7	0.70
1LA4 562-6...	1313	904	97.4	0.85	875	790	97.2	0.82	438	627	96.7	0.70
1LA4 564-6...	1463	904	97.5	0.86	975	790	97.3	0.84	488	627	96.9	0.73
8-pole												
1LA4 500-8...	600	677	96.3	0.80	400	591	96.1	0.75	200	469	95.2	0.62
1LA4 502-8...	638	677	96.4	0.80	425	591	96.1	0.75	213	469	95.2	0.62
1LA4 504-8...	713	677	96.4	0.80	475	591	96.2	0.75	238	469	95.2	0.62
1LA4 560-8...	840	677	96.8	0.82	560	591	96.6	0.78	280	469	96.1	0.66
1LA4 562-8...	938	677	96.9	0.82	625	591	96.7	0.78	313	469	96.1	0.66
1LA4 564-8...	1088	677	97.0	0.82	725	591	96.8	0.78	363	469	96.1	0.66

Selection and ordering data

Rated power		High voltage motor H-compact	Operating values at rated output for utilization 155 (F)							
IEC			Rated speed	Efficiency	Power factor	Rated current at 3.4 kV	Rated torque	Break-down torque	Moment of inertia	Mechanical speed limit[1]
P_{rated} 155 (F)	P_{rated} 130 (B)		n_{rated}	η	cos φ	I_{rated}	T_{rated}	T_B/T_{rated}	J	n_{max}
kW	kW	Article No.	rpm	%	[-]	A	Nm	[-]	kgm^2	rpm
3.4 ... 4.16 kV, 50 Hz										
4-pole										
1350	1180	**1LA4 500-4CV■■**	1493	97.0	0.87	280	8634	2.50	42	2200
1500	1280	**1LA4 502-4CV■■**	1493	97.2	0.87	310	9594	2.60	47	2200
1650	1420	**1LA4 504-4CV■■**	1493	97.3	0.88	335	10553	2.60	54	2200
1850	1550	**1LA4 560-4CV■■**	1494	97.5	0.87	380	11824	2.40	79	2000
2100	1750	**1LA4 562-4CV■■**	1494	97.5	0.87	435	13422	2.40	92	2000
2350	1900	**1LA4 564-4CV■■**	1494	97.5	0.87	485	15020	2.40	104	2000
6-pole										
1080	940	**1LA4 500-6CV■■**	995	97.0	0.86	225	10365	2.40	82	2100
1180	1030	**1LA4 502-6CV■■**	995	97.0	0.87	245	11324	2.40	92	2100
1280	1130	**1LA4 504-6CV■■**	995	97.1	0.87	265	12284	2.40	103	2100
1500	1320	**1LA4 560-6CV■■**	995	97.3	0.86	315	14395	2.60	142	2000
1750	1500	**1LA4 562-6CV■■**	995	97.4	0.86	365	16795	2.70	162	2000
1950	1700	**1LA4 564-6CV■■**	995	97.5	0.87	400	18714	2.50	189	2000
8-pole										
800	690	**1LA4 500-8CV■■**	745	96.5	0.81	180	10254	2.10	82	2100
850	750	**1LA4 502-8CV■■**	745	96.5	0.81	190	10895	2.10	92	2100
950	800	**1LA4 504-8CV■■**	745	96.5	0.81	215	12177	2.10	102	2100
1120	980	**1LA4 560-8CV■■**	745	96.8	0.83	245	14356	2.20	142	2000
1250	1090	**1LA4 562-8CV■■**	745	96.9	0.83	270	16022	2.20	162	2000
1450	1270	**1LA4 564-8CV■■**	745	97.0	0.83	315	18585	2.20	189	2000

Voltage code:	
4.16 kV, 50 Hz	**4**
Other voltage	**9**
Type of construction:	
IM B3	**0**
IM V1 (with canopy)	**4**
IM V1 (without canopy)	**8**

Note:

The motors for converter operation with non-sinusoidal output have, among other things, a reinforced winding insulation.
Additional details see Page 3/2.
Ratings are defined for sinusoidal supply, based on IEC 60034-2-1:2007.
The ratings for converter operation depend on the converter and its settings and cannot be predetermined.

Higher pole numbers are available on request.

[1] For IM B3, anti-friction bearings.

Motor type (repeated)	Partial load values for square-law torque drive											
	P/P_{rated} 155 (F) = 75 %				P/P_{rated} 155 (F) = 50 %				P/P_{rated} 155 (F) = 25 %			
	P	n	η	cos φ	P	n	η	cos φ	P	n	η	cos φ
	kW	rpm	%	[-]	kW	rpm	%	[-]	kW	rpm	%	[-]
												Square-law torque drive
4-pole												
1LA4 500-4...	1013	1357	97.0	0.87	675	1185	96.9	0.84	338	941	96.5	0.73
1LA4 502-4...	1125	1357	97.1	0.87	750	1185	97.0	0.84	375	941	96.5	0.73
1LA4 504-4...	1238	1357	97.2	0.88	825	1185	97.1	0.86	413	941	96.8	0.77
1LA4 560-4...	1388	1357	97.4	0.85	925	1186	97.2	0.81	463	941	96.8	0.68
1LA4 562-4...	1575	1357	97.5	0.86	1050	1186	97.4	0.83	525	941	97.0	0.71
1LA4 564-4...	1763	1357	97.5	0.86	1175	1186	97.4	0.83	588	941	97.0	0.72
6-pole												
1LA4 500-6...	810	904	96.9	0.86	540	790	96.7	0.83	270	627	96.2	0.72
1LA4 502-6...	885	904	97.0	0.86	590	790	97.0	0.84	295	627	96.4	0.73
1LA4 504-6...	960	904	97.1	0.87	640	790	97.0	0.84	320	627	96.5	0.74
1LA4 560-6...	1125	904	97.3	0.85	750	790	97.2	0.81	375	627	96.7	0.70
1LA4 562-6...	1313	904	97.4	0.85	875	790	97.2	0.82	438	627	96.7	0.70
1LA4 564-6...	1463	904	97.5	0.86	975	790	97.3	0.84	488	627	96.9	0.73
8-pole												
1LA4 500-8...	600	677	96.3	0.80	400	591	96.1	0.75	200	469	95.2	0.62
1LA4 502-8...	638	677	96.4	0.80	425	591	96.1	0.75	213	469	95.2	0.62
1LA4 504-8...	713	677	96.4	0.80	475	591	96.2	0.75	238	469	95.2	0.62
1LA4 560-8...	840	677	96.8	0.82	560	591	96.6	0.78	280	469	96.1	0.66
1LA4 562-8...	938	677	96.9	0.82	625	591	96.7	0.78	313	469	96.1	0.66
1LA4 564-8...	1088	677	97.0	0.82	725	591	96.8	0.78	363	469	96.1	0.66

Selection and ordering data

Rated power IEC		High voltage motor H-compact	Operating values at rated output for utilization 155 (F)							
			Rated speed	Efficiency	Power factor	Rated current 2.3 kV	Rated torque	Break-down torque	Moment of inertia	Mechanical speed limit[1]
P_{rated} 155 (F)	P_{rated} 130 (B)		n_{rated}	η	cos φ	I_{rated}	T_{rated}	T_B/T_{rated}	J	n_{max}
kW	kW	Article No.	rpm	%	[-]	A	Nm	[-]	kgm^2	rpm
2.3 kV, 60 Hz										
4-pole										
1500	1260	**1LA4 500-4CV1■**	1793	96.8	0.87	445	7989	2.50	42	2200
1650	1350	**1LA4 502-4CV1■**	1793	96.8	0.87	490	8787	2.50	47	2200
1800	1450	**1LA4 504-4CV1■**	1793	96.8	0.87	540	9586	2.50	54	2200
2000	1600	**1LA4 560-4CV1■**	1794	97.3	0.87	590	10645	2.40	79	2000
2300	1850	**1LA4 562-4CV1■**	1794	97.3	0.87	680	12242	2.40	92	2000
2600	2100	**1LA4 564-4CV1■**	1794	97.3	0.87	770	13839	2.40	104	2000
6-pole										
1180	1020	**1LA4 500-6CV1■**	1195	96.8	0.87	350	9429	2.40	82	2100
1320	1150	**1LA4 502-6CV1■**	1195	97.0	0.87	395	10548	2.40	92	2100
1450	1250	**1LA4 504-6CV1■**	1195	97.1	0.87	430	11587	2.50	103	2100
1650	1400	**1LA4 560-6CV1■**	1195	97.2	0.86	495	13185	2.60	142	2000
1900	1550	**1LA4 562-6CV1■**	1195	97.4	0.86	570	15183	2.60	162	2000
2150	1750	**1LA4 564-6CV1■**	1195	97.5	0.87	640	17180	2.60	189	2000
8-pole										
900	750	**1LA4 500-8CV1■**	896	96.4	0.79	295	9592	2.30	82	2100
950	780	**1LA4 502-8CV1■**	896	96.4	0.79	315	10124	2.30	92	2100
1050	850	**1LA4 504-8CV1■**	896	96.4	0.79	345	11190	2.30	102	2100
1200	1030	**1LA4 560-8CV1■**	895	96.8	0.83	375	12803	2.20	142	2000
1380	1190	**1LA4 562-8CV1■**	895	96.8	0.83	430	14724	2.30	162	2000
1580	1280	**1LA4 564-8CV1■**	895	96.9	0.83	495	16857	2.40	189	2000

Type of construction:	
IM B3	**0**
IM V1 (with canopy)	**4**
IM V1 (without canopy)	**8**

Note:

The motors for converter operation with non-sinusoidal output have, among other things, a reinforced winding insulation.
Additional details see Page 3/2.
Ratings are defined for sinusoidal supply, based on IEC 60034-2-1:2007.
The ratings for converter operation depend on the converter and its settings and cannot be predetermined.

Higher pole numbers are available on request.

[1] For IM B3, anti-friction bearings.

Motor type (repeated)	Partial load values for square-law torque drive											
	P/P_{rated} 155 (F) = 75 %				P/P_{rated} 155 (F) = 50 %				P/P_{rated} 155 (F) = 25 %			
	P	n	η	cos φ	P	n	η	cos φ	P	n	η	cos φ
	kW	rpm	%	[-]	kW	rpm	%	[-]	kW	rpm	%	[-]
												Square-law torque drive
4-pole												
1LA4 500-4...	1125	1629	96.5	0.86	750	1423	96.2	0.82	375	1130	95.5	0.71
1LA4 502-4...	1238	1629	96.7	0.86	825	1423	96.4	0.83	413	1130	95.7	0.73
1LA4 504-4...	1350	1629	96.8	0.87	900	1423	96.5	0.84	450	1130	95.9	0.75
1LA4 560-4...	1500	1630	97.1	0.86	1000	1424	96.9	0.82	500	1130	96.4	0.72
1LA4 562-4...	1725	1630	97.2	0.86	1150	1424	97.2	0.83	575	1130	96.8	0.74
1LA4 564-4...	1950	1630	97.3	0.87	1300	1424	97.3	0.84	650	1130	96.9	0.74
6-pole												
1LA4 500-6...	885	1086	96.8	0.86	590	949	96.6	0.83	295	753	96.0	0.74
1LA4 502-6...	990	1086	96.9	0.86	660	949	96.7	0.83	330	753	96.0	0.74
1LA4 504-6...	1088	1086	97.0	0.86	725	949	96.7	0.83	363	753	96.0	0.73
1LA4 560-6...	1238	1086	97.2	0.85	825	949	97.0	0.82	413	753	96.3	0.72
1LA4 562-6...	1425	1086	97.3	0.85	950	949	97.0	0.82	475	753	96.4	0.72
1LA4 564-6...	1613	1086	97.4	0.86	1075	949	97.1	0.83	538	753	96.5	0.73
8-pole												
1LA4 500-8...	675	814	96.3	0.79	450	711	95.8	0.74	225	564	94.8	0.62
1LA4 502-8...	713	814	96.3	0.78	475	711	95.8	0.73	238	564	94.8	0.60
1LA4 504-8...	788	814	96.3	0.78	525	711	95.9	0.73	263	564	94.9	0.61
1LA4 560-8...	900	813	96.7	0.82	600	710	96.4	0.78	300	564	95.7	0.66
1LA4 562-8...	1035	813	96.8	0.82	690	710	96.4	0.77	345	564	95.7	0.66
1LA4 564-8...	1185	813	96.8	0.81	790	710	96.4	0.76	395	564	95.7	0.65

Selection and ordering data

Rated power IEC		High voltage motor H-compact	Operating values at rated output for utilization 155 (F)							
			Rated speed	Efficiency	Power factor	Rated current at 4.16 kV	Rated torque	Break-down torque	Moment of inertia	Mechanical speed limit[1]
P_{rated} 155 (F)	P_{rated} 130 (B)		n_{rated}	η	cos φ	I_{rated}	T_{rated}	T_B/T_{rated}	J	n_{max}
kW	kW	Article No.	rpm	%	[-]	A	Nm	[-]	kgm^2	rpm
3.4 ... 4.16 kV, 60 Hz										
4-pole										
1500	1260	**1LA4 500-4CV5■**	1793	96.8	0.87	245	7989	2.50	42	2200
1650	1350	**1LA4 502-4CV5■**	1793	96.8	0.87	270	8787	2.50	47	2200
1800	1450	**1LA4 504-4CV5■**	1793	96.8	0.87	295	9586	2.50	54	2200
2000	1600	**1LA4 560-4CV5■**	1794	97.3	0.87	330	10645	2.40	79	2000
2300	1850	**1LA4 562-4CV5■**	1794	97.3	0.87	375	12242	2.40	92	2000
2600	2100	**1LA4 564-4CV5■**	1794	97.3	0.87	425	13839	2.40	104	2000
6-pole										
1180	1020	**1LA4 500-6CV5■**	1195	96.8	0.87	194	9429	2.40	82	2100
1320	1150	**1LA4 502-6CV5■**	1195	97.0	0.87	215	10548	2.40	92	2100
1450	1250	**1LA4 504-6CV5■**	1195	97.1	0.87	240	11587	2.50	103	2100
1650	1400	**1LA4 560-6CV5■**	1195	97.2	0.86	275	13185	2.60	142	2000
1900	1550	**1LA4 562-6CV5■**	1195	97.4	0.86	315	15183	2.60	162	2000
2150	1750	**1LA4 564-6CV5■**	1195	97.5	0.87	350	17180	2.60	189	2000
8-pole										
900	750	**1LA4 500-8CV5■**	896	96.4	0.79	164	9592	2.30	82	2100
950	780	**1LA4 502-8CV5■**	896	96.4	0.79	174	10124	2.30	92	2100
1050	850	**1LA4 504-8CV5■**	896	96.4	0.79	192	11190	2.30	102	2100
1200	1030	**1LA4 560-8CV5■**	895	96.8	0.83	205	12803	2.20	142	2000
1380	1190	**1LA4 562-8CV5■**	895	96.8	0.83	240	14724	2.30	162	2000
1580	1280	**1LA4 564-8CV5■**	895	96.9	0.83	275	16857	2.40	189	2000

Type of construction:	
IM B3	**0**
IM V1 (with canopy)	**4**
IM V1 (without canopy)	**8**

Note:

The motors for converter operation with non-sinusoidal output have, among other things, a reinforced winding insulation.
Additional details see Page 3/2.
Ratings are defined for sinusoidal supply, based on IEC 60034-2-1:2007.
The ratings for converter operation depend on the converter and its settings and cannot be predetermined.

Higher pole numbers are available on request.

[1] For IM B3, anti-friction bearings.

Motor type (repeated)	Partial load values for square-law torque drive											
	P/P_{rated} 155 (F) = 75 %				P/P_{rated} 155 (F) = 50 %				P/P_{rated} 155 (F) = 25 %			
	P	n	η	cos φ	P	n	η	cos φ	P	n	η	cos φ
	kW	rpm	%	[-]	kW	rpm	%	[-]	kW	rpm	%	[-]
												Square-law torque drive
4-pole												
1LA4 500-4...	1125	1629	96.5	0.86	750	1423	96.2	0.82	375	1130	95.5	0.71
1LA4 502-4...	1238	1629	96.7	0.86	825	1423	96.4	0.83	413	1130	95.7	0.73
1LA4 504-4...	1350	1629	96.8	0.87	900	1423	96.5	0.84	450	1130	95.9	0.75
1LA4 560-4...	1500	1630	97.1	0.86	1000	1424	96.9	0.82	500	1130	96.4	0.72
1LA4 562-4...	1725	1630	97.2	0.86	1150	1424	97.2	0.83	575	1130	96.8	0.74
1LA4 564-4...	1950	1630	97.3	0.87	1300	1424	97.3	0.84	650	1130	96.9	0.74
6-pole												
1LA4 500-6...	885	1086	96.8	0.86	590	949	96.6	0.83	295	753	96.0	0.74
1LA4 502-6...	990	1086	96.9	0.86	660	949	96.7	0.83	330	753	96.0	0.74
1LA4 504-6...	1088	1086	97.0	0.86	725	949	96.7	0.83	363	753	96.0	0.73
1LA4 560-6...	1238	1086	97.2	0.85	825	949	97.0	0.82	413	753	96.3	0.72
1LA4 562-6...	1425	1086	97.3	0.85	950	949	97.0	0.82	475	753	96.4	0.72
1LA4 564-6...	1613	1086	97.4	0.86	1075	949	97.1	0.83	538	753	96.5	0.73
8-pole												
1LA4 500-8...	675	814	96.3	0.79	450	711	95.8	0.74	225	564	94.8	0.62
1LA4 502-8...	713	814	96.3	0.78	475	711	95.8	0.73	238	564	94.8	0.60
1LA4 504-8...	788	814	96.3	0.78	525	711	95.9	0.73	263	564	94.9	0.61
1LA4 560-8...	900	813	96.7	0.82	600	710	96.4	0.78	300	564	95.7	0.66
1LA4 562-8...	1035	813	96.8	0.82	690	710	96.4	0.77	345	564	95.7	0.66
1LA4 564-8...	1185	813	96.8	0.81	790	710	96.4	0.76	395	564	95.7	0.65

Selection and ordering data

Rated power IEC		High voltage motor H-compact	Operating values at rated output for utilization 155 (F)							
			Rated speed	Efficiency	Power factor	Rated current 2.3 kV	Rated torque	Break-down torque	Moment of inertia	Mechanical speed limit[1]
P_{rated} 155 (F)	P_{rated} 130 (B)		n_{rated}	η	cos φ	I_{rated}	T_{rated}	T_B/T_{rated}	J	n_{max}
kW	kW	Article No.	rpm	%	[-]	A	Nm	[-]	kgm^2	rpm
2.3 kV, 50 Hz										
4-pole										
1350	1180	**1LA4 500-4CV0■**	1493	97.0	0.87	400	8634	2.50	42	2200
1500	1280	**1LA4 502-4CV0■**	1493	97.2	0.87	445	9594	2.60	47	2200
1650	1420	**1LA4 504-4CV0■**	1493	97.3	0.88	485	10553	2.60	54	2200
1850	1550	**1LA4 560-4CV0■**	1494	97.5	0.87	550	11824	2.40	79	2000
2100	1750	**1LA4 562-4CV0■**	1494	97.5	0.87	620	13422	2.40	92	2000
2350	1900	**1LA4 564-4CV0■**	1494	97.5	0.87	700	15020	2.40	104	2000
6-pole										
1080	940	**1LA4 500-6CV0■**	995	97.0	0.86	325	10365	2.40	82	2100
1180	1030	**1LA4 502-6CV0■**	995	97.0	0.87	350	11324	2.40	92	2100
1280	1130	**1LA4 504-6CV0■**	995	97.1	0.87	380	12284	2.40	103	2100
1500	1320	**1LA4 560-6CV0■**	995	97.3	0.86	450	14395	2.60	142	2000
1750	1500	**1LA4 562-6CV0■**	995	97.4	0.86	520	16795	2.70	162	2000
1950	1700	**1LA4 564-6CV0■**	995	97.5	0.87	580	18714	2.50	189	2000
8-pole										
800	690	**1LA4 500-8CV0■**	745	96.5	0.81	255	10254	2.10	82	2100
850	750	**1LA4 502-8CV0■**	745	96.5	0.81	275	10895	2.10	92	2100
950	800	**1LA4 504-8CV0■**	745	96.5	0.81	305	12177	2.10	102	2100
1120	980	**1LA4 560-8CV0■**	745	96.8	0.83	350	14356	2.20	142	2000
1250	1090	**1LA4 562-8CV0■**	745	96.9	0.83	390	16022	2.20	162	2000
1450	1270	**1LA4 564-8CV0■**	745	97.0	0.83	450	18585	2.20	189	2000

Type of construction:	
IM B3	**0**
IM V1 (with canopy)	**4**
IM V1 (without canopy)	**8**

Note:

The motors for converter operation with non-sinusoidal output have, among other things, a reinforced winding insulation.
Additional details see Page 3/2.
Ratings are defined for sinusoidal supply, based on IEC 60034-2-1:2007.
The ratings for converter operation depend on the converter and its settings and cannot be predetermined.

Higher pole numbers are available on request.

[1] For IM B3, anti-friction bearings.

Motor type (repeated)	Constant-torque drive, speed range											
	1:2				1:5				1:10			
	P_{max}	T_{max}	η	cos φ	P_{max}	T_{max}	η	cos φ	P_{max}	T_{max}	η	cos φ
	kW	Nm	%	[-]	kW	Nm	%	[-]	kW	Nm	%	[-]
												Constant-torque drive
4-pole												
1LA4 500-4...	1300	8315	96.8	0.85	1050	6716	96.9	0.85	940	6012	96.9	0.84
1LA4 502-4...	1450	9274	97.0	0.85	1180	7547	97.1	0.85	1060	6780	97.1	0.85
1LA4 504-4...	1600	10233	97.1	0.86	1320	8443	97.2	0.86	1180	7547	97.2	0.86
1LA4 560-4...	1760	11249	97.3	0.85	1450	9268	97.4	0.84	1320	8437	97.4	0.83
1LA4 562-4...	2040	13039	97.3	0.85	1680	10738	97.4	0.85	1550	9907	97.4	0.84
1LA4 564-4...	2300	14701	97.3	0.85	1900	12144	97.4	0.85	1750	11185	97.4	0.84
6-pole												
1LA4 500-6...	1060	10173	96.6	0.85	880	8445	96.8	0.84	800	7678	96.9	0.84
1LA4 502-6...	1160	11133	96.8	0.86	970	9309	97.0	0.86	880	8445	97.0	0.85
1LA4 504-6...	1260	12092	96.8	0.86	1060	10173	97.0	0.86	960	9213	97.1	0.86
1LA4 560-6...	1480	14204	97.0	0.84	1250	11996	97.2	0.84	1120	10749	97.2	0.83
1LA4 562-6...	1720	16507	97.1	0.84	1450	13916	97.3	0.83	1250	11996	97.3	0.83
1LA4 564-6...	1930	18522	97.3	0.85	1650	15835	97.4	0.85	1400	13436	97.5	0.85
8-pole												
1LA4 500-8...	790	10126	96.1	0.79	650	8331	96.3	0.78	580	7434	96.3	0.76
1LA4 502-8...	850	10895	96.1	0.80	730	9357	96.2	0.79	650	8331	96.3	0.77
1LA4 504-8...	950	12177	96.1	0.80	800	10254	96.2	0.78	710	9100	96.3	0.77
1LA4 560-8...	1090	13971	96.6	0.82	890	11408	96.8	0.81	800	10254	96.8	0.79
1LA4 562-8...	1240	15894	96.7	0.82	1020	13074	96.9	0.81	920	11792	96.9	0.80
1LA4 564-8...	1440	18457	96.8	0.82	1200	15381	97.0	0.81	1100	14099	97.0	0.80

Selection and ordering data

Rated power		High voltage motor H-compact	Operating values at rated output for utilization 155 (F)							
IEC			Rated speed	Efficiency	Power factor	Rated current at 3.4 kV	Rated torque	Break-down torque	Moment of inertia	Mechanical speed limit[1]
P_{rated} 155 (F)	P_{rated} 130 (B)		n_{rated}	η	cos φ	I_{rated}	T_{rated}	T_B/T_{rated}	J	n_{max}
kW	kW	Article No.	rpm	%	[-]	A	Nm	[-]	kgm^2	rpm
3.4 ... 4.16 kV, 50 Hz										
4-pole										
1350	1180	**1LA4 500-4CV■■**	1493	97.0	0.87	280	8634	2.50	42	2200
1500	1280	**1LA4 502-4CV■■**	1493	97.2	0.87	310	9594	2.60	47	2200
1650	1420	**1LA4 504-4CV■■**	1493	97.3	0.88	335	10553	2.60	54	2200
1850	1550	**1LA4 560-4CV■■**	1494	97.5	0.87	380	11824	2.40	79	2000
2100	1750	**1LA4 562-4CV■■**	1494	97.5	0.87	435	13422	2.40	92	2000
2350	1900	**1LA4 564-4CV■■**	1494	97.5	0.87	485	15020	2.40	104	2000
6-pole										
1080	940	**1LA4 500-6CV■■**	995	97.0	0.86	225	10365	2.40	82	2100
1180	1030	**1LA4 502-6CV■■**	995	97.0	0.87	245	11324	2.40	92	2100
1280	1130	**1LA4 504-6CV■■**	995	97.1	0.87	265	12284	2.40	103	2100
1500	1320	**1LA4 560-6CV■■**	995	97.3	0.86	315	14395	2.60	142	2000
1750	1500	**1LA4 562-6CV■■**	995	97.4	0.86	365	16795	2.70	162	2000
1950	1700	**1LA4 564-6CV■■**	995	97.5	0.87	400	18714	2.50	189	2000
8-pole										
800	690	**1LA4 500-8CV■■**	745	96.5	0.81	180	10254	2.10	82	2100
850	750	**1LA4 502-8CV■■**	745	96.5	0.81	190	10895	2.10	92	2100
950	800	**1LA4 504-8CV■■**	745	96.5	0.81	215	12177	2.10	102	2100
1120	980	**1LA4 560-8CV■■**	745	96.8	0.83	245	14356	2.20	142	2000
1250	1090	**1LA4 562-8CV■■**	745	96.9	0.83	270	16022	2.20	162	2000
1450	1270	**1LA4 564-8CV■■**	745	97.0	0.83	315	18585	2.20	189	2000

Voltage code:	
4.16 kV, 50 Hz	**4**
Other voltage	**9**
Type of construction:	
IM B3	**0**
IM V1 (with canopy)	**4**
IM V1 (without canopy)	**8**

Note:

The motors for converter operation with non-sinusoidal output have, among other things, a reinforced winding insulation.
Additional details see Page 3/2.
Ratings are defined for sinusoidal supply, based on IEC 60034-2-1:2007.
The ratings for converter operation depend on the converter and its settings and cannot be predetermined.

Higher pole numbers are available on request.

[1] For IM B3, anti-friction bearings.

Motor type (repeated)	Constant-torque drive, speed range											
	1:2				1:5				1:10			
	P_{max}	T_{max}	η	cos φ	P_{max}	T_{max}	η	cos φ	P_{max}	T_{max}	η	cos φ
	kW	Nm	%	[-]	kW	Nm	%	[-]	kW	Nm	%	[-]
												Constant-torque drive
4-pole												
1LA4 500-4...	1300	8315	96.8	0.85	1050	6716	96.9	0.85	940	6012	96.9	0.84
1LA4 502-4...	1450	9274	97.0	0.85	1180	7547	97.1	0.85	1060	6780	97.1	0.85
1LA4 504-4...	1600	10233	97.1	0.86	1320	8443	97.2	0.86	1180	7547	97.2	0.86
1LA4 560-4...	1760	11249	97.3	0.85	1450	9268	97.4	0.84	1320	8437	97.4	0.83
1LA4 562-4...	2040	13039	97.3	0.85	1680	10738	97.4	0.85	1550	9907	97.4	0.84
1LA4 564-4...	2300	14701	97.3	0.85	1900	12144	97.4	0.85	1750	11185	97.4	0.84
6-pole												
1LA4 500-6...	1060	10173	96.6	0.85	880	8445	96.8	0.84	800	7678	96.9	0.84
1LA4 502-6...	1160	11133	96.8	0.86	970	9309	97.0	0.86	880	8445	97.0	0.85
1LA4 504-6...	1260	12092	96.8	0.86	1060	10173	97.0	0.86	960	9213	97.1	0.86
1LA4 560-6...	1480	14204	97.0	0.84	1250	11996	97.2	0.84	1120	10749	97.2	0.83
1LA4 562-6...	1720	16507	97.1	0.84	1450	13916	97.3	0.83	1250	11996	97.3	0.83
1LA4 564-6...	1930	18522	97.3	0.85	1650	15835	97.4	0.85	1400	13436	97.5	0.85
8-pole												
1LA4 500-8...	790	10126	96.1	0.79	650	8331	96.3	0.78	580	7434	96.3	0.76
1LA4 502-8...	850	10895	96.1	0.80	730	9357	96.2	0.79	650	8331	96.3	0.77
1LA4 504-8...	950	12177	96.1	0.80	800	10254	96.2	0.78	710	9100	96.3	0.77
1LA4 560-8...	1090	13971	96.6	0.82	890	11408	96.8	0.81	800	10254	96.8	0.79
1LA4 562-8...	1240	15894	96.7	0.82	1020	13074	96.9	0.81	920	11792	96.9	0.80
1LA4 564-8...	1440	18457	96.8	0.82	1200	15381	97.0	0.81	1100	14099	97.0	0.80

Selection and ordering data

Rated power		**High voltage motor H-compact**	Operating values at rated output for utilization 155 (F)							
IEC			Rated speed	Efficiency	Power factor	Rated current 2.3 kV	Rated torque	Break-down torque	Moment of inertia	Mechanical speed limit[1]
P_{rated} 155 (F)	P_{rated} 130 (B)		n_{rated}	η	cos φ	I_{rated}	T_{rated}	T_B/T_{rated}	J	n_{max}
kW	kW	Article No.	rpm	%	[-]	A	Nm	[-]	kgm^2	rpm
2.3 kV, 60 Hz										
4-pole										
1500	1260	**1LA4 500-4CV1■**	1793	96.8	0.87	445	7989	2.50	42	2200
1650	1350	**1LA4 502-4CV1■**	1793	96.8	0.87	490	8787	2.50	47	2200
1800	1450	**1LA4 504-4CV1■**	1793	96.8	0.87	540	9586	2.50	54	2200
2000	1600	**1LA4 560-4CV1■**	1794	97.3	0.87	590	10645	2.40	79	2000
2300	1850	**1LA4 562-4CV1■**	1794	97.3	0.87	680	12242	2.40	92	2000
2600	2100	**1LA4 564-4CV1■**	1794	97.3	0.87	770	13839	2.40	104	2000
6-pole										
1180	1020	**1LA4 500-6CV1■**	1195	96.8	0.87	350	9429	2.40	82	2100
1320	1150	**1LA4 502-6CV1■**	1195	97.0	0.87	395	10548	2.40	92	2100
1450	1250	**1LA4 504-6CV1■**	1195	97.1	0.87	430	11587	2.50	103	2100
1650	1400	**1LA4 560-6CV1■**	1195	97.2	0.86	495	13185	2.60	142	2000
1900	1550	**1LA4 562-6CV1■**	1195	97.4	0.86	570	15183	2.60	162	2000
2150	1750	**1LA4 564-6CV1■**	1195	97.5	0.87	640	17180	2.60	189	2000
8-pole										
900	750	**1LA4 500-8CV1■**	896	96.4	0.79	295	9592	2.30	82	2100
950	780	**1LA4 502-8CV1■**	896	96.4	0.79	315	10124	2.30	92	2100
1050	850	**1LA4 504-8CV1■**	896	96.4	0.79	345	11190	2.30	102	2100
1200	1030	**1LA4 560-8CV1■**	895	96.8	0.83	375	12803	2.20	142	2000
1380	1190	**1LA4 562-8CV1■**	895	96.8	0.83	430	14724	2.30	162	2000
1580	1280	**1LA4 564-8CV1■**	895	96.9	0.83	495	16857	2.40	189	2000

Type of construction:	
IM B3	**0**
IM V1 (with canopy)	**4**
IM V1 (without canopy)	**8**

Note:

The motors for converter operation with non-sinusoidal output have, among other things, a reinforced winding insulation.
Additional details see Page 3/2.
Ratings are defined for sinusoidal supply, based on IEC 60034-2-1:2007.
The ratings for converter operation depend on the converter and its settings and cannot be predetermined.

Higher pole numbers are available on request.

[1] For IM B3, anti-friction bearings.

Motor type (repeated)	Constant-torque drive, speed range											
	1:2				1:5				1:10			
	P_{max}	T_{max}	η	cos φ	P_{max}	T_{max}	η	cos φ	P_{max}	T_{max}	η	cos φ
	kW	Nm	%	[-]	kW	Nm	%	[-]	kW	Nm	%	[-]
												Constant-torque drive
4-pole												
1LA4 500-4...	1470	7829	96.5	0.86	1270	6764	96.5	0.86	1150	6125	96.5	0.85
1LA4 502-4...	1600	8521	96.5	0.86	1320	7030	96.5	0.85	1200	6391	96.5	0.85
1LA4 504-4...	1750	9320	96.5	0.86	1500	7989	96.5	0.86	1350	7190	96.5	0.85
1LA4 560-4...	1920	10220	97.1	0.87	1610	8570	97.2	0.86	1500	7984	97.2	0.85
1LA4 562-4...	2250	11976	97.1	0.87	1880	10007	97.2	0.86	1750	9315	97.2	0.85
1LA4 564-4...	2580	13733	97.1	0.87	2250	11976	97.2	0.86	2100	11178	97.2	0.86
6-pole												
1LA4 500-6...	1160	9269	96.6	0.86	980	7831	96.7	0.86	880	7032	96.7	0.85
1LA4 502-6...	1300	10388	96.7	0.85	1120	8950	96.8	0.85	1020	8151	96.8	0.85
1LA4 504-6...	1430	11427	96.9	0.86	1250	9988	97.0	0.86	1150	9189	97.0	0.85
1LA4 560-6...	1630	13025	97.0	0.84	1450	11587	97.1	0.84	1350	10788	97.1	0.84
1LA4 562-6...	1880	15023	97.1	0.85	1650	13185	97.1	0.85	1520	12146	97.2	0.84
1LA4 564-6...	2130	17020	97.3	0.86	1930	15422	97.3	0.86	1800	14383	97.4	0.86
8-pole												
1LA4 500-8...	880	9378	96.0	0.79	780	8313	96.0	0.77	710	7567	96.0	0.76
1LA4 502-8...	950	10124	96.0	0.79	870	9272	96.0	0.78	780	8313	96.0	0.77
1LA4 504-8...	1050	11190	96.0	0.79	970	10338	96.0	0.78	880	9378	96.0	0.77
1LA4 560-8...	1200	12803	96.6	0.83	1010	10776	96.7	0.82	930	9922	96.7	0.81
1LA4 562-8...	1380	14724	96.6	0.82	1190	12696	96.7	0.81	1100	11736	96.8	0.81
1LA4 564-8...	1580	16857	96.8	0.82	1420	15150	96.9	0.81	1320	14083	96.9	0.81

Selection and ordering data

Rated power		**High voltage motor H-compact**	Operating values at rated output for utilization 155 (F)							
IEC			Rated speed	Efficiency	Power factor	Rated current at 4.16 kV	Rated torque	Break-down torque	Moment of inertia	Mechanical speed limit[1]
P_{rated} 155 (F)	P_{rated} 130 (B)		n_{rated}	η	cos φ	I_{rated}	T_{rated}	T_B/T_{rated}	J	n_{max}
kW	kW	Article No.	rpm	%	[-]	A	Nm	[-]	kgm^2	rpm
3.4 ... 4.16 kV, 60 Hz										
4-pole										
1500	1260	**1LA4 500-4CV5■**	1793	96.8	0.87	245	7989	2.50	42	2200
1650	1350	**1LA4 502-4CV5■**	1793	96.8	0.87	270	8787	2.50	47	2200
1800	1450	**1LA4 504-4CV5■**	1793	96.8	0.87	295	9586	2.50	54	2200
2000	1600	**1LA4 560-4CV5■**	1794	97.3	0.87	330	10645	2.40	79	2000
2300	1850	**1LA4 562-4CV5■**	1794	97.3	0.87	375	12242	2.40	92	2000
2600	2100	**1LA4 564-4CV5■**	1794	97.3	0.87	425	13839	2.40	104	2000
6-pole										
1180	1020	**1LA4 500-6CV5■**	1195	96.8	0.87	194	9429	2.40	82	2100
1320	1150	**1LA4 502-6CV5■**	1195	97.0	0.87	215	10548	2.40	92	2100
1450	1250	**1LA4 504-6CV5■**	1195	97.1	0.87	240	11587	2.50	103	2100
1650	1400	**1LA4 560-6CV5■**	1195	97.2	0.86	275	13185	2.60	142	2000
1900	1550	**1LA4 562-6CV5■**	1195	97.4	0.86	315	15183	2.60	162	2000
2150	1750	**1LA4 564-6CV5■**	1195	97.5	0.87	350	17180	2.60	189	2000
8-pole										
900	750	**1LA4 500-8CV5■**	896	96.4	0.79	164	9592	2.30	82	2100
950	780	**1LA4 502-8CV5■**	896	96.4	0.79	174	10124	2.30	92	2100
1050	850	**1LA4 504-8CV5■**	896	96.4	0.79	192	11190	2.30	102	2100
1200	1030	**1LA4 560-8CV5■**	895	96.8	0.83	205	12803	2.20	142	2000
1380	1190	**1LA4 562-8CV5■**	895	96.8	0.83	240	14724	2.30	162	2000
1580	1280	**1LA4 564-8CV5■**	895	96.9	0.83	275	16857	2.40	189	2000

Type of construction:	
IM B3	**0**
IM V1 (with canopy)	**4**
IM V1 (without canopy)	**8**

Note:

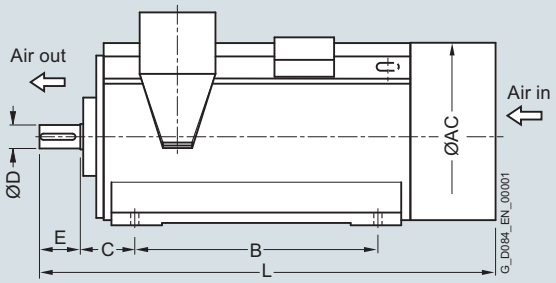
The motors for converter operation with non-sinusoidal output have, among other things, a reinforced winding insulation.
Additional details see Page 3/2.
Ratings are defined for sinusoidal supply, based on IEC 60034-2-1:2007.
The ratings for converter operation depend on the converter and its settings and cannot be predetermined.

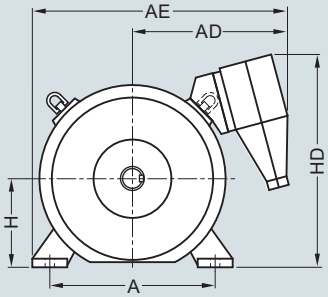
Higher pole numbers are available on request.

[1] For IM B3, anti-friction bearings.

Motor type (repeated)	Constant-torque drive, speed range											
	1:2				1:5				1:10			
	P_{max}	T_{max}	η	cos φ	P_{max}	T_{max}	η	cos φ	P_{max}	T_{max}	η	cos φ
	kW	Nm	%	[-]	kW	Nm	%	[-]	kW	Nm	%	[-]
												Constant-torque drive
4-pole												
1LA4 500-4...	1470	7829	96.5	0.86	1270	6764	96.5	0.86	1150	6125	96.5	0.85
1LA4 502-4...	1600	8521	96.5	0.86	1320	7030	96.5	0.85	1200	6391	96.5	0.85
1LA4 504-4...	1750	9320	96.5	0.86	1500	7989	96.5	0.86	1350	7190	96.5	0.85
1LA4 560-4...	1920	10220	97.1	0.87	1610	8570	97.2	0.86	1500	7984	97.2	0.85
1LA4 562-4...	2250	11976	97.1	0.87	1880	10007	97.2	0.86	1750	9315	97.2	0.85
1LA4 564-4...	2580	13733	97.1	0.87	2250	11976	97.2	0.86	2100	11178	97.2	0.86
6-pole												
1LA4 500-6...	1160	9269	96.6	0.86	980	7831	96.7	0.86	880	7032	96.7	0.85
1LA4 502-6...	1300	10388	96.7	0.85	1120	8950	96.8	0.85	1020	8151	96.8	0.85
1LA4 504-6...	1430	11427	96.9	0.86	1250	9988	97.0	0.86	1150	9189	97.0	0.85
1LA4 560-6...	1630	13025	97.0	0.84	1450	11587	97.1	0.84	1350	10788	97.1	0.84
1LA4 562-6...	1880	15023	97.1	0.85	1650	13185	97.1	0.85	1520	12146	97.2	0.84
1LA4 564-6...	2130	17020	97.3	0.86	1930	15422	97.3	0.86	1800	14383	97.4	0.86
8-pole												
1LA4 500-8...	880	9378	96.0	0.79	780	8313	96.0	0.77	710	7567	96.0	0.76
1LA4 502-8...	950	10124	96.0	0.79	870	9272	96.0	0.78	780	8313	96.0	0.77
1LA4 504-8...	1050	11190	96.0	0.79	970	10338	96.0	0.78	880	9378	96.0	0.77
1LA4 560-8...	1200	12803	96.6	0.83	1010	10776	96.7	0.82	930	9922	96.7	0.81
1LA4 562-8...	1380	14724	96.6	0.82	1190	12696	96.7	0.81	1100	11736	96.8	0.81
1LA4 564-8...	1580	16857	96.8	0.82	1420	15150	96.9	0.81	1320	14083	96.9	0.81

Dimension drawings





Motor type	Weight	Dimensions										
		A	AC	AD[1)3)]	AE[1)2)3)]	B	C	D	E	H	HD[4)]	L
	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
Up to 6.6 kV, anti-friction bearings, IM B3 type of construction												
2-pole												
1LA4454-2CM00	5200	850	960	825	1340	1250	280	95	130	450	1100	2320
4-pole												
1LA4454-4A..0	5300	850	960	825	1340	1250	280	130	200	450	1100	2390
1LA4500-4C..0	6200	950	1070	875	1440	1320	315	140	200	500	1200	2525
1LA4502-4C..0	6500	950	1070	875	1440	1320	315	140	200	500	1200	2525
1LA4504-4C..0	7000	950	1070	875	1440	1320	315	140	200	500	1200	2525
1LA4560-4C..0	8200	1060	1210	925	1560	1400	335	160	240	560	1310	2775
1LA4562-4C..0	8900	1060	1210	925	1560	1400	335	160	240	560	1310	2775
1LA4564-4C..0	9700	1060	1210	925	1560	1400	335	160	240	560	1310	2775
6-pole												
1LA4454-6AM00	5200	850	960	825	1340	1250	280	130	200	450	1100	2390
1LA4500-6C..0	6400	950	1070	875	1440	1320	315	140	200	500	1200	2525
1LA4502-6C..0	6800	950	1070	875	1440	1320	315	140	200	500	1200	2525
1LA4504-6C..0	7300	950	1070	875	1440	1320	315	140	200	500	1200	2525
1LA4560-6C..0	8500	1060	1210	925	1560	1400	335	160	240	560	1310	2775
1LA4562-6C..0	9300	1060	1210	925	1560	1400	335	160	240	560	1310	2775
1LA4564-6C..0	10100	1060	1210	925	1560	1400	335	160	240	560	1310	2775
8-pole												
1LA4454-8AM00	5200	850	960	825	1340	1250	280	130	200	450	1100	2390
1LA4500-8C..0	6400	950	1070	875	1440	1320	315	140	200	500	1200	2525
1LA4502-8C..0	6700	950	1070	875	1440	1320	315	140	200	500	1200	2525
1LA4504-8C..0	7200	950	1070	875	1440	1320	315	140	200	500	1200	2525
1LA4560-8C..0	8500	1060	1210	925	1560	1400	335	160	240	560	1310	2775
1LA4562-8C..0	9200	1060	1210	925	1560	1400	335	160	240	560	1310	2775
1LA4564-8C..0	10000	1060	1210	925	1560	1400	335	160	240	560	1310	2775

Note: Higher pole numbers are available on request.

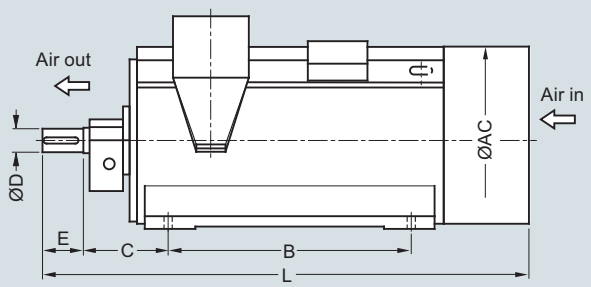
[1)] For V_{rated} = 690 V, the dimension changes by + 100 mm.

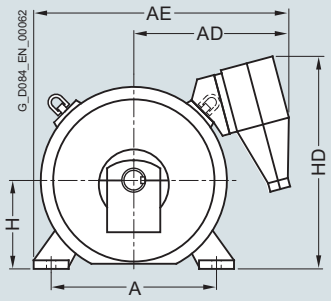
[2)] For V_{rated} = 690 V and I_{rated} > 1230 A, the dimension changes by + 475 mm (a second main terminal box is required).

[3)] For $V_{rated} \geq$ 2.0 kV and current I_{rated} > 315 A, the dimension changes by + 140 mm.

[4)] For $V_{rated} \geq$ 2.0 kV and current I_{rated} > 315 A, the dimension changes by + 70 mm.

Dimension drawings





Motor type	Weight	Dimensions										
		A	AC	AD[1)3)]	AE[1)2)3)]	B	C	D	E	H	HD[4)]	L
	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
Up to 6.6 kV, sleeve bearings, IM B3 type of construction												
2-pole												
1LA4454-2CM00-Z K96	5200	850	960	825	1340	1250	475	95	130	450	1100	2515
4-pole												
1LA4454-4A..0-Z K96	5400	850	960	825	1340	1250	475	130	200	450	1100	2745
1LA4500-4C..0-Z K96	6300	950	1070	875	1440	1320	500	140	200	500	1200	2870
1LA4502-4C..0-Z K96	6700	950	1070	875	1440	1320	500	140	200	500	1200	2870
1LA4504-4C..0-Z K96	7200	950	1070	875	1440	1320	500	140	200	500	1200	2870
1LA4560-4C..0-Z K96	8500	1060	1210	925	1560	1400	560	160	240	560	1310	3170
1LA4562-4C..0-Z K96	9200	1060	1210	925	1560	1400	560	160	240	560	1310	3170
1LA4564-4C..0-Z K96	10000	1060	1210	925	1560	1400	560	160	240	560	1310	3170
6-pole												
1LA4454-6AM00-Z K96	5300	850	960	825	1340	1250	475	130	200	450	1100	2745
1LA4500-6C..0-Z K96	6600	950	1070	875	1440	1320	530	140	200	500	1200	2900
1LA4502-6C..0-Z K96	7000	950	1070	875	1440	1320	530	140	200	500	1200	2900
1LA4504-6C..0-Z K96	7500	950	1070	875	1440	1320	530	140	200	500	1200	2900
1LA4560-6C..0-Z K96	8800	1060	1210	925	1560	1400	560	160	240	560	1310	3170
1LA4562-6C..0-Z K96	9500	1060	1210	925	1560	1400	560	160	240	560	1310	3170
1LA4564-6C..0-Z K96	10400	1060	1210	925	1560	1400	560	160	240	560	1310	3170

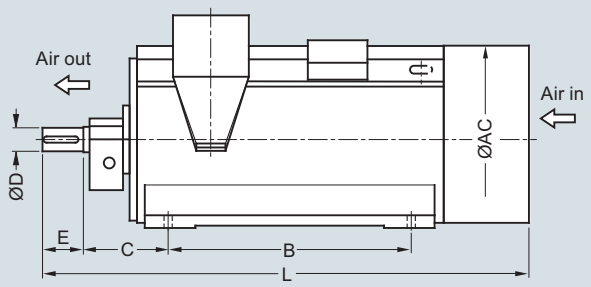
1) For V_{rated} = 690 V, the dimension changes by + 100 mm.

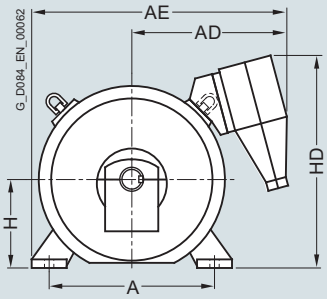
2) For V_{rated} = 690 V and I_{rated} > 1230 A, the dimension changes by + 475 mm (a second main terminal box is required).

3) For $V_{rated} \geq$ 2.0 kV and current I_{rated} > 315 A, the dimension changes by + 140 mm.

4) For $V_{rated} \geq$ 2.0 kV and current I_{rated} > 315 A, the dimension changes by + 70 mm.

Dimension drawings (continued)





Motor type	Weight	Dimensions										
		A	AC	AD[1)3)]	AE[1)2)3)]	B	C	D	E	H	HD[4)]	L
	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
Up to 6.6 kV, sleeve bearings, IM B3 type of construction												
8-pole												
1LA4454-8AM00-Z K96	5300	850	960	825	1340	1250	475	130	200	450	1100	2745
1LA4500-8C..0-Z K96	6600	950	1070	875	1440	1320	530	140	200	500	1200	2900
1LA4502-8C..0-Z K96	6900	950	1070	875	1440	1320	530	140	200	500	1200	2900
1LA4504-8C..0-Z K96	7400	950	1070	875	1440	1320	530	140	200	500	1200	2900
1LA4560-8C..0-Z K96	8800	1060	1210	925	1560	1400	560	160	240	560	1310	3170
1LA4562-8C..0-Z K96	9500	1060	1210	925	1560	1400	560	160	240	560	1310	3170
1LA4564-8C..0-Z K96	10300	1060	1210	925	1560	1400	560	160	240	560	1310	3170

Note:

Higher pole numbers are available on request.

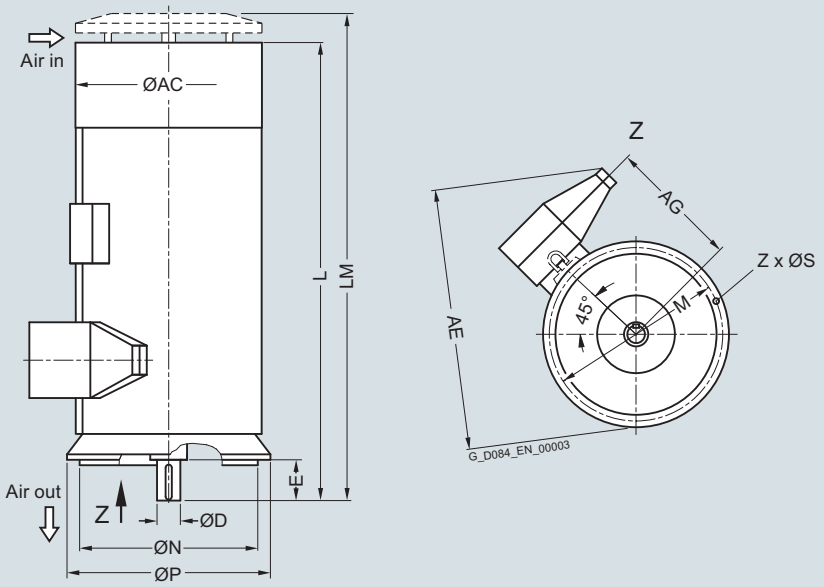
1) For V_{rated} = 690 V, the dimension changes by + 100 mm.

2) For V_{rated} = 690 V and I_{rated} > 1230 A, the dimension changes by + 475 mm (a second main terminal box is required).

3) For $V_{rated} \geq$ 2.0 kV and current I_{rated} > 315 A, the dimension changes by + 140 mm.

4) For $V_{rated} \geq$ 2.0 kV and current I_{rated} > 315 A, the dimension changes by + 70 mm.

Dimension drawings



Motor type	Weight	Dimensions											
		AC	AG[1)2)]	AE[3)]	D	E	L	LM	P	N	M	S	Z
	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Quantity
Up to 6.6 kV, anti-friction bearings, IM V1 type of construction													
4-pole													
1LA4454-4AM0.	5200	960	770	1550	130	200	2390	2550	1150	1000	1080	26	8
1LA4500-4C...	6100	1070	840	1660	140	200	2525	2695	1250	1120	1180	26	16
1LA4502-4C...	6500	1070	840	1660	140	200	2525	2695	1250	1120	1180	26	16
1LA4504-4C...	7000	1070	840	1660	140	200	2525	2695	1250	1120	1180	26	16
1LA4560-4C...	8300	1210	910	1800	160	240	2775	2955	1400	1250	1320	26	16
1LA4562-4C...	9000	1210	910	1800	160	240	2775	2955	1400	1250	1320	26	16
1LA4564-4C...	9700	1210	910	1800	160	240	2775	2955	1400	1250	1320	26	16
6-pole													
1LA4454-6AM0.	5200	960	770	1550	130	200	2390	2550	1150	1000	1080	26	8
1LA4500-6C...	6400	1070	840	1660	140	200	2525	2695	1250	1120	1180	26	16
1LA4502-6C...	6800	1070	840	1660	140	200	2525	2695	1250	1120	1180	26	16
1LA4504-6C...	7300	1070	840	1660	140	200	2525	2695	1250	1120	1180	26	16
1LA4560-6C...	8500	1210	910	1800	160	240	2775	2955	1400	1250	1320	26	16
1LA4562-6C...	9300	1210	910	1800	160	240	2775	2955	1400	1250	1320	26	16
1LA4564-6C...	10100	1210	910	1800	160	240	2775	2955	1400	1250	1320	26	16

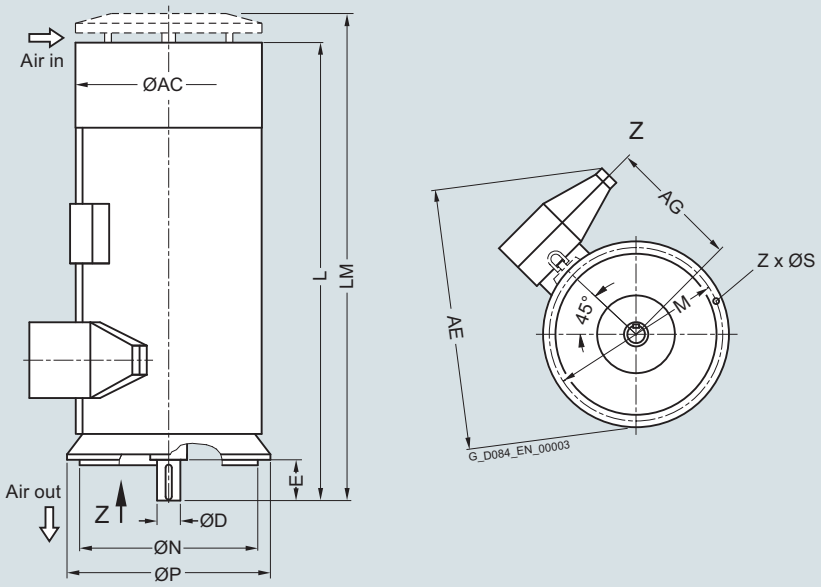
[1)] For V_{rated} = 690 V, the dimension changes by – 50 mm.

[2)] For currents I_{rated} > 315 A, the dimension changes by + 45 mm.

[3)] For currents I_{rated} > 315 A, the dimension changes by + 180 mm.

3

Dimension drawings (continued)



Motor type	Weight	Dimensions											
		AC	AG[1)2)]	AE[3)]	D	E	L	LM	P	N	M	S	Z
	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Quantity
Up to 6.6 kV, anti-friction bearings, IM V1 type of construction													
8-pole													
1LA4454-8AM0.	5200	960	770	1550	130	200	2390	2550	1000	1150	1080	26	8
1LA4500-8C...	6400	1070	840	1660	140	200	2525	2695	1250	1120	1180	26	16
1LA4502-8C...	6800	1070	840	1660	140	200	2525	2695	1250	1120	1180	26	16
1LA4504-8C...	7200	1070	840	1660	140	200	2525	2695	1250	1120	1180	26	16
1LA4560-8C...	8500	1210	910	1800	160	240	2775	2955	1400	1250	1320	26	16
1LA4562-8C...	9200	1210	910	1800	160	240	2775	2955	1400	1250	1320	26	16
1LA4564-8C...	10000	1210	910	1800	160	240	2775	2955	1400	1250	1320	26	16

Note:

Higher pole numbers are available on request.

[1)] For V_{rated} = 690 V, the dimension changes by – 50 mm.

[2)] For currents I_{rated} > 315 A, the dimension changes by + 45 mm.

[3)] For currents I_{rated} > 315 A, the dimension changes by + 180 mm.

Overview

Technical data

Overview of technical data

H-compact 1PQ4	
Rated voltage	690 V … 6.6 kV
Rated frequency	50/60 Hz
Motor type	Induction motor with squirrel-cage rotor
Type of construction	IM B3, IM V1
Degree of protection	IP55
Cooling method	IC416
Stator winding insulation	Insulation system, thermal class 155 (F), utilized to 155 (F)
Shaft height	450 … 560 mm
Bearings	Anti-friction bearings, sleeve bearings
Cage material	Die-cast aluminum or copper (dependent on the shaft height and number of poles)
Standards	IEC, EN
Frame design	Cast iron with cooling ribs

Technical data (continued)

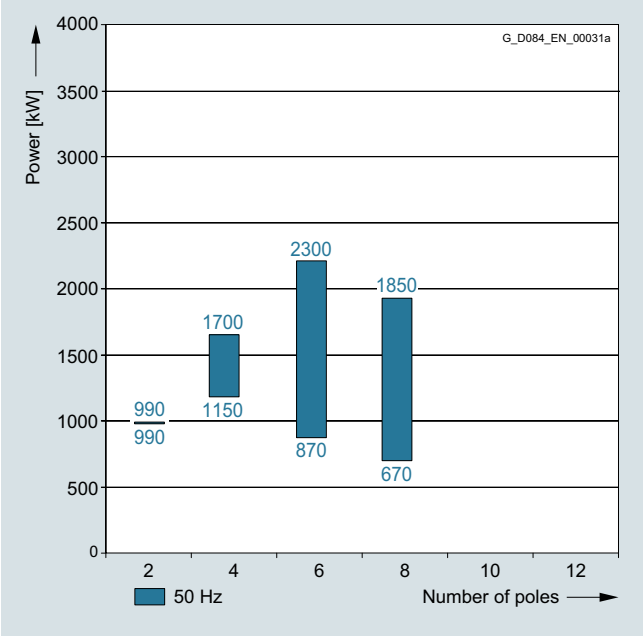
Power ranges for IEC motors with reinforced insulation for SINAMICS drive converters without sine-wave filter

1PQ4 series

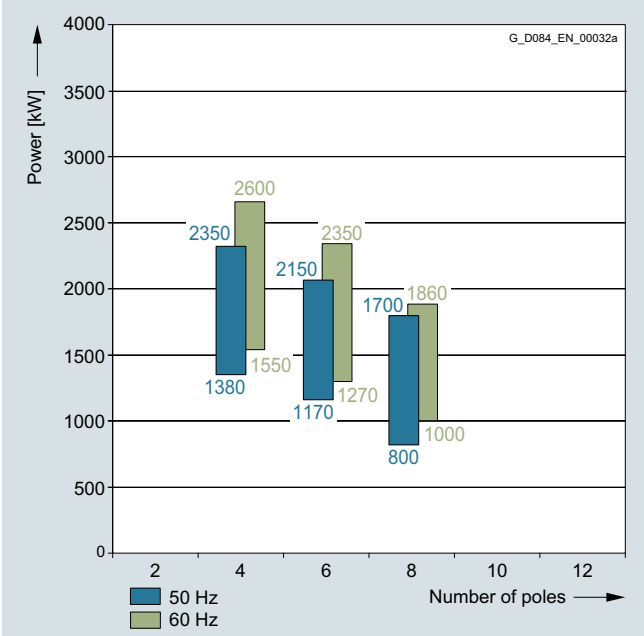
Insulation system, thermal class 155 (F), utilized to 155 (F)

The power data listed here apply for an ambient temperature of 40 °C and an installation altitude ≤ 1000 m.

690 V; 50 Hz

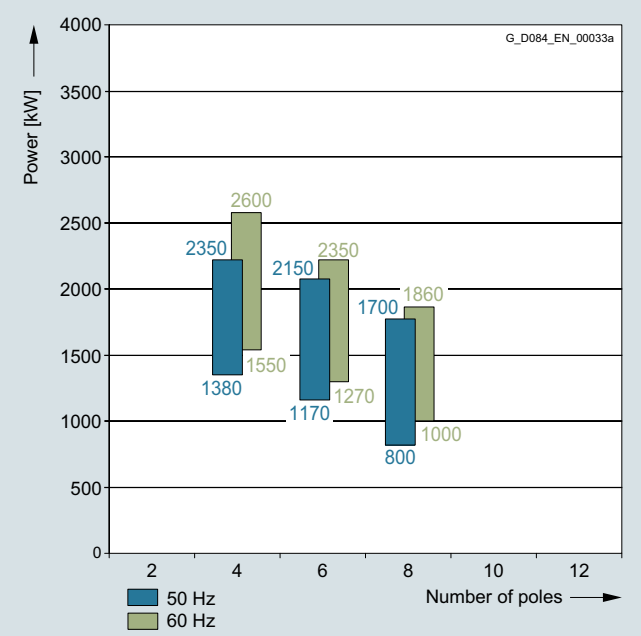


2.3 kV; 50 and 60 Hz

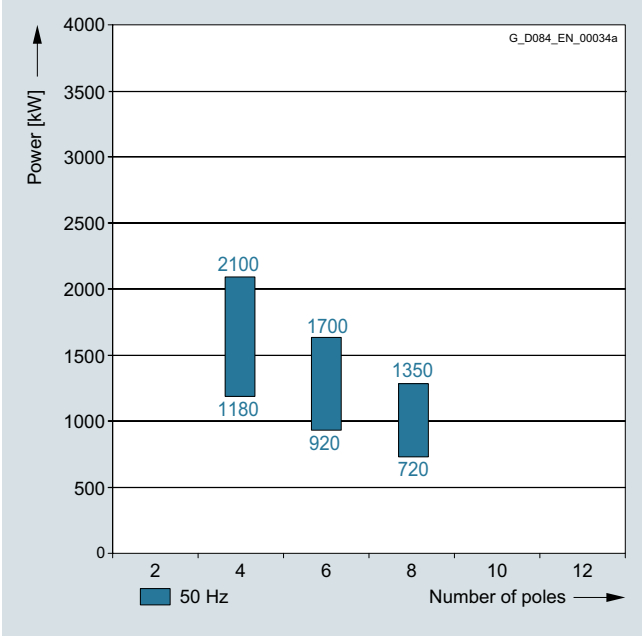


Technical data (continued)

3.4 to 4.16 kV; 50 and 60 Hz



6 to 6.6 kV; 50 Hz



Selection and ordering data

Rated power	**Low-voltage motor H-compact**	Operating values at rated output for utilization 155 (F)							
IEC		Rated speed	Efficiency	Power factor	Rated current at 690 V	Rated torque	Break-down torque	Moment of inertia	Mechanical speed limit[1]
P_{rated} 155 (F)		n_{rated}	η	cos φ	I_{rated}	T_{rated}	T_B/T_{rated}	J	n_{max}
kW	Article No.	rpm	%	[-]	A	Nm	[-]	kgm^2	rpm
690 V, 50 Hz									
2-pole									
990	**1PQ4 454-2CM0 0**	2983	97.3	0.92	930	3169	2.80	22.2	3000
4-pole									
1150	**1PQ4 454-4AM0■**	1491	97.5	0.89	1100	7365	2.50	33.9	2400
1340	**1PQ4 500-4CM0■**	1490	97.3	0.88	1300	8588	2.00	44.3	2400
1550	**1PQ4 502-4CM0■**	1492	97.5	0.87	1520	9920	2.20	49.0	2400
1700	**1PQ4 504-4CM0■**	1490	97.4	0.89	1640	10895	2.00	56.2	2400
6-pole									
870	**1PQ4 454-6AM0■**	993	97.3	0.86	870	8366	2.50	53.5	2200
1350	**1PQ4 500-6CM0■**	995	97.2	0.86	1360	12956	2.20	82.1	2200
1480	**1PQ4 502-6CM0■**	995	97.2	0.86	1480	14204	2.15	92.4	2200
1630	**1PQ4 504-6CM0■**	995	97.3	0.87	1620	15643	2.15	102.6	2200
1900	**1PQ4 560-6CM0■**	995	97.5	0.86	1900	18234	2.30	141.5	2000
2100	**1PQ4 562-6CM0■**	995	97.5	0.86	2100	20154	2.40	162.1	2000
2300	**1PQ4 564-6CM0■**	995	97.6	0.87	2250	22073	2.40	188.5	2000
8-pole									
670	**1PQ4 454-8AM0■**	745	96.7	0.80	720	8588	2.40	52.8	2200
950	**1PQ4 500-8CM0■**	746	96.7	0.80	1020	12160	2.10	81.7	2200
1050	**1PQ4 502-8CM0■**	746	96.8	0.81	1120	13440	2.10	91.9	2200
1150	**1PQ4 504-8CM0■**	746	96.9	0.81	1220	14720	2.10	102.2	2200
1400	**1PQ4 560-8CM0■**	745	97.0	0.81	1500	17944	2.30	141.6	2000
1600	**1PQ4 562-8CM0■**	746	97.1	0.82	1680	20480	2.30	162.3	2000
1850	**1PQ4 564-8CM0■**	746	97.1	0.82	1940	23680	2.30	188.8	2000

Type of construction:	
IM B3	**0**
IM V1 (with canopy)	**4**
IM V1 (without canopy)	**8**

Note:

The motors for converter operation with non-sinusoidal output have, among other things, a reinforced winding insulation.
Additional details see Page 3/2.
Ratings are defined for sinusoidal supply, based on IEC 60034-2-1:2007.
The ratings for converter operation depend on the converter and its settings and cannot be predetermined.

Higher pole numbers are available on request.

[1] For IM B3, anti-friction bearings.

Motor type (repeated)	Constant-torque drive, speed range											
	1:2				1:5				1:10			
	P_{max}	T_{max}	η	cos φ	P_{max}	T_{max}	η	cos φ	P_{max}	T_{max}	η	cos φ
	kW	rpm	%	[-]	kW	rpm	%	[-]	kW	rpm	%	[-]
												Constant-torque drive
2-pole												
1PQ4 454-2...	990	3169	97.3	0.92	880	2817	97.3	0.92	850	2721	97.3	0.92
4-pole												
1PQ4 454-4...	1130	7237	97.5	0.89	1060	6789	97.6	0.89	1020	6533	97.6	0.88
1PQ4 500-4...	1320	8460	97.2	0.88	1230	7883	97.3	0.88	1200	7690	97.3	0.88
1PQ4 502-4...	1530	9792	97.5	0.87	1420	9088	97.6	0.87	1390	8896	97.6	0.87
1PQ4 504-4...	1680	10767	97.4	0.89	1540	9869	97.5	0.89	1510	9677	97.5	0.89
6-pole												
1PQ4 454-6...	870	8366	97.3	0.86	770	7405	97.4	0.85	740	7116	97.4	0.85
1PQ4 500-6...	1350	12956	97.2	0.85	1320	12668	97.2	0.85	1300	12476	97.2	0.85
1PQ4 502-6...	1480	14204	97.2	0.86	1430	13724	97.2	0.86	1420	13628	97.2	0.86
1PQ4 504-6...	1630	15643	97.3	0.87	1580	15163	97.3	0.87	1570	15067	97.3	0.87
1PQ4 560-6...	1900	18234	97.5	0.86	1750	16795	97.5	0.86	1700	16315	97.5	0.85
1PQ4 562-6...	2100	20154	97.5	0.86	2000	19194	97.5	0.86	1950	18714	97.6	0.86
1PQ4 564-6...	2300	22073	97.6	0.87	2250	21593	97.6	0.87	2200	21113	97.6	0.87
8-pole												
1PQ4 454-8...	670	8588	96.7	0.80	640	8203	96.7	0.80	610	7819	96.8	0.79
1PQ4 500-8...	950	12160	96.7	0.80	950	12160	96.7	0.80	950	12160	96.7	0.80
1PQ4 502-8...	1050	13440	96.8	0.81	1050	13440	96.8	0.81	1050	13440	96.8	0.81
1PQ4 504-8...	1150	14720	96.9	0.81	1150	14720	96.9	0.81	1150	14720	96.9	0.81
1PQ4 560-8...	1400	17944	97.0	0.81	1300	16663	97.0	0.80	1300	16663	97.0	0.80
1PQ4 562-8...	1600	20480	97.1	0.82	1500	19200	97.1	0.82	1500	19200	97.1	0.82
1PQ4 564-8...	1850	23680	97.1	0.82	1700	21760	97.1	0.81	1700	21760	97.1	0.81

Selection and ordering data

Rated power		High voltage motor H-compact	Operating values at rated output for utilization 155 (F)							
IEC			Rated speed	Efficiency	Power factor	Rated current 2.3 kV	Rated torque	Break-down torque	Moment of inertia	Mechanical speed limit[1]
P_{rated} 155 (F)	P_{rated} 130 (B)		n_{rated}	η	cos φ	I_{rated}	T_{rated}	T_B/T_{rated}	J	n_{max}
kW	kW	Article No.	rpm	%	[-]	A	Nm	[-]	kgm^2	rpm
2.3 kV, 50 Hz										
4-pole										
1380	1200	**1PQ4 500-4CV0■**	1492	97.4	0.87	410	8833	2.35	42.3	2400
1530	1320	**1PQ4 502-4CV0■**	1492	97.5	0.87	455	9793	2.35	47.0	2400
1680	1470	**1PQ4 504-4CV0■**	1492	97.6	0.88	490	10753	2.35	54.2	2400
1850	1550	**1PQ4 560-4CV0■**	1494	97.8	0.87	550	11826	2.45	79.0	2200
2100	1750	**1PQ4 562-4CV0■**	1494	97.8	0.87	620	13424	2.45	92.0	2200
2350	1900	**1PQ4 564-4CV0■**	1494	97.8	0.87	690	15022	2.45	104.0	2200
6-pole										
1170	1050	**1PQ4 500-6CV0■**	994	97.2	0.87	345	11241	2.20	82.1	2200
1280	1150	**1PQ4 502-6CV0■**	994	97.2	0.87	380	12298	2.20	92.4	2200
1380	1250	**1PQ4 504-6CV0■**	994	97.2	0.87	410	13259	2.20	102.6	2200
1700	1480	**1PQ4 560-6CV0■**	995	97.4	0.86	510	16317	2.25	141.5	2000
1900	1680	**1PQ4 562-6CV0■**	995	97.5	0.87	560	18236	2.40	162.1	2000
2150	1900	**1PQ4 564-6CV0■**	995	97.6	0.87	640	20636	2.25	188.5	2000
8-pole										
800	800	**1PQ4 500-8CV0■**	746	96.6	0.81	255	10241	2.20	81.7	2200
850	850	**1PQ4 502-8CV0■**	746	96.6	0.81	275	10881	2.20	91.9	2200
950	950	**1PQ4 504-8CV0■**	746	96.6	0.81	305	12162	2.20	102.2	2200
1300	1140	**1PQ4 560-8CV0■**	744	96.8	0.84	400	16687	1.90	141.6	2000
1450	1270	**1PQ4 562-8CV0■**	744	96.9	0.84	445	18612	1.90	162.3	2000
1700	1500	**1PQ4 564-8CV0■**	744	97.0	0.84	520	21821	1.90	188.8	2000

Type of construction:	
IM B3	**0**
IM V1 (with canopy)	**4**
IM V1 (without canopy)	**8**

Note:

The motors for converter operation with non-sinusoidal output have, among other things, a reinforced winding insulation.
Additional details see Page 3/2.
Ratings are defined for sinusoidal supply, based on IEC 60034-2-1:2007.
The ratings for converter operation depend on the converter and its settings and cannot be predetermined.

Higher pole numbers are available on request.

[1] For IM B3, anti-friction bearings.

Motor type (repeated)	Constant-torque drive, speed range											
	1:2				1:5				1:10			
	P_{max}	T_{max}	η	cos φ	P_{max}	T_{max}	η	cos φ	P_{max}	T_{max}	η	cos φ
	kW	Nm	%	[-]	kW	Nm	%	[-]	kW	Nm	%	[-]
												Constant-torque drive
4-pole												
1PQ4 500-4...	1350	8641	97.4	0.87	1280	8193	97.4	0.87	1230	7873	97.4	0.86
1PQ4 502-4...	1500	9601	97.5	0.87	1430	9153	97.5	0.87	1380	8833	97.5	0.87
1PQ4 504-4...	1650	10561	97.6	0.88	1560	9985	97.6	0.88	1500	9601	97.6	0.88
1PQ4 560-4...	1850	11826	97.8	0.87	1780	11378	97.8	0.87	1730	11059	97.8	0.87
1PQ4 562-4...	2100	13424	97.8	0.87	2030	12976	97.8	0.87	1980	12657	97.8	0.87
1PQ4 564-4...	2350	15022	97.8	0.87	2300	14702	97.8	0.87	2250	14383	97.8	0.87
6-pole												
1PQ4 500-6...	1170	11241	97.2	0.87	1170	11241	97.2	0.87	1120	10761	97.2	0.87
1PQ4 502-6...	1280	12298	97.2	0.87	1280	12298	97.2	0.87	1220	11721	97.2	0.87
1PQ4 504-6...	1380	13259	97.2	0.87	1380	13259	97.2	0.87	1320	12682	97.3	0.87
1PQ4 560-6...	1700	16317	97.4	0.86	1700	16317	97.4	0.86	1600	15357	97.4	0.86
1PQ4 562-6...	1900	18236	97.5	0.87	1900	18236	97.5	0.87	1800	17276	97.5	0.87
1PQ4 564-6...	2150	20636	97.6	0.87	2150	20636	97.6	0.87	2050	19676	97.6	0.87
8-pole												
1PQ4 500-8...	800	10241	96.6	0.81	800	10241	96.6	0.81	760	9729	96.6	0.81
1PQ4 502-8...	850	10881	96.6	0.81	850	10881	96.6	0.81	810	10369	96.6	0.81
1PQ4 504-8...	980	12546	96.6	0.81	980	12546	96.6	0.81	930	11905	96.6	0.81
1PQ4 560-8...	1300	16687	96.8	0.84	1260	16173	96.8	0.84	1230	15788	96.8	0.84
1PQ4 562-8...	1450	18612	96.9	0.84	1440	18484	96.9	0.84	1400	17970	96.9	0.84
1PQ4 564-8...	1700	21821	97.0	0.84	1690	21693	97.0	0.84	1650	21179	97.0	0.84

Selection and ordering data

Rated power		High voltage motor H-compact	Operating values at rated output for utilization 155 (F)							
IEC			Rated speed	Efficiency	Power factor	Rated current at 3.4 kV	Rated torque	Break-down torque	Moment of inertia	Mechanical speed limit[1]
P_{rated} 155 (F)	P_{rated} 130 (B)		n_{rated}	η	cos φ	I_{rated}	T_{rated}	T_B/T_{rated}	J	n_{max}
kW	kW	Article No.	rpm	%	[-]	A	Nm	[-]	kgm^2	rpm
3.4 ... 4.16 kV, 50 Hz										
4-pole										
1380	1200	**1PQ4 500-4CV■■**	1492	97.4	0.87	285	8833	2.35	42.3	2400
1530	1320	**1PQ4 502-4CV■■**	1492	97.5	0.87	315	9793	2.35	47.0	2400
1680	1470	**1PQ4 504-4CV■■**	1492	97.6	0.88	340	10753	2.35	54.2	2400
1850	1550	**1PQ4 560-4CV■■**	1494	97.8	0.87	380	11826	2.45	79.0	2200
2100	1750	**1PQ4 562-4CV■■**	1494	97.8	0.87	430	13424	2.45	92.0	2200
2350	1900	**1PQ4 564-4CV■■**	1494	97.8	0.87	485	15022	2.45	104.0	2200
6-pole										
1170	1050	**1PQ4 500-6CV■■**	994	97.2	0.87	240	11241	2.20	82.1	2200
1280	1150	**1PQ4 502-6CV■■**	994	97.2	0.87	265	12298	2.20	92.4	2200
1380	1250	**1PQ4 504-6CV■■**	994	97.2	0.87	285	13259	2.20	102.6	2200
1700	1480	**1PQ4 560-6CV■■**	995	97.4	0.86	355	16317	2.25	141.5	2000
1900	1680	**1PQ4 562-6CV■■**	995	97.5	0.87	390	18236	2.40	162.1	2000
2150	1900	**1PQ4 564-6CV■■**	995	97.6	0.87	445	20636	2.25	188.5	2000
8-pole										
800	800	**1PQ4 500-8CV■■**	746	96.6	0.81	178	10241	2.20	81.7	2200
850	850	**1PQ4 502-8CV■■**	746	96.6	0.81	190	10881	2.20	91.9	2200
950	950	**1PQ4 504-8CV■■**	746	96.6	0.81	210	12162	2.20	102.2	2200
1300	1140	**1PQ4 560-8CV■■**	744	96.8	0.84	280	16687	1.90	141.6	2000
1450	1270	**1PQ4 562-8CV■■**	744	96.9	0.84	310	18612	1.90	162.3	2000
1700	1500	**1PQ4 564-8CV■■**	744	97.0	0.84	365	21821	1.90	188.8	2000

Voltage code:	
4.16 kV, 50 Hz	**4**
Other voltage	**9**
Type of construction:	
IM B3	**0**
IM V1 (with canopy)	**4**
IM V1 (without canopy)	**8**

Note:

The motors for converter operation with non-sinusoidal output have, among other things, a reinforced winding insulation.
Additional details see Page 3/2.
Ratings are defined for sinusoidal supply, based on IEC 60034-2-1:2007.
The ratings for converter operation depend on the converter and its settings and cannot be predetermined.

Higher pole numbers are available on request.

[1] For IM B3, anti-friction bearings.

Motor type (repeated)	Constant-torque drive, speed range											
	1:2				1:5				1:10			
	P_{max}	T_{max}	η	cos φ	P_{max}	T_{max}	η	cos φ	P_{max}	T_{max}	η	cos φ
	kW	Nm	%	[-]	kW	Nm	%	[-]	kW	Nm	%	[-]
												Constant-torque drive
4-pole												
1PQ4 500-4...	1350	8641	97.4	0.87	1280	8193	97.4	0.87	1230	7873	97.4	0.86
1PQ4 502-4...	1500	9601	97.5	0.87	1430	9153	97.5	0.87	1380	8833	97.5	0.87
1PQ4 504-4...	1650	10561	97.6	0.88	1560	9985	97.6	0.88	1500	9601	97.6	0.88
1PQ4 560-4...	1850	11826	97.8	0.87	1780	11378	97.8	0.87	1730	11059	97.8	0.87
1PQ4 562-4...	2100	13424	97.8	0.87	2030	12976	97.8	0.87	1980	12657	97.8	0.87
1PQ4 564-4...	2350	15022	97.3	0.85	1900	12145	97.8	0.87	2250	14383	97.8	0.87
6-pole												
1PQ4 500-6...	1170	11241	97.2	0.87	1170	11241	97.1	0.87	1120	11529	97.2	0.87
1PQ4 502-6...	1280	12298	97.2	0.87	1280	12298	96.9	0.87	1220	12970	97.2	0.87
1PQ4 504-6...	1380	13259	97.2	0.87	1380	13259	97.4	0.87	1320	14700	97.3	0.87
1PQ4 560-6...	1700	16317	97.4	0.86	1700	16317	97.5	0.87	1600	16796	97.4	0.86
1PQ4 562-6...	1900	18236	97.5	0.87	1900	18236	97.5	0.87	1800	18716	97.5	0.87
1PQ4 564-6...	2150	20636	97.6	0.87	2150	20636	97.6	0.87	2050	21595	97.6	0.87
8-pole												
1PQ4 500-8...	800	10241	96.6	0.81	800	10241	96.6	0.81	760	9729	96.6	0.81
1PQ4 502-8...	850	10881	96.6	0.81	850	10881	96.6	0.81	810	10369	96.6	0.81
1PQ4 504-8...	980	12546	96.6	0.81	980	12546	96.6	0.81	930	11905	96.6	0.81
1PQ4 560-8...	1300	16687	96.8	0.84	1260	16173	96.8	0.84	1230	15788	96.8	0.84
1PQ4 562-8...	1450	18612	96.9	0.84	1440	18484	96.9	0.84	1400	17970	96.9	0.84
1PQ4 564-8...	1700	21821	97.0	0.84	1690	21693	97.0	0.84	1650	21179	97.0	0.84

Selection and ordering data

Rated power	**High voltage motor H-compact**	Operating values at rated output for utilization 155 (F)							
IEC		Rated speed	Efficiency	Power factor	Rated current at 6.6 kV	Rated torque	Break-down torque	Moment of inertia	Mechanical speed limit[1]
P_{rated} 155 (F)		n_{rated}	η	cos φ	I_{rated}	T_{rated}	T_B/T_{rated}	J	n_{max}
kW	Article No.	rpm	%	[-]	A	Nm	[-]	kgm²	rpm
6 ... 6.6 kV, 50 Hz									
4-pole									
1180	**1PQ4 500-4CV■■**	1493	96.8	0.87	122	7548	2.60	42.0	2400
1300	**1PQ4 502-4CV■■**	1493	96.9	0.87	134	8315	2.60	47.0	2400
1450	**1PQ4 504-4CV■■**	1493	97.1	0.88	148	9275	2.50	54.0	2400
1600	**1PQ4 560-4CV■■**	1494	97.2	0.86	168	10228	2.60	79.0	2200
1850	**1PQ4 562-4CV■■**	1494	97.4	0.87	190	11826	2.60	92.0	2200
2100	**1PQ4 564-4CV■■**	1494	97.5	0.87	215	13424	2.60	104.0	2200
6-pole									
920	**1PQ4 500-6CV■■**	995	96.6	0.86	97	8830	2.50	82.0	2200
1030	**1PQ4 502-6CV■■**	995	96.7	0.87	108	9886	2.40	92.0	2200
1120	**1PQ4 504-6CV■■**	995	96.8	0.87	116	10750	2.40	103.0	2200
1400	**1PQ4 560-6CV■■**	996	97.1	0.86	146	13424	2.70	142.0	2000
1550	**1PQ4 562-6CV■■**	996	97.2	0.86	162	14862	2.70	162.0	2000
1700	**1PQ4 564-6CV■■**	996	97.3	0.87	176	16300	2.50	189.0	2000
8-pole									
720	**1PQ4 500-8CV■■**	746	96.0	0.80	82	9217	2.30	82.0	2200
760	**1PQ4 502-8CV■■**	746	96.2	0.81	85	9729	2.30	92.0	2200
820	**1PQ4 504-8CV■■**	746	96.3	0.81	92	10497	2.30	102.0	2200
1050	**1PQ4 560-8CV■■**	745	96.6	0.82	116	13460	2.40	142.0	2000
1180	**1PQ4 562-8CV■■**	745	96.7	0.82	130	15126	2.40	162.0	2000
1350	**1PQ4 564-8CV■■**	745	96.8	0.83	146	17305	2.40	189.0	2000

Voltage code:		
6 kV, 50 Hz	**6**	
6.6 kV, 50 Hz	**7**	
Other voltage	**9**	
Type of construction:		
IM B3		**0**
IM V1 (with canopy)		**4**
IM V1 (without canopy)		**8**

Note:

The motors for converter operation with non-sinusoidal output have, among other things, a reinforced winding insulation.
Additional details see Page 3/2.
Ratings are defined for sinusoidal supply, based on IEC 60034-2-1:2007.
The ratings for converter operation depend on the converter and its settings and cannot be predetermined.

Higher pole numbers are available on request.

[1] For IM B3, anti-friction bearings.

Motor type (repeated)	Constant-torque drive, speed range											
	1:2				1:5				1:10			
	P_{max} kW	T_{max} Nm	η %	cos φ [-]	P_{max} kW	T_{max} Nm	η %	cos φ [-]	P_{max} kW	T_{max} Nm	η %	cos φ [-]
												Constant-torque drive
4-pole												
1PQ4 500-4...	1180	7548	96.8	0.87	1180	7548	96.8	0.87	1070	6844	96.7	0.86
1PQ4 502-4...	1300	8315	96.9	0.87	1300	8315	96.9	0.87	1200	7676	96.8	0.87
1PQ4 504-4...	1450	9275	97.1	0.88	1450	9275	97.1	0.88	1370	8763	97.0	0.88
1PQ4 560-4...	1600	10228	97.2	0.86	1600	10228	97.2	0.86	1450	9269	97.1	0.84
1PQ4 562-4...	1850	11826	97.4	0.87	1850	11826	97.4	0.87	1700	10867	97.3	0.86
1PQ4 564-4...	2100	13424	97.5	0.87	2100	13424	97.5	0.87	1950	12465	97.4	0.87
6-pole												
1PQ4 500-6...	920	8830	96.6	0.86	920	8830	96.6	0.86	920	8830	96.6	0.86
1PQ4 502-6...	1030	9886	96.7	0.87	1030	9886	96.7	0.87	1030	9886	96.7	0.87
1PQ4 504-6...	1120	10750	96.8	0.87	1120	10750	96.8	0.87	1120	10750	96.8	0.87
1PQ4 560-6...	1400	13424	97.1	0.86	1400	13424	97.1	0.86	1400	13424	97.2	0.86
1PQ4 562-6...	1550	14862	97.2	0.86	1550	14862	97.2	0.86	1550	14862	97.3	0.86
1PQ4 564-6...	1700	16300	97.3	0.87	1700	16300	97.3	0.87	1700	16300	97.4	0.87
8-pole												
1PQ4 500-8...	720	9217	96.0	0.80	720	9217	96.0	0.80	720	9217	96.1	0.81
1PQ4 502-8...	760	9729	96.2	0.81	760	9729	96.2	0.81	760	9729	96.2	0.81
1PQ4 504-8...	820	10497	96.3	0.81	820	10497	96.3	0.81	820	10497	96.3	0.81
1PQ4 560-8...	1050	13460	96.6	0.82	1050	13460	96.6	0.82	1050	13460	96.6	0.82
1PQ4 562-8...	1180	15126	96.7	0.82	1180	15126	96.7	0.82	1180	15126	96.8	0.82
1PQ4 564-8...	1350	17305	96.8	0.83	1350	17305	96.8	0.83	1350	17305	96.8	0.82

Selection and ordering data

Rated power		High voltage motor H-compact	Operating values at rated output for utilization 155 (F)							
IEC			Rated speed	Efficiency	Power factor	Rated current 2.3 kV	Rated torque	Break-down torque	Moment of inertia	Mechanical speed limit[1]
P_{rated} 155 (F)	P_{rated} 130 (B)		n_{rated}	η	cos φ	I_{rated}	T_{rated}	T_B/T_{rated}	J	n_{max}
kW	kW	Article No.	rpm	%	[-]	A	Nm	[-]	kgm^2	rpm
2.3 kV, 60 Hz										
4-pole										
1550	1320	**1PQ4 500-4CV1■**	1793	97.5	0.88	455	8256	2.50	42.3	2400
1700	1400	**1PQ4 502-4CV1■**	1793	97.5	0.88	495	9055	2.50	47.0	2400
1850	1550	**1PQ4 504-4CV1■**	1793	97.5	0.88	540	9854	2.50	54.2	2400
2000	1600	**1PQ4 560-4CV1■**	1794	97.7	0.87	590	10647	2.40	79.0	2200
2300	1850	**1PQ4 562-4CV1■**	1794	97.7	0.87	680	12244	2.40	92.0	2200
2600	2100	**1PQ4 564-4CV1■**	1794	97.7	0.87	770	13841	2.40	104.0	2200
6-pole										
1270	1120	**1PQ4 500-6CV1■**	1195	97.1	0.87	375	10149	2.25	82.1	2200
1420	1250	**1PQ4 502-6CV1■**	1196	97.3	0.87	420	11339	2.25	92.4	2200
1600	1400	**1PQ4 504-6CV1■**	1195	97.4	0.87	475	12787	2.25	102.6	2200
1850	1600	**1PQ4 560-6CV1■**	1195	97.5	0.87	550	14785	2.40	141.5	2000
2050	1780	**1PQ4 562-6CV1■**	1195	97.5	0.87	610	16383	2.40	162.1	2000
2350	2000	**1PQ4 564-6CV1■**	1195	97.6	0.87	690	18780	2.40	188.5	2000
8-pole										
1000	900	**1PQ4 500-8CV1■**	895	96.7	0.81	320	10670	2.10	81.7	2200
1100	1000	**1PQ4 502-8CV1■**	895	96.7	0.81	355	11737	2.10	91.9	2200
1200	1100	**1PQ4 504-8CV1■**	895	96.7	0.81	385	12804	2.10	102.2	2200
1400	1220	**1PQ4 560-8CV1■**	894	96.9	0.84	430	14955	1.90	141.6	2000
1630	1420	**1PQ4 562-8CV1■**	894	97.0	0.84	500	17412	1.90	162.3	2000
1860	1600	**1PQ4 564-8CV1■**	894	97.1	0.84	570	19869	2.10	188.8	2000

Type of construction:	
IM B3	**0**
IM V1 (with canopy)	**4**
IM V1 (without canopy)	**8**

Note:

The motors for converter operation with non-sinusoidal output have, among other things, a reinforced winding insulation.
Additional details see Page 3/2.
Ratings are defined for sinusoidal supply, based on IEC 60034-2-1:2007.
The ratings for converter operation depend on the converter and its settings and cannot be predetermined.

Higher pole numbers are available on request.

[1] For IM B3, anti-friction bearings.

Motor type (repeated)	Constant-torque drive, speed range											
	1:2				1:5				1:10			
	P_{max}	T_{max}	η	cos φ	P_{max}	T_{max}	η	cos φ	P_{max}	T_{max}	η	cos φ
	kW	Nm	%	[-]	kW	Nm	%	[-]	kW	Nm	%	[-]
												Constant-torque drive
4-pole												
1PQ4 500-4...	1550	8256	97.5	0.88	1550	8256	97.5	0.88	1480	7883	97.5	0.88
1PQ4 502-4...	1700	9055	97.5	0.88	1700	9055	97.5	0.88	1620	8629	97.5	0.88
1PQ4.504-4...	1850	9854	97.5	0.88	1850	9854	97.5	0.88	1780	9481	97.5	0.88
1PQ4 560-4...	2000	10647	97.7	0.87	1940	10327	97.7	0.87	1900	10114	97.7	0.87
1PQ4 562-4...	2300	12244	97.7	0.87	2300	12244	97.7	0.87	2250	11977	97.7	0.87
1PQ4 564-4...	2600	13841	97.7	0.87	2600	13841	97.7	0.87	2550	13574	97.7	0.87
6-pole												
1PQ4 500-6...	1270	10149	97.1	0.87	1270	10149	97.1	0.87	1200	9590	97.1	0.87
1PQ4 502-6...	1420	11339	96.9	0.87	1420	11339	96.9	0.87	1350	10780	96.9	0.87
1PQ4 504-6...	1600	12787	97.4	0.87	1600	12787	97.4	0.87	1530	12227	97.4	0.87
1PQ4 560-6...	1850	14785	97.5	0.87	1850	14785	97.5	0.87	1750	13985	97.5	0.87
1PQ4 562-6...	2050	16383	97.5	0.87	2050	16383	97.5	0.87	1950	15584	97.5	0.87
1PQ4 564-6...	2350	18780	97.6	0.87	2350	18780	97.6	0.87	2250	17981	97.6	0.87
8-pole												
1PQ4 500-8...	1000	10670	96.7	0.81	1000	10670	96.7	0.81	950	10137	96.7	0.81
1PQ4 502-8...	1100	11737	96.7	0.81	1100	11737	96.7	0.81	1050	11204	96.7	0.81
1PQ4 504-8...	1200	12804	96.7	0.81	1200	12804	96.7	0.81	1150	12271	96.7	0.81
1PQ4 560-8...	1400	14955	96.9	0.84	1400	14955	96.9	0.84	1350	14421	96.9	0.84
1PQ4 562-8...	1630	17412	97.0	0.84	1630	17412	97.0	0.84	1580	16878	97.0	0.84
1PQ4 564-8...	1860	19869	97.1	0.84	1860	19869	97.1	0.84	1800	19228	97.1	0.84

Selection and ordering data

Rated power		High voltage motor H-compact	Operating values at rated output for utilization 155 (F)							
IEC			Rated speed	Efficiency	Power factor	Rated current at 4.16 kV	Rated torque	Break-down torque	Moment of inertia	Mechanical speed limit[1]
P_{rated} 155 (F)	P_{rated} 130 (B)		n_{rated}	η	cos φ	I_{rated}	T_{rated}	T_B/T_{rated}	J	n_{max}
kW	kW	Article No.	rpm	%	[-]	A	Nm	[-]	kgm^2	rpm
3.4 ... 4.16 kV, 60 Hz										
4-pole										
1550	1320	**1PQ4 500-4CV5■**	1793	97.5	0.88	250	8256	2.50	42.3	2400
1700	1400	**1PQ4 502-4CV5■**	1793	97.5	0.88	275	9055	2.50	47.0	2400
1850	1550	**1PQ4 504-4CV5■**	1793	97.5	0.88	300	9854	2.50	54.2	2400
2000	1600	**1PQ4 560-4CV5■**	1794	97.7	0.87	325	10647	2.40	79.0	2200
2300	1850	**1PQ4 562-4CV5■**	1794	97.7	0.87	375	12244	2.40	92.0	2200
2600	2100	**1PQ4 564-4CV5■**	1794	97.7	0.87	425	13841	2.40	104.0	2200
6-pole										
1270	1120	**1PQ4 500-6CV5■**	1195	97.1	0.87	210	10149	2.25	82.1	2200
1420	1250	**1PQ4 502-6CV5■**	1196	97.3	0.87	235	11339	2.25	92.4	2200
1600	1400	**1PQ4 504-6CV5■**	1195	97.4	0.87	260	12787	2.25	102.6	2200
1850	1600	**1PQ4 560-6CV5■**	1195	97.5	0.87	305	14785	2.40	141.5	2000
2050	1780	**1PQ4 562-6CV5■**	1195	97.5	0.87	335	16383	2.40	162.1	2000
2350	2000	**1PQ4 564-6CV5■**	1195	97.6	0.87	385	18780	2.40	188.5	2000
8-pole										
1000	900	**1PQ4 500-8CV5■**	895	96.7	0.81	178	10670	2.10	81.7	2200
1100	1000	**1PQ4 502-8CV5■**	895	96.7	0.81	194	11737	2.10	91.9	2200
1200	1100	**1PQ4 504-8CV5■**	895	96.7	0.81	215	12804	2.10	102.2	2200
1400	1220	**1PQ4 560-8CV5■**	894	96.9	0.84	240	14955	1.90	141.6	2000
1630	1420	**1PQ4 562-8CV5■**	894	97.0	0.84	280	17412	1.90	162.3	2000
1860	1600	**1PQ4 564-8CV5■**	894	97.1	0.84	315	19869	2.10	188.8	2000

Type of construction:	
IM B3	**0**
IM V1 (with canopy)	**4**
IM V1 (without canopy)	**8**

Note:

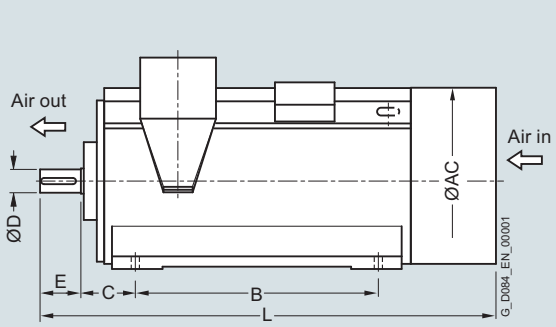
The motors for converter operation with non-sinusoidal output have, among other things, a reinforced winding insulation.
Additional details see Page 3/2.
Ratings are defined for sinusoidal supply, based on IEC 60034-2-1:2007.
The ratings for converter operation depend on the converter and its settings and cannot be predetermined.

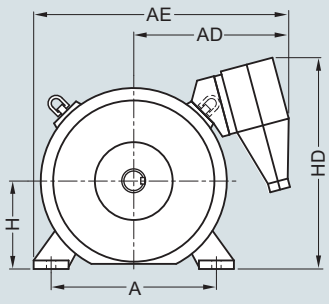
Higher pole numbers are available on request.

[1] For IM B3, anti-friction bearings.

Motor type (repeated)	Constant-torque drive, speed range											
	1:2				1:5				1:10			
	P_{max}	T_{max}	η	cos φ	P_{max}	T_{max}	η	cos φ	P_{max}	T_{max}	η	cos φ
	kW	Nm	%	[-]	kW	Nm	%	[-]	kW	Nm	%	[-]
												Constant-torque drive
4-pole												
1PQ4 500-4...	1550	8256	97.5	0.88	1550	8256	97.5	0.88	1480	7883	97.5	0.88
1PQ4 502-4...	1700	9055	97.5	0.88	1700	9055	97.5	0.88	1620	8629	97.5	0.88
1PQ4 504-4...	1850	9854	97.5	0.88	1850	9854	97.5	0.88	1780	9481	97.5	0.88
1PQ4 560-4...	2000	10647	97.7	0.87	1940	10327	97.7	0.87	1900	10114	97.7	0.87
1PQ4 562-4...	2300	12244	97.7	0.87	2300	12244	97.7	0.87	2250	11977	97.7	0.87
1PQ4 564-4...	2600	13841	97.7	0.87	2600	13841	97.7	0.87	2550	13574	97.7	0.87
6-pole												
1PQ4 500-6...	1270	10149	97.1	0.87	1270	10149	97.1	0.87	1200	9590	97.1	0.87
1PQ4 502-6...	1420	11339	96.9	0.87	1420	11339	96.9	0.87	1350	10780	96.9	0.87
1PQ4 504-6...	1600	12787	97.4	0.87	1600	12787	97.4	0.87	1530	12227	97.4	0.87
1PQ4 560-6...	1850	14785	97.5	0.87	1850	14785	97.5	0.87	1750	13985	97.5	0.87
1PQ4 562-6...	2050	16383	97.5	0.87	2050	16383	97.5	0.87	1950	15584	97.5	0.87
1PQ4 564-6...	2350	18780	97.6	0.87	2350	18780	97.6	0.87	2250	17981	97.6	0.87
8-pole												
1PQ4 500-8...	1000	10670	96.7	0.81	1000	10670	96.7	0.81	950	10137	96.7	0.81
1PQ4 502-8...	1100	11737	96.7	0.81	1100	11737	96.7	0.81	1050	11204	96.7	0.81
1PQ4 504-8...	1200	12804	96.7	0.81	1200	12804	96.7	0.81	1150	12271	96.7	0.81
1PQ4 560-8...	1400	14955	96.9	0.84	1400	14955	96.9	0.84	1350	14421	96.9	0.84
1PQ4 562-8...	1630	17412	97.0	0.84	1630	17412	97.0	0.84	1580	16878	97.0	0.84
1PQ4 564-8...	1860	19869	97.1	0.84	1860	19869	97.1	0.84	1800	19228	97.1	0.84

Dimension drawings





Motor type	Weight	Dimensions										
		A	AC	AD[1)3)]	AE[1)2)3)]	B	C	D	E	H	HD[4)]	L
	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
Up to 6.6 kV, anti-friction bearings, IM B3 type of construction												
2-pole												
1PQ4454-2CM00	5350	850	960	920	1440	1250	280	95	130	450	1100	2766
4-pole												
1PQ4454-4AM00	5300	850	960	920	1440	1250	280	130	200	450	1100	2836
1PQ4500-4C..0	6400	950	1070	875	1440	1320	315	140	200	500	1200	3005
1PQ4502-4C..0	6800	950	1070	875	1440	1320	315	140	200	500	1200	3005
1PQ4504-4C..0	7300	950	1070	875	1440	1320	315	140	200	500	1200	3005
1PQ4560-4C..0	8600	1060	1210	925	1560	1400	335	160	240	560	1310	3291
1PQ4562-4C..0	9300	1060	1210	925	1560	1400	335	160	240	560	1310	3291
1PQ4564-4C..0	10100	1060	1210	925	1560	1400	335	160	240	560	1310	3291
6-pole												
1PQ4454-6AM00	5400	850	960	920	1440	1250	280	130	200	450	1100	2836
1PQ4500-6C..0	6700	950	1070	875	1440	1320	315	140	200	500	1200	3005
1PQ4502-6C..0	7100	950	1070	875	1440	1320	315	140	200	500	1200	3005
1PQ4504-6C..0	7600	950	1070	875	1440	1320	315	140	200	500	1200	3005
1PQ4560-6C..0	8900	1060	1210	925	1560	1400	335	160	240	560	1310	3291
1PQ4562-6C..0	9600	1060	1210	925	1560	1400	335	160	240	560	1310	3291
1PQ4564-6C..0	10500	1060	1210	925	1560	1400	335	160	240	560	1310	3291
8-pole												
1PQ4454-8AM00	5400	850	960	920	1630	1250	280	130	200	450	1100	2836
1PQ4500-8C..0	6700	950	1070	875	1440	1320	315	140	200	500	1200	3005
1PQ4502-8C..0	7000	950	1070	875	1440	1320	315	140	200	500	1200	3005
1PQ4504-8C..0	7500	950	1070	875	1440	1320	315	140	200	500	1200	3005
1PQ4560-8C..0	8900	1060	1210	925	1560	1400	335	160	240	560	1310	3291
1PQ4562-8C..0	9600	1060	1210	925	1560	1400	335	160	240	560	1310	3291
1PQ4564-8C..0	10400	1060	1210	925	1560	1400	335	160	240	560	1310	3291

Note: Higher pole numbers are available on request.

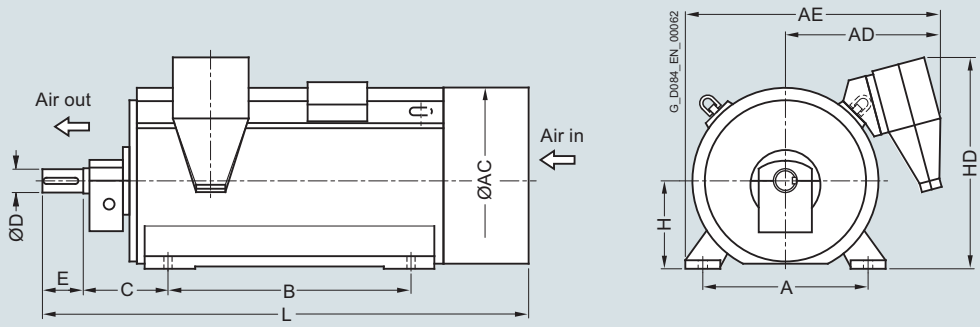
[1)] For V_{rated} = 690 V, the dimension changes by + 100 mm.

[2)] For V_{rated} = 690 V and I_{rated} > 1230 A, the dimension changes by + 475 mm (a second main terminal box is required).

[3)] For $V_{rated} \geq$ 2.0 kV and current I_{rated} > 315 A, the dimension changes by + 140 mm.

[4)] For $V_{rated} \geq$ 2.0 kV and current I_{rated} > 315 A, the dimension changes by + 70 mm.

Dimension drawings



Motor type	Weight	Dimensions										
		A	AC	AD[1)3)]	AE[1)2)3)]	B	C	D	E	H	HD[4)]	L
	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
Up to 6.6 kV, sleeve bearings, IM B3 type of construction												
2-pole												
1PQ4454-2AM00-Z K96	5400	850	960	920	1440	1250	475	95	130	450	1100	2961
4-pole												
1PQ4454-4AM00-Z K96	5300	850	960	920	1440	1250	475	130	200	450	1100	3031
1PQ4500-4C..0-Z K96	6400	950	1070	875	1440	1320	500	140	200	500	1200	3190
1PQ4502-4C..0-Z K96	6800	950	1070	875	1440	1320	500	140	200	500	1200	3190
1PQ4504-4C..0-Z K96	7300	950	1070	875	1440	1320	500	140	200	500	1200	3190
1PQ4560-4C..0-Z K96	8600	1060	1210	925	1560	1400	560	160	240	560	1310	3710
1PQ4562-4C..0-Z K96	9300	1060	1210	925	1560	1400	560	160	240	560	1310	3710
1PQ4564-4C..0-Z K96	10100	1060	1210	925	1560	1400	560	160	240	560	1310	3710
6-pole												
1PQ4454-6AM00-Z K96	5400	850	960	920	1440	1250	475	130	200	450	1100	3031
1PQ4500-6C..0-Z K96	6700	950	1070	875	1440	1320	530	140	200	500	1200	3190
1PQ4502-6C..0-Z K96	7100	950	1070	875	1440	1320	530	140	200	500	1200	3190
1PQ4504-6C..0-Z K96	7600	950	1070	875	1440	1320	530	140	200	500	1200	3190
1PQ4560-6C..0-Z K96	8900	1060	1210	925	1560	1400	560	160	240	560	1310	3710
1PQ4562-6C..0-Z K96	9600	1060	1210	925	1560	1400	560	160	240	560	1310	3710
1PQ4564-6C..0-Z K96	10500	1060	1210	925	1560	1400	560	160	240	560	1310	3710
8-pole												
1PQ4454-8AM00-Z K96	5400	850	960	920	1630	1250	475	130	200	450	1100	3031
1PQ4500-8C..0-Z K96	6700	950	1070	875	1440	1320	530	140	200	500	1200	3190
1PQ4502-8C..0-Z K96	7000	950	1070	875	1440	1320	530	140	200	500	1200	3190
1PQ4504-8C..0-Z K96	7500	950	1070	875	1440	1320	530	140	200	500	1200	3190
1PQ4560-8C..0-Z K96	8900	1060	1210	925	1560	1400	560	160	240	560	1310	3710
1PQ4562-8C..0-Z K96	9600	1060	1210	925	1560	1400	560	160	240	560	1310	3710
1PQ4564-8C..0-Z K96	10400	1060	1210	925	1560	1400	560	160	240	560	1310	3710

Note: Higher pole numbers are available on request.

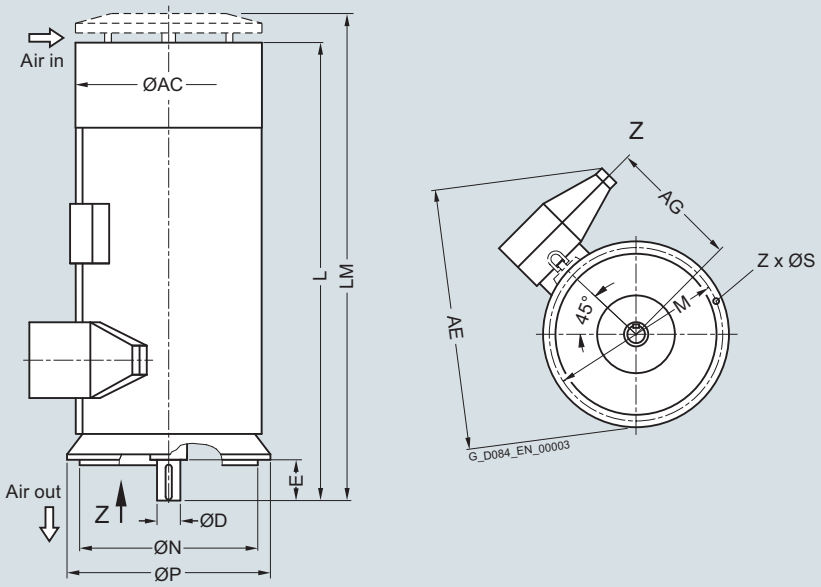
[1)] For V_{rated} = 690 V, the dimension changes by + 100 mm.

[2)] For V_{rated} = 690 V and I_{rated} > 1230 A, the dimension changes by + 475 mm (a second main terminal box is required).

[3)] For $V_{rated} \geq$ 2.0 kV and current I_{rated} > 315 A, the dimension changes by + 140 mm.

[4)] For $V_{rated} \geq$ 2.0 kV and current I_{rated} > 315 A, the dimension changes by + 70 mm.

Dimension drawings



Motor type	Weight	Dimensions											
		AC	AG[1)2)]	AE[3)]	D	E	L	LM	P	N	M	S	Z
	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Quantity
Up to 6.6 kV, anti-friction bearings, IM V1 type of construction													
4-pole													
1PQ4454-4AM04	5200	960	770	1550	130	200	3062	3212	1150	1000	1080	26	8
1PQ4500-4C..4	6200	1070	840	1660	140	200	3205	3255	1250	1120	1180	26	16
1PQ4502-4C..4	6600	1070	840	1660	140	200	3205	3255	1250	1120	1180	26	16
1PQ4504-4C..4	7100	1070	840	1660	140	200	3205	3255	1250	1120	1180	26	16
1PQ4560-4C..4	8400	1210	910	1800	160	240	3496	3546	1400	1250	1320	26	16
1PQ4562-4C..4	9100	1210	910	1800	160	240	3496	3546	1400	1250	1320	26	16
1PQ4564-4C..4	9800	1210	910	1800	160	240	3496	3546	1400	1250	1320	26	16
6-pole													
1PQ4454-6AM04	5500	960	770	1550	130	200	3062	3212	1150	1000	1080	26	8
1PQ4500-6C..4	6500	1070	840	1660	140	200	3205	3255	1250	1120	1180	26	16
1PQ4502-6C..4	6900	1070	840	1660	140	200	3205	3255	1250	1120	1180	26	16
1PQ4504-6C..4	7400	1070	840	1660	140	200	3205	3255	1250	1120	1180	26	16
1PQ4560-6C..4	8600	1210	910	1800	160	240	3496	3546	1400	1250	1320	26	16
1PQ4562-6C..4	9400	1210	910	1800	160	240	3496	3546	1400	1250	1320	26	16
1PQ4564-6C..4	10200	1210	910	1800	160	240	3496	3546	1400	1250	1320	26	16
8-pole													
1PQ4454-8AM04	5500	960	770	1550	130	200	3062	3212	1000	1150	1080	26	8
1PQ4500-8C..4	6500	1070	840	1660	140	200	3205	3255	1250	1120	1180	26	16
1PQ4502-8C..4	6900	1070	840	1660	140	200	3205	3255	1250	1120	1180	26	16
1PQ4504-8C..4	7300	1070	840	1660	140	200	3205	3255	1250	1120	1180	26	16
1PQ4560-8C..4	8600	1210	910	1800	160	240	3496	3546	1400	1250	1320	26	16
1PQ4562-8C..4	9300	1210	910	1800	160	240	3496	3546	1400	1250	1320	26	16
1PQ4564-8C..4	10100	1210	910	1800	160	240	3496	3546	1400	1250	1320	26	16

Note: Higher pole numbers are available on request.

[1)] For V_{rated} = 690 V, the dimension changes by – 50 mm.

[2)] For currents I_{rated} > 315 A, the dimension changes by + 45 mm.

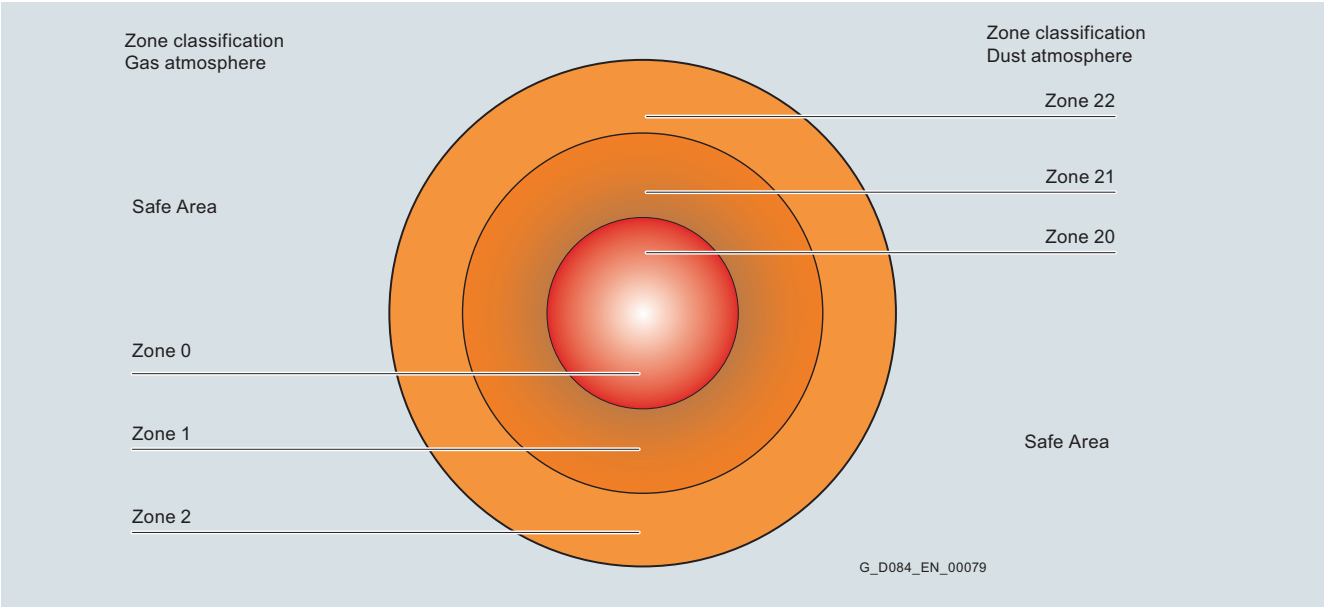
[3)] For currents I_{rated} > 315 A, the dimension changes by + 180 mm.

Classification of zones

Overview

In many industries, the manufacture, processing, transport or storage of combustible materials results in the creation or release of gases, vapors or mist into the environment. Combustible dusts are created in other processes.
Explosive atmospheres are formed when gases, vapors, mist or dust come into contact with oxygen in the air. If ignited, this can result in an explosion. In the chemical and petrochemical industries in particular, when crude oil and natural gas are transported, or in mining, milling (e.g. grain and granular solids), this can result in serious injury to personnel and damage to equipment.
To ensure maximum safety in these areas, legislators in most countries have implemented appropriate stipulations in the form of laws and regulations based on national and international standards.

Hazardous areas are classified in zones. Classification in zones depends on the probability of the presence of an explosive atmosphere, the duration and the location. Information and specifications regarding classification in zones are provided in IEC/EN 60079-10-1 for gas atmospheres and in IEC/EN 60079-10-2 for potentially explosive atmospheres as a result of dust. Further, a distinction is made between various explosion groups as well as temperature classes and these are included in the hazard assessment.



Depending on the particular zone and therefore the associated hazard, operating equipment must comply with defined minimum requirements regarding the type of protection. The different types of protection require corresponding measures to prevent ignition that should be implemented at the motor in order to prevent that a surrounding explosive atmosphere is ignited.

Zone		Zone definition acc. to		
Dust[2)]	**Gas[1)2)]**	**IEC/EN 60079-10-1 for Gas atmospheres IEC/EN 60079-10-2 for dust atmospheres**	**Assigned types of protection**	**Category according to 94/9/EC**
22	–	An area in which in normal operation it is not expected that an explosive atmosphere in the form of a cloud of combustible dust in the air occurs, and if it does occur then only briefly.	Ex tc	3D
–	2	An area in which in normal operation it is not expected that an explosive gas atmosphere occurs and if so, only infrequently and only briefly.	Ex ec	3G
–	1	An area in which it is expected that an explosive gas atmosphere occurs during normal operation.	Ex eb Ex pxb Ex db	2G
–	0	An area in which it is expected that a gas atmosphere is constantly present or for long periods of time	Motors are not permitted	

Note:

Referring to the 60079 IEC/EN standards, the following should be observed:

- The previous Ex e and Ex nA markings have been changed to Ex eb and Ex ec respectively. For both, the associated standard is IEC/EN 60079-7:2015. Expiration date of old marking: 2018-07-31
- The previous Ex px marking has been changed to Ex pxb. The associated standard is IEC/EN 60079-2:2014. Expiration date of old marking: 2017-08-25

[1)] Motors for Zone 1 may also be used in Zone 2.

[2)] Motors, which are marked for gas or dust protection, must not be used in hybrid mixtures! Hybrid mixtures: When explosive gas and dust atmospheres occur simultaneously.

Overview

Type of protection, Ex ec acc. to IEC/EN 60079-7

The type of protection ***Ex ec*** ensures that a motor in normal operation as well as when operated under deviating conditions as specified in the standard is not in a position to ignite a surrounding explosive gas atmosphere.

The series of H-compact motors (type series 1MS4) are available in ***Ex ec.***

Type of protection Ex t acc. to IEC/EN 60079-31

This type of protection applies for electrical equipment protected using an enclosure and with limited surface temperature for use in areas in which combustible dust can occur in concentration levels that could cause a fire or an explosion.

The series of H-compact motors (type series 1MS4) are available in ***Ex tc***.

Explosion-protected motors for converter operation

Principally, explosion-protected motors can be fed from drive converters. As a result of the different design, system analyses, system tests etc. for the various types of protection, an inquiry is required to check whether these motors can be actually implemented.

Overview

Technical data

Overview of technical data

H-compact 1MS4	
Rated voltage	2.0 … 11 kV
Rated frequency	50/60 Hz
Motor type	Induction motor with squirrel-cage rotor
Type of construction	IM B3, IM V1
Degree of protection	IP55
Type of protection	Ex ec/Ex tc
Operation in hazardous areas	Zone 2/Zone 22
Cooling method	IC411/IC416
Stator winding insulation	Thermal class 155 (F), utilized to 130 (B)
Shaft height	315 … 560 mm
Bearings	Anti-friction bearings, sleeve bearings
Cage material	Die-cast aluminum or copper (dependent on the shaft height and number of poles)
Standards	IEC, EN
Frame design	Cast iron with cooling ribs

The series of H-compact motors (IC411/IC416 cooling type), developed for Zone 2 in type of protection ***Ex ec*** or for Zone 22 in type of protection ***Ex tc*** are available as 1MS4 motors. The Article No. schematic is shown in Chapter 1.

These ***Ex ec*** or ***Ex tc*** measures do not affect the performance data or main dimensions with respect to H-compact motors (1LA4 type series). This is the reason that the values of the 1LA4 type series from Chapter 2 and Chapter 3 can also be used for 1MS4 motors.

An extensive range of options and tests are available for H-compact motors, type of protection ***Ex ec*** or ***Ex tc*** (--> Options and tests).

Overview

Using the following options, SIMOTICS HV/TN can be adapted to order-specific requirements. The Article No. is supplemented with a "-Z" and with either one or several order codes.

Example:

1LA4354-4AN60-Z H05 + K16 + L20

As standard, 6x Pt100 slot resistance thermometers without surge arrester for 3-wire or 4-wire circuit from the terminal box are integrated in the stator winding.
The motors are prepared as standard with SPM nipples to monitor the anti-friction bearings.

Order code	Option description	Remark
	Paint finish	
K26	Special paint finish in RAL 7030	
Y53	Standard paint finish in a color different from RAL 7030	Plain text required
Y54	Special paint finish in a color different from RAL 7030	Plain text required
	Documentation	
B00	No motor manual	
B21	Documentation on CD-ROM instead of paper printout	
B22	Documentation as e-mail instead of paper	
B23	Motor manual printed on paper, 3x	
B27	Run out protocol	
B28	Protocol air gap calculation	
B34	Document standard inspection and test plan	
B35	Document balancing report	
B36	Document test and inspection description	
B37	Document load characteristics	
B38	Document recommended spare parts	
B41	Document instrumentation list	
B43	Document production schedule: Generated once	
B44	Document production schedule: Updated biweekly	
B45	Document production schedule: Updated monthly	
B48	Document order-specific inspection and test plan	
	Document language	
D00	Documentation in German	
D54	Documentation in Czech	
D55	Documentation in Polish	
D56	Documentation in Russian	
D72	Documentation in Italian	
D73	Documentation in Finnish	
D74	Documentation in Dutch	
D75	Documentation in Turkish	
D76	Documentation in English	Standard
D77	Documentation in French	
D78	Documentation in Spanish	
D79	Documentation in Portuguese	
D80	Documentation in Bulgarian	
D81	Documentation in Norwegian	
D82	Documentation in Hungarian	
D83	Documentation in Swedish	
D84	Documentation in Chinese	

Overview (continued)

Order code	Option description	Remark
	Speed monitoring	
A03	Speed monitoring using an inductive proximity switch, Pepperl + Fuchs, incl. terminal box, without evaluation unit	
H70	Rotary pulse encoder LL 861 900 220 (Leine+Linde)	
H73	Rotary pulse encoder HOG 10 D1024 I (16 mm)	
H88	Rotary pulse encoder HOG 11 DN 1024 I (16 mm) with special anti-corrosion protection	For marine applications
H89	Rotary pulse encoder HOG 11 DN 1024 I (16 mm) with integrated shaft grounding and special anti-corrosion protection	For marine applications
	Direction of rotation	
K97	Rotation clockwise (CW)	
K98	Rotation counter-clockwise (CCW)	Standard
	Noise reduction	
L20	Silencer for air inlet	
L23	External metal fan, unidirectional	
L25	Rustless grid at inlet silencer	
	Terminal box mounting position	
K09	Terminal box on right-hand side, view from DE	Standard
K10	Terminal box on left-hand side, view from DE	
K83	Terminal box rotated through 90°, cable entry from DE	
K84	Terminal box rotated through 90°, cable entry from NDE	
K85	Terminal box rotated through 180°	
N81	Bracket rotated through 180°, terminal box rotated through 90°, cable entry from NDE	
N82	Bracket rotated through 180°, terminal box rotated through 90°, cable entry from DE	
N83	Bracket rotated through 180°, terminal box rotated through 180°, cable entry from above	
N84	Bracket rotated through 180°, rotated through 90°, cable entry from below	
N85	Terminal box on NDE	
	Terminal box, main and auxiliary terminal box	
L54	Terminal box, 6 terminals with 2 cable entries for connection to power supply, rated current > 315 A	
L55	Star-point terminal box, up to 6.6 kV, 3 terminals	
L56	Star-point terminal box, up to 11 kV, 3 terminals	
L57	Star-point terminal box, up to 6.6 kV, 6 terminals	
L58	Star-point terminal box, for installing current transformer (without current transformer)	
L59	Terminal box with sealing chamber for 1 cable entry	
M50	Auxiliary terminal box in cast iron	
M51	Auxiliary terminal box material: Stainless steel	
M52	Separate auxiliary terminal box for anti-condensation heater	
	Terminal box – accessories/equipping	
K59	Cable plug connection, rated voltage 2 to 6.6 kV	
L79	Gland plate for 3 winding ends to connect to the line supply via separately mounted terminal box, 3 m free cable length from the frame	
L80	Gland plate for 6 winding ends to connect to the line supply via separately mounted terminal box, 3 m free cable length from the frame	
L83	Cable plug connection, rated voltage 9 to 11 kV	

Overview (continued)

Order code	Option description	Remark
	Cooling air monitoring	
A44	1 resistance thermometer Pt100 for 2-, 3- or 4-wire connection from terminal box for cold air temperature	
A45	1 resistance thermometer Pt100 for 2-, 3- or 4-wire connection from terminal box for hot air temperature	
A46	1 double resistance thermometer Pt100 for 2-, 3- or 4-wire connection from terminal box, for cold air temperature	
A47	1 double resistance thermometer Pt100 for 2-, 3- or 4-wire connection from terminal box, for hot air temperature	
A86	1 dial-type thermometer with 2 NO-Contacts for cold air temperature incl. terminal box	
A87	1 dial-type thermometer with 2 NO-Contacts for hot air temperature incl. terminal box	
	Bearing version/instrumentation	
H09 + H11	DIN flange type for forced oil lubrication for oil inlet with flowmeter, manometer and throttle valve (incl. counter flange) + DIN flange type forced oil lubrication for oil outlet with sight glass (incl. counter flange)	
H10 + H12	ANSI flange type for forced oil lubrication for oil inlet with flowmeter, manometer and throttle valve (incl. counter flange) + ANSI flange type for forced oil lubrication for oil outlet with sight glass (incl. counter flange)	
H43	DIN flange type for forced oil lubrication for in- and outlet without instruments (with counter flanges)	
H44	ANSI flange type for forced oil lubrication for in- and outlet without instruments (with counter flanges)	
K20	Bearing design on DE for increased forces (reinforced)	SH 315 and SH 355 only
K96	Sleeve bearing instead of anti-friction bearing	
L18	DE insulation	
L27	Insulated bearing on NDE	
L60	Forced-circulation oil lubrication (with oil cooling) instead of oil-ring lubrication	
L66	Air cooling, but prepared for future conversion to forced-circulation oil lubrication	
P44	Oil manifold; connections with counter flange; flange flush with the axial shaft face	
	Bearing monitoring – sleeve bearings	
A02	Shaft vibration monitoring for sleeve bearings, Bently Nevada system	
A39	Prepared for shaft vibration monitoring for sleeve bearings (without monitoring system)	
A41	2 resistance thermometers Pt100 for 2-, 3- or 4-wire connection from terminals for sleeve bearing	
A43	2 double resistance thermometers Pt100 for 2-, 3- or 4-wire connection from terminals for sleeve bearing	
A70	2 dial-type thermometers without contacts	
A71	2 dial-type thermometers with contacts	

Overview (continued)

Order code	Option description	Remark
	Bearing monitoring – anti-friction bearings	
A40	2 resistance thermometers Pt100 for 2-, 3- or 4-wire connection from terminal box for anti-friction bearings	
A42	2 double resistance thermometers Pt100 for 2-, 3- or 4-wire connection from terminals for anti-friction bearings	
G50	Shock pulse measuring nipple (SPM) at DE and NDE	Standard
H05	Shock pulse measurement (SPM), fixed sensors and distributor box	
H07	Shock pulse measurement (SPM), complete alarm box	
	Mechanical versions	
K16	Second shaft extension up to 50 % rated torque	
L81	Vibration severity grade B according to IEC/ EN 60034-14	Not available for 2-pole motors with roller bearings.
Y55	Non-standard cylindrical shaft extension (an inquiry must be sent to the factory)	
Y85	Oil shrink fit for cylindrical, single-stage shaft extension instead of a key connection	
	Certified for pump drives	
E88	Construction supervision for motors for seawater desalination plants where Siemens AG commissions the acceptance authority	
E89	Construction supervision for motors for seawater desalination plants where a third party commissions the acceptance authority	
E90	Pump drive for seawater desalination plants certified according to Lloyds Register	
	Marine applications	Options and tests for marine and offshore applications: see Chapter 6.
	Others/additional options	
H08	Leakage water detection	
K52	Degree of protection IP56 non-heavy-sea	
L15	Supporting ring for coupling guard	
L17	Mounting a coupling provided (finish machined and balanced)	
L31	Motor mounting materials for mounting on a steel foundation: Bolts, shims and taper dowels	
L32	Motor mounting materials for mounting on a concrete foundation or concrete base: Threaded bolts, armature plates, sole plates, shims and taper dowels	
L33	Motor mounting materials to mount on a concrete foundation or concrete base: T-head bolts, foundation bolt sleeves, sole plates, shims and taper dowels	
L91	Higher number of starts, > 1000 ... 10000 starts per year, for Cu rotors	
L92	Higher number of starts, > 5000 ... 10000 starts per year, for Al rotors	
P45	External screws made of stainless steel	

Overview (continued)

Order code	Option description	Remark
	Anti-condensation heating	
L08	Anti-condensation heater, rated voltage 400 V	
L09	Anti-condensation heater, rated voltage 500 V	
M12	Anti-condensation heater for 110 to 120 V	
M13	Anti-condensation heater for 220 to 240 V	
Y83	Anti-condensation heater with other rated voltages, V = additional text required)	
	Ambient conditions	
D02	Operation at ambient temperatures up to –50 °C, transport up to –50 °C	
D03	Operation at ambient temperatures up to –40 °C, transport up to –40 °C	
D04	Operation at ambient temperatures up to –30 °C, transport up to –40 °C	
E81	Outdoor use with high salinity or offshore applications (corrosivity grade C5-M/ C5-I)	
E82	Outdoor use with moderate salinity (corrosivity grade C4)	
E83	Outdoor use with low salinity (corrosivity grade C3)	
M06	For use in sulfurous or hydrogenous atmosphere	
	Winding and motor protection	
A12	6 PTC thermistors without lightning arresters	
A65	6 embedded resistance thermometers Pt100 for 2-, 3- or 4-wire connection from terminal box without lightning arresters	Standard
A66	6 embedded resistance thermometers Pt100 for 2-, 3- or 4-wire connection from terminal box with lightning arresters	
	Tests with acceptance	
F01	All standard tests (routine test), with acceptance	
F15	Recording of no-load characteristic and determination of core and friction losses, with acceptance	
F17	Recording of short-circuit characteristic and determination of short-circuit losses, with acceptance	
F19	Recording of load characteristic, with acceptance	
F23	Dissipation factor test (tan delta) on 2 (test) coils, with acceptance	
F29	No-load noise measurement, without noise analysis, with acceptance	
F31	Cooling air flow and pressure drop measurement, with acceptance	
F35	Recording of current and torque characteristics during acceleration, with acceptance	
F37	Determination of moment of inertia by retardation method, with acceptance	
F39	Overspeed test, with acceptance	
F41	Recording of residual voltage curve, with acceptance	
F53	Locked-rotor torque and current measurement, with acceptance	
F55	Polarization index measurement, with acceptance	
F61	Impulse or AC voltage test on 2 (test) coils, with acceptance	In addition, specify order code F90
F63	Noise analysis, with acceptance	
F83	Type test for horizontal motors with temperature rise test, with acceptance	
F90	2 test coils	
F93	Type test for vertical motors with temperature rise test, with acceptance	

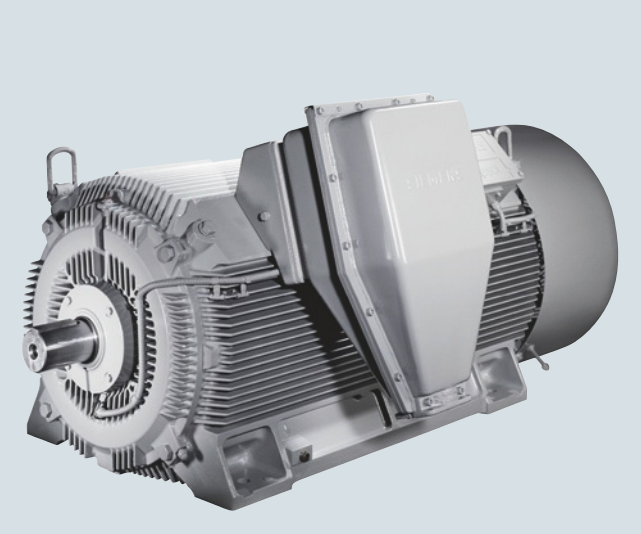
Overview (continued)

Order code	Option description	Remark
	Tests without acceptance	
F14	Recording of no-load characteristic and determination of core and friction losses, without acceptance	
F16	Recording of short-circuit characteristic and determination of short-circuit losses, without acceptance	
F18	Recording of load characteristic, without acceptance	
F22	Dissipation factor test (tan delta) on 2 (test) coils, without acceptance	In addition, specify order code F90
F28	No-load noise measurement, without noise analysis, without acceptance	
F30	Cooling air flow and pressure drop measurement, without acceptance	
F34	Recording of current and torque characteristics during acceleration, without acceptance	
F36	Determination of moment of inertia by retardation method, without acceptance	
F38	Overspeed test, without acceptance	
F42	"Conformance Test (Wet Test)" to NEMA Standard, without acceptance	
F52	Locked-rotor torque and current measurement, without acceptance	
F54	Polarization index measurement, without acceptance	
F60	Impulse or AC voltage test on 2 (test) coils, without acceptance	In addition, specify order code F90
F62	Noise analysis, without acceptance	
F82	Type test for horizontal motors with temperature rise test, without acceptance	
F90	2 test coils	
F92	Type test for vertical motors with temperature rise test, without acceptance	
	Extension of liability for defects	**Article number for reorder**
Q80	Extension of liability for defects, by 12 months to a total of 24 months (2 years) from delivery	**9LD1720-0AA24**
Q81	Extension of liability for defects, by 18 months to a total of 30 months (2.5 years) from delivery	**9LD1720-0AA30**
Q82	Extension of liability for defects, by 24 months to a total of 36 months (3 years) from delivery	**9LD1720-0AA36**
Q83	Extension of liability for defects, by 30 months to a total of 42 months (3.5 years) from delivery	**9LD1720-0AA42**
Q84	Extension of liability for defects, by 36 months to a total of 48 months (4 years) from delivery	**9LD1720-0AA48**
Q85	Extension of liability for defects, by 48 months to a total of 60 months (5 years) from delivery	**9LD1720-0AA60**

Notes

Options for marine and offshore applications

Overview



The SIMOTICS HV/TN series in a marine design have been designed for below-deck operation on ships. If the motors are intended for on deck operation or for offshore applications, then these must be explicitly ordered using an additional order code. The reason
for this is that in these cases special measures are required. The thermal utilization of the motors is adapted to the generally higher ambient temperatures onboard ships. If the application demands compliance with additional regulations, such as explosion protection, the appropriate motor series must be chosen.

The motors onboard ships are subdivided into three importance categories by the marine classification societies in collaboration with customers, depending on the field of application:

- **Essential Service for Propulsion** or also Primary Essential Service
- **Essential Service** or also Secondary Essential Service or Important Service
- **Non-Essential Service** or also Non-Important Service

As the assignment of a drive to one of the importance categories has a direct impact on the scope of the marine options, this must be known when ordering the motor.

The following services of the motor manufacturer are associated with the categories:

	Importance category		
	Essential Service for Propulsion	**Essential Service**	**Non-Essential Service**
Typical applications	Propeller drive, thruster (if used as main drive/declared as propulsion)	Thrusters, lateral thrust units, anchor winches, bilge and ballast pumps, fire-fighting pumps	Pumps for service water
Version	In accordance with the regulations of the classification society		In accordance with ambient conditions of the classification society
Acceptance test certificate	Acceptance test certificate 3.2 according to EN10204		Acceptance test certificate 3.1 according to EN 10204[1)]
Individual acceptance by classification society	Will be performed. Motor is assigned an individual certificate of the classification society.		Not necessary
Ordering several identical motors	Differentiation between the first motor and additional ones must be realized when ordering using an order code.		No distinction
Rating plate data	Information about ambient conditions of the classification society		
Stamp of the classification society	Stamp on the shaft[2)] and enclosure		No stamp

Classification authorities

Society	Abbreviation	Location
American Bureau Of Shipping	ABS	USA
Bureau Veritas	BV	France
China Classification Society	CCS	China
Det Norske Veritas Germanischer Lloyd	DNV GL	Norway
Korean Register	KR	Korea
Lloyds Register	LR	UK

Benefits

The marine motors offer the user a number of advantages and benefits:

- Cast iron and steel versions can be supplied for corrosive atmospheres especially for high humidity levels and salt laden air
- Increased corrosion protection using specially designed paint finishes is available
- Certified marine motors can be supplied for use in areas to be protected against explosion
- In depth know-how regarding customer requirements
- Worldwide service network with 24-hour service hotline for motors and converters

1) Certificate is not stipulated by the classification society but it is issued according to the internal quality standards within the scope of a routine test.

2) Provided that it is specified that the classification society supervises construction.

Application

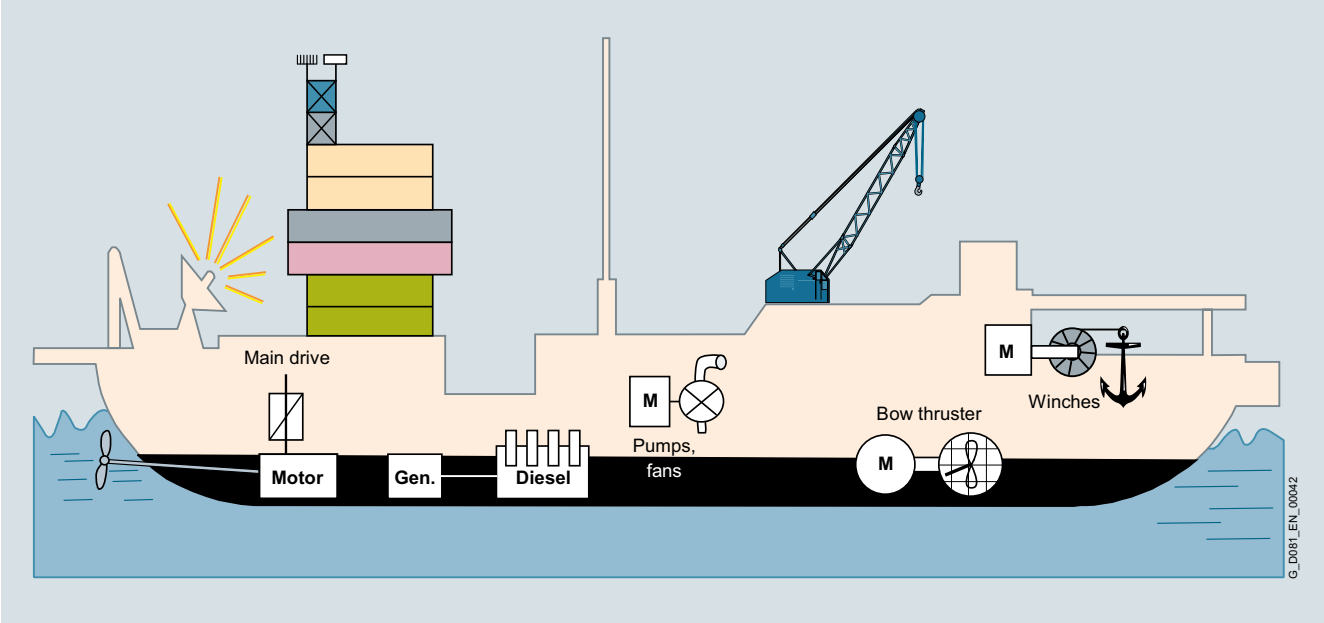
Our marine motors are designed for use onboard ships (installed below deck or on deck under a protective canopy):

- Applications onboard ships as main and auxiliary drives below deck, e.g.:
  - Fans (air conditioning, refrigeration plants)
  - Pumps (for fire-extinguishing water, fuels, oils)
  - Winches (anchor winches, warping winches, lifting gear)
  - Compressors
  - Bow thruster drives
  - Main propulsion drives
  - Ex motors for hazardous zones

If marine motors are to be used on deck in especially corrosive atmospheres or in offshore applications, then they must be additionally upgraded to meet these more stringent conditions. For this purpose, one of the options E81, E82 or E83 should be selected.

- Typical applications are:
  - Coastal areas, e.g. oil rigs, drilling ships
  - Dynamic positioning drives for platforms
  - Pumps

Offshore versions must be specifically ordered, as they require special measures.



Typical areas of application

Technical data

Enclosure version

Depending on the motor series, motors are available in a corrosion-resistant steel enclosure or in a rugged low-vibration cast-iron version.

Regulations of the individual classifications societies for motors:

Motor connection

Cable glands are not included in the scope of delivery.

All marine motors generally have an external grounding terminal.

Classification society	Coolant temperature CT		Admissible temperature rise limit according to the classification society			Rated power limit for individual acceptance test	Construction supervision mandatory
	Water cooling	Air cooling	Temperature class				
			130 (B)	155 (F), P_{rated} < 5000 kW	155 (F), P_{rated} ≥ 5000 kW		
	°C	°C	K	K	K	kW	
LR	32	45	70	95	90	≥ 100	≥ 100 kW
BV	32	45	75	100	95	≥ 100	≥ 500 kW
DNV GL	32	45	75	100	100	≥ 300	–
ABS	32	50	70	95	90	≥ 100	–
KR	32	45	75	100	95	≥ 7.5	–
CCS	32	45	75	100	95	All power ratings	All power ratings

Technical data (continued)

Regulations of the individual classification societies with order codes when ordering SIMOTICS HV/TN motors (low and high voltage versions) in a marine design

SIMOTICS HV/TN in a marine design

	Motor type H-compact
Air-cooled motors for line and converter operation (self-ventilated)	1LA4
Air-cooled motors with externally mounted fan for converter operation	1PQ4
Motors with the cooling types listed above with type of protection "nA" or "tD" (Zone 2 or Zone 22)	1MS4

SIMOTICS HV/TN motors for marine applications must be ordered with the classification-specific options. This ensures that both the mechanical design of the motor, and the tests are performed exactly in accordance with the instructions provided by the respective classification society.

There are four categories of classification-specific options:

1) *Design options* define the marine-compatible technical design in accordance with the definitions of the classification society
2) *Certification options* define the scope of the test certificates
3) *Test options* define the scope of the individual tests
4) *Additional options* for deviations and special conditions: specify the customer's request for participation in the tests at the factory, or define coolant temperatures that differ from the requirements of the classification society (additional plain text required)

The options of the importance categories listed above are combined with each other depending on the class of importance, classification society and other conditions.

If motors are to be designed according to the specifications of several classification societies, a special inquiry is necessary.

Motors for Non-Essential Services

The technical design is in accordance with the ambient operating conditions specified by the classification society. One of the marine design options X00, X01, X12[1)], X03, X05 or X06 must be specified depending on the classification society. Acceptance inspections are not required. There is no distinction between ordering an individual motor or several ones.

Non-Essential Service	Options according to the classification society					
	ABS	**BV**	**CCS**	**DNV GL**	**KR**	**LR**
Technical version	X00	X01	[1)]	X03	X05	X06

Motors for Essential Services

The technical design is in accordance with regulations of the classification society: Options X10 to X16. An acceptance test certificate 3.2 according to EN 10204 and a product certificate of the classification society is provided with each motor. Depending on the classification society, the test steps are defined by options X30 to X42 for the first motor (even numbers) and X31 to X43 for the additional motors (uneven numbers). Options J70 to J82 or J71 to J83 define the expenditure for certifying the motor.

Essential Service	Options according to the classification society					
	ABS	**BV**	**CCS**	**DNV GL**	**KR**	**LR**
Technical version	X10	X11	X12	X13	X15	X16
Certification						
• First motor	J70	J72	J74	J76	J80	J82
• Additional motors	J71	J73	J75	J77	J81	J83
Scope of the tests and presence of representatives of the classification society						
• First motor	X30	X32	X34	X36	X40	X42
• Additional motors	X31	X33	X35	X37	X41	X43
Tests in presence of representatives of the customer (in addition to the inspector of the classification society)	X99					
Conditions deviating from classification requirements must be fulfilled	E80					

Motors for Essential Services for Propulsion

The technical design is in accordance with regulations of the classification society: Options X20 to X26. An acceptance test certificate 3.2 according to EN 10204 and a product certificate of the classification society is provided with each motor. Depending on the classification society, the test steps are defined by options X60 to X72 for the first motor (even numbers) and X61 to X73 for the additional motors (uneven numbers). Options N40 to N52, or N41 to N53 define the expenditure for certifying the motor.

Essential Service for Propulsion	Options according to the classification society					
	ABS	**BV**	**CCS**	**DNV GL**	**KR**	**LR**
Technical version	X20	X21	X22	X23	X25	X26
Certification						
• First motor	N40	N42	N44	N46	N50	N52
• Additional motors	N41	N43	N45	N47	N51	N53
Scope of the tests and presence of representatives of the classification society						
• First motor	X60	X62	X64	X66	X70	X72
• Additional motors	X61	X63	X65	X67	X71	X73
Tests in presence of representatives of the customer (in addition to the inspector of the classification society)	X99					
Conditions deviating from classification requirements must be fulfilled	E80					

Option E80 is used if a different coolant temperature CT is required. The CT must also be specified in plain text, e.g. CT55.

[1)] Non-Essential Service must be handled by CCS just like an Essential Service.

Technical data (continued)

Scope of design options X00 to X26

All classification-specific technical measures are contained in the design options.

Temperature class and coolant temperature

Standard motors and explosion-protected motors up to shaft height 560 mm

In general, marine motors are designed for a coolant temperature CT 45 °C in temperature class 155 (F), used according to 155 (F). Motors according to the ABS classification that specify CT 50 °C are an exception. When motors are used according to temperature class 130 (B) derating is required.

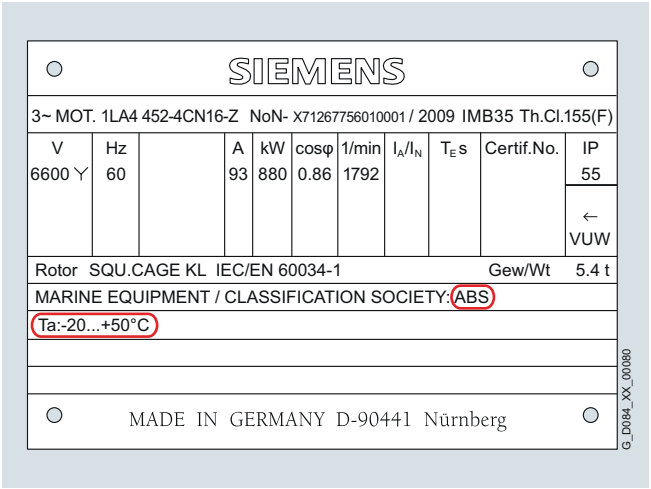
Coolant temperatures that exceed CT 45 °C require derating in accordance with the following table:

	Coolant temperature CT			
	45 °C	50 °C	55 °C	60 °C
Temperature class 155 (F) according to 155 (F)				
Derating factor for line operation	1.00	0.95	0.90	0.85

More detailed information is available on request.

Rating plate and acceptance test certificate

The metal rating plate includes the data of the relevant classification society (exception: Non-Essential Services) and the associated coolant temperature.



Degree of protection

The degrees of protection as specified in Catalog D 84.1 apply. For IP56 (non-heavy sea, order code K52) the formation of ice must be avoided.

Winding and motor protection

To monitor the winding – and if specified by the classification society – to monitor the bearings, the motors are equipped with PTC thermistors, temperature sensors and resistance thermometers. Marine motors are equipped with anti-condensation heating in order to prevent possible condensation forming on the windings.

Paint finish

The paint finish has an increased coating thickness (order code K26). This is suitable for indoor installations and outdoors under a roof or canopy.

A paint finish according to DIN EN ISO 12944-5 C5-M is used for unprotected installation on deck, especially aggressive atmospheres or offshore applications. This is part of order code E81, which upgrades a standard marine motor for these special ambient conditions.

Special paint colors and increased layer thicknesses are available on request.

Recommended special versions:

- Installation of 2 screw-in PT100 resistance thermometers in basic circuit for anti-friction bearings – Order code A40
- IP56 degree of protection (non-heavy-sea) for protection against harmful dust deposits, protection against water jets from any direction – Order code K52
- Degree of protection IP65 on request.
- External screws and bolts manufactured out of stainless steel – Order code P45
- Upgrading a marine motor for unprotected installation on deck, use in especially aggressive atmospheres or offshore applications – Order code E81

Additional information

Order information

The fees of the classification societies for individual acceptance inspections are included in the order code.

Selection and ordering data

Ordering examples:

Selection criteria	Requirement	Structure of the Article No.
1st ordering example: 5 motors for Non-Essential Service according to LR (Lloyds Register), UK		
Motor type	Rib-cooled H-compact high voltage motor, low voltage version, self-ventilated, cooling type IC411, degree of protection IP55	**1LA4■■■-■■■■■**
Shaft height	560 mm	**1LA4560-6■■■■**
No. of poles/synchronous speed	6-pole/1000 rpm	
Type rating	1750 kW	
Rotor cage material	Copper	**1LA4560-6C■■■**
Voltage and frequency	690 V, 50 Hz	**1LA4560-6CM0■**
Operating mode	Converter operation	
Type of construction	IM B3	**1LA4560-6CM00**
Special versions	Technical design in accordance with LR (Lloyds Register), UK	**1LA4560-6CM00-Z X06**
	Article No. for all 5 motors	**1LA4560-6CM00-Z X06**
2nd ordering example: 2 motors for Essential Service according to DNV GL (Det Norske Veritas Germanischer Lloyd), Norway		
Motor type	The same as for the 1st ordering example	**1LA4560-6CM00**
Special versions		
1st motor	Technical design in accordance with DNV GL (Det Norske Veritas Germanischer Lloyd), Norway	**1LA4560-6CM00-Z X13**
	Necessary certification for first motor ordered according to DNV GL (Det Norske Veritas Germanischer Lloyd), Norway	**1LA4560-6CM00-Z X13+J76**
	Necessary tests for first motor ordered according to DNV GL (Det Norske Veritas Germanischer Lloyd), Norway	**1LA4560-6CM00-Z X13+J76+X36**
	Tests in presence of representatives of the customer (in addition to the inspector of the classification society)	**1LA4560-6CM00-Z X13+J76+X36+X99**
	Article No. for 1st motor	**1LA4560-6CM00-Z X13+J76+X36+X99**
Additional motor (additional motors)	Technical design in accordance with DNV GL (Det Norske Veritas Germanischer Lloyd), Norway	**1LA4560-6CM00-Z X13**
	Necessary certification for additional motors ordered according to DNV GL (Det Norske Veritas Germanischer Lloyd), Norway	**1LA4560-6CM00-Z X13+J77**
	Necessary tests for additional motors ordered according to DNV GL (Det Norske Veritas Germanischer Lloyd), Norway	**1LA4560-6CM00-Z X13+J77+X37**
	Article No. for additional motor	**1LA4560-6CM00-Z X13+J77+X37**
3rd ordering example: 1 motor for Essential Service according to ABS (American Bureau of Shipping), USA, coolant temperature 60 °C:		
Motor type	The same as for the 1st ordering example	**1LA4560-6CM00**
Special versions	Technical design in accordance with ABS (American Bureau of Shipping), USA	**1LA4560-6CM00-Z X10**
	Necessary certification for first motor ordered according to ABS (American Bureau of Shipping), USA	**1LA4560-6CM00-Z X10+J70**
	Necessary tests for first motor ordered according to ABS (American Bureau of Shipping), USA	**1LA4560-6CM00-Z X10+J70+X30**
	Motor for marine application, higher ambient temperature and/or utilization to temperature class 155 (F) according to 130 (B) – Coolant temperature 60 °C	**1LA4560-6CM00-Z X10+J70+X30+E80** **Plain text: COOLANT TEMP CT60**
	Article No. for the motor	**1LA4560-6CM00-Z X10+J70+X30+E80** **Plain text: COOLANT TEMP CT60**

Options

Options for marine motors

Order code	Option description
	Non-Essential Service
	Technical version
X00	Version according to ABS for Non-Essential Service
X01	Version according to BV for Non-Essential Service
X12[1)]	Version according to CCS for Essential Service
X03	Version according to DNV GL for Non-Essential Service
X05	Version according to KR for Non-Essential Service
X06	Version according to LR for Non-Essential Service
	Essential Service
	Technical version
X10	Version according to ABS for Essential Service
X11	Version according to BV for Essential Service
X12	Version according to CCS for Essential Service
X13	Version according to DNV GL for Essential Service
X15	Version according to KR for Essential Service
X16	Version according to LR for Essential Service
	Certification
	for the first motor ordered
J70	Certification for the first motor ordered according to ABS for Essential Service
J72	Certification for the first motor ordered according to BV for Essential Service
J74	Certification for the first motor ordered according to CCS for Essential Service
J76	Certification for the first motor ordered according to DNV GL for Essential Service
J80	Certification for the first motor ordered according to KR for Essential Service
J82	Certification for the first motor ordered according to LR for Essential Service
	for the second and additional motors ordered
J71	Certification for the second and additional motors ordered according to ABS for Essential Service
J73	Certification for the second and additional motors ordered according to BV for Essential Service
J75	Certification for the second and additional motors ordered according to CCS for Essential Service
J77	Certification for the second and additional motors ordered according to DNV GL for Essential Service
J81	Certification for the second and additional motors ordered according to KR for Essential Service
J83	Certification for the second and additional motors ordered according to LR for Essential Service
	Tests
	for the first motor ordered
X30	Tests for the first motor ordered according to ABS for Essential Service
X32	Tests for the first motor ordered according to BV for Essential Service
X34	Tests for the first motor ordered according to CCS for Essential Service
X36	Tests for the first motor ordered according to DNV GL for Essential Service
X40	Tests for the first motor ordered according to KR for Essential Service
X42	Tests for the first motor ordered according to LR for Essential Service
	for the second and additional motors ordered
X31	Tests for the second and additional motors ordered according to ABS for Essential Service
X33	Tests for the second and additional motors ordered according to BV for Essential Service
X35	Tests for the second and additional motors ordered according to CCS for Essential Service
X37	Tests for the second and additional motors ordered according to DNV GL for Essential Service
X41	Tests for the second and additional motors ordered according to KR for Essential Service
X43	Tests for the second and additional motors ordered according to LR for Essential Service

[1)] CCS handles Non-Essential Service just the same as Essential Service

Options (continued)

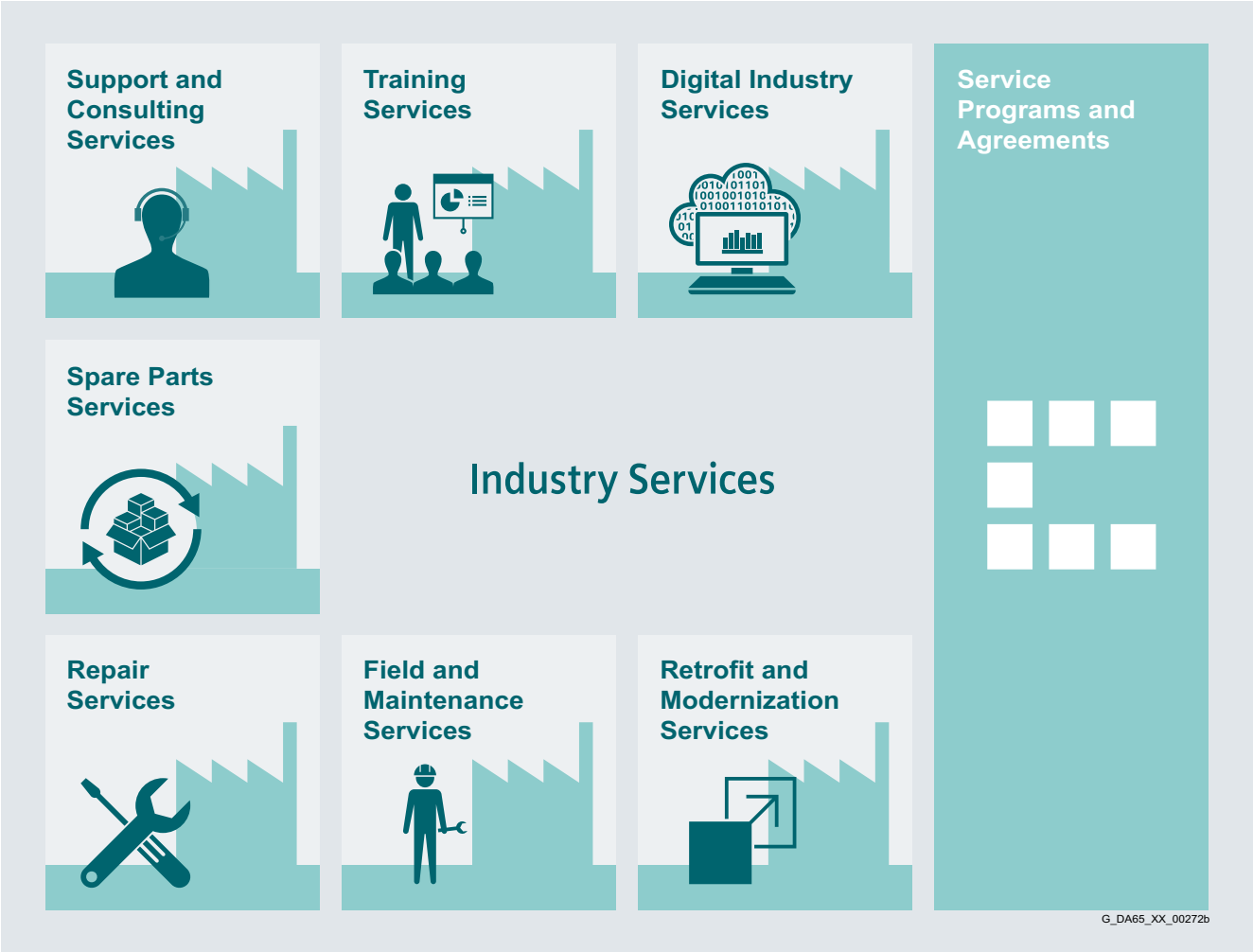
Order code	Option description
	Essential Service Propulsion
	Technical version
X20	Version according to ABS for Essential Service Propulsion
X21	Version according to BV for Essential Service Propulsion
X22	Version according to CCS for Essential Service Propulsion
X23	Version according to DNV GL for Essential Service Propulsion
X25	Version according to KR for Essential Service Propulsion
X26	Version according to LR for Essential Service Propulsion
	Certification
	for the first motor ordered for essential service propulsion
N40	Certification for the first motor ordered according to ABS for Essential Service Propulsion
N42	Certification for the first motor ordered according to BV for Essential Service Propulsion
N44	Certification for the first motor ordered according to CCS for Essential Service Propulsion
N46	Certification for the first motor ordered according to DNV GL for Essential Service Propulsion
N50	Certification for the first motor ordered according to KR for Essential Service Propulsion
N52	Certification for the first motor ordered according to LR for Essential Service Propulsion
	Certification
	for the second and additional motors ordered
N41	Certification for the second and additional motors ordered according to ABS for Essential Service Propulsion
N43	Certification for the second and additional motors ordered according to BV for Essential Service Propulsion
N45	Certification for the second and additional motors ordered according to CCS for Essential Service Propulsion
N47	Certification for the second and additional motors ordered according to DNV GL for Essential Service Propulsion
N51	Certification for the second and additional motors ordered according to KR for Essential Service Propulsion
N53	Certification for the second and additional motors ordered according to LR for Essential Service Propulsion
	Tests
	for the first motor ordered
X60	Tests for the first motor ordered according to ABS for Essential Service Propulsion
X62	Tests for the first motor ordered according to BV for Essential Service Propulsion
X64	Tests for the first motor ordered according to CCS for Essential Service Propulsion
X66	Tests for the first motor ordered according to DNV GL for Essential Service Propulsion
X70	Tests for the first motor ordered according to KR for Essential Service Propulsion
X72	Tests for the first motor ordered according to LR for Essential Service Propulsion
	for the second and additional motors ordered
X61	Tests for the second and additional motors ordered according to ABS for Essential Service Propulsion
X63	Tests for the second and additional motors ordered according to BV for Essential Service Propulsion
X65	Tests for the second and additional motors ordered according to CCS for Essential Service Propulsion
X67	Tests for the second and additional motors ordered according to DNV GL for Essential Service Propulsion
X71	Tests for the second and additional motors ordered according to KR for Essential Service Propulsion
X73	Tests for the second and additional motors ordered according to LR for Essential Service Propulsion

Supplementary options

Order code	Option description
X99[1)]	Tests in the presence of representatives of the customer (together with the inspector of the classification society)
E80[2)]	Conditions deviating from the classification requirements
E81	Upgrading a marine motor for unprotected installation on deck, use in especially aggressive atmospheres or offshore applications

[1)] Only for Essential Service and Essential Service Propulsion.
[2)] Additional plain text data explaining the deviation required.

Overview



Keep your business running and shaping your digital future – with Industry Services

Optimizing the productivity of your equipment and operations can be a challenge, especially with constantly changing market conditions. Working with our service experts makes it easier. We understand your industry's unique processes and provide the services needed so that you can better achieve your business goals.

You can count on us to maximize your uptime and minimize your downtime, increasing your operations' productivity and reliability. When your operations have to be changed quickly to meet a new demand or business opportunity, our services give you the flexibility to adapt. Of course, we take care that your production is protected against cyber threats. We assist in keeping your operations as energy and resource efficient as possible and reducing your total cost of ownership. As a trendsetter, we ensure that you can capitalize on the opportunities of digitalization and by applying data analytics to enhance decision making: You can be sure that your plant reaches its full potential and retains this over the longer lifespan.

You can rely on our highly dedicated team of engineers, technicians and specialists to deliver the services you need – safely, professionally and in compliance with all regulations. We are there for you, where you need us, when you need us.

www.siemens.com/lda-service

Overview

Digital Industry Services

Digital Industry Services make your industrial processes transparent to gain improvements in productivity, asset availability, and energy efficiency.

Production data is generated, filtered and translated with intelligent analytics to enhance decision-making.

This is done whilst taking data security into consideration and with continuous protection against cyber-attack threats.

Training Services

From the basics and advanced to specialist skills, SITRAIN courses provide expertise right from the manufacturer – and encompass the entire spectrum of Siemens products and systems for the industry.

SITRAIN courses for medium-voltage converters are offered at various locations.
www.siemens.com/sitrain

Support and Consulting Services

Industry Online Support site for comprehensive information, application examples, FAQs and support requests.

Technical and Engineering Support for advice and answers for all inquiries about functionality, handling, and fault clearance.

Spare Parts

Spare Parts Services are available worldwide for smooth and fast supply of spare parts – and thus optimal plant availability. Genuine spare parts are available for up to ten years. Logistic experts take care of procurement, transport, custom clearance, storage and order management. Reliable logistics processes ensure that components reach their destination as needed.

Since not all spare parts can be kept in stock at all times, Siemens offers a preventive measure for spare parts provisioning on the customer's premises with optimized **Spare Parts Packages** for individual products, custom-assembled drive components and entire integrated drive trains – including risk consulting.

Asset Optimization Services help you design a strategy for parts supply where your investment and carrying costs are reduced and the risk of obsolescence is avoided.

Repair Services

Repair Services are offered on-site and in regional repair centers for fast restoration of faulty devices' functionality.

Also available are extended repair services, which include additional diagnostic and repair measures, as well as emergency services.

Field and Maintenance Services

Siemens specialists are available globally to provide expert field and maintenance services, including commissioning, functional testing, preventive maintenance and fault clearance.

All services can be included in customized service agreements with defined reaction times or fixed maintenance intervals.

Retrofit and Modernization Services

Provide a cost-effective solution for the expansion of entire plants, optimization of systems or upgrading existing products to the latest technology and software, e.g. migration services for automation systems.

Service experts support projects from planning through commissioning and, if desired over the entire extended lifespan, e.g. Retrofit for Integrated Drive Systems for an extended lifetime of your machines and plants.

Service Programs and Agreements

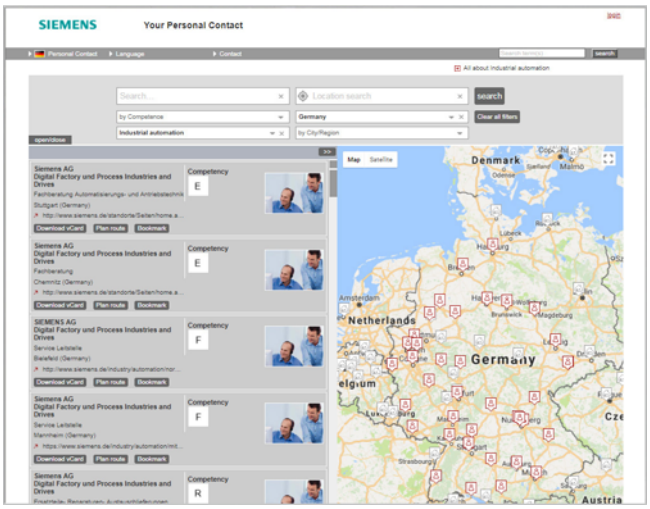
A technical Service Program or Agreement enables you to easily bundle a wide range of services into a single annual or multi-year agreement.

You pick the services you need to match your unique requirements or fill gaps in your organization's maintenance capabilities.

Programs and agreements can be customized as KPI-based and/or performance-based contracts.

Appendix

Partner at Siemens



At your service locally, around the globe for consulting, sales, training, service, support, spare parts on the entire portfolio of Digital Industries.

Your partner can be found in our Personal Contacts Database at:
www.siemens.com/automation-contact

You start by selecting

- the required competence,
- products and branches,
- a country and a city

or by a

- location search or free text search.

1. General Provisions

By using this catalog you can purchase products (hardware, software and services) described therein from Siemens Aktiengesellschaft subject to the following Terms and Conditions of Sale and Delivery (hereinafter referred to as "T&C"). Please note that the scope, the quality and the conditions for supplies and services, including software products, by any Siemens entity having a registered office outside Germany, shall be subject exclusively to the General Terms and Conditions of the respective Siemens entity. The following T&C apply exclusively for orders placed with Siemens Aktiengesellschaft, Germany.

1.1 For customers with a seat or registered office in Germany

For customers with a seat or registered office in Germany, the following terms and conditions apply subordinate to T&C:

- for products, which include specific terms and conditions in the description text, these specific terms and conditions shall apply and subordinate thereto,
- for installation work the "General Conditions for Erection Works – Germany"[1] ("Allgemeine Montagebedingungen – Deutschland" (currently only available in German)) and/or
- for stand-alone software products and software products forming a part of a product or project, the "General License Conditions for Software Products for Automation and Drives for Customers with a Seat or registered Office in Germany"[1] and/or
- for consulting services the "General Terms and Conditions for Consulting Services of the Division DF – Germany"[1] and/or
- for other supplies and/or services the "General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry"[1].
  In case such supplies and/or services should contain Open Source Software, the conditions of which shall prevail over the " General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry "[1], a notice will be contained in the scope of delivery in which the applicable conditions for Open Source Software are specified. This shall apply mutatis mutandis for notices referring to other third party software components.

1.2 For customers with a seat or registered office outside Germany

For customers with a seat or registered office outside Germany, the following terms and conditions apply subordinate to T&C:

- for products, which include specific terms and conditions in the description text, these specific terms and conditions shall apply and subordinate thereto,
- for services the "International Terms & Conditions for Services"[1] supplemented by "Software Licensing Conditions"[1] and/or
- for consulting services the "General Terms and Conditions for Consulting Services of the Division DF – Germany"[1] and/or
- for other supplies of hard- and software the "International Terms & Conditions for Products"[1] supplemented by "Software Licensing Conditions" [1]

1.3 For customers with master or framework agreement

To the extent our supplies and/or services offered are covered by an existing master or framework agreement, the terms and conditions of that agreement shall apply instead of T&C.

2. Prices

The prices are in € (Euro) ex point of delivery, exclusive of packaging.

The sales tax (value added tax) is not included in the prices. It shall be charged separately at the respective rate according to the applicable statutory legal regulations.

Prices are subject to change without prior notice. We will charge the prices valid at the time of delivery.

To compensate for variations in the price of raw materials (e.g. silver, copper, aluminum, lead, gold, dysprosium and neodym), surcharges are calculated on a daily basis using the so-called metal factor for products containing these raw materials. A surcharge for the respective raw material is calculated as a supplement to the price of a product if the basic official price of the raw material in question is exceeded.

The metal factor of a product indicates the basic official price (for those raw materials concerned) as of which the surcharges on the price of the product are applied, and with what method of calculation.

An exact explanation of the metal factor can be downloaded at:

www.siemens.com/automation/salesmaterial-as/catalog/en/terms_of_trade_en.pdf

To calculate the surcharge (except in the cases of dysprosium and neodym), the official price from the day prior to that on which the order was received or the release order was effected is used.

To calculate the surcharge applicable to dysprosium and neodym ("rare earths"), the corresponding three-month basic average price in the quarter prior to that in which the order was received or the release order was effected is used with a one-month buffer (details on the calculation can be found in the explanation of the metal factor).

3. Additional Terms and Conditions

The dimensions are in mm. In Germany, according to the German law on units in measuring technology, data in inches apply only to devices for export.

Illustrations are not binding.

Insofar as there are no remarks on the individual pages of this catalog – especially with regard to data, dimensions and weights given – these are subject to change without prior notice.

[1] The text of the Terms and Conditions of Siemens AG can be downloaded at
www.siemens.com/automation/salesmaterial-as/catalog/en/terms_of_trade_en.pdf

4. Export Regulations

We shall not be obligated to fulfill any agreement if such fulfillment is prevented by any impediments arising out of national or international foreign trade or customs requirements or any embargoes and/or other sanctions.

Export may be subject to license. We shall indicate in the delivery details whether licenses are required under German, European and US export lists.

Our products are controlled by the U.S. Government (when labeled with "ECCN" unequal "N") and authorized for export only to the country of ultimate destination for use by the ultimate consignee or end-user(s) herein identified. They may not be resold, transferred, or otherwise disposed of, to any other country or to any person other than the authorized ultimate consignee or end-user(s), either in their original form or after being incorporated into other items, without first obtaining approval from the U.S. Government or as otherwise authorized by U.S. law and regulations.

The export indications can be viewed in advance in the description of the respective goods on the Industry Mall, our online catalog system. Only the export labels "AL" and "ECCN" indicated on order confirmations, delivery notes and invoices are authoritative.

Products labeled with "AL" unequal "N" are subject to European / national export authorization. Products without label, with label "AL:N" / "ECCN:N", or label "AL:9X9999" / "ECCN: 9X9999" may require authorization from responsible authorities depending on the final end-use, or the destination.

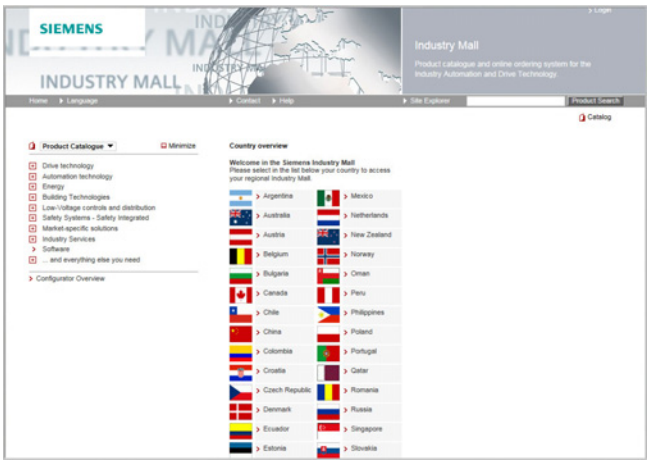
If you transfer goods (hardware and/or software and/or technology as well as corresponding documentation, regardless of the mode of provision) delivered by us or works and services (including all kinds of technical support) performed by us to a third party worldwide, you must comply with all applicable national and international (re-)export control regulations.

If required for the purpose of conducting export control checks, you (upon request by us) shall promptly provide us with all information pertaining to the particular end customer, final disposition and intended use of goods delivered by us respectively works and services provided by us, as well as to any export control restrictions existing in this relation.

The products listed in this catalog may be subject to European/German and/or US export regulations. Any export requiring approval is therefore subject to authorization by the relevant authorities.

Errors excepted and subject to change without prior notice.

Easy product selection and ordering: Industry Mall and Interactive Catalog CA 01



Industry Mall

The Industry Mall is a Siemens AG Internet ordering platform. It provides you with online access to a comprehensive product spectrum that is presented in an informative, well-organized way.

Powerful search functions help you select the required products, while configurators enable you to configure complex product and system components quickly and easily. CAx data are also available for you to use.

Data transfer allows the entire procedure, from selection through ordering to tracking and tracing, to be carried out online. Availability checks, individual customer discounting, and quotation preparation are also possible.

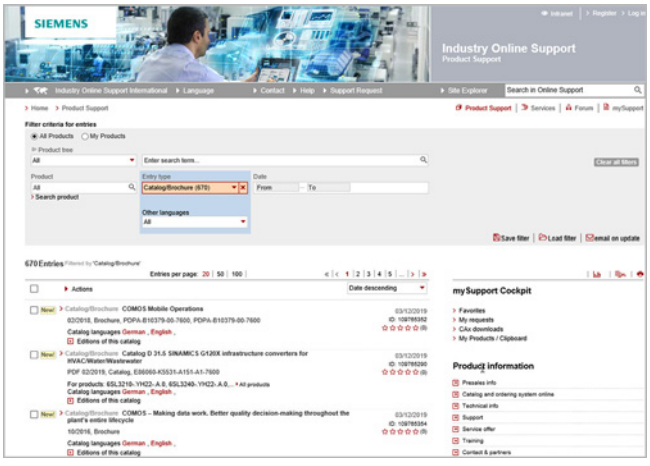
www.siemens.com/industrymall

Interactive Catalog CA 01 – Products for automation and drives

The Interactive Catalog CA 01 combined with the Siemens Industry Mall unites the benefits of offline and online media in one application – the performance of an offline catalog with the availability of a wide range of up-to-date information on the Internet.
Select products and assemble orders using the CA 01, determine the availability of the selected products, and track and trace them via the Industry Mall.

Information and download:
www.siemens.com/automation/ca01

Downloading catalogs



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You can download catalogs and brochures in PDF format from Siemens Industry Online Support without having to register.

The filter box makes it possible to perform targeted searches.

www.siemens.com/industry-catalogs

Ordering printed catalogs

Please contact your local Siemens branch if you are interested in ordering printed catalogs.
Addresses can be found at
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Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial security measures that may be implemented, please visit
https://www.siemens.com/industrialsecurity

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under
https://www.siemens.com/industrialsecurity