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Overview

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

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

Note on using this catalog

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

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Determine the motor type according to cooling method, degree of protection and frame design
(for further selection according to speed or number of poles, rated output, rated torque, rated speed and rated current, see the relevant "Preselection of the motor" tables in catalog parts 1 to 10)

Applications for surface-cooled motor types	Cooling method	Standard designation for degree of protection to DIN EN 60034 Part 5	Frame design	Motor type (Positions 1 to 3 of the Order No.) + type series (Position 4 of the Order No.) Rated output at 50 Hz																		
				Motor frame sizes (shaft heights)																		
				56	63	71	80	90	100	112	132	160	180	200	225	250	280	315	355	400	450	
New generation motors 1LE1/1PC1																						
Catalog Part 1																						
General Line motors with shorter delivery time	Self-ventilated	IP55	Aluminum	1LE1 1.5 ... 18.5 kW																		
Energy-saving motors with improved efficiency (Improved Efficiency EFF2)	Self-ventilated	IP55	Aluminum	1LE1 0.75 ... 18.5 kW																		
Energy-saving motors with high efficiency (High Efficiency EFF1)	Self-ventilated	IP55	Aluminum	1LE1 0.75 ... 18.5 kW																		
Motors with increased output and improved efficiency	Self-ventilated	IP55	Aluminum	1LE1 2.2 ... 22 kW																		
Motors with increased output and high efficiency	Self-ventilated	IP55	Aluminum	1LE1 2.2 ... 22 kW																		
Motors without external fan and fan cover with improved efficiency	Forced-air-cooled	IP55	Aluminum	1LE1 0.75 ... 18.5 kW																		
Motors without external fan and fan cover with high efficiency	Forced-air-cooled	IP55	Aluminum	1LE1 0.75 ... 18.5 kW																		
Motors without external fan and fan cover with improved efficiency	Self-cooled	IP55	Aluminum	1PC1 0.3 ... 7.4 kW																		
Motors without external fan and fan cover with high efficiency	Self-cooled	IP55	Aluminum	1PC1 0.37 ... 9 kW																		
Standard motors (up to frame size 315 L)																						
Catalog Part 2																						
Energy-saving motors with improved efficiency (Improved Efficiency EFF 2)	Self-ventilated	IP55	Aluminum	1LA7 0.06 ... 18.5 kW	1LE1/1PC1		1LA5 11 ... 45 kW															
		IP55	Cast iron			1LA6 0.75 ... 18.5 kW	1LG4 11 ... 200 kW															
Pole-changing motors with improved efficiency	Self-ventilated	IP55	Aluminum	1LA7 0.15 ... 17 kW		1LA5 18 ... 31 kW																
Energy-saving motors with high efficiency (High Efficiency EFF1)	Self-ventilated	IP55	Aluminum	1LA9 0.06 ... 37 kW																		
		IP55	Cast iron					1LG6 11 ... 200 kW														
Motors with increased output	Self-ventilated	IP55	Aluminum	1LA9 0.14 ... 53 kW																		
		IP55	Cast iron					1LG4 15 ... 110 kW														
Motors without external fans	Self-cooled	IP55	Aluminum	1LP7 0.045 ... 7 kW		1LE1/1PC1		1LP5 5.5 ... 16.5 kW														
		IP55	Cast iron					1LP4 3.7 ... 67 kW														
Non-standard motors (frame size 315 and above)																						
Catalog Part 3																						
Motors for mains-fed operation	Self-ventilated	IP55	Cast iron	1LA8 160 ... 1000 kW																		
Motors for converter-fed operation	Self-ventilated	IP55	Cast iron	1LA8 145 ... 1000 kW																		
Motors with mounted separately driven fan for converter-fed operation	Forced-air-cooled	IP55	Cast iron	1PQ8 145 ... 1000 kW																		
Motors with through-ventilation for mains-fed operation	Self-ventilated	IP23	Cast iron	1LL8 200 ... 1250 kW																		
Motors with through-ventilation for converter-fed operation	Self-ventilated	IP23	Cast iron	1LL8 200 ... 1250 kW																		

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

Applications for surface-cooled motor types	Cooling method	Standard designation for degree of protection to DIN EN 60034 Part 5	Frame design	Motor type (Positions 1 to 3 of the Order No.) + type series (Position 4 of the Order No.) Rated output at 50 Hz	Motor frame sizes (shaft heights)																
					56	63	71	80	90	100	112	132	160	180	200	225	250	280	315	355	400
Explosion-proof motors					Catalog Part 4																
Motors in Zone 1 with type of protection "e" (Zone 1 Exe II T3)	Self-ventilated	IP55	Aluminum	1MA7 0.12 ... 16 kW																	
			Cast iron																		
Motors in Zone 1 with type of protection "de" (Zone 1 Exde IIC T4)	Self-ventilated	IP55	Cast iron	1MJ6 0.25 ... 37 kW																	
Motors in Zone 2 with type of protection "n"	Self-ventilated	IP55	Aluminum	1LA7 0.09 ... 18.5 kW																	
			Aluminum	1LA9 0.06 ... 37 kW																	
			Cast iron																		
Motors in Zone 21 with explosion protection	Self-ventilated	IP65	Aluminum	1LA7 0.09 ... 18.5 kW																	
			Aluminum	1LA9 0.06 ... 37 kW																	
			Cast iron																		
Motors in Zone 22 with explosion protection	Self-ventilated	IP55	Aluminum	1LA7 0.09 ... 18.5 kW																	
			Aluminum	1LA9 0.06 ... 37 kW																	
			Cast iron																		
Motors operating with frequency converters					Catalog Part 5																
Surface-cooled motors with standard insulation for voltages ≤500 V																					
For standard motors, non-standard motors, explosion-proof motors and fan motors, see catalog part 5.																					
Motors with special insulation for voltages up to 690 V (standard motors)	Self-ventilated	IP55	Aluminum	1LA7 1.5 ... 18.5 kW																	
			Cast iron																		
Motors with special insulation for voltages up to 690 V (non-standard motors)	Self-ventilated	IP55	Cast iron																	1LA8 145 ... 980 kW	
Motors with mounted separately driven fan with special insulation for voltages up to 690 V	Forced-air cooled	IP55	Cast iron																	1PQ8 145 ... 980 kW	

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

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

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

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

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

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

Order No. code

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Overview

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

e. g.

1LA5223-4AA19-Z

M1F + A11 + G17

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

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

Ordering data:

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

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

Ordering example

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

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Special versions

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Overview

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

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

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

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

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

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Special versions

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Overview (continued)

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

IEC Squirrel-Cage Motors

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

Special versions

Overview (continued)

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