

Asynchronous motors

Main spindle motors for SINAMICS S120

1PH4 standard type motors SH 100 to SH 160

Selection and Ordering Data

Shaft height	Rated speed	Continuous speed, max.			Speed, max. ¹⁾			Rated power for duty type in accordance with IEC 60034-1			1PH4 asynchronous motor with solid shaft Water cooling
SH	n_{rated}	$n_{S1\ cont.}^{2)}$	$n_{S1\ cont.}^{3)}$	$n_{S1\ cont.}^{4)}$	$n_{max}^{2)}$	$n_{max}^{3)}$	$n_{max}^{4)}$	P_{rated}			Order No. Standard type
								S1	S6-60%	S6-40%	
	rpm	rpm	rpm	rpm	rpm	rpm	rpm	kW (HP)	kW (HP)	kW (HP)	
100	1500	5600	6500	10000	7500	9000	12000	7.5 (10.1)	8.75 (11.7)	10 (13.4)	1PH4103 - 4 F26
								11 (14.8)	12.75 (17.1)	14.75 (19.8)	1PH4105 - 4 F26
								14 (18.8)	16.25 (21.8)	18.75 (25.1)	1PH4107 - 4 F26
132	1500	5200	6000	9250	6700	8000	10000	15 (20.1)	18 (24.1)	21 (28.2)	1PH4133 - 4 F26
								22 (29.5)	26.5 (35.5)	31 (41.6)	1PH4135 - 4 F26
								27 (36.2)	32.5 (43.6)	38 (51.0)	1PH4137 - 4 F26
								30 (40.2)	36 (48.3)	42 (56.3)	1PH4138 - 4 F26
160	1500	4000	4500	7000	5300	6500	8000	37 (49.6)	45 (60.3)	52.5 (70.4)	1PH4163 - 4 F26
								46 (61.7)	55 (73.8)	65 (87.2)	1PH4167 - 4 F26
								52 (69.7)	62.5 (83.8)	73 (97.9)	1PH4168 - 4 F26
Encoder systems for motors without DRIVE-CLiQ interface:		Absolute encoder EnDat, 2048 S/R Incremental encoder sin/cos 1 V _{pp} 2048 S/R with C and D track Incremental encoder sin/cos 1 V _{pp} 2048 S/R without C and D track									EMN
Encoder systems for motors with DRIVE-CLiQ interface:		Absolute encoder 22 bit single-turn + 12 bit multi-turn Incremental encoder 22 bit with 11 bit commutation position Incremental encoder 22 bit									FDQ

Options

Designation	Order code	Designation	Order code
Bearing version (view drive end) (standard = duplex bearing) • Single bearing for coupling, for low to medium cantilever forces or planetary gear units (e.g. mounting of a ZF gearbox 2LG43...) ⁶⁾⁷⁾	K00	Shaft seal (DE) • Radial shaft sealing ring, oil-tight, IP65	K18¹¹⁾
Vibration magnitude in accordance with EN 60034-14 (IEC 60034-14) (standard = vibration magnitude grade R, duplex bearing) • Grade S with duplex bearing ⁸⁾ • Grade S with single bearing ⁸⁾ • Grade SR with single bearing ⁸⁾	K05⁹⁾ K02⁹⁾ K03⁹⁾	Brake⁷⁾ • With holding brake mounted on DE	G46
Shaft and flange accuracy in accordance with DIN 42955 (IEC 60072-1) (standard = tolerance N) • Tolerance R	K04¹⁰⁾	Terminal box location (view DE) (standard = top) • Right side, cable entry from below ⁷⁾¹⁴⁾ • Left side, cable entry from below ⁷⁾¹⁴⁾ Rotation of terminal box on its own axis • By 90°, cable entry from drive end ¹²⁾ • By 90°, cable entry from non-drive end ¹²⁾ • By 180°, cable entry from above ¹²⁾¹⁴⁾	K09 K10 K83 K84 K85
Shaft extension (DE) (standard = full-key balancing with keyway) • Plain shaft • Half-key balancing	K42 L69	Speed¹³⁾ • With increased maximum speed and half-key balancing	L37
		Other • Second rating plate, separately packed	K31
		Encoder system • Without encoder system	H30⁵⁾

When ordering a motor with options, **-Z** should be added to the order number and the order code should also be specified for each additional required version.

Order codes must not be repeated in plain text in the order.

Order No. **1PH4135-4NF26-Z**

Order code(s) **K05 + K09 + K31**

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SH 100 to SH 160

Selection and Ordering Data

Motor type (continued)	Rated torque	Moment of inertia	Weight, approx.	Rated current for duty type in accordance with IEC 60034-1			SINAMICS S120 Motor Module	
	M_{rated}	J	m	I_{rated}			Required rated output current	Booksize format
	Nm (lb _f -ft)	kgm ² (lb _f -in-s ²)	kg (lb)	S1	S6-60%	S6-40%	I_{rated} S1	Order No.
1PH4103 - ...	48 (35.4)	0.017 (0.15)	52 (115)	26	29	32	30	6SL312 - 1TE23-0AA3
1PH4105 - ...	70 (51.6)	0.024 (0.21)	67 (148)	38	42	47	45	6SL312 - 1TE24-5AA3
1PH4107 - ...	90 (66.4)	0.031 (0.27)	80 (176)	46	52	58	60	6SL312 - 1TE26-0AA3
1PH4133 - ...	95 (70.1)	0.046 (0.41)	90 (198)	55	65	74	60	6SL312 - 1TE26-0AA3
1PH4135 - ...	140 (103)	0.071 (0.63)	112 (247)	73	86	99	85	6SL312 - 1TE28-5AA3
1PH4137 - ...	170 (125)	0.085 (0.75)	130 (287)	85	100	114	85	6SL312 - 1TE28-5AA3
1PH4138 - ...	190 (140)	0.097 (0.86)	150 (331)	102	119	136	132	6SL312 - 1TE31-3AA3
1PH4163 - ...	235 (173)	0.17 (1.50)	175 (386)	107	125	142	132	6SL312 - 1TE31-3AA3
1PH4167 - ...	293 (216)	0.206 (1.82)	210 (463)	120	138	158	132	6SL312 - 1TE31-3AA3
1PH4168 - ...	331 (244)	0.22 (1.95)	240 (529)	148	173	197	200	6SL312 - 1TE32-0AA3

Cooling:

Internal air cooling
External air cooling

0
1

Motor Module:

Single Motor Module

1

Notes on water cooling

Motor type	Coolant flow rate (water)	Connecting thread on non-drive end (NDE)
1PH410	6 l/min	G 1/4
1PH413	8 l/min	G 3/8
1PH416	10 l/min	G 1/2

- 1) For continuous duty (with 30% n_{max} , 60% $^{2/3} n_{max}$, 10% standstill) for a duty cycle time of 10 min. For maintenance intervals for motors and components, see the 1PH Motors Configuration Manual.
- 2) Bearing version for duplex bearing.
- 3) Bearing version for single bearing.
- 4) Bearing version for increased speed using option L37.
- 5) These encoders are not suitable for operation on machine tools.
- 6) Vibration magnitude grades S, SR and mounting position IM V35 not possible for integrated gearbox. Use order code K00 + G97 for old ZF gearbox 2LG42... (for gear selection, see Gearboxes).
- 7) Options gear mounting, built-on brake, terminal box location on side are mutually exclusive.
- 8) Options K05, K02 and K03 are mutually exclusive.
- 9) Automatically includes version K04.
- 10) Increased shaft accuracy.
- 11) Only recommended if oil spray/mist occasionally gets onto the sealing ring.
- 12) Options K83, K84 and K85 are mutually exclusive.
- 13) Version for increased maximum speed includes vibration magnitude grade SR and half-key balancing. The following options are not possible:
 - ZF gearbox mounting prepared (on request only)
 - Shaft seal.
- 14) K09 or K10 cannot be combined with K85.