

Asynchronous motors

Main spindle motors for SINAMICS S120

1PH4 motors, standard type
SH 100 to SH 160 – Water cooling

Selection and ordering data

Shaft height	Rated speed	Continuous speed, max.			Speed, max. ¹⁾			Rated power for duty type			1PH4 asynchronous motor with solid shaft Standard type
		$n_{S1\ cont.}^{2)}$	$n_{S1\ cont.}^{3)}$	$n_{S1\ cont.}^{4)}$	$n_{max}^{2)}$	$n_{max}^{3)}$	$n_{max}^{4)}$	P_{rated}	S6-60 %	S6-40 %	
SH	n_{rated} rpm	rpm	rpm	rpm	rpm	rpm	rpm	S1 kW (HP)	S6-60 % kW (HP)	S6-40 % kW (HP)	Order No.
Water cooling – Line voltage 400 V 3 AC, operation on Active Line Module											
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 (encoder AM2048S/R)									E
		Incremental encoder sin/cos 1 V _{pp} 2048 S/R with C and D tracks (encoder IC2048S/R)									M
		Incremental encoder sin/cos 1 V _{pp} 2048 S/R (encoder IN2048S/R)									N
Encoder systems for motors with DRIVE-CLiQ interface:		22 bit absolute encoder single-turn + 12 bit multi-turn (encoder AM22DQ)									F
		22 bit incremental encoder + commutation position (encoder IC22DQ)									D
		22 bit incremental encoder (encoder IN22DQ)									Q

Options

Description	Order code	Description	Order code
Bearing version (view drive end) (standard = duplex bearing) • Single bearing for coupling, for low to medium cantilever forces or planetary gearboxes (e.g. mounting of a ZF gearbox 2LG43...) ⁵⁾⁶⁾	K00	Shaft seal DE⁹⁾ • Radial shaft sealing ring, oil-tight, IP65	K18
Vibration magnitude in accordance with EN 60034-14 (IEC 60034-14) (standard = vibration magnitude grade R, duplex bearing) • Grade S with duplex bearing ⁷⁾ • Grade S with single bearing ⁷⁾ • Grade SR with single bearing ⁷⁾	K05 K02 K03	Brake⁶⁾ • With holding brake mounted on DE	G46
Shaft and flange accuracy in accordance with DIN 42955 (IEC 60072-1) (standard = tolerance N) • Tolerance R ⁸⁾	K04	Terminal box location (view DE) (standard = top) • Right side, cable entry from below ⁶⁾ • Left side, cable entry from below ⁶⁾ Rotation of terminal box on its own axis • By 90°, cable entry from drive end ¹⁰⁾ • By 90°, cable entry from non-drive end ¹⁰⁾ • By 180°, cable entry from above ¹⁰⁾	K09¹²⁾ K10¹³⁾ K83 K84 K85¹²⁾
Shaft extension DE (standard = full-key balancing with keyway) • Plain shaft • Half-key balancing	K42 L69	Speed¹¹⁾ • With increased maximum speed and half-key balancing	L37
		Other • Second rating plate, separately packed	K31

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

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

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

Order codes **K05 + K09 + K31**

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Motor type (repeated)	Rated torque	Moment of inertia	Weight, approx.	Rated current for duty type			SINAMICS S120 Motor Module	
							Required rated output current for S1 duty	Booksize format
				M_{rated}	J	m		
Nm (lb _f -ft)	kgm ² (lb _f -in-s ²)	kg (lb)	S1 A	S6-60 % A	S6-40 % A	I_{rated}	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	0
External air cooling	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 (1.59 US gallons)	G 1/4"
1PH413	8 l/min (2.11 US gallons)	G 3/8"
1PH416	10 l/min (2.64 US gallons)	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 1PH4 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) 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).
- 6) Options gear mounting, built-on brake, terminal box location on side are mutually exclusive.
- 7) Automatically includes version K04. Options K05, K02 and K03 are mutually exclusive.
- 8) Increased shaft accuracy.
- 9) Only recommended if oil spray/mist occasionally gets onto the sealing ring.
- 10) Options K83, K84 and K85 are mutually exclusive.
- 11) Version for increased maximum speed includes vibration magnitude grade SR and half-key balancing. The following options are not possible:
 - Shaft seal.
- 12) K09 or K10 cannot be combined with K85.