

Synchronous motors

Feed motors for SINAMICS S120

1PH8 motors, standard type – SH 132 Forced ventilation/water cooling

Selection and ordering data

Rated speed	Continuous speed, max. ¹⁾	Operating speed, max. ²⁾	Rated power for S1 duty	Rated torque	Static torque	1PH8 synchronous motors Standard type
n_{rated} rpm	n_{max} rpm	$n_{max, Inv}$ rpm	P_{rated} kW (HP)	M_{rated} Nm (lb _r -ft)	M_0 Nm (lb _r -ft)	Order No.
Shaft height 132 – Forced ventilation – Line voltage 400 V 3 AC, operation on Active Line Module						
1500	4500	2500	15.7 (21.1)	100 (73.8)	105 (77.4)	1PH8131-2 F ■■■-■■■1
2500	4500	4000	25 (33.5)	96 (70.8)	105 (77.4)	1PH8131-2 L ■■■-■■■1
1500	4500	3000	19.9 (26.7)	127 (93.7)	131 (96.6)	1PH8133-2 F ■■■-■■■1
2500	4500	3950	31.7 (42.5)	121 (89.2)	131 (96.6)	1PH8133-2 L ■■■-■■■1
1500	4500	2450	23.7 (31.8)	151 (111)	158 (117)	1PH8135-2 F ■■■-■■■1
2000	4500	3500	31.4 (42.1)	150 (111)	158 (117)	1PH8135-2 G ■■■-■■■1
1500	4500	2650	30.6 (41.0)	195 (144)	203 (150)	1PH8137-2 F ■■■-■■■1
2500	4500	3850	48.4 (64.9)	185 (136)	203 (150)	1PH8137-2 L ■■■-■■■1
3000	4500	4500	57.5 (77.1)	183 (135)	203 (150)	1PH8137-2 M ■■■-■■■1
Shaft height 132 – Water cooling – Line voltage 400 V 3 AC, operation on Active Line Module						
1500	4500	3100	17.6 (23.6)	112 (82.6)	115 (84.8)	1PH8131-2 F 2 ■■■-■■■1
2500	4500	4500	28.5 (38.2)	109 (80.4)	115 (84.8)	1PH8131-2 L 2 ■■■-■■■1
1500	4500	2450	23.1 (31.0)	147 (108)	155 (114)	1PH8133-2 F 2 ■■■-■■■1
2000	4500	3400	30.6 (41.0)	146 (108)	155 (114)	1PH8133-2 G 2 ■■■-■■■1
1500	4500	2600	29.7 (39.8)	189 (139)	196 (145)	1PH8135-2 F 2 ■■■-■■■1
2000	4500	3800	39 (52.3)	186 (137)	196 (145)	1PH8135-2 G 2 ■■■-■■■1
1500	4500	2300	34.1 (45.7)	217 (160)	226 (167)	1PH8137-2 F 2 ■■■-■■■1
2000	4500	3500	44.4 (59.5)	212 (156)	226 (167)	1PH8137-2 G 2 ■■■-■■■1
1500	4500	3500	44.9 (60.2)	286 (211)	290 (214)	1PH8138-2 F 2 ■■■-■■■1
2000	4500	3850	59.7 (80.1)	285 (210)	290 (214)	1PH8138-2 G 2 ■■■-■■■1

For versions, see Order number supplement and options.

Synchronous motors

Feed motors for SINAMICS S120

1PH8 motors, standard type – SH 132
Forced ventilation/water cooling

Motor type (repeated)	Efficiency η %	Moment of inertia J kgm ² (lb _r -in-s ²)	Weight, approx. m kg (lb)	Rated current for S1 duty I_{rated} A	Static current I_0 A	SINAMICS S120 Motor Module	
						Rated output current ³⁾ for S1 duty I_{rated} A	For additional versions and components, see SINAMICS S120 drive system Order No.
1PH8131-2.F...	94.4	0.0446 (0.39)	85 (187)	29	30	30	6SL312-1TE23-0AA3
1PH8131-2.L...	94.8	0.0446 (0.39)	85 (187)	44	48	45	6SL312-1TE24-5AA3
1PH8133-2.F...	94.8	0.0600 (0.53)	103 (227)	44	45	45	6SL312-1TE24-5AA3
1PH8133-2.L...	95.1	0.0600 (0.53)	103 (227)	55	59	60	6SL312-1TE26-0AA3
1PH8135-2.F...	95.2	0.0750 (0.66)	120 (265)	43	44	45	6SL312-1TE24-5AA3
1PH8135-2.G...	95.3	0.0750 (0.66)	120 (265)	59	63	60	6SL312-1TE26-0AA3
1PH8137-2.F...	95.2	0.0885 (0.78)	136 (300)	60	62	60	6SL312-1TE26-0AA3
1PH8137-2.L...	95.4	0.0885 (0.78)	136 (300)	83	89	85	6SL312-1TE28-5AA3
1PH8137-2.M...	95.3	0.0885 (0.78)	136 (300)	104 ⁴⁾	115	132	6SL312-1TE31-3AA3
1PH8131-2.F2...	94.6	0.0446 (0.39)	102 (225)	40	41	45	6SL312-1TE24-5AA3
1PH8131-2.L2...	94.8	0.0446 (0.39)	102 (225)	57	60	60	6SL312-1TE26-0AA3
1PH8133-2.F2...	94.7	0.0600 (0.53)	120 (265)	42	43	45	6SL312-1TE24-5AA3
1PH8133-2.G2...	95.0	0.0600 (0.53)	120 (265)	57	61	60	6SL312-1TE26-0AA3
1PH8135-2.F2...	95.0	0.0750 (0.66)	138 (304)	57	59	60	6SL312-1TE26-0AA3
1PH8135-2.G2...	95.2	0.0750 (0.66)	138 (304)	81	85	85	6SL312-1TE28-5AA3
1PH8137-2.F2...	95.1	0.0885 (0.78)	153 (337)	58	60	60	6SL312-1TE26-0AA3
1PH8137-2.G2...	95.4	0.0885 (0.78)	153 (337)	85	90	85	6SL312-1TE28-5AA3
1PH8138-2.F2...	95.8	0.0885 (0.78)	156 (344)	118	120	132	6SL312-1TE31-3AA3
1PH8138-2.G2...	96.0	0.0885 (0.78)	156 (344)	131	133	132	6SL312-1TE31-3AA3

Format: Booksize	1
Cooling: Internal air cooling External air cooling	0 1
Motor Module: Single Motor Module	1

1) Maximum speed which must not be exceeded.

2) Maximum permissible operating speed based on the induced voltage in the motor and the voltage stability of the converter (without protective circuit).

3) Compliance with the rated pulse frequencies is essential; the rated motor data is valid for 4 kHz.

Synchronous motors

Feed motors for SINAMICS S120

1PH8 motors, standard type SH 180/SH 225 – water cooling

Selection and ordering data

Rated speed	Continuous speed, max. ¹⁾	Operating speed, max. ²⁾	Rated power for S1 duty	Rated torque	Static torque	1PH8 synchronous motors Standard type
n_{rated} rpm	n_{max} rpm	$n_{max, Inv}$ rpm	P_{rated} kW (HP)	M_{rated} Nm (lb _r -ft)	M_0 Nm (lb _r -ft)	Order No.
Shaft height 180 – Water cooling – Line voltage 400 V 3 AC, operation on Active Line Module						
700	3800	1450	42 (56.3)	573 (423)	590 (435)	1PH8184-2 C2 - - - - - 1
1000	1950	1950	61 (81.8)	583 (430)	600 (443)	1PH8184-2 D2 - - - - - 1
1500	2700	2700	90 (121)	573 (423)	600 (443)	1PH8184-2 F2 - - - - - 1
2500	3800	3800	127 (170)	485 (358)	530 (391)	1PH8184-2 L2 - - - - - 1
700	1450	1450	58 (77.8)	791 (583)	800 (590)	1PH8186-2 C2 - - - - - 1
1000	2050	2050	80 (107)	764 (564)	800 (590)	1PH8186-2 D2 - - - - - 1
1500	2950	2950	119 (160)	758 (559)	800 (590)	1PH8186-2 F2 - - - - - 1
2500	3800	3800	168 (225)	642 (474)	720 (531)	1PH8186-2 L2 - - - - - 1
Shaft height 225 – Water cooling – Line voltage 400 V 3 AC, operation on Active Line Module						
700	1450	1450	72 (96.6)	982 (724)	1007 (743)	1PH8224-2 C2 - - - - - 1
1000	2050	2050	101 (135)	964 (711)	1007 (743)	1PH8224-2 D2 - - - - - 1
1500	2900	2900	151 (203)	961 (709)	1007 (743)	1PH8224-2 F2 - - - - - 1
2500	3500	3500	182 (244)	695 (513)	855 (631)	1PH8224-2 L2 - - - - - 1
700	1550	1550	95 (127)	1296 (956)	1330 (981)	1PH8226-2 C2 - - - - - 1
1000	1950	1950	135 (181)	1289 (951)	1330 (981)	1PH8226-2 D2 - - - - - 1
1500	2700	2700	201 (270)	1280 (944)	1330 (981)	1PH8226-2 F2 - - - - - 1
2500	3500	3500	228 (306)	871 (642)	1170 (863)	1PH8226-2 L2 - - - - - 1
700	1450	1450	121 (162)	1651 (1218)	1680 (1239)	1PH8228-2 C2 - - - - - 1
1000	1950	1950	169 (227)	1614 (1190)	1680 (1239)	1PH8228-2 D2 - - - - - 1

For versions, see Order number supplement and options.

Synchronous motors

Feed motors for SINAMICS S120

1PH8 motors, standard type
SH 180/SH 225 – water cooling

Motor type (repeated)	Efficiency η %	Moment of inertia J kgm ² (lb _r -in-s ²)	Weight, approx. m kg (lb)	Rated current for S1 duty I_{rated} A	Static current I_0 A	SINAMICS S120 Motor Module	
						Rated output current ³⁾ for S1 duty I_{rated} A	For additional versions and components, see SINAMICS S120 drive system Order No.
1PH8184-2.C2...	91.9	0.45 (3.98)	330 (728)	100	103	132	6SL312-1TE31-3AA3
1PH8184-2.D2...	93.7	0.45 (3.98)	330 (728)	140	143	200	6SL312-1TE32-0AA3
1PH8184-2.F2...	95.1	0.45 (3.98)	330 (728)	190	196	200	6SL312-1TE32-0AA3
1PH8184-2.L2...	95.7	0.45 (3.98)	330 (728)	260	278	260	6SL3320-1TE32-6AA0
1PH8186-2.C2...	92.4	0.60 (5.31)	400 (882)	142	143	200	6SL312-1TE32-0AA3
1PH8186-2.D2...	94.3	0.60 (5.31)	400 (882)	190	196	200	6SL312-1TE32-0AA3
1PH8186-2.F2...	95.2	0.60 (5.31)	400 (882)	275	285	310	6SL3320-1TE33-1AA0
1PH8186-2.L2...	95.7	0.60 (5.31)	400 (882)	370	405	380	6SL3320-1TE33-8AA0
1PH8224-2.C2...	94.7	1.28 (11.3)	580 (1279)	180	183	200	6SL312-1TE32-0AA3
1PH8224-2.D2...	95.6	1.28 (11.3)	580 (1279)	255	262	260	6SL3320-1TE32-6AA0
1PH8224-2.F2...	96.2	1.28 (11.3)	580 (1279)	355	367	380	6SL3320-1TE33-8AA0
1PH8224-2.L2...	96.1	1.28 (11.3)	580 (1279)	365	460	380	6SL3320-1TE33-8AA0
1PH8226-2.C2...	95.2	1.66 (14.7)	700 (1544)	255	260	260	6SL3320-1TE32-6AA0
1PH8226-2.D2...	96.0	1.66 (14.7)	700 (1544)	325	330	380	6SL3320-1TE33-8AA0
1PH8226-2.F2...	96.5	1.66 (14.7)	700 (1544)	445	454	490	6SL3320-1TE35-0AA0
1PH8226-2.L2...	96.2	1.66 (14.7)	700 (1544)	400	532	380	6SL3320-1TE33-8AA0
1PH8228-2.C2...	95.5	2.02 (17.9)	810 (1786)	305	306	310	6SL3320-1TE33-1AA0
1PH8228-2.D2...	96.2	2.02 (17.9)	810 (1786)	395	408	490	6SL3320-1TE35-0AA0

Format:	
Booksize	1
Chassis	3
Cooling:	
Internal air cooling	0
External air cooling	1
Motor Module:	
Single Motor Module	1

¹⁾ Maximum speed which must not be exceeded.

²⁾ Maximum permissible operating speed based on the induced voltage in the motor and the voltage stability of the converter (without protective circuit).

³⁾ Compliance with the rated pulse frequencies is essential; the rated motor data is valid for 4 kHz (booksize format) or 2 kHz (chassis format).

Synchronous motors

Feed motors for SINAMICS S120

1PH8 motors, standard type Forced ventilation/water cooling

Order number supplement for shaft height 132

Data position of the Order No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
Shaft height 132	1	P	H	8	1	3	.	-	2	■	■	■	-	■	■	■	1	-	Z	
Overall length																				
Synchronous version without brake									2											
Encoder systems for motors <u>without</u> DRIVE-CLiQ interface																				
Incremental encoder sin/cos 1 V _{pp} 2048 S/R with C and D tracks (encoder IC2048S/R)										M										
Absolute encoder 2048 S/R single-turn, 4096 revolutions multi-turn, with EnDat interface (encoder AM2048S/R)										E										
Encoder systems for motors <u>with</u> DRIVE-CLiQ interface																				
22 bit incremental encoder (resolution 4194304, internal 2048 S/R) + commutation position 11 bit (encoder IC22DQ)										D										
22 bit absolute encoder single-turn (resolution 4194304, internal 2048 S/R) with 12 bit multi-turn (traversing range 4096 revolutions) (encoder AM22DQ)										F										
Rated speed (winding version)																				
Cooling																				
Forced ventilation DE → NDE										0										
Forced ventilation NDE → DE										1										
Water cooling										2										
Type of construction																				
IM B3 (IM V5, IM V6)										0										
IM B5 (IM V1, IM V3)										2										
IM B35 (IM V15, IM V35)										3										
Shaft extension DE								Balancing												
Plain shaft								-									0			
Fitted key								Full-key									1			
Fitted key								Half-key									2			
Bearing version								Vibration magnitude acc. to Siemens¹⁾/EN 60034-14				Shaft and flange accuracy								
Standard								R/A				R				B				
Standard								S/A				R				C				
Advanced Lifetime								S/A				R				Q				
Power connection (view of DE)								Cable entry				Signal connection								
Terminal box top								Right				DE				A				
Terminal box top								Left				DE				B				
Terminal box top								NDE				Left				C				
Power connector top ²⁾								Right				DE				E				
Power connector top ²⁾								Left				DE				F				
Power connector top ²⁾								NDE				Left				G				
Power connector top ²⁾								DE				Left				H				
Version status															1					
Special version (order codes are required for options)																				
Z																				

7

¹⁾ For a definition of vibration magnitude according to Siemens, please see 1PH8 Motors Configuration Manual.

²⁾ Power connectors only possible up to a maximum static current of $I_0 = 85$ A.

Synchronous motors

Feed motors for SINAMICS S120

1PH8 motors, standard type
Water cooling

Order number supplement for shaft heights 180 and 225

Data position of the Order No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16					
Shaft height 180	1	P	H	8	1	8	.	-	2	■	.	2	■	-	■	■	■	1	-	Z	
Shaft height 225	1	P	H	8	2	2	.	-	2	■	.	2	■	-	■	■	■	1	-	Z	
Overall length																					
Synchronous version without brake									2												
Encoder systems for motors without DRIVE-CLiQ interface																					
Incremental encoder sin/cos 1 V _{pp} 2048 S/R with C and D tracks (encoder IC2048S/R)									M												
Absolute encoder 2048 S/R single-turn, 4096 revolutions multi-turn, with EnDat interface (encoder AM2048S/R)									E												
Encoder systems for motors with DRIVE-CLiQ interface																					
22 bit incremental encoder (resolution 4194304, internal 2048 S/R) + commutation position 11 bit (encoder IC22DQ)									D												
22 bit absolute encoder single-turn (resolution 4194304, internal 2048 S/R) with 12 bit multi-turn (traversing range 4096 revolutions) (encoder AM22DQ)									F												
Rated speed (winding version)																					
Cooling																					
Water cooling												2									
Type of construction																					
IM B3 (IM B6, IM B7, IM B8, IM V6)										0											
IM V5										1											
IM B5 (IM V3) ¹⁾										2											
IM B35 (IM V35)										3											
IM V15 (Not possible for belt output)										5											
Shaft extension DE										Balancing											
Plain shaft										-											
Fitted key										Full-key											
Fitted key										Half-key											
										0											
										1											
										2											
Bearing version										Vibration magnitude acc. to Siemens²⁾/EN 60034-14					Shaft and flange accuracy						
Standard										R/A					R						
Standard										S/A					R						
Increased radial forces										R/A					R						
															B						
															C						
															F						
Power connection (view of DE)										Cable entry					Signal connection						
Terminal box top										Right					DE						
Terminal box top										Left					DE						
Terminal box top										NDE					Right						
Terminal box top										DE					Right						
															A						
															B						
															C						
															D						
Version status																1					
Special version (order codes are required for options)																					
																Z					

¹⁾ With 1PH818, continuous speed $n_{max} = 3000$ rpm.
With 1PH822, continuous speed $n_{max} = 2500$ rpm.

²⁾ For a definition of vibration magnitude according to Siemens, please see 1PH8 Motors Configuration Manual.

Synchronous motors

Feed motors for SINAMICS S120

1PH8 motors, standard type Forced ventilation/water cooling

Options

Order code	Description of option 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.	Used with motors	
		1PH813	1PH818 1PH822
A12	Additional PTC thermistor chain for alarm and tripping (Only possible for versions with terminal box.)	✓	✓
K08	Encoder connector mounted opposite	–	✓
K09	Terminal box or power connector NDE <u>right</u> (For terminal box type, see Selection guides or CAD CREATOR)	✓ ¹⁾	–
	Terminal box NDE <u>right</u> , cable entry DE/signal connection <u>top</u> (Only possible if 15 th data position: A)	–	✓
K10	Terminal box or power connector NDE <u>left</u> (For terminal box type, see Selection guides or CAD CREATOR)	✓ ¹⁾	–
	Terminal box NDE <u>left</u> , cable entry DE/signal connection <u>top</u> (Only possible if 15 th data position: A)	–	✓
K18	Radial shaft sealing ring DE ²⁾ (Not possible if 14 th data position: F, L or M)	✓	✓
K40	Regreasing system, DE and NDE	–	✓
K83	Terminal box ³⁾ rotated through + 90°	–	✓
K84	Terminal box ³⁾ rotated through – 90°	–	✓
K85	Terminal box ³⁾ rotated through + 180°	–	✓
K90	Version with flange size A400 (Only possible if 12 th data position: 2, 3 or 5)	–	✓ With 1PH818 only
L00	Replace terminal box (standard) with the next largest terminal box (Note dimension implications in CAD CREATOR.)	–	✓
P00	Undrilled cable entry plate	–	✓
P01	Cable entry plate 3 × M63 × 1.5 (Only with terminal box type 1XB7700-P02)	–	✓
L74	Fan in IP66 degree of protection	✓	–
	Paint finish (Anthracite RAL 7016)	Standard	Standard
X01	Normal paint finish: Jet black RAL 9005	✓	✓
X02	Normal paint finish: Cream white RAL 9001	✓	✓
X03	Normal paint finish: Reseda green RAL 6011	✓	✓
X04	Normal paint finish: Pebble gray RAL 7032	✓	✓
X05	Normal paint finish: Sky blue RAL 5015	✓	✓
X06	Normal paint finish: Light ivory RAL 1015	✓	✓
X08	Normal paint finish: White aluminum RAL 9006	✓	✓
K24	Primer	✓ Pale green	✓ Red brown
K23	Special paint finish worldwide: Primer and paint finish in anthracite RAL 7016	✓	✓
K23+X..	Special paint finish worldwide: Primer and paint finish can be selected from X01 to X08	✓	✓

¹⁾ With options K09 or K10, another terminal box type is used for side mounting. gk843 is used instead of gk833.
Only possible for types of construction IM B3 or IM B35.

²⁾ Only appropriate if oil spray or oil vapor is occasionally deposited on the sealing ring.

³⁾ Only possible in conjunction with option K09 or K10.