

Asynchronous motors

Main spindle motors for SINAMICS S120

1PH7 core 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				1PH7 asynchronous motor with solid shaft Forced ventilation Order No. Core type		
SH	n_{rated}	$n_{S1\ cont.}^{2)}$	$n_{S1\ cont.}^{3)}$	n_{max}	$n_{max}^{4)}$	P_{rated}						
	rpm	rpm	rpm	rpm	rpm	S1 kW (HP)	S6-60% kW (HP)	S6-40% kW (HP)	S2-30 min kW (HP)			
100	2000	5500	–	9000	–	7 (9.39)	8.5 (11.4)	10 (13.4)	9.25(12.4)			
	1500	5500	–	9000	–	9 (12.1)	11 (14.8)	13 (17.4)	12 (16.1)			
132	1000	4500	–	8000	–	12 (16.1)	15 (20.1)	18.5 (24.8)	16 (21.5)			
	2000					20 (26.8)	25 (33.5)	30 (40.2)	27.5 (36.9)			
	1000	4500	–	8000	–	17 (22.8)	20.5 (27.5)	25 (33.5)	22.5 (30.2)			
	2000					28 (37.6)	35 (46.9)	43 (57.7)	39 (52.3)			
160	1000	3700	–	6500	–	22 (29.5)	27 (36.2)	33 (44.3)	30 (40.2)			
	1500					30 (40.2)	37 (49.6)	45 (60.4)	41 (55.0)			
	1500	3700	–	6500	–	37 (49.6)	46 (61.7)	56 (75.1)	51 (68.4)			
Fans:		External fan unit, heavy-gauge threaded cable entry in terminal box								2		
		External fan unit, metric cable entry in terminal box								7		
Encoder systems for motors without DRIVE-CLiQ interface:		Incremental encoder sin/cos 1 V _{pp} without C and D track								N		
Encoder systems for motors with DRIVE-CLiQ interface:		Incremental encoder 22 bit								Q		
Type: ⁵⁾		IM B5 (IM V1, IM V3)								2		
		IM B35 (IM V15, IM V35) ⁶⁾								3		
Shaft extension (DE): ⁵⁾		Balancing:		Direction of air flow (fan):		Blow-out direction:		A J				
Fitted key		Half-key		DE → NDE		Axial						
Plain shaft		–		DE → NDE		Axial						

To select the type and the degree of protection, see Selection guides.

Asynchronous motors

Main spindle motors for SINAMICS S120

1PH7 core type motors
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	
								Rated output current	Booksize format
								I_{rated}	Order No.
	M_{rated}	J	m	I_{rated}					
	Nm (lb _f -ft)	kgm ² (lb _f -in-s ²)	kg (lb)	S1 A	S6-60% A	S6-40% A	S2- 30 min A	S1 A	
1PH7103-2NG02-...	33.4 (24.6)	0.017 (0.15)	40 (88.2)	17.5	20.5	23.5	21.5	18	6SL312 - TE21-8AA3
1PH7107-2NF02-...	57.3 (43.3)	0.029 (0.26)	63 (138.9)	23.5	27.5	31	29	30	6SL312 - 1TE23-0AA3
1PH7133-2ND02-...	114.6 (84.5)	0.076 (0.67)	90 (198.5)	30	36	43	37.5	30	6SL312 - 1TE23-0AA3
1PH7133-2NG02-...	95.5 (70.4)	0.076 (0.67)	90 (198.5)	45	54	63	59	45	6SL312 - 1TE24-5AA3
1PH7137-2ND02-...	162.3 (119.7)	0.109 (0.96)	130 (287)	43	50	60	54	45	6SL312 - 1TE24-5AA3
1PH7137-2NG02-...	133.7 (98.6)	0.109 (0.96)	130 (287)	60	73	87	80	60	6SL312 - 1TE26-0AA3
1PH7163-2ND03-...	210.1 (155)	0.19 (1.68)	180 (397)	55	65	77	71	60	6SL312 - 1TE26-0AA3
1PH7163-2NF03-...	191.0 (141)	0.19 (1.68)	180 (397)	72	86	102	94	85	6SL312 - 1TE28-5AA3
1PH7167-2NF03-...	235.5 (174)	0.23 (2.04)	228 (503)	82	97	115	104	85	6SL312 - 1TE28-5AA3

Cooling:

Internal air cooling
External air cooling

0
1

Motor Module:

Single Motor Module
Double Motor Module

1
2



1PH7 motor (SH 100 to SH 160)

- 1) For continuous duty (with 30% n_{max} , 60% $\frac{2}{3} n_{max}$, 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 coupling/belt output.
- 3) Bearing version for increased maximum speed.
- 4) Version for increased maximum speed only possible with vibration magnitude grade SR. The following options are not possible:
 - Shaft seal.
- 5) The following motor versions are required for ZF gearbox mounting prepared (see Gearboxes for gear selection):
 - Shaft with fitted key and full-key balancing
- 6) Motors of shaft height 160 and higher require foot support.

Asynchronous motors

Main spindle motors for SINAMICS S120

1PH7 standard type motors SH 100

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				1PH7 asynchronous motor with solid shaft Forced ventilation					
SH	n_{rated}	$n_{\text{S1 cont.}}^{2)}$	$n_{\text{S1 cont.}}^{3)}$	n_{max}	$n_{\text{max}}^{4)}$	P_{rated}				Order No. Standard type					
	rpm	rpm	rpm	rpm	rpm	S1 kW (HP)	S6-60% kW (HP)	S6-40% kW (HP)	S2-30 min kW (HP)						
100	1500	5500	10000	9000	12000	3.7 (4.96)	4.5 (6.03)	5.25 (7.04)	4.9 (6.57)	1PH7101 - ■ ■ F ■ ■ - 0 ■ ■ ■					
	1000	5500	10000	9000	12000	3.7 (4.96)	4.5 (6.03)	5.25 (7.04)	4.7 (6.30)	1PH7103 - ■ ■ D ■ ■ - 0 ■ ■ ■					
	1500					5.5 (7.38)	6.7 (8.98)	7.7 (10.3)	7 (9.39)	1PH7103 - ■ ■ F ■ ■ - 0 ■ ■ ■					
	2000					7 (9.39)	8.5 (11.4)	10 (13.4)	9.25 (12.4)	1PH7103 - ■ ■ G ■ ■ - 0 ■ ■ ■					
	1500	5500	10000	9000	12000	7 (9.39)	8.5 (11.4)	10 (13.4)	9.25 (12.4)	1PH7105 - ■ ■ F ■ ■ - 0 ■ ■ ■					
	1000	5500	10000	9000	12000	6.25 (8.38)	7.5 (10.1)	8.8 (11.8)	7.75 (10.4)	1PH7107 - ■ ■ D ■ ■ - 0 ■ ■ ■					
	1500					9 (12.1)	11 (14.8)	13 (17.4)	12 (16.1)	1PH7107 - ■ ■ F ■ ■ - 0 ■ ■ ■					
	2000					10.5 (14.1)	12.5 (16.8)	14.5 (19.4)	13.5 (18.1)	1PH7107 - ■ ■ G ■ ■ - 0 ■ ■ ■					
Fans:		External fan unit, heavy-gauge threaded cable entry in terminal box External fan unit, metric cable entry in terminal box								2 7					
Encoder systems for motors without DRIVE-CLiQ interface:		Absolute encoder EnDat 2048 S/R Incremental encoder sin/cos 1 V _{pp} with C and D track Incremental encoder sin/cos 1 V _{pp} without C and D track									E M N				
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									F D Q				
Terminal box/ Cable entry:		Top/right Top/NDE Top/left										0 2 3			
Type: ⁵⁾		IM B3 (IM V5, IM V6) IM B5 (IM V1, IM V3) IM B35 (IM V15, IM V35) ⁷⁾										0 2 3			
Bearing version for: Coupling/belt output Coupling/belt output Coupling/belt output Increased speed (coupling/belt output) ⁶⁾				Vibration magnitude: Grade R Grade S Grade SR Grade SR		Shaft and flange accuracy: Tolerance R Tolerance R Tolerance R Tolerance R							B C D L		
Shaft extension (DE): ⁵⁾ Fitted key Fitted key Fitted key Fitted key Plain shaft Plain shaft				Balancing: Half-key Half-key Full-key Full-key – –		Direction of air flow (fan): DE → NDE NDE → DE DE → NDE NDE → DE DE → NDE NDE → DE				Blow-out direction: Axial Axial Axial Axial Axial Axial				A B C D J K	
Degree of protection: IP55, fan IP54 IP55, fan IP54 IP55, fan IP54 IP55, fan IP54 IP55, fan IP54 IP55, fan IP54				Seal: – DE flange with shaft sealing ring ⁶⁾ – DE flange with shaft sealing ring ⁶⁾ – DE flange with shaft sealing ring ⁶⁾				Paint finish: Unpainted Unpainted Anthracite Anthracite Anthracite, two coats Anthracite, two coats							0 2 3 5 6 8

To select the type and the degree of protection, see Selection guides.

Asynchronous motors

Main spindle motors for SINAMICS S120

1PH7 standard type motors
SH 100

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}				Rated output current	Booksize format
	Nm (lb _f -ft)	kgm ² (lb _f -in-s ²)	kg (lb)	S1 A	S6-60% A	S6-40% A	S2- 30 min A	S1 A	Order No.
1PH7101 - ..F...	23.6 (17.4)	0.017 (0.15)	40 (88.2)	10	11.5	12.5	12	18	6SL312 ■ - ■ TE21-8AA3
1PH7103 - ..D...	35.3 (26.0)	0.017 (0.15)	40 (88.2)	10	11.5	13	12	18	6SL312 ■ - ■ TE21-8AA3
1PH7103 - ..F...	35.0 (25.8)	0.017 (0.15)	40 (88.2)	13	16	18	16.5	18	6SL312 ■ - ■ TE21-8AA3
1PH7103 - ..G...	33.4 (24.6)	0.017 (0.15)	40 (88.2)	17.5	20.5	23.5	21.5	18	6SL312 ■ - ■ TE21-8AA3
1PH7105 - ..F...	44.6 (32.9)	0.029 (0.26)	63 (139)	17.5	21	23.5	22	18	6SL312 ■ - ■ TE21-8AA3
1PH7107 - ..D...	59.7 (44.0)	0.029 (0.26)	63 (139)	17.5	20.5	23	21	18	6SL312 ■ - ■ TE21-8AA3
1PH7107 - ..F...	57.3 (43.3)	0.029 (0.26)	63 (139)	23.5	27.5	31	29	30	6SL312 ■ - 1 TE23-0AA3
1PH7107 - ..G...	50.1 (37.0)	0.029 (0.26)	63 (139)	26	28.5	33	31	30	6SL312 ■ - 1 TE23-0AA3

Cooling:

Internal air cooling
External air cooling

0
1

Motor Module:

Single Motor Module
Double Motor Module

1
2



1PH7 motor (SH 100 to SH 160)

- 1) For continuous duty (with 30% n_{max} , 60% $\frac{2}{3} n_{max}$, 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 coupling/belt output.
- 3) Bearing version for increased maximum speed.
- 4) Version for increased maximum speed only possible with vibration magnitude grade SR. The following options are not possible:
 - Shaft sealing ring.
- 5) The following motor versions are required for ZF gearbox mounting prepared (see Gearboxes for gear selection):
 - Types IM B5 or IM B35
 - Shaft with fitted key and full-key balancing
- 6) Only appropriate if the sealing ring is occasionally lubricated with oil spray/mist. A sealing ring is not possible with increased maximum speed.
- 7) Motors of shaft height 160 and higher require foot support.

Asynchronous motors

Main spindle motors for SINAMICS S120

1PH7 standard type motors SH 132

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				1PH7 asynchronous motor with solid shaft Forced ventilation							
SH	n_{rated}	$n_{S1\text{ cont.}}^{2)}$	$n_{S1\text{ cont.}}^{3)}$	n_{max}	$n_{max}^{4)}$	P_{rated}				Order No. Standard type							
	rpm	rpm	rpm	rpm	rpm	S1 kW (HP)	S6-60% kW (HP)	S6-40% kW (HP)	S2-30 min kW (HP)								
132	1500	4500	8500	8000	10000	11 (14.8)	13.5 (18.1)	16.5 (22.1)	15 (20.1)	1PH7131 - ■ ■ F ■ ■ - 0 ■ ■ ■							
	1000	4500	8500	8000	10000	12 (16.1)	15 (20.1)	18.5 (24.8)	16 (21.5)	1PH7133 - ■ ■ D ■ ■ - 0 ■ ■ ■							
	1500					15 (20.1)	18.5 (24.8)	23 (30.8)	20.5 (27.5)	1PH7133 - ■ ■ F ■ ■ - 0 ■ ■ ■							
	2000					20 (26.8)	25 (33.5)	30 (40.2)	27.5 (36.9)	1PH7133 - ■ ■ G ■ ■ - 0 ■ ■ ■							
	1500	4500	8500	8000	10000	18.5 (24.8)	23 (30.8)	28 (37.6)	25.5 (34.2)	1PH7135 - ■ ■ F ■ ■ - 0 ■ ■ ■							
	1000	4500	8500	8000	10000	17 (22.8)	20.5 (27.5)	25 (33.5)	22.5 (30.2)	1PH7137 - ■ ■ D ■ ■ - 0 ■ ■ ■							
	1500					22 (29.5)	27.5 (36.9)	33 (44.3)	30 (40.2)	1PH7137 - ■ ■ F ■ ■ - 0 ■ ■ ■							
	2000					28 (37.6)	35 (46.9)	43 (57.7)	39 (52.3)	1PH7137 - ■ ■ G ■ ■ - 0 ■ ■ ■							
Fans:		External fan unit, heavy-gauge threaded cable entry in terminal box External fan unit, metric cable entry in terminal box								2 7							
Encoder systems for motors without DRIVE-CLiQ interface:		Absolute encoder EnDat 2048 S/R Incremental encoder sin/cos 1 V _{pp} with C and D track Incremental encoder sin/cos 1 V _{pp} without C and D track								E M N							
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								F D Q							
Terminal box/ Cable entry:		Top/right Top/NDE Top/left									0 2 3						
Type: ⁵⁾		IM B3 (IM V5, IM V6) IM B5 (IM V1, IM V3) IM B35 (IM V15, IM V35) ⁷⁾									0 2 3						
Bearing version for: Coupling/belt output Coupling/belt output Coupling/belt output Increased speed (coupling/belt output) ⁶⁾				Vibration magnitude: Grade R Grade S Grade SR Grade SR				Shaft and flange accuracy: Tolerance R Tolerance R Tolerance R Tolerance R					B C D L				
Shaft extension (DE): ⁵⁾ Fitted key Fitted key Fitted key Fitted key Plain shaft Plain shaft				Balancing: Half-key Half-key Full-key Full-key – –				Direction of air flow (fan): DE → NDE NDE → DE DE → NDE NDE → DE DE → NDE NDE → DE				Blow-out direction: Axial Axial Axial Axial Axial Axial					A B C D J K
Degree of protection: IP55, fan IP54 IP55, fan IP54 IP55, fan IP54 IP55, fan IP54 IP55, fan IP54 IP55, fan IP54 IP55, fan IP54				Seal: – DE flange with shaft sealing ring ⁶⁾ – DE flange with shaft sealing ring ⁶⁾ – DE flange with shaft sealing ring ⁶⁾				Paint finish: Unpainted Unpainted Anthracite Anthracite Anthracite, two coats Anthracite, two coats					0 2 3 5 6 8				

To select the type and the degree of protection, see Selection guides.

Asynchronous motors

Main spindle motors for SINAMICS S120

1PH7 standard type motors
SH 132

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	
								Rated output current	Booksize format
	M_{rated}	J	m	I_{rated}				I_{rated}	Order No.
	Nm (lb _f -ft)	kgm ² (lb _f -in-s ²)	kg (lb)	S1 A	S6-60% A	S6-40% A	S2-30 min A	S1 A	
1PH7131 - ..F...	70.0 (51.6)	0.076 (0.67)	90 (198)	24	29	34	31.5	30	6SL312 - 1TE23-0AA3
1PH7133 - ..D...	114.6 (84.5)	0.076 (0.67)	90 (198)	30	36	43	37.5	30	6SL312 - 1TE23-0AA3
1PH7133 - ..F...	95.5 (70.4)	0.076 (0.67)	90 (198)	34	41	49	43.5	45	6SL312 - 1TE24-5AA3
1PH7133 - ..G...	95.5 (70.4)	0.076 (0.67)	90 (198)	45	54	63	59	45	6SL312 - 1TE24-5AA3
1PH7135 - ..F...	117.8 (86.9)	0.109 (0.96)	130 (287)	42	50	58	54	45	6SL312 - 1TE24-5AA3
1PH7137 - ..D...	162.3 (119.7)	0.109 (0.96)	130 (287)	43	50	60	54	45	6SL312 - 1TE24-5AA3
1PH7137 - ..F...	140.1 (103.3)	0.109 (0.96)	130 (287)	57	68	79	73	60	6SL312 - 1TE26-0AA3
1PH7137 - ..G...	133.7 (98.6)	0.109 (0.96)	130 (287)	60	73	87	80	60	6SL312 - 1TE26-0AA3
Cooling: Internal air cooling External air cooling									0 1
Motor Module: Single Motor Module									1



1PH7 motor (SH 100 to SH 160)

- 1) For continuous duty (with 30% n_{max} , 60% $\frac{2}{3} n_{max}$, 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 coupling/belt output.
- 3) Bearing version for increased maximum speed.
- 4) Version for increased maximum speed only possible with vibration magnitude grade SR. The following options are not possible:
 - Shaft sealing ring.
- 5) The following motor versions are required for ZF gearbox mounting prepared (see Gearboxes for gear selection):
 - Types IM B5 or IM B35
 - Shaft with fitted key and full-key balancing
- 6) Only appropriate if the sealing ring is occasionally lubricated with oil spray/mist. A sealing ring is not possible with increased maximum speed.
- 7) Motors of shaft height 160 and higher require foot support.

Asynchronous motors

Main spindle motors for SINAMICS S120

1PH7 standard type motors 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				1PH7 asynchronous motor with solid shaft Forced ventilation												
SH	n_{rated}	$n_{\text{S1 cont.}}^{2)}$	$n_{\text{S1 cont.}}^{3)}$	n_{max}	$n_{\text{max}}^{4)}$	P_{rated}				Order No. Standard type												
	rpm	rpm	rpm	rpm	rpm	S1 kW (HP)	S6-60% kW (HP)	S6-40% kW (HP)	S2-30 min kW (HP)													
160	500	3700	7000	6500	8000	12 (16.1)	15 (20.1)	18 (24.1)	16.5 (22.1)	1PH7163 - ■ ■ B ■ ■ - 0 ■ ■ ■												
	1000					22 (29.5)	27 (36.2)	33 (44.3)	30 (40.2)	1PH7163 - ■ ■ D ■ ■ - 0 ■ ■ ■												
	1500					30 (40.2)	37 (49.6)	45 (60.4)	41 (55.0)	1PH7163 - ■ ■ F ■ ■ - 0 ■ ■ ■												
	2000					36 (48.3)	44 (59.0)	52 (69.7)	48 (64.4)	1PH7163 - ■ ■ G ■ ■ - 0 ■ ■ ■												
	500	3700	7000	6500	8000	16 (21.5)	19.5 (26.1)	24 (32.2)	21.5 (28.8)	1PH7167 - ■ ■ B ■ ■ - 0 ■ ■ ■												
	1000					28 (37.5)	34.5 (46.3)	42 (56.3)	38 (51.0)	1PH7167 - ■ ■ D ■ ■ - 0 ■ ■ ■												
	1500					37 (49.6)	46 (61.7)	56 (75.1)	51 (68.4)	1PH7167 - ■ ■ F ■ ■ - 0 ■ ■ ■												
	2000					41 (55.0)	51 (68.4)	61 (81.8)	56 (75.1)	1PH7167 - ■ ■ G ■ ■ - 0 ■ ■ ■												
Fans:		External fan unit, heavy-gauge threaded cable entry in terminal box								2												
		External fan unit, metric cable entry in terminal box								7												
Encoder systems for motors without DRIVE-CLiQ interface:		Absolute encoder EnDat 2048 S/R Incremental encoder sin/cos 1 V _{pp} with C and D track Incremental encoder sin/cos 1 V _{pp} without C and D track								E M N												
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								F D Q												
Terminal box/ Cable entry:		Top/right Top/NDE Top/left								0 2 3												
Type: ⁵⁾		IM B3 (IM V5, IM V6) IM B35 (IM V15, IM V35) ⁷⁾								0 3												
Bearing version for:		Vibration magnitude:		Shaft and flange accuracy:								B C D L										
Coupling/belt output		Grade R		Tolerance R																		
Coupling/belt output		Grade S		Tolerance R																		
Coupling/belt output		Grade SR		Tolerance R																		
Increased speed (coupling/belt output) ⁶⁾		Grade SR		Tolerance R																		
Shaft extension (DE): ⁵⁾		Balancing:		Direction of air flow (fan):				Blow-out direction:														
Fitted key		Half-key		DE → NDE				Axial										A B C D J K				
Fitted key		Half-key		NDE → DE				Axial														
Fitted key		Full-key		DE → NDE				Axial														
Fitted key		Full-key		NDE → DE				Axial														
Plain shaft		–		DE → NDE				Axial														
Plain shaft		–		NDE → DE				Axial														
Degree of protection:		Seal:		Paint finish:								0 2 3 5 6 8										
IP55, fan IP54		–		Unpainted																		
IP55, fan IP54		DE flange with shaft sealing ring ⁶⁾		Unpainted																		
IP55, fan IP54		–		Anthracite																		
IP55, fan IP54		DE flange with shaft sealing ring ⁶⁾		Anthracite																		
IP55, fan IP54		–		Anthracite, two coats																		
IP55, fan IP54		DE flange with shaft sealing ring ⁶⁾		Anthracite, two coats																		

To select the type and the degree of protection, see Selection guides.

Asynchronous motors

Main spindle motors for SINAMICS S120

1PH7 standard type motors
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	
								Rated output current	Booksize format
								I_{rated}	Order No.
	M_{rated}	J	m	I_{rated}					
	Nm (lb _f -ft)	kgm ² (lb _f -in-s ²)	kg (lb)	S1 A	S6-60% A	S6-40% A	S2- 30 min A	S1 A	
1PH7163 - ..B...	229.2 (169)	0.19 (1.68)	180 (397)	30	36	42	39	30	6SL312 - 1TE23-0AA3
1PH7163 - ..D...	210.1 (155)	0.19 (1.68)	180 (397)	55	65	77	71	60	6SL312 - 1TE26-0AA3
1PH7163 - ..F...	191.0 (141)	0.19 (1.68)	180 (397)	72	86	102	94	85	6SL312 - 1TE28-5AA3
1PH7163 - ..G...	171.9 (127)	0.19 (1.68)	180 (397)	85	100	114	107	85	6SL312 - 1TE28-5AA3
1PH7167 - ..B...	305.5 (225)	0.23 (2.04)	228 (503)	37	44	53	48	45	6SL312 - 1TE24-5AA3
1PH7167 - ..D...	267.4 (197)	0.23 (2.04)	228 (503)	71	85	100	92	85	6SL312 - 1TE28-5AA3
1PH7167 - ..F...	235.5 (174)	0.23 (2.04)	228 (503)	82	97	115	104	85	6SL312 - 1TE28-5AA3
1PH7167 - ..G...	195.8 (144)	0.23 (2.04)	228 (503)	89	106	124	115	132	6SL312 - 1TE31-3AA3

Cooling:

Internal air cooling
External air cooling

0
1

Motor Module:

Single Motor Module

1



1PH7 motor (SH 100 to SH 160)

- 1) For continuous duty (with 30% n_{max} , 60% $\frac{2}{3} n_{max}$, 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 coupling/belt output.
- 3) Bearing version for increased maximum speed.
- 4) Version for increased maximum speed only possible with vibration magnitude grade SR. The following options are not possible:
 - Shaft sealing ring.
- 5) The following motor versions are required for ZF gearbox mounting prepared (see Gearboxes for gear selection):
 - Types IM B5 or IM B35
 - Shaft with fitted key and full-key balancing
- 6) Only appropriate if the sealing ring is occasionally lubricated with oil spray/mist. A sealing ring is not possible with increased maximum speed.
- 7) Motors of shaft height 160 and higher require foot support.

Asynchronous motors

Main spindle motors for SINAMICS S120

1PH7 standard type motors SH 180

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				1PH7 asynchronous motor with solid shaft Forced ventilation						
SH	n_{rated}	$n_{S1 \text{ cont.}}^{2)}$	$n_{S1 \text{ cont.}}^{3)}$	$n_{S1 \text{ cont.}}^{4)}$	n_{max}	$n_{max}^{5)}$	P_{rated}				Order No. Standard type						
	rpm	rpm	rpm	rpm	rpm	rpm	S1 kW (HP)	S6-60% kW (HP)	S6-40% kW (HP)	S2-30 min kW (HP)							
180	500	3500	3000	4500	5000	7000	21.5 (28.8)	26.5 (35.5)	30.5 (40.9)	30 (40.2)	1PH7184 - ■ ■ T ■ ■ - 0 ■ ■ ■						
	1000						39 (52.3)	48 (64.4)	58 (77.8)	58 (77.8)	1PH7184 - ■ ■ D ■ ■ - 0 ■ ■ ■						
	1250						40 (53.6)	50 (67.1)	56 (75.1)	66 (88.5)	1PH7184 - ■ ■ E ■ ■ - 0 ■ ■ ■						
	1500						51 (68.4)	68 (91.2)	81 (109)	81 (109)	1PH7184 - ■ ■ F ■ ■ - 0 ■ ■ ■						
	2500						78 (105)	97 (130)	115 (154)	115 (154)	1PH7184 - ■ ■ L ■ ■ - 0 ■ ■ ■						
	500	3500	3000	4500	5000	7000	29.6 (39.7)	36.5 (48.9)	43 (57.7)	38 (51.0)	1PH7186 - ■ ■ T ■ ■ - 0 ■ ■ ■						
	1000						51 (68.4)	65 (87.2)	77 (103)	77 (103)	1PH7186 - ■ ■ D ■ ■ - 0 ■ ■ ■						
	1250						60 (80.5)	71 (95.2)	80 (107)	84 (113)	1PH7186 - ■ ■ E ■ ■ - 0 ■ ■ ■						
	Fans:					External fan unit, heavy-gauge threaded cable entry in terminal box						2					
					External fan unit, metric cable entry in terminal box						7						
Encoder systems for motors without DRIVE-CLiQ interface:					Absolute encoder EnDat 2048 S/R						E						
					Incremental encoder sin/cos 1 V _{pp} 2048 S/R with C and D track						M						
					Incremental encoder sin/cos 1 V _{pp} 2048 S/R without C and D track						N						
Encoder systems for motors with DRIVE-CLiQ interface:					Absolute encoder, 22 bit single-turn + 12 bit multi-turn						F						
					Incremental encoder, 22 bit with 11 bit commutation position						D						
					Incremental encoder, 22 bit						Q						
Terminal box/ Cable entry:					Top/right Top/DE Top/NDE Top/left						0	1	2	3			
Type:					IM B3						0						
					IM B3 (IM V5, IM V6) (hoisting system for vertical types)						2						
					IM B35 ⁹⁾						3						
					IM B35 (for 1PH7184 with 450 mm (17.7 in) flange only) ⁹⁾						4						
					IM B35 (IM V15, IM V35) (hoisting system for vertical types) ⁹⁾						5						
					IM B35 (IM V15, IM V35) (for 1PH7184 with 450 mm (17.7 in) flange only) ⁹⁾						6						
Bearing version for:					Vibration magnitude:		Shaft and flange accuracy:										
Coupling output					Grade R		Tolerance N									A	
Coupling output					Grade R		Tolerance R									B	
Coupling output					Grade S		Tolerance R									C	
Coupling output					Grade SR		Tolerance R									D	
Belt output					Grade R		Tolerance N									E	
Belt output					Grade R		Tolerance R									F	
Increased cantilever force (belt output) ⁶⁾					Grade R		Tolerance N									G	
Increased cantilever force (belt output) ⁶⁾					Grade R		Tolerance R									H	
Increased speed (coupling output) ⁶⁾					Grade S		Tolerance R									J	
Shaft extension (DE): ⁷⁾					Balancing:		Direction of air flow (fan):				Blow-out direction:						
Fitted key					Half-key		DE → NDE				Right						A
Fitted key					Half-key		NDE → DE				Axial						B
Fitted key					Full-key		DE → NDE				Right						C
Fitted key					Full-key		NDE → DE				Axial						D
Plain shaft					–		DE → NDE				Right						J
Plain shaft					–		NDE → DE				Axial						K
Degree of protection:					Seal:				Paint finish:								
IP55, fan IP54					–				Primed							0	
IP55, fan IP54					DE flange with shaft sealing ring ⁶⁾				Primed							2	
IP55, fan IP54					–				Anthracite							3	
IP55, fan IP54					DE flange with shaft sealing ring ⁶⁾				Anthracite							5	
IP55, fan IP54					–				Anthracite, two coats							6	
IP55, fan IP54					DE flange with shaft sealing ring ⁶⁾				Anthracite, two coats							8	

To select the type and the degree of protection, see Selection guides.

Asynchronous motors

Main spindle motors for SINAMICS S120

1PH7 standard type motors
SH 180

Selection and Ordering Data

Motor type (continued)	Rated torque	Moment of inertia	Weight, approx. ⁸⁾	Rated current for duty type in accordance with IEC 60034-1				SINAMICS S120 Motor Module	
	M_{rated}	J	m	I_{rated}				Rated output current	Booksize format
	Nm (lb _f -ft)	kgm ² (lb _f -in-s ²)	kg (lb)	S1 A	S6-60% A	S6-40% A	S2-30 min A	I_{rated} S1 A	Order No.
1PH7184 - .. T...	410 (302)	0.5 (4.43)	390 (860)	76	90	103	102	85	6SL312 - 1TE28-5AA3
1PH7184 - .. D...	372 (274)	0.5 (4.43)		90	106	126	126	132	6SL312 - 1TE31-3AA3
1PH7184 - .. E...	305 (225)	0.5 (4.43)		85	100	110	128	85	6SL312 - 1TE28-5AA3
1PH7184 - .. F...	325 (240)	0.5 (4.43)		120	149	174	174	132	6SL312 - 1TE31-3AA3
1PH7184 - .. L...	298 (220)	0.5 (4.43)		172	204	237	237	200	6SL312 - 1TE32-0AA3
1PH7186 - .. T...	565 (417)	0.67 (5.93)	460 (1014)	105	126	147	130	132	6SL312 - 1TE31-3AA3
1PH7186 - .. D...	487 (359)	0.67 (5.93)		118	141	164	164	132	6SL312 - 1TE31-3AA3
1PH7186 - .. E...	458 (338)	0.67 (5.93)		120	135	150	156	132	6SL312 - 1TE31-3AA3

Cooling:

Internal air cooling
External air cooling

0
1

Motor Module:

Single Motor Module

1



1PH7 motor (SH 180 and SH 225)

- 1) For continuous duty (with 30% n_{max} , 60% $\frac{2}{3} n_{max}$, 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 coupling/belt output.
- 3) Bearing version for increased cantilever force.
- 4) Bearing version for increased maximum speed.
- 5) Version for increased maximum speed, only possible in combination with vibration magnitude grade S. The following options are not possible:
 - ZF gearbox mounting prepared
 - Shaft sealing ring
- 6) Only appropriate if the sealing ring is occasionally lubricated with oil spray/mist. A sealing ring is not possible for type IM B3 (IM V5, IM V6), version with increased cantilever force or increased maximum speed.
- 7) The following motor versions are required for ZF gearbox mounting prepared (see Gearboxes for gear selection):
 - Type IM B35, IM V15 (not IM V35)
 - Shaft with fitted key and full-key balancing
 - Bearing version for coupling output
 - Shaft and flange accuracy tolerance R
 - DE flange with shaft sealing ring
- 8) Applies to type IM B35, as type IM B3, the motor is 20 kg (44 lb) lighter.
- 9) Motors of shaft height 160 and higher require foot support.

Asynchronous motors

Main spindle motors for SINAMICS S120

1PH7 standard type motors SH 225

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				1PH7 asynchronous motor with solid shaft Forced ventilation							
SH	n_{rated}	$n_{\text{S1 cont.}}^{2)}$	$n_{\text{S1 cont.}}^{3)}$	$n_{\text{S1 cont.}}^{4)}$	n_{max}	$n_{\text{max}}^{5)}$	P_{rated}				Order No. Standard type							
	rpm	rpm	rpm	rpm	rpm	rpm	S1 kW (HP)	S6-60% kW (HP)	S6-40% kW (HP)	S2-30 min kW (HP)								
225	700	3100	2700	3600	4500	5500	55 (73.8)	66 (88.5)	75 (101)	78 (105)	1PH7224 - ■ ■ ■ C ■ ■ - 0 ■ ■ ■							
	1000						71 (95.2)	88 (118)	105 (141)	114 (153)	1PH7224 - ■ ■ ■ D ■ ■ - 0 ■ ■ ■							
	1500						100 (134)	126 (169)	136 (182)	140 (188)	1PH7224 - ■ ■ ■ F ■ ■ - 0 ■ ■ ■							
Fans:					External fan unit, heavy-gauge threaded cable entry in terminal box							2						
					External fan unit, metric cable entry in terminal box							7						
Encoder systems for motors without DRIVE-CLiQ interface:					Absolute encoder EnDat 2048 S/R								E					
					Incremental encoder sin/cos 1 V _{pp} with C and D track								M					
					Incremental encoder sin/cos 1 V _{pp} without C and D track								N					
Encoder systems for motors with DRIVE-CLiQ interface:					Absolute encoder, 22 bit single-turn + 12 bit multi-turn								F					
					Incremental encoder, 22 bit with 11 bit commutation position								D					
					Incremental encoder, 22 bit								Q					
Terminal box/ Cable entry:					Top/right Top/DE Top/NDE Top/left							0 1 2 3						
Type:					IM B3 IM B3 (IM V5, IM V6) (hoisting system for vertical types) IM B35 ⁹⁾ IM B35 (IM V15, IM V35) (hoisting system for vertical types) ⁹⁾							0 1 3 5						
Bearing version for:					Vibration magnitude:		Shaft and flange accuracy:							A				
Coupling output					Grade R		Tolerance N							B				
Coupling output					Grade R		Tolerance R							C				
Coupling output					Grade S		Tolerance R							D				
Coupling output					Grade SR		Tolerance R							E				
Belt output					Grade R		Tolerance N							F				
Belt output					Grade R		Tolerance R							G				
Increased cantilever force ⁶⁾ (belt output)					Grade R		Tolerance N							H				
Increased cantilever force ⁶⁾ (belt output)					Grade R		Tolerance R											
Increased speed (coupling output) ⁶⁾					Grade S		Tolerance R							J				
Shaft extension (DE): ⁷⁾					Balancing:		Direction of air flow (fan):		Blow-out direction:					A				
Fitted key					Half-key		DE → NDE		Right					B				
Fitted key					Half-key		NDE → DE		Axial									
Fitted key					Full-key		DE → NDE		Right					C				
Fitted key					Full-key		NDE → DE		Axial					D				
Plain shaft					–		DE → NDE		Right					J				
Plain shaft					–		NDE → DE		Axial					K				
Degree of protection:					Seal:				Paint finish:									
IP55, fan IP54					–				Primed					0				
IP55, fan IP54					DE flange with shaft sealing ring ⁶⁾				Primed					2				
IP55, fan IP54					–				Anthracite					3				
IP55, fan IP54					DE flange with shaft sealing ring ⁶⁾				Anthracite					5				
IP55, fan IP54					–				Anthracite, two coats					6				
IP55, fan IP54					DE flange with shaft sealing ring ⁶⁾				Anthracite, two coats					8				

To select the type and the degree of protection, see Selection guides.

Asynchronous motors

Main spindle motors for SINAMICS S120

1PH7 standard type motors
SH 225

Selection and Ordering Data

Motor type (continued)	Rated torque	Moment of inertia	Weight, approx. ⁸⁾	Rated current for duty type in accordance with IEC 60034-1				SINAMICS S120 Motor Module	
	M_{rated}	J	m	I_{rated}				Rated output current	Booksize format
	Nm (lb _f -ft)	kgm ² (lb _f -in-s ²)	kg (lb)	S1 A	S6-60% A	S6-40% A	S2-30 min A	I_{rated} S1 A	Order No.
1PH7224 - ..C...	750 (553)	1.48 (13.1)	650 (1433)	117	135	149	155	132	6SL312 - 1TE31-3AA3
1PH7224 - ..D...	678 (500)	1.48 (13.1)	650 (1433)	164	190	222	240	200	6SL312 - 1TE32-0AA3
1PH7224 - ..F...	636 (469)	1.48 (13.1)	650 (1433)	188	230	248	256	200	6SL312 - 1TE32-0AA3
Cooling: Internal air cooling External air cooling									0 1
Motor Module: Single Motor Module									1



1PH7 motor (SH 180 and SH 225)

- 1) For continuous duty (with 30% n_{max} , 60% $\frac{2}{3} n_{max}$, 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 coupling/belt output.
- 3) Bearing version for increased cantilever force.
- 4) Bearing version for increased maximum speed.
- 5) Version for increased maximum speed, only possible in combination with vibration magnitude grade S. The following options are not possible:
 - ZF gearbox mounting prepared
 - Shaft sealing ring
- 6) Only appropriate if the sealing ring is occasionally lubricated with oil spray/mist. A sealing ring is not possible for type IM B3 (IM V5, IM V6), version with increased cantilever force or increased maximum speed.
- 7) The following motor versions are required for ZF gearbox mounting prepared (see Gearboxes for gear selection):
 - Type IM B35, IM V15 (not IM V35)
 - Shaft with fitted key and full-key balancing
 - Bearing version for coupling output
 - Shaft and flange accuracy tolerance R
 - DE flange with shaft sealing ring
- 8) Applies to type IM B35, as type IM B3, the motor is 20 kg (44 lb) lighter.
- 9) Motors of shaft height 160 and higher require foot support.