

Asynchronous motors

Main spindle motors for SINAMICS S120

1PH7 motors, core type
SH 100 to SH 160 – Forced ventilation

Selection and ordering data

Shaft height	Rated speed	Continuous speed, max.		Speed, max. ¹⁾		Rated power for duty type				1PH7 asynchronous motor with solid shaft Core type Order No.				
SH	n_{rated}	$n_{S1\ cont.}^{2)}$	$n_{S1\ cont.}^{3)}$	n_{max}	$n_{max}^{4)}$	P_{rated}								
	rpm	rpm	rpm	rpm	rpm	kW (HP)	kW (HP)	kW (HP)	kW (HP)					
Forced ventilation – Line voltage 400 V 3 AC, operation on Active Line Module														
100	2000	5500	–	9000	–	7 (9.39)	8.5 (11.4)	10 (13.4)	9.25 (12.4)	1PH7103-■ ■ G02-0C■ ■				
	1500	5500	–	9000	–	9 (12.1)	11 (14.8)	13 (17.4)	12 (16.1)	1PH7107-■ ■ F02-0C■ ■				
132	1000	4500	–	8000	–	12 (16.1)	15 (20.1)	18.5 (24.8)	16 (21.5)	1PH7133-■ ■ D02-0C■ ■				
	2000					20 (26.8)	25 (33.5)	30 (40.2)	27.5 (36.9)	1PH7133-■ ■ G02-0C■ ■				
	1000	4500	–	8000	–	17 (22.8)	20.5 (27.5)	25 (33.5)	22.5 (30.2)	1PH7137-■ ■ D02-0C■ ■				
	2000					28 (37.6)	35 (46.9)	43 (57.7)	39 (52.3)	1PH7137-■ ■ G02-0C■ ■				
160	1000	3700	–	6500	–	22 (29.5)	27 (36.2)	33 (44.3)	30 (40.2)	1PH7163-■ ■ D03-0C■ ■				
	1500					30 (40.2)	37 (49.6)	45 (60.4)	41 (55.0)	1PH7163-■ ■ F03-0C■ ■				
	1500	3700	–	6500	–	37 (49.6)	46 (61.7)	56 (75.1)	51 (68.4)	1PH7167-■ ■ F03-0C■ ■				
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} 2048 S/R without C and D tracks (encoder IN2048S/R)						N				
Encoder systems for motors with DRIVE-CLiQ interface:				22 bit incremental encoder (encoder IN22DQ)						Q				
Type of construction: ⁵⁾				IM B5 (IM V1, IM V3) IM B35 (IM V15, IM V35) ⁶⁾						2 3				
Shaft extension DE: ⁵⁾ Fitted key Plain shaft				Balancing: Half-key –		Direction of air flow (fan): DE → NDE DE → NDE		Blow-out direction: Axial Axial			A J			
Degree of protection: IP55, fan IP54 IP55, fan IP54				Paint finish: Unpainted Anthracite								0 3		

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

Asynchronous motors

Main spindle motors for SINAMICS S120

1PH7 motors, core type
SH 100 to SH 160 – Forced ventilation

Motor type (repeated)	Rated torque	Moment of inertia	Weight, approx.	Rated current for duty type				SINAMICS S120 Motor Module	
	M_{rated}	J	m	I_{rated}				Rated output current for S1 duty I_{rated} A	Booksize format For additional versions and components, see SINAMICS S120 drive system 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		
1PH7103-..G02-...	33.4 (24.6)	0.017 (0.15)	43 (94.8)	17.5	20.5	23.5	21.5	18	6SL312-1-TE21-8AA3
1PH7107-..F02-...	57.3 (43.3)	0.029 (0.26)	64 (141)	23.5	27.5	31	29	30	6SL312-1-TE23-0AA3
1PH7133-..D02-...	114.6 (84.5)	0.076 (0.67)	102 (225)	30	36	43	37.5	30	6SL312-1-TE23-0AA3
1PH7133-..G02-...	95.5 (70.4)			45	54	63	59	45	6SL312-1-TE24-5AA3
1PH7137-..D02-...	162.3 (119.7)	0.109 (0.96)	129 (284)	43	50	60	54	45	6SL312-1-TE24-5AA3
1PH7137-..G02-...	133.7 (98.6)			60	73	87	80	60	6SL312-1-TE26-0AA3
1PH7163-..D03-...	210.1 (155)	0.19 (1.68)	198 (437)	55	65	77	71	60	6SL312-1-TE26-0AA3
1PH7163-..F03-...	191.0 (141)			72	86	102	94	85	6SL312-1-TE28-5AA3
1PH7167-..F03-...	235.5 (174)	0.23 (2.04)	231 (509)	82	97	115	104	85	6SL312-1-TE28-5AA3

Cooling:

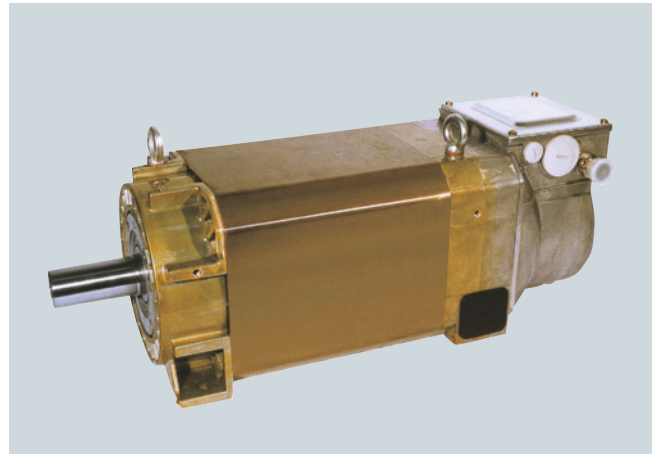
Internal air cooling
External air cooling

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 1PH7 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⁾ For preconditions for gearbox mounting, please refer to Gearboxes.

⁶⁾ Motors of shaft height 160 and higher require foot support.

Asynchronous motors

Main spindle motors for SINAMICS S120

1PH7 motors, standard type SH 100 – Forced ventilation

Selection and ordering data

Shaft height	Rated speed	Continuous speed, max.	Speed, max. ¹⁾			Rated power for duty type				1PH7 asynchronous motor with solid shaft Standard type Order No.	
SH	n_{rated}	$n_{S1\text{ cont.}}^{2)}$	$n_{S1\text{ cont.}}^{3)}$	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)		
Forced ventilation – Line voltage 400 V 3 AC, operation on Active Line Module											
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						2	E M N F D Q 0 2 3 0 2 3 B C D L A B C D J K
				External fan unit, metric cable entry in terminal box						7	
Encoder systems for motors without DRIVE-CLiQ interface:				Absolute encoder EnDat 2048 S/R (encoder AM2048S/R)							
				Incremental encoder sin/cos 1 V _{pp} 2048 S/R with C and D tracks (encoder IC2048S/R)							
				Incremental encoder sin/cos 1 V _{pp} 2048 S/R (encoder IN2048S/R)							
Encoder systems for motors with DRIVE-CLiQ interface:				22 bit absolute encoder single-turn +12 bit multi-turn (encoder AM22DQ)							
				22 bit incremental encoder + commutation position (encoder IC22DQ)							
				22 bit incremental encoder (encoder IN22DQ)							
Terminal box/ cable entry:				Top/from right Top/from NDE Top/from left							
Type of construction: ⁵⁾				IM B3 (IM V5, IM V6) IM B5 (IM V1, IM V3) IM B35 (IM V15, IM V35)							
Bearing version for: Coupling/belt output Coupling/belt output Coupling/belt output Increased speed (coupling/belt output)				Vibration magnitude: Grade R Grade S Grade SR Grade SR		Shaft and flange accuracy: Tolerance R Tolerance R Tolerance R Tolerance R					
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			
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 of construction and degree of protection, see Selection guides.

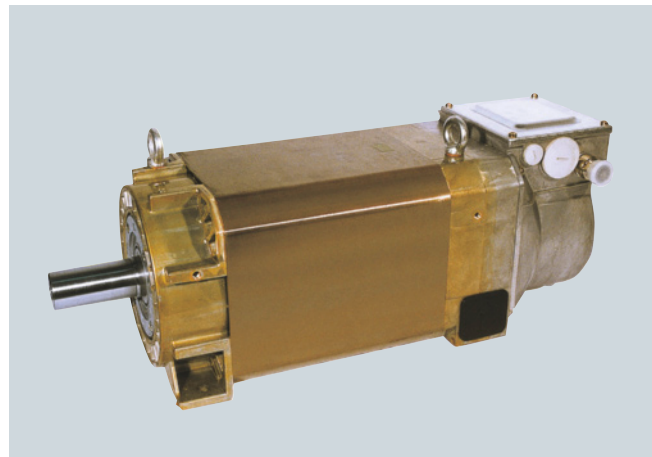
Asynchronous motors

Main spindle motors for SINAMICS S120

**1PH7 motors, standard type
SH 100 – Forced ventilation**

Motor type (repeated)	Rated torque	Moment of inertia	Weight, approx.	Rated current for duty type				SINAMICS S120 Motor Module	
	M_{rated}	J	m	I_{rated}				Rated output current for S1 duty	Booksized 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} A	For additional versions and components, see SINAMICS S120 drive system Order No.
1PH7101-..F...	23.6 (17.4)	0.017 (0.15)	43 (94.8)	10	11.5	12.5	12	18	6SL312-1-TE21-8AA3
1PH7103-..D...	35.3 (26.0)	0.017 (0.15)	43 (94.8)	10	11.5	13	12	18	6SL312-1-TE21-8AA3
1PH7103-..F...	35.0 (25.8)			13	16	18	16.5	18	6SL312-1-TE21-8AA3
1PH7103-..G...	33.4 (24.6)			17.5	20.5	23.5	21.5	18	6SL312-1-TE21-8AA3
1PH7105-..F...	44.6 (32.9)	0.029 (0.26)	64 (141)	17.5	21	23.5	22	18	6SL312-1-TE21-8AA3
1PH7107-..D...	59.7 (44.0)	0.029 (0.26)	64 (141)	17.5	20.5	23	21	18	6SL312-1-TE21-8AA3
1PH7107-..F...	57.3 (43.3)			23.5	27.5	31	29	30	6SL312-1-TE23-0AA3
1PH7107-..G...	50.1 (37.0)			26	28.5	33	31	30	6SL312-1-TE23-0AA3

Cooling:	
Internal air cooling	0
External air cooling	1
Motor Module:	
Single Motor Module	1
Double Motor Module	2



1PH7 motor (SH 100 to SH 160)

- 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 1PH7 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) For preconditions for gearbox mounting, please refer to Gearboxes.
- 6) Only appropriate if the sealing ring is occasionally lubricated with oil spray/mist. A sealing ring is not possible with increased maximum speed.

Asynchronous motors

Main spindle motors for SINAMICS S120

1PH7 motors, standard type SH 132 – Forced ventilation

Selection and ordering data

Shaft height	Rated speed	Continuous speed, max.		Speed, max. ¹⁾		Rated power for duty type				1PH7 asynchronous motor with solid shaft Standard type					
SH	n_{rated}	$n_{S1\ cont.}^{2)}$	$n_{S1\ cont.}^{3)}$	n_{max}	$n_{max}^{4)}$	P_{rated}									
	rpm	rpm	rpm	rpm	rpm	kW (HP)	kW (HP)	kW (HP)	kW (HP)						
Forced ventilation – Line voltage 400 V 3 AC, operation on Active Line Module															
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						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 (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					
Terminal box/ cable entry:				Top/from right						0					
				Top/from NDE											
				Top/from left							3				
Type of construction: ⁵⁾				IM B3 (IM V5, IM V6)						0					
				IM B5 (IM V1, IM V3)							2				
				IM B35 (IM V15, IM V35)							3				
Bearing version for: Coupling/belt output Coupling/belt output Coupling/belt output Increased speed (coupling/belt output)				Vibration magnitude:		Shaft and flange accuracy:				B					
											C				
												D			
													L		
Shaft extension DE: ⁵⁾				Balancing:		Direction of air flow (fan):		Blow-out direction:		A	B	C	D	J	K
Fitted key		Half-key		DE → NDE		Axial									
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					
											IP55, fan IP54	Unpainted			
											IP55, fan IP54		Unpainted		
											IP55, fan IP54	Anthracite			
											IP55, fan IP54		Anthracite		
											IP55, fan IP54	Anthracite, two coats			
											IP55, fan IP54		Anthracite, two coats		
											IP55, fan IP54	Anthracite, two coats			

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

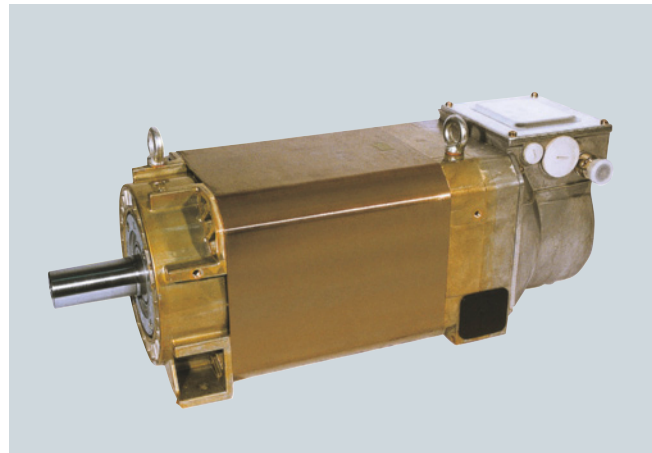
Asynchronous motors

Main spindle motors for SINAMICS S120

1PH7 motors, standard type
SH 132 – Forced ventilation

Motor type (repeated)	Rated torque	Moment of inertia	Weight, approx.	Rated current for duty type				SINAMICS S120 Motor Module	
	M_{rated}	J	m	I_{rated}				Rated output current for S1 duty	Booksized 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} A	For additional versions and components, see SINAMICS S120 drive system Order No.
1PH7131-..F...	70.0 (51.6)	0.076 (0.67)	102 (225)	24	29	34	31.5	30	6SL312-1TE23-0AA3
1PH7133-..D...	114.6 (84.5)	0.076 (0.67)	102 (225)	30	36	43	37.5	30	6SL312-1TE23-0AA3
1PH7133-..F...	95.5 (70.4)			34	41	49	43.5	45	6SL312-1TE24-5AA3
1PH7133-..G...	95.5 (70.4)			45	54	63	59	45	6SL312-1TE24-5AA3
1PH7135-..F...	117.8 (86.9)	0.109 (0.96)	129 (284)	42	50	58	54	45	6SL312-1TE24-5AA3
1PH7137-..D...	162.3 (119.7)	0.109 (0.96)	129 (284)	43	50	60	54	45	6SL312-1TE24-5AA3
1PH7137-..F...	140.1 (103.3)			57	68	79	73	60	6SL312-1TE26-0AA3
1PH7137-..G...	133.7 (98.6)			60	73	87	80	60	6SL312-1TE26-0AA3

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



1PH7 motors (SH 100 to SH 160)

- 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 1PH7 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) For preconditions for gearbox mounting, please refer to Gearboxes.
- 6) Only appropriate if the sealing ring is occasionally lubricated with oil spray/mist. A sealing ring is not possible with increased maximum speed.

Asynchronous motors

Main spindle motors for SINAMICS S120

1PH7 motors, standard type SH 160 – Forced ventilation

Selection and ordering data

Shaft height	Rated speed	Continuous speed, max.	Speed, max. ¹⁾			Rated power for duty type				1PH7 asynchronous motor with solid shaft Standard type						
SH	n_{rated}	$n_{S1\text{ cont.}}^{2)}$	$n_{S1\text{ cont.}}^{3)}$	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)							
Forced ventilation – Line voltage 400 V 3 AC, operation on Active Line Module																
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 (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					
Terminal box/cable entry:				Top/from right							0					
				Top/from NDE							2					
				Top/from left							3					
Type of construction: ⁵⁾				IM B3 (IM V5, IM V6)							0					
				IM B35 (IM V15, IM V35) ⁷⁾							3					
Bearing version for:				Vibration magnitude:		Shaft and flange accuracy:										
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)				Grade SR		Tolerance R										
Shaft extension DE: ⁵⁾				Balancing:		Direction of air flow (fan):		Blow-out direction:								
Fitted key				Half-key		DE → NDE		Axial								
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:								
IP55, fan IP54				–				Unpainted								0
IP55, fan IP54				DE flange with shaft sealing ring ⁶⁾				Unpainted								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 of construction and degree of protection, see Selection guides

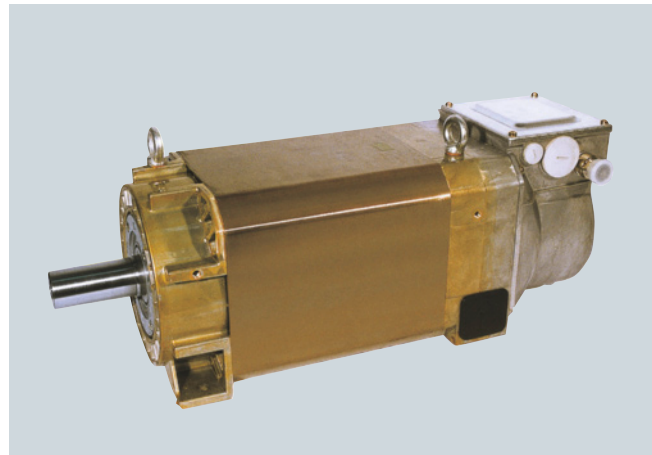
Asynchronous motors

Main spindle motors for SINAMICS S120

1PH7 motors, standard type
SH 160 – Forced ventilation

Motor type (repeated)	Rated torque	Moment of inertia	Weight, approx.	Rated current for duty type				SINAMICS S120 Motor Module	
	M_{rated}	J	m	I_{rated}				Rated output current for S1 duty I_{rated} A	Booksize format For additional versions and components, see SINAMICS S120 drive system 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		
1PH7163-..B...	229.2 (169)	0.19 (1.68)	198 (437)	30	36	42	39	30	6SL312-1TE23-0AA3
1PH7163-..D...	210.1 (155)			55	65	77	71	60	6SL312-1TE26-0AA3
1PH7163-..F...	191.0 (141)			72	86	102	94	85	6SL312-1TE28-5AA3
1PH7163-..G...	171.9 (127)			85	100	114	107	85	6SL312-1TE28-5AA3
1PH7167-..B...	305.5 (225)	0.23 (2.04)	231 (509)	37	44	53	48	45	6SL312-1TE24-5AA3
1PH7167-..D...	267.4 (197)			71	85	100	92	85	6SL312-1TE28-5AA3
1PH7167-..F...	235.5 (174)			82	97	115	104	85	6SL312-1TE28-5AA3
1PH7167-..G...	195.8 (144)			89	106	124	115	132	6SL312-1TE31-3AA3

Cooling:	
Internal air cooling	0
External air cooling	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 1PH7 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⁾ For preconditions for gearbox mounting, please refer to Gearboxes.
- 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 motors, standard type SH 180 – Forced ventilation

Selection and ordering data

Shaft height	Rated speed	Continuous speed, max.					Speed, max. ¹⁾	Rated power for duty type				1PH7 asynchronous motor with solid shaft Standard type				
SH	n_{rated}	$n_{S1\ cont.}^{2)}$	$n_{S1\ cont.}^{3)}$	$n_{S1\ cont.}^{4)}$	n_{max}	$n_{max}^{5)}$	P_{rated}									
	rpm	rpm	rpm	rpm	rpm	rpm	S1 kW (HP)	S6-60 % kW (HP)	S6-40 % kW (HP)	S2-30 min kW (HP)						
Forced ventilation – Line voltage 400 V 3 AC, operation on Active Line Module																
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 ■ ■ ■					
	1500						74 (99.2)	94 (126)	113 (152)	113 (152)	1PH7186-■ ■ F ■ -0 ■ ■ ■					
	2500						106 (142)	131 (176)	157 (211)	165 (221)	1PH7186-■ ■ L ■ -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 (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					
Terminal box/cable entry:				Top/from right							0					
				Top/from DE							1					
				Top/from NDE							2					
				Top/from left							3					
Type of construction:				IM B3							0					
				IM B3 (IM V5, IM V6) (hoisting system for vertical types of construction)							1					
				IM B35 ⁹⁾							3					
				IM B35 (Only for 1PH7184 with 450 mm (17.7 in) flange) ⁹⁾							4					
				IM B35 (IM V15, IM V35) (hoisting system for vertical types of construction) ⁹⁾							5					
				IM B35 (IM V15, IM V35) (Only for 1PH7184 with 450 mm (17.7 in) flange) 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)				Grade R		Tolerance N									G	
Increased cantilever force (belt output)				Grade R		Tolerance R									H	
Increased speed (coupling output)				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 of construction and degree of protection, see Selection guides

Asynchronous motors

Main spindle motors for SINAMICS S120

**1PH7 motors, standard type
SH 180 – Forced ventilation**

Motor type (repeated)	Rated torque	Moment of inertia	Weight, approx. ⁸⁾	Rated current for duty type				SINAMICS S120 Motor Module	
								Rated output current for S1 duty	For additional versions and components, see SINAMICS S120 drive system
				I_{rated} S1 A	S6-60 % A	S6-40 % A	S2-30 min A	I_{rated} A	Order No.
M_{rated} Nm (lb _f -ft)	J kgm ² (lb _f -in-s ²)	m kg (lb)							
1PH7184-...T...	410 (302)	0.5 (4.43)	390 (860)	76	90	103	102	85	6SL312-1TE28-5AA3
1PH7184-...D...	372 (274)			90	106	126	126	132	6SL312-1TE31-3AA3
1PH7184-...E...	305 (225)			85	100	114	128	85	6SL312-1TE28-5AA3
1PH7184-...F...	325 (240)			120	149	174	174	132	6SL312-1TE31-3AA3
1PH7184-...L...	298 (220)			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)			118	141	164	164	132	6SL312-1TE31-3AA3
1PH7186-...E...	458 (338)			120	135	150	156	132	6SL312-1TE31-3AA3
1PH7186-...F...	471 (347)			170	210	250	266	200	6SL312-1TE32-0AA3
1PH7186-...L...	405 (299)			235	290	345	355	260	6SL332-1TE32-1AA3

Format:

Booksize
Chassis

1
3

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 1PH7 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 with vibration magnitude grade S. The following options are not possible:
• 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 of construction IM B3 (IM V5, IM V6), version with increased cantilever force or increased maximum speed.

⁷⁾ For preconditions for gearbox mounting, please refer to Gearboxes.

⁸⁾ Applies to type of construction IM B35, as type of construction IM B3, the motor is 20 kg (44 lb) lighter.

⁹⁾ Motors of shaft height 160 and higher require foot support.

Main spindle motors for SINAMICS S120

1PH7 motors, standard type
SH 225 – Forced ventilation

Selection and ordering data

Shaft height	Rated speed	Continuous speed, max.				Speed, max. ¹⁾	Rated power for duty type				1PH7 asynchronous motor with solid shaft Standard type				
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}								
	rpm	rpm	rpm	rpm	rpm	rpm	S1 kW (HP)	S6-60 % kW (HP)	S6-40 % kW (HP)	S2-30 min kW (HP)					
Order No.															
Forced ventilation – Line voltage 400 V 3 AC, operation on Active Line Module															
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■ ■ ■				
	2500						142 (190)	176 (236)	210 (282)	220 (295)	1PH7224-■L■-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 (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				
Terminal box/ cable entry:				Top/from right							0				
				Top/from DE							1				
				Top/from NDE							2				
				Top/from left							3				
Type of construction:				IM B3							0				
				IM B3 (IM V5, IM V6) (hoisting system for vertical types of construction)							1				
				IM B35 ⁹⁾							3				
				IM B35 (IM V15, IM V35) (hoisting system for vertical types of construction) ⁹⁾							5				
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)				Grade R		Tolerance N								G	
Increased cantilever force (belt output)				Grade R		Tolerance R								H	
Increased speed (coupling output)				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 of construction and degree of protection, see Selection guides.

Asynchronous motors

Main spindle motors for SINAMICS S120

**1PH7 motors, standard type
SH 225 – Forced ventilation**

Motor type (repeated)	Rated torque	Moment of inertia	Weight, approx. ⁸⁾	Rated current for duty type				SINAMICS S120 Motor Module	
	M_{rated}	J	m	I_{rated}				Rated output current for S1 duty	For additional versions and components, see SINAMICS S120 drive system
	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} 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)			164	190	222	240	200	6SL312-1TE32-0AA3
1PH7224-..F...	636 (469)			188	230	248	256	200	6SL312-1TE32-0AA3
1PH7224-..L...	542 (400)			298	355	419	430	310	6SL332-1TE33-1AA3

Format:	
Booksize	1
Chassis	3
Cooling:	
Internal air cooling	0
External air cooling	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 1PH7 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 with vibration magnitude grade S. The following options are not possible:
- 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 of construction IM B3 (IM V5, IM V6), version with increased cantilever force or increased maximum speed.
- ⁷⁾ For preconditions for gearbox mounting, please refer to Gearboxes.
- ⁸⁾ Applies to type of construction IM B35, as type of construction 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 motors, standard type SH 225 – Forced ventilation

Selection and ordering data

Shaft height	Rated speed	Continuous speed, max.			Speed, max. ¹⁾		Rated power for duty type				1PH7 asynchronous motor with solid shaft Standard type					
SH	n_{rated}	$n_{S1\ cont.}^{2)}$	$n_{S1\ cont.}^{3)}$	$n_{S1\ cont.}^{4)}$	n_{max}	$n_{max}^{5)}$	P_{rated}									
	rpm	rpm	rpm	rpm	rpm	rpm	S1 kW (HP)	S6-60 % kW (HP)	S6-40 % kW (HP)	S2-30 min kW (HP)						
Order No.																
Forced ventilation – Line voltage 400 V 3 AC, operation on Active Line Module																
225	1000	3100	2700	–	4500	–	92 (123)	114 (153)	136 (182)	136 (182)	1PH7226-■ ■ D ■ -0 ■ ■ ■					
	1500						130 (174)	161 (216)	192 (257)	200 (268)	1PH7226-■ ■ F ■ -0 ■ ■ ■					
	2500						168 (225)	208 (279)	248 (333)	265 (355)	1PH7226-■ ■ L ■ -0 ■ ■ ■					
	1000	3100	2700	–	4500	–	113 (152)	140 (188)	167 (224)	167 (224)	1PH7228-■ ■ D ■ -0 ■ ■ ■					
	1500						160 (215)	198 (266)	237 (318)	237 (318)	1PH7228-■ ■ F ■ -0 ■ ■ ■					
	2500						205 (275)	254 (341)	303 (406)	310 (416)	1PH7228-■ ■ L ■ -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 (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					
Terminal box/ cable entry:				Top/from right							0					
				Top/from DE							1					
				Top/from NDE							2					
				Top/from left							3					
Type of construction:				IM B3							0					
				IM B3 (IM V5, IM V6) (hoisting system for vertical types of construction)							1					
				IM B35 ⁹⁾							3					
				IM B35 (IM V15, IM V35) (hoisting system for vertical types construction) ⁹⁾							5					
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)				Grade R		Tolerance N										G
Increased cantilever force (belt output)				Grade R		Tolerance R										H
Increased speed (coupling output)				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 of construction and degree of protection, see Selection guides.

Asynchronous motors

Main spindle motors for SINAMICS S120

**1PH7 motors, standard type
SH 225 – Forced ventilation**

Motor type (repeated)	Rated torque	Moment of inertia	Weight, approx. ⁸⁾	Rated current for duty type				SINAMICS S120 Motor Module	
	M_{rated}	J	m	I_{rated}				Rated output current for S1 duty	For additional versions and components, see SINAMICS S120 drive system
	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} A	Order No.
1PH7226-...D...	880 (649)	1.930 (17.1)	750 (1654)	198	237	280	389	200	6SL312-1TE32-0AA3
1PH7226-...F...	828 (611)			278	330	387	395	310	6SL332-1TE33-1AA3
1PH7226-...L...	642 (474)			362	428	501	511	380	6SL332-1TE33-8AA3
1PH7228-...D...	1080 (797)	2.326 (20.6)	860 (1896)	240	289	342	348	260	6SL332-1TE32-6AA3
1PH7228-...F...	1019 (752)			350	413	483	491	380	6SL332-1TE33-8AA3
1PH7228-...L...	783 (578)			433	534	630	639	490	6SL332-1TE35-0AA3

Format:	
Booksize	1
Chassis	3
Cooling:	
Internal air cooling	0
External air cooling	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 1PH7 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 with vibration magnitude grade S. The following options are not possible:
- 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 of construction IM B3 (IM V5, IM V6), version with increased cantilever force or increased maximum speed.
- ⁷⁾ For preconditions for gearbox mounting, please refer to Gearboxes.
- ⁸⁾ Applies to type of construction IM B35, as type of construction IM B3, the motor is 20 kg (44 lb) lighter.
- ⁹⁾ Motors of shaft height 160 and higher require foot support.