

Synchronous motors for SINAMICS S120

1FK7 Compact motors Natural cooling

Selection and Ordering Data

Rated speed	Shaft height	Rated power	Static torque	Rated torque ¹⁾	Rated current	1FK7 Compact synchronous motor Natural cooling	Number of pole pairs	Rotor moment of inertia (without brake)	Weight (without brake)
n_{rated}	SH	P_{rated} at $\Delta T=100\text{ K}$	M_0 at $\Delta T=100\text{ K}$	M_{rated} at $\Delta T=100\text{ K}$	I_{rated} at $\Delta T=100\text{ K}$	Order No.		J	m
rpm		kW (HP)	Nm (lb _f -in)	Nm (lb _f -in)	A			10 ⁻⁴ kgm ² (10 ⁻³ x lb _f -in-s ²)	kg (lb)
2000	100	7.75 (10.4)	48 (425)	37 (327)	16	1FK7105 - 5AC71- 1 ■ ■ ■ ■	4	156 (138)	39 (86.0)
3000	48	0.82 (1.10)	3 (26.6)	2.6 (23.0)	1.95	1FK7042 - 5AF71- 1 ■ ■ ■ ■	4	3.01(2.66)	4.9 (10.8)
	63	1.48 (1.98)	6 (53.1)	4.7 (41.6)	3.7	1FK7060 - 5AF71- 1 ■ ■ ■ ■	4	7.95(7.04)	7 (15.4)
		2.29 (3.07)	11 (97.4)	7.3 (64.6)	5.6	1FK7063 - 5AF71- 1 ■ ■ ■ ■	4	15.1 (13.4)	11.5 (25.4)
	80	2.14 (2.87)	8 (70.8)	6.8 (60.2)	4.4	1FK7080 - 5AF71- 1 ■ ■ ■ ■	4	15 (13.3)	10 (22.1)
		3.3 (4.43)	16 (142)	10.5 (92.9)	7.4	1FK7083 - 5AF71- 1 ■ ■ ■ ■	4	27.3 (24.2)	14 (30.9)
	100	3.77 (5.06)	18 (159)	12 (106)	8	1FK7100 - 5AF71- 1 ■ ■ ■ ■	4	55.3 (48.9)	19 (41.9)
		4.87 (6.53)	27 (239)	15.5 (137)	11.8	1FK7101 - 5AF71- 1 ■ ■ ■ ■	4	79.9 (70.7)	21 (46.3)
		5.37 (7.20) ²⁾	36 (319)	20.5 (181) ²⁾	16.5 ²⁾	1FK7103 - 5AF71- 1 ■ ■ ■ ■	4	105 (92.9)	29 (63.9)
8.17 (11.0)		48 (425)	26 (230)	18	1FK7105 - 5AF71- 1 ■ ■ ■ ■	4	156 (138)	39 (86.0)	
Encoder systems for motors without DRIVE-CLiQ interface:			Incremental encoder sin/cos 1 V _{pp} 2048 S/R Absolute encoder EnDat 2048 S/R ¹⁾ Absolute encoder EnDat 32 S/R ¹⁾ Multi-pole resolver 2-pole resolver			A E G S T			
Encoder systems for motors with DRIVE-CLiQ interface:			Incremental encoder 22 bit Absolute encoder 22 bit single-turn + 12 bit multi-turn ¹⁾ Absolute encoder 16 bit single-turn + 12 bit multi-turn ¹⁾ 15 bit resolver 14 bit resolver			D F K U P			
Shaft extension: Fitted key and keyway Fitted key and keyway Plain shaft Plain shaft			Shaft and flange accuracy: Tolerance N Tolerance N Tolerance N Tolerance N		Holding brake: without with without with		A B G H		
Degree of protection:			IP64 IP65 and DE flange IP67 IP64 and anthracite paint finish IP65 and DE flange IP67, anthracite paint finish			0 2 3 5			
			IP65 and DE flange IP67, anthracite paint finish and metal rating plate on motor			8			

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

Synchronous motors for SINAMICS S120

1FK7 Compact motors
Natural cooling

Selection and Ordering Data

Motor type (continued)	Static current I_0 at M_0 $\Delta T=100$ K A	Calculated power P_{calc} ⁵⁾ P_{calc} for M_0 $\Delta T=100$ K kW (HP)	SINAMICS S120 Motor Module		Power cable with complete shield Motor connection (and brake connection) via power connector		
			Rated output current ⁴⁾ I_{rated} A	Booksize format Order No.	Power connector Size	Motor cable cross- section ³⁾ mm ²	Order No. Pre-assembled cable
1FK7105-5AC71...	20	10 (13.4)	30	6SL312 - TE23 - 0AA3	1.5	4 x 2.5	6FX 002 - 5S31 -
1FK7042-5AF71...	2.2	0.9 (1.21)	3	6SL312 - TE13 - 0AA3	1	4 x 1.5	6FX 002 - 5S01 -
1FK7060-5AF71...	4.5	1.9 (2.55)	5	6SL312 - TE15 - 0AA3	1	4 x 1.5	6FX 002 - 5S01 -
1FK7063-5AF71...	8	3.5 (4.69)	9	6SL312 - TE21 - 0AA3	1	4 x 1.5	6FX 002 - 5S01 -
1FK7080-5AF71...	4.8	2.5 (3.35)	5	6SL312 - TE15 - 0AA3	1	4 x 1.5	6FX 002 - 5S01 -
1FK7083-5AF71...	10.4	5.0 (6.71)	9 ³⁾	6SL312 - TE21 - 0AA3	1	4 x 1.5	6FX 002 - 5S01 -
1FK7100-5AF71...	11.2	5.7 (7.64)	18	6SL312 - TE21 - 8AA3	1	4 x 1.5	6FX 002 - 5S01 -
1FK7101-5AF71...	19	8.5 (11.4)	18 ³⁾	6SL312 - TE21 - 8AA3	1.5	4 x 2.5	6FX 002 - 5S31 -
1FK7103-5AF71...	27.5	11.3 (15.2)	30	6SL312 - 1TE23 - 0AA3	1.5	4 x 4	6FX 002 - 5S41 -
1FK7105-5AF71...	31	15 (20.1)	30 ³⁾	6SL312 - 1TE23 - 0AA3	1.5	4 x 10	6FX 002 - 5S61 -
Cooling: Internal air cooling External air cooling				0 1			
Motor Module: Single Motor Module Double Motor Module				1 2			
Type of power cable: MOTION-CONNECT 800 MOTION-CONNECT 500						8 5	
Without brake cores With brake cores							C D
For length code as well as power and signal cables, see Connection system MOTION-CONNECT.							

¹⁾ If the absolute encoder is used, M_{rated} is reduced by 10%.

²⁾ These values refer to $n = 2500$ rpm.

³⁾ The current carrying capacity of the power cables complies with IEC 60204-1 for installation type C under continuous operating conditions at an ambient air temperature of 40 °C (104 °F), designed for I_0 (100 K), PVC/PUR-insulated cable.

⁴⁾ With default setting of the pulse frequency.

⁵⁾ $P_{calc} [kW] = \frac{M_0 [Nm] \times n_{rated}}{9550}$ $P_{calc} [HP] = \frac{M_0 [lb_f-in] \times n_{rated}}{63000}$

Synchronous motors for SINAMICS S120

1FK7 Compact motors Natural cooling

Selection and Ordering Data

Rated speed	Shaft height	Rated power	Static torque	Rated torque ¹⁾	Rated current	1FK7 Compact synchronous motor Natural cooling	Number of pole pairs	Rotor moment of inertia (without brake)	Weight (without brake)
n_{rated}	SH	P_{rated} at $\Delta T=100\text{ K}$	M_0 at $\Delta T=100\text{ K}$	M_{rated} at $\Delta T=100\text{ K}$	I_{rated} at $\Delta T=100\text{ K}$	Order No.		J	m
rpm		kW (HP)	Nm (lb _f -in)	Nm (lb _f -in)	A			10^{-4} kgm^2 ($10^{-3}\text{ x lb}_f\text{-in-s}^2$)	kg (lb)
4500	63	1.74 (2.33)	6 (53.1)	3.7 (32.7)	4.1	1FK7060 - 5AH71- 1 ■ ■ ■	4	7.95 (7.04)	7 (15.4)
		2.09 (2.80) ²⁾	11 (97.4)	5 (44.3) ²⁾	6.1 ²⁾	1FK7063 - 5AH71- 1 ■ ■ ■	4	15.1 (13.4)	11.5 (25.4)
	80	2.39 (3.20) ²⁾	8 (70.8)	5.7 (50.5) ²⁾	5.6 ²⁾	1FK7080 - 5AH71- 1 ■ ■ ■	4	15 (13.3)	10 (22.1)
		3.04 (4.08) ³⁾	16 (142)	8.3 (73.5) ³⁾	9 ³⁾	1FK7083 - 5AH71- 1 ■ ■ ■	4	27.3 (24.2)	14 (30.9)
6000	20	0.05 (0.07)	0.18 (1.59)	0.08 (0.71)	0.85	1FK7011 - 5AK71- 1 ■ ■ ■ 3	4	0.064 (0.06)	0.9 (1.98)
		0.10 (0.13)	0.35 (3.10)	0.16 (1.42)	0.85	1FK7015 - 5AK71- 1 ■ ■ ■ 3	4	0.083 (0.07)	1.1 (2.43)
	28	0.43 (0.58)	0.85 (7.52)	0.6 (5.31)	1.4	1FK7022 - 5AK71- 1 ■ ■ ■	3	0.28 (0.25)	1.8 (3.97)
	36	0.50 (0.67)	1.1 (9.74)	0.8 (7.08)	1.3	1FK7032 - 5AK71- 1 ■ ■ ■	3	0.61 (0.54)	2.7 (5.95)
		0.63 (0.84)	1.6 (14.2)	1 (8.85)	1.3	1FK7034 - 5AK71- 1 ■ ■ ■	3	0.9 (0.80)	3.7 (8.16)
	48	0.69 (0.93)	1.6 (14.2)	1.1 (9.74)	1.7	1FK7040 - 5AK71- 1 ■ ■ ■	4	1.69 (1.50)	3.5 (7.72)
		1.02 (1.37) ⁴⁾	3 (26.6)	1.95 (17.3) ⁴⁾	3.1 ⁴⁾	1FK7042 - 5AK71- 1 ■ ■ ■	4	3.01 (2.66)	4.9 (10.8)

Encoder systems for motors without DRIVE-CLiQ interface:

Incremental encoder sin/cos 1V_{pp} 2048 S/R
 Absolute encoder EnDat 2048 S/R (not for 1FK701...1FK703)¹⁾
 Absolute encoder EnDat 512 S/R (only for 1FK701...1FK703)¹⁾
 Absolute encoder EnDat 32 S/R
 (not for 1FK701...1FK703)¹⁾
 Absolute encoder EnDat 16 S/R (only for 1FK701...1FK703)¹⁾
 Multi-pole resolver
 2-pole resolver

A
E
H
G
J
S
T

Encoder systems for motors with DRIVE-CLiQ interface:⁵⁾

Incremental encoder 22 bit
 (not for 1FK701)
 Absolute encoder 22 bit single-turn + 12 bit multi-turn¹⁾
 (not for 1FK701 ... 1FK703)
 Absolute encoder 20 bit single-turn + 12 bit multi-turn¹⁾
 (only for 1FK701 ... 1FK703)
 Absolute encoder 16 bit single-turn + 12 bit multi-turn¹⁾
 (not for 1FK701 ... 1FK703)
 Absolute encoder 15 bit single-turn + 12 bit multi-turn¹⁾
 (only for 1FK701 ... 1FK703)
 15 bit resolver (not for 1FK701)
 14 bit resolver (not for 1FK701)

D
F
L
K
V
U
P

Shaft extension:

Fitted key and keyway
 Fitted key and keyway
 Plain shaft
 Plain shaft

Shaft and flange accuracy:

Tolerance N
 Tolerance N
 Tolerance N
 Tolerance N

Holding brake:

without
 with
 without
 with

A
B
G
H

Degree of protection:

IP64 (not for 1FK701)
 IP65 and DE flange IP67 (not for 1FK701)
 IP64 (IP54 with 1FK701) and anthracite paint finish
 IP65 and DE flange IP67, anthracite paint finish
 (not for 1FK701)
 IP65 and DE flange IP67, anthracite paint finish
 and metal rating plate on motor (not for 1FK701)

0
2
3
5
8

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

Synchronous motors for SINAMICS S120

**1FK7 Compact motors
Natural cooling**
Selection and Ordering Data

Motor type (continued)	Static current I_0 at M_0 $\Delta T = 100\text{ K}$ A	Calculated power P_{calc} ⁸⁾ P_{calc} for M_0 $\Delta T = 100\text{ K}$ kW (HP)	SINAMICS S120 Motor Module		Power cable with complete shield Motor connection (and brake connection) via power connector		
			Rated output current ⁷⁾ I_{rated} A	Booksize format Order No.	Power connector Size	Motor cable cross- section ⁶⁾ mm ²	Order No. Pre-assembled cable
1FK7060-5AH71...	6.2	2.8 (3.75)	9	6SL312 - TE21 - 0AA3	1	4 x 1.5	6FX 002 - 5S01 -
1FK7063-5AH71...	12	5.2 (6.97)	18	6SL312 - TE21 - 8AA3	1	4 x 1.5	6FX 002 - 5S01 -
1FK7080-5AH71...	7.4	3.8 (5.10)	9	6SL312 - TE21 - 0AA3	1	4 x 1.5	6FX 002 - 5S01 -
1FK7083-5AH71...	15	7.5 (10.1)	18	6SL312 - TE21 - 8AA3	1	4 x 1.5	6FX 002 - 5S01 -
1FK7011-5AK71...	1.5	0.11 (0.15)	3	6SL312 - TE13 - 0AA3	0.5	4 x 1.5	6FX 5 002 - 5DA20 -
1FK7015-5AK71...	1.5	0.22 (0.30)	3	6SL312 - TE13 - 0AA3	0.5	4 x 1.5	6FX 5 002 - 5DA20 -
1FK7022-5AK71...	1.8	0.5 (0.67)	3	6SL312 - TE13 - 0AA3	1	4 x 1.5	6FX 002 - 5S01 -
1FK7032-5AK71...	1.7	0.7 (0.94)	3	6SL312 - TE13 - 0AA3	1	4 x 1.5	6FX 002 - 5S01 -
1FK7034-5AK71...	1.9	1 (1.34)	3	6SL312 - TE13 - 0AA3	1	4 x 1.5	6FX 002 - 5S01 -
1FK7040-5AK71...	2.25	1.0 (1.34)	3	6SL312 - TE13 - 0AA3	1	4 x 1.5	6FX 002 - 5S01 -
1FK7042-5AK71...	4.4	1.9 (2.55)	5	6SL312 - TE15 - 0AA3	1	4 x 1.5	6FX 002 - 5S01 -
Cooling: Internal air cooling External air cooling				0 1			
Motor Module: Single Motor Module Double Motor Module				1 2			
Type of power cable: MOTION-CONNECT 800 MOTION-CONNECT 500					8 5		
Without brake cores With brake cores						C D	
For length code as well as power and signal cables, see Connection system MOTION-CONNECT.							

¹⁾ If the absolute encoder is used, M_{rated} is reduced by 10%.

²⁾ These values refer to $n = 4000\text{ rpm}$.

³⁾ These values refer to $n = 3500\text{ rpm}$.

⁴⁾ These values refer to $n = 5000\text{ rpm}$.

⁵⁾ Motors with shaft height 20 are not available with a DRIVE-CLiQ interface. The encoder systems are connected via the SMC (Sensor Module Cabinet-Mounted).

⁶⁾ The current carrying capacity of the power cables complies with IEC 60204-1 for installation type C under continuous operating conditions at an ambient air temperature of 40 °C (104 °F), designed for I_0 (100 K), PVC/PUR-insulated cable.

⁷⁾ With default setting of the pulse frequency.

⁸⁾ $P_{\text{calc}} [\text{kW}] = \frac{M_0 [\text{Nm}] \times n_{\text{rated}}}{9550}$ $P_{\text{calc}} [\text{HP}] = \frac{M_0 [\text{lb}_f\text{-in}] \times n_{\text{rated}}}{63000}$

Synchronous motors for SINAMICS S120

1FK7 High Dynamic motors Natural cooling

Selection and Ordering Data

Rated speed	Shaft height	Rated power	Static torque	Rated torque ¹⁾	Rated current	1FK7 High Dynamic synchronous motor Natural cooling	Number of pole pairs	Rotor moment of inertia (without brake)	Weight (without brake)
n_{rated}	SH	P_{rated} at $\Delta T=100\text{ K}$	M_0 at $\Delta T=100\text{ K}$	M_{rated} at $\Delta T=100\text{ K}$	I_{rated} at $\Delta T=100\text{ K}$	Order No.		J	m
rpm		kW (HP)	Nm (lb _f -in)	Nm (lb _f -in)	A			10 ⁻⁴ kgm ² (10 ⁻³ x lb _f -in-s ²)	kg (lb)
3000	48	1.1 (1.48)	4 (35.4)	3.5 (31.0)	4	1FK7044 - 7AF71- 1 ■ ■ ■ ■	3	1.28 (1.13)	7.7 (17.0)
	63	1.7 (2.28)	6.4 (56.6)	5.4 (47.8)	5.3	1FK7061 - 7AF71- 1 ■ ■ ■ ■	3	3.4 (3.01)	10 (22.1)
		2.51 (3.37)	12 (106)	8 (70.8)	7.5	1FK7064 - 7AF71- 1 ■ ■ ■ ■	3	6.5 (5.75)	15.5 (34.2)
	80	3.14 (4.21) ²⁾	22 (195)	12 (106) ²⁾	12.5 ²⁾	1FK7085 - 7AF71- 1 ■ ■ ■ ■	4	23 (20.4)	23.5 (51.8)
		3.77 (5.06) ³⁾	28 (248)	18 (159) ³⁾	14.5 ³⁾	1FK7086 - 7AF71- 1 ■ ■ ■ ■	4	23 (20.4)	23.5 (51.8)
4500	48	1.23 (1.65)	3.1 (27.4)	2.6 (23.0)	4	1FK7043 - 7AH71- 1 ■ ■ ■ ■	3	1 (0.89)	6.3 (13.9)
		1.41 (1.89)	4 (35.4)	3 (26.6)	4.9	1FK7044 - 7AH71- 1 ■ ■ ■ ■	3	1.28 (1.13)	7.7 (17.0)
	63	2.03 (2.72)	6.4 (56.6)	4.3 (38.1)	5.9	1FK7061 - 7AH71- 1 ■ ■ ■ ■	3	3.4 (3.01)	10 (22.1)
		2.36 (3.16)	12 (106)	5 (44.3)	7	1FK7064 - 7AH71- 1 ■ ■ ■ ■	3	6.5 (5.75)	15.5 (34.2)
6000	36	0.57 (0.76)	1.3 (11.5)	0.9 (7.97)	1.5	1FK7033 - 7AK71- 1 ■ ■ ■ ■	3	0.27 (0.24)	3.1 (6.84)
	48	1.26 (1.69)	3.1 (27.4)	2 (17.7)	4.4	1FK7043 - 7AK71- 1 ■ ■ ■ ■	3	1 (0.89)	6.3 (13.9)
Encoder systems for motors without DRIVE-CLiQ interface:			Incremental encoder sin/cos 1 V _{pp} 2048 S/R Absolute encoder EnDat 2048 S/R (not for 1FK703) ¹⁾ Absolute encoder EnDat 512 S/R (only for 1FK703) ¹⁾ Absolute encoder EnDat 32 S/R (not for 1FK703) ¹⁾ Absolute encoder EnDat 16 S/R (only for 1FK703) ¹⁾ Multi-pole resolver 2-pole resolver				A E H G J S T		
Encoder systems for motors with DRIVE-CLiQ interface:			Incremental encoder 22 bit Absolute encoder 22 bit single-turn + 12 bit multi-turn ¹⁾ (not for 1FK703) Absolute encoder 20 bit single-turn + 12 bit multi-turn ¹⁾ (only for 1FK703) Absolute encoder 16 bit single-turn + 12 bit multi-turn ¹⁾ (not for 1FK703) Absolute encoder 15 bit single-turn + 12 bit multi-turn ¹⁾ (only for 1FK703) 15 bit resolver 14 bit resolver				D F L K V U P		
Shaft extension: Fitted key and keyway Fitted key and keyway Plain shaft Plain shaft			Shaft and flange accuracy: Tolerance N Tolerance N Tolerance N Tolerance N			Holding brake: without with without with		A B G H	
Degree of protection:			IP64 IP65 and drive end flange IP67 IP64 and anthracite paint finish IP65 and DE flange IP67, anthracite paint finish IP65 and DE flange IP67, anthracite paint finish and metal rating plate on motor				0 2 3 5 8		

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

Synchronous motors for SINAMICS S120

**1FK7 High Dynamic motors
Natural cooling**

Selection and Ordering Data

Motor type (continued)	Static current I_0 at M_0 $\Delta T=100\text{ K}$ A	Calculated power P_{calc} ⁶⁾ P_{calc} for M_0 $\Delta T=100\text{ K}$ kW (HP)	SINAMICS S120 Motor Module		Power cable with complete shield Motor connection (and brake connection) via power connector		
			Rated output current ⁵⁾ I_{rated} A	Booksize format Order No.	Power connector Size	Motor cable cross- section ⁴⁾ mm ²	Order No. Pre-assembled cable
1FK7044-7AF71...	4.5	1.3 (1.74)	5	6SL312 - - TE15 - 0AA3	1	4 x 1.5	6FX 002 - 5 S01 -
1FK7061-7AF71...	6.1	2.0 (2.68)	9	6SL312 - - TE21 - 0AA3	1	4 x 1.5	6FX 002 - 5 S01 -
1FK7064-7AF71...	11	3.8 (5.10)	18	6SL312 - - TE21 - 8AA3	1	4 x 1.5	6FX 002 - 5 S01 -
1FK7085-7AF71...	22.5	6.9 (9.25)	30	6SL312 - - 1TE23 - 0AA3	1.5	4 x 4	6FX 002 - 5 S41 -
1FK7086-7AF71...	21	8.8 (11.8)	30	6SL312 - - 1TE23 - 0AA3	1.5	4 x 4	6FX 002 - 5 S41 -
1FK7043-7AH71...	4.5	1.5 (2.01)	5	6SL312 - - TE15 - 0AA3	1	4 x 1.5	6FX 002 - 5 S01 -
1FK7044-7AH71...	6.3	1.9 (2.55)	9	6SL312 - - TE21 - 0AA3	1	4 x 1.5	6FX 002 - 5 S01 -
1FK7061-7AH71...	8	3.0 (4.02)	9	6SL312 - - TE21 - 0AA3	1	4 x 1.5	6FX 002 - 5 S01 -
1FK7064-7AH71...	15	5.7 (7.64)	18	6SL312 - - TE21 - 8AA3	1	4 x 1.5	6FX 002 - 5 S01 -
1FK7033-7AK71...	2.2	0.8 (1.07)	3	6SL312 - - TE13 - 0AA3	1	4 x 1.5	6FX 002 - 5 S01 -
1FK7043-7AK71...	6.4	1.9 (2.55)	9	6SL312 - - TE21 - 0AA3	1	4 x 1.5	6FX 002 - 5 S01 -
Cooling: Internal air cooling External air cooling				0 1			
Motor Module: Single Motor Module Double Motor Module				1 2			
Type of power cable: MOTION-CONNECT 800 MOTION-CONNECT 500					8 5		
Without brake cores With brake cores						C D	
For length code as well as power and signal cables, see Connection system MOTION-CONNECT.							

¹⁾ If the absolute encoder is used, M_{rated} is reduced by 10%.

²⁾ These values refer to $n = 2500\text{ rpm}$.

³⁾ These values refer to $n = 2000\text{ rpm}$.

⁴⁾ The current carrying capacity of the power cables complies with IEC 60204-1 for installation type C under continuous operating conditions at an ambient air temperature of 40 °C (104 °F), designed for I_0 (100 K), PVC/PUR-insulated cable.

⁵⁾ With default setting of the pulse frequency.

⁶⁾ $P_{\text{calc}} [\text{kW}] = \frac{M_0 [\text{Nm}] \times n_{\text{rated}}}{9550}$ $P_{\text{calc}} [\text{HP}] = \frac{M_0 [\text{lb}_f\text{-in}] \times n_{\text{rated}}}{63000}$

Synchronous motors for SINAMICS S120

1FK7 Compact/High Dynamic motors Natural cooling for Power Modules

Selection and Ordering Data

Rated speed	Shaft height	Rated power	Static torque	Rated torque ¹⁾	Rated current	1FK7 Compact/ 1FK7 High Dynamic synchronous motor Natural cooling Connection to SINAMICS 230 V 1 AC	Num-ber of pole pairs	Rotor moment of inertia (without brake)	Weight (without brake)	
n_{rated}	SH	P_{rated} at $\Delta T=100\text{ K}$	M_0 at $\Delta T=100\text{ K}$	M_{rated} at $\Delta T=100\text{ K}$	I_{rated} at $\Delta T=100\text{ K}$	Order No.		J	m	
rpm		kW (HP)	Nm (lb _f -in)	Nm (lb _f -in)	A			10 ⁻⁴ kgm ² (10 ⁻³ x lb _f -in-s ²)	kg (lb)	
3000	36	0.31 (0.42)	1.15 (10.2)	1.0 (8.85)	1.6	1FK7032 - 5AF21- 1 ■ ■ ■	3	0.61 (0.54)	2.7 (5.95)	
		0.38 (0.51)	1.3 (11.5)	1.2 (10.6)	2	1FK7033 - 7AF21- 1 ■ ■ ■	3	0.27 (0.24)	3.1 (6.84)	
		0.46 (0.62)	1.6 (14.2)	1.45 (12.8)	1.8	1FK7034 - 5AF21- 1 ■ ■ ■	3	0.9 (0.80)	3.7 (8.16)	
	48	0.82 (1.10)	3 (26.6)	2.6 (23.0)	3.5	1FK7042 - 5AF21- 1 ■ ■ ■	4	3.01 (2.66)	4.9 (10.8)	
		0.79 (1.06)	2.7 (23.9)	2.5 (22.1)	3.8	1FK7043 - 7AF21- 1 ■ ■ ■	3	1 (0.89)	6.3 (13.9)	
6000	20	0.05 (0.07)	0.18 (1.59)	0.08 (0.71)	0.5	1FK7011 - 5AK21-1 ■ ■ ■ 3	4	0.064 (0.06)	0.9 (1.98)	
		0.10 (0.13)	0.35 (3.10)	0.16 (0.42)	0.5	1FK7015 - 5AK21-1 ■ ■ ■ 3	4	0.083 (0.07)	1.1 (2.43)	
	28	0.38 (0.51)	0.85 (7.52)	0.6 (5.31)	1.4	1FK7022 - 5AK21-1 ■ ■ ■	3	0.28 (0.25)	1.8 (3.97)	
Synchronous motor:			1FK7 Compact 1FK7 High Dynamic			5 7				
Encoder systems for motors without DRIVE-CLiQ interface:			Incremental encoder sin/cos 1 V _{pp} 2048 S/R Absolute encoder EnDat 2048 S/R (only for 1FK704) ¹⁾ Absolute encoder EnDat 512 S/R (not for 1FK704) ¹⁾ Absolute encoder EnDat 32 S/R (only for 1FK704) ¹⁾ Absolute encoder EnDat 16 S/R (not for 1FK704) ¹⁾ Multi-pole resolver 2-pole resolver				A E H G J S T			
Encoder systems for motors with DRIVE-CLiQ interface: ⁴⁾			Incremental encoder 22 bit (not for 1FK701) Absolute encoder 22 bit single-turn + 12 bit multi-turn ¹⁾ (only for 1FK704) Absolute encoder 20 bit single-turn + 12 bit multi-turn ¹⁾ (only for 1FK702/1FK703) Absolute encoder 16 bit single-turn + 12 bit multi-turn ¹⁾ (only for 1FK704) Absolute encoder 15 bit single-turn + 12 bit multi-turn ¹⁾ (not for 1FK704) 15 bit resolver (not for 1FK701) 14 bit resolver (not for 1FK701)				D F L K V U P			
Shaft extension: Fitted key and keyway Fitted key and keyway Plain shaft Plain shaft			Shaft and flange accuracy: Tolerance N Tolerance N Tolerance N Tolerance N			Holding brake: without with without with		A B G H		
Degree of protection:			IP64 (not for 1FK701) IP65 and DE flange IP67 (not for 1FK701) IP64 (IP54 with 1FK701) and anthracite paint finish IP65 and DE flange IP67, anthracite paint finish (not for 1FK701) IP65 and DE flange IP67, anthracite paint finish and metal rating plate on motor (not for 1FK701)				0 2 3 5 8			

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

Synchronous motors for SINAMICS S120

**1FK7 Compact/High Dynamic motors
Natural cooling for Power Modules**

Selection and Ordering Data

Motor type (continued)	Static current I_0 at M_0 $\Delta T=100\text{ K}$ A	Calculated power P_{calc} ⁶⁾ P_{calc} for M_0 $\Delta T=100\text{ K}$ kW (HP)	SINAMICS S120 Power Module		Power cable with complete shield Motor connection (and brake connection) via power connector		
			Rated output current ⁵⁾ I_{rated} A	Blocksize format without line filter Order No.	Power connector Size	Motor cable cross- section ³⁾ mm ²	Order No. Pre-assembled cable
1FK7032-5AF21...	1.7	0.36 (0.48)	2.3	6SL3210-1SB12-3UA0	1	4 x 1.5	6FX 002 - 5 G01 -
1FK7033-7AF21...	2.1	0.41 (0.55)	2.3	6SL3210-1SB12-3UA0	1	4 x 1.5	6FX 002 - 5 G01 -
1FK7034-5AF21...	1.9	0.5 (0.67)	2.3	6SL3210-1SB12-3UA0	1	4 x 1.5	6FX 002 - 5 G01 -
1FK7042-5AH21...	3.9	0.94 (1.26)	3.9	6SL3210-1SB14-0UA0	1	4 x 1.5	6FX 002 - 5 G01 -
1FK7043-7AH21...	3.9	0.85 (1.14)	3.9	6SL3210-1SB14-0UA0	1	4 x 1.5	6FX 002 - 5 G01 -
1FK7011-5AK21...	0.85	0.11 (0.15)	0.9	6SL3210-1SB11-0UA0	0.5	4 x 1.5	6FX5 002 - 5DA30 -²⁾
1FK7015-5AK21...	0.85	0.22 (0.30)	0.9	6SL3210-1SB11-0UA0	0.5	4 x 1.5	6FX5 002 - 5DA30 -²⁾
1FK7022-5AK21...	1.8	0.53 (0.71)	2.3	6SL3210-1SB12-3UA0	1	4 x 1.5	6FX 002 - 5 G01 -
Type of power cable: MOTION-CONNECT 800 MOTION-CONNECT 500						8 5	
Without brake cores With brake cores							C D
For length code as well as power and signal cables, see Connection system MOTION-CONNECT.							

¹⁾ If the absolute encoder is used, M_{rated} is reduced by 10%.

²⁾ This power cable is fitted with a connector with M17 thread at the motor end and brake cores as standard (4 x 1.5 mm² + 2 x 1.5 mm²).

³⁾ The current carrying capacity of the power cables complies with IEC 60204-1 for installation type C under continuous operating conditions at an ambient air temperature of 40 °C (104 °F), designed for I_0 (100 K), PVC/PUR-insulated cable.

⁴⁾ Motors with shaft height 20 are not available with a DRIVE-CLiQ interface. The encoder systems are connected via the SMC (Sensor Module Cabinet-Mounted).

⁵⁾ With default setting of the pulse frequency.

⁶⁾ $P_{\text{calc}} [\text{kW}] = \frac{M_0 [\text{Nm}] \times n_{\text{rated}}}{9550}$ $P_{\text{calc}} [\text{HP}] = \frac{M_0 [\text{lb}_f\text{-in}] \times n_{\text{rated}}}{63000}$