

Synchronous motors

Feed motors for SIMODRIVE 611

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	No. of pole pairs	Rotor moment of inertia (without brake)	Weight (without brake)	
<i>n</i> _{rated}	SH	<i>P</i> _{rated} at Δ <i>T</i> =100 K	<i>M</i> ₀ at Δ <i>T</i> =100 K	<i>M</i> _{rated} at Δ <i>T</i> =100 K	<i>I</i> _{rated} at Δ <i>T</i> =100 K			<i>J</i>	<i>m</i>	
rpm		kW (HP)	Nm (lb _f -in)	Nm (lb _f -in)	A	Order No.		10 ⁻⁴ kgm ² (lb _f -in-s ²)	kg (lb)	
2 000	100	4.29 (5.75)	27 (238)	20.5 (181.4)	9.6	1FK7101 - 5AC71-1 ■ ■ ■	4	79.9 (0.0707)	21 (46.3)	
		5.23 (7.01)	36 (319)	25 (221.3)	11.5	1FK7103 - 5AC71-1 ■ ■ ■	4	105 (0.0929)	29 (63.9)	
		7.75 (10.39)	48 (425)	37 (328)	16	1FK7105 - 5AC71-1 ■ ■ ■	4	156 (0.1381)	39 (86.2)	
3 000	48	0.82 (1.1)	3 (27)	2.6 (23)	1.95	1FK7042 - 5AF71- 1 ■ ■ ■	4	3.01 (0.0027)	4.9 (10.8)	
		63	1.48 (1.98)	6 (53)	4.7 (41.6)	3.7	1FK7060 - 5AF71- 1 ■ ■ ■	4	7.95 (0.0070)	7 (15.4)
			2.29 (3.07)	11 (97)	7.3 (64.6)	5.6	1FK7063 - 5AF71- 1 ■ ■ ■	4	15.1 (0.0134)	11.5 (25.4)
	80	2.14 (2.87)	8 (71)	6.8 (60.2)	4.4	1FK7080 - 5AF71- 1 ■ ■ ■	4	15 (0.0133)	10 (22.1)	
		3.3 (4.42)	16 (142)	10.5 (92.9)	7.4	1FK7083 - 5AF71- 1 ■ ■ ■	4	27.3 (0.0242)	14 (30.9)	
	100	3.77 (5.05)	18 (159)	12 (106.1)	8	1FK7100 - 5AF71- 1 ■ ■ ■	4	55.3 (0.0489)	19 (41.9)	
		4.87 (6.53)	27 (238)	15.5 (137.2)	11.8	1FK7101 - 5AF71- 1 ■ ■ ■	4	79.9 (0.0707)	21 (46.3)	
		5.37 (7.2) ²⁾	36 (319)	20.5 (181.4) ²⁾	16.5 ²⁾	1FK7103 - 5AF71- 1 ■ ■ ■	4	105 (0.0929)	29 (63.9)	
		8.17 (10.95)	48 (425)	26 (230)	18	1FK7105 - 5AF71- 1 ■ ■ ■	4	156 (0.1381)	39 (86.2)	
	4 500	63	1.74 (2.33)	6 (53)	3.7 (32.7)	4.1	1FK7060 - 5AH71- 1 ■ ■ ■	4	7.95 (0.0070)	7 (15.4)
			2.09 (2.8) ³⁾	11 (97)	5 (44.3) ³⁾	6.1 ³⁾	1FK7063 - 5AH71- 1 ■ ■ ■	4	15.1 (0.0134)	11.5 (25.4)
80		2.39 (3.2) ³⁾	8 (71)	5.7 (50.5) ³⁾	5.6 ³⁾	1FK7080 - 5AH71- 1 ■ ■ ■	4	15 (0.0133)	10 (22.1)	
		3.04 (4.8) ⁴⁾	16 (142)	8.3 (73.5) ⁴⁾	9 ⁴⁾	1FK7083 - 5AH71- 1 ■ ■ ■	4	27.3 (0.0242)	14 (30.9)	
6 000	20	0.05 (0.07)	0.18 (1.6)	0.08 (0.7)	0.85	1FK7011 - 5AK71- 1 ■ ■ ■ 3	4	0.064 (0.00006)	0.9 (2)	
		0.10 (0.13)	0.35 (3.1)	0.16 (1.4)	0.85	1FK7015 - 5AK71- 1 ■ ■ ■ 3	4	0.083 (0.00007)	1.1 (2.4)	
	28	0.43 (0.58)	0.85 (7.5)	0.6 (5.3)	1.4	1FK7022 - 5AK71- 1 ■ ■ ■	3	0.28 (0.0002)	1.8 (4)	
		36	0.50 (0.67)	1.1 (9.7)	0.8 (7.1)	1.3	1FK7032 - 5AK71- 1 ■ ■ ■	3	0.61 (0.0005)	2.7 (6)
	0.63 (0.84)		1.6 (14.2)	1 (8.9)	1.3	1FK7034 - 5AK71- 1 ■ ■ ■	3	0.9 (0.0008)	3.7 (8.2)	
	48	0.69 (0.92)	1.6 (14.2)	1.1 (9.7)	1.7	1FK7040 - 5AK71- 1 ■ ■ ■	4	1.69 (0.0015)	3.5 (7.7)	
		1.02 (1.41) ⁵⁾	3 (27)	1.95 (17.3) ⁵⁾	3.1 ⁵⁾	1FK7042 - 5AK71- 1 ■ ■ ■	4	3.01 (0.0027)	4.9 (10.8)	
	Encoder systems:			Incremental encoder sin/cos 1 V _{pp} 2 048 S/R Absolute encoder EnDat 2 048 S/R ¹⁾ (only for 1FK704 ... 1FK710) Absolute encoder EnDat 512 S/R ¹⁾ (only for 1FK702 ... 1FK703) Absolute encoder EnDat 32 S/R ¹⁾ (only for 1FK704 ... 1FK710) Absolute encoder EnDat 16 S/R ¹⁾ (only for 1FK701 ... 1FK703) Multipole resolver 2-pole resolver				A E H G J S T		
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 IP67 drive end flange (not for 1FK701) IP64 (IP54 for 1FK701) and anthracite paint finish IP65 and IP67 drive end flange, anthracite paint finish (not for 1FK701) IP65 and IP67 drive end flange, anthracite paint finish and metal rating plate on motor (not for 1FK701)				0 2 3 5 8			

To select the degree of protection, see Selection guides.

Synchronous motors

Feed motors for SIMODRIVE 611

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 ⁹⁾ P_{calc} for M_0 $\Delta T=100\text{ K}$ kW (HP)	SIMODRIVE 611 power module		Power cable with complete shield Motor connection and brake connection via power connector		
			Rated output current ⁸⁾ I_{rated} A	Order No.	Power connector Size	Cable cross- section ⁷⁾ mm ²	Pre-assembled cable Order No.
1FK7101-5AC71...	12.3	5.7 (7.64)	18	For ordering data, see Converter system	1.5	4 x 1,5	6FX 002-5 A21 - ...
1FK7103-5AC71...	14.7	7.5 (10.06)	18		1.5	4 x 1,5	6FX 002-5 A21 - ...
1FK7105-5AC71...	20	10 (13.4)	28		1.5	4 x 2.5	6FX 002-5 A31 - ...
1FK7042-5AF71...	2.2	0.9 (1.21)	3		1	4 x 1.5	6FX 002-5 A01 - ...
1FK7060-5AF71...	4.5	1.9 (2.55)	5		1	4 x 1.5	6FX 002-5 A01 - ...
1FK7063-5AF71...	8	3.5 (4.69)	9		1	4 x 1.5	6FX 002-5 A01 - ...
1FK7080-5AF71...	4.8	2.5 (3.35)	5		1	4 x 1.5	6FX 002-5 A01 - ...
1FK7083-5AF71...	10.4	5.0 (6.7)	9 ⁶⁾		1	4 x 1.5	6FX 002-5 A01 - ...
1FK7100-5AF71...	11.2	5.7 (7.64)	18		1	4 x 1.5	6FX 002-5 A01 - ...
1FK7101-5AF71...	19	8.5 (11.39)	18 ⁶⁾		1.5	4 x 2.5	6FX 002-5 A31 - ...
1FK7103-5AF71...	27.5	11.3 (15.15)	28		1.5	4 x 4	6FX 002-5 A41 - ...
1FK7105-5AF71...	31	15 (20.11)	28 ⁶⁾		1.5	4 x 6	6FX 002-5 A51 - ...
1FK7060-5AH71...	6.2	2.8 (3.75)	9		1	4 x 1.5	6FX 002-5 A01 - ...
1FK7063-5AH71...	12	5.2 (6.97)	18		1	4 x 1.5	6FX 002-5 A01 - ...
1FK7080-5AH71...	7.4	3.8 (5.09)	9		1	4 x 1.5	6FX 002-5 A01 - ...
1FK7083-5AH71...	15	7.5 (10.06)	18		1	4 x 1.5	6FX 002-5 A01 - ...
1FK7011-5AK71...	1.5	0.11	3		0.5	4 x 1.5	6FX 5002-5 DA30 - ...
1FK7015-5AK71...	1.5	0.22	3		0.5	4 x 1.5	6FX 5002-5 DA30 - ...
1FK7022-5AK71...	1.8	0.5	3		1	4 x 1.5	6FX 002-5 A01 - ...
1FK7032-5AK71...	1.7	0.7 (0.94)	3		1	4 x 1.5	6FX 002-5 A01 - ...
1FK7034-5AK71...	1.9	1 (1.34)	3		1	4 x 1.5	6FX 002-5 A01 - ...
1FK7040-5AK71...	2.25	1 (1.34)	3		1	4 x 1.5	6FX 002-5 A01 - ...
1FK7042-5AK71...	4.4	1.9 (2.55)	5		1	4 x 1.5	6FX 002-5 A01 - ...

Type of power cable:

MOTION-CONNECT 800

MOTION-CONNECT 700 (only with brake cores)

MOTION-CONNECT 500

MOTION-CONNECT 500 PLUS (only up to a cross-section of 6 mm²)

8	0
7	0
5	0
5	1

Without brake cores

With brake cores

C
D

For length code as well as power and signal cables, see connection system MOTION-CONNECT.

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

²⁾ These values refer to $n = 2\,500\text{ rpm}$.

³⁾ These values refer to $n = 4\,000\text{ rpm}$.

⁴⁾ These values refer to $n = 3\,500\text{ rpm}$.

⁵⁾ These values refer to $n = 5\,000\text{ rpm}$.

⁶⁾ With the specified power module, the motor cannot be fully utilized at M_0 at $\Delta T=100\text{ K}$ winding temperature rise. If a power module with a higher rating is used, you must check whether the specified power cable can be connected to it.

⁷⁾ The current carrying capacity of the power cables complies with EN 60204-1 for installation type C under continuous operating conditions at an ambient air temperature of 40 °C (104 °F).

⁸⁾ For the default setting of pulse frequency.

⁹⁾ $P_{\text{calc}} [\text{kW}] = \frac{M_0 [\text{Nm}] \times n_{\text{rated}}}{9550}$ $P_{\text{calc}} [\text{HP}] = \frac{M_0 [\text{lb}_f\text{-in}] \times n_{\text{rated}}}{63000}$

Synchronous motors

Feed motors for SIMODRIVE 611

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	No. of pole pairs	Rotor moment of inertia (without brake)	Weight (without brake)	
n_{rated}	SH	P_{rated} at $\Delta T=100$ K	M_0 at $\Delta T=100$ K	M_{rated} at $\Delta T=100$ K	I_{rated} at $\Delta T=100$ K			J	m	
rpm		kW (HP)	Nm (lb _f -in)	Nm (lb _f -in)	A	Order No.		10 ⁻⁴ kgm ² (lb _f -in-s ²)	kg (lb)	
3 000	48	1.1 (1.5)	4 (35)	3.5 (31)	4	1FK7044 - 7AF71- 1■ ■ ■	3	1.28 (0.0011)	7.7 (17)	
	63	1.7 (2.3)	6.4 (56.6)	5.4 (47.8)	5.3	1FK7061 - 7AF71- 1■ ■ ■	3	3.4 (0.0030)	10 (22.1)	
		2.51 (3.36)	12 (106)	8 (71)	7.5	1FK7064 - 7AF71- 1■ ■ ■	3	6.5 (0.0058)	15.5 (34.2)	
	80	3.14 (4.21) ²⁾ 3.77 (5.05) ³⁾	22 (195) 28 (248)	12 (106) ²⁾ 18 (159) ³⁾	12.5 ²⁾ 14.5 ³⁾	1FK7085 - 7AF71- 1■ ■ ■ 1FK7086 - 7AF71- 1■ ■ ■	4 4	23 (0.0204) 23 (0.0204)	23.5 (51.8) 23.5 (51.8)	
4 500	48	1.23 (1.65) 1.41 (1.53)	3.1 (27.4) 4 (35)	2.6 (23) 3 (27)	4 4.9	1FK7043 - 7AH71- 1■ ■ ■ 1FK7044 - 7AH71- 1■ ■ ■	3 3	1 (0.0009) 1.28 (0.0011)	6.3 (13.9) 7.7 (17)	
	63	2.03 (2.72)	6.4 (56.6)	4.3 (38.1)	5.9	1FK7061 - 7AH71- 1■ ■ ■	3	3.4 (0.0030)	10 (22.1)	
		2.36 (3.16)	12 (106)	5 (44)	7	1FK7064 - 7AH71- 1■ ■ ■	3	6.5 (0.0058)	15.5 (34.2)	
6 000	36	0.57 (0.76)	1.3 (11.5)	0.9 (8)	1.5	1FK7033 - 7AK71- 1■ ■ ■	3	0.27 (0.0002)	3.1 (6.8)	
	48	1.26 (1.69)	3.1 (27.4)	2 (17.7)	4.4	1FK7043 - 7AK71- 1■ ■ ■	3	1 (0.0009)	6.3 (13.9)	
Encoder systems:			Incremental encoder sin/cos 1 V _{pp} 2 048 S/R Absolute encoder EnDat 2 048 S/R ¹⁾ (not for 1FK703) Absolute encoder EnDat 512 S/R ¹⁾ (only for 1FK703) Absolute encoder EnDat 32 S/R ¹⁾ (not for 1FK703) Absolute encoder EnDat 16 S/R ¹⁾ (only for 1FK703) Multipole resolver 2-pole resolver				A E H G J S T			
Shaft extension:			Shaft and flange accuracy:		Holding brake:		A B G H			
Fitted key and keyway			Tolerance N		Without					
Fitted key and keyway			Tolerance N		With					
Plain shaft			Tolerance N		Without					
Plain shaft			Tolerance N		With					
Degree of protection:			IP64 IP65 and IP67 drive end flange IP64 and anthracite paint finish IP65 and IP67 drive end flange, anthracite paint finish IP65 and IP67 drive end flange, anthracite paint finish and metal rating plate on motor				0 2 3 5 8			

To select the degree of protection, see Selection guides.

Synchronous motors

Feed motors for SIMODRIVE 611

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 ⁶⁾ P_{calc} for M_0 $\Delta T = 100\text{ K}$ kW (HP)	SIMODRIVE 611 power module		Power cable with complete shield Motor connection and brake connection via power connector		
			Rated output current ⁵⁾ I_{rated} A	Order No.	Power connector Size	Cable cross- section ⁴⁾ mm ²	Pre-assembled cable Order No.
1FK7044-7AF71...	4.5	1.3 (1.7)	5	For ordering data, see Converter system	1	4 x 1.5	6FX ■ ■ 02- 5 ■ A01 -
1FK7061-7AF71...	6.1	2.0 (2.7)	9		1	4 x 1.5	6FX ■ ■ 02- 5 ■ A01 -
1FK7064-7AF71...	11	3.8 (5.1)	18		1	4 x 1.5	6FX ■ ■ 02- 5 ■ A01 -
1FK7085-7AF71...	22.5	6.9 (9.3)	28		1.5	4 x 4	6FX ■ ■ 02- 5 ■ A41 -
1FK7086-7AF71...	21	8.8 (11.8)	28		1.5	4 x 4	6FX ■ ■ 02- 5 ■ A41 -
1FK7043-7AH71...	4.5	1.5 (2.0)	5		1	4 x 1.5	6FX ■ ■ 02- 5 ■ A01 -
1FK7044-7AH71...	6.3	1.9 (2.6)	9		1	4 x 1.5	6FX ■ ■ 02- 5 ■ A01 -
1FK7061-7AH71...	8	3.0 (4.0)	9		1	4 x 1.5	6FX ■ ■ 02- 5 ■ A01 -
1FK7064-7AH71...	15	5.7 (7.6)	18		1	4 x 1.5	6FX ■ ■ 02- 5 ■ A01 -
1FK7033-7AK71...	2.2	0.8 (1.1)	3		1	4 x 1.5	6FX ■ ■ 02- 5 ■ A01 -
1FK7043-7AK71...	6.4	1.9 (2.6)	9		1	4 x 1.5	6FX ■ ■ 02- 5 ■ A01 -

Type of power cable:

MOTION-CONNECT 800

MOTION-CONNECT 700 (only with brake cores)

MOTION-CONNECT 500

MOTION-CONNECT 500 PLUS (only up to a cross-section of 6 mm²)

8 0
7 0
5 0
5 1

Without brake cores

With brake cores

C
D

For length code as well as power and signal cables, see connection system MOTION-CONNECT.

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

²⁾ These values refer to $n = 2\,500\text{ rpm}$.

³⁾ These values refer to $n = 2\,000\text{ rpm}$.

⁴⁾ The current carrying capacity of the power cables complies with EN 60204-1 for installation type C under continuous operating conditions at an ambient air temperature of 40 °C (104 °F).

⁵⁾ For the default setting of pulse frequency.

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