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)
n_{rated}	SH	P_{rated} at ΔT=100 K	M_0 at ΔT=100 K	M_{rated} at ΔT=100 K	I_{rated} at ΔT=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)
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 pulses/revolution	**A**
	Absolute encoder EnDat 2 048 pulses/revolution[1] (not for 1FK701 ... 1FK703)	**E**
	Absolute encoder EnDat 512 pulses/revolution[1] (only for 1FK702 ... 1FK703)	**H**
	Absolute encoder EnDat 32 pulses/revolution[1] (only for 1FK701 ... 1FK703)	**G**
	Absolute encoder EnDat 16 pulses/revolution[1] (only for 1FK701 ... 1FK703)	**J**
	Multipole resolver	**S**
	2-pole resolver	**T**

Shaft extension:	**Shaft and flange accuracy:**	**Holding brake:**	
Fitted key and keyway	Tolerance N	without	**A**
Fitted key and keyway	Tolerance N	with	**B**
Plain shaft	Tolerance N	without	**G**
Plain shaft	Tolerance N	with	**H**

Degree of protection:	IP64 (not for 1FK701)	**0**
	IP65 and IP67 drive end flange (not for 1FK701)	**2**
	IP64 (IP54 for 1FK701) and anthracite paint finish	**3**
	IP65 and IP67 drive end flange, anthracite paint finish (not for 1FK701)	**5**
	IP65 and IP67 drive end flange, anthracite paint finish and metal rating plate on motor (not for 1FK701)	**8**

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

Selection and Ordering Data

Motor type (continued)	Static current	Calculated power[9]	SIMODRIVE 611 power module		Power cable with complete shield Motor connection (and brake connection) via power connector		
			Rated output current[8]		Power connector	Cable cross-section[7]	Pre-assembled cable
	I_0 at M_0 ΔT=100 K	P_{calc} for M_0 ΔT=100 K	I_{rated}				
	A	kW (HP)	A	Order No.	Size	mm²	Order No.
1FK7101-5AC71...	12.3	5.7 (7.64)	18	For ordering data, see Converter systems	1.5	4 x 1,5	6FX■ ■02- 5■A21 - ....
1FK7103-5AC71...	14.7	7.5 (10.06)	18		1.5	4 x 1,5	6FX■ ■02- 5■A21 - ....
1FK7105-5AC71...	20	10 (13.4)	28		1.5	4 x 2.5	6FX■ ■02- 5■A31 - ....
1FK7042-5AF71...	2.2	0.9 (1.21)	3		1	4 x 1.5	6FX■ ■02- 5■A01 - ....
1FK7060-5AF71...	4.5	1.9 (2.55)	5		1	4 x 1.5	6FX■ ■02- 5■A01 - ....
1FK7063-5AF71...	8	3.5 (4.69)	9		1	4 x 1.5	6FX■ ■02- 5■A01 - ....
1FK7080-5AF71...	4.8	2.5 (3.35)	5		1	4 x 1.5	6FX■ ■02- 5■A01 - ....
1FK7083-5AF71...	10.4	5.0 (6.7)	9[6]		1	4 x 1.5	6FX■ ■02- 5■A01 - ....
1FK7100-5AF71...	11.2	5.7 (7.64)	18		1	4 x 1.5	6FX■ ■02- 5■A01 - ....
1FK7101-5AF71...	19	8.5 (11.39)	18[6]		1.5	4 x 2.5	6FX■ ■02- 5■A31 - ....
1FK7103-5AF71...	27.5	11.3 (15.15)	28		1.5	4 x 4	6FX■ ■02- 5■A41 - ....
1FK7105-5AF71...	31	15 (20.11)	28[6]		1.5	4 x 10	6FX■ 002- 5■A61 - ....
1FK7060-5AH71...	6.2	2.8 (3.75)	9		1	4 x 1.5	6FX■ ■02- 5■A01 - ....
1FK7063-5AH71...	12	5.2 (6.97)	18		1	4 x 1.5	6FX■ ■02- 5■A01 - ....
1FK7080-5AH71...	7.4	3.8 (5.09)	9		1	4 x 1.5	6FX■ ■02- 5■A01 - ....
1FK7083-5AH71...	15	7.5 (10.06)	18		1	4 x 1.5	6FX■ ■02- 5■A01 - ....
1FK7011-5AK71...	1.5	0.11	3		0.5	4 x 1.5	6FX5002 - 5DA30 - ....
1FK7015-5AK71...	1.5	0.22	3		0.5	4 x 1.5	6FX5002 - 5DA30 - ....
1FK7022-5AK71...	1.8	0.5	3		1	4 x x1.5	6FX■ ■02- 5■A01 - ....
1FK7032-5AK71...	1.7	0.7 (0.94)	3		1	4 x 1.5	6FX■ ■02- 5■A01 - ....
1FK7034-5AK71...	1.9	1 (1.34)	3		1	4 x 1.5	6FX■ ■02- 5■A01 - ....
1FK7040-5AK71...	2.25	1 (1.34)	3		1	4 x 1.5	6FX■ ■02- 5■A01 - ....
1FK7042-5AK71...	4.4	1.9 (2.55)	5		1	4 x 1.5	6FX■ ■02- 5■A01 - ....

Type of power cable:			
MOTION-CONNECT 800	**8**	**0**	
MOTION-CONNECT 700 (only with brake cores)	**7**	**0**	
MOTION-CONNECT 500	**5**	**0**	
MOTION-CONNECT 500 PLUS (only up to a cross-section of 6 mm²)	**5**	**1**	
Without brake cores			**C**
With brake cores			**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 = 2 500 rpm.

3) These values refer to n = 4 000 rpm.

4) These values refer to n = 3 500 rpm.

5) These values refer to n = 5 000 rpm.

6) With the specified power module, the motor cannot be fully utilized at M_0 at ΔT = 100 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) $P_{calc}\,[kW] = \frac{M_0\,[Nm] \times n_{rated}}{9550}$ $P_{calc}\,[HP] = \frac{M_0\,[lb_f\text{-in}] \times n_{rated}}{63000}$

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 ΔT=100 K	T_0 at ΔT=100 K	M_{rated} at ΔT=100 K	I_{rated} at ΔT=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]	22 (195)	12 (106)[2]	12.5[2]	**1FK7085 - 7AF71- 1■ ■ ■**	4	23 (0.0204)	23.5 (51.8)
		3.77 (5.05)[3]	28 (248)	18 (159)[3]	14.5[3]	**1FK7086 - 7AF71- 1■ ■ ■**	4	23 (0.0204)	23.5 (51.8)
4 500	48	1.23 (1.65)	3.1 (27.4)	2.6 (23)	4	**1FK7043 - 7AH71- 1■ ■ ■**	3	1 (0.0009)	6.3 (13.9)
		1.41 (1.53)	4 (35)	3 (27)	4.9	**1FK7044 - 7AH71- 1■ ■ ■**	3	1.28 (0.0011)	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} 2048 pulses/revolution	**A**
	Absolute encoder EnDat 2048 pulses/revolution[1]	**E**
	(not for 1FK703)	
	Absolute encoder EnDat 512 pulses/revolution[1]	**H**
	(only for 1FK703)	
	Absolute encoder EnDat 32 pulses/revolution[1]	**G**
	(not for 1FK703)	
	Absolute encoder EnDat 16 pulses/revolution[1]	**J**
	(only for 1FK703)	
	Multipole resolver	**S**
	2-pole resolver	**T**

Shaft extension:	**Shaft and flange accuracy:**	**Holding brake:**	
Fitted key and keyway	Tolerance N	without	**A**
Fitted key and keyway	Tolerance N	with	**B**
Plain shaft	Tolerance N	without	**G**
Plain shaft	Tolerance N	with	**H**

Degree of protection:	IP64	**0**
	IP65 and IP67 drive end flange	**2**
	IP64 and anthracite paint finish	**3**
	IP65 and IP67 drive end flange, anthracite paint finish	**5**
	IP65 and IP67 drive end flange, anthracite paint finish and metal rating plate on motor	**8**

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

Selection and Ordering Data

Motor type (continued)	Static current	Calculated power[6]	SIMODRIVE 611 power module		Power cable with complete shield Motor connection (and brake connection) via power connector		
			Rated output current[5]		Power connector	Cable cross-section[4]	Pre-assembled cable
	I_0 at M_0 ΔT=100 K	P_{calc} for M_0 ΔT=100 K	I_{rated}				
	A	kW (HP)	A	Order No.	Size	mm²	Order No.
1FK7044-7AF71...	4.5	1.3 (1.7)	5	For ordering data, see Converter systems	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	**8 0**	
MOTION-CONNECT 700 (only with brake cores)	**7 0**	
MOTION-CONNECT 500	**5 0**	
MOTION-CONNECT 500 PLUS (only up to a cross-section of 6 mm²)	**5 1**	
Without brake cores		**C**
With brake cores		**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 = 2 500 rpm.

[3] These values refer to n = 2 000 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] $P_{calc}\,[kW] = \frac{M_0\,[Nm] \times n_{rated}}{9550}$ $P_{calc}\,[HP] = \frac{M_0\,[lb_f\text{-in}] \times n_{rated}}{63000}$