

1FK6 with SIMODRIVE

1FK6 motors



1FK6 AC servomotors	
Type of motor	Permanently excited synchronous motor
Magnet material	Rare-earth magnet material
Insulation of the stator winding ¹⁾ EN 60034-1 (IEC 60034-1)	Temperature class F for a winding overheating of $\Delta T = 100$ K at an ambient temperature of +40 °C (104 °F).
Type EN 60034-7 (IEC 60034-7)	IM B5 (IM V1, IM V3)
Degree of protection EN 60034-5 (IEC 60034-5)	IP64
Cooling	Natural cooling
Temperature monitoring	KTY 84 temperature sensor in stator winding
Paint finish	Unpainted
2nd rating plate	Glued to end shield
3rd rating plate	Supplied separately packed
Shaft end on the drive	Plain shaft

end DIN 748-3 (IEC 60072-1)	
Rotational accuracy, concentricity, and linear movement DIN 42955 (IEC 60072-1)	Tolerance N (normal)
Vibration severity EN 60034-14 (IEC 60034-14)	Grade N (normal)
Max. Sound pressure level EN ISO 1680	1FK603: 55 dB(A) 1FK604: 55 dB(A) 1FK606: 65 dB(A) 1FK608: 70 dB(A) 1FK610: 70 dB(A)
Encoder system, integrated	<ul style="list-style-type: none"> • Incremental encoder sin/cos 1 V_{PP}, 2048 pulses/revolution with 1FK604 to 1FK610 • Absolute encoder, multiturn, 2048 pulses/revolution with 1FK604 to 1FK610 and traversing range 4096 revolutions with EnDat interface • Single absolute encoder, multiturn, 32 pulses/revolution with 1FK604 to 1FK610 and traversing range 4096 revolutions with EnDat interface • Resolver multipole ²⁾ (number of poles corresponds to number of pole pairs of the motor) • Resolver 2-pole
Connection	Connectors for signals and power can be rotated (270°)
Options	<ul style="list-style-type: none"> • Shaft end on the drive end with featherkey and featherkey way (half-key balancing) • Built-in holding brake • Degree of protection IP65, additional drive end flange IP67 • Planetary gear unit (requires: plain shaft)

1)

Supply voltage of the SIMODRIVE 611 converter system	
3-phase AC 400 V ± 10 % (i.e. $U_{DC \text{ link}} = 600$ V)	3-phase AC 480 V +6 %, -10 % (i.e. $U_{DC \text{ link}} = 680$ V)
Utilization of the 1FK6 motors up to $\Delta T = 100$ K	Utilization of the 1FK610 motors up to to $\Delta T = 100$ K.
	Utilization of the 1FK603, 1FK604, 1FK606 and 1FK608 motors up to $\Delta T = 60$ K.

2) With SIMODRIVE 611 universal HR, the maximum operating frequency of 432 Hz must be complied with.

Rated speed	Shaft height	Rated output	Static torque	Rated torque	Rated current	1FK6 synchronous motors Natural cooling	Number of pole pairs	Rotor moment of inertia (without brake)	Weight (with brake)
n_{rated}		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	Order No. Core type		J	m
rpm		kW	Nm (lb-in)	Nm (lb-in)	A			10^{-4} kgm ²	kg (lb)
3000	48 (1.89)	0.82	3.2 (28.32)	2.6 (23.01)	2.4	1FK6042- 6AF71- 1□□□	3	3.3	5 (11.03)
3000	63 (2.48)	1.26	6 (53.10)	4 (35.40)	3.1	1FK6060- 6AF71- 1□□□	3	8.6	9 (19.85)

3000	63 (2.48)	1.88	11 (97.36)	6 (53.10)	4.7	1FK6063- 6AF71- 1□□□	3	16.1	13.2 (29.11)
3000	80 (3.15)	2.14	8 (70.81)	6.8 (60.19)	5.2	1FK6080- 6AF71- 1□□□	3	15	12.5 (26.57)
3000	80 (3.15)	3.3	16 (141.61)	10.5 (92.93)	7.7	1FK6083- 6AF71- 1□□□	3	27.3	17 (37.49)
3000	100 (3.94)	3.77	18 (159.31)	12 (106.21)	8.4	1FK6100- 8AF71- 1□□□	4	55.3	21 (46.31)
3000	100 (3.94)	4.87	27 (238.97)	15.5 (137.19)	10.8	1FK6101- 8AF71- 1□□□	4	79.9	26 (57.33)
3000	100 (3.94)	5.18	36 (318.63)	16.5 (146.04)	11.8	1FK6103- 8AF71- 1□□□	4	105	30 (66.15)
6000	36 (1.42)	0.5	1.1 (9.74)	0.8 (7.08)	1.5	1FK6032- 6AK71- 1S□□	3	0.68	2.9 (6.39)
6000	36 (1.42)	0.5	1.1 (9.74)	0.8 (7.08)	1.5	1FK6032- 6AK71- 1T□□	3	0.68	2.9 (6.39)
6000	48 (1.89)	0.5	1.6 (14.16)	0.8 (7.08)	1.75	1FK6040- 6AK71- 1□□□	3	1.84	3.7 (8.16)

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

Motor type (continued)	Stall current	Calculated power $P_{\text{calc}} =$ $M_0 \times n_{\text{rated}} /$ 9550	SIMODRIVE 611 power module Required rated current		Power cable, completely screened Motor connection (with brake connection) through power supply connector		
			I_{rated} at M_0 at $\Delta T = 100$ K	Order No.	Power suppl y conn.	Motor cable cross- sectio n ⁴⁾	Order No. Pre- assemb led cable
	A	kW	A		Size	mm ² (in ²)	
1FK6042- 6AF7...	2.8	1.0	3	For ordering data, see "Converters"	1	4 x 1.5 (0.002)	6FX□□02- 5□A01-....
1FK6060- 6AF7...	4.3	1.9	5		1	4 x 1.5 (0.002)	6FX□□02- 5□A01-....
1FK6063- 6AF7...	7.9	3.5	9		1	4 x 1.5 (0.002)	6FX□□02- 5□A01-....
1FK6080- 6AF7...	5.8	2.5	5 ³⁾		1	4 x 1.5 (0.002)	6FX□□02- 5□A01-....
1FK6083- 6AF7...	10.4	5.0	9 ³⁾		1	4 x 1.5 (0.002)	6FX□□02- 5□A01-....
1FK6100- 8AF7...	12.2	5.7	18		1	4 x 1.5 (0.002)	6FX□□02- 5□A01-....
1FK6101- 8AF7...	17.5	8.5	18		1.5	4 x 2.5 (0.004)	6FX□□02- 5□A31-....

1FK6103-8AF7...	23.5	11.3	28		1.5	4 x 4 (0.006)	6FX□□02-5□A41-....
1FK6032-6AK7...	1.7	0.7	3		1	4 x 1.5 (0.002)	6FX□□02-5□A01-....
1FK6032-6AK7...	1.7	0.7	3		1	4 x 1.5 (0.002)	6FX□□02-5□A01-....
1FK6040-6AK7...	2.8	1.0	3		1	4 x 1.5 (0.002)	6FX□□02-5□A01-....

For length code as well as power and signal cables, see "MOTION-CONNECT cables and connections".

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

2) Not for 1FK603.

3) With the specified power module, the motor cannot be fully utilized to $\Delta T = 100$ K winding overheating.

If a larger power module is implemented, it must be checked that the specified power cable can be connected to the larger power module.

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

5) With SIMODRIVE 611 universal HR, the maximum operating frequency of 432 Hz must be complied with.