

Technical data and characteristics

7.2 1FK7 motors on SINAMICS S120 with 3 AC 400/480 V power supply

Table 7-15 1FK7083 CT

Technical data	Code	Unit	-5AF71	
Engineering data				
Rated speed	n_N	RPM	3000	
No. of poles	2p		8	
Rated torque (100 K)	M_N (100 K)	Nm	10.5 7.4	
Rated current (100 K)	I_N	A	13.3	
Static torque (60 K)	M_0 (60 K)	Nm	16	
Static torque (100 K)	M_0 (100 K)	Nm	8.6 10.4	
Stall current (60 K)	I_0 (60 K)	A	35.9	
Stall current (100 K)	I_0 (100 K)	A	27.3	
Moment of inertia (with brake)	J_{MotBr}	10^{-4} kgm ²		
Moment of inertia (without brake)	J_{Mot}	10^{-4} kgm ²	3000	
	n_{opt}		3.3	
Optimum operating point	P_{opt}	RPM		
Optimum speed		kW	6000	
Optimum power	$n_{max\ mech}$	RPM	5900 50	
	$n_{max\ Inv}$		37	
Limiting data				
Max. permissible speed (mech.)	M_{max}	RPM		
Max. permissible speed (converter)		Nm	1.52	
Max. torque	I_{max}	A	97	
Max. current	k_T	Nm/A	0.4	
	k_E	V/1000 RPM	6.0	
			15	
Physical constants				
Torque constant	R_{Str}	Ohm	1.41	
Voltage constant	L_D	mH	50	
Winding resistance at 20°C	T_{el}	ms	105000	
Cyclic inductance	T_{mech}	ms	16.5	
Electrical time constant	T_{th}	min	14	
Mechanical time constant	C_t	Nm/rad		
Thermal time constant	m_{MotBr}	kg	9	
Shaft torsional stiffness	m_{Mot}	kg	18	
Weight with brake		A	27.8	
Weight without brake		A		
		Nm		
Recommended motor module 6SL312_-TE21-0AA_				
Rated current converter	$I_N\ Inv$			
Max. current converter	$I_{max\ Inv}$			
Max. torque at $I_{max\ Inv}$	$M_{max\ Inv}$			

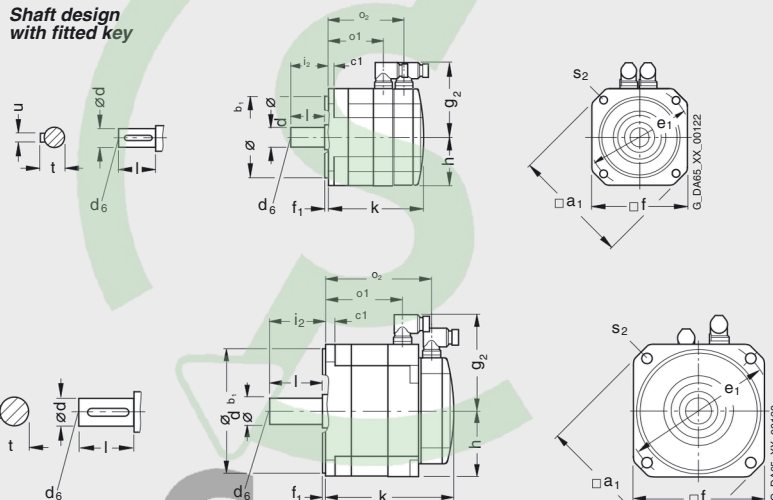
e-Servo

8.1 1FK7 Compact and High Dynamic motors

For motor		Dimensions in mm (in)											Resolver					
Shaft height	Type	DIN IEC												without brake			with	
			a_1 P	b_1 N	c_1 LA	e_1 M	f AB	f_1 T	g_2 —	h H	i_2 —	s_2 S	k LB	o_1 —	o_2 —	brake ko_1 LB—	o_2 —	
1FK7 Compact, type IM B5, natural cooling, with connector, with/without brake																		
80	1FK7080-5		186 (7.32)	130 (5.12)	13 (0.51)	165 (6.50)	155 (6.10)	3.5 (0.14)	119.5 (4.70)	77.5 (3.05)	58 (2.28)	11 (0.43)	156 (6.14)	91 (3.58)	124 (4.88)	184 (7.24)	91 (3.58)	151 (5.94)
	1FK7083-5		186 (7.32)	130 (5.12)	13 (0.51)	165 (6.50)	155 (6.10)	3.5 (0.14)	119.5 (4.70)	77.5 (3.05)	58 (2.28)	11 (0.43)	194 (7.64)	129 (5.08)	162 (6.38)	245 (9.65)	129 (5.08)	207 (8.15)
100	1FK7100-5		240 (9.45)	180 (7.09)	13 (0.51)	215 (8.46)	192 (7.56)	4 (0.16)	138 (5.43)	96 (3.78)	80 (3.15)	14 (0.55)	185 (7.28)	113 (4.45)	153 (6.02)	204 (8.03)	113 (4.45)	172 (6.77)
	1FK7101-5		240 (9.45)	180 (7.09)	13 (0.51)	215 (8.46)	192 (7.56)	4 (0.16)	160 (6.30)	96 (3.78)	80 (3.15)	14 (0.55)	211 (8.31)	139 (5.47)	179 (7.05)	240 (9.45)	139 (5.47)	208 (8.19)
	1FK7103-5		240 (9.45)	180 (7.09)	13 (0.51)	215 (8.46)	192 (7.56)	4 (0.16)	160 (6.30)	96 (3.78)	80 (3.15)	14 (0.55)	237 (9.33)	165 (6.50)	205 (8.07)	266 (10.47)	165 (6.50)	234 (9.21)
	1FK7105-5		240 (9.45)	180 (7.09)	13 (0.51)	215 (8.46)	192 (7.56)	4 (0.16)	160 (6.30)	96 (3.78)	80 (3.15)	14 (0.55)	289 (11.38)	217 (8.54)	257 (10.12)	318 (12.52)	217 (8.54)	286 (11.26)

		Basic absolute encoder (EnDat) (shaft height 48 and larger), Incremental encoder sin/cos 1 V _{pp}						Absolute encoder (EnDat)										
Shaft height	Type	without brake			with brake			without brake			with brake			d D	d ₆ —	l E	t GA	u F
		k LB	o ₁ —	o ₂ —	k LB	o ₁ —	o ₂ —	k LB	o ₁ —	o ₂ —	ko ₁ LB—	o ₂ —						
80	1FK7080-5	179 (7.05)	91 (3.58)	124 (4.88)	206 (8.11)	91 (3.58)	151 (5.94)	187 (7.36)	91 (3.58)	124 (4.88)	215 (8.46)	91 (3.58)	151 (5.94)	32 (1.26)	M12	58 (2.28)	35 (1.38)	10 (0.39)
	1FK7083-5	217 (8.54)	129 (5.08)	162 (6.38)	268 (10.55)	153 (6.02)	213 (8.39)	225 (8.86)	129 (5.08)	162 (6.38)	276 (10.87)	129 (5.08)	207 (8.15)	32 (1.26)	M12	58 (2.28)	35 (1.38)	10 (0.39)
100	1FK7100-5	208 (8.19)	113 (4.45)	153 (6.02)	227 (8.94)	113 (4.45)	172 (6.77)	216 (8.50)	113 (4.45)	153 (6.02)	235 (9.25)	113 (4.45)	172 (6.77)	38 (1.50)	M12	80 (3.15)	41 (1.61)	10 (0.39)
	1FK7101-5	234 (9.21)	139 (5.47)	179 (7.05)	263 (10.35)	139 (5.47)	208 (8.19)	242 (9.53)	139 (5.47)	179 (7.05)	271 (10.67)	139 (5.47)	208 (8.19)	38 (1.50)	M12	80 (3.15)	41 (1.61)	10 (0.39)
	1FK7103-5	260 (10.24)	165 (6.50)	205 (8.07)	289 (11.38)	165 (6.5)	234 (9.21)	268 (10.55)	165 (6.50)	205 (8.07)	297 (11.69)	165 (6.50)	234 (9.21)	38 (1.50)	M12	80 (3.15)	41 (1.61)	10 (0.39)
	1FK7105-5	312 (12.28)	217 (8.54)	257 (10.12)	341 (13.43)	217 (8.54)	286 (11.26)	320 (12.60)	217 (8.54)	257 (10.12)	349 (13.74)	217 (8.54)	286 (11.26)	38 (1.50)	M12	80 (3.15)	41 (1.61)	10 (0.39)

1FK708 . -5

Shaft design
with fitted key1FK7100-
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1FK7101-
5
1FK7103-
5
1FK7105-
5

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