

SIMOTICS servomotors

SIMOTICS S synchronous motors for SINAMICS S120

SIMOTICS S-1FT7 geared servomotors with SP+ planetary gearbox

Selection and ordering data

Motor	Planetary gearbox single-stage			Available gear ratio $i =$				Motor speed, max. S3-60 %	Output torque, max. S3-60 %	Radial output shaft loading, max. ¹⁾	Axial output shaft loading, max. ¹⁾
Type	Type	Torsional backlash	Gearbox weight, approx. kg (lb)	4	5	7	10	n_{G1} (n_1) rpm	M_{G2} (T_{2B}) Nm (lb _f -ft)	F_r (F_{2Rmax}) N (lb _f)	F_a (F_{2Amax}) N (lb _f)
1FT7034	SP 060S-MF1	≤ 4	1.9 (4.19)	✓	✓	✓	–	6000	40 (29.5)	2700 (607)	2400 (540)
1FT7034	SP 075S-MF1	≤ 4	3.9 (8.6)	–	–	–	✓	6000	110 (81.1) (90 for $i = 10$)	4000 (899)	3350 (753)
1FT7036				✓	✓	✓	✓				
1FT7042				✓	✓	✓	✓				
1FT7044				✓	✓	✓	✓				
1FT7046				✓	✓	✓	–				
1FT7046	SP 100S-MF1	≤ 3	7.7 (17.0)	–	–	–	✓	4500	300 (221) (225 for $i = 10$)	6300 (1416)	5650 (1270)
1FT7062				✓	✓	✓	✓				
1FT7064				✓	✓	✓	✓				
1FT7065				✓	✓	✓	–				
1FT7066				✓	✓	✓	✓				
1FT7067				✓	✓	✓	–				
1FT7068				✓	✓	✓	–				
1FT7065	SP 140S-MF1	≤ 3	17.2 (37.9)	–	–	–	✓	4000	600 (443) (480 for $i = 10$)	9450 (2124)	9870 (2219)
1FT7067				–	–	–	✓				
1FT7068				–	–	–	✓				
1FT7082				✓	✓	✓	✓				
1FT7084				✓	✓	✓	✓				
1FT7085				✓	✓	✓	–				
1FT7086				✓	✓	✓	–				
1FT7087				✓	✓	–	–				
1FT7085	SP 180S-MF1	≤ 3	34 (75.0)	–	–	–	✓	3500	1100 (811) (880 for $i = 10$)	14700 (3305)	14150 (3181)
1FT7086				–	–	–	✓				
1FT7087				–	–	✓	✓				
1FT7102				✓	✓	✓	✓				
1FT7105				✓	✓	✓	–				
1FT7108				✓	✓	✓	–				
1FT7105	SP 210S-MF1	≤ 3	56 (123)	–	–	–	✓	2500	2500 (1844) (2400 for $i = 7$ 1900 for $i = 10$)	21000 (4721)	30000 (6744)
1FT7108				–	–	–	✓				
	Gear shaft			Order code							
	With feather key			J02	J03	J05	J09				
	Without feather key			J22	J23	J25	J29				

Preconditions:

SP+ planetary gearboxes can be mounted with the following motor versions:

- Flange 1
- Plain motor shaft extension, shaft and flange accuracy tolerance N, without/with holding brake
- Vibration severity grade A/IP65 degree of protection

SP+ planetary gearboxes can therefore only be ordered with these motors:

1FT7...-5..71...G1
1FT7...-5..71...H1
1FT7...-7..71...G1
1FT7...-7..71...H1

When ordering a motor with gearbox, **-Z** should be added to the order number.

Example:

1FT7042 motor without holding brake
 with single-stage SP+ planetary gearbox
 with $i = 5$ and gear shaft without feather key
1FT7042-5AF71-1NG1-Z
J23

✓ Possible

– Not possible

¹⁾ In reference to the output shaft center.

SIMOTICS servomotors

SIMOTICS S synchronous motors for SINAMICS S120

**SIMOTICS S-1FT7 geared servomotors
with SP+ planetary gearbox**

Technical specifications

SIMOTICS S-1FT7 motor with SP+ planetary gearbox

Single-stage Type	Gear ratio <i>i</i>	Motor speed	Output torque	Moments of inertia of gearboxes (referred to the drive)				
		Continuous duty S1 ¹⁾ n_{N1} rpm	M_{N2} (T_{2N}) Nm (lb _f -ft)	1FT703. J_1 kgcm ² (lb _f -in ²)	1FT704. J_1 kgcm ² (lb _f -in ²)	1FT706. J_1 kgcm ² (lb _f -in ²)	1FT708. J_1 kgcm ² (lb _f -in ²)	1FT710. J_1 kgcm ² (lb _f -in ²)
SP 060S-MF1	4	3300	26 (19.2)	0.22 (0.08)	–	–	–	–
	5	3300	26 (19.2)	0.20 (0.07)	–	–	–	–
	7	4000	26 (19.2)	0.18 (0.06)	–	–	–	–
SP 075S-MF1	4	2900	75 (55.3)	0.61 (0.21)	0.78 (0.27)	–	–	–
	5	2900	75 (55.3)	0.51 (0.17)	0.68 (0.23)	–	–	–
	7	3100	75 (55.3)	0.42 (0.14)	0.59 (0.20)	–	–	–
	10	3100	52 (38.4)	0.38 (0.13)	0.54 (0.19)	–	–	–
SP 100S-MF1	4	2500	180 (133)	–	–	3.04 (1.04)	–	–
	5	2500	175 (129)	–	–	2.61 (0.89)	–	–
	7	2800	170 (125)	–	–	2.29 (0.78)	–	–
	10	2800	120 (88.5)	–	1.38 (0.47)	2.07 (0.71)	–	–
SP 140S-MF1	4	2100	360 (266)	–	–	–	11.0 (3.76)	–
	5	2100	360 (266)	–	–	–	9.95 (3.40)	–
	7	2600	360 (266)	–	–	–	9.01 (3.08)	–
	10	2600	220 (162)	–	–	5.28 (1.80)	8.44 (2.88)	–
SP 180S-MF1	4	1500	750 (553)	–	–	–	–	33.9 (11.6)
	5	1500	750 (553)	–	–	–	–	27.9 (9.53)
	7	2300	750 (553)	–	–	–	–	22.2 (7.59)
	10	2300	750 (553)	–	–	–	19.2 (6.56)	19.2 (6.56)
SP 210S-MF1	10	2000	1000 (738)	–	–	–	–	53.1 (18.1)

¹⁾ The limit values in the table apply for S1 continuous duty (ON time > 60 % or > 20 min) for a maximum gearbox temperature of 90 °C (194 °F).

SIMOTICS servomotors

SIMOTICS S synchronous motors for SINAMICS S120

SIMOTICS S-1FT7 geared servomotors with SP+ planetary gearbox

Selection and ordering data

Motor	Planetary gearbox two-stage			Available gear ratio $i =$					Motor speed, max. S3-60 %	Output torque, max. S3-60 %	Radial output shaft loading, max. ¹⁾	Axial output shaft loading, max. ¹⁾							
Type	Type	Torsional backlash	Gearbox weight, approx.	16	20	28	40	50	n_{G1}	M_{G2}	F_r	F_a							
		arcmin	kg (lb)						(n_1)	(T_{2B})	(F_{2Rmax})	(F_{2Amax})							
									rpm	Nm (lb _f -ft)	N (lb _f)	N (lb _f)							
1FT7034 1FT7036	SP 075S-MF2	≤ 6	3.6 (7.94)	✓	✓	✓	–	–	6000	110 (81.1)	4000 (899)	3350 (753)							
1FT7042				✓	–	–	–	–											
1FT7034 1FT7036	SP 100S-MF2	≤ 5	7.9 (17.4)	–	–	–	✓	✓	4500	300 (221)	6300 (1416)	5650 (1270)							
1FT7042				–	✓	✓	✓	✓											
1FT7044				✓	✓	✓	–	–											
1FT7046				✓	✓	–	–	–											
1FT7062				✓	✓	–	–	–											
1FT7064				✓	–	–	–	–											
1FT7044 1FT7046	SP 140S-MF2	≤ 5	17 (37.5)	–	–	–	✓	✓	4000	600 (443)	9450 (2124)	9870 (2219)							
1FT7062				–	–	✓	✓	✓											
1FT7064				–	✓	✓	–	–											
1FT7065				✓	✓	–	–	–											
1FT7066				✓	✓	–	–	–											
1FT7067				✓	–	–	–	–											
1FT7068				✓	✓	–	–	–											
1FT7082				✓	✓	–	–	–											
1FT7084				✓	–	–	–	–											
1FT7064 1FT7065 1FT7066 1FT7067 1FT7068	SP 180S-MF2	≤ 5	36.4 (80.3)	–	–	–	✓	✓	4000	1100 (811)	14700 (3305)	14150 (3181)							
1FT7082				–	–	✓	✓	✓											
1FT7084				–	✓	✓	–	–											
1FT7085				✓	–	–	–	–											
1FT7086				✓	✓	–	–	–											
1FT7102				✓	✓	–	–	–											
1FT7084 1FT7085 1FT7086 1FT7102				SP 210S-MF2	≤ 5	55 (121)	–	–					–	✓	✓	3500	2400 (1770) (2500 for $i = 20$)	21000 (4721)	30000 (6744)
1FT7086							–	–					✓	✓	–				
1FT7087							✓	✓					✓	–	–				
1FT7102	–	–	✓				–	–											
1FT7105	✓	✓	–				–	–											
1FT7108	✓	–	–				–	–											
1FT7085 1FT7086	SP 240S-MF2	≤ 5	80.6 (178)	–	–	–	✓	✓	3500	4500 (3319) (4000 for $i = 40$ 4300 for $i = 50$)	30000 (6744)	33000 (7419)							
1FT7102				–	–	–	–	✓											
1FT7105				–	–	✓	✓	–											
1FT7108				–	✓	✓	–	–											
	Gear shaft			Order code															
	With feather key			J12	J13	J15	J16	J17											
	Without feather key			J32	J33	J35	J36	J37											

For preconditions see page 4/52.

✓ Possible

– Not possible

¹⁾ In reference to the output shaft center.

SIMOTICS servomotors

SIMOTICS S synchronous motors for SINAMICS S120

**SIMOTICS S-1FT7 geared servomotors
with SP+ planetary gearbox**

Technical specifications

SIMOTICS S-1FT7 motor with SP+ planetary gearbox

Two-stage Type	Gear ratio	Motor speed	Output torque	Moments of inertia of gearboxes (referred to the drive)				
		Continuous duty S1 ¹⁾		1FT703.	1FT704.	1FT706.	1FT708.	1FT710.
	<i>i</i>	n_{N1} rpm	M_{N2} (T_{2N}) Nm (lb _f -ft)	J_1 kgcm ² (lb _f -in ²)	J_1 kgcm ² (lb _f -in ²)	J_1 kgcm ² (lb _f -in ²)	J_1 kgcm ² (lb _f -in ²)	J_1 kgcm ² (lb _f -in ²)
SP 075S-MF2	16	3500	75 (55.3)	0.23 (0.08)	0.55 (0.19)	–	–	–
	20	3500	75 (55.3)	0.20 (0.07)	–	–	–	–
	28	3500	75 (55.3)	0.18 (0.06)	–	–	–	–
SP 100S-MF2	16	3100	180 (133)	–	0.81 (0.28)	2.18 (0.75)	–	–
	20	3100	180 (133)	0.54 (0.19)	0.70 (0.24)	2.07 (0.71)	–	–
	28	3100	180 (133)	0.43 (0.15)	0.60 (0.21)	–	–	–
	40	3100	180 (133)	0.38 (0.13)	0.55 (0.19)	–	–	–
	50	3500	175 (129)	0.38 (0.13)	0.54 (0.19)	–	–	–
SP 140S-MF2	16	2900	360 (265)	–	–	3.19 (1.09)	10.3 (3.52)	–
	20	2900	360 (265)	–	–	2.71 (0.93)	9.77 (3.34)	–
	28	2900	360 (265)	–	1.65 (0.56)	2.34 (0.80)	–	–
	40	2900	360 (265)	–	1.40 (0.48)	2.10 (0.72)	–	–
	50	3200	360 (265)	–	1.39 (0.48)	2.08 (0.71)	–	–
SP 180S-MF2	16	2700	750 (553)	–	–	–	12.4 (4.24)	13.5 (4.61)
	20	2700	750 (553)	–	–	–	10.9 (3.73)	12.0 (4.10)
	28	2700	750 (553)	–	–	6.32 (2.16)	9.48 (3.24)	–
	40	2700	750 (553)	–	–	5.51 (1.88)	8.67 (2.96)	–
	50	2900	750 (553)	–	–	5.45 (1.86)	8.61 (2.94)	–
SP 210S-MF2	16	2500	1500 (1106)	–	–	–	–	34.5 (11.8)
	20	2500	1500 (1106)	–	–	–	–	31.5 (10.8)
	28	2500	1500 (1106)	–	–	–	30.0 (10.3)	30.0 (10.3)
	40	2500	1500 (1106)	–	–	–	28.5 (9.74)	–
	50	2500	1500 (1106)	–	–	–	28.3 (9.67)	–
SP 240S-MF2	20	2500	2500 (1844)	–	–	–	–	34.6 (11.8)
	28	2500	2500 (1844)	–	–	–	–	30.5 (10.4)
	40	2500	2500 (1844)	–	–	–	–	28.2 (9.64)
	50	2500	2500 (1844)	–	–	–	27.9 (9.53)	27.9 (9.53)

¹⁾ The limit values in the table apply for S1 continuous duty (ON time > 60 % or > 20 min) for a maximum gearbox temperature of 90 °C (194 °F).