

# SIMOTICS S servomotors

## SIMOTICS S geared motors for SINAMICS S120

### Planetary gearbox SP+ series for SIMOTICS S-1FT7

#### Selection and ordering data

Motor Type	Planetary gearbox 1-stage			Available gearbox ratio $i =$				Motor speed, max. S3-60 % $n_{G1}$ ( $n_1$ ) r/min	Output torque, max. S3-60 % $M_{G2}$ ( $T_{2B}$ ) Nm (lb <sub>f</sub> -ft)	Radial output shaft load, max. <sup>1)</sup> $F_r$ ( $F_{2Rmax}$ ) N (lb <sub>f</sub> )	Axial out- put shaft load, max. <sup>1)</sup> $F_a$ ( $F_{2Amax}$ ) N (lb <sub>f</sub> )
	Type	Tor- sional back- lash arcmin	Gearbox weight, approx. kg (lb)	4	5	7	10				
1FT7034	SP 060S-MF1	≤ 4	1.9 (4.2)	✓	✓	✓	–	7500	50 (36.9)	2800 (629)	2400 (540)
1FT7034 1FT7036 1FT7042 1FT7044 1FT7046	SP 075S-MF1	≤ 4	3.9 (8.6)	–	–	–	✓	7500	132 (97.4) (114 (84.1) for $i = 10$ )	4200 (944)	3350 (753)
1FT7046 1FT7062 1FT7064 1FT7065 1FT7066 1FT7067 1FT7068	SP 100S-MF1	≤ 3	7.7 (17.0)	–	–	–	✓	5500	378 (279) (282 (208) for $i = 10$ )	6600 (1484)	5650 (1270)
1FT7065 1FT7067 1FT7068 1FT7082 1FT7084 1FT7085 1FT7086 1FT7087	SP 140S-MF1	≤ 3	17.2 (37.9)	–	–	–	✓	5000	792 (584) (636 (469) for $i = 10$ )	9900 (2226)	9870 (2219)
1FT7085 1FT7086 1FT7087 1FT7102 1FT7105 1FT7108	SP 180S-MF1	≤ 3	34 (75.0)	–	–	–	✓	4500	1452 (1071) (1164 (859) for $i = 10$ )	15400 (3462)	15570 (3500)
1FT7105 1FT7108 1FT7132 1FT7134 1FT7136 1FT7138	SP 210S-MF1	≤ 3	56 (123)	–	–	–	✓	3000	3000 (2213) (2880 (2124) for $i = 7$ 2280 (1682) for $i = 10$ )	21000 (4721)	30000 (6744)
1FT7132 1FT7134 1FT7136 1FT7138	SP 240S-MF1	≤ 3	83 (183)	–	–	–	✓	3000	5400 (3983) (5160 (3806) for $i = 7$ 4000 (2950) for $i = 10$ )	30000 (6744)	33000 (7419)
<b>Gear shaft</b>				<b>Order code</b>							
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 compatible with 1FT6/1FK7
- Plain motor shaft end, 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...-...1-..G1,**
- **1FT7...-...1-..H1,**
- **1FT7...-...4-..G1,**
- **1FT7...-...4-..H1**

When ordering a motor with gearbox, a **-Z** must be added to the article number and the order code of the required gearbox specified.

#### Example:

- 1FT7042 motor without holding brake
- With single-stage SP+ planetary gearbox
- With  $i = 5$  and gearbox shaft without feather key

1FT7042-5AF74-1NG1-**Z J23**

✓ Possible

– Not possible

<sup>1)</sup> Referred to output shaft center.

**SIMOTICS S servomotors**

SIMOTICS S geared motors for SINAMICS S120

**Planetary gearbox SP+ series for SIMOTICS S-1FT7****Technical specifications****SIMOTICS S-1FT7 motor with SP+ planetary gearbox**

1-stage Type	Gearbox ratio	Motor speed  Continuous duty S1 <sup>1)</sup> $n_{N1}$ r/min	Output torque  $M_{N2} (T_{2N})$ Nm (lb <sub>f</sub> -ft)	Moments of inertia of gearboxes (referred to the drive)					
				1FT703.	1FT704.	1FT706.	1FT708.	1FT710.	1FT713.
				$J_1$ kgcm <sup>2</sup> (lb <sub>f</sub> -in <sup>2</sup> )	$J_1$ kgcm <sup>2</sup> (lb <sub>f</sub> -in <sup>2</sup> )	$J_1$ kgcm <sup>2</sup> (lb <sub>f</sub> -in <sup>2</sup> )	$J_1$ kgcm <sup>2</sup> (lb <sub>f</sub> -in <sup>2</sup> )	$J_1$ kgcm <sup>2</sup> (lb <sub>f</sub> -in <sup>2</sup> )	$J_1$ kgcm <sup>2</sup> (lb <sub>f</sub> -in <sup>2</sup> )
SP 060S-MF1	4	3300	27 (19.9)	0.22 (0.08)	–	–	–	–	–
	5	3300	27 (19.9)	0.20 (0.07)	–	–	–	–	–
	7	4000	26 (19.2)	0.18 (0.06)	–	–	–	–	–
SP 075S-MF1	4	2900	81 (59.7)	0.61 (0.21)	0.78 (0.27)	–	–	–	–
	5	2900	81 (59.7)	0.51 (0.17)	0.68 (0.23)	–	–	–	–
	7	3100	81 (59.7)	0.42 (0.14)	0.59 (0.20)	–	–	–	–
	10	3100	81 (59.7)	0.38 (0.13)	0.54 (0.18)	–	–	–	–
SP 100S-MF1	4	2500	171 (126)	–	–	3.04 (1.04)	–	–	–
	5	2500	169 (125)	–	–	2.61 (0.89)	–	–	–
	7	2800	166 (122)	–	–	2.29 (0.78)	–	–	–
	10	2800	174 (128)	–	1.38 (0.47)	2.07 (0.71)	–	–	–
SP 140S-MF1	4	2100	335 (247)	–	–	–	11.0 (3.8)	–	–
	5	2100	333 (246)	–	–	–	9.95 (3.40)	–	–
	7	2600	319 (235)	–	–	–	9.00 (3.08)	–	–
	10	2600	327 (241)	–	–	5.28 (1.80)	8.44 (2.88)	–	–
SP 180S-MF1	4	1500	927 (684)	–	–	–	–	33.9 (11.6)	–
	5	1500	919 (678)	–	–	–	–	27.9 (9.5)	–
	7	2300	825 (609)	–	–	–	–	22.2 (7.6)	–
	10	2300	864 (637)	–	–	–	19.2 (6.6)	19.2 (6.6)	–
SP 210S-MF1	4	1200	1895 (1398)	–	–	–	–	–	94.3 (32.2)
	5	1500	1767 (1303)	–	–	–	–	–	76.9 (26.3)
	7	1700	1731 (1277)	–	–	–	–	–	61.5 (21.0)
	10	2000	1708 (1260)	–	–	–	–	53.1 (18.1)	–
SP 240S-MF1	7	1500	2737 (2019)	–	–	–	–	–	138 (47.2)
	10	1700	2735 (2017)	–	–	–	–	–	125 (42.7)

<sup>1)</sup> The limit values in the table apply for S1 continuous duty (switch-on duration > 60 % or > 20 min) for a maximum gearbox temperature of 90 °C (194 °F).

# SIMOTICS S servomotors

## SIMOTICS S geared motors for SINAMICS S120

### Planetary gearbox SP+ series for SIMOTICS S-1FT7

#### Selection and ordering data

Motor Type	Planetary gearbox 2-stage			Available gearbox ratio $i =$					Motor speed, max. S3-60 % $n_{G1}$ ( $n_1$ ) r/min	Output torque, max. S3-60 % $M_{G2}$ ( $T_{2B}$ ) Nm (lb <sub>f</sub> -ft)	Radial out- put shaft load, max. <sup>1)</sup> $F_r$ ( $F_{2Rmax}$ ) N (lb <sub>f</sub> )	Axial output shaft load, max. <sup>1)</sup> $F_a$ ( $F_{2Amax}$ ) N (lb <sub>f</sub> )
	Type	Tor- sional back- lash arcmin	Gearbox weight, approx. kg (lb)	16	20	28	40	50				
1FT7034 1FT7036 1FT7042	SP 075S-MF2	≤ 6	3.6 (7.9)	✓	✓	✓	–	–	8500	126 (92.9)	4200 (944)	3350 (753)
1FT7034 1FT7036 1FT7042 1FT7044 1FT7046 1FT7062 1FT7064	SP 100S-MF2	≤ 5	7.9 (17.4)	–	–	–	✓	✓	6500	347 (256)	6600 (1484)	5650 (1270)
1FT7044 1FT7046 1FT7062 1FT7064 1FT7065 1FT7066 1FT7067 1FT7068 1FT7082 1FT7084	SP 140S-MF2	≤ 5	17 (37.5)	–	–	–	✓	✓	6000	726 (535) (670 (494) for $i = 50$ )	9900 (2226)	9870 (2219)
1FT7064 1FT7065 1FT7066 1FT7067 1FT7068 1FT7082 1FT7084 1FT7085 1FT7086 1FT7102	SP 180S-MF2	≤ 5	36.4 (80.3)	–	–	–	✓	✓	5000	1452 (1071)	15400 (3462)	15570 (3500)
1FT7084 1FT7085 1FT7086 1FT7087 1FT7102 1FT7105 1FT7108	SP 210S-MF2	≤ 5	55 (121)	–	–	–	✓	✓	4500	2880 (2124) (3000 (2213) for $i = 20$ ) (2840 (2095) for $i = 40$ )	21000 (4721)	30000 (6744)
1FT7085 1FT7086 1FT7102 1FT7105 1FT7108 1FT7132 1FT7134	SP 240S-MF2	≤ 5	80.6 (177.7)	–	–	–	✓	✓	4500	5400 (3983) (4400 (3245) for $i = 40$ ) 5160 (3806) for $i = 50$ )	30000 (6744)	33000 (7419)
<b>Gear shaft</b>				<b>Order code</b>								
With feather key				J12	J13	J15	J16	J17				
Without feather key				J32	J33	J35	J36	J37				

Preconditions, see page 8.1/33.

✓ Possible  
– Not possible

<sup>1)</sup> Referred to output shaft center.

**SIMOTICS S servomotors**

SIMOTICS S geared motors for SINAMICS S120

**Planetary gearbox SP+ series for SIMOTICS S-1FT7****Technical specifications**

<b>SIMOTICS S-1FT7 motor with SP+ planetary gearbox</b>									
2-stage Type	Gearbox ratio	Motor speed	Output torque	Moments of inertia of gearboxes (referred to the drive)					
				Continuous duty S1 <sup>1)</sup>			1FT703.	1FT704.	1FT706.
	<i>i</i>	$n_{N1}$ r/min	$M_{N2}$ ( $T_{2N}$ ) Nm (lb <sub>F</sub> -ft)	$J_1$ kgcm <sup>2</sup> (lb <sub>F</sub> -in <sup>2</sup> )	$J_1$ kgcm <sup>2</sup> (lb <sub>F</sub> -in <sup>2</sup> )	$J_1$ kgcm <sup>2</sup> (lb <sub>F</sub> -in <sup>2</sup> )	$J_1$ kgcm <sup>2</sup> (lb <sub>F</sub> -in <sup>2</sup> )	$J_1$ kgcm <sup>2</sup> (lb <sub>F</sub> -in <sup>2</sup> )	$J_1$ kgcm <sup>2</sup> (lb <sub>F</sub> -in <sup>2</sup> )
SP 075S-MF2	16	3500	101 (74.5)	0.23 (0.08)	0.55 (0.19)	–	–	–	–
	20	3500	101 (74.5)	0.20 (0.07)	–	–	–	–	–
	28	3500	101 (74.5)	0.18 (0.06)	–	–	–	–	–
SP 100S-MF2	16	3100	243 (179)	–	0.81 (0.28)	2.18 (0.74)	–	–	–
	20	3100	259 (191)	0.54 (0.18)	0.70 (0.24)	2.07 (0.71)	–	–	–
	28	3100	277 (204)	0.43 (0.15)	0.60 (0.21)	–	–	–	–
	40	3100	277 (204)	0.38 (0.13)	0.55 (0.19)	–	–	–	–
	50	3500	277 (204)	0.38 (0.13)	0.54 (0.18)	–	–	–	–
SP 140S-MF2	16	2900	461 (340)	–	–	3.19 (1.09)	10.3 (3.5)	–	–
	20	2900	493 (364)	–	–	2.71 (0.93)	9.77 (3.34)	–	–
	28	2900	545 (402)	–	1.65 (0.56)	2.34 (0.80)	–	–	–
	40	2900	581 (429)	–	1.40 (0.48)	2.10 (0.72)	–	–	–
	50	3200	536 (395)	–	1.39 (0.47)	2.08 (0.71)	–	–	–
SP 180S-MF2	16	2700	1162 (857)	–	–	–	12.4 (4.2)	13.5 (4.6)	–
	20	2700	1162 (857)	–	–	–	10.9 (3.7)	12.0 (4.1)	–
	28	2700	1162 (857)	–	–	6.32 (2.16)	9.48 (3.24)	–	–
	40	2700	1162 (857)	–	–	5.51 (1.88)	8.67 (2.96)	–	–
	50	2900	1162 (857)	–	–	5.45 (1.86)	8.61 (2.94)	–	–
SP 210S-MF2	16	2500	1274 (940)	–	–	–	–	34.5 (11.8)	–
	20	2500	1266 (934)	–	–	–	–	31.5 (10.8)	–
	28	2500	1294 (954)	–	–	–	30.0 (10.3)	30.0 (10.3)	–
	40	2500	1358 (1002)	–	–	–	28.5 (9.7)	–	–
	50	2500	1679 (1238)	–	–	–	28.3 (9.7)	–	–
SP 240S-MF2	16	2300	2658 (1961)	–	–	–	–	–	39.2 (13.4)
	20	2500	2596 (1915)	–	–	–	–	34.6 (11.8)	34.6 (11.8)
	28	2500	2667 (1967)	–	–	–	–	30.5 (10.4)	–
	40	2500	2803 (2067)	–	–	–	28.2 (9.6)	28.2 (9.6)	–
	50	2500	3457 (2550)	–	–	–	27.9 (9.5)	27.9 (9.5)	–

<sup>1)</sup> The limit values in the table apply for S1 continuous duty (switch-on duration > 60 % or > 20 min) for a maximum gearbox temperature of 90 °C (194 °F).