

## Data sheet for SIMOTICS S-1FK7 servo geared motor

Article No. : **1FK7042-2AF71-1RH1-Z**  
J02



Figure similar

Client order no. :  
Order no. :  
Offer no. :  
Remarks :

Item no. :  
Consignment no. :  
Project :

### Engineering data

|                       |                         |
|-----------------------|-------------------------|
| Rated speed (100 K)   | 3,000 rpm               |
| Number of poles       | 8                       |
| Rated torque (100 K)  | 2.6 Nm                  |
| Rated current         | 2.0 A                   |
| Static torque (60 K)  | 2.50 Nm                 |
| Static torque (100 K) | 3.00 Nm                 |
| Stall current (60 K)  | 1.80 A                  |
| Stall current (100 K) | 2.20 A                  |
| Moment of inertia     | 3.980 kgcm <sup>2</sup> |

### Physical constants

|                             |                               |
|-----------------------------|-------------------------------|
| Torque constant             | 1.38 Nm/A                     |
| Voltage constant at 20° C   | 90.0 V/1000*min <sup>-1</sup> |
| Winding resistance at 20° C | 4.67 Ω                        |
| Rotating field inductance   | 35.0 mH                       |
| Electrical time constant    | 7.50 ms                       |
| Mechanical time constant    | 2.15 ms                       |
| Thermal time constant       | 30 min                        |
| Shaft torsional stiffness   | 11,400 Nm/rad                 |
| Net weight of the motor     | 9.2 kg                        |

### Recommended Motor Module

|                          |          |
|--------------------------|----------|
| Rated inverter current   | 3 A      |
| Maximum inverter current | 9 A      |
| Maximum torque           | 10.50 Nm |

### Mechanical data

|                          |   |
|--------------------------|---|
| Motor type               | Permanent-magnet synchronous motor  |
| Motor type               | Compact   |
| Shaft height             | 48  |
| Cooling                  | Natural cooling   |
| Radial runout tolerance  | 0.040 mm  |
| Concentricity tolerance  | 0.08 mm   |
| Axial runout tolerance   | 0.08 mm   |
| Vibration severity grade | Grade A   |
| Connector size           | 1   |
| Degree of protection     | IP65  |
| Design acc. to Code I    | IM B5 (IM V1, IM V3)  |
| Temperature monitoring   | Pt1000 temperature sensor   |
| Electrical connectors    | Connectors for signals and power rotatable  |
| Color of the housing     | Standard (Anthracite RAL 7016)  |
| Holding brake            | with holding brake  |
| Shaft end                | Plain shaft   |
| Encoder system           | Encoder AM20DQI: absolute encoder 20 bits (resolution 1048576, encoder-internal 512 S/R) + 12 bits multi-turn (traversing range 4096 revolutions) |

### Gearbox data

|  |                         |
|--|-------------------------|
| Gearbox type                             | Planetary gearbox SP+   |
| Designation                              | SP 075S-MF1             |
| Gearbox shaft end                        | With feather key        |
| Gear ratio + steps                       | 4 (1-step)              |
| Motor speed S3-60 %                      | 7,500 rpm               |
| Motor speed S1                           | 2,900 rpm               |
| Output torque S1                         | 81 Nm                   |
| Rated output torque at duty type S3-60 % | 132 Nm                  |
| Moment of inertia of gearbox             | 0.780 kgcm <sup>2</sup> |
| Radial output shaft loading, max.        | 4,200 N                 |
| Axial output shaft load, max.            | 3,350 N                 |
| Efficiency of gearbox                    | 0.97                    |
| Torsional backlash                       | 4'                      |
| Gearbox weight                           | 3.90 kg                 |

### Limiting data

|                                   |           |
|-----------------------------------|-----------|
| Max. permissible speed (mech.)    | 9,000 rpm |
| Max. permissible speed (inverter) | 6,400 rpm |
| Maximum torque                    | 10.5 Nm   |
| Maximum current                   | 7.6 A     |

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### Holding brake

|                       |                        |
|-----------------------|------------------------|
| Holding brake version | Permanent-magnet brake |
| Holding torque        | 4.0 Nm                 |
| Power supply voltage  | DC 24 V $\pm$ 10 %     |
| Coil current          | 0.5 A                  |
| Opening time          | 70 ms                  |
| Closing time          | 30 ms                  |
| Highest braking work  | 150 J                  |

### Special design

J02 Mounting of SP+ planetary gearbox

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