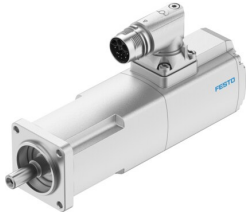


# Servo Motor EMMT-EC-40-M-ES-R1SCB

Part number: 8171406

**FESTO**



 General operating condition

## Data sheet

| Feature                                                             | Value                                                                                                                                                |
|---------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ambient temperature                                                 | -40 °C ... 40 °C                                                                                                                                     |
| Note on ambient temperature                                         | Up to 80 °C with derating of -1.5% per degree Celsius                                                                                                |
| Max. installation height                                            | 4000 m                                                                                                                                               |
| Information on max. installation height                             | with 1,000 m and longer only with derating of -1.0% per 100 m                                                                                        |
| Storage temperature                                                 | -40 °C ... 70 °C                                                                                                                                     |
| Relative air humidity                                               | 0 - 90 %                                                                                                                                             |
| Conforms to standard                                                | IEC 60034                                                                                                                                            |
| Thermal class according to EN 60034-1                               | F                                                                                                                                                    |
| Max. winding temperature                                            | 155 °C                                                                                                                                               |
| Rating class according to EN 60034-1                                | S1                                                                                                                                                   |
| Motor type as per EN 60034-7                                        | IM B5<br>IM V1<br>IM V3                                                                                                                              |
| Mounting position                                                   | Any                                                                                                                                                  |
| Degree of protection                                                | IP40                                                                                                                                                 |
| Note on degree of protection                                        | IP40 for motor shaft without rotary shaft seal<br>IP65 for motor housing, incl. connection technology<br>IP65 for motor shaft with rotary shaft seal |
| Concentricity, coaxiality, axial runout according to DIN SPEC 42955 | N                                                                                                                                                    |
| Balancing quality                                                   | G 2.5                                                                                                                                                |
| Detent torque                                                       | <1.0% of peak torque                                                                                                                                 |
| Bearing lifetime, under nominal conditions                          | 20000 h                                                                                                                                              |
| Interface code, motor out                                           | 40P                                                                                                                                                  |
| Electrical connection 1, connection type                            | Hybrid plug                                                                                                                                          |
| Electrical connection 1, connection technology                      | M17x0.75                                                                                                                                             |
| Electrical connection 1, number of pins/wires                       | 12                                                                                                                                                   |
| Electrical connection for input 1, connection pattern               | 00997532                                                                                                                                             |
| Contamination level                                                 | 2                                                                                                                                                    |
| Note on materials                                                   | RoHS-compliant                                                                                                                                       |
| Corrosion resistance class (CRC)                                    | 0 - No corrosion stress                                                                                                                              |
| LABS (PWIS) conformity                                              | VDMA24364 zone III                                                                                                                                   |
| Vibration resistance                                                | Transport application test with severity level 2 as per FN 942017-4 and EN 60068-2-6                                                                 |
| Shock resistance                                                    | Shock test with severity level 2 as per FN 942017-5 and EN 60068-2-27                                                                                |
| Certification                                                       | RCM compliance mark<br>c UL us - Recognized (OL)                                                                                                     |
| CE marking (see declaration of conformity)                          | As per EU EMC directive<br>As per EU RoHS directive                                                                                                  |

| Feature                                                      | Value                                                                                                |
|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| UKCA marking (see declaration of conformity)                 | To UK instructions for EMC<br>To UK RoHS instructions<br>To UK instructions for electrical equipment |
| Certificate issuing authority                                | UL E342973                                                                                           |
| Nominal operating voltage DC                                 | 48 V                                                                                                 |
| Type of winding switch                                       | Star inside                                                                                          |
| Number of pole pairs                                         | 5                                                                                                    |
| Stall torque                                                 | 0.45 Nm                                                                                              |
| Nominal torque                                               | 0.44 Nm                                                                                              |
| Peak torque                                                  | 1.32 Nm                                                                                              |
| Nominal rotary speed                                         | 3000 rpm                                                                                             |
| Max. rotational speed                                        | 5770 rpm                                                                                             |
| Max. mechanical speed                                        | 15000 rpm                                                                                            |
| Angular acceleration                                         | $\leq 100000 \text{ rad/s}^2$                                                                        |
| Motor nominal power                                          | 138 W                                                                                                |
| Continuous stall current                                     | 5.2 A                                                                                                |
| Motor nominal current                                        | 5.2 A                                                                                                |
| Peak current                                                 | 20 A                                                                                                 |
| Motor constants                                              | 0.085 Nm/A                                                                                           |
| Standstill torque constant                                   | 0.1 Nm/A                                                                                             |
| Voltage constant, phase-to-phase                             | 5.8 mV/min                                                                                           |
| Phase-phase winding resistance                               | 0.87 Ohm                                                                                             |
| Winding inductance phase-phase                               | 0.89 mH                                                                                              |
| Winding longitudinal inductivity Ld (phase)                  | 0.34 mH                                                                                              |
| Cross inductivity Lq (phase)                                 | 0.45 mH                                                                                              |
| Electric time constant                                       | 1.02 ms                                                                                              |
| Thermal time constant                                        | 21.4 min                                                                                             |
| Thermal resistance                                           | 1.35 K/W                                                                                             |
| Measuring flange                                             | 200 x 200 x 15 mm, steel                                                                             |
| Total output inertia moment                                  | 0.076 kgcm <sup>2</sup>                                                                              |
| Product weight                                               | 800 g                                                                                                |
| Permissible axial shaft load                                 | 30 N                                                                                                 |
| Permissible radial shaft load                                | 150 N                                                                                                |
| Rotor position sensor                                        | Absolute encoder, single-turn                                                                        |
| Rotor position sensor for manufacturer designation           | Festo iC-MHM                                                                                         |
| Rotor position encoder for absolutely detectable revolutions | 1                                                                                                    |
| Rotor position sensor interface                              | BiSS-C                                                                                               |
| Rotor position sensor measuring principle                    | Magnetic                                                                                             |
| Rotor position encoder for DC operating voltage              | 5 V                                                                                                  |
| Rotor position encoder for DC operating voltage range        | 4.5 V ... 5.5 V                                                                                      |
| Rotor position encoder for positional values per revolution  | 65536                                                                                                |
| Rotor position sensor resolution                             | 16 bit                                                                                               |
| Rotor position encoder system accuracy angle measurement     | -1800 arcsec ... 1800 arcsec                                                                         |
| Brake holding torque                                         | 0.45 Nm                                                                                              |
| Brake DC operating voltage                                   | 24 V                                                                                                 |
| Brake current consumption                                    | 0.34 A                                                                                               |
| Brake power consumption                                      | 8.2 W                                                                                                |
| Brake coil resistance                                        | 70.9 Ohm                                                                                             |
| Brake coil inductivity                                       | 146 mH                                                                                               |
| Brake separation time                                        | $\leq 28 \text{ ms}$                                                                                 |
| Brake closing time                                           | 41 ms                                                                                                |
| DC brake response delay                                      | $\leq 8 \text{ ms}$                                                                                  |
| Max. brake no-load speed                                     | 12000 rpm                                                                                            |

| Feature                            | Value                                               |
|------------------------------------|-----------------------------------------------------|
| Max. brake friction work           | 1500 J                                              |
| Number of emergency stops per hour | 1                                                   |
| Total brake friction work          | 1.5 kJ                                              |
| Brake mass moment of inertia       | 0.0058 kgcm <sup>2</sup>                            |
| Switching cycles, holding brake    | 10 million idle actuations (without friction work!) |
| MTTF, subcomponent                 | 190 years, rotor position sensor                    |