

# Servo Motor EMMT-...-40-

Part number: 8171399

**FESTO**



## Data sheet

| Feature                                                             | Value                                                                                         |
|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| Ambient temperature                                                 | -40 °C...40 °C                                                                                |
| Note on ambient temperature                                         | Up to 80 °C with derating of -2.25% 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                                                                                            |
| Temperature monitoring                                              | Digital motor temperature transmission via EnDat® 2.2<br>Dig. Motor temperature per BiSS-C    |
| Motor type as per EN 60034-7                                        | IM B5<br>IM V1<br>IM V3                                                                       |
| Mounting position                                                   | Any                                                                                           |
| Degree of protection                                                | IP40<br>IP65                                                                                  |
| Note on degree of protection                                        | IP40 for motor shaft without rotary shaft seal<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                                                                                       |
| Featherkey shaft design                                             | DIN 6885<br>A 3 x 3 x 12                                                                      |
| Interface code, motor out                                           | 40P                                                                                           |
| Electrical connection 1, connection type                            | Hybrid plug                                                                                   |
| Electrical connection 1, connection technology                      | M17x0.75<br>M23x1                                                                             |
| Electrical connection 1, number of pins/wires                       | 12                                                                                            |
| Contamination level                                                 | 2                                                                                             |
| Note on materials                                                   | RoHS compliant                                                                                |

| Feature                                                      | Value                                                                                                |
|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| 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>TÜV<br>c UL us - recognized (OL)                                              |
| CE marking (see declaration of conformity)                   | As per EU EMC directive<br>As per EU low voltage directive<br>As per EU RoHS directive               |
| 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                                | TÜV 968/INS 464.00/24<br>UL E342973                                                                  |
| Nominal operating voltage DC                                 | 48 V...325 V                                                                                         |
| Type of winding switch                                       | Star inside                                                                                          |
| Number of pole pairs                                         | 5                                                                                                    |
| Stall torque                                                 | 0.24 Nm...0.75 Nm                                                                                    |
| Nominal torque                                               | 0.21 Nm...0.69 Nm                                                                                    |
| Peak torque                                                  | 0.83 Nm...2 Nm                                                                                       |
| Nominal rotary speed                                         | 3000 rpm...7000 rpm                                                                                  |
| Max. rotational speed                                        | 5760 rpm...15600 rpm                                                                                 |
| Angular acceleration                                         | 100000 rad/s <sup>2</sup>                                                                            |
| Motor nominal power                                          | 96 W...234 W                                                                                         |
| Continuous stall current                                     | 1.3 A...8.6 A                                                                                        |
| Motor nominal current                                        | 1 A...8.1 A                                                                                          |
| Peak current                                                 | 5.4 A...20 A                                                                                         |
| Motor constants                                              | 0.055 Nm/A...0.33 Nm/A                                                                               |
| Standstill torque constant                                   | 0.06 Nm/A...0.42 Nm/A                                                                                |
| Voltage constant, phase-to-phase                             | 3.6 mV/min...25.4 mV/min                                                                             |
| Phase-phase winding resistance                               | 0.41 Ohm...13.1 Ohm                                                                                  |
| Winding inductance phase-phase                               | 0.57 mH...13.9 mH                                                                                    |
| Winding longitudinal inductivity Ld (phase)                  | 0.22 mH...5.3 mH                                                                                     |
| Cross inductivity Lq (phase)                                 | 0.29 mH...6.9 mH                                                                                     |
| Electric time constant                                       | 0.82 ms...1.39 ms                                                                                    |
| Thermal time constant                                        | 4.6 min...21.4 min                                                                                   |
| Thermal resistance                                           | 1.05 K/W...1.58 K/W                                                                                  |
| Measuring flange                                             | 200 x 200 x 15 mm, steel                                                                             |
| Total output inertia moment                                  | 0.039 kgcm <sup>2</sup> ...0.138 kgcm <sup>2</sup>                                                   |
| Product weight                                               | 500 g...1200 g                                                                                       |
| Permissible axial shaft load                                 | 30 N                                                                                                 |
| Permissible radial shaft load                                | 150 N                                                                                                |
| Rotor position sensor                                        | Absolute single-turn encoder<br>Absolute multi-turn encoder                                          |
| Rotor position sensor for manufacturer designation           | ECI 1119<br>EQI 1131<br>Festo iC-MHM<br>KCD-BC33B-1617-JP4F-GRQ-009                                  |
| Rotor position encoder for absolutely detectable revolutions | 1 ...4096                                                                                            |
| Rotor position sensor interface                              | BiSS-C<br>EnDat 22                                                                                   |
| Rotor position sensor measuring principle                    | Magnetic<br>Inductive                                                                                |
| Rotor position encoder for DC operating voltage              | 5 V                                                                                                  |
| Rotor position encoder for DC operating voltage range        | 3.6 V...14 V                                                                                         |

| Feature                                                     | Value                                               |
|-------------------------------------------------------------|-----------------------------------------------------|
| Rotor position encoder for positional values per revolution | 65536 ...524288                                     |
| Rotor position sensor resolution                            | 16 bit...19 bit                                     |
| Brake holding torque                                        | 0.45 Nm                                             |
| Brake DC operating voltage                                  | 24 V                                                |
| Brake power consumption                                     | 8.2 W                                               |
| Number of emergency stops per hour                          | 1                                                   |
| 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 encoder                   |