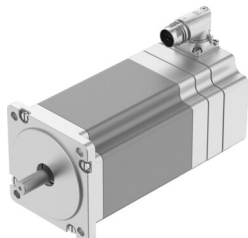


# Stepper motor EMMT-ST-87-L-RSB

Part number: 8156201

**FESTO**



## Data sheet

| Feature                                        | Value                                                                                |
|------------------------------------------------|--------------------------------------------------------------------------------------|
| Ambient temperature                            | -15 °C...40 °C                                                                       |
| Note on ambient temperature                    | up to 80°C with derating -2%/°C                                                      |
| 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                            | -20 °C...70 °C                                                                       |
| Relative air humidity                          | 0 - 90%<br>Non-condensating                                                          |
| Conforms to standard                           | IEC 60034                                                                            |
| Thermal class according to EN 60034-1          | B                                                                                    |
| Max. winding temperature                       | 130 °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 engine shaft<br>IP65 for motor housing, incl. connection technology             |
| Interface code, motor out                      | 87A                                                                                  |
| Electrical connection 1, connection type       | Hybrid plug                                                                          |
| Electrical connection 1, connection technology | M17x0.75                                                                             |
| Electrical connection 1, number of pins/wires  | 12                                                                                   |
| 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                                                              |

| Feature                                                                | Value                                                 |
|------------------------------------------------------------------------|-------------------------------------------------------|
|                                                                        | As per EU RoHS directive                              |
| UKCA marking (see declaration of conformity)                           | To UK instructions for EMC<br>To UK RoHS instructions |
| Certificate issuing authority                                          | UL E342973                                            |
| Nominal operating voltage DC                                           | 48 V                                                  |
| Number of pole pairs                                                   | 50                                                    |
| Motor holding torque                                                   | 9.4 Nm                                                |
| Nominal torque                                                         | 8.4 Nm                                                |
| Peak torque                                                            | 9.4 Nm                                                |
| Nominal rotary speed                                                   | 140 rpm                                               |
| Max. rotational speed                                                  | 430 rpm                                               |
| Max. mechanical speed                                                  | 7000 rpm                                              |
| Step angle with full step                                              | 1.8 deg                                               |
| Step angle tolerance                                                   | ±5%                                                   |
| Motor nominal power                                                    | 126 W                                                 |
| Continuous stall current                                               | 10 A                                                  |
| Motor nominal current                                                  | 8.4 A                                                 |
| Peak current                                                           | 10 A                                                  |
| Motor constants                                                        | 1.06 Nm/A                                             |
| Voltage constant, phase                                                | 78.9 mVmin                                            |
| Phase winding resistance                                               | 0.3 Ohm                                               |
| Winding inductance phase                                               | 2.7 mH                                                |
| Winding longitudinal inductivity Ld (phase)                            | 4.1 mH                                                |
| Cross inductivity Lq (phase)                                           | 2.7 mH                                                |
| Electric time constant                                                 | 9 ms                                                  |
| Thermal time constant                                                  | 37 min                                                |
| Thermal resistance                                                     | 0.75 K/W                                              |
| Measuring flange                                                       | 250 x 250 x 15 mm, steel                              |
| Total output inertia moment                                            | 3.11 kgcm <sup>2</sup>                                |
| Product weight                                                         | 5490 g                                                |
| Permissible axial shaft load                                           | 60 N                                                  |
| Permissible radial shaft load                                          | 220 N                                                 |
| Rotor position sensor                                                  | Absolute single-turn encoder                          |
| 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                  | 4.75 V...5.25 V                                       |
| Rotor position encoder, sinusoidal/cosinusoidal periods per revolution | 2                                                     |
| Rotor position encoder for positional values per revolution            | 65536                                                 |
| Rotor position sensor resolution                                       | 16 bit                                                |
| Rotor position encoder system accuracy angle measurement               | -540 arcsec...540 arcsec                              |
| Brake holding torque                                                   | 4.26 Nm                                               |
| Brake DC operating voltage                                             | 24 V                                                  |
| Brake current consumption                                              | 0.49 A                                                |
| Brake power consumption                                                | 12 W                                                  |
| Brake coil resistance                                                  | 49.2 Ohm                                              |
| Brake coil inductivity                                                 | 110 mH                                                |
| Brake separation time                                                  | 44 ms                                                 |
| Brake closing time                                                     | 110 ms                                                |
| DC brake response delay                                                | 30 ms                                                 |
| Max. brake no-load speed                                               | 7000 rpm                                              |

| Feature                                  | Value                                               |
|------------------------------------------|-----------------------------------------------------|
| Max. friction work per braking operation | 14000 J                                             |
| Number of emergency stops per hour       | 1                                                   |
| Brake mass moment of inertia             | 0.11 kgcm <sup>2</sup>                              |
| Switching cycles, holding brake          | 10 million idle actuations (without friction work!) |
| MTTF, subcomponent                       | 106 years, rotor position encoder                   |