

# Servo motor EMMT-AS-80-L-HS-RMYB

Part number: 8160653

**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                                                                           |
| Note on max. installation height                          | As of 1,000 m: 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                                                                        |
| Temperature class as per EN 60034-1                       | F                                                                                |
| Max. winding temperature                                  | 155 °C                                                                           |
| Rating class as per EN 60034-1                            | S1                                                                               |
| Temperature monitoring                                    | Digital motor temperature transmission via EnDat® 2.2                            |
| Motor type to EN 60034-7                                  | IM V1<br>IM V3                                                                   |
| Mounting position                                         | Any                                                                              |
| Degree of protection                                      | IP40                                                                             |
| Note on degree of protection                              | IP67 for motor housing including connection components                           |
| Concentricity, coaxiality, axial runout to DIN SPEC 42955 | N                                                                                |
| Balance quality                                           | G 2.5                                                                            |
| Detent torque                                             | <1.0% of peak torque                                                             |
| Bearing lifetime under nominal conditions                 | 20000 h                                                                          |
| Interface code, motor out                                 | 80P                                                                              |
| Electrical connection 1, connection type                  | Hybrid plug                                                                      |
| Electrical connection 1, connector system                 | M23x1                                                                            |
| Electrical connection 1, number of connections/cores      | 15                                                                               |
| Electrical connection 1, connection pattern               | 00995913                                                                         |
| Pollution degree                                          | 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 to FN 942017-4 and EN 60068-2-6 |
| Shock resistance                                          | Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27                |
| Approval                                                  | RCM<br>German Technical Control Board (TÜV)<br>c UL us - Recognised (Oil)        |

| Feature                                                     | Value                                                                                      |
|-------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| CE mark (see declaration of conformity)                     | To EU EMC Directive<br>To EU Low Voltage Directive<br>In accordance with EU RoHS Directive |
| UKCA marking (see declaration of conformity)                | To UK RoHS instructions<br>To UK regulations for electrical equipment                      |
| Certificate issuing authority                               | TÜV 968/INS 464.00/24<br>UL E342973                                                        |
| Nominal operating voltage DC                                | 680 V                                                                                      |
| Type of winding switch                                      | Star inside                                                                                |
| Number of pole pairs                                        | 5                                                                                          |
| Standstill torque                                           | 3.5 Nm                                                                                     |
| Nominal torque                                              | 2.9 Nm                                                                                     |
| Peak torque                                                 | 9.9 Nm                                                                                     |
| Nominal rotary speed                                        | 3000 rpm                                                                                   |
| Max. rotational speed                                       | 8540 rpm                                                                                   |
| Max. mechanical speed                                       | 14000 rpm                                                                                  |
| Angular acceleration                                        | $\leq 100000 \text{ rad/s}^2$                                                              |
| Nominal power rating of motor                               | 910 W                                                                                      |
| Continuous stall current                                    | 4.3 A                                                                                      |
| Nominal motor current                                       | 3.5 A                                                                                      |
| Peak current                                                | 17.5 A                                                                                     |
| Motor constant                                              | 0.82 Nm/A                                                                                  |
| Standstill torque constant                                  | 0.93 Nm/A                                                                                  |
| Voltage constant, phase-to-phase                            | 56 mV/min                                                                                  |
| Phase-phase winding resistance                              | 2.69 Ohm                                                                                   |
| Phase-phase winding inductance                              | 12.6 mH                                                                                    |
| Winding longitudinal inductivity Ld (phase)                 | 7.5 mH                                                                                     |
| Winding cross inductivity Lq (phase)                        | 9.45 mH                                                                                    |
| Electric time constant                                      | 7 ms                                                                                       |
| Thermal time constant                                       | 48 min                                                                                     |
| Thermal resistance                                          | 0.68 K/W                                                                                   |
| Measuring flange                                            | 250 x 250 x 15 mm, steel                                                                   |
| Total mass moment of inertia of output                      | 1.993 kgcm <sup>2</sup>                                                                    |
| Product weight                                              | 4120 g                                                                                     |
| Permissible axial shaft load                                | 120 N                                                                                      |
| Permissible radial shaft load                               | 620 N                                                                                      |
| Rotor position sensor                                       | Absolute multi-turn safety encoder                                                         |
| rotor position sensor, manufacturer designation             | EQI 1131                                                                                   |
| rotor position sensor, absolute detectable revolutions      | 4096                                                                                       |
| Rotor position encoder interface                            | EnDat 22                                                                                   |
| Rotor position sensor, encoder measuring principle          | Inductive                                                                                  |
| rotor position sensor, DC operating voltage                 | 5 V                                                                                        |
| rotor position sensor, DC operating voltage range           | 3.6 V ... 14 V                                                                             |
| rotor position sensor, position values per revolution       | 524288                                                                                     |
| Rotor position transducer resolution                        | 19 bit                                                                                     |
| rotor position sensor, system accuracy of angle measurement | -120 arcsec ... 120 arcsec                                                                 |
| Brake holding torque                                        | 7 Nm                                                                                       |
| Operating voltage DC for brake                              | 24 V                                                                                       |
| Brake current consumption                                   | 0.63 A                                                                                     |
| Power consumption, brake                                    | 15 W                                                                                       |
| Brake coil resistance                                       | 38.4 Ohm                                                                                   |
| Brake coil inductivity                                      | 900 mH                                                                                     |
| Brake separation time                                       | $\leq 45 \text{ ms}$                                                                       |
| Brake closing time                                          | $\leq 30 \text{ ms}$                                                                       |

| Feature                                | Value                                                                                                                       |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| DC brake response delay                | ≤4 ms                                                                                                                       |
| Max. brake no-load speed               | 10000 rpm                                                                                                                   |
| Max. friction per braking process      | 12000 J                                                                                                                     |
| Number of emergency stops per hour     | 1                                                                                                                           |
| Total brake friction                   | 2400 kJ                                                                                                                     |
| Mass moment of inertia of brake        | 0.459 kgcm <sup>2</sup>                                                                                                     |
| Switching cycles holding brake         | 10 million idle actuations (without friction work!)                                                                         |
| Safety device                          | Safety device                                                                                                               |
| Maximum SIL                            | Safety integrity level 3<br>See user documentation                                                                          |
| Safety sub-functions up to SIL2        | Reliable recording and transmission of single-turn position data                                                            |
| Safety sub-functions up to SIL3        | Reliable recording and transmission of single-turn position data, only with additional software function in the servo drive |
| Maximum PL and category                | Performance Level e, category 3<br>See user documentation                                                                   |
| Safety sub-function up to PL d, Cat. 3 | Reliable recording and transmission of single-turn position data                                                            |
| Safety sub-function up to PL e, Cat. 3 | Reliable recording and transmission of single-turn position data, only with additional software function in the servo drive |
| PFHd, subcomponent                     | 15 x 10E-9, encoder                                                                                                         |
| Duration of use Tm, subcomponent       | 20 years, rotor position encoder                                                                                            |
| Energy efficiency                      | ENEFF (CN) / Class 2                                                                                                        |