

# Servo motor EMMT-AS-150-L-HS-R3MB

Part number: 8148328

**FESTO**



 General operating condition

## Data sheet

| Feature                                                   | Value                                                                                                                                                   |
|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ambient temperature                                       | -15 °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                                       | -20 °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 B5<br>IM V1<br>IM V3                                                                                                                                 |
| Mounting position                                         | optional                                                                                                                                                |
| Degree of protection                                      | IP21                                                                                                                                                    |
| Note on degree of protection                              | IP21 for motor shaft without rotary shaft seal<br>IP65 for motor shaft with rotary shaft seal<br>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                                 | 150A                                                                                                                                                    |
| Electrical connection 1, connection type                  | Hybrid plug                                                                                                                                             |
| Electrical connection 1, connector system                 | M40x1                                                                                                                                                   |
| Electrical connection 1, number of connections/cores      | 15                                                                                                                                                      |
| Electrical connection 1, connection pattern               | 00997380                                                                                                                                                |
| Pollution degree                                          | 2                                                                                                                                                       |
| Note on materials                                         | RoHS-compliant                                                                                                                                          |
| Corrosion resistance class CRC                            | 0 - No corrosion stress                                                                                                                                 |
| LABS (PWIS) conformity                                    | VDMA24364 zone III                                                                                                                                      |
| Vibration resistance                                      | As per EN 60068-2-6                                                                                                                                     |
| Shock resistance                                          | As per EN 60068-2-29<br>15 g/11 ms to EN 60068-2-27                                                                                                     |
| Approval                                                  | RCM trademark<br>c UL us - Recognized (OL)                                                                                                              |

| 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 instructions for EMC<br>To UK RoHS instructions<br>To UK regulations for electrical equipment |
| Certificate issuing authority                               | UL E342973                                                                                          |
| Nominal operating voltage DC                                | 680 V                                                                                               |
| Type of winding switch                                      | Star inside                                                                                         |
| Number of pole pairs                                        | 5                                                                                                   |
| Standstill torque                                           | 45.5 Nm                                                                                             |
| Nominal torque                                              | 29 Nm                                                                                               |
| Peak torque                                                 | 87 Nm                                                                                               |
| Nominal rotary speed                                        | 2100 rpm                                                                                            |
| Max. rotational speed                                       | 3495 rpm                                                                                            |
| Max. mechanical speed                                       | 8000 rpm                                                                                            |
| Angular acceleration                                        | $\leq 100000 \text{ rad/s}^2$                                                                       |
| Nominal power rating of motor                               | 6377 W                                                                                              |
| Continuous stall current                                    | 23.6 A                                                                                              |
| Nominal motor current                                       | 15.4 A                                                                                              |
| Peak current                                                | 49.5 A                                                                                              |
| Motor constant                                              | 1.88 Nm/A                                                                                           |
| Standstill torque constant                                  | 2.23 Nm/A                                                                                           |
| Voltage constant, phase-to-phase                            | 135.1 mV/min                                                                                        |
| Phase-phase winding resistance                              | 0.25 Ohm                                                                                            |
| Phase-phase winding inductance                              | 4.4 mH                                                                                              |
| Winding longitudinal inductivity Ld (phase)                 | 2.15 mH                                                                                             |
| Winding cross inductivity Lq (phase)                        | 2.2 mH                                                                                              |
| Electric time constant                                      | 17.1 ms                                                                                             |
| Thermal time constant                                       | 55 min                                                                                              |
| Thermal resistance                                          | 0.39 K/W                                                                                            |
| Measuring flange                                            | 450 x 450 x 30 mm, steel                                                                            |
| Total mass moment of inertia of output                      | 70.1 kgcm <sup>2</sup>                                                                              |
| Product weight                                              | 29700 g                                                                                             |
| Permissible axial shaft load                                | 274 N                                                                                               |
| Permissible radial shaft load                               | 1370 N                                                                                              |
| Rotor position sensor                                       | Absolute multi-turn encoder                                                                         |
| rotor position sensor, manufacturer designation             | EQI 1331                                                                                            |
| 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 | -65 arcsec ... 65 arcsec                                                                            |
| Brake holding torque                                        | 65 Nm                                                                                               |
| Operating voltage DC for brake                              | 24 V                                                                                                |
| Brake current consumption                                   | 1.08 A                                                                                              |
| Power consumption, brake                                    | 26 W                                                                                                |
| Brake separation time                                       | 200 ms                                                                                              |
| Brake closing time                                          | 40 ms                                                                                               |
| DC brake response delay                                     | 10 ms                                                                                               |
| Max. brake no-load speed                                    | 8000 rpm                                                                                            |

| Feature                                   | Value                                              |
|-------------------------------------------|----------------------------------------------------|
| Max. friction per braking process         | 40000 J                                            |
| Number of emergency stops per hour        | 1                                                  |
| Total brake friction                      | 4500 kJ                                            |
| Mass moment of inertia of brake           | 12.5 kgcm <sup>2</sup>                             |
| Switching cycles holding brake            | 5 million idle actuations (without friction work!) |
| Mean time to failure (MTTF), subcomponent | 190 years, rotor position sensor                   |
| Energy efficiency                         | ENEFF (CN) / Class 1                               |