

# Servo motor EMMH-AS-138-MA-HS-S1MB-T

Part number: 8215367

**FESTO**



 [General operating condition](#)

## Data sheet

| Feature                                                   | Value                                                                                      |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Ambient temperature                                       | -30 °C ... 40 °C                                                                           |
| Note on ambient temperature                               | Up to 80°C with derating -2%/°C                                                            |
| Max. installation height                                  | 3000 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 - 100%                                                                                   |
| 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 B14<br>IM V18                                                                           |
| Mounting position                                         | Any                                                                                        |
| Degree of protection                                      | IP69K                                                                                      |
| 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                                 | 138C                                                                                       |
| Electrical connection 1, connection type                  | Hybrid plug                                                                                |
| Electrical connection 1, connector system                 | M17x0.75                                                                                   |
| Electrical connection 1, number of connections/cores      | 15                                                                                         |
| Electrical connection 1, connection pattern               | 00997714                                                                                   |
| Pollution degree                                          | 2                                                                                          |
| Note on materials                                         | RoHS compliant                                                                             |
| Corrosion resistance class CRC                            | 4 - Very high corrosion stress<br>(except laser marking)                                   |
| LABS (PWIS) conformity                                    | VDMA24364 zone III                                                                         |
| Suitable for use with food                                | Approved for direct contact with food                                                      |
| 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                                                                                        |
| CE mark (see declaration of conformity)                   | To EU EMC Directive<br>To EU Low Voltage Directive<br>In accordance with EU RoHS Directive |

| Feature                                                     | Value                                                                 |
|-------------------------------------------------------------|-----------------------------------------------------------------------|
| UKCA marking (see declaration of conformity)                | To UK RoHS instructions<br>To UK regulations for electrical equipment |
| Nominal operating voltage DC                                | 680 V                                                                 |
| Type of winding switch                                      | Star inside                                                           |
| Number of pole pairs                                        | 5                                                                     |
| Standstill torque                                           | 11 Nm                                                                 |
| Nominal torque                                              | 6.2 Nm                                                                |
| Peak torque                                                 | 33.3 Nm                                                               |
| Nominal rotary speed                                        | 2000 rpm                                                              |
| Max. rotational speed                                       | 4590 rpm                                                              |
| Max. mechanical speed                                       | 5000 rpm                                                              |
| Angular acceleration                                        | $\leq 100000 \text{ rad/s}^2$                                         |
| Nominal power rating of motor                               | 1300 W                                                                |
| Continuous stall current                                    | 7.4 A                                                                 |
| Nominal motor current                                       | 4.3 A                                                                 |
| Peak current                                                | 23.1 A                                                                |
| Motor constant                                              | 1.47 Nm/A                                                             |
| Standstill torque constant                                  | 1.51 Nm/A                                                             |
| Voltage constant, phase-to-phase                            | 97.6 mV/min                                                           |
| Phase-phase winding resistance                              | 0.89 Ohm                                                              |
| Phase-phase winding inductance                              | 8.8 mH                                                                |
| Winding longitudinal inductivity Ld (phase)                 | 3.9 mH                                                                |
| Winding cross inductivity Lq (phase)                        | 4.4 mH                                                                |
| Electric time constant                                      | 9.8 ms                                                                |
| Thermal time constant                                       | 100 min                                                               |
| Thermal resistance                                          | 0.68 K/W                                                              |
| Measuring flange                                            | 300 x 300 x 30 mm, steel                                              |
| Mass moment of inertia of rotor                             | 9.78 kgcm <sup>2</sup>                                                |
| Total mass moment of inertia of output                      | 12.1 kgcm <sup>2</sup>                                                |
| Product weight                                              | 14400 g                                                               |
| Permissible axial shaft load                                | 227 N                                                                 |
| Permissible radial shaft load                               | 1135 N                                                                |
| Rotor position sensor                                       | Absolute encoder, multi-turn                                          |
| 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                                        | 20 Nm                                                                 |
| Operating voltage DC for brake                              | 24 V                                                                  |
| Brake current consumption                                   | 0.68 A                                                                |
| Power consumption, brake                                    | 16.4 W                                                                |
| Brake coil resistance                                       | 35.3 Ohm                                                              |
| Brake coil inductivity                                      | 3200 mH                                                               |
| Brake separation time                                       | 90 ms                                                                 |
| Brake closing time                                          | 81 ms                                                                 |
| DC brake response delay                                     | 10 ms                                                                 |
| Max. brake no-load speed                                    | 10000 rpm                                                             |
| Max. friction per braking process                           | 1980 J                                                                |

| Feature                                   | Value                                               |
|-------------------------------------------|-----------------------------------------------------|
| Number of emergency stops per hour        | 1                                                   |
| Total brake friction                      | 1980 kJ                                             |
| Mass moment of inertia of brake           | 2.32 kgcm <sup>2</sup>                              |
| Switching cycles holding brake            | 10 million idle actuations (without friction work!) |
| Mean time to failure (MTTF), subcomponent | 190 years, rotor position encoder                   |