

# Servo motor EMMT-AS-190-MR-HS-R3MYB

Part number: 8148383

**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                                                                                                                                               |
| 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 %                                                                                                                                             |
| 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                                                                                                |
| Motor type as per EN 60034-7                                        | IM B5<br>IM V1<br>IM V3                                                                                                                              |
| Mounting position                                                   | Any                                                                                                                                                  |
| 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, incl. connection technology |
| 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                                                                                                                                              |
| Interface code, motor out                                           | 190B                                                                                                                                                 |
| Electrical connection 1, connection type                            | Hybrid plug                                                                                                                                          |
| Electrical connection 1, connection technology                      | M40x1                                                                                                                                                |
| Electrical connection 1, number of pins/wires                       | 15                                                                                                                                                   |
| Electrical connection for input 1, connection pattern               | 00997380                                                                                                                                             |
| Contamination level                                                 | 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 as per EN 60068-2-27                                                                                              |
| Certification                                                       | c UL us - Recognized (OL)                                                                                                                            |

| Feature                                                      | Value                                                                                                |
|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| 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/FSP 2317.00/21<br>UL E342973                                                                 |
| Nominal operating voltage DC                                 | 680 V                                                                                                |
| Type of winding switch                                       | Star inside                                                                                          |
| Number of pole pairs                                         | 5                                                                                                    |
| Stall torque                                                 | 76.7 Nm                                                                                              |
| Nominal torque                                               | 59.1 Nm                                                                                              |
| Peak torque                                                  | 118.3 Nm                                                                                             |
| Nominal rotary speed                                         | 1200 rpm                                                                                             |
| Max. rotational speed                                        | 2163 rpm                                                                                             |
| Max. mechanical speed                                        | 8000 rpm                                                                                             |
| Angular acceleration                                         | $\leq 100000 \text{ rad/s}^2$                                                                        |
| Motor nominal power                                          | 7427 W                                                                                               |
| Continuous stall current                                     | 25 A                                                                                                 |
| Motor nominal current                                        | 19.2 A                                                                                               |
| Peak current                                                 | 41.5 A                                                                                               |
| Motor constants                                              | 3.08 Nm/A                                                                                            |
| Standstill torque constant                                   | 3.56 Nm/A                                                                                            |
| Voltage constant, phase-to-phase                             | 215.2 mV/min                                                                                         |
| Phase-phase winding resistance                               | 0.285 Ohm                                                                                            |
| Winding inductance phase-phase                               | 12.3 mH                                                                                              |
| Winding longitudinal inductivity Ld (phase)                  | 5.65 mH                                                                                              |
| Cross inductivity Lq (phase)                                 | 6.15 mH                                                                                              |
| Electric time constant                                       | 39.6 ms                                                                                              |
| Thermal time constant                                        | 70 min                                                                                               |
| Thermal resistance                                           | 0.31 K/W                                                                                             |
| Measuring flange                                             | 450 x 450 x 30 mm, steel                                                                             |
| Total output inertia moment                                  | 160 kgcm <sup>2</sup>                                                                                |
| Product weight                                               | 50600 g                                                                                              |
| Permissible axial shaft load                                 | 500 N                                                                                                |
| Permissible radial shaft load                                | 2530 N                                                                                               |
| Rotor position sensor                                        | Safety encoder, absolute multi-turn                                                                  |
| Rotor position sensor for manufacturer designation           | EQI 1331                                                                                             |
| Rotor position encoder for absolutely detectable revolutions | 4096                                                                                                 |
| Rotor position sensor interface                              | EnDat® 22                                                                                            |
| Rotor position sensor measuring principle                    | Inductive                                                                                            |
| Rotor position encoder for DC operating voltage              | 5 V                                                                                                  |
| Rotor position encoder for DC operating voltage range        | 3.6 V ... 14 V                                                                                       |
| Rotor position encoder for positional values per revolution  | 524288                                                                                               |
| Rotor position sensor resolution                             | 19 bit                                                                                               |
| Rotor position encoder system accuracy angle measurement     | -65 arcsec ... 65 arcsec                                                                             |
| Brake holding torque                                         | 115 Nm                                                                                               |
| Brake DC operating voltage                                   | 24 V                                                                                                 |
| Brake current consumption                                    | 2.08 A                                                                                               |
| Brake power consumption                                      | 50 W                                                                                                 |
| Brake separation time                                        | 190 ms                                                                                               |
| Brake closing time                                           | 65 ms                                                                                                |
| DC brake response delay                                      | 12 ms                                                                                                |

| Feature                                | Value                                                              |
|----------------------------------------|--------------------------------------------------------------------|
| Max. brake no-load speed               | 8000 rpm                                                           |
| Max. brake friction work               | 62000 J                                                            |
| Number of emergency stops per hour     | 1                                                                  |
| Total brake friction work              | 13000 kJ                                                           |
| Brake mass moment of inertia           | 50 kgcm <sup>2</sup>                                               |
| Switching cycles, holding brake        | 5 million idle actuations (without friction work!)                 |
| Safety device                          | Safety device                                                      |
| Maximum SIL                            | Security integrity level 2                                         |
| Safety sub-functions up to SIL2        | Reliable acquisition and transmission of single-turn position data |
| Maximum PL and category                | Performance Level D, Category 3                                    |
| Safety sub-function up to PL d, Cat. 3 | Reliable acquisition and transmission of single-turn position data |
| PFHd, subcomponent                     | 15 x 10E-9, encoder                                                |
| Duration of use Tm, subcomponent       | 20 years, rotor position sensor                                    |
| MTTF, subcomponent                     | 190 years, rotor position sensor                                   |
| Energy efficiency                      | ENEFF (CN) / Class 1                                               |