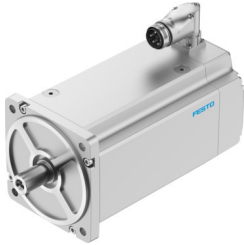


# Servo motor EMMT-AS-190-MKR-HS-R3MYB

Part number: 8148389

**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                                                                                                                                                 |
| Featherkey shaft type                                     | DIN 6885<br>A 10 x 8 x 45                                                                                                                               |
| Interface code, motor out                                 | 190B                                                                                                                                                    |
| 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                                                                                                     |

| Feature                                                     | Value                                                                                               |
|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Approval                                                    | c UL us - Recognized (OL)                                                                           |
| 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                               | 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                                                                                                   |
| Standstill 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                                        | $\leq 100000 \text{ rad/s}^2$                                                                       |
| Nominal power rating of motor                               | 7427 W                                                                                              |
| Continuous stall current                                    | 25 A                                                                                                |
| Nominal motor current                                       | 19.2 A                                                                                              |
| Peak current                                                | 41.5 A                                                                                              |
| Motor constant                                              | 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                                                                                           |
| Phase-phase winding inductance                              | 12.3 mH                                                                                             |
| Winding longitudinal inductivity Ld (phase)                 | 5.65 mH                                                                                             |
| Winding 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 mass moment of inertia of output                      | 160 kgcm <sup>2</sup>                                                                               |
| Product weight                                              | 50600 g                                                                                             |
| Permissible axial shaft load                                | 500 N                                                                                               |
| Permissible radial shaft load                               | 2530 N                                                                                              |
| Rotor position sensor                                       | Absolute multi-turn safety 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                                        | 115 Nm                                                                                              |
| Operating voltage DC for brake                              | 24 V                                                                                                |
| Brake current consumption                                   | 2.08 A                                                                                              |
| Power consumption, brake                                    | 50 W                                                                                                |
| Brake separation time                                       | 190 ms                                                                                              |
| Brake closing time                                          | 65 ms                                                                                               |

| Feature                                   | Value                                                            |
|-------------------------------------------|------------------------------------------------------------------|
| DC brake response delay                   | 12 ms                                                            |
| Max. brake no-load speed                  | 8000 rpm                                                         |
| Max. friction per braking process         | 62000 J                                                          |
| Number of emergency stops per hour        | 1                                                                |
| Total brake friction                      | 13000 kJ                                                         |
| Mass moment of inertia of brake           | 50 kgcm <sup>2</sup>                                             |
| Switching cycles holding brake            | 5 million idle actuations (without friction work!)               |
| Safety device                             | Safety device                                                    |
| Maximum SIL                               | Safety integrity level 2                                         |
| Safety sub-functions up to SIL2           | Reliable recording 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 recording and transmission of single-turn position data |
| PFHd, subcomponent                        | 15 x 10E-9, encoder                                              |
| Duration of use Tm, subcomponent          | 20 years, rotor position sensor                                  |
| Mean time to failure (MTTF), subcomponent | 190 years, rotor position sensor                                 |
| Energy efficiency                         | ENEFF (CN) / Class 1                                             |