

EAM360R-K - CANopen®/SAE J1939

Encoder kit

Magnetic single- or multiturn encoders 14 bit ST / 18 bit MT

Overview

- Encoder kit single- or multiturn / CANopen®/SAE J1939
- E1 compliant design
- High protection IP 67
- High resistance to shock and vibrations
- Protection against corrosion CX (C5-M)
- Wire cross section 0.5 mm²
- Electronic gear function
- Applicable up to PLd (ISO 13849)
- Magnetic rotor included in delivery



Technical data

Technical data - electrical ratings

| | |
|-----------------------|--|
| Voltage supply | 10...30 VDC |
| Consumption typ. | 20 mA (24 VDC, w/o load) |
| Initializing time | ≤ 170 ms after power on |
| Interface | CANopen® SAE J1939 |
| Function | Multiturn Singleturn |
| Profile conformity | CANopen® CiA communication profile DS 301, LSS profile DSP 305, device profile DS 406 |
| Steps per revolution | ≤16384 / 14 bit |
| Number of revolutions | ≤262144 / 18 bit |
| Absolute accuracy | ±0.15 ° (+20 ±15 °C) ±0.25 ° (-40...+85 °C) (see info working distance) |
| Sensing method | Magnetic |
| Code sequence | CW: ascending values with clockwise sense of rotation; looking at flange |
| Output stages | CAN-Bus, LV (3.3 V) compatible ISO 11898 |
| Interference immunity | EN 61000-6-2 ISO 11452-2:2004* / -5:2002* ISO 7637-2:2004* ISO 10605:2008 + Amd 1:2014 (CD ±8 kV / AD ±15 kV) * Severity level according to ECE R10 (Rev. 4) |
| Emitted interference | EN 61000-6-4 CISPR 25:2008 (30...1000 MHz) ISO 7637-2:2004* * Severity level according to ECE R10 (Rev. 4) |

Technical data - electrical ratings

| | |
|-------------------------------|---|
| MTTF _d (ISO 13849) | High (>100 years) Use in safety functions exclusively based on Application Note and MTTF _d reliability prediction (request separately). |
| Approval | UL approval / E217823 |

Technical data - mechanical design

| | |
|-----------------------|--|
| Size (flange) | ø36 mm |
| Shaft type | ø6 mm (magnet bore) ø8 mm (magnet bore) ø12 mm (magnet bore) |
| Protection EN 60529 | IP 67 |
| Operating speed | ≤6000 rpm |
| Working distance | 1.1 ±0.9 mm axial / ≤ 0.3 mm eccentricity |
| Material | Housing: steel, powder-coated Flange: aluminium |
| Corrosion protection | IEC 60068-2-52 Salt mist for ambient conditions CX (C5-M) according to ISO 12944-2 |
| Operating temperature | -40...+85 °C (see general information) |
| Relative humidity | 95 % |
| Resistance | EN 60068-2-6 Vibration 30 g, 10-2000 Hz EN 60068-2-27 Shock 500 g, 1 ms |
| Weight approx. | 170 g |
| Connection | Flange connector M12, 5-pin Cable 2 m |

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General information

Self-heating correlated to installation and ambient conditions as well as to electronics and supply voltage must be considered for precise thermal dimensioning. Operating the encoder close to the maximum limits requires measuring the real prevailing temperature at the encoder flange.

Terminal assignment

Cable

for connection reference -L

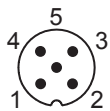
| Core colour | Signals |
|-------------|---------|
| white | 0 V |
| brown | +Vs |
| green | CAN_H |
| yellow | CAN_L |
| grey | CAN_GND |

Cable data: 5 x 0.5 mm²

Flange connector M12, 5-pin

for connection reference -N

| Pin | Signals |
|-----|---------|
| 1 | CAN_GND |
| 2 | +Vs |
| 3 | 0 V |
| 4 | CAN_H |
| 5 | CAN_L |



CANopen® features

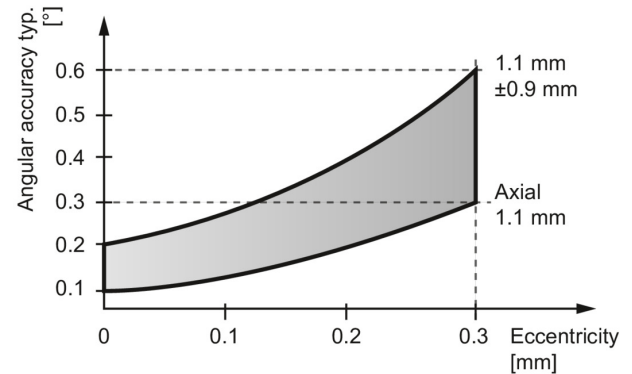
| | |
|-------------------------|---|
| Operating modes | Timer-driven (Event-Time) Synchronously triggered (Sync) |
| Node Monitoring | Heartbeat Node guarding |
| Programmable parameters | Operating modes Total resolution Scaling Electronic gear function |
| Diagnosis | Multiturn sensing Position error Temperature exceeding Speed exceeding |
| Default | 50 kbit/s, Node ID 1 (DS406) 250 kbit/s, Node ID 4 (DS417) |

SAE J1939 features

| | |
|-------------------------|---|
| Programmable parameters | Total resolution Scaling |
| Diagnosis | Multiturn sensing Position error Temperature exceeding Speed exceeding |
| Default | 250 kbit/s ECU address 172 |

Working distance

The ideal working distance of the magnet related to the encoder is at an eccentricity of 0 mm and an axial distance of 1.1 mm. Deviation affects the accuracy as shown in following diagram.



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Dimensions

