

# EAM580R-SC - CANopen®/SAE J1939

Solid shaft with clamping flange

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

## Overview

- Encoder single- or multiturn / CANopen®/SAE J1939
- E1 approval (KBA)
- High protection IP 67
- High resistance to shock and vibrations
- Protection against corrosion CX (C5-M)
- Wire cross section 0.5 mm<sup>2</sup>
- Electronic gear function
- Applicable up to PLd (ISO 13849)



## 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®<br>SAE J1939   |
| Function                      | Multiturn<br>Singleturn   |
| Profile conformity            | CANopen® CiA communication profile<br>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)<br>±0.25 ° (-40...+85 °C)  |
| 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<br>ISO 11898   |
| Interference immunity         | EN 61000-6-2<br>UN ECE R10  |
| Emitted interference          | EN 61000-6-4<br>UN ECE R10  |
| MTTF <sub>d</sub> (ISO 13849) | High (>100 years)<br>Use in safety functions exclusively based on Application Note and MTTF <sub>d</sub> reliability prediction (request separately). |

### Technical data - electrical ratings

Approval UL approval / E217823

### Technical data - mechanical design

|                       |  |
|-----------------------|--|
| Size (flange)         | ø58 mm   |
| Shaft type            | ø10 x 20 mm, solid shaft with flat   |
| Flange                | Clamping flange  |
| Protection EN 60529   | IP 67 (with shaft seal)  |
| Operating speed       | ≤6000 rpm  |
| Starting torque       | ≤2.5 Ncm (+20 °C, IP 67)   |
| Moment of inertia     | 15.38 gcm <sup>2</sup>   |
| Admitted shaft load   | ≤40 N axial<br>≤80 N radial  |
| Material              | Housing: steel, powder-coated<br>Flange: aluminium<br>Shaft: stainless steel       |
| 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<br>Vibration 30 g, 10-2000 Hz<br>EN 60068-2-27<br>Shock 500 g, 1 ms   |
| Weight approx.        | 250 g  |
| Connection            | Flange connector M12, 5-pin<br>Cable 2 m   |

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## General information

Self-heating interrelated to speed, protection, attachment method and ambient conditions as well electronics and supply voltage must be considered for precise thermal dimensioning. Self-heating is supposed to approximate 8 K (IP 67 protection) per 1000 rpm. 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

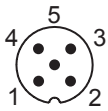
| Core colour | Signals |
|-------------|---------|
| white       | 0 V     |
| brown       | +Vs     |
| green       | CAN_H   |
| yellow      | CAN_L   |
| grey        | CAN_GND |

Cable data: 5 x 0.5 mm<sup>2</sup>

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

## SAE J1939 features

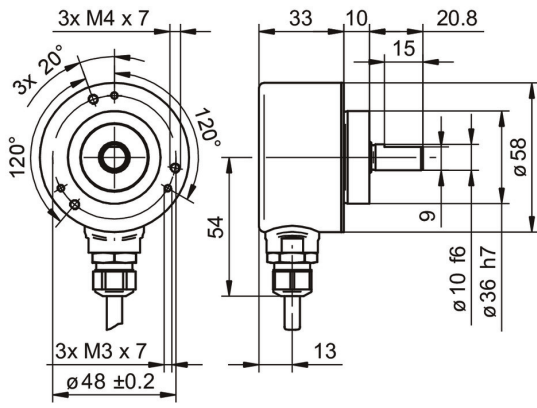
|                         |   |
|-------------------------|---|
| Programmable parameters | Total resolution<br>Scaling   |
| Diagnosis               | Multiturn sensing<br>Position error<br>Temperature exceeding<br>Speed exceeding |
| Default                 | 250 kbit/s<br>ECU address 172   |

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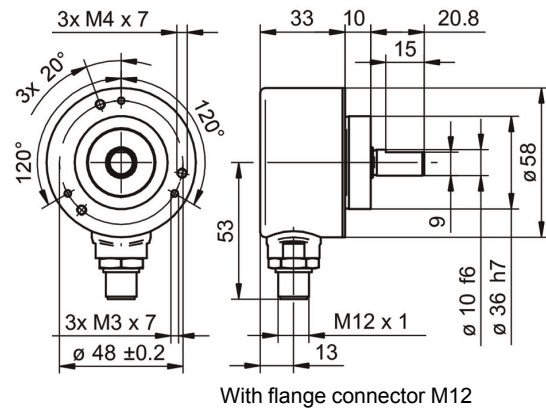
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## Dimensions



With cable



With flange connector M12

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## Ordering reference

|                                   |   |          |          |          |          |          |          |          |           |          |           |           |          |          |          |
|-----------------------------------|---|----------|----------|----------|----------|----------|----------|----------|-----------|----------|-----------|-----------|----------|----------|----------|
|                                   | <b>EAM580R</b>  | <b>-</b> | <b>S</b> | <b>C</b> | <b>0</b> | <b>.</b> | <b>7</b> | <b>#</b> | <b>##</b> | <b>.</b> | <b>14</b> | <b>##</b> | <b>0</b> | <b>.</b> | <b>A</b> |
| <b>Product</b>                    | EAM580R   |          |          |          |          |          |          |          |           |          |           |           |          |          |          |
| <b>Shaft type</b>                 | Solid shaft   |          | S        |          |          |          |          |          |           |          |           |           |          |          |          |
| <b>Flange (shaft)</b>             | Clamping flange, centering collar ø36 x 10 mm,<br>pitch circle diameter 48 mm - 3xM3/3xM4 |          |          | C        |          |          |          |          |           |          |           |           |          |          |          |
| <b>Shaft</b>                      | ø10 x 20 mm, with flat  |          |          |          | 0        |          |          |          |           |          |           |           |          |          |          |
| <b>Protection class</b>           | IP 67   |          |          |          |          | 7        |          |          |           |          |           |           |          |          |          |
| <b>Connection</b>                 | Cable radial, 2 m   |          |          |          |          |          |          | L        |           |          |           |           |          |          |          |
|                                   | Flange socket radial, M12, 5-pin, male contacts, CCW                                      |          |          |          |          |          |          | N        |           |          |           |           |          |          |          |
| <b>Voltage supply / interface</b> | 10...30 VDC / CANopen (DS 406)  |          |          |          |          |          |          |          | C6        |          |           |           |          |          |          |
|                                   | 10...30 VDC, SAE J1939  |          |          |          |          |          |          |          | C9        |          |           |           |          |          |          |
| <b>Resolution Singleturn</b>      | 14 Bit  |          |          |          |          |          |          |          |           |          | 14        |           |          |          |          |
| <b>Resolution Multiturn</b>       | No option   |          |          |          |          |          |          |          |           |          |           |           | 00       |          |          |
|                                   | 18 Bit  |          |          |          |          |          |          |          |           |          |           |           | 18       |          |          |
| <b>Resolution supplement</b>      | No option   |          |          |          |          |          |          |          |           |          |           |           |          | 0        |          |
| <b>Operating temperature</b>      | -40...+85 °C  |          |          |          |          |          |          |          |           |          |           |           |          |          | A        |

## Accessories

### Mounting accessories

|          |  |
|----------|--|
| 11101781 | Double loops coupling (D1=10 / D2=10)  |
| 11050507 | Bellows coupling (D1=06 / D2=10)       |
| 11065923 | Coupling CPS25 (L=19, D1=10 / D2=10)   |
| 11065922 | Coupling CPS25 (L=19, D1=10 / D2=06)   |
| 10141132 | Spring washer coupling (D1=6 / D2=10)  |
| 10141133 | Spring washer coupling (D1=10 / D2=10) |
| 11069337 | Coupling CPS37 (L=24, D1=10 / D2=06)   |
| 11069340 | Coupling CPS37 (L=24, D1=10 / D2=10)   |
| 11053277 | Bellows coupling (D1=10 / D2=10)       |
| 11101893 | Spring encoder arm                     |
| 10125051 | Mounting adaptor                       |