

## EAM580-SY - CANopen®

Solid shaft with synchro flange

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

### Overview

- Encoder single- or multiturn / CANopen®
- Precise magnetic sensing
- Angular accuracy up to  $\pm 0.15^\circ$
- Additional incremental signals
- High protection up to IP 67
- High resistance to shock and vibrations
- Electronic gear function



### Technical data

#### Technical data - electrical ratings

|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Voltage supply        | 10...30 VDC                                                                                        |
| Consumption typ.      | 20 mA (24 VDC, w/o load)                                                                           |
| Initializing time     | $\leq 170$ ms after power on                                                                       |
| Data currency         | $< 1$ ms                                                                                           |
| Interface             | CANopen®<br>CANopen®-Lift<br>CANopen® + incremental                                                |
| Function              | Multiturn<br>Singleturn                                                                            |
| Profile conformity    | CANopen® CiA communication profile<br>DS 301, LSS profile DSP 305, device profile DS 406, DS 417   |
| Steps per revolution  | $\leq 16384 / 14$ bit                                                                              |
| Number of revolutions | $\leq 262144 / 18$ bit                                                                             |
| Absolute accuracy     | $\pm 0.15^\circ$ (+20 $\pm 15^\circ$ C)<br>$\pm 0.25^\circ$ (-40...+85 $^\circ$ 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<br>Incremental: linedriver RS422 or push-pull (option) |
| Incremental output    | 1024, 2048, 4096 ppr (other on request)                                                            |
| Output signals        | A+, A-, B+, B-                                                                                     |
| Output frequency      | $\leq 350$ kHz                                                                                     |
| Interference immunity | EN 61000-6-2                                                                                       |

#### Technical data - electrical ratings

|                      |                       |
|----------------------|-----------------------|
| Emitted interference | EN 61000-6-4          |
| Approval             | UL approval / E217823 |

#### Technical data - mechanical design

|                       |                                                                                  |
|-----------------------|----------------------------------------------------------------------------------|
| Size (flange)         | $\varnothing 58$ mm                                                              |
| Shaft type            | $\varnothing 6 \times 10$ mm, solid shaft with flat                              |
| Flange                | Synchro flange                                                                   |
| Protection EN 60529   | IP 65 (without shaft seal)<br>IP 67 (with shaft seal)                            |
| Operating speed       | $\leq 6000$ rpm                                                                  |
| Starting torque       | $\leq 2$ Ncm (+20 $^\circ$ C, IP 65)<br>$\leq 2.5$ Ncm (+20 $^\circ$ C, IP 67)   |
| Moment of inertia     | 15.38 gcm <sup>2</sup>                                                           |
| Admitted shaft load   | $\leq 40$ N axial<br>$\leq 80$ N radial                                          |
| Material              | Housing: steel zinc-coated<br>Flange: aluminium<br>Shaft: stainless steel        |
| Operating temperature | -40...+85 $^\circ$ 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>Flange connector M12, 8-pin<br>Cable 2 m          |

### Optional

- Protection against corrosion CX (C5-M)

## EAM580-SY - CANopen®

Solid shaft with synchro flange

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

### 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 3 K (IP 65 protection) respectively 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 | W/o incremental | With incremental |
|-------------|-----------------|------------------|
| white       | 0 V             | 0 V              |
| brown       | +Vs             | +Vs              |
| green       | CAN_H           | CAN_H            |
| yellow      | CAN_L           | CAN_L            |
| grey        | CAN_GND         | A+               |
| pink        | n.c.            | A-               |
| blue        | n.c.            | B+               |
| red         | n.c.            | B-               |

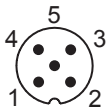
Screen: connected to housing

Cable data: 4 x 2 x 0.14 mm<sup>2</sup>

#### Flange connector M12, 5-pin

for connection reference -N

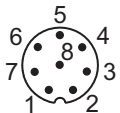
| Pin | W/o incremental |
|-----|-----------------|
| 1   | CAN_GND         |
| 2   | +Vs             |
| 3   | 0 V             |
| 4   | CAN_H           |
| 5   | CAN_L           |



#### Flange connector M12, 8-pin

for connection reference -B

| Pin | With incremental |
|-----|------------------|
| 1   | 0 V              |
| 2   | +Vs              |
| 3   | CAN_H            |
| 4   | CAN_L            |
| 5   | A+               |
| 6   | A-               |
| 7   | B+               |
| 8   | B-               |

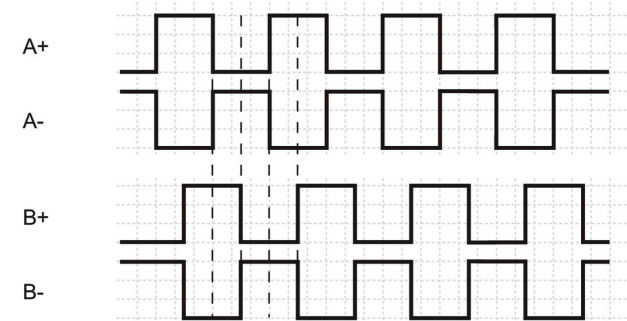


### CANopen® features

|                         |                                                                                 |
|-------------------------|---------------------------------------------------------------------------------|
| 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)                   |

### Output signals

Incremental signals: clockwise rotating direction when looking at flange.



### Trigger level

|                   |        |
|-------------------|--------|
| <b>RS422</b>      |        |
| Output level High | >2.3 V |
| Output level Low  | <0.5 V |
| Load              | <20 mA |

### Push-pull

|                   |             |
|-------------------|-------------|
| Output level High | ≥+VS -2.2 V |
| Output level Low  | <0.7 V      |
| Load              | <20 mA      |

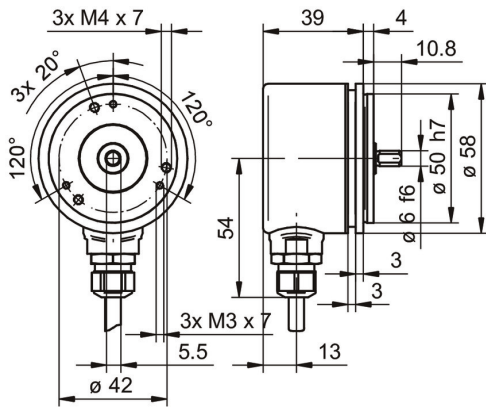
Applies to standard cable lengths up to 2 m, for longer cables the voltage drop must be taken into account.

## EAM580-SY - CANopen®

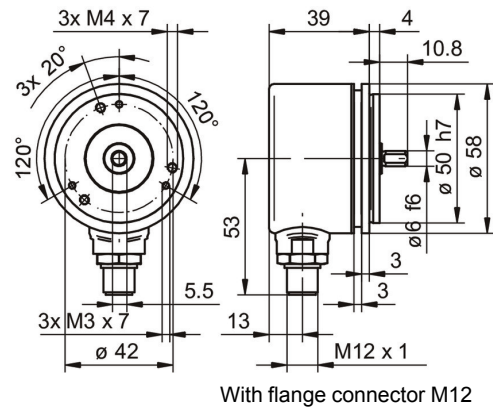
Solid shaft with synchro flange

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

### Dimensions



With cable



With flange connector M12

## EAM580-SY - CANopen®

Solid shaft with synchro flange

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

### Ordering reference

|                                                                                                     |        |   |   |   |   |   |   |   |    |   |    |    |   |    |   |
|-----------------------------------------------------------------------------------------------------|--------|---|---|---|---|---|---|---|----|---|----|----|---|----|---|
|                                                                                                     | EAM580 | - | S | Y | 6 | . | # | # | ## | . | 14 | ## | # | .  | A |
| <b>Product</b>                                                                                      | EAM580 |   |   |   |   |   |   |   |    |   |    |    |   |    |   |
| <b>Shaft type</b>                                                                                   |        |   |   |   |   |   |   |   |    |   |    |    |   |    |   |
| Solid shaft                                                                                         |        |   |   | S |   |   |   |   |    |   |    |    |   |    |   |
| <b>Flange (shaft)</b>                                                                               |        |   |   |   |   |   |   |   |    |   |    |    |   |    |   |
| Synchro flange, centering collar ø50 x 4 mm,<br>flute ø53 mm, pitch circle diameter ø42 - 3xM3/3xM4 |        |   |   | Y |   |   |   |   |    |   |    |    |   |    |   |
| <b>Shaft</b>                                                                                        |        |   |   |   |   |   |   |   |    |   |    |    |   |    |   |
| ø6 x 10 mm, with flat                                                                               |        |   |   |   | 6 |   |   |   |    |   |    |    |   |    |   |
| <b>Protection class</b>                                                                             |        |   |   |   |   |   |   |   |    |   |    |    |   |    |   |
| IP 65                                                                                               |        |   |   |   |   |   |   |   |    |   |    |    |   | 5  |   |
| IP 67                                                                                               |        |   |   |   |   |   |   |   |    |   |    |    |   | 7  |   |
| <b>Connection</b>                                                                                   |        |   |   |   |   |   |   |   |    |   |    |    |   |    |   |
| Flange socket radial, M12, 8-pin, male contacts, CCW                                                |        |   |   |   |   |   |   |   |    |   |    |    |   | B  |   |
| Cable radial, 2 m                                                                                   |        |   |   |   |   |   |   |   |    |   |    |    |   | L  |   |
| Flange socket radial, M12, 5-pin, male contacts, A-coded                                            |        |   |   |   |   |   |   |   |    |   |    |    |   | N  |   |
| <b>Voltage supply / interface</b>                                                                   |        |   |   |   |   |   |   |   |    |   |    |    |   |    |   |
| 10...30 VDC, CANopen (DS 406)                                                                       |        |   |   |   |   |   |   |   |    |   |    |    |   | C6 |   |
| 10...30 VDC, CANopen Lift (DS 417)                                                                  |        |   |   |   |   |   |   |   |    |   |    |    |   | C7 |   |
| <b>Resolution Singleturn</b>                                                                        |        |   |   |   |   |   |   |   |    |   |    |    |   |    |   |
| 14 Bit                                                                                              |        |   |   |   |   |   |   |   |    |   |    |    |   | 14 |   |
| <b>Resolution Multiturn</b>                                                                         |        |   |   |   |   |   |   |   |    |   |    |    |   |    |   |
| No option                                                                                           |        |   |   |   |   |   |   |   |    |   |    |    |   | 00 |   |
| 18 Bit                                                                                              |        |   |   |   |   |   |   |   |    |   |    |    |   | 18 |   |
| <b>Resolution supplement</b>                                                                        |        |   |   |   |   |   |   |   |    |   |    |    |   |    |   |
| No option                                                                                           |        |   |   |   |   |   |   |   |    |   |    |    |   | 0  |   |
| 4096 ppr TTL (RS422), 4 channels                                                                    |        |   |   |   |   |   |   |   |    |   |    |    |   | H  |   |
| 2048 ppr TTL (RS422), 4 channels                                                                    |        |   |   |   |   |   |   |   |    |   |    |    |   | 8  |   |
| 1024 ppr TTL (RS422), 4 channels                                                                    |        |   |   |   |   |   |   |   |    |   |    |    |   | 5  |   |
| <b>Operating temperature</b>                                                                        |        |   |   |   |   |   |   |   |    |   |    |    |   |    |   |
| -40...+85 °C                                                                                        |        |   |   |   |   |   |   |   |    |   |    |    |   |    | A |

### Accessories

#### Mounting accessories

|          |                                                           |
|----------|-----------------------------------------------------------|
| 10252773 | Clamp set ø15 mm                                          |
| 11050507 | Bellows coupling (D1=06 / D2=10)                          |
| 11065922 | Coupling CPS25 (L=19, D1=10 / D2=06)                      |
| 11065916 | Coupling CPS25 (L=19, D1=06 / D2=06)                      |
| 10141132 | Spring washer coupling (D1=6 / D2=10)                     |
| 10141131 | Spring washer coupling (D1=6 / D2=6)                      |
| 11069333 | Coupling CPS37 (L=24, D1=06 / D2=06)                      |
| 11069337 | Coupling CPS37 (L=24, D1=10 / D2=06)                      |
| 10117667 | Mounting adaptor                                          |
| 10117668 | Set of eccentric fixings for mounting clamp<br>(10117667) |