

EAM360-S - 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 | ≤ 170 ms after power on |
| Data currency | < 1 ms |
| Interface | CANopen® CANopen®-Lift CANopen® + incremental |
| Function | Multiturn Singleturn |
| Profile conformity | CANopen® CiA communication profile 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) $\pm 0,25^\circ$ (-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 ISO 11898 Incremental: linedriver RS422 or push-pull (option) |
| Incremental output | 1024, 2048, 4096 ppr (other on request) |
| Output signals | A+, A-, B+, B- |
| Output frequency | ≤ 350 kHz |

Technical data - electrical ratings

| | |
|-----------------------|--------------|
| Interference immunity | EN 61000-6-2 |
| Emitted interference | EN 61000-6-4 |

Technical data - mechanical design

| | |
|-----------------------|--|
| Size (flange) | $\varnothing 36$ mm |
| Shaft type | $\varnothing 10 \times 16$ mm, solid shaft with flat |
| Flange | Synchro flange |
| Protection EN 60529 | IP 65 (without shaft seal) IP 67 (with shaft seal) |
| Operating speed | ≤ 6000 rpm |
| Starting torque | ≤ 2 Ncm (+20 $^\circ$ C, IP 65) $\leq 2,5$ Ncm (+20 $^\circ$ C, IP 67) |
| Moment of inertia | 15,38 gcm ² |
| Admitted shaft load | ≤ 40 N axial ≤ 80 N radial |
| Material | Housing: steel zinc-coated Flange: aluminium Shaft: stainless steel |
| Operating temperature | -40...+85 $^\circ$ 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 Flange connector M12, 8-pin Cable 2 m |

Optional

- Protection against corrosion CX (C5-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 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- |

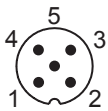
Screen: connected to housing

Cable data: 4 x 2 x 0.14 mm²

Flange connector M12, 5-pin

for connection reference -N

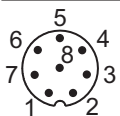
| Pin | W/o incremental |
|-----|-----------------|
| 1 | CAN_GND |
| 2 | +Vs |
| 3 | 0 V |
| 4 | CAN_H |
| 5 | CAN_L |



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- |

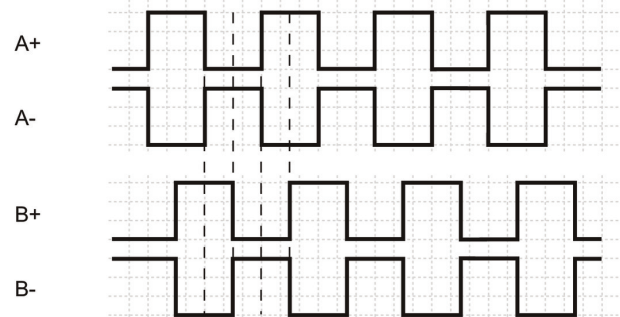


CANopen® features

| | |
|-------------------------|---|
| Operating modes | Timer-driven (Event-Time) 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) |

Output signals

Incremental signals: clockwise rotating direction when looking at flange.



Trigger level

| RS422 | |
|-------------------|--------|
| 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 |

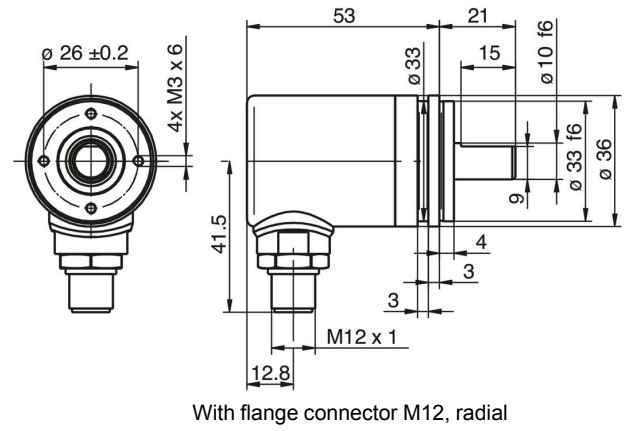
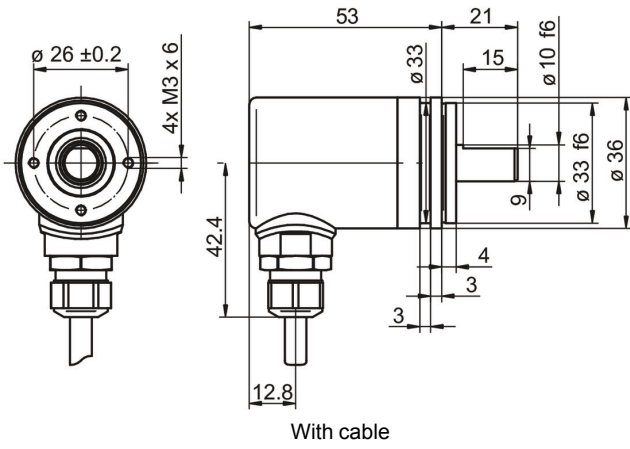
Applies to standard cable lengths up to 2 m, for longer cables the voltage drop must be taken into account.

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Dimensions



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Ordering reference

| | EAM360 | - | S | W | A | . | # | ## | ## | . | 14 | ## | # | . | A | |
|-----------------------------------|--|---|---|---|---|---|---|----|----|---|----|----|----|---|---|----|
| Product | EAM360 | | | | | | | | | | | | | | | |
| Shaft type | Solid shaft | | S | | | | | | | | | | | | | |
| Flange (shaft) | Synchro flange, ø33 mm, M3 | | | W | | | | | | | | | | | | |
| Shaft | ø10 x 16 mm, with flat | | | | A | | | | | | | | | | | |
| Protection class | IP 65 | | | | | | | 5 | | | | | | | | |
| | IP 67 | | | | | | | 7 | | | | | | | | |
| Connection | 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 |
| Voltage supply / interface | 10...30 VDC, CANopen (DS 406) | | | | | | | | | | | | | | | C6 |
| | 10...30 VDC, CANopen Lift (DS 417) | | | | | | | | | | | | | | | C7 |
| Resolution Singleturn | 14 Bit | | | | | | | | | | | | 14 | | | |
| Resolution Multiturn | no option | | | | | | | | | | | | | | | 00 |
| | 18 Bit | | | | | | | | | | | | | | | 18 |
| Resolution supplement | No option | | | | | | | | | | | | | | | 0 |
| | 4096 ppr TTL (RS422), 4 channels | | | | | | | | | | | | | | | H |
| | 2048 ppr TTL (RS422), 4 channels | | | | | | | | | | | | | | | 8 |
| | 1024 ppr TTL (RS422), 4 channels | | | | | | | | | | | | | | | 5 |
| Operating temperature | -40...+85 °C | | | | | | | | | | | | | | | A |

Accessories

Connectors and cables

| | |
|----------|--|
| 11046264 | Female connector M12, 5-pin, straight, shielded, 2 m cable |
| 11046266 | Female connector M12, 5-pin, straight, shielded, 5 m cable |
| 10127844 | Female connector M12, 8-pin, straight, shielded, 2 m cable |
| 11201509 | Cable with male/female M12, 5-pin, straight, A-coded, 2 m (ESG 34C/KSG34C) |
| 11201520 | Cable with male/female M12, 5-pin, straight, A-coded, 5 m (ESG 34C/KSG34C) |