

## 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	$\leq 170$ 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 $\pm 15^\circ\text{C}$ ) $\pm 0.25^\circ$ (-40...+85 $^\circ\text{C}$ )
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	$\leq 350$ kHz
Interference immunity	EN 61000-6-2

#### Technical data - electrical ratings

Emitted interference	EN 61000-6-4
Approval	UL approval / E217823
<b>Technical data - mechanical design</b>	
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	$\leq 6000$ rpm
Starting torque	$\leq 2$ Ncm (+20 $^\circ\text{C}$ , IP 65) $\leq 2.5$ Ncm (+20 $^\circ\text{C}$ , IP 67)
Moment of inertia	15.38 gcm <sup>2</sup>
Admitted shaft load	$\leq 40$ N axial $\leq 80$ N radial
Material	Housing: steel zinc-coated Flange: aluminium Shaft: stainless steel
Operating temperature	-40...+85 $^\circ\text{C}$ (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-

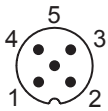
Screen: connected to housing

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

### Flange connector M12, 5-pin

for connection reference -N

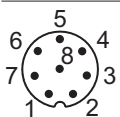
Pin	W/o incremental
1	CAN_GND
2	+Vs
3	0 V
4	CAN_H
5	CAN_L



### 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-

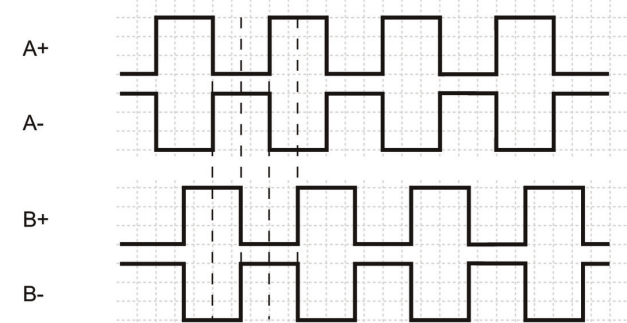


## CANopen® features

Operating modes	Timer-driven (Event-Time) 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

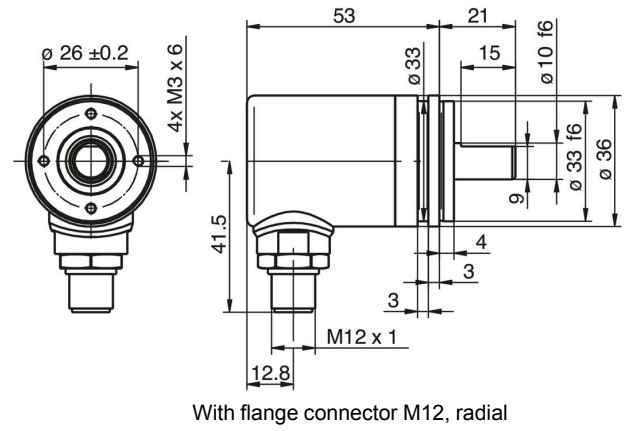
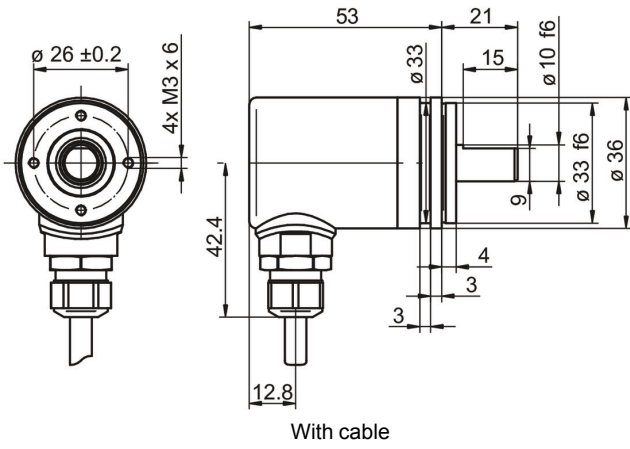
Applies to standard cable lengths up to 2 m, for longer cables the voltage drop must be taken into account.

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## Dimensions



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**Ordering reference**

		EAM360	-	S	W	A	.	#	#	##	.	14	##	#	.	A
<b>Product</b>		EAM360														
<b>Shaft type</b>	Solid shaft			S												
<b>Flange (shaft)</b>	Synchro flange, ø33 mm, M3				W											
<b>Shaft</b>	ø10 x 16 mm, with flat					A										
<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, CCW															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