

EAM360-K - CANopen®

Encoder kit

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

Overview

- Encoder kit 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
- 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
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	$\pm 0.15^\circ$ ($+20 \pm 15^\circ\text{C}$) $\pm 0.25^\circ$ ($-40...+85^\circ\text{C}$) (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 Incremental: linedriver RS422 or push-pull (option)
Incremental output	1024, 2048, 4096 ppr (other on request)

Technical data - electrical ratings

Output signals	A+, A-, B+, B-
Output frequency	≤ 350 kHz
Interference immunity	EN 61000-6-2
Emitted interference	EN 61000-6-4
Approval	UL approval / E217823

Technical data - mechanical design

Size (flange)	$\varnothing 36$ mm
Shaft type	$\varnothing 6$ mm (magnet bore) $\varnothing 8$ mm (magnet bore) $\varnothing 12$ 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 zinc-coated Flange: aluminium
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 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	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-

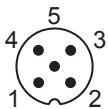
Screen: connected to housing

Cable data: 4 x 2 x 0.14 mm²

Flange connector M12, 5-pin

for connection reference -N

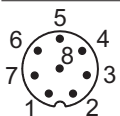
Pin	W/o incremental
1	CAN_GND
2	+Vs
3	0 V
4	CAN_H
5	CAN_L



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-

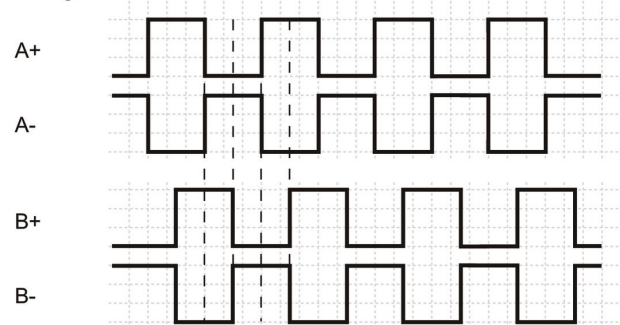


CANopen® features

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.

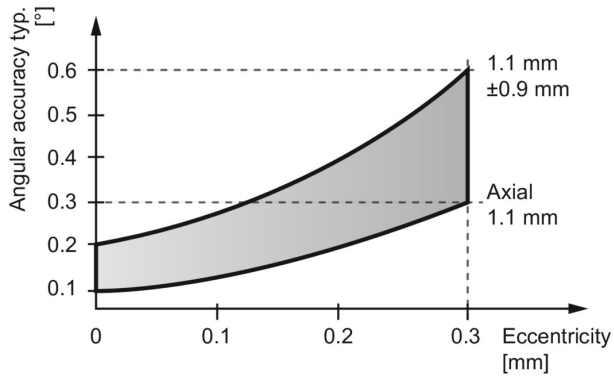
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Working distance

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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Ordering reference

	EAM360	-	K	W	##	.	7	#	##	.	14	##	#	.	A
Product	EAM360														
Shaft type	Kit														
Flange (kit)	Synchro flange, ø33 mm, M3														
Magnet holder / bore diameter	ø6 mm														
	ø8 mm														
	ø12 mm														
Protection class	IP 67														
Connection	Flange socket radial, M12, 8-pin, male contacts, CCW														
	Cable radial, 2 m														
	Flange socket radial, M12, 5-pin, male contacts, A-coded														
Voltage supply / interface	10...30 VDC, CANopen (DS 406)														
	10...30 VDC, CANopen Lift (DS 417)														
Resolution Singleturn	14 Bit														
Resolution Multiturn	No option														
	18 Bit														
Resolution supplement	No option														
	4096 ppr TTL (RS422), 4 channels														
	2048 ppr TTL (RS422), 4 channels														
	1024 ppr TTL (RS422), 4 channels														
Operating temperature	-40...+85 °C														