Absolute encoders - bus interfaces

Encoder kit

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

EAM360R-K - CANopen®/SAE J1939 - *MAGRES*

EAM360R Kit with M12

Features

- **Encoder kit single- or multiturn / CANopen®/ SAE J1939**
- **ISO 13849 compliant firmware**
- **E1 compliant design**
- **High protection IP 67**
- **High resistance to shock and vibrations**
- **Protection against corrosion C5-M**
- **Wire cross section 0.5 mm²**
- **Electronic gear function**

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
Interfaces	CANopen®, SAE J1939
Function	Multiturn, Singleturn
Profile conformity	CANopen® CiA communication profile 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) ±0.25 ° (-40...+85 °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
Interference immunity	DIN EN 61000-6-2 ISO 11452-2:2004* / -5:2002* ISO 7637-2:2004* ISO 10605:2008 + Amd 1:2014 (CD ±8 kV / AD ±15 kV) * Severity level according to ECE R10 (Rev. 4)
Emitted interference	DIN EN 61000-6-4 CISPR 25:2008 (30..1000 MHz) ISO 7637-2:2004* * Severity level according to ECE R10 (Rev. 4)

Technical data - mechanical design

Size (flange)	ø36 mm
Shaft type	ø6 mm (magnet bore) ø8 mm (magnet bore) ø12 mm (magnet bore)
Protection DIN EN 60529	IP 67
Operating speed	≤6000 rpm
Working distance	1.1 ±0.9 mm axial / ≤0.3 mm eccentricity
Materials	Housing: steel, powder-coated Flange: aluminium
Corrosion protection	IEC 60068-2-52 Salt mist for ambient conditions C5-M (CX) according to ISO 12944-2
Operating temperature	-40...+85 °C (see general information)
Relative humidity	95 %
Resistance	DIN EN 60068-2-6 Vibration 30 g, 10-2000 Hz DIN EN 60068-2-27 Shock 500 g, 1 ms
Weight approx.	170 g
Connection	Flange connector M12, 5-pin Cable 2 m
Instruction	Use in safety functions exclusively based on Application Note and MTTFd reliability prediction (request separately).

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Part number

EAM360R-K	W		.	7			.	14		0.A

Flange
W Synchro flange, flute ø33 mm, M3

Magnet holder / bore diameter
6 ø6 mm
8 ø8 mm
C ø12 mm

Protection
7 IP 67

Connection
N Flange connector M12, 5-pin, radial, male contacts, CCW
L Cable 2 m, radial

Voltage supply / signals
C6 10...30 VDC / CANopen® (DS406)
C9 10...30 VDC / SAE J1939

Resolution singleturn
14 14 bit

Resolution multiturn
00 No option
18 18 bit

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

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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)

SAE J1939 features

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

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.

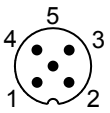
Terminal assignment

Cable
for connection reference **-L**

Core colour	Signals
white	0 V
brown	+Vs
green	CAN_H
yellow	CAN_L
grey	CAN_GND
Cable data: 5 x 0.5 mm²	

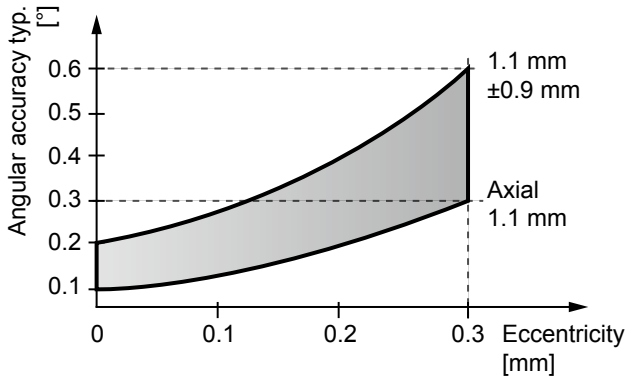
Flange connector M12, 5-pin
for connection reference **-N**

Pin	Signals
1	CAN_GND
2	+Vs
3	0 V
4	CAN_H
5	CAN_L



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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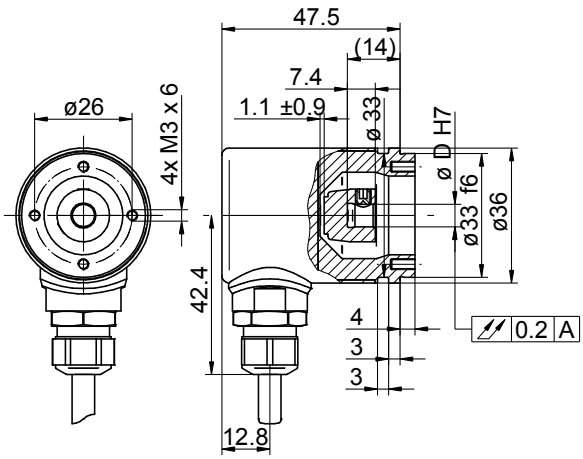
Dimensions

EAM360R Kit, cable



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