

Profibus-DP Interface Absolute Multiturn Encoder EAM58



Description

Profibus-DP interface absolute multiturn encoder EAM 58 series are capable of withstanding mechanical damage and higher axial and radial loads. Various types of flanges can be adapted to meet different requirements. It complies with Profibus protocol, and has the max resolution up to 8192 and the max revolution up to 4096. The resolution and revolution can be configured in accordance with customer requirements. Its high speed communication and anti-interference capabilities deliver stable operation.

Features

- Various types of flanges available
- Pre-screwed holes for the convenience of customer
- Waterproof seal provides greater IP level
- Cable output, convenient in installation and maintenance
- Protection class IP65
- Metal housing for better shock resistance
- Conforming to Profibus-DP protocol, programmable revolution and resolution

Mechanical parameters

Shaft diameter (mm)	Φ6g6	-(58B)
	Φ8g6	-58A/B/D/EA
	Φ9.52(3/8")g6	-58A/D/E
	Φ10g6	-58C
Hollow shaft diameter (mm)	Φ8H7/Φ9.52H7/Φ10H7	-58W
	Φ12H7/Φ14H7/ Φ15H7	-58W
Protection acc. to EN 60529	IP65	
Speed	6000, continuous	
Axial load capacity	80N	
Radial load capacity	160N	
Shock resistance	50G/11ms	
Vibration resistance	10G 10~2000Hz	
Bearing life	10 ⁹ revolution	
Rotor moment of inertia	approx. 1.8×10 ⁻⁶ kgm ²	
Starting torque	<0.05Nm	
Body material	ALUNI 9002/5 -(D11S)	
Housing material	AL6060	
Flange material	ALUNI 9002/5 -(D11S)	
Operating temperature	-40 °C~~+80 °C	
Storage temperature	-45 °C~~+85 °C	
Relative humidity/condensation	90%, Condensation not permitted	
Weight	~800g -58B/C, 63A/D/E	

Resolution 4096 (revolution) ×8192 (resolution) 4096 (revolution) ×4096 (resolution)
 Revolution and resolution can be programmed in PLC (see operation manual for configurations)

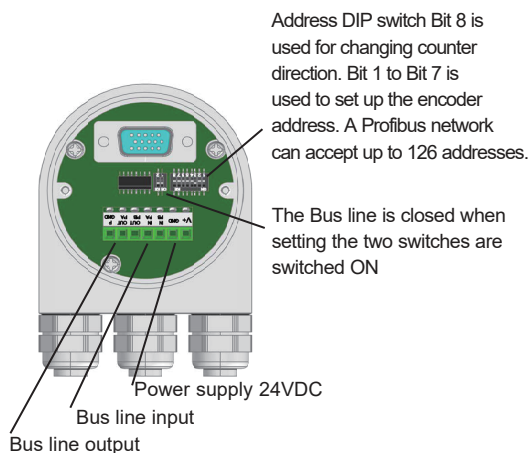
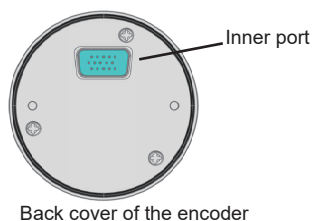
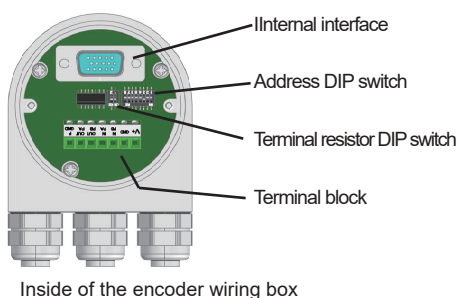
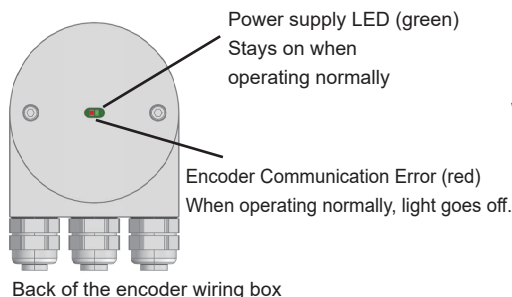
Electrical parameters

Revolution	4096 (12 bits)
Resolution/revolution	8192 (13 bits)
Supply voltage	10~30 Vdc
Power consumption (no load)	300mA
Baud rate	12 Mbaud
Linearity	+/- 1/2 LSB
Output frequency	Max 100 KHz

Terminal Assignment

+V	Supply voltage (24VDC)
0V	Ground
A	Profibus-DPline output (GN)
B	Profibus-DPline output (RD)
A	Profibus-DPline input (GN)
B	Profibus-DPline input (RD)

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Introduction

The Profibus-DP Bus multiturn absolute encoder (identification code 0x0CCA) conforms to the Profibus-DP standards as described in the European Standard EN 50170 volume 2. It also complies with the existing encoder regulation document: "Profibus Profile for Encoders, Order No. 3062".

The Profibus-DP interface maintains the same maximum resolution and characteristics (8192 position/revolution, 4096 revolution) of the stand-alone version, and it also adds on the extra feature of the Profibus-DP network.

Through the Profibus-DP network, it is possible to:

- Obtain the angular position information from the encoder during the periodic data exchange.
- Program the resolution and the revolution (refer to corresponding chapters for parameter setting).
- Change the default increment counting direction (switch between CW/CCW when configuring the parameters).
- Perform the Preset operation (Set the encoder to read a specific position).
- Read the diagnosis status.
- Obtain info about the code supplied by the device.

When using the device, it is possible to:

- Display the ON/OFF status.
- Display the device activity on the bus.
- Activate the Reset function
- Set up the device address
- If required, inserting the terminal resistor into the bus.
- Change the counting direction

Installation

Installing the Profibus-DP encoder in a network requires the execution of the standard procedures necessary for configuring any Profibus-DP slave. The procedures are as follows

- 1- Add the slave onto the master (please see corresponding chapter).
- 2- Wire the encoder into the Profibus network. Whether wiring it in the middle or at the terminal are depending on the physical position of the device in the bus.
- 3- Directly set up the address (which must be unique in the network and as same as the device) for the slave.
- 4- Prepare the applications at the master side and set up the Profibus network.

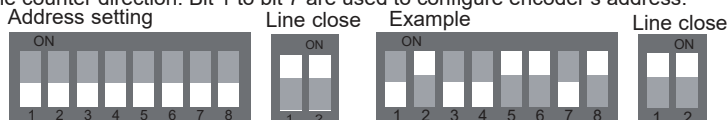
On the back cover of the encoder there are two LED indicators. The device's operating status can be observed by the two LED. The green LED shows the power status and must be on constantly. The red LED only switches off only during the periodic data exchange between the Profibus master and the encoder.

Note: To set and configure the slave into the Profibus-DP master, it is necessary to use the "gsd" file delivered with the encoder. The file can be found on the CD.

DIP-switches setup (configuring slave address)

Besides the address and the standard position of a terminal DIP switch, a configuration example of Profibus and the devices is illustrated below.

In this example, device's address is set up as 1011001, with the corresponding decimal address as 77. Bit 7 is the top digit, and bit 1 is the lowest digit. Bit 8 is used for changing the counter direction. Bit 1 to bit 7 are used to configure encoder's address.



Network Characteristics

Usually, an A type cable is used to wire a DP/FMS network. This cable has to have the following characteristics:

Parameter	A type cable
Characteristic resistance (Ω)	135...165at a certain frequency (3...20Mhz)
Rated capacity (PF/m)	<30
Loop resistance (Ω /Km)	<=110
Core diameter (mm)	>0.64*
Core cross-section (mm ²)	>0.34*

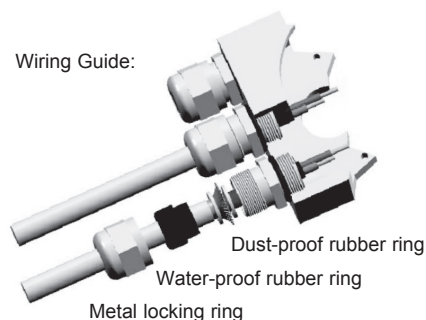
This cable allows the optimal network utilization. In fact, it is possible to reach the maximum communication speed allowed (12Mbaud). However, there are some limitations due to the maximum physical dimensions of a bus segment as follows:

kbaud	9.6	19.2	93.75	187.5	500	1500	12000
Range/Segment	1200m	1200m	1200m	1000m	400m	200m	100m

Finally, the physical characteristics of a Profibus network are now known.

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Wiring Guide:



Max. number of station participating in the exchange of user data	DP: 126 (Address 0-125) FMS: 127 (Address 0-26)
Max. number of stations per segment	32
Available data transfer rates (kbit/s)	9.6, 19.2, 45.45, 93.75, 187.5, 500, 1500, 3000,
Max. segments	6000, 12000

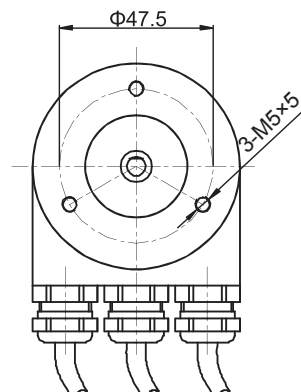
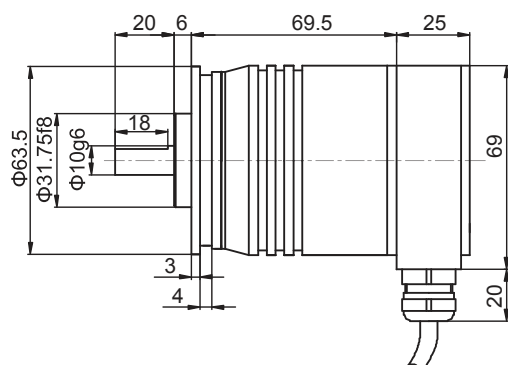
According to EN50170, a maximum of 4 repeaters are allowed between any two stations. Dependent on the repeater type and manufacturer, more than 4 repeaters may be allowed in some cases. Refer to the manufacturer's technical specification for details.

Wiring box

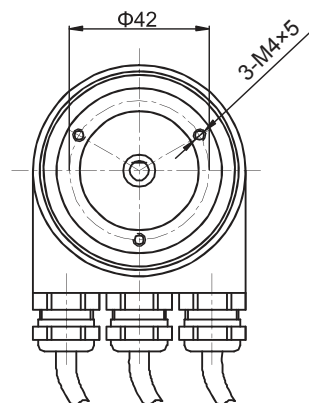
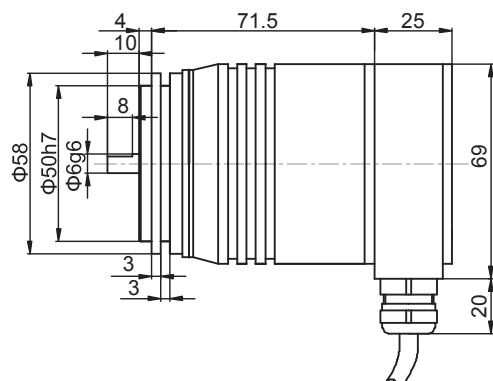
Unscrew the back cover and wire the cables (power cable, input and output bus) according to the instructions on the cover wiring. The cable will pass through the metal locking ring, water-proof rubber ring, and dust-proof rubber ring into the metal notch. Lock the metal ring to fasten the cables

Dimensions

EAM58A



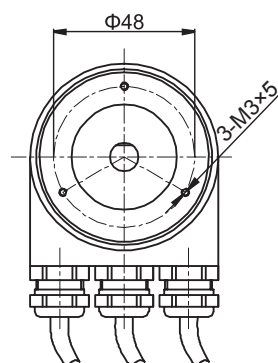
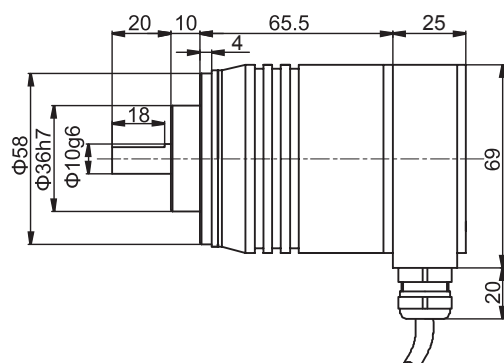
EAM58B



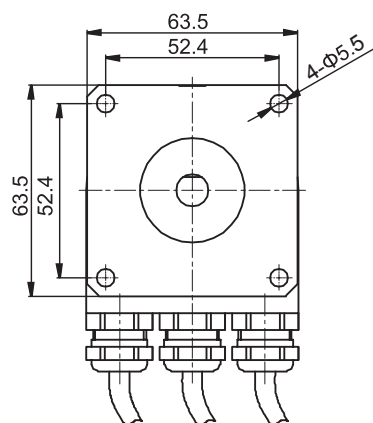
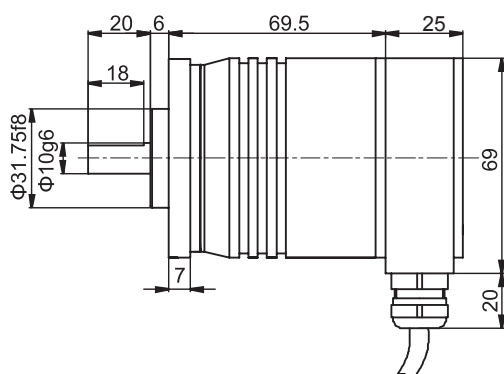
Profibus-DP Interface Absolute Multiturn Encoder EAM58

Dimensions

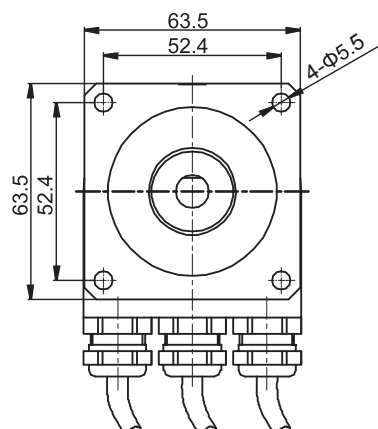
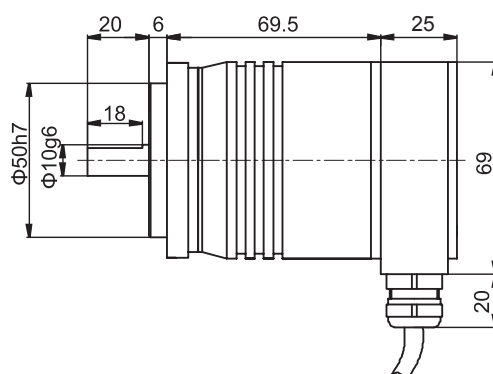
EAM58C



EAM58D



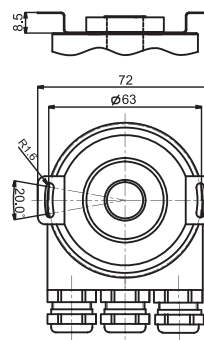
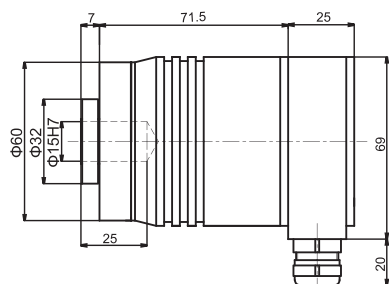
EAM58E



Profibus-DP Interface Absolute Multiturn Encoder EAM58

Dimensions

EAM58W



Order Code:

EAM 58 C 10 — B F6 X X R — 4096/8192 DP

Shaft diameter

6=Φ6g6mm
(58B)
8=Φ8g6mm
58A/B/D/E,
9=Φ9.52g6mm
58A/D/E,

Only applicable
for axis aperture in
flange type 58W

8 =Φ8H7mm
9 =Φ9.52H7mm
10=Φ10H7mm
12=Φ12H7mm
14=Φ14H7mm
15=Φ15H7mm

Flange type

A=round flange
B=synchro flange, shaft length 10mm
C=Φ36clamping flange, shaft length 20mm
D=Φ63.5square flange, Φ31.75, shaft length 20mm
E=Φ63.5square flange, Φ50h7, shaft length 20mm
W=blind hollow shaft flange, double-winged spring leaf installation

Housing diameter

58=Φ58flange

Series

EAM = Profibus-DP interface
absolute multiturn

Code type

B=Binary

Interface & Power Supply

F6=Profibus-DP interface 10~30Vdc

Output logic

X=No definition

Types of connection

X=integrated coupler terminal box with 3 PG7 threaded connectors
T=integrated coupler terminal box with 3 M12 plugs

Connection direction
R=radial

Resolution

resolution (see previous
pages for reference
Standard 4096/8192(25 bits)

Profibus-DP Interface
Absolute Encoder