

Profibus-DP Interface Absolute Multiturn Encoder PAM58/90/115



Application

Profibus-DP interface absolute multiturn encoder PAM58 series have good performance against mechanical damage, and can withstand higher axial and radial load. The resolution and revolution can be set in accordance with customer requirements. Maximum resolution 8192, maximum revolution 4096.

Characteristics

- Various flanges available
- Pre-screw hole, convenient for usage
- Water-proof seal
- Integral cables, convenient for installation and maintenance
- Protection class IP64
- Metal housing
- us-DP protocol

Mechanical Characteristics

Shaft (mm)	Φ6g6	-58B optional
	Φ8g6	-58A/B/D/E,90A
	Φ9.52(3/8")g6	-58A/D/E,90A
	Φ10g6	-58C,90A
	Φ11g6	-115A
Hollow shaft (mm)	Φ8H7/Φ9.52H7/Φ10H7	-58G/F
	Φ12H7/Φ14H7/ Φ15H7	-58G/F
Protection acc. to EN 60 529	IP64 (IP66 optional)	
Speed (r/m)	6000, continuous (3000- continuous, for -58G/F)	
Axial load capacity of shaft	80N	
Radial load capacity of shaft	160N	
Shock resistance	50G/11ms	
Vibration resistance	10G 10~2000Hz	
Bearing life	10 ⁹ revolution	
Rotor moment of inertia	Approximate 1.8×10 ⁻⁶ kgm ²	
Starting torque	<0.05Nm	
Body material	AL UNI 9002/5 -(D11S)	
Housing material	AL 6060	
Flange material	AL UNI 9002/5 -(D11S)	
Operating temperature	-20°C~~+60°C	
Storage temperature	-25°C~~+65°C	
Weight	~800g -58B/C, 63A/D/E/F/G	
	~1000g -90A, 115A	

Revolution:4096 (turn) ×8192 (resolution) 4096 (turn) ×4096 (resolution)
Turn and resolution can be settled in PLC (see operating instruction for setting steps)

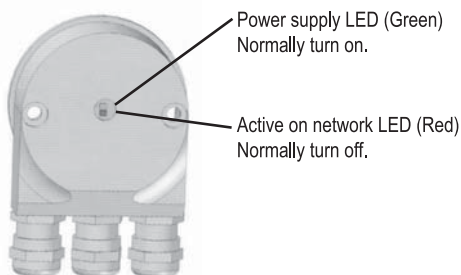
Electrical Characteristics

Revolution	4096 (12 bits)
Resolution	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

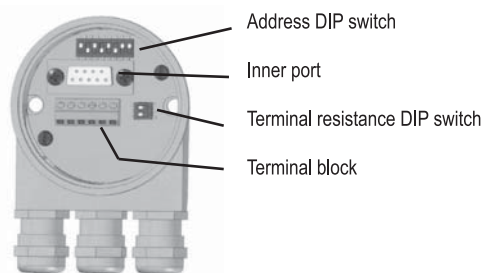
Connection

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

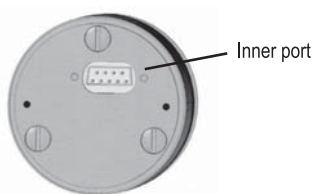
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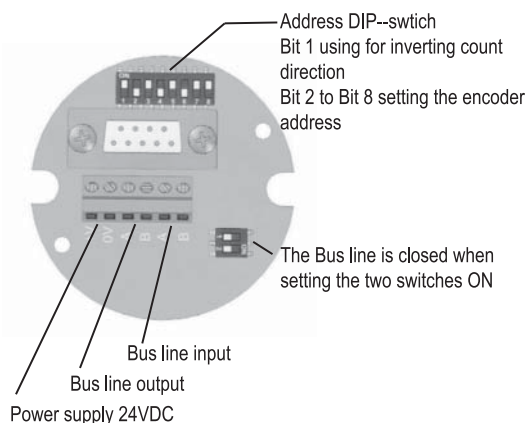
Back of the encoder



Interior of the encoder



Back cover of the encoder



Introduction

Profibus-DP interface absolute multiturn encoder (Identification Number 0x0599) is complying to the Profibus-DP standard as described on the European Standard EN 50170 volume 2. The encoders are according to "Profibus Profile for Encoders, Order No. 3.062". The Profibus-DP interface maintains the same maximum resolution and characteristics (8192 resolution and 4096 revolutions) of the stand-alone version and adds the plus of the Profibus-DP network.

By the Profibus-DP network is possible:

- During the periodic data exchange, getting the indication of the angular position from the encoder.
- Setting the resolution and the revolution.
- Changing the default increase direction.
- To perform the Preset operation (Set the encoder to read a specific position).
- Reading the diagnostic operating mode.
- Getting info about the code supplied by the device.

From the device it is possible:

- To display the ON/OFF status.
- To display the device activity on the bus.
- Reset function.
- Setting the device address.
- If requested, inserting in the bus the terminal resistance.
- Inverting the counting direction.

Equipment installation

Installing the Profibus-DP encoder in a network requires the execution of the standard steps necessary for configuring any Profibus-DP slave.

The sequence of steps is as follows:

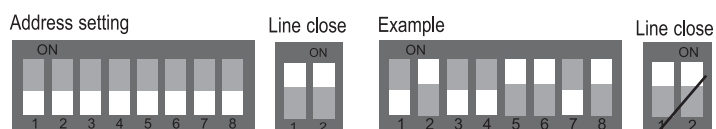
1. Commissioning the slave on the master (see corresponding paragraph).
2. Wiring the encoder into the Profibus network using or not terminations depending on the physical position the devices has in the bus.
3. Directly set the address (which must be unique in the network and the same as the one chosen in point 1) for the slave.
4. Preparing the master side application and setting up the Profibus network.

On the back cover of the encoder there is a led inspection window. The device operating status can be controlled by the two led through the window. The green one shows the power presence and must be permanently switched on. The red led 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 setting (address the slave)

Below it is reported an example of the standard position of address and termination DIP switches as well as settings for closing a Profibus line.



Network specifications

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
Characteristics resistance (Ω)	135...165 at a frequency of (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 an optimum network utilization. In fact, it is possible to reach the maximum communication speed allowed (12 Mbaud). However, there are some limitations due to the maximum physical dimensions of a bus segment as follows:

Baud rate (kbit/s)	9.6	19.2	93.75	187.5	500	1500	12000
Range/Segment	1200m	1200m	1200m	1000m	400m	200m	100m

Finally, main physical and topographical specifications of a Profibus network are as follows:

Overview

General

Absolute

Easydic
Incremental

Topdic
Incremental

Heavydic
Incremental

Ex-proof

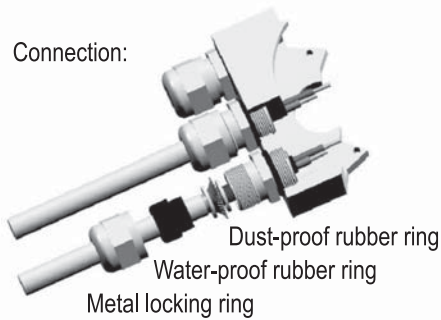
Special
Temperature

Adapter and draw
wire mechanics

Accessories

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Connection:



Maximum number of station participating in the exchange of user data	DP: 126 (Address0..125) FMS: 127 (Address0..126)
Maximum 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, 6000, 12000

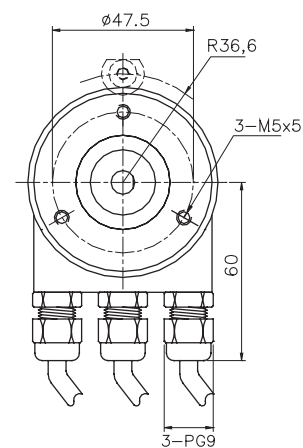
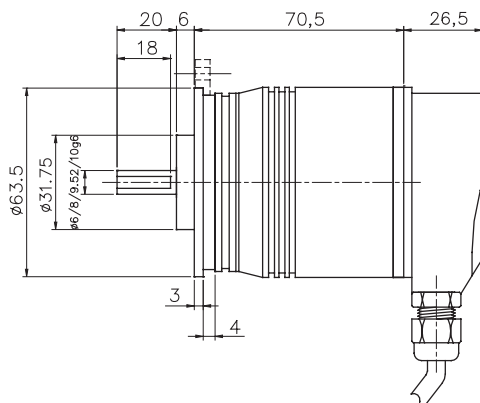
According to EN50170, a maximum of 4 repeaters are allowed between any two stations. Dependent on the repeater type and manufacturer, more than 4 repeaters are allowed in some cases. Refer to the manufacturer's technical specification for details.

Connection box:

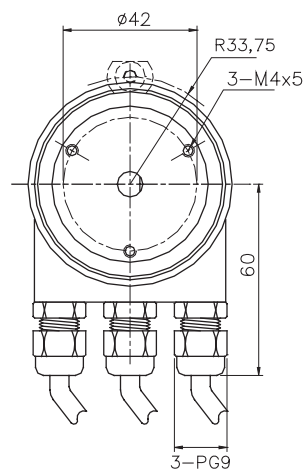
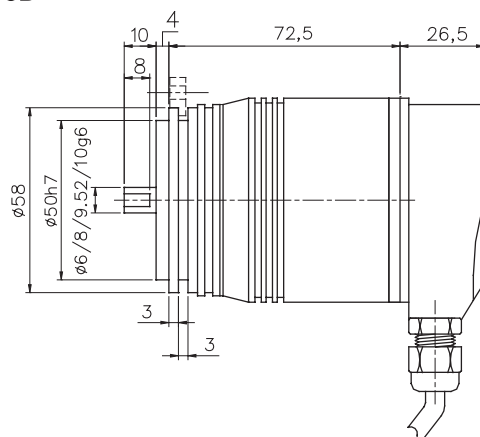
Open the cover, according to the instructions on the cover wiring. The cable will pass through metal locking ring, water-proof rubber ring, dust-proof rubber ring, lock the cable.

Dimensions

PAM58A



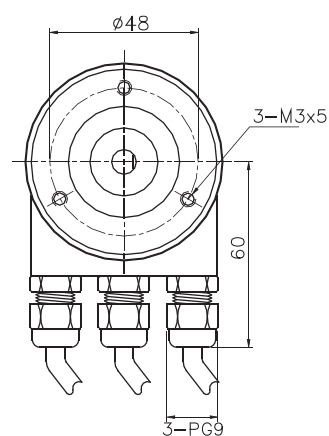
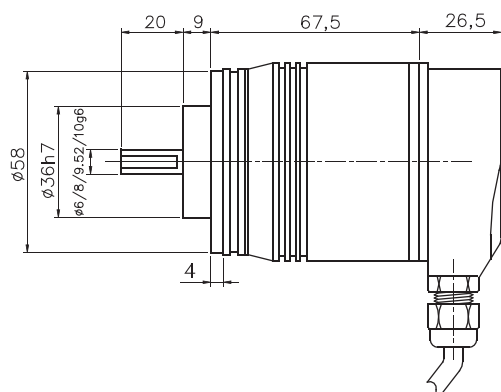
PAM58B



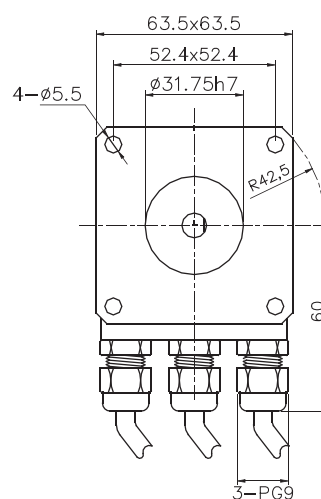
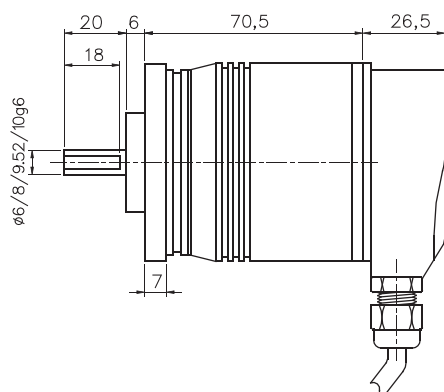
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Dimensions

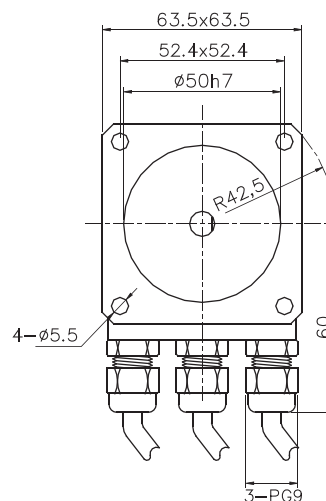
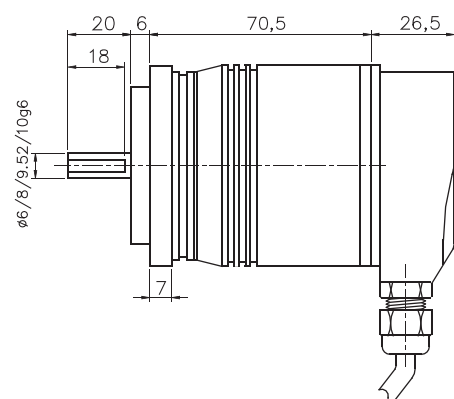
PAM58C



PAM58D



PAM58E



Overview

General

Absolute

Easydic
Incremental

Topdic
Incremental

Heavydic
Incremental

Ex-proof

Special
Temperature

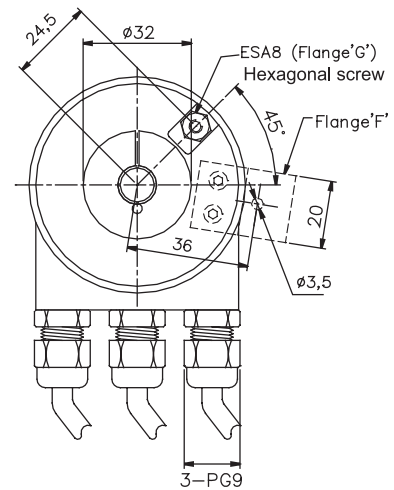
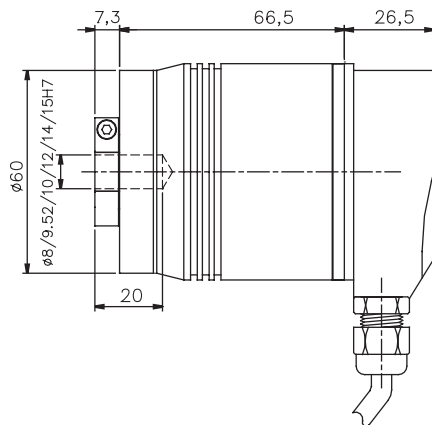
Adapter and draw
wire mechanics

Accessories

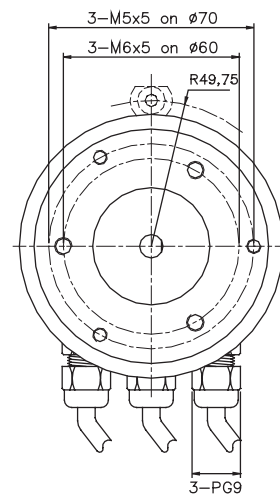
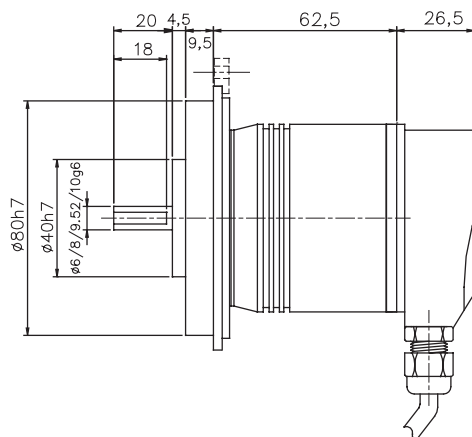
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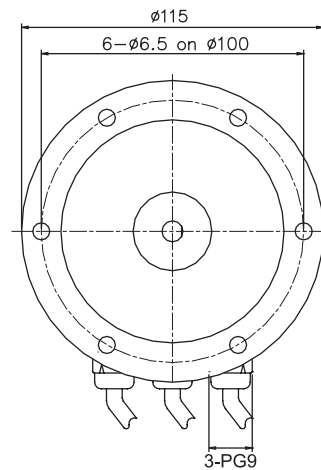
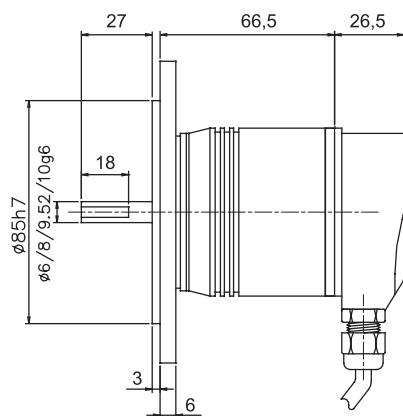
PAM58F/PAM58G



PAM90A



PAM115A



PAM **58** **C** **10** **-** **B** **F6** **X** **X** **R** **-** **4096/8192** **.** **XXXX**

Series
PAM = Profibus-DP interface absolute multiturn encoder

Housing Diameter
58=Φ58flange
90=Φ90flange
115=Φ115flange

Flange Type
A=Round flange(58A,90A,115A)
B=synchronous flange,length 10mm
C=Φ36 clamping flange,shaft length 20mm
D=□63.5 square flange,shaft Φ31.75,length 20mm
E=□63.5 square flange,shaft Φ50h7,length 20mm
L=synchronous flange,length 20mm
G=Blind hollow shaft flange torque block pin install
F=Blind hollow shaft flange spring install

Shaft Diameter
6=Φ6g6mm 58B
8=Φ8g6mm 58A/B/D/E, 90A
9=Φ9.52g6mm 58A/D/E, 90A
10=Φ10g6mm
11=Φ11g6mm 115A
Only for 58G、F type flange
8 =Φ8H7mm
9 =Φ9.52H7mm
10=Φ10H7mm
12=Φ12H7mm
14=Φ14H7mm
15=Φ15H7mm

Code Type
B=Binary

Output & Supply voltage
F6=Profibus-DP interface 10~30Vdc

Output logic
X=nonsense

Type of connection
X=connection box 3 PG7 connection

Outlets direction
R=radial

Resolution
Revolution/resolution
Standard 4096/8192(25bits)

XXXX=Special Code