Large Hollow Shaft Profibus-DP Interface Absolute Multiturn Encoder PAM90

Descriptions

Profibus-DP interface absolute multiturn encoder PAM90 series have good performance against mechanical damage, and can withstand higher axial and radial load. Throughhole and various axis diameter could meet different demands. Comply with Profibus protocol, Maximum resolution 16384, maximum revolution 4096. The resolution and revolution can be set in accordance with customer requirements. High speed communication and anti-interference performance ensure stable operation.

Characteristics

- Water-proof seal, improving protection degree
- Stainless steel shaft, various shaft diameter optional
- Metal housing for shock resistance
- Integral cables, convenient for installation and maintenance
- IP65 protection
- Profibus protocol
  Adjustable resolution and revolution

Mechanical Characteristics

Shaft(mm)	Φ12H7/Φ15H7/Φ20H7//Φ24H7/Φ28H7/
	Φ(5/8)"H7/Φ1"H7/Φ12g6X30
Protection degree	IP 65
Speed(r/m)	Max.6000；continuous，Max.3000
Max load capacity of shaft	
Axial force	40 N
Radial force	80 N
Shock resistance	2500 m/s^2 6ms
Vibration resistance	100 m/s^2 10~2000 Hz
Bearing life	10^9revolution
Moment of inertia	~72 x 10^{-6}kgm^2
Starting torque	hollow shaft：< 0.2 Nm
	shaft：< 0.05 Nm
Body material	AL-alloy
Housing material	AL-alloy
Operating temperature	-20˚C ~ +80˚C
Storage temperature	-25˚C ~ +85˚C
Weight	~ 900g

Resolution：
4096（revolution）*8192（resolution）
4096（revolution）*4096（resolution）
Revolution and resolution can be set in PLC
（see operating instruction for setting steps）

Electrical Characteristics

Supply voltage(+Ub)	10~30 V DC
Power consumption	Max.0.29 A
Linearity	±1/2 LSB(±1 LSB 13/14 bit resolution)
Interface type	RS 485
Interface protocol	Profibus-DP, encoder profile class 2
Transmission speed	Max. 12 Mbit/s
Address set	set by DIP dial switch

Conform to CE acc. to EN61000-6-1, EN61000-6-4 & EN61000-6-3
Conform to EMC EN61000-4,5

Profibus Profile for Encoders：
Pls refer to PROFIBUS-DP for detailed information, and see OVERVIEW for others.

Changeable parameters by programming：
- Direction of rotation
- Proportion factor
  - 1 revolution resolution
  - total resolution
- Preset position
- Diagnostic operating mode

Integrated coupler including：
- Current isolation through Fieldus DC/DC converter
- RS485 driver, max transmission speed 12MB
- Set Fieldbus address by DIP switch
- Diagnostic LED
- Complete Class1 & Class 2 function

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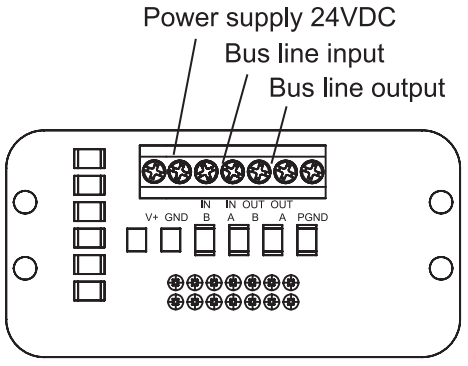
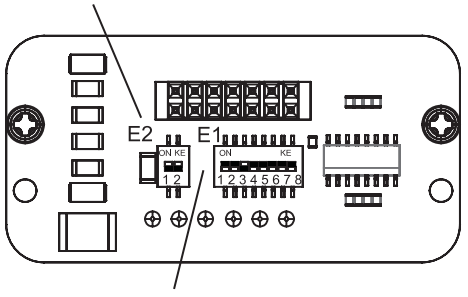


Terminal block

E2: Line close DIP switch- Default OFF
DIP1-DIP2, the busline is closed when setting the two switches ON, 120Ω.



E1: Address DIP switch- DIP1- DIP7 address setting switch, binary operation, default address 4 in the diagram, max 126 acceptable by Profibus network.

DIP8: CW&CCW inverting the counting direction

Cable

V+	power
GND	GND
B	Profibus-DPin （red）
A	Profibus-DPin （green）
B	Profibus-DPout（red）
A	Profibus-DPout（green）

Introduction

Profibus-DP interface absolute multiturn encoder (Identification number 0x0CCA) 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. 3062”.

The Profibus-DP interface maintains the same maximum resolution and characteristics (16384 position/ revolution, 16384 revolution) of the stand-along 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 required, inserting in the bus the terminal resistance.
- Inverting the counting direction

Equipment installation

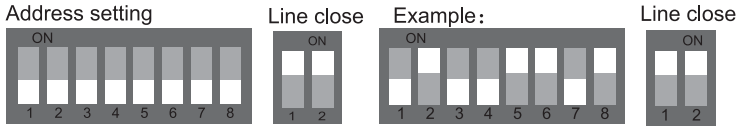
Installing the Profibus-DP encoder in a network requires the execution of the standard steps necessary for configuring any Profibus-DP slave. The sequence of steps is as follows:

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 device 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.
In this example, device address 1001101, 77 denary, bit 7 top digit, bit 1 lowest order, bit 8 using for converting count direction , bit 1to bit 7 setting the encoder address, binary operation



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
Characteristic 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(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, mainly physical specifications of Profibus network are perceived.

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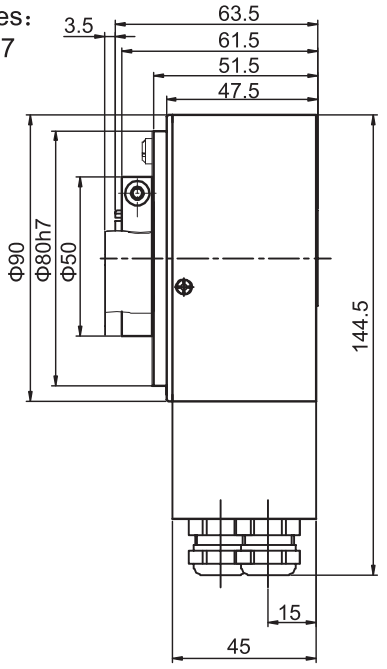
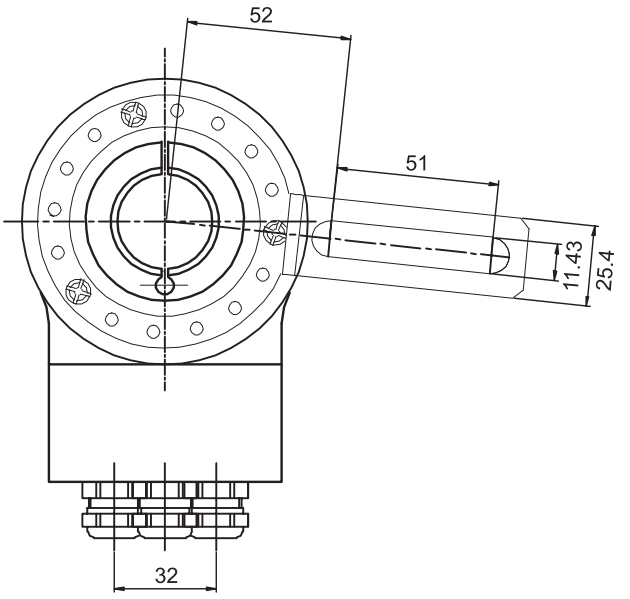
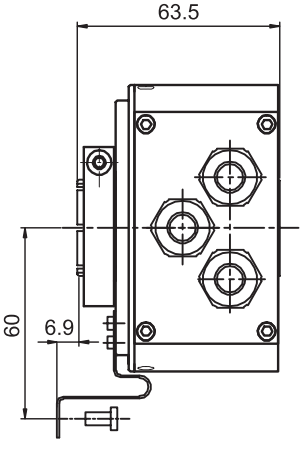
Dimension(mm)

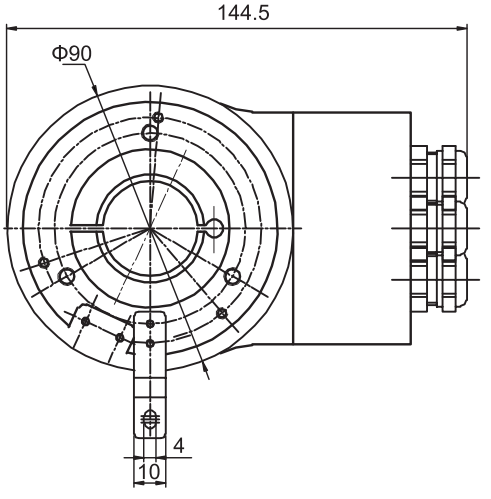
PAM90L
Accessories：
E41350087





PAM90H
Accessories：
E41350105





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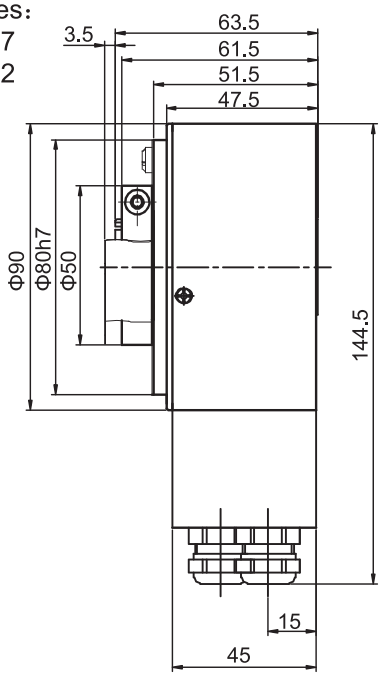
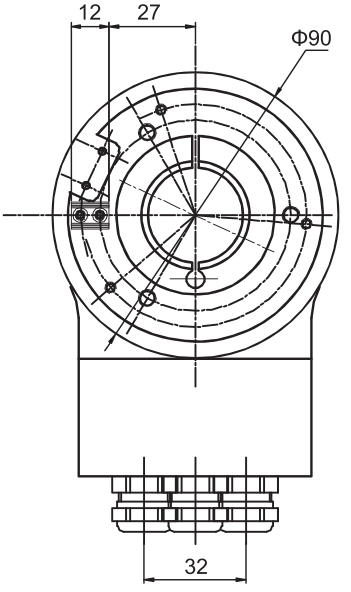
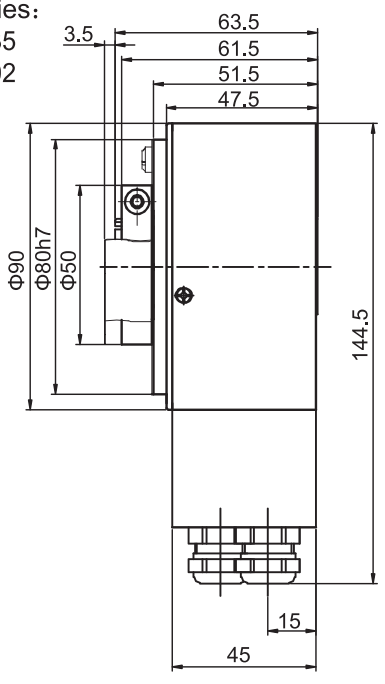
Dimension(mm)

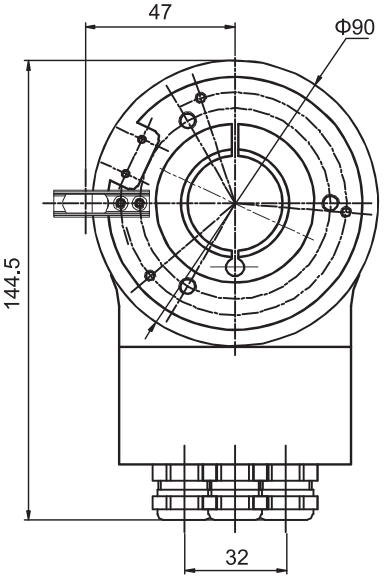
PAM90Q
Accessories:
E41350107
E41220002





PAM90K
Accessories:
E41350035
E41220002





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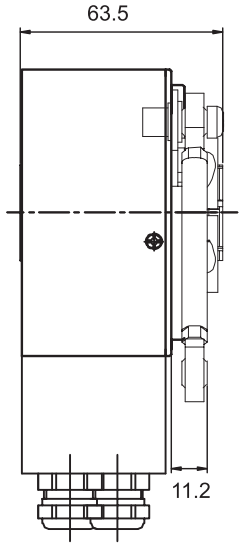
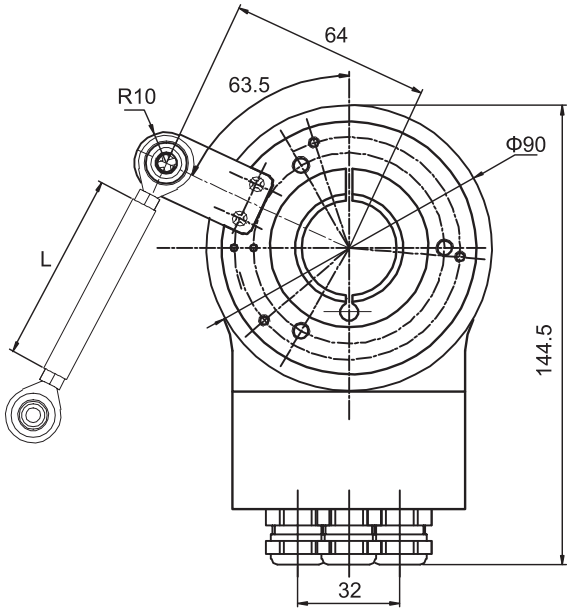
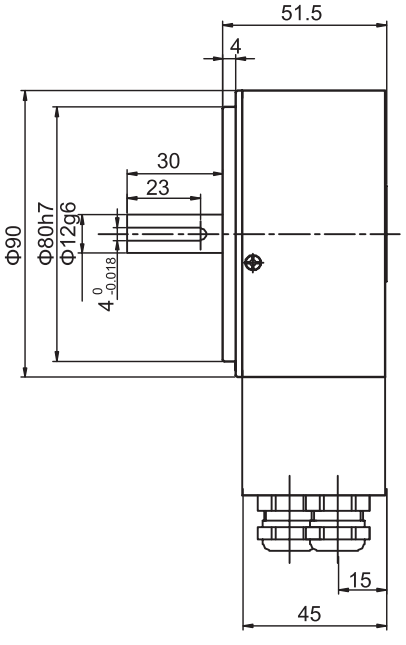
Dimension(mm)

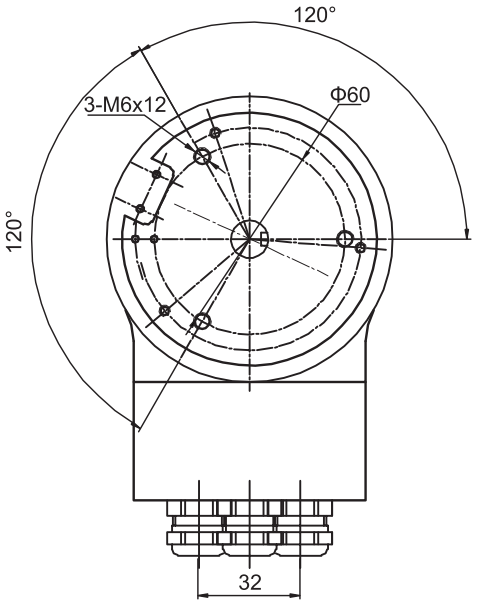
PAM90R
Accessories：
SN5A60





PAM90P1C





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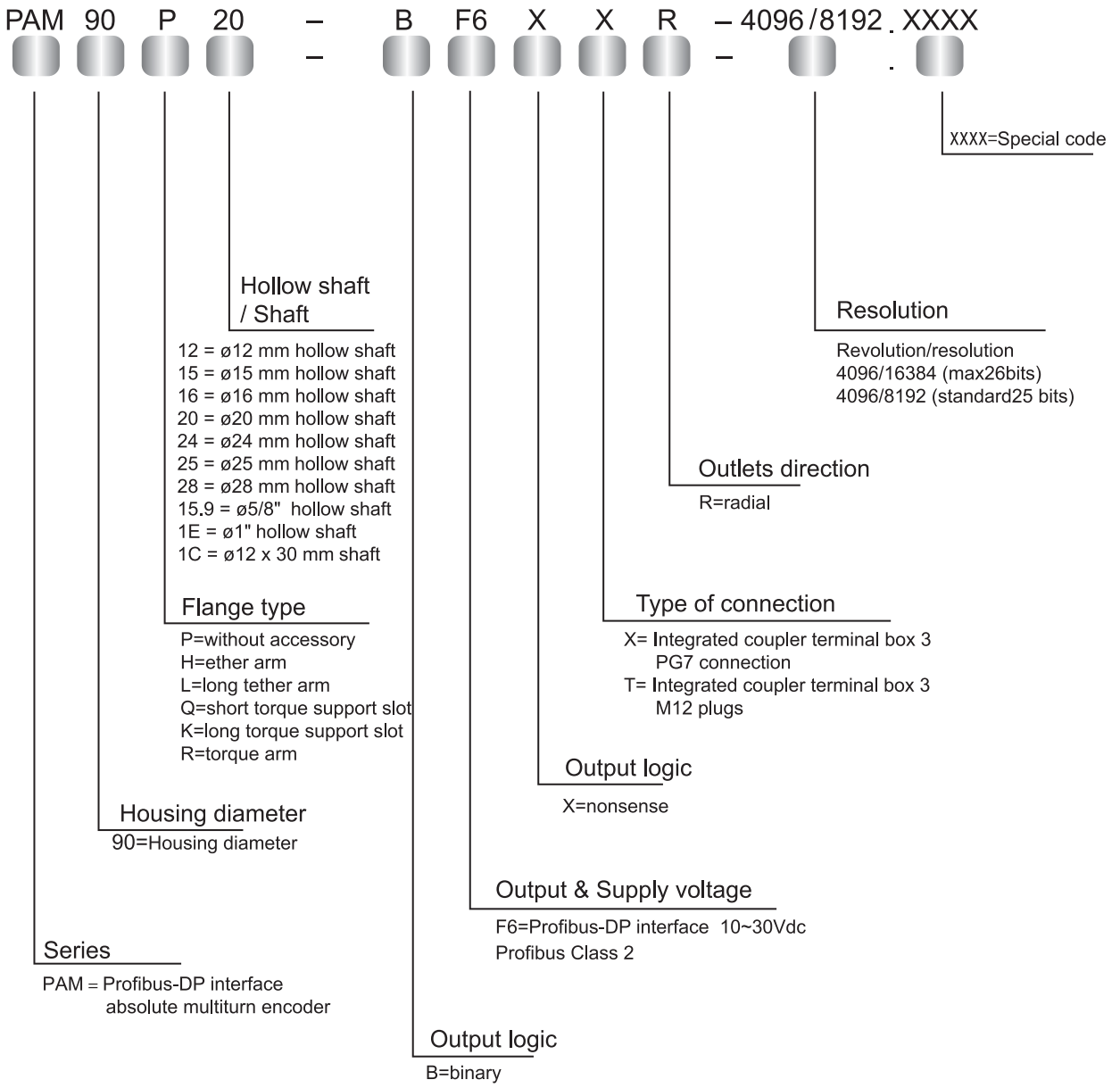
Order Code:



Accessories:
Mounting accessories
various connection

Refer to attached CD for GSD profile and specifications.