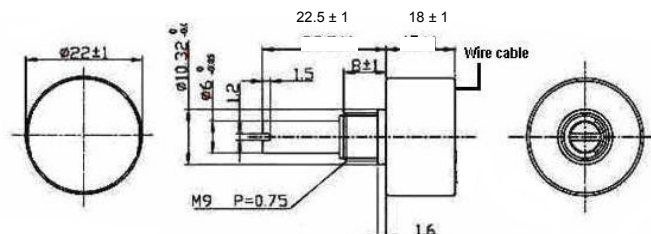


PRECISION INCREMENTAL CONTACTLESS ROTARY POSITION SENSOR

1 Ball bearing, Bush mounting
Hall effect magnetic
A - B - Z channels- Any pulse from 2 - 128 programmable, 256, 512, 1024 ppr
Robust aluminium housing
Shock & vibration proof
Measurement range 0° - 360°

Series 22I PBBL



1 - Supply (red) 2 - Ch Z (Grey) 3 - Ch B (Grey) 4 - Ch A (Grey) 5 - Ground (Grey)

All dimensions in mm

ELECTRICAL CHARACTERISTICS

Electrical angle	0 - 360°
Pulses	Any pulse from 2 to 128, 256, 512, 1024 ppr
Resolution	4096 steps
Supply voltage	5V ± 10% / 9 - 30 VDC
Output signal	5V TTL, 5V / 24V Open collector
Supply current	< 30 mA
Frequency response	10 KHz

MECHANICAL CHARACTERISTICS

Mechanical angle	360° (continuous)
Starting torque (approx.)	0.5 Ncm
Protection	IP 40
Operating temperature	- 40 to +85° C
Operating life (approx.)	20 million rotations
Mechanical speed (max.)	5000 rpm
Electrical speed (max.)	1600 rpm
Weight	22 gm

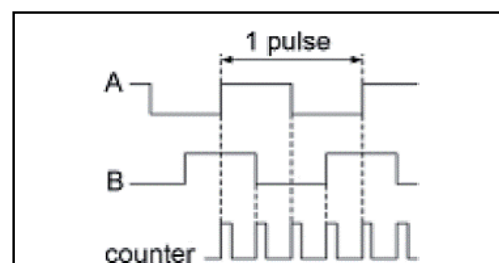
MATERIAL

Housing	anodized aluminium
Shaft	stainless steel
Cable	5 core flat cable (150 mm)
Bearings	1 precision ball bearing

FUNCTION PRINCIPLE

A magnet rotates over the sensor IC with 4 Hall sensors for angular determination and converts the magnetic field into a measurable Hall voltage. When the magnet rotates around the longitudinal axis, sine and cosine voltages are generated to determine the angles. Two separate sine/digital converters provide A, B, Z incremental signals.

INCREMENTAL INTERFACE



There are 3 signals for incremental output : A, B and Z. Signals A and B are quadrature signals, shifted by 90° and signal Z is a reference mark. One revolution generates N pulses of signal A or B. The reference mark signal is produced once per revolution. The width of the Z pulse is 1/4 of quadrature signal period and is matched with A high and B high. Generally, the magnetic incremental encoders are directly comparable with the conventional optical incremental encoders. They provide additional features and can much easier be adjusted to customer requirements. Nevertheless optical and magnetic incremental encoders do not provide an absolute signal.

OPTIONS AND ORDERING REFERENCES

Refer to electrical & mechanical options on page 2

Housing diameter	Incremental output	Pewatron Angular Sensor	Bush version with ball bearing, Long housing Goldline	Signal	Pulses and electrical rotational direction	Pulses and Clockwise (CW) Pulses and Counter clockwise (CCW)	Programming options	Zero point Inverted signal	Output connections	5 Core Flat cable (standard) Terminal block (A - Axial & R - Radial)
22	I	PB	BL	S 5TTL S 05OC S 24OC	CW CCW		POx POZ POI		OCx OCF OCT	
22	I	PB	BL	Sxxxx	xxxx CW / CCW		POx		OCx	
example with description - 22I PBBL S24OC 120CW POI OCT - 22mm diameter, Incremental output, PB Series, Bush version Long housing Goldline, Signal -24V open collector, 120 pulse and clockwise, Inverted signal, Terminal block										
Standard Version : 360° CW Electrical & Mechanical angle, 1024 ppr, OCF - 5 core flat cable										

For complete Contactless Rotary Sensor product range refer - sensorsandpower.angst-pfister.com

ELECTRICAL OPTIONS FOR INCREMENTAL VERSIONS 22I PBBL

PB Series are the latest development in rotational position sensors and contactless devices. Modern Hall IC's in combination with special magnets and RISC processors provide intelligent customizing of output signals and interfacing. Not only precision potentiometer but also optoelectronic incremental and absolute encoders are replaced. The PB series is divided into three groups : analog - types with analog output (replacement for precision potentiometer), incremental output (replacement of optoelectronic encoders), absolute digital SPI and SSI output. Because of wide variety of mechanical and electrical options it is possible to use them in almost any automation and control application where rotary angular sensing is required. Regardless of the wide variety of existing technical features, the price is relative low.

Rotary incremental magnetic encoders and sensors - PB Series are angular position sensors with an integrated signal conditioning unit, which generates constant amplitude sine and cosine voltages which are used for angle calculation. The maximum resolution is 4096 angular measurements per revolution (0.1°). Like in the standard optical incremental encoders a rising and falling edge at channel A and channel B is available. Thus the rotational direction can be detected. The quadrature signal consist of 2 wave signal out of phase. The Z channel enables the counter to be reset to zero with the function of a non true power on absolute encoder. The programming of the position for the reference "Z" impulse in a relation to the marking on the shaft and housing can be factory set. Contrary to optical encoders, any pulse between 2 - 128 pulses per revolution can be programmed by software without disc change

Number of Pulses & Direction (xxxx CW / CCW)

As a unique feature any number of pulses from 2 - 128 pulses per revolution (ppr) can be programmed in a 3 channel configuration. Above 128 ppr the following resolutions are possible as std option: 256, 512, 1024 ppr. The default direction of rotation is clockwise (CW). With this option it is also possible to change direction from clockwise(CW) to counter clockwise (CCW).

Start Up Performance

In the basic default version, when the sensor is switched on, first the output A-B pulses are received only if the shaft rotates. After reaching the Z pulse it is used for resetting the counter (identical to optical encoders). In this option, when the electronic is switched on, the A and B output pulses are received automatically till the Z pulse is reached. Then the counter can be reset without rotating the shaft. From this point, the A, B and Z outputs are received corresponding to the shaft rotation.

Z Pulse

A counter which is connected to the sensor is reset once per revolution by the Z - pulse. Within one rotation a simulation of non - true power on encoder is possible. In the basic type the counter is reset manually.

Zero Point Programming (POZ)

It is possible to position the Z Pulse in line with the marking on the shaft and the bushing. Also any offset to this marking is possible.

Inverted Signal (POI)

The channels A and B can be inverted or not inverted independent of each other. The basic type is not inverted.

MECHANICAL OPTIONS FOR INCREMENTAL VERSION 22I PBBL

Type / Series	Standard mechanical options	Customized mechanical options
22I PBBL	Terminal Block (OCTA / OCTR)	Special shaft length

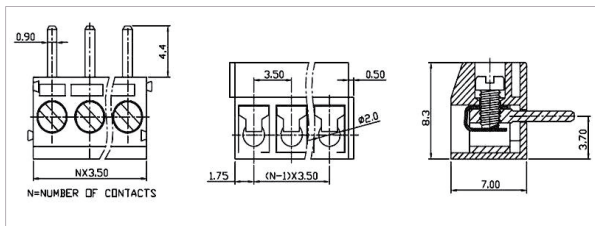
INTERCONNECTIONS

Standard Interconnections - 5 Core flat cable

Other Interconnection options

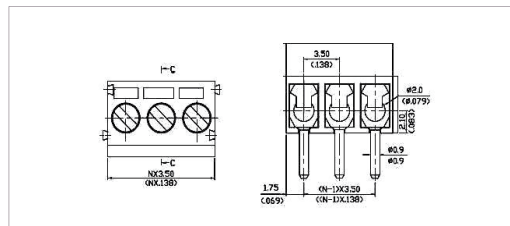
Terminal block - Axial (OCTA)
Wires leaving axial to shaft axis

5 sockets



Terminal block - Radial (OCTR)
Wires leaving radial to shaft axis

5 sockets



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