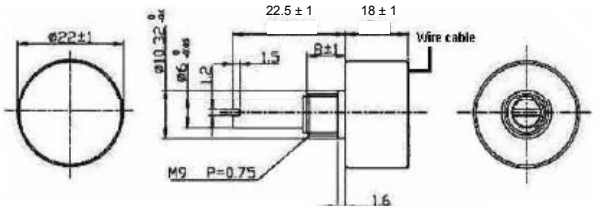
# PRECISION DIGITAL SERIAL SYNCHRONOUS ABSOLUTE CONTACTLESS ROTARY POSITION SENSOR SSI

## Series 22Y PBBL

**Metalcase - 1 Ball bearing**
**Hall effect magnetic**
**Direct serial synchronous interface for direct input to PLC etc.**
**Robust metal aluminium housing with ball bearing**
**Bush mounting**
**Shock & vibration proof**
**Measurement range 0° - 360 °**




Supply(Red)|Ground(Grey)|Clock +ve(Grey)|Clock -ve(Grey)|Data +ve(Grey)|Data -ve(Grey)

All dimensions in mm

### ELECTRICAL CHARACTERISTICS

| | |
|---|---|
| Electrical angle | 0 - 360° |
| Resolution | 12 bit (4096 steps) |
| Output signal | Digital serial synchronous (SSI) |
| Supply voltage | 5V ± 10% / 9 - 30 VDC |
| Supply current | < 30 mA |
| Update rate | 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 |

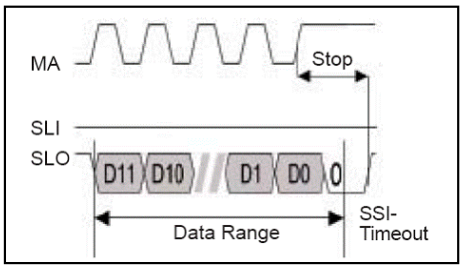
### MATERIAL

| | |
|---|---|
| Housing | anodized aluminium |
| Shaft | stainless steel |
| Cable | 6 core flat cable (150 mm) |
| Bearings | 1 precision ball bearing |

### FUNCTION PRINCIPLE

The angular position and the signal generation is detected by a CMOS Hall sensor over which a parallel diametrically polarized magnet induces a magnetic field. An integrated electronic provides the output of a 2 byte WORD in Grey-code for SSI interface.

### SERIAL SYNCHRONOUS INTERFACE




With the SSI interface the absolute angular position is provided serially and synchronous to a receiving electronic which has an SSI input (PLC indicator etc). The main advantage of the SSI interface is that long cable distances can be overcome by very few data lines. The actual angle of position is provided in 2 byte WORD Grey code with 12 bit over 360°. The receiving electronic provides pulse sequences and thus determines the transmission rate. With the first following signal of the pulse sequence, the angular position is detected and kept. The following rising ramps control the bit- wise transmission of the data word. After a small pause a new angular value can be transmitted.

### OPTIONS AND ORDERING REFERENCES

Refer to electrical and mechanical options on page 2

| Housing diameter | Serial Synchronous output | Pewatron Angular Sensor | Bush version with ball bearing, Long housing, Goldline | Signal | 5 V 24 V | Rotational direction | Clockwise Counter clockwise | 12 bit output | Programming options Zero point | Output connections | 6 Core Flat cable (standard) Terminal block ( A- Axial & R - Radial ) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 22 | Y | PB | BL | SSI | 05 SSI 24 SSI | | CW CCW | S 12 | POx POZ | OCx | OCF OCT |
| **22** | **Y** | **PB** | **BL** | **xx SSI** | | **CW / CCW** | | **S12** | **POx** | **OCx** | |

Example with description **22Y PBBL 05SSI CW S12 POZ OCT -** 22mm diameter, SSI output, Rotacol sensor, Bush version Long housing Goldline, Signal - 5V, Clockwise direction, 12 bit output, Zero point,Terminal block

**Standard Version :** 360° CW Electrical angle & mechanical angle, OCF - 6 core flat cable

## ELECTRICAL OPTIONS FOR SSI VERSION 22Y PBBL

The sensors 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 optoelectronical incremental and absolute encoders are replaced. The series is divided into 3 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.

**SSI - Serial Synchronous Interface** is wide spread in industrial applications with absolute angle sensors. There are a lot of programmable logic controls (PLC) or other peripheral appliances like counters available that can be easily configured for this communication. Furthermore this interface is very insensitive against electromagnetic interferences because of the differential signals that should be transmitted via twisted pair leads.

**Direction of Rotation (CW / CCW)**

The standard direction of rotation is clockwise (CW). It is also possible to change the direction of turning to counter clockwise mode (CCW).

**Zero Point Programming (POZ)**

The electrical zero point is at the beginning of the signal rise. If a shaft marking is brought in line with the housing marking, the electrical zero point can be set to that position. Beside that is it also possible to position the zero point at any position within the mechanical angle. In any case it is necessary to have a reference to the shaft marking.

## MECHANICAL OPTIONS FOR SSI VERSION 22Y PBBL

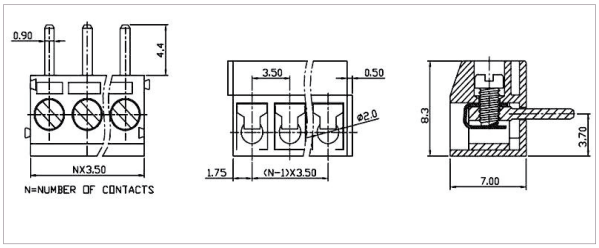
| Type / Series | Standard mechanical options | Customized mechanical options |
|---|---|---|
| 22Y PBSL | Terminal Block (OCTA / OCTR) | Special shaft length |

## INTERCONNECTIONS

Standard Interconnections - 6 Core flat cable

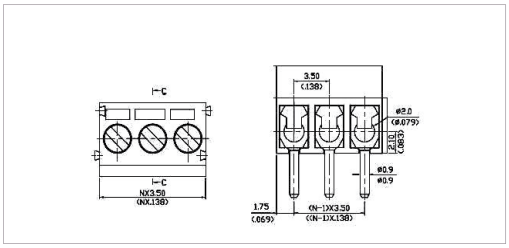
**Terminal block - Axial (OCTA)**
**Wires leaving axial to shaft axis**

6 sockets




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

6 sockets



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