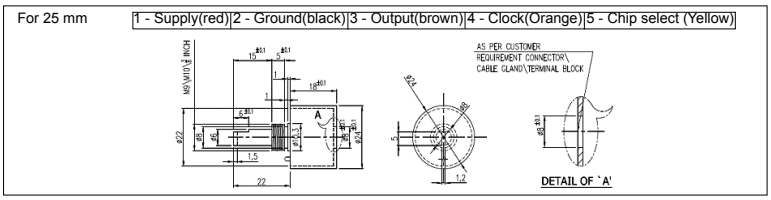
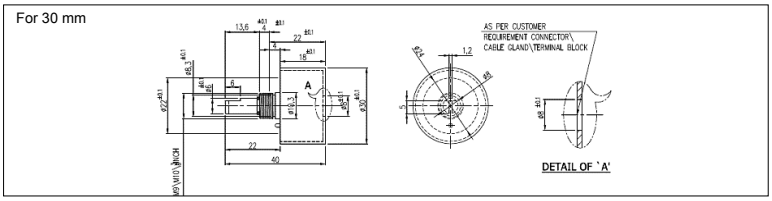
PRECISION SPI DIGITAL CONTACTLESS ROTARY POSITION SENSORS - BUSH MOUNTING

Series 25P PP B
Series 30P PP B

Ø25 mm & 30 mm plastic robust housing
Direct SPI interface to microcontroller
Bush mounting
Shock and vibration proof
Alternative to optical encoder





with terminal block

with cable gland

ELECTRICAL CHARACTERISTICS

Electrical angle	0 - 360°
Resolution	14 bit (16383 steps)
Output signal	Absolute SPI
Frequency response	5 KHz
Supply voltage	5V ± 10%
Supply current	< 30 mA

MECHANICAL CHARACTERISTICS

Mechanical angle	360°
Mechanical speed (max.)	800 rpm (brass) ; 3000 rpm (polymer)
Electrical speed (max.)	800 rpm
Life: with brass sleeve bearings	~ 10 million rotations
Life: with polymer sleeve bearings	~ 15 million rotations
Operating temperature	- 40 ... +85 °C
Operating torque (approx.)	1.2 Ncm ± 50%
Output connection	Cable gland (with 1 meter cable)
Weight	31 gm (25P RS B) / 47 gm (30P RS B)

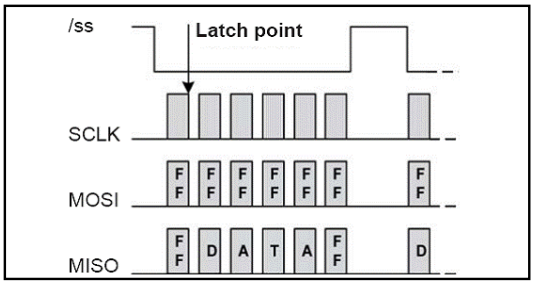
MATERIAL

Bearing type: basic type	brass bearing with stainless steel shaft
Bearing type: option P	polymer sleeve bearing with SS shaft
Housing	Nylon 66 Glass Fibre reinforced
Shaft	stainless steel
Cable	5 core round cable

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 with an SPI interface.

SERIAL PERIPHERAL INTERFACE



The serial peripheral interface (SPI) is a bus system for a serial synchronous data transmission between different integrated circuits. The bus consists of 3 lines MOSI (Master Out --> Slave In), MISO (Master In <-- Slave Out), SCLK - (Serial Clock, output from master) and SS Slave Select (active low; output from master). By these signal lines the master selects the slave for communication. This is done because the master sets the SS line from high to low. The angular informations are calculated all 350 and are available for the master on demand. There is no fixed protocol for the SPI bus. Nevertheless many microcontroller IC`s have a SPI input. By programming this microcontroller IC many SPI suitable sensors can be managed by one microcontroller.

OPTIONS AND ORDERING REFERENCES

Refer to electrical & mechanical options on page 2

25 & 30 mm Housing diameter	Serial peripheral interface (SPI) output	pewatron Angular Sensor	Bushi mounting	Thread M10 / Shaft Ø 6mm Thread M9 / Shaft Ø 6mm Thread 3/8" / Shaft Ø 6.35mm	Signal	5V	2 Channel output	14 bit output	Clockwise (CW) Counter clockwise (CCW)	Programming options Zero point	Low torque High torque	Polymer sleeve bearing (only for B1)	Special shaft length (std 22 mm)	Special cable length (std 1m cable)	Output connections	Cable gland (std) Miniature connector Terminal block (A- Axial & R - Radial)
25/30	P	PP	B1 B2 B3		05 SPI		2C	S14	CW CCW	POx POZ	LT HT	P	Axx	CVxx	OCx	OCG OCM OCT
25	**P**	**PP**	**Bx**		**05 SPI**		**2C**	**S14**	**CW / CCW**	**POx**	**xT**	**P**	**Axx**	**CVxx**	**OCx**	

Example with description - **25P PP B3 05SPI S14 CW POZ** - 25 mm housing, SPI output, Ecoline rota speedconnect, Bush mounting - Thread 3/8"/6.35mm,5V,14 bit,clockwise, zero point

Standard Version : 360° CW Electrical & Mechanical angle, 05 SPI, OCG - Cable gland, MT- Medium torque

ELECTRICAL OPTIONS FOR SPI VERSION 25/30P PP B

PP 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 optoelectronical incremental and absolute encoders are replaced. The PP series is divided into 3 grous : 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.

SPI Bus Interface The Serial Peripheral Interface bus or SPI bus is a synchronous serial data link standard developed by Motorola that operates in full duplex mode. One or more devices can communicate with one master. The length of the signal wire should not be longer than 0.5m. To bridge larger distances it is recommended to use the SSI interface. The digital signal in 2 byte Grey code transmits the angular position information through the data bus.

Direction of Rotation (xxxx 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.

2 Channel Output (2C)

The Hall sensor chip which is integrated into the sensor consists of two galvanically separated sensor units which are influenced by the same magnetic field. The sensor provides 2 operating modes: 1) redundancy i.e. channel one and channel two are identical. If one channel fails the other channel remains active. 2) It is also possible to have 2 different programs in the 2 channels. For this, additional functions can be obtained.

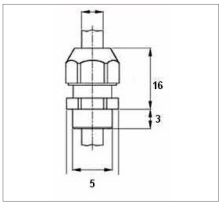
MECHANICAL OPTIONS FOR SPI VERSION 25/30P PP B

Type / Series	Standard mechanical options	Customized mechanical options
25/30P PP B	Low torque (LT), High torque (HT)	Special shaft length

SPEEDCONNECT OUTPUT CONNECTIONS FOR SPI VERSION 25/30P PP B

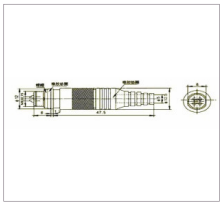
Cable gland (OCG)

3,5,6 core cable of 1 m length according to interface



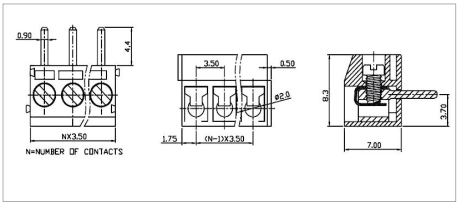
Miniature connector (OCM)

3,5,6 pin in integrated socket with plug according to interface



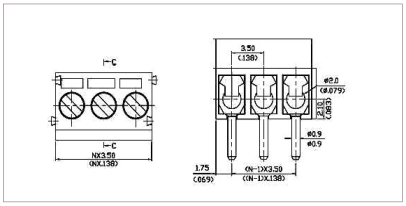
Terminal block - Axial (OCTA) Wires leaving axial to shaft axis

3,5,6 sockets according to interface



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

3,5,6 sockets according to interface



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