

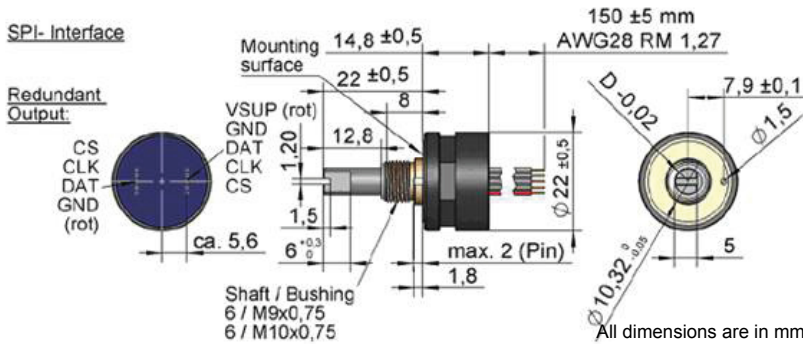
RotaCol® - Ecoline PRECISION SPI DIGITAL CONTACTLESS ROTARY POSITION SENSORS - BUSH MOUNTING

Series 22P ERCB



www.rotacol.info/22percb.pdf

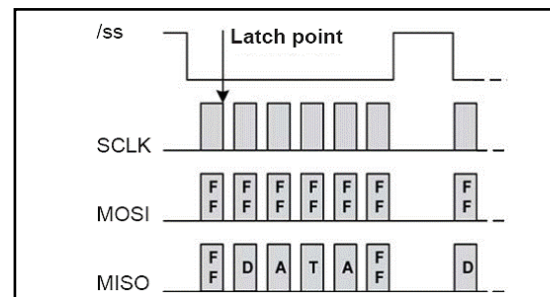
Economical - SPI digital - interface, 22 mm housing
Direct SPI interface to microcontroller
Bush mounting
Shock and vibration proof
Alternative to optical encoder



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 360 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 micro-

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
update rate	0.6 ms

MECHANICAL CHARACTERISTICS

Mechanical angle	360° (continuous)
Mechanical speed (Max.)	800 rpm (brass), 3000 rpm (polymer bearing)
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 (for medium.)	0.5 -1Ncm (std)
Vibration (IEC 68-2-6, Test Fc)	±1.5 mm / 20g / 2000Hz / 16cycles
Mechanical shock (IEC 68-2-7, Test Ea)	50g /11ms /halfisine (3X6 shocks)
Weight	25 gm

MATERIAL

Bearing - standard	brass bearing
Bearing type: option P	polymer sleeve bearing
Housing	Nylon 66 Glass Fibre reinforced
Shaft	stainless steel
Cable	5 core flat cable 0.15 m

OPTIONS AND ORDERING REFERENCES

Refer to electrical and mechanical options on page 2

Housing diameter	Serial peripheral interface (SPI) output	Ecoline RotaCol	Bush mounting	Signal	Channel output	Bit output	Clockwise (CW) Counter clockwise (CCW)	Programming options	Zero point	Low torque (< 0.5Ncm) Medium torque (0.5 -1 Ncm) - standard High torque (1-1.5 Ncm)	Polymer sleeve bearing (only for B1)	Shaft seal IP65 (not „P“ option)	Special shaft length (std 22 mm)	Special cable length (standard 0.15 m)
22	P	ERC	B1 B2 B3	05 SPI	2C	S14	CW CCW	POx POZ	Zero point	LT MT HT	P	D	Axx	CVxx
22	P	ERC	Bx	05 SPI	2C	S14	CW / CCW	POx	Zero point	xT	P	D	Axx	CVxx

Example with description - **22 P ERC B3 05SPI S14 CW POZ** - 22 mm housing, SPI output, Ecoline RotaCol, Bush mounting - Thread 3/8" / 6.35 mm shaft, 5V, 14 bit, clockwise, zero point

Standard Version : 360° CW Electrical & Mechanical angle, Medium Torque, 05 SPI, 5 core flat cable

For complete RotaCol Contactless Rotary Sensor product range refer - www.rotacol.info/rotamec.pdf

Please note: The specification and information in this datasheet cannot consider all special demands that are caused by the application. Because of this, they are no general description of the properties of the product. Megacraft does not assume any responsibility for damages due to improper application of our products. The user has to ensure by its own, that the products used are suitable for this application. Megacraft does not warrant the reproducibility of published information. The specifications can be changed any time without notice.

ELECTRICAL OPTIONS FOR SPI VERSIONS 22P ERCB

RotaCol® 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 RotaCol® 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.

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 it is 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.

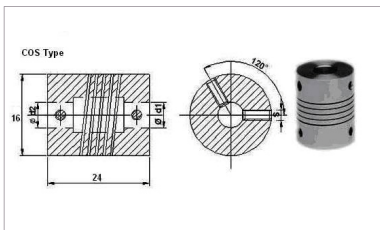
MECHANICAL OPTIONS FOR SPI VERSION 22P ERCB

Type / Series	Standard mechanical options	Customized mechanical options
22P ERCB	Low torque (LT), High torque (HT), Endstop at 90 °, 180 °, 270 °, Mu metal cap	Special shaft length ; Special endstop angle

ACCESSORIES - SPIRAL COUPLINGS

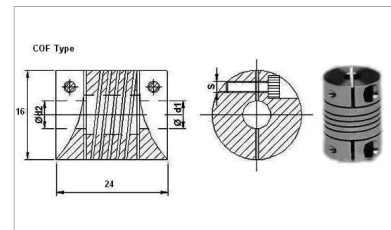
Whenever the shafts of the sensors are available only in metric (mm) or radial force is expected on the shaft, we recommend our very economical precision machined metal spiral couplings with set screws or clamp fixing. there are two dimensions in stock. One side for 6 mm dia shaft and other side either 1/4th inch or 1/8 inch shaft dia. These can be used to connect metric and non metric devices

COS Type



Set Screw Fitting
6 mm (d1) - 1/4" (d2)
6 mm (d1) - 1/8" (d2)

COF Type



Flange Clamping
6 mm (d1) - 1/4" (d2)
6 mm (d1) - 1/8" (d2)

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