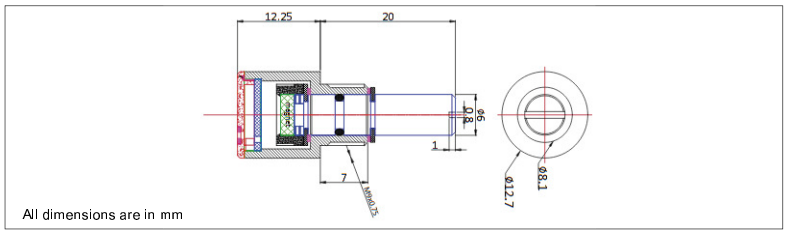
12P MMPB2

'SPI' Interface Precision Contactless Rotary Position Sensors
Bush Mounting - Sleeve bearing

12 mm Ø metal housing
Hall CMOS technology, low cost
SPI - 4 wire - full duplex, Measurement range 0° - 360°
Direct SPI interface to microcontroller
Bush mounting - Sleeve bearing - 6 mm shaft diameter

1-Supply (Red); 2-Ground (Grey); 3-Clock (Grey); 4-MOSI (Grey); 5-MISO (Grey); 6-Chip select (Grey)



ELECTRICAL CHARACTERISTICS

Electrical angle	0 to 360°	
Electrical speed (max)	800 rpm	
Resolution	16383 steps (14 bit)	
Signal type	Supply voltage	Output signal
SE05SPI	5V ±10%	5V SPI - 4 wire
SE33SPI	3.3V ± 10%	3.3V SPI - 4 wire
Supply current (mA)	< 30 mA	
Update rate	0.6 ms	

MECHANICAL CHARACTERISTICS

Mechanical angle	0 - 360°(continuous)
Shaft diameter and length (FMS)	6 mm Ø X 20 mm
Bushing	M9 X 0.75
Mechanical speed (Max.)	800 rpm
Rotational life	~ 10 million rotations
Operating torque (approx.)	0.1 to 0.3 Ncm
Operating temperature range	- 40 to +85° C
Weight	10 gm
Interconection	6 core flat cable 0.15 mtr long - 4 wire SPI

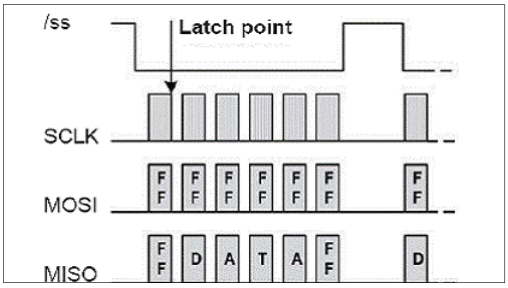
MATERIAL

Housing	Aluminium anodized
Shaft	Stainless Steel
Bearing	Sleeve bearing - teflon

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 4 lines MOSI, MISO, 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 µs 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.

Default Version :
12 mm housing, 6 mm shaft, bush mount, 360° Electrical & Mechanical angle CCW, SPI interface,6 core flat cable 0.15 mtr long - 4 wire SPI

ORDERING INFORMATION

Refer to electrical and mechanical options on page 2

Housing diameter	Serial Peripheral Interface (SPI)	Miniline (Bush Thread M9X0.75 & Shaft 6 mm Ø)	Miniline	Bush mounting M9X0.75	Signal	5V SPI - 4 wire 3.3V SPI -4 wire	Electrical angle	Without stop 360° continuous (default 360°)	Direction of rotation	Counter clockwise (default - for 4 wire SPI)	Programming options	Zero point	Special cable length (default 0.15 m long)	Output connection	6 core flat cable 0.15 mtr long - (default)
12	P	M	MP	B2		SE05SPI SE33SPI		O360		CCW		POZ	CVxx		OCF
12	**P**	**M**	**MP**	**B2**	**SxxSPI**		**O360**		**CCW**		**POZ**		**CVxx**	**OCF**	

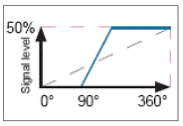
Example with description- **12P MMPB2 SE05SPI 360CW OCF -** 12 mm diameter, SPI interface, Miniline, RotaCol bush mount, (Bush Thread M9X0.75 & Shaft 6 mm Ø), 5V SPI - 4 wire, 360° counter clockwise, 6 core flat cable 0.15 mtr long

ELECTRICAL OPTIONS FOR SPI VERSION 12P MMPB2

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 putput signals and interfacing. Not only precision potentiometer but also optoelectronical 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.

Zero point Programming (POZ) :
Standard configuration is zero point without orientation. At POZ, when we do zero point programming rising ramp will start from marking on encoder housing or from the endstop CCW. Zero point can also be programmed at any defined offset from marking on the housing (Price Adder).



MECHANICAL OPTIONS FOR SPI VERSION 12P MMPB2

Type / Series	Customized mechanical options
12P MMPB2	Special cable length

INTERCONNECTIONS

Standard Interconnections - 6 core flat cable 0.15 mtr long

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