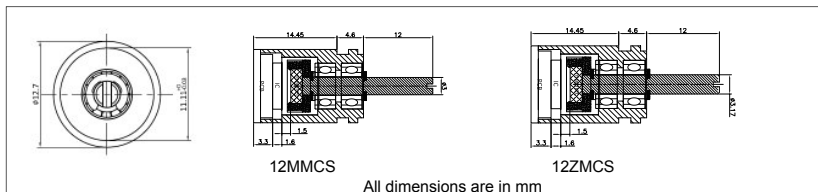


**Economical Hall effect magnetic sensor  
12 mm Ø metal housing, Mini size, Servo Mount  
Hall CMOS technology, low cost  
SPI - 4 wire - full duplex, Measurement range 0° - 360°  
Direct SPI interface to microcontroller**

1- Supply (Red); 2- Ground (Grey); 3- Clock (Grey); 4- MOSI (Grey); 5- MISO (Grey); 6- chip select (Grey) : **For OCF**



**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
Independent linearity tolerance	± 0.5%	
Supply current (mA)	< 30 mA	
Update rate	0.6 ms	

**MECHANICAL CHARACTERISTICS**

Mechanical angle	0 - 360°(continuous)
Shaft diameter and length (FMS)	Metric 3 mm Ø X 12mm (MMCS) Inch 1/8" Ø X12mm (ZMCS)
Mechanical speed (Max.)	3000 rpm
Rotational life	~ 15 million rotations
Operating torque (approx.)	0.1 to 0.2 Ncm
Operating temperature range	- 40 to +85° C
Weight	10 gm
Interconnection	6 core flat cable 0.15 mtr long

**MATERIAL**

Housing	Aluminium anodized
Shaft	Stainless Steel
Bearing	2 precision ball bearings

**ORDERING INFORMATION**

Refer to electrical and mechanical options on page 2

Housing diameter	Serial Peripheral Interface (SPI)	Metric Miniline Shaft diameter 3 mm Ø	Inch Miniline Shaft diameter 1/8" Ø	Miniline RotaCol	Servo mounting	Signal	Electrical angle	Direction of rotation	Programming options	Zero point	Special cable length (default 0.15 m long)	Output connection
12	P	M	Z	MC	S	5V SPI - 4 wire 3.3V SPI - 4 wire	0360	CCW	POx	POZ	CVxx	OCF
<b>12</b>	<b>P</b>	<b>M / Z</b>		<b>MC</b>	<b>S</b>	<b>SxxSPI</b>	<b>O360</b>	<b>CCW</b>	<b>POZ</b>		<b>CVxx</b>	<b>OCF</b>

Example with description - **12P MMCS SE33SPI O360 CCW POZ OCF** - 12 mm diameter, SPI interface, Metric Miniline ,Shaft 3 mm Ø, RotaCol servo mount, 3.3V SPI - 4 wire, 360°counter clockwise, Zero point, 6 core flat cable 0.15 mtr long

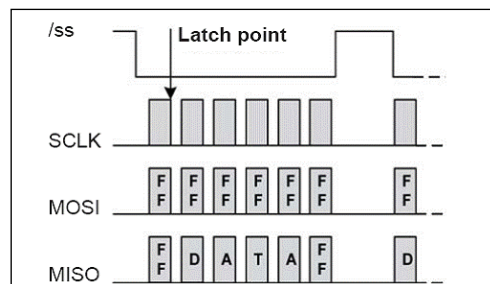


**For full range of Rotary Sensor refer -  
www.rotacol.info/rotamec.pdf**

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

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 on his own, that the products used are suitable for his application. Megacraft does not warrant the reproducibility of published information. The specifications can be changed any time without notice.

## ELECTRICAL OPTIONS FOR SPI VERSION 12P M/Z MCS

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 interface. 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)

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. In any case it is necessary to have a reference to the shaft marking.

## MECHANICAL OPTIONS FOR SPI VERSION 12P M/Z MCS

Type / Series	Customized mechanical options
12P M/Z MCS	Special cable length

## INTERCONNECTIONS

Standard Interconnections - 6 core flat cable 0.15 mtr long

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