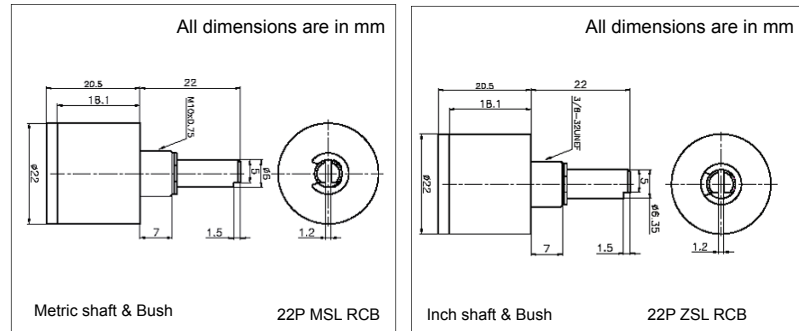




**Economical Hall effect magnetic sensor  
SPI - 3 wire - half duplex  
Direct SPI interface to microcontroller  
Robust metal aluminium housing, 22 mm Ø housing  
Bush mounting - sleeve bearing, Shock & vibration proof  
Measurement range 0° - 360°**

1- Supply (red); 2- Ground (grey); 3- MOSI/MISO (grey); 4- Clock (grey); 5- Chip select (grey) : For OCF  
1- Supply; 2- Ground ; 3- MOSI/MISO; 4- Clock; 5- Chip select : For OCTA, OCTR



**ELECTRICAL CHARACTERISTICS**

Electrical angle	0 - 360°	
Electrical speed (max.)	800 rpm	
Resolution	14 bit (16383 steps)	
Signal type	Supply voltage	Output signal
S05SPI	5V±10%	SPI - 3 wire
Supply current	< 30 mA	
Frequency response	5 KHz	
Update rate	0.6 ms	

**MECHANICAL CHARACTERISTICS**

Mechanical angle	360° (continuous)	
Bushing	Metric	M10 X 0.75 (MSL)
	Inch	3/8" X 32 UNEF (ZSL)
Shaft diameter and length (FMS)	Metric	6mm Ø X 22 mm (MSL)
	Inch	1/4" Ø X 22 mm (ZSL)
Operating torque (approx.)	0.2 - 0.3 Ncm	
Protection	IP 40	
Operating temperature	- 40 to +85° C	
Operating life (approx.)	5 million rotations	
Mechanical speed (max.)	1000 rpm	
Weight	22 gm	
Interconnection	5 core flat cable 0.15 mtr long / terminal block axial or radial	

**MATERIAL**

Housing with bushing	anodized aluminium
Bearing	sleeve bearing
Shaft	stainless steel

**ORDERING INFORMATION**

Refer to electrical and mechanical options on page 2

Housing diameter	Serial peripheral interface (SPI)	RotaCol	Bush mounting - sleeve bearing	Signal	Output	Without stop (default 360°)	Direction	Programming options	Special shaft length (default 22 mm)	Output connections			
22	P	MSL ZSL	B	S05SPI	2C S14	O360	CW CCW	POx POZ	Axx CVxx	OCxx			
<b>22</b>	<b>P</b>	<b>xSL</b>	<b>RC</b>	<b>B</b>	<b>S05SPI</b>	<b>2C</b>	<b>S14</b>	<b>O360</b>	<b>CW / CCW</b>	<b>POx</b>	<b>Axx</b>	<b>CVxx</b>	<b>OCxx</b>

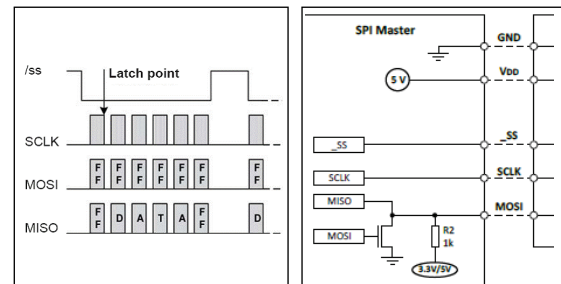
Example with description - **22P MSL RCB S05SPI S14 CW POZ OCTR** - 22mm diameter, SPI output, Metric Silverline ( Bush Thread M10X0.75 / Shaft 6mm Ø ), RotaCol, Bush mounting , 5V SPI output - 3 wire, 14 bit output, clockwise, Zero point, Terminal block Radial

For full range of Rotary Sensors refer - [www.rotacol.info/rotamec.pdf](http://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 3 lines MOSI / MISO (one common line), 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. Two channel redundant outputs can be provided.

**Default Version** : 360° CW Electrical & Mechanical angle, 5V SPI – 3 wire, 5 core flat cable 0.15 mtr long

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 22P MSL/ZSL RCB

### 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 (CW/CCW)

By default the direction of rotation is clockwise (CW). With this option it is also possible to change the direction from clockwise(CW) to counterclockwise (CCW).

### Zero point Programming (POZ)

Mechanical zero point is aligned with marking on the sensor housing. Electrical zero point can be aligned to mechanical zero point.

### 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 MSL/ZSL RCB

Type / Series	Standard mechanical options	Customized mechanical options
22P MSL/ZSL RCB	Terminal Block axial or terminal block radial (OCTA / OCTR)	Special shaft length

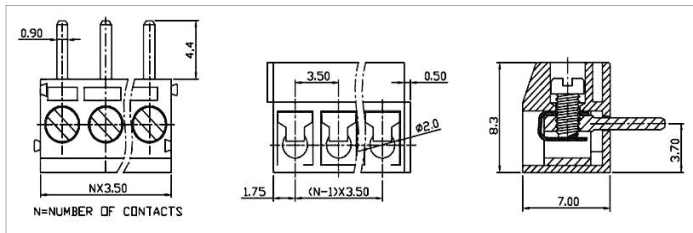
## INTERCONNECTIONS

Standard Interconnections - 5 Core flat cable

### Other Interconnection options

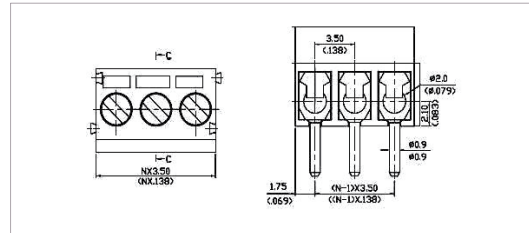
**Terminal block - Axial (OCTA)**  
Wires leaving axial to shaft axis

5 sockets



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

5 sockets



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