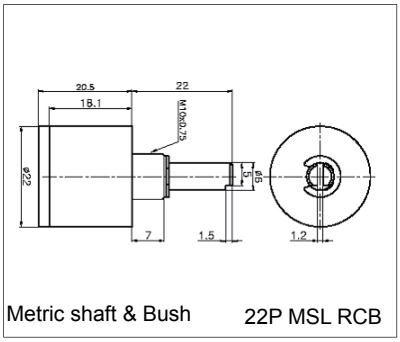
RotaCol® - *Silverline*
PRECISION SPI DIGITAL CONTACTLESS ROTARY POSITION SENSOR

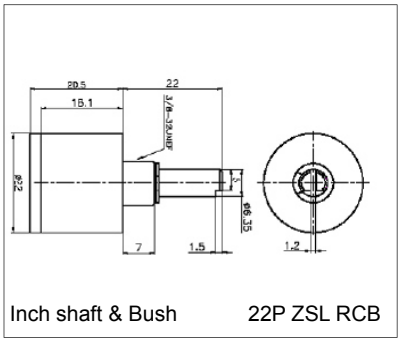
Series 22P MSL RCB
Series 22P ZSL RCB

Economical Hall effect magnetic sensor
Direct SPI interface to microcontroller
Robust metal aluminium housing
Bush mounting
Shock & vibration proof
Measurement range 0° - 360 °

www.rotacol.info/22pmslrcb.pdf
www.rotacol.info/22pzslrcb.pdf



Metric shaft & Bush 22P MSL RCB



Inch shaft & Bush 22P ZSL RCB

All dimensions are in mm

1 - Supply (red)	2 - Ground (grey)	3 - Output (grey)	4 - Clock (grey)	5 - Chip select (grey)

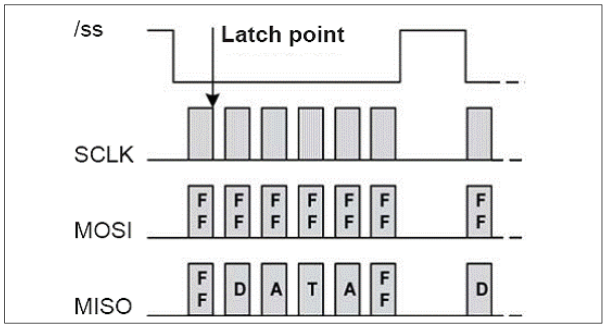
FUNCTION PRINCIPLE

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.

ELECTRICAL CHARACTERISTICS

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

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.

MECHANICAL CHARACTERISTICS

Mechanical angle	360° (continuous)
Starting torque (approx.)	0.5 Ncm
Protection	IP 40
Operating temperature	- 40 to +85° C
Operating life (approx.)	5 million rotations
Mechanical speed (max.)	1000 rpm
Electrical speed (max.)	800 rpm
Weight	22 gm

MATERIAL

Housing	anodized aluminium
Shaft	stainless steel
Cable	5 core flat cable (150 mm)

OPTIONS AND ORDERING REFERENCES

Refer to electrical and mechanical options on page 2

Housing diameter	Serial peripheral interface (SPI) output	Metric Silverline (Bush Thread M10 & Shaft Ø 6mm)	Inch Silverline (Bush Thread 3/8" & Shaft 1/4")	RotaCol	Bush mounting	Signal	5V	2 Channel output	14 bit output	Clockwise (CW) Counter clockwise (CCW)	Programming options	Zero point	Output connections	5 Core Flat cable (standard) Terminal block Axial Terminal block Radial
22	P	MSL	ZSL	RC	B	05 SPI		2C	S14	CW CCW	POx	POZ	OCxx	OCF OCTA OCTR
22	**P**	**xSL**		**RC**	**B**	**05 SPI**		**2C**	**S14**	**CW / CCW**	**POx**		**OCxx**	

Example with description - **22P MSL RC B 05SPI S14 CW POZ OCTR -** 22mm diameter, SPI output, Metric Silverline (Bush Thread M10 / Shaft Ø 6mm), RotaCol , Bush mounting , 5V SPI, 14 bit output, clockwise, Zero point, Terminal block Radial

Standard Version : 360° CW Electrical & Mechanical angle, 5V SPI, OCF - 5 core flat cable

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

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. Zero point can be programmed at any offset.

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 (OCTA / OCTR)	Special shaft length

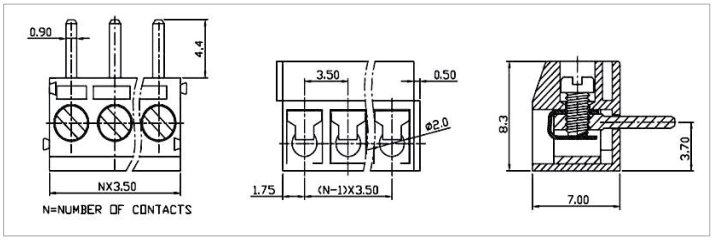
INTERCONNECTIONS

Standard Interconnections - 5 Core flat cable

Other Interconnection options

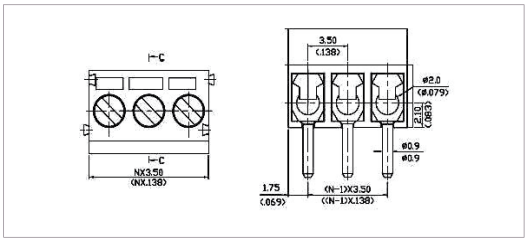
Terminal block - Axial (OCTA)
Wires leaving axial to shaft axis

5 sockets



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

5 sockets



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