

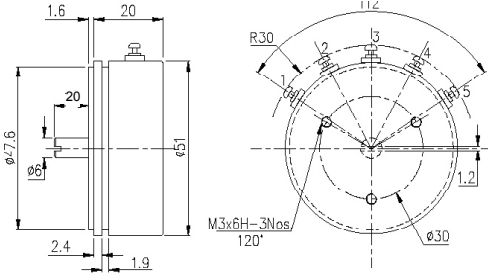
# RotaCol® - Silverline PRECISION INCREMENTAL SERVOMOUNT CONTACTLESS LONG LIFE ROTARY POSITION SENSOR

Series 50I MSL RCS



**Servomount case - 2 Ball bearings**  
**Hall effect magnetic**  
**A - B - Z channels- Any pulse from 2 - 128 programmable, 256, 512, 1024 ppr**  
**Precision robust aluminium housing**  
**Synchro size 20, shock & vibration proof**  
**Measurement range 0° - 360°**

[www.rotacol.info/50imslracs.pdf](http://www.rotacol.info/50imslracs.pdf)

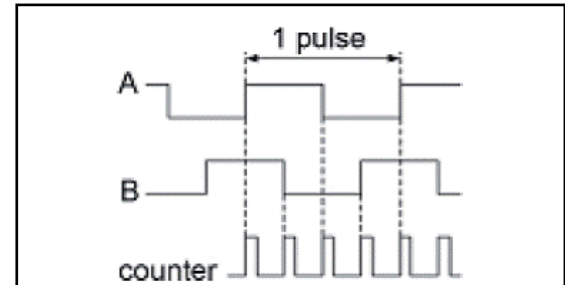


1 - Supply(green) 2 - Ch Z(Grey) 3 - Ch B(Grey) 4 - Ch A(Grey) 5 - Ground(Grey)  
 All Dimensions are in mm.

## FUNCTION PRINCIPLE

A magnet rotates over the sensor IC with 4 Hall sensors for angular determination and converts the magnetic field into a measurable Hall voltage. When the magnet rotates around the longitudinal axis, sine and cosine voltages are generated to determine the angles. Two separate sine/digital converters provide A, B, Z incremental signals.

## INCREMENTAL INTERFACE



There are 3 signals for incremental output : A, B and Z. Signals A and B are quadrature signals, shifted by 90° and signal Z is a reference mark. One revolution generates N pulses of signal A or B. The reference mark signal is produced once per revolution. The width of the Z pulse is 1/4 of quadrature signal period and is matched with A high and B high. Generally, the magnetic incremental encoders are directly comparable with the conventional optical incremental encoders. They provide additional features and can much easier be adjusted to customer requirements. Nevertheless optical and magnetic incremental encoders do not provide an absolute signal.

## ELECTRICAL CHARACTERISTICS

Electrical angle	0 - 360°
Pulses	Any pulse from 2 to 128, 256, 512, 1024 ppr
Resolution	4096 steps (0.1°)
Supply voltage	5V ± 10% / 9 - 30 VDC
Output signal	5V TTL, 5V / 24V Open collector
Supply current	< 30 mA
Frequency response	10 KHz

## MECHANICAL CHARACTERISTICS

Mechanical angle	360° (continuous)
Starting torque (approx.)	0.4 Ncm
Protection	IP 40
Operating temperature	- 40 to +85° C
Operating life (approx.)	40 million rotations
Mechanical speed (max.)	9000 rpm
Electrical speed (max.)	1600 rpm
Weight	77 gm

## MATERIAL

Housing	anodized aluminium
Shaft	stainless steel
Terminals	5 pins brass gold plated
Bearings	2 precision ball bearing

## OPTIONS AND ORDERING REFERENCES

Refer to electrical and mechanical options on page 2

Housing diameter	Incremental output	Metric Silverline (Shaft Ø 6mm)	RotaCol	Servomount - with 2 ball bearings	Signal	Pulses and electrical rotational direction	Pulses and Clockwise (CW) Pulses and Counter clockwise (CCW)	Programming options	Output connections
50	I	MSL	RC	S	S 5TTL S 05OC S 24OC	xxxxCW xxxxCCW	POx POZ POI	OCx OCP OCF OCM OCG OCTA OCTR	
<b>50</b>	<b>I</b>	<b>MSL</b>	<b>RC</b>	<b>S</b>	<b>Sxxxx</b>	<b>xxxx CW / CCW</b>	<b>POx</b>	<b>OCx</b>	

Example with description - **50I MSL RCS S05OC 100 CCW POZ OCTA** - 50mm diameter, incremental output, RotaCol sensor, Servomount Silverline, Signal - 5V open collector, 100 pulse and counter clockwise, Zero point, Terminal block axial  
**Standard Version : 360° CW Electrical & Mechanical angle, 1024 ppr, OCP - 5 pins**

For complete RotaCol Contactless Rotary Sensor product range refer - [www.rotacol.info/rotamec.pdf](http://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 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 INCREMENTAL VERSIONS 50I MSL RCS

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 three 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.

**Rotary incremental magnetic encoders and sensors** - RotaCol® are angular position sensors with an integrated signal conditioning unit, which generates constant amplitude sine and cosine voltages which are used for angle calculation. The maximum resolution is 4096 angular measurements per revolution (0.1°). Like in the standard optical incremental encoders a rising and falling edge at channel A and channel B is available. Thus the rotational direction can be detected. The quadrature signal consist of 2 wave signal out of phase. The Z channel enables the counter to be reset to zero with the function of a non true power on absolute encoder. The programming of the position for the reference "Z" impulse in a relation to the marking on the shaft and housing can be factory set. Contrary to optical encoders, any pulse between 2 - 128 pulses per revolution can be programmed by software without disc change.

### Number of Pulses & Direction (xxx CW / CCW)

As a unique feature any number of pulses from 2 - 128 pulses per revolution (ppr) can be programmed in a 3 channel configuration. Above 128 ppr the following resolutions are possible as std option: 256, 512. Default is 1024 ppr. The default direction of rotation is clockwise (CW). With this option it is also possible to change direction from clockwise(CW) to counter clockwise (CCW).

### Start Up Performance

In the basic default version, when the sensor is switched on, first the output A-B pulses are received only if the shaft rotates. After reaching the Z pulse it is used for resetting the counter (identical to optical encoders). In this option, when the electronic is switched on, the A and B output pulses are received automatically till the Z pulse is reached. Then the counter can be reset without rotating the shaft. From this point, the A, B and Z outputs are received corresponding to the shaft rotation.

### Z Pulse

A counter which is connected to the sensor is reset once per revolution by the Z - pulse. Within one rotation a simulation of non - true power on encoder is possible. In the basic type the counter is reset manually.

### Zero Point Programming (POZ)

It is possible to position the Z Pulse in line with the marking on the shaft and the bushing. Also any offset to this marking is possible.

### Inverted Signal (POI)

The channels A and B can be inverted or not inverted independent of each other. The basic type is not inverted.

### Push Pull Function

In an open collector mode the driver current is limited by pull up resistor. In push - pull mode the driver current goes up to 300 mA. Longer distances and faster switching is possible.

## MECHANICAL OPTIONS FOR INCREMENTAL VERSION 50I MSL RCS

Type / Series	Standard mechanical options	Customized mechanical options
50I MSL RCS	Cable gland (OCG) ; Terminal Block (OCTA / OCTR) ; Miniature connector (OCM)	Special shaft length ; Special cable

## INTERCONNECTIONS

Standard Interconnections - 5 Pins

### Other Interconnection options

#### Cable gland (OCG)

5 core cable of 1 m length

#### Miniature connector (OCM)

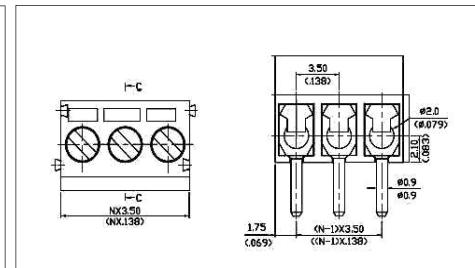
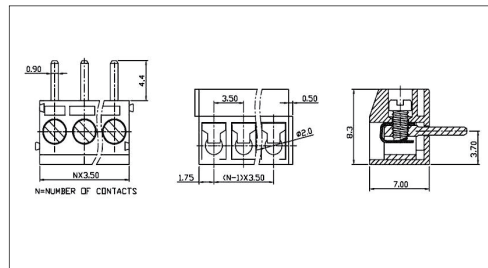
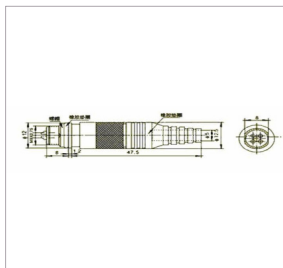
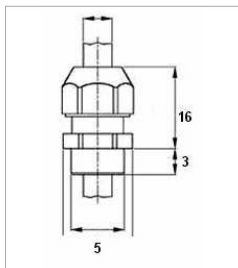
5 pin in integrated socket with plug

#### 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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