RotaCol® - *Silverline*

'INCREMENTAL' Output Precision Contactless Rotary Position Sensors
Servo Mount - 2 Precision Ball Bearings

Metalcase - Hall effect magnetic sensor
A - B - Z channels- Any pulse from 2 - 128, 256,512,1024 ppr
36 mm Ø metal aluminium housing with 2 precision ball bearings
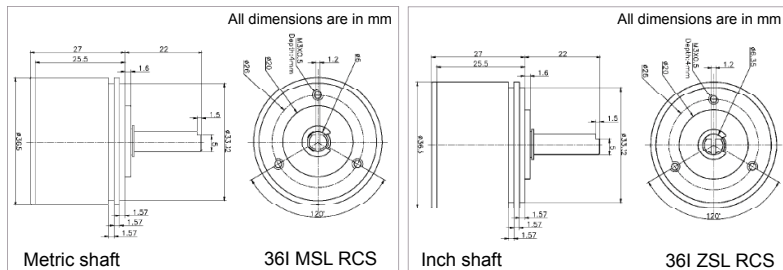**Servo mount / Screw fitting**
Shock & vibration proof,
Measurement range 0° - 360 °

Series 36I MSL RCS
Series 36I ZSL RCS

1-Supply (Red); 2-Ch Z (Brown); 3-Ch B (Yellow); 4-Ch A (Orange); 5-Ground (Black) : **For OCG, OCR**
1-Supply ; 2-Ch Z; 3-Ch B ; 4-Ch A; 5-Ground : **For OCM, OCTA, OCTR**

All dimensions are in mm — Metric shaft — 36I MSL RCS

All dimensions are in mm — Inch shaft — 36I ZSL RCS

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

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.

ELECTRICAL CHARACTERISTICS

Electrical angle		0 - 360°
Electrical speed (max.)		1600 rpm
Elec. Pulses		Any pulse from 2 to 128, 256, 512, 1024 ppr
Resolution		4096 step (12 bit)
Signal type	Supply voltage	Output signal
S05TTL	5V +/- 10%	5V TTL
S05OC	5V +/- 10%	5V Open collector
S24OC	9-30V	24V Open collector
Supply current		< 30 mA
Frequency response		500 KHz

MECHANICAL CHARACTERISTICS

Mechanical angle		360° (continuous)
Shaft diameter and length (FMS)	Metric	6 mm Ø X 22 mm (MSL)
	Inch	1/4" Ø X 22 mm (ZSL)
Operating torque (approx.)		0.05 Ncm
Protection		IP 40
Operating temperature		- 40 to +85° C
Operating life (approx.)		40 million rotations
Mechanical speed (max.)		8000 rpm
Weight		95 gm
Interconnection		5 core round cable 1 mtr long (default)

MATERIAL

Housing	Anodized aluminium
Shaft	Stainless steel
Bearings	2 precision ball bearings

INCREMENTAL OUTPUT

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. Neverthless optical and magnetic incremental encoders do not provide an absolute signal.

Default Version :
Servo mount, 36 mm housing with 2 precision ball bearing, 360° Electrical & Mechanical angle CW, 1024 ppr, 5 core round cable 1 mtr long

ORDERING INFORMATION

Refer to electrical and mechanical options on page 2

Housing diameter	Incremental output	Metric Silverline (Shaft 6 mm Ø)	Inch Silverline (Shaft 1/4" Ø)	RotaCol	Servo mount with 2 ball bearings	Signal	5V TTL / 5V Open collector / 24V Open collector	No of Pulses — Any pulse from 2 - 128,256, 512,1024 ppr (default 1024 ppr)	Direction of Rotation — Clockwise (CW)- (default) / Counter clockwise (CCW)	Programming options	Zero point Inverted signal	Special shaft length (default length - 22 mm FMS)	Special cable length - only for OCG, OCR (default 1 mtr long)	Output connections	5 Pins — 5 Core round cable 1 mtr long (default) / Miniature connector / Cable gland with 1m round cable / Terminal block Axial / Terminal block Radial
36	–	MSL	ZSL	RC	S		S05TTL S05OC S24OC	xxxx	CW CCW	POx	POZ POI	Axx	CVxx	OCxx	OCP OCR OCM OCG OCTA OCTR
36	**I**	**xSL**	**RC**		**S**	**Sxxxx**		**xxxx**	**CW / CCW**	**POx**		**Axx**	**CVxx**	**OCxx**	

Example with description - **36I ZSL RCS S05TTL 512 CW OCG -** 36mm diameter, incremental output, Inch Silverline (Shaft 1/4" ø), Servo mount version with 2 ball bearings, 5V TTL, 512 pulses, clockwise, cable gland with round cable 1 mtr long

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 optoelectronical 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(xxxx) :
Standard configuration is 1024 ppr. As an option, every ppr betweeen 2 to 128 ppr are programmable. Besides that 256 or 512 ppr can also be programmed (Price Adder).

Direction of Rotation (CW / CCW) :
In standard configuration direction of rotation is clockwise. With this option, it is possible to change direction from Clockwise (CW) to counter clockwise (CCW). (Price Adder)

Start Up Performance :
In the standard configuration, 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) :
Standard configuration is zero point without orientation. It is possible to position the Z Pulse in line with the marking on the shaft and the housing (Price Adder).

Inverted Signal (POI) :
The standard configuration is not inverted. With this option, the channels A and B can be inverted independent of each other (Price Adder).

MECHANICAL OPTIONS FOR INCREMENTAL VERSION 36I MSL/ZSL RCS

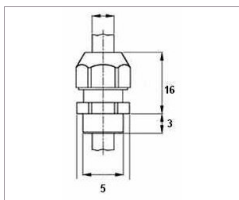| Type / Series	Standard mechanical options	Customized mechanical options
36I MSL/ZSL RCS	Cable gland (OCG), pins (OCP) , miniature connector (OCM), terminal block (OCTA / R),special cable length	Special shaft length

INTERCONNECTIONS

Standard Interconnections - 5 Core round cable
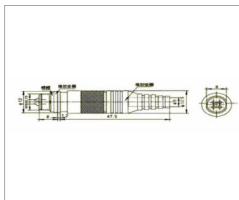
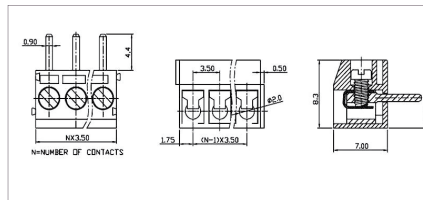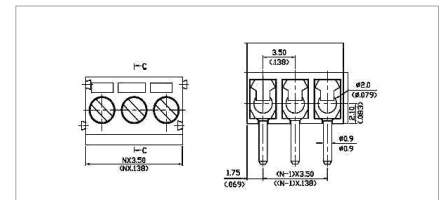### Other Interconnection options

Cable gland (OCG)	Miniature connector (OCM)	Terminal block - Axial (OCTA) Wires leaving axial to shaft axis	Terminal block - Radial (OCTR) Wires leaving radial to shaft axis
5 core round cable 1 m long	5 pin in integrated socket with plug	5 sockets	5 sockets