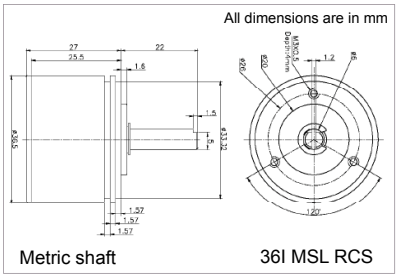
RotaCol® - *Silverline*

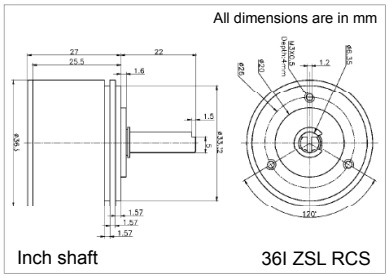
INCREMENTAL CONTACTLESS ROTARY POSITION SENSOR
SERVO MOUNTING - 2 PRECISION BALL BEARINGS

Series 36I MSL RCS
Series 36I ZSL RCS

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 °

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**





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

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)
Supply voltage	5V ± 10% / 9 - 30 VDC
Output signal	5V TTL, 5V / 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.)	35 million rotations
Mechanical speed (max.)	8000 rpm
Weight	95 gm
Interconnection	5 core round cable 1 mtr long (default)

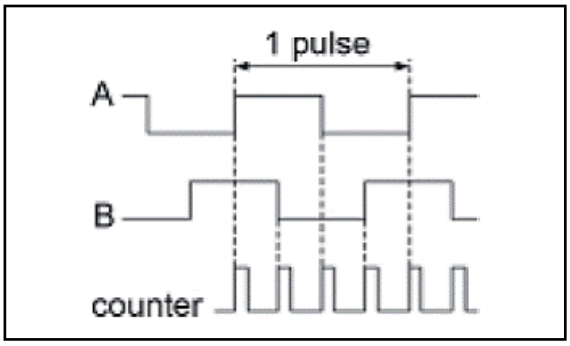
MATERIAL

Housing	anodized aluminium
Shaft	stainless steel
Bearings	2 precision ball bearings

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

Default Version :
360° CW Electrical & Mechanical angle, 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	I	MSL	ZSL	RC	S	S 05TTL S 05OC S 24OC	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

ELECTRICAL OPTIONS FOR INCREMENTAL VERSION 36I MSL/ZSL RCS

Rotary incremental magnetic encoders and sensors - 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)

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 standard option: 256, 512 and 1024. **Default is 1024 ppr**.

Direction of rotation (CW / CCW)

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.

Zero point Programming (POZ)

It is possible to position the Z pulse in line with the marking on the shaft and housing.

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.

Inverted Signal (POI)

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

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 shaft length; special cable length

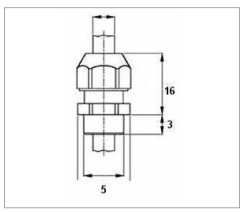
INTERCONNECTIONS

Standard Interconnections - 5 Core round cable

Other Interconnection options

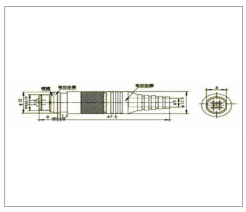
Cable gland (OCG)

5 core round cable 1 m long



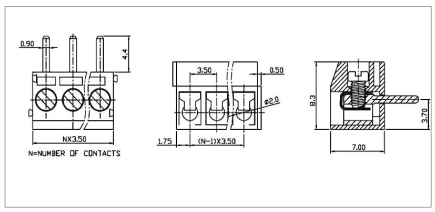
Miniature connector (OCM)

5 pin in integrated socket with plug



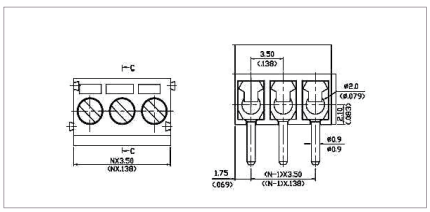
Terminal block - Axial (OCTA)
Wires leaving axial to shaft axis

5 sockets



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

5 sockets



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