

# RotaCol® - Ecoline Speedconnect

## 'INCREMENTAL' Output Precision Contactless Rotary Position Sensors

### Bush Mounting - Sleeve bearing

Series 25I RSB  
Series 30I RSB

25 mm & 30 mm Ø plastic robust housing - Bush mounting

Hall CMOS technology

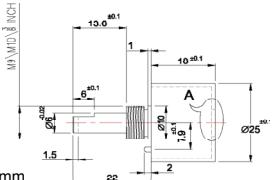
A - B - Z channels- Any pulse from 2 - 128, 256, 512,1024 ppr programmable

Following interconnections are available :

Round cable, Cable gland, Miniature connector and Terminal block

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

25 mm

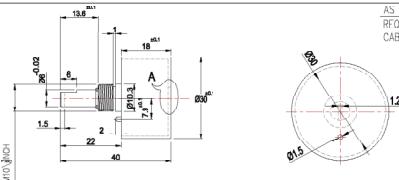


All dimensions are in mm

AS PER CUSTOMER  
REQUIREMENT CONNECTOR,  
CABLE GLAND\TERMINAL BLOCK

DETAIL OF 'A'

30 mm



All dimensions are in mm

AS PER CUSTOMER  
REQUIREMENT CONNECTOR,  
CABLE GLAND\TERMINAL BLOCK

DETAIL OF 'A'

### ELECTRICAL CHARACTERISTICS

Elec. Pulses	Any pulse from 2 to 128, 256, 512, 1024 ppr	
Electrical speed (Max.)	1600 rpm	
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	(O) 360°
Max rotating speed (max.)	800 rpm (brass) ; 3000 rpm (polymer)
Shaft diameter X length (FMS)	6 mm or 1/4 inch X 22 mm
Life: with brass sleeve bearings	~ 15 million rotations
Life: with polymer sleeve bearings	~ 20 million rotations
End stopper strength	Max 80 Ncm
Operating temperature	- 40 ... +85 °C
Operating torque	0.3 to 0.5 Ncm(Low) 0.5 to 1 Ncm (Medium)
Vibration (IEC 68-2-6, Test Fc)	±1.5 mm / 20g / 2000Hz / 16cycles
Mechanical shock (IEC 68-2-7, Test Ea)	50g /11ms /halfsine (3X6 shocks)
Weight (25IRSB) - (gm)	60 (OCR), 70 (OCG), 30 (OCTA/R), 36 (OCM)
Weight (30IRSB) - (gm)	65 (OCR), 76 (OCG), 35 (OCTA/R), 45 (OCM)

### MATERIAL

Bushing	Brass
Bearing standard	Sleeve bearing - Brass (default)
Bearing type: option P	Polymer sleeve bearing
Housing	Nylon 66 Glass fibre reinforced
Shaft	Stainless steel

### ORDERING INFORMATION

Refer to electrical & mechanical option on page2														
25/30	25 & 30 mm Housing diameter	Incremental output	Ecoline RotaCol Speedconnect	Bush mounting	Thread M10 X 0.75 / Shaft 6 mm Ø Thread M9 X 0.75 / Shaft 6 mm Ø Thread 3/8" X 32- UNEF / Shaft 1/4" Ø	Signal	5V TTL 5V Open collector 24V Open collector	No. of pulses	Any pulse from 2 - 128, 256, 512, 1024 ppr programmable (default 1024 ppr)	Direction of rotation	Clockwise (CW) (default) Counter clockwise (CCW)	Programming options	Zero point Inverted signal	Low torque (0.3 to 0.5 Ncm ) Medium torque (0.5 to 1 Ncm ) High torque (1.5 to 3 Ncm ) - price adder
xx	I	RS	B1 B2 B3	S05TTL S05OC S24OC	xxxx	CW / CCW	POx POZ POI	L MT HT	D	Shaft seal IP65 (not for 'P' option)				
xx	I	RS	Bx	SXXXX	xxxx	POx	xT	P	Axx	Special shaft length (default 22 mm FMS)				
xx	I	RS	Bx	SXXXX	xxxx	CW / CCW	POx	xT	CVxx	Special cable length (default 1m long) only for OCG & OCTA (default 1m long)				
xx	I	RS	Bx	SXXXX	xxxx	CW / CCW	POx	xT	OCxx	Cable gland with round cable 1m long Miniature connector 5 core round cable 1mtr long Terminal block Axial Terminal block Radial				

Example with description - 25I RSB2 S05TTL 256 CW A25 OCM - 25mm housing, incremental output, Ecoline RotaCol speedconnect, bush mounting-Thread M9 X 0.75 / Shaft 6 mm, 5V TTL, 256 ppr, clockwise, special shaft length 25 mm, 5 pin miniature connector

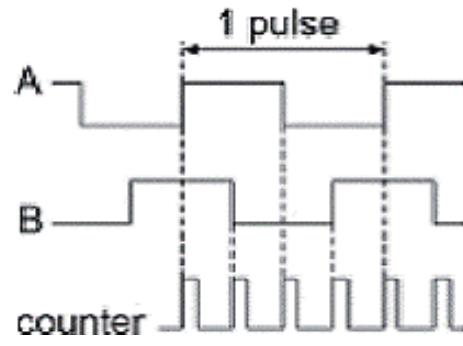


For full range of Rotary Sensors refer -  
[www.rotacol.info/rotamec.pdf](http://www.rotacol.info/rotamec.pdf)

### 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.

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

### Default Version :

Bush mount , Incremental output, 360° Electrical & Mechanical angle CW, 1024 ppr, Low or medium Torque

## ELECTRICAL OPTIONS FOR INCREMENTAL VERSIONS 25/30I RSB

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(xxxx) :

Standard configuration is 1024 ppr. As an option, every ppr between 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).

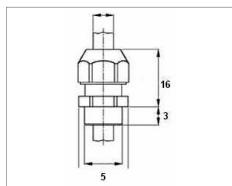
## MECHANICAL OPTIONS FOR INCREMENTAL VERSION 25/30I RSB

Type / Series	Standard mechanical options	Customized mechanical options
25/30I RSB	High torque (HT) ; Special cable length	Special shaft length

## SPEEDCONNECT OUTPUT CONNECTIONS FOR INCREMENTAL VERSION 25/30I RSB

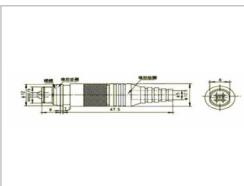
### Cable gland (OCG)

5 core round cable 1 m long



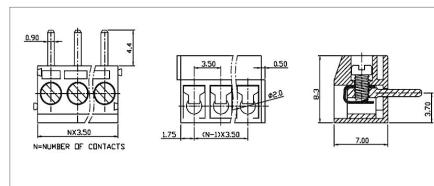
### Miniature connector (OCM)

5 pin in integrated socket with plug



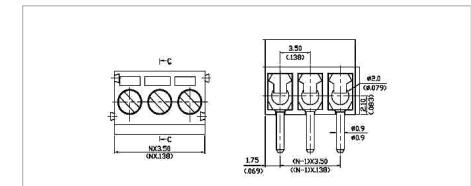
### Terminal block - Axial (OCTA) Wires leaving axial to shaft axis

5 sockets



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

5 sockets



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