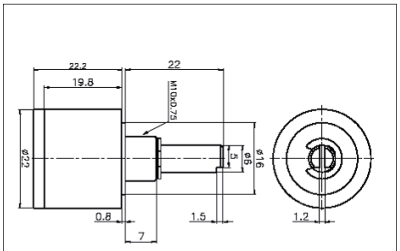
RotaCol® - *Silverline*
PRECISION ANALOG CONTACTLESS ROTARY POSITION SENSOR

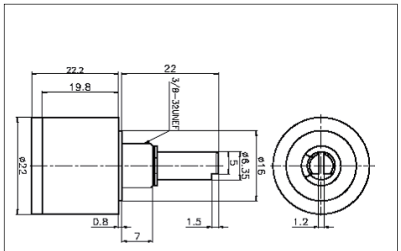
Series 22A MSL RCBB
Series 22A ZSL RCBB

Economical - Metalcase - 1 Ball bearing
Hall effect magnetic
Precision potentiometer replacement
Output : 0 - 5V, 0 - 10V, 4 - 20 mA, 0 - 20 mA, PWM
Robust metal aluminium housing with ball bearing
Bush mounting
Shock & vibration proof
Measurement range 0° - 360 °

www.rotacol.info/22amslrcbb.pdf
www.rotacol.info/22azslrcbb.pdf



Metric shaft & Bush 22A MSL RCBB



Inch shaft & Bush 22A ZSL RCBB

All dimensions are in mm

1-Supply (red) | 2-Output (grey) | 3-Ground (grey)

ELECTRICAL CHARACTERISTICS

Electrical angle	0 - 360°, any angle from 0 - 20..0 - 360 programmable in steps of 1°	
Resolution	4096 step (12 bit)	
Signal type	Supply voltage	Output signal
0505	5V ± 10%	0 - 5V (ratiometric)
DC05	9 - 30V	0 - 5V
2410	15 - 30V	0 -10V
2442	15 - 30V	4 - 20 mA
2420	15 - 30V	0 - 20 mA
PWM	5V ± 10%	PWM
Supply current	< 25 mA	
Independent linearity tolerance	0.5%	

MECHANICAL CHARACTERISTICS

Mechanical angle	360° (continuous)
Starting torque (approx.)	0.5 Ncm
Protection	IP 40
Operating temperature	- 40 to +85° C
Operating life (approx.)	15 million rotations
Mechanical speed (max.)	4000 rpm
Electrical speed (max.)	160 rpm
Weight	22 gm

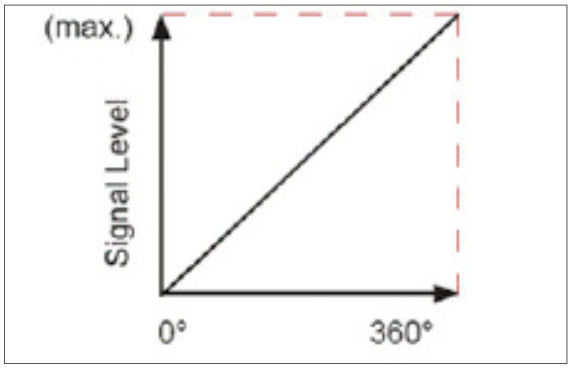
MATERIAL

Housing	anodized aluminium
Shaft	stainless steel
Cable	3 core flat cable (150 mm)
Bearings	1 precision ball bearing

FUNCTION PRINCIPLE

The determination of angular position and signal generation is realised by an intelligent CMOS Hall sensor. A diametrical polarised magnet induces its magnetic field into the sensor. It rotates and provides a conditioned signal to the integrated electronic.

ANALOG INTERFACE



At the output of the sensor a variable voltage or variable current is provided proportional to the position of the shaft / axis over a complete angle range of 360 ° or a subrange. The contactless sensor electronic guarantees a steady signal level and a very low linearity error of 0.5%. With supply voltages of 5VDC ± 10% ; 9 - 30VDC ; 15 - 30V (24VDC) output signals of 0 - 5VDC; 0 -10VDC; 0 - 20mA ; 4 - 20mA at the sensor output are provided. Besides this a large variety of electrical options such as Zero point programming, Centre point programming, Multipoint programming, PWM, 2 Channel redundant are provided. Other options on request.

OPTIONS AND ORDERING REFERENCES

Refer to electrical and mechanical options on page 2

Housing diameter	Analog output	Metric Silverline (Bush Thread M10 & Shaft Ø 6mm)	Inch Silverline (Bush Thread 3/8" & Shaft Ø 1/4")	RotaCol	Bush mounting with 1 ball bearing	Signal	0 - 5V (ratiometric) Pulse width modulation (only for 0505) 0 - 5V 0 - 10V 4 - 20mA 0 - 20mA	2 Channel redundant output (only for voltage)	Angle and electrical rotational direction	Angle and Clockwise (CW) Angle and Counter clockwise (CCW)	Programming options for non - effective electrical angle	Delta 1/2 Low level High level Variable level	Programming options Zero point Center point Multipoint	Output connections	3 Core Flat cable (standard) Terminal block Axial Terminal block Radial
22	A	MSL	ZSL	RC	BB	S 0505 S PWM	S DC05 S 2410 S 2442 S 2420	2C	xxx CW xxx CCW		PEx	PE1 PE2 PE3 PE4	POx	POZ POC POM	OCxx	OCF OCTA OCTR
22	**A**	**xSL**		**RC**	**BB**	**Sxxxx**		**2C**	**xxx CW / CCW**		**PEx**		**POx**		**OCxx**	

Example with description - **22A MSL RC BB S2442 180CW PE1 POZ OCTA -** 22mm diameter, analog output, Metric Silverline (Bush Thread M10 & Shaft 6mm), RotaCol, Bush version with 1 ball bearing, Signal - 4 - 20 mA, 180 angle and clockwise, Delta 1/2, Zero point, Terminal block axial

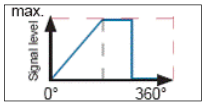
Standard Version : 360° CW Electrical & Mechanical angle, OCF - 3 core flat cable

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

ELECTRICAL OPTIONS FOR ANALOG VERSION 22A MSL / ZSL RCBB

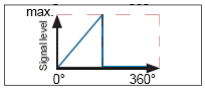
Non-effective Electrical Angle (PE1) - Delta 1/2

If the electrical effective angle is programmed smaller than 360°, the remaining electrical non-effective angle is divided in two equal parts : high level & low level (Delta 1/2)



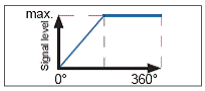
Low level (PE2)

If the electrical effective angle is programmed smaller than 360°, after reaching the maximum, the signal level falls to low level.



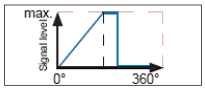
High level (PE3)

If the elecrical angle is programmed smaller than 360°, the signal level remains high after reaching the full level.



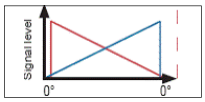
Variable level (PE4)

If the electrical angle is programmed smaller than 360°,remaining electrical non effective angle can be divided into high and low level in any ratio according to customer request.



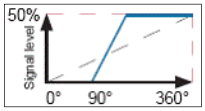
Direction of Rotation (CW/CCW)

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).



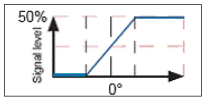
Zero point Programming (POZ)

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.



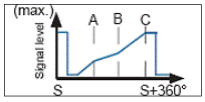
Center Point Programming (POC)

Effective electrical angle is aligned with the mechanical zero point in such a way that equal effective angles in both rotating directions are achieved. Center point can be programmed at any offset.



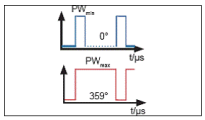
Multi Point Programming (POM)

Output characteristics : 3 to 6 rising or falling linear segments. Min and max signal level can be defined within the total electrical angle. First and last linear segment (min/max) is always horizontal.1 to 3 setable calibration points.



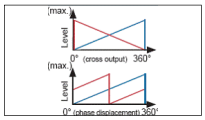
Pulse Width Modulation (PWM)

PWM provides a constant carrier frequency which defines high to low ratio. The ratio between high & low corresponds to the signal characteristics. It is in a fixed relation to the angle. Generally, for further signal processing, no A/D converter is required because many microcontrollers already have PWM input (valid only for 0505 output).



2 Channel Redundant Output (2C)

This is realized by a Hall sensor chip consisting of 2 galvanically seperated sensing elements. One magnet provides a magnetic field simultaneously for both elements. Both elements can be programmed identically, or channel 2 can also be programmed independently from channel1. (Valid only for 0505, DC05, and 2410 outputs).



MECHANICAL OPTIONS FOR ANALOG VERSION 22A MSL / ZSL RCBB

Type / Series	Standard mechanical options	Customized mechanical options
22A MSL / ZSL RCBB	Terminal Block (OCTA / OCTR)	Special shaft length

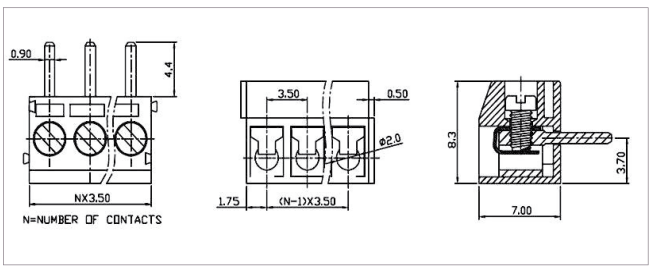
INTERCONNECTIONS

Standard Interconnections - 3 Core flat cable

Other Interconnection options

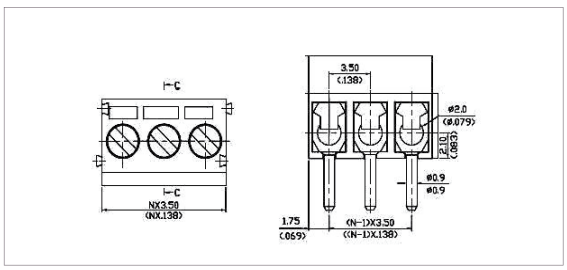
Terminal block - Axial (OCTA)
Wires leaving axial to shaft axis

3 sockets



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

3 sockets



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