

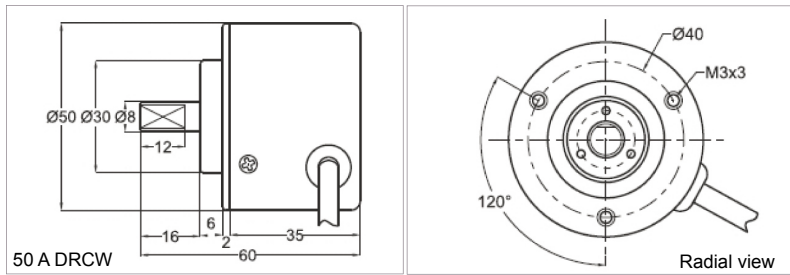
# RotaCol® - Diamondline PRECISION ANALOG CONTACTLESS ROTARY POSITION SENSOR

50A DRCW



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

**Heavy duty - Metalcase - 2 Ball bearings**  
**Hall effect magnetic**  
**Output : 0 - 5V, 0 - 10V, 4 - 20 mA, 0 - 20 mA, PWM**  
**Robust metal aluminium housing with ball bearings**  
**Clamping flange with 3 screws.**  
**Shock & vibration proof**  
**Measurement range 0° - 360 °**



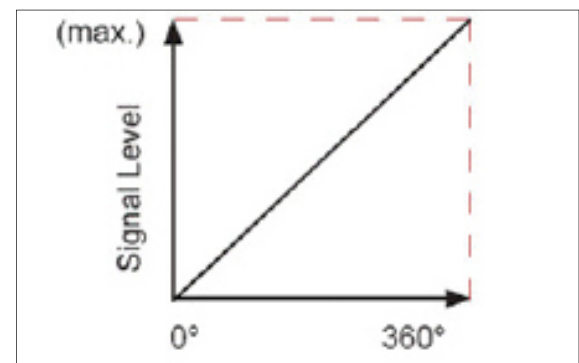
1-Supply (Green) 2-Output (Brown) 3-Ground (White)

All dimensions are in mm

## 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.

## 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 - 30 V	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)
Shaft diameter	8 mm
Protection	IP 54
Operating temperature	- 20 to +80° C
Operating life	~ 75 million rotations
Mechanical speed (max.)	5000 rpm
Electrical speed (max.)	160 rpm
Update rate	2 KHz
Weight	270 gm

## MATERIAL

Housing	anodized aluminium
Shaft	stainless steel
Cable	2.5m long round cable -radial
Bearings	2 precision ball bearings

## OPTIONS AND ORDERING REFERENCES

Refer to electrical and mechanical options on page 2

Housing diameter	Analog output	Diamondline	RotaCol	Clamping flange with 3 screws	Signal	2 Channel redundant output (only for voltage)	Angle and electrical rotational direction	Programming options for non - effective electrical angle	Programming options	Output connections
50	A	D	RC	W	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 OCR OCG OCM OCTA OCTR
<b>50</b>	<b>A</b>	<b>D</b>	<b>RC</b>	<b>W</b>	<b>Sxxxx</b>	<b>2C</b>	<b>xxx CW / CCW</b>	<b>PEX</b>	<b>POX</b>	<b>OCxx</b>

Example with description - **50A DRCW S2420 180CW PE1 POZ OCM** - 50 mm diameter, analog output, Diamondline ( Shaft 8 mm Ø), RotaCol with 2 ball bearings, Signal - 0 - 20 mA, 180 angle and clockwise, Delta 1/2, Zero point, Miniature connector  
**Standard Version** : 360° CW Electrical & Mechanical angle, 2.5m long round cable - radial

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 this application. Megacraft does not warrant the reproducibility of published information. The specifications can be changed any time without notice.

## ELECTRICAL OPTIONS FOR ANALOG VERSION 50A DRCW

### 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 electrical 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)

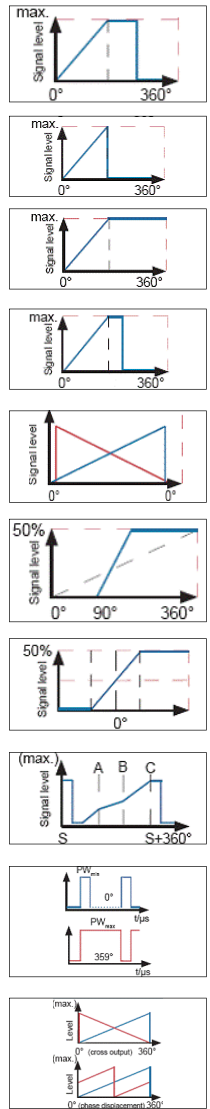
Output characteristics : 3 to 6 rising or falling linear segments. Min and max signal level can be defined within the total electrical angle. First and last linear segment (min/max) is always horizontal. 1 to 3 settable calibration points.

### 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 separated 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).



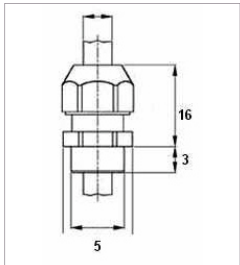
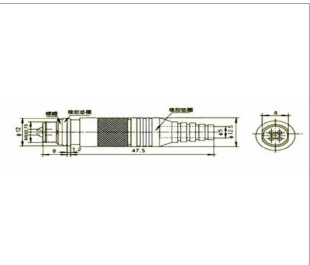
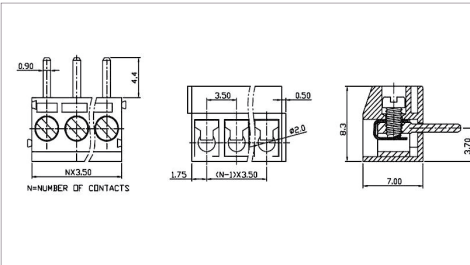
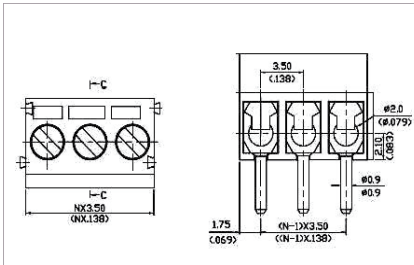
## MECHANICAL OPTIONS FOR ANALOG VERSION 50A DRCW

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

## INTERCONNECTIONS

Standard Interconnections - 3 core round cable - radial (2.5 m)

### 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
3 core cable of 2.5 m length  	3 pin in integrated socket with plug  	3 sockets  	3 sockets  

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