

R1380 Series

Rotary Position Sensors



Description

The Macro Sensors R1380-050 are a series of contactless, fractional-turn, absolute output rotary position sensors that provide an analog voltage or current output proportional to shaft rotation over a total range of 100°. They are ideal sensors for measuring the position of quarter-turn ball and butterfly valves, flue dampers, weir gates, mail sorters, conveyor check weigher systems, dancer arm tensioners, and myriad other applications involving 90° shaft movement. The R1380 series is also useful for other limited rotation applications requiring high reliability like pedal position sensing for mobile equipment such as lift trucks, stackers, golf carts, and lawn tractors, or throttle lever position sensing in boats, cranes, and articulating-arm utility service vehicles.

The R1380 series of rotary position sensors utilize built-in electronics to offer several DC input/output configurations. They are available for 0° to ±50° rotation range with a ±10 V DC output, or for 0° to 100° rotation range with unipolar outputs of 0.5 - 4.5 V DC ratiometric, or 4-20 mA DC, either 3-wire sourcing or 2-wire loop powered. The sensors have electrical trimpots for fine zero and span adjustment of the DC output.

R1380-050 series rotary sensors utilize an anodized aluminum mounting flange with a 16 mm diameter

Features

- 0° to 100° rotational range
- Full 360° rotation contactless technology
- Non-linearity less than ±0.25% of FRO
- DC voltage or 4-20 mA absolute outputs
- Environmentally sealed to IEC IP-66
- Integral DC-in / DC-out electronics

Applications

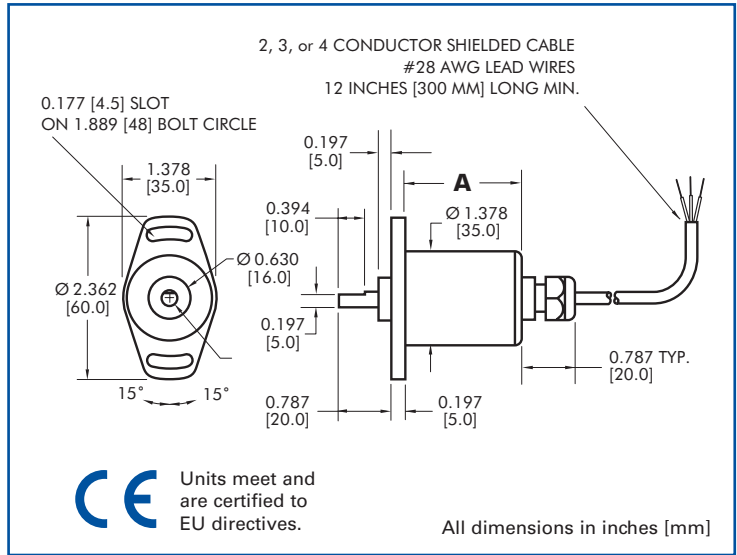
- Quarter-turn valves
- Mail sorter gates
- Flue dampers
- Throttle position
- Dancer arm tensioning
- Fuel rack position

center pilot and kidney-shaped mounting slots that permit coarse mechanical adjustment of about ±5° for applications measuring 90° rotation. These sensors are enclosed in a stainless steel shell, and have a 6 mm stainless steel shaft running in cost-effective sleeve bearings. Overall the units are environmentally sealed to IEC IP-66. Normal electrical I/O termination is a 12-inch (300-mm) long cable, but on special order for OEMs, longer cable lengths or a sensor-mounted connector can be supplied. Contact the factory for more information.

Mechanically, all R1380 series sensors are full 360° rotation devices with two 100° ranges having a linearity error less than ±0.25% of full range output located 180° apart. The sensors' principal rotary range is denoted by the alignment of the flat on the sensor's shaft perpendicular to a witness mark cast into the face of the mounting flange. In this position, the analog output decreases when the shaft is rotated clockwise as viewed from the shaft end. In the alternate 100° range, the output slope is reversed, so the analog output increases as the shaft is rotated clockwise. Their absolute output characteristic makes the R1380 series of sensors superior to incremental output sensors like optical encoders that lose their position information in the event of a power failure.

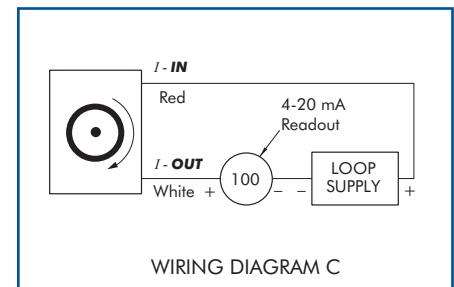
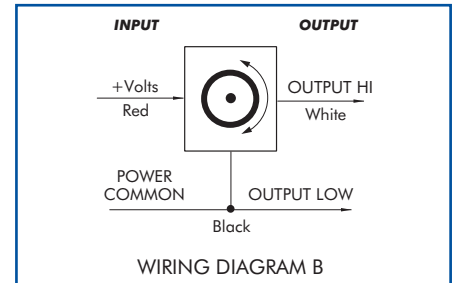
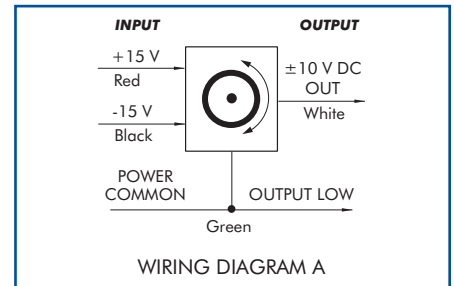
General Specifications

- Input Power:** See Specifications Table
- Full Scale Output:** See Specifications Table
- Output Impedance:** <math>< 10 \Omega</math>
- Output Noise & Ripple:** <math>< 0.1\%</math> of FSO
- Frequency Response:** 800 Hz (nominal)
(-3 dB)
- Linearity Error:** <math>< \pm 0.25\%</math> of FRO
- Operating Temperature:** 0°F to +185°F
(-20°C to +85°C)
- Thermal Coefficient of Scale Factor:** $\pm 0.005\%/^{\circ}\text{F}$ (nominal)
($\pm 0.01\%/^{\circ}\text{C}$ nominal)
- Vibration Tolerance:** 10 g, 50 to 2000 Hz
- Shock Survival:** 100 g, 11 ms



Specifications

Model ▶	R1380-050 -100	R1380-050 -300	R1380-050 -400	R1380-050 -500
Parameter ▼				
Nominal Range (degrees)	0 - ± 50	0 - 100	0 - 100	0 - 100
Power Input (DC Volts nominal)	± 15	+5	16-28	18-28
Power Input (DC mA max.)	± 20	20	40	4-20
DC Output (Volts nominal)	0 - ± 10	0.5 - 4.5	N/A	N/A
DC Output (mA max.)	± 5	5	4-20	4-20
Output Configuration	Absolute	Ratiometric	3-wire Source	2-wire Loop
Load Resistance (Ω min.)	5000	2000	N/A	N/A
Loop Resistance (Ω max.)	N/A	N/A	300	300
Dimension "A" (inches)	1.97	1.73	1.97	1.97
Dimension "A" (mm)	50	44	50	50
Weight (ounces)	4.5	4.2	4.5	4.7
Weight (grams)	130	120	130	135
Wiring Diagram	A	B	B	C



Ordering Information

Order by model number.
For accessories, please visit our website at www.macrosensors.com.



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Innovators in Position Sensing

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