

# RT9101

0–90° to 0–50 Turns • Voltage Divider

Industrial Grade Rotational Position Sensor

Absolute Rotary Position up to 50 turns

Aluminum or Stainless Steel Enclosure Options

IP68 / NEMA 6



## GENERAL

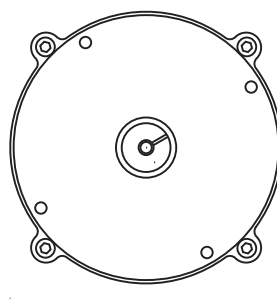
Full Stroke Range Options	0-0.25 to 0-50 turns
Output Signal Options	voltage divider (potentiometer)
Accuracy	see ordering information
Repeatability	± 0.02% full stroke
Resolution	essentially infinite
Enclosure Material Options	powder-painted aluminum or stainless steel
Sensor	plastic-hybrid precision potentiometer
Potentiometer Cycle Life	see ordering information
Shaft Loading	up to 35 lbs. radial and 5 lbs. axial
Weight, Aluminum (Stainless Steel) Enclosure	5 lbs. (10 lbs.) max.

## ELECTRICAL

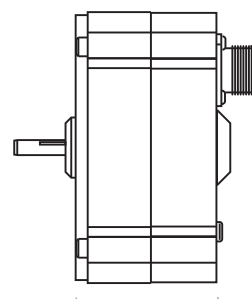
Input Resistance Options	see ordering information
Power Rating, Watt	2.0 at 70°F derated to 0 at 250°
Recommended Maximum Input Voltage	30 V (AC/DC)
Output Signal Change Over Full Stroke Range	94% ±4% of input voltage

## ENVIRONMENTAL

Enclosure	NEMA 4/4X/6, IP 67/68
Operating Temperature	-40° to 200°F (-40° to 90°C)
Vibration	up to 10 g to 2000 Hz maximum



4.5" [114 mm]

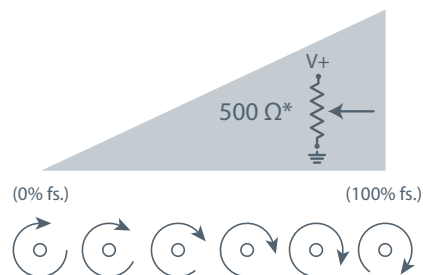


2.4" [59 mm]

Celeco's model RT9101 provides a voltage feedback signal for rotational position. The sensing element of this device is a precision plastic-hybrid potentiometer which provides superb linearity and resolution.

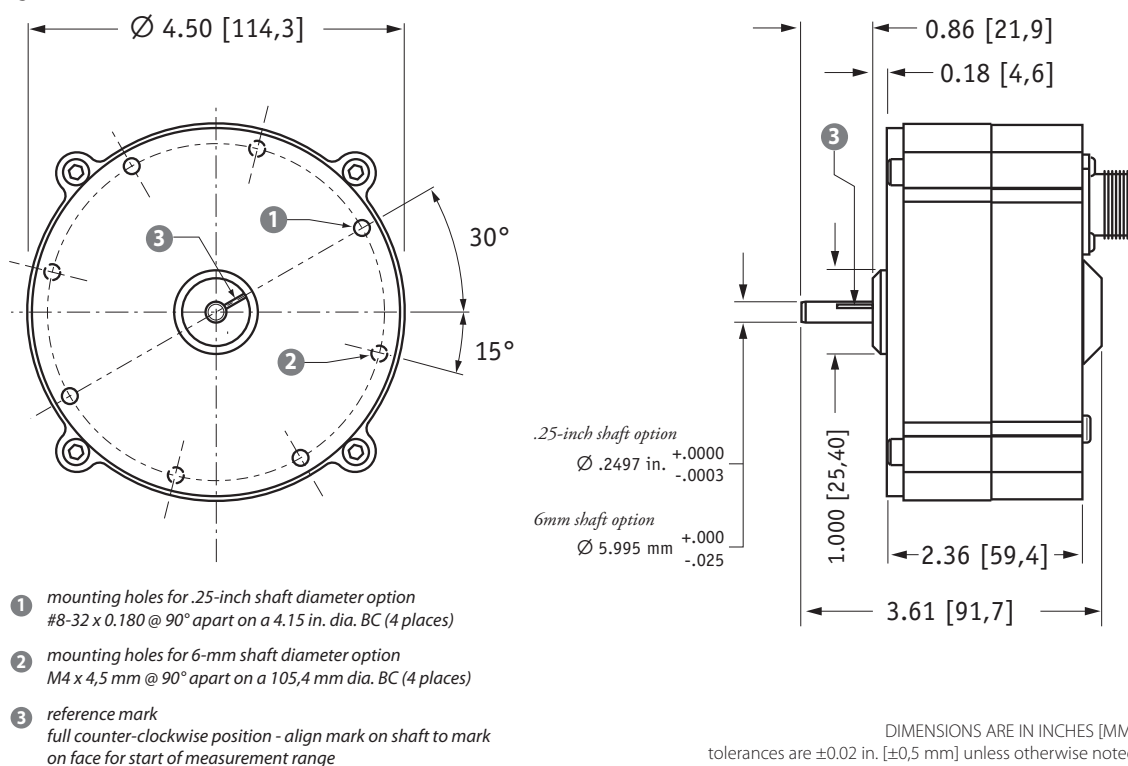
This innovative sensor from Celeco, designed to meet tough NEMA-4 and IP67 environmental standards, is available in full-stroke measurement ranges of 1/4 to 50 turns. Because the sensor is potentiometric, the RT9101 is absolute and will maintain position information even after a loss of power.

### Output Signal:



\*—1K, 5K, 10K-ohm and bridge circuit also available.  
see ordering info.

## Outline Drawing:



## Ordering Information:

### Model Number:

**RT9101-** order code: **R** **A** **B** **1** **D** **1** **0** **G**

Sample Model Number:

**RT9101 - 0005 - 111 - 1110**

**R** range: 5 turns (clockwise shaft rotations)  
**A** enclosure: aluminum  
**B** shaft diameter: .25 inches  
**D** output signal: 500 ohm potentiometer  
**F** electrical connection: 6-pin plastic connector

### Full Stroke Range:





<b>R</b> order code:	<b>0R25</b>	<b>0R50</b>	<b>0001</b>	<b>0002</b>	<b>0003</b>	<b>0005</b>	<b>0010</b>	<b>0020</b>	<b>0030</b>	<b>0050</b>
clockwise shaft rotations, min:	0.25	0.50	1	2	3	5	10	20	30	50
accuracy (% of f.s.):	0.3%	0.3%	0.3%	0.3%	0.3%	0.2%	0.15%	0.15%	0.15%	0.15%
potentiometer cycle life*:	$2.5 \times 10^6$	$2.5 \times 10^6$	$2.5 \times 10^6$	$2.5 \times 10^6$	$2.5 \times 10^6$	$5 \times 10^5$	$2.5 \times 10^5$	$2.5 \times 10^5$	$2.5 \times 10^5$	$2.5 \times 10^5$

\*-number of times the sensor shaft can be cycled back and forth from beginning to end and back to the beginning before any measurable signal degradation may occur.

### Enclosure Material:

<b>A</b> order code:	1	2
	powder-painted aluminum	303 stainless steel

### Shaft Diameter:

<b>B</b> order code:	1	2	3	4
	0.25-in. diameter	6 mm diameter	0.25-in. dia. w/flats	6 mm dia. w/flats
				
	.2497 in. ( $^{+.0000}_{-.0003}$ )	5.995 mm ( $^{+.000}_{-.025}$ )	0.33 in. $\pm 0.025$ in.	8.4 mm $\pm 0.64$ mm

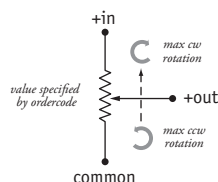
tel: 800.423.5483 • +1.818.701.2750 • fax: +1.818.701.2799

## Ordering Information (cont.):

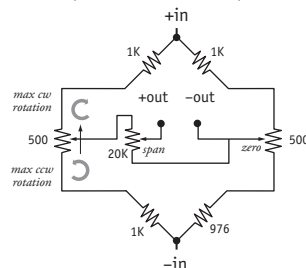
### Output Signals:

① order code:	1	2	3	4	5
	500 ohm*	1000 ohm*	5000 ohm*	10,000 ohm*	adjustable bridge (0...30 mV/V)
	*tolerance = $\pm 10\%$				

circuit options: 1, 2, 3, 4



circuit option: 5 (adjustable bridge)



full scale output: adjustable from 0 to 30mV/V  
zero adjust: to 50% of full stroke

### Electrical Connection:

<b>① order code:</b>	<b>1</b> 6-pin plastic connector w/mating plug <b>IP 67, NEMA 4X**, 6</b>  1/2 - 5/16" [14 - 8 mm] cable dia. 16 AWG max conductor size connector: MS3102E-14S-6P mating plug: MS3106E-14S-6S	<b>2</b> 10-ft. [3 M] waterproof cable <b>IP 67, NEMA 4X**, 6</b>  10 ft. x 0.4-in. dia. [3 M x 10 mm dia.] 18 AWG, type SJTW	<b>3</b> 6-pin metal connector w/mating plug <b>IP 65, NEMA 4</b>  3/8-in. [9 mm] max cable dia. 16 AWG max conductor size connector: MS3102E-14S-6P mating plug: MS3106E-14S-6S	<b>4</b> 25-ft. [7.5 M] instrumentation cable <b>IP 67, NEMA 6</b>  25 ft. x 0.2-in. dia. [7,5 M x 5 mm dia.] 24 AWG, shielded																																										
<b>② order code:</b>	<b>5</b> 100-ft. [30 M] waterproof cable <b>IP 67, NEMA 4X**, 6</b>  100 ft. x 0.4-in. dia. [30 M x 10 mm dia.] 18 AWG, type SJTW	<b>6</b> 10-ft. [3 M] pressure tested* waterproof cable <b>IP 68, NEMA 4X**, 6P</b>  10 ft. x 0.4-in. dia. [3 M x 10 mm dia.] 18 AWG, type SJTW	<b>7</b> 100-ft. [30 M] pressure tested* waterproof cable <b>IP 68, NEMA 4X**, 6P</b>  100 ft. x 0.4-in. dia. [30 M x 10 mm dia.] 18 AWG, type SJTW																																											
<div> <div> <b>6-pin Mating Plug</b> <table> <tr> <th>pin</th> <th>standard</th> <th>bridge</th> </tr> <tr> <td>A</td> <td>+ in</td> <td>+ in</td> </tr> <tr> <td>B</td> <td>common</td> <td>- in</td> </tr> <tr> <td>C</td> <td>+ out</td> <td>- out</td> </tr> <tr> <td>D</td> <td>-</td> <td>+ out</td> </tr> </table>            contact view         </div> <div> <b>Waterproof Cable</b> <table> <tr> <th>color code</th> <th>standard</th> <th>bridge</th> </tr> <tr> <td>WHITE</td> <td>+ in</td> <td>n/a</td> </tr> <tr> <td>BLACK</td> <td>common</td> <td>n/a</td> </tr> <tr> <td>GREEN</td> <td>+ out</td> <td>n/a</td> </tr> </table> </div> <div> <b>Instrumentation Cable</b> <table> <tr> <th>color code</th> <th>standard</th> <th>bridge</th> </tr> <tr> <td>RED</td> <td>+ in</td> <td>+ in</td> </tr> <tr> <td>BLACK</td> <td>common</td> <td>- in</td> </tr> <tr> <td>GREEN</td> <td>+ out</td> <td>+ out</td> </tr> <tr> <td>WHITE</td> <td>-</td> <td>- out</td> </tr> </table> </div> </div>					pin	standard	bridge	A	+ in	+ in	B	common	- in	C	+ out	- out	D	-	+ out	color code	standard	bridge	WHITE	+ in	n/a	BLACK	common	n/a	GREEN	+ out	n/a	color code	standard	bridge	RED	+ in	+ in	BLACK	common	- in	GREEN	+ out	+ out	WHITE	-	- out
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\*-Test pressure: 100 feet [30 meters] H<sub>2</sub>O (40 PSID); Test Medium: Air; Duration: 2 hours. \*\*-Applies to stainless steel enclosure only.

version: 4.0 last updated: March 1, 2014