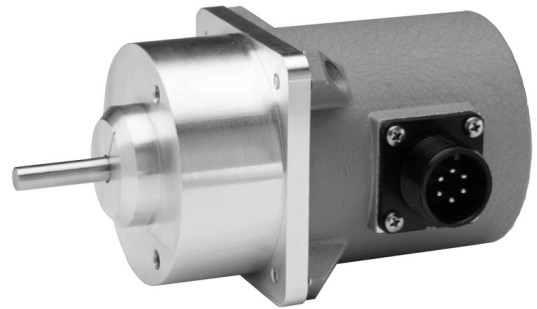


# Rotational Position Transducer

**Precision Potentiometric Output**  
**Ranges: 0-45° to 0-200 Turns**  
**Industrial Grade**



# RT8101



## Specification Summary:

### GENERAL

Full Stroke Range Options ..... 0-0.125 to 0-200 turns  
 Output Signal Options ..... voltage divider (potentiometer)  
 Accuracy ..... *see ordering information*  
 Repeatability .....  $\pm 0.02\%$  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 10 lbs. radial and 5 lbs. axial  
 Starting Torque (25°C) ..... 2.0 in.-oz., max.  
 Weight, Aluminum (Stainless Steel) Enclosure ..... 3 lbs. (6 lbs.) max.

### ELECTRICAL

Input Resistance Options ..... 500, 1K, 5K, 10K or bridge, *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%  $\pm 4\%$  of input voltage

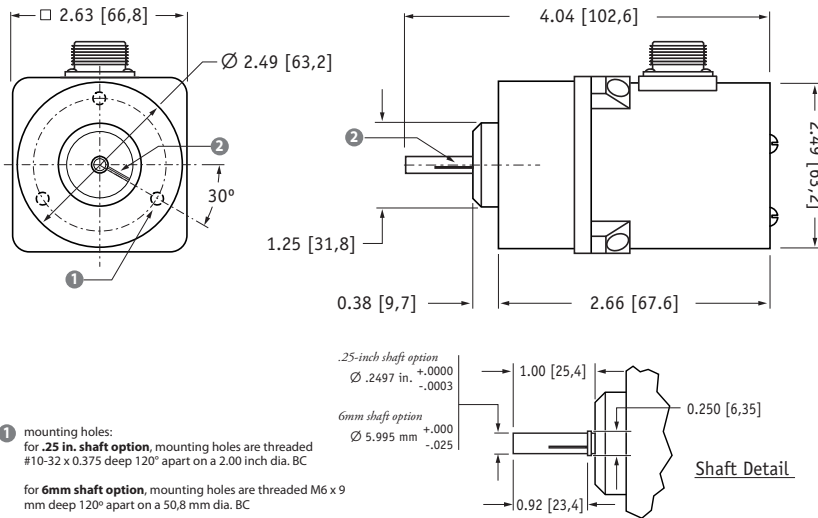
### ENVIRONMENTAL

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

Celeco's model RT8101 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.

The RT8101 provides extended rotational position feedback from as little as 1/8 of a turn f.s. all the way up to 200 turns f.s. Because the sensor is potentiometric, the RT8101 is absolute and will maintain position information even after a loss of power.

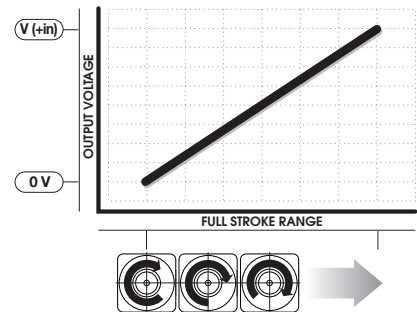
## Outline Drawing



- 1 mounting holes:  
for **.25 in. shaft option**, mounting holes are threaded #10-32 x 0.375 deep 120° apart on a 2.00 inch dia. BC
- for **6mm shaft option**, mounting holes are threaded M6 x 9 mm deep 120° apart on a 50,8 mm dia. BC
- 2 reference mark:  
full counter-clockwise position - align mark on shaft to mark on face for start of measurement range

ALL DIMENSIONS ARE IN INCHES [MM]

## Output Signal



## Ordering Information:

### Model Number:

**RT8101-** order code: **R** - **A** - **B** - **G** - **D** - **E** - **F** - **G**

Sample Model Number:

**RT8101 - 0005 - 111 - 1110**

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

### Full Stroke Range:

<b>R</b> order code:	<b>R125</b>	<b>OR25</b>	<b>OR50</b>	<b>0001</b>	<b>0002</b>	<b>0003</b>	<b>0005</b>	<b>0010</b>	<b>0020</b>
clockwise shaft rotations, min:	0.125	0.25	0.50	1	2	3	5	10	20
accuracy (% of f.s.):	1.25%	1.25%	0.5%	0.5%	0.5%	0.2%	0.2%	0.15%	0.15%
potentiometer cycle life*:	$2.5 \times 10^6$	$2.5 \times 10^6$	$2.5 \times 10^6$	$2.5 \times 10^6$	$2.5 \times 10^6$	$5 \times 10^5$	$5 \times 10^5$	$2.5 \times 10^5$	$2.5 \times 10^5$





<b>R</b> order code:	<b>0030</b>	<b>0040</b>	<b>0050</b>	<b>0080</b>	<b>0100</b>	<b>0120</b>	<b>0140</b>	<b>0180</b>	<b>0200</b>
clockwise shaft rotations, min:	30	40	50	80	100	120	140	180	200
accuracy (% of f.s.):	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%
potentiometer cycle life*:	$2.5 \times 10^5$	$2.5 \times 10^5$	$2.5 \times 10^5$	$2.5 \times 10^5$	$2.5 \times 10^5$	$2.5 \times 10^5$	$2.5 \times 10^5$	$2.5 \times 10^5$	$2.5 \times 10^5$

\*-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.

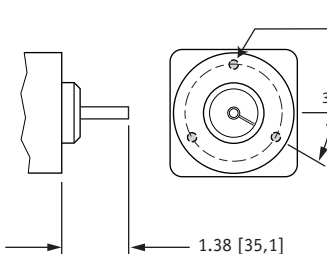
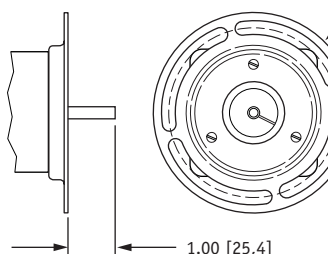
### Enclosure Material:

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

### Shaft Diameter:

<b>B</b> order code:	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
	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

### Mounting Style:

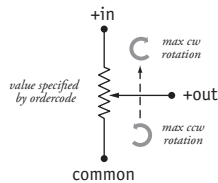
<b>G</b> order code:	<b>1</b>	<b>2</b>
	face mount	flange mount
		
	1.38 [35,1]	1.00 [25,4]
	mounting holes spaced 120° apart on 2.00 [50,8] BC 6mm shaft option threaded M6 x 9 mm deep .25 in. shaft option #10-32 x 0.375 inch deep	Ø 4.1 [104,14] .28 [7,1] wide mounting slot on a Ø3.50 [88,9] BC

**Ordering Information:**

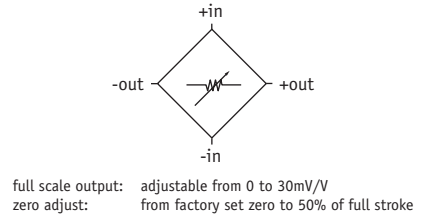
**Output Signals:**

<b>① order code:</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
	500 ohm*	1000 ohm*	5000 ohm*	10,000 ohm*	adjustable bridge
available ranges:	all ranges	not available for .125-turn (R125) and .25-turn (OR25) range options		adjustable from 0 to 30mV/V (0...30 mV/V)	
				*tolerance = ±10%	

**circuit options: 1, 2, 3, 4**



**circuit option: 5 (adjustable bridge)**



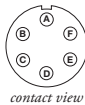
**Electrical Connection:**

<b>① order code:</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
	6-pin plastic connector w/mating plug <b>IP 67, NEMA 4X**, 6</b>	10-ft. [3 M] waterproof cable <b>IP 67, NEMA 4X**, 6</b>	6-pin metal connector w/mating plug <b>IP 65, NEMA 4</b>	25-ft. [7.5 M] instrumentation cable <b>IP 67, NEMA 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	 10 ft. x 0.4-in. dia. [3 M x 10 mm dia.] 18 AWG, type SJTW	 3/8-in. [9 mm] max cable dia. 16 AWG max conductor size connector: MS3102E-14S-6P mating plug: MS3106E-14S-6S	 25 ft. x 0.2-in. dia. [7.5 M x 5 mm dia.] 24 AWG, shielded

<b>① order code:</b>	<b>5</b>	<b>6</b>	<b>7</b>
	100-ft. [30 M] waterproof cable <b>IP 67, NEMA 4X**, 6</b>	10-ft. [3 M] <b>pressure tested*</b> waterproof cable <b>IP 68, NEMA 4X**, 6P</b>	100-ft. [30 M] <b>pressure tested*</b> 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	 10 ft. x 0.4-in. dia. [3 M x 10 mm dia.] 18 AWG, type SJTW	 100 ft. x 0.4-in. dia. [30 M x 10 mm dia.] 18 AWG, type SJTW

**6-pin Mating Plug**

pin	standard	bridge
A	+ in	+ in
B	common	- in
C	+ out	- out
D	-	+ out



**Waterproof Cable**

color code	standard	bridge
WHITE	+ in	n/a
BLACK	common	n/a
GREEN	+ out	n/a

**Instrumentation Cable**

color code	standard	bridge
RED	+ in	+ in
BLACK	common	- in
GREEN	+ out	+ out
WHITE	-	- out

Notes: { \* -Test pressure: 100 feet [30 meters] H<sub>2</sub>O (40 PSID); Test Medium: Air; Duration: 2 hours.  
\*\* -NEMA 4X applies to stainless steel enclosure only.