

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

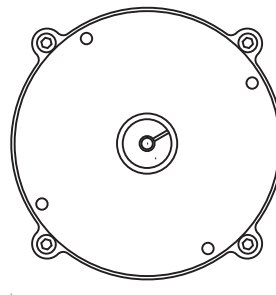
Full Stroke Range Options	0-0.25 to 0-50 turns
Output Signal Options	voltage divider (potentiometer)
Accuracy	see ordering information
Repeatability	± 0.02% full stroke
Resolution	essentially infinite
Enclosure Material Options	powder-painted aluminum or stainless steel
Sensor	plastic-hybrid precision 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

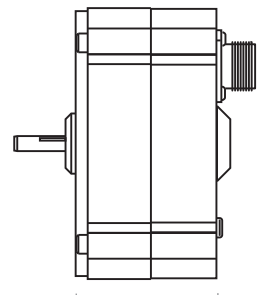
Input Resistance Options	see ordering information
Power Rating, Watt	2.0 at 70°F derated to 0 at 250°
Recommended Maximum Input Voltage	30 V (AC/DC)
Output Signal Change Over Full Stroke Range	94% ±4% of input voltage

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]

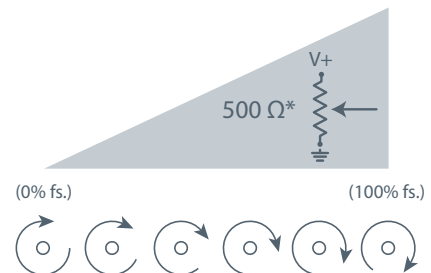


2.4" [59 mm]

Celesco'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 Celesco, 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:



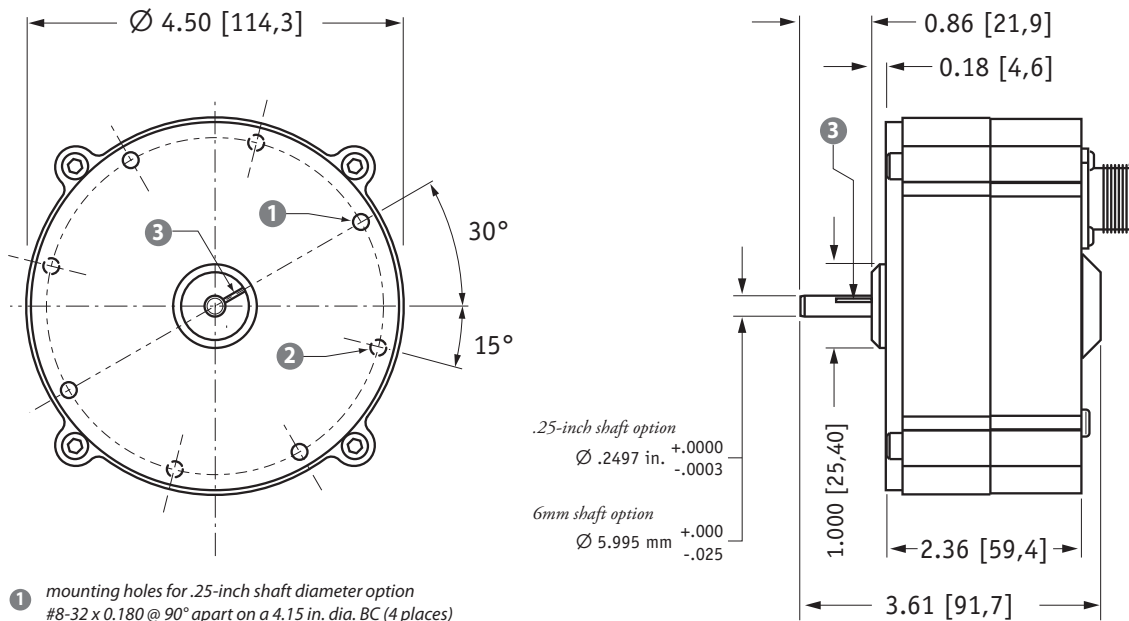
*—1K, 5K, 10K-ohm and bridge circuit also available. see ordering info.

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Outline Drawing:



- 1 mounting holes for .25-inch shaft diameter option
#8-32 x 0.180 @ 90° apart on a 4.15 in. dia. BC (4 places)
- 2 mounting holes for 6-mm shaft diameter option
M4 x 4,5 mm @ 90° apart on a 105,4 mm dia. BC (4 places)
- 3 reference mark
full counter-clockwise position - align mark on shaft to mark on face for start of measurement range

DIMENSIONS ARE IN INCHES [MM]
 tolerances are ± 0.02 in. [$\pm 0,5$ mm] unless otherwise noted

Ordering Information:

Model Number:

RT9101- _____ **1** - _____ **1** - _____ **0**

order code: R A B C D E F 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:

R order code:	0R25	0R50	0001	0002	0003	0005	0010	0020	0030	0050
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*:	2.5×10^6	2.5×10^6	2.5×10^6	2.5×10^6	2.5×10^6	5×10^5	2.5×10^5	2.5×10^5	2.5×10^5	2.5×10^5

*-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:

A order code:	1	2
	powder-painted aluminum	303 stainless steel

Shaft Diameter:

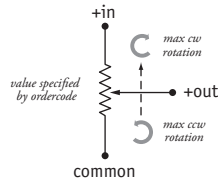
B order code:	1	2	3	4
	0.25-in. diameter	6 mm diameter	0.25-in. dia. w/flats	6 mm dia. w/flats
	$.2497$ in. ($^{+.0000}_{-.0003}$)	5.995 mm ($^{+.000}_{-.025}$)	0.33 in. $\leftarrow \rightarrow$ 0.025 in.	8.4 mm $\leftarrow \rightarrow$ 0.64 mm

Ordering Information (cont.):

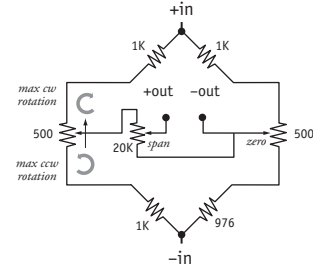
Output Signals:

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

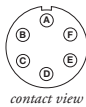
Electrical Connection:

1	2	3	4
order code:	6-pin plastic connector w/mating plug IP 67, NEMA 4X**, 6	10-ft. [3 M] waterproof cable IP 67, NEMA 4X**, 6	6-pin metal connector w/mating plug IP 65, NEMA 4
	25-ft. [7.5 M] instrumentation cable IP 67, NEMA 6		
	 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

5	6	7
order code:	100-ft. [30 M] waterproof cable IP 67, NEMA 4X**, 6	10-ft. [3 M] pressure tested* waterproof cable IP 68, NEMA 4X**, 6P
		100-ft. [30 M] pressure tested* waterproof cable IP 68, NEMA 4X**, 6P
	 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

*-Test pressure: 100 feet [30 meters] H₂O (40 PSID); Test Medium: Air; Duration: 2 hours. **-Applies to stainless steel enclosure only.



version: 4.0 last updated: March 1, 2014