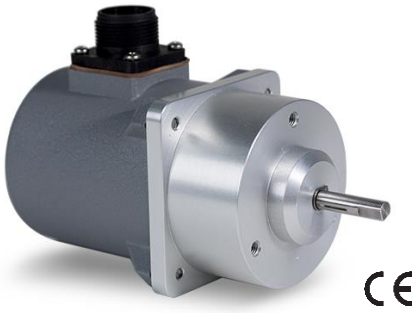
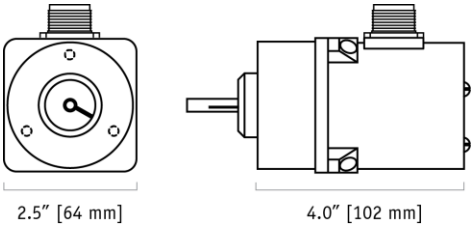




RT8101

0–45° to 0–200 Turns • Voltage Divider

Industrial Grade Rotational Position Sensor

Absolute Rotary Position up to 200 turns

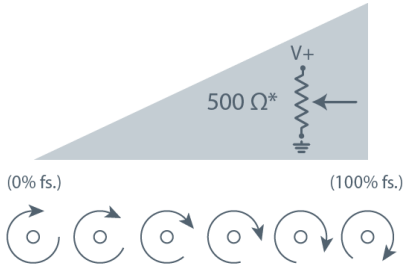
Aluminum or Stainless Steel Enclosure Options

IP68 / NEMA 6

Celesco'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.

Output Signal



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

General

Full Stroke Range	0-0.125 to 0-200 turns
Output Signal Options	voltage divider (potentiometer)
Accuracy	0.15% to 1.25%, see ordering information
Repeatability	± 0.05% 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 (25ºC)	2.0 in-oz., max.
Weight, Aluminum (Stainless Steel) Enclosure	3 lbs. (6 lbs.) max.

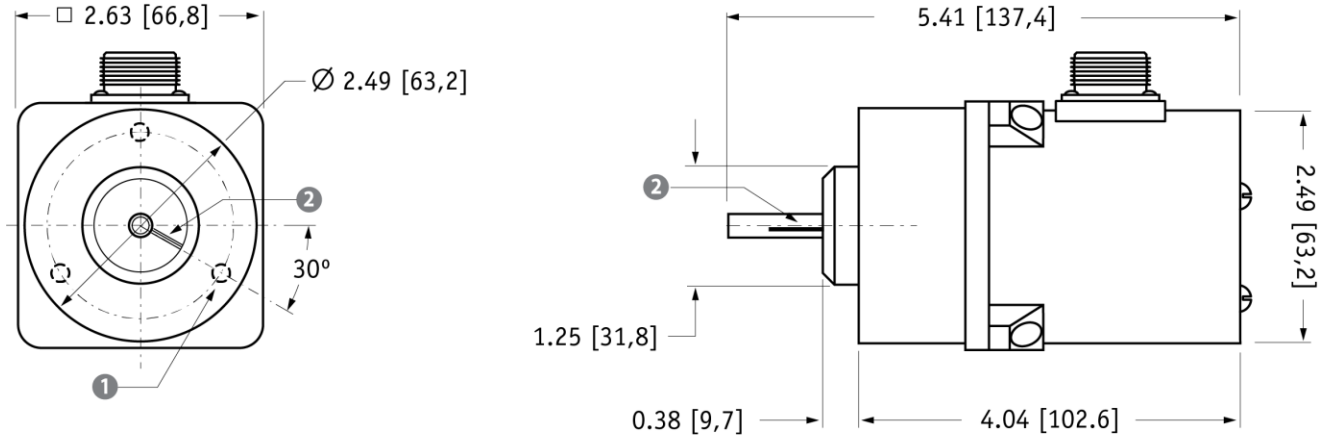
Electrical

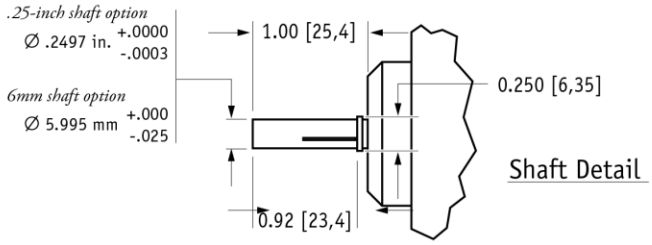
Input Resistance Options	see ordering information
Power Rating, Watt	2.0 at 70°F derated to 0 at 250°
Recommended Maximum Input Voltage	30 V (AC/DC)
Output Signal Change Over Full Stroke Range	94% ±4% of input voltage

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

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

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

Ordering Information

Model Number:

RT8101-____ - __ __ __ - __ **1** __ **0**
order code: Ⓡ Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ

Sample Model Number:

RT8101 - 0005 - 111 - 1110

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

Full Stroke Range:

Ⓡ *order code:*	R125	0R25	0R50	0001	0002	0003	0005	0010	0020
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*:	2.5×10^6	2.5×10^6	2.5×10^6	2.5×10^6	2.5×10^6	5×10^5	5×10^5	2.5×10^5	2.5×10^5

Ⓡ *order code:*	0030	0040	0050	0080	0100	0120	0140	0180	0200
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*:	2.5×10^5	2.5×10^5	2.5×10^5	2.5×10^5	2.5×10^5	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:

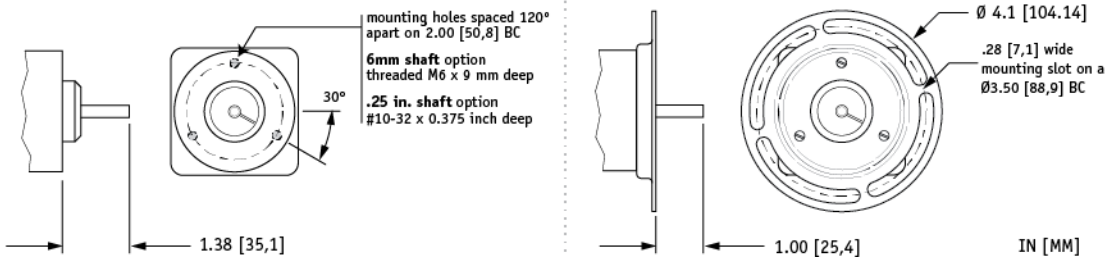
Ⓐ order code:	1	2
	powder-painted aluminum	303 stainless steel

Shaft Diameter:

Ⓑ order code:	1	2	3	4
	0.25-in. diameter	6 mm diameter	0.25-in. dia. w/flats	6 mm dia. w/flats

Mounting Style:

Ⓒ order code:	1	2
	face mount	flange mount

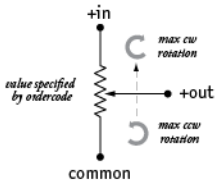


Output Signals:

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

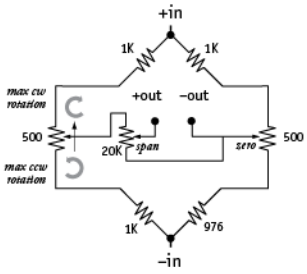
**tolerance = ±10%*

options 1, 2, 3, 4

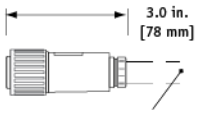
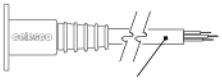
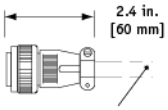


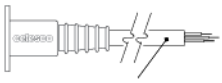
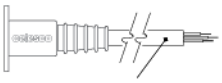
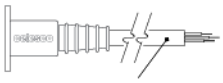
adjustable bridge option

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



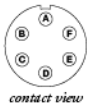
Electrical Connection:

order code:	1	2	3	4
	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

order code:	5	6	7
	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



contact view

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_2O (40 PSID); Test Medium: Air; Duration: 2 hours.*
** –*NEMA 4X applies to stainless steel enclosure only.*

RT8101 12/01/2015