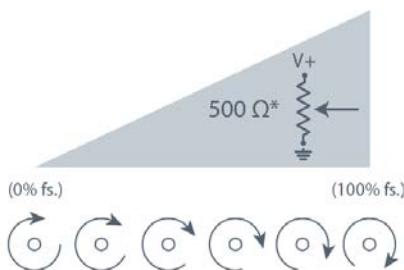


Celesco's model RT8101 provides a voltage feedback signal for rotational position. The sensing element of this device is a precision plastic-hybrid potentiometer which provides superb linearity and resolution.

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.

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

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 (25°C)	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

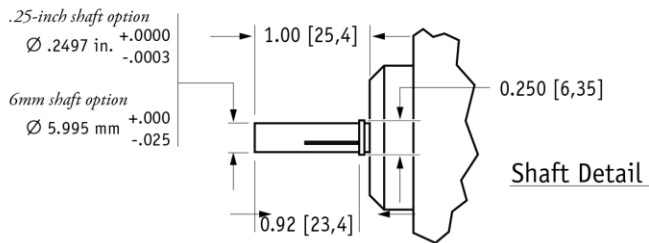
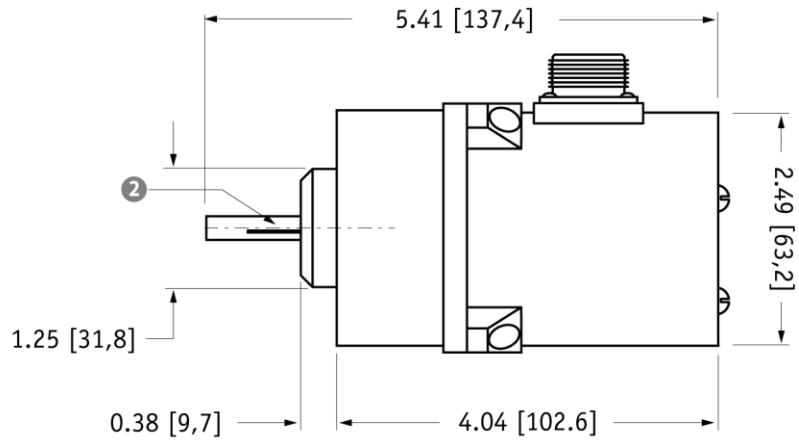
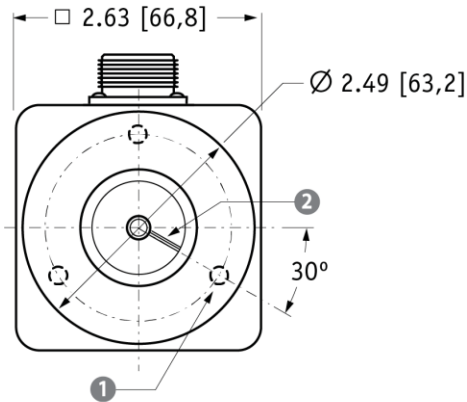
Environmental

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

RT8101

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

Outline Drawing



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

- 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

Ordering Information

Model Number:

RT8101- _____ **1** _____ **0**
order code: R A B C 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
- C mounting style: face mount
- D output signal: 500 ohm potentiometer
- E electrical connection: 6-pin plastic connector

Full Stroke Range:

R 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 x 10 ⁶	2.5 x 10 ⁶	2.5 x 10 ⁶	2.5 x 10 ⁶	2.5 x 10 ⁶	5 x 10 ⁵	5 x 10 ⁵	2.5 x 10 ⁵	2.5 x 10 ⁵

R 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 x 10 ⁵	2.5 x 10 ⁵	2.5 x 10 ⁵	2.5 x 10 ⁵	2.5 x 10 ⁵	2.5 x 10 ⁵	2.5 x 10 ⁵	2.5 x 10 ⁵	2.5 x 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.

RT8101

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

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 -0.0003)	5.995 mm (+.000 -0.025)	0.33 in. 0.025 in.	8.4 mm 0.64 mm

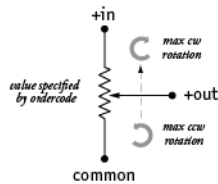
Mounting Style:

C order code:	1	2
	face mount	flange mount
	<p>mounting holes spaced 120° apart on 2.00 [50,8] BC</p> <p>6mm shaft option threaded M6 x 9 mm deep</p> <p>.25 in. shaft option #10-32 x 0.375 inch deep</p> <p>30°</p> <p>1.38 [35,1]</p>	<p>Ø 4.1 [104,14]</p> <p>.28 [7,1] wide mounting slot on a Ø3.50 [88,9] BC</p> <p>1.00 [25,4]</p> <p>IN [MM]</p>

Output Signals:

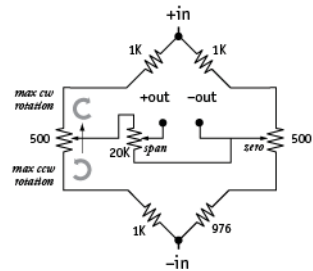
D order code:	1	2	3	4	5
	500 ohm*	1000 ohm*	5000 ohm*	10,000 ohm*	adjustable bridge (0...30 mV/V)
available ranges:	all ranges	not available for .125-turn (R125) and .25-turn (OR25) range options			
					*tolerance = ±10%

options 1, 2, 3, 4



adjustable bridge option

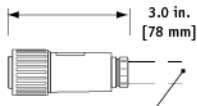
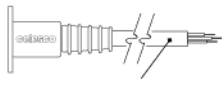
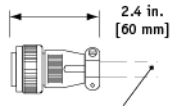

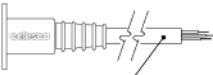
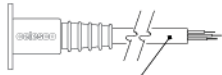
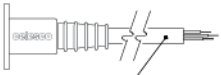

full scale output: adjustable from 0 to 30mV/V
zero adjust: to 50% of full stroke



RT8101

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

Electrical Connection:

<p>1</p> <p>order code:</p> <p>6-pin plastic connector w/mating plug IP 67, NEMA 4X**, 6</p>  <p>3.0 in. [78 mm]</p> <p>1/2 - 5/16" [14 - 8 mm] cable dia. 16 AWG max conductor size connector: MS3102E-14S-6P mating plug: MS3106E-14S-6S</p>	<p>2</p> <p>10-ft. [3 M] waterproof cable IP 67, NEMA 4X**, 6</p>  <p>10 ft. x 0.4-in. dia. [3 M x 10 mm dia.] 18 AWG, type SJTW</p>	<p>3</p> <p>6-pin metal connector w/mating plug IP 65, NEMA 4</p>  <p>2.4 in. [60 mm]</p> <p>3/8-in. [9 mm] max cable dia. 16 AWG max conductor size connector: MS3102E-14S-6P mating plug: MS3106E-14S-6S</p>	<p>4</p> <p>25-ft. [7.5 M] instrumentation cable IP 67, NEMA 6</p>  <p>25 ft. x 0.2-in. dia. [7.5 M x 5 mm dia.] 24 AWG, shielded</p>																																										
<p>5</p> <p>order code:</p> <p>100-ft. [30 M] waterproof cable IP 67, NEMA 4X**, 6</p>  <p>100 ft. x 0.4-in. dia. [30 M x 10 mm dia.] 18 AWG, type SJTW</p>	<p>6</p> <p>10-ft. [3 M] pressure tested* waterproof cable IP 68, NEMA 4X**, 6P</p>  <p>10 ft. x 0.4-in. dia. [3 M x 10 mm dia.] 18 AWG, type SJTW</p>	<p>7</p> <p>100-ft. [30 M] pressure tested* waterproof cable IP 68, NEMA 4X**, 6P</p>  <p>100 ft. x 0.4-in. dia. [30 M x 10 mm dia.] 18 AWG, type SJTW</p>																																											
<p>6-pin Mating Plug</p> <table border="1"> <thead> <tr> <th>pin</th> <th>standard</th> <th>bridge</th> </tr> </thead> <tbody> <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> </tbody> </table>  <p>contact view</p>		pin	standard	bridge	A	+ in	+ in	B	common	- in	C	+ out	- out	D	-	+ out	<p>Waterproof Cable</p> <table border="1"> <thead> <tr> <th>color code</th> <th>standard</th> <th>bridge</th> </tr> </thead> <tbody> <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> </tbody> </table> <p>Instrumentation Cable</p> <table border="1"> <thead> <tr> <th>color code</th> <th>standard</th> <th>bridge</th> </tr> </thead> <tbody> <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> </tbody> </table>		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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Notes: { * -Test pressure: 100 feet [30 meters] H₂O (40 PSID); Test Medium: Air; Duration: 2 hours.
** -NEMA 4X applies to stainless steel enclosure only.

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RT8101 12/01/2015