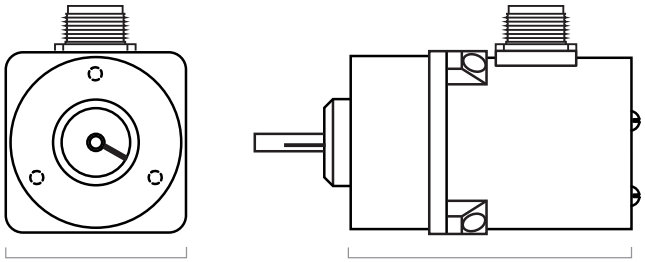
# RT8101

## 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**

CE





2.5″ [64 mm] 4.0″ [102 mm]

### GENERAL

| | |
|---|---|
| Full Stroke Range Options | 0-0.125 to 0-200 turns |
| Output Signal Options | voltage divider (potentiometer) |
| Accuracy | 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 |

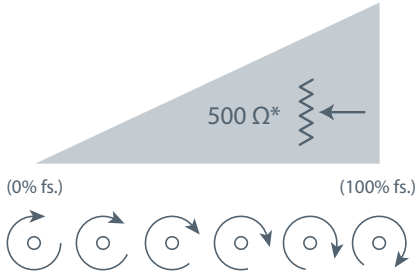
### ENVIRONMENTAL

| | |
|---|---|
| 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 |

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:

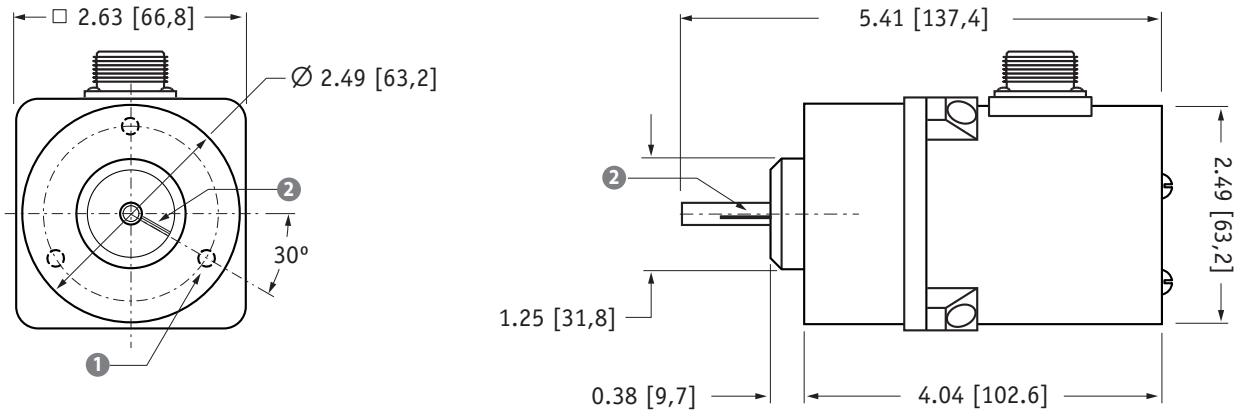



*—1K, 5K , 10K-ohm and bridge circuit also available. see ordering info.*

20630 Plummer Street • Chatsworth, CA 91311
tel: 800.423.5483 • +1.818.701.2750 • fax: +1.818.701.2799

celesco

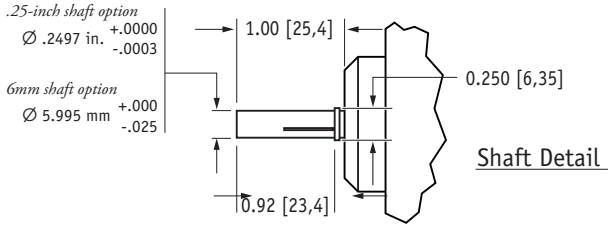
## Outline Drawing:




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

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*: | $2.5 \times 10^6$ | $2.5 \times 10^6$ | $2.5 \times 10^6$ | $2.5 \times 10^6$ | $2.5 \times 10^6$ | $5 \times 10^5$ | $5 \times 10^5$ | $2.5 \times 10^5$ | $2.5 \times 10^5$ |

| Ⓡ 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*: | $2.5 \times 10^5$ | $2.5 \times 10^5$ | $2.5 \times 10^5$ | $2.5 \times 10^5$ | $2.5 \times 10^5$ | $2.5 \times 10^5$ | $2.5 \times 10^5$ | $2.5 \times 10^5$ | $2.5 \times 10^5$ |

**–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:

| Ⓐ 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 |

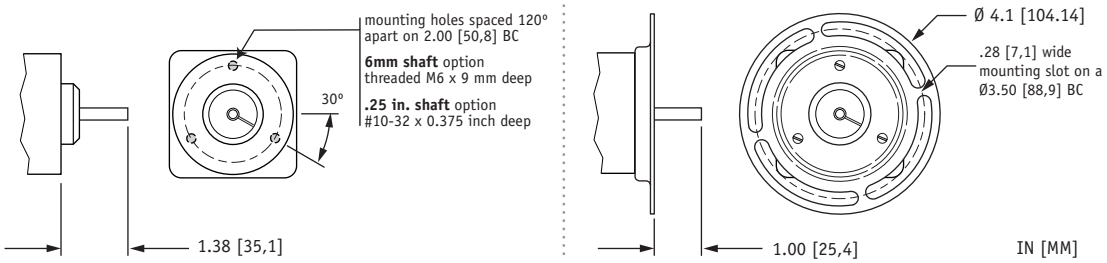


Ordering Information (cont.):

## Mounting Style:

Ⓒ *order code:*

| 1 | 2 |
|---|---|
| face mount | flange mount |



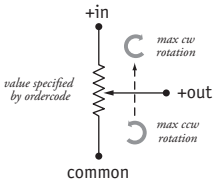

## Output Signals:

Ⓓ *order code:*

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| | 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 | | | (0...30 mV/V) |

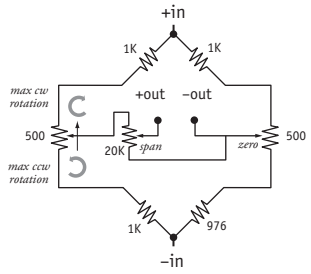
**tolerance = ±10%*

**options 1, 2, 3, 4**



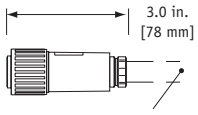
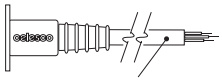
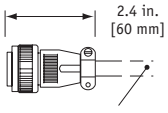
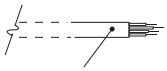

**adjustable bridge option**

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

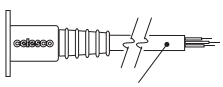
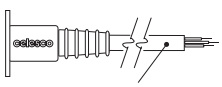
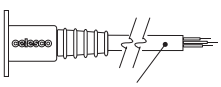



## Electrical Connection:

Ⓕ *order code:*

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 6-pin plastic connector w/mating plug | 10-ft. [3 M] waterproof cable | 6-pin metal connector w/mating plug | 25-ft. [7.5 M] instrumentation cable |
| **IP 67, NEMA 4X**,6** | **IP 67, NEMA 4X**, 6** | **IP 65, NEMA 4** | **IP 67, NEMA 6** |
|   |   |   |  |
| 1/2 - 5/16" [14 - 8 mm] cable dia.<br>16 AWG max conductor size<br>connector: MS3102E-14S-6P<br>mating plug: MS3106E-14S-6S | 10 ft. x 0.4-in. dia.<br>[3 M x 10 mm dia.]<br>18 AWG, type SJTW | 3/8-in. [9 mm] max cable dia.<br>16 AWG max conductor size<br>connector: MS3102E-14S-6P<br>mating plug: MS3106E-14S-6S | 25 ft. x 0.2-in. dia.<br>[7,5 M x 5 mm dia.]<br>24 AWG, shielded |

Ⓕ *order code:*

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

version: **8.0** last updated: **November 19, 2013**