

# RT8420

0-45° to 0-200 Turns • 0..20mA • 4..20mA

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 Options	0-0.125 to 0-200 turns
Output Signal Options	4...20 mA (2-wire) and 0...20 mA (3-wire)
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 Voltage	see ordering information
Input Current	20 mA max.
Maximum Loop Resistance (Load)	(loop supply voltage - 8)/0.020
Circuit Protection	38 mA max.
Impedance	100M ohms@100 VDC, min.
Output Signal Adjustment	
Zero Adjustment	from factory set zero to 50% of full stroke range
Span Adjustment	to 50% of factory set span
Thermal Effects, Zero	0.01% f.s./°F, max.
Thermal Effects, Span	0.01% f.s./°F, max.

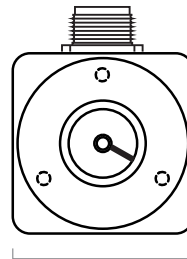
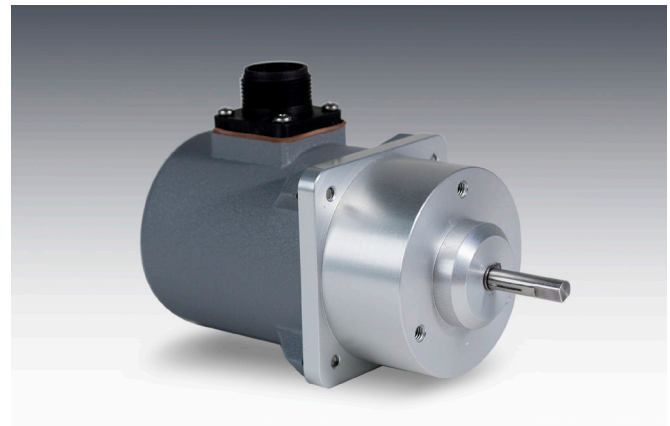
## EMC COMPLIANCE PER DIRECTIVE 89/336/EEC

Emission/Immunity	EN50081-2/EN50082-2
-------------------	---------------------

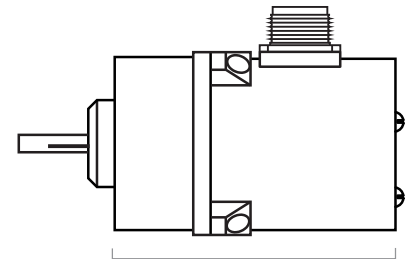
## ENVIRONMENTAL

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

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



2.5" [64 mm]

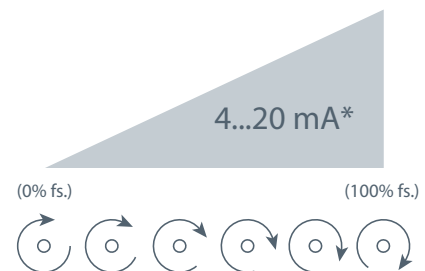


4.0" [102 mm]

Celeco's model RT8420 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. The RT8420 combines the superb linearity and resolution of a plastic-hybrid potentiometer with the durability of Celeco's 4...20 mA circuit to provide an accurate and reliable electrical signal over all ranges.

Additionally, the RT8420 has fully accessible zero and span settings allowing precise matching of the output signal to the required measurement.

### Output Signal:

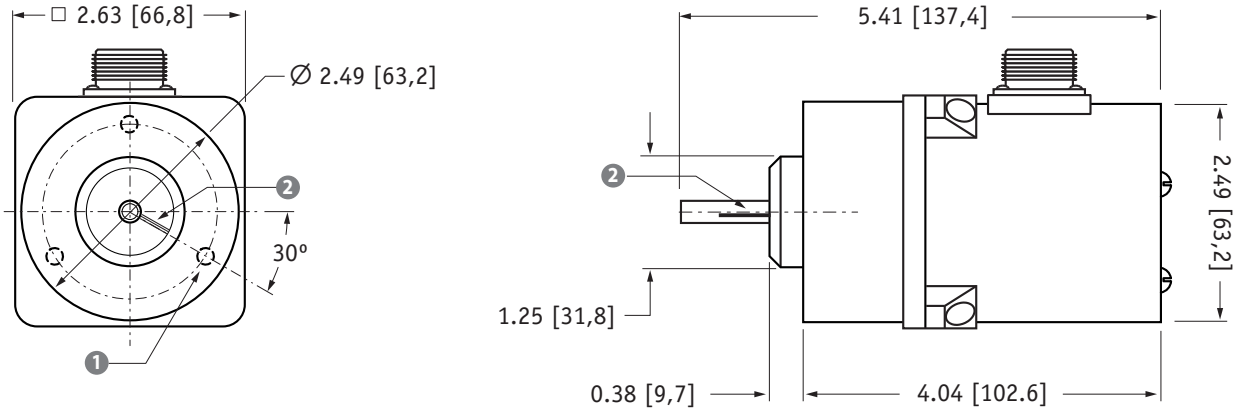


\*Optional 3-wire, 0...20mA output signal available.

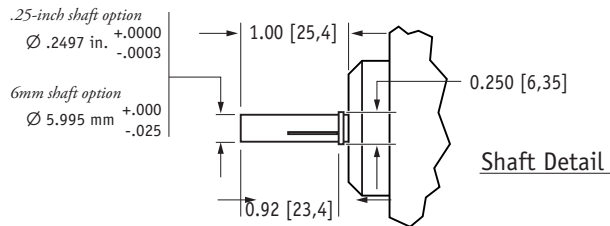


celesco.com • info@celesco.com

**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:**

**RT8420-** \_\_\_\_\_ - \_\_\_\_\_ - **1** - \_\_\_\_\_ - **0**  
order code:      R      A      B      C      D      E      F      G

Sample Model Number:

**RT8420 - 0005 - 111 - 1110**

- R range: 5 turns (clockwise shaft rotations)
- A enclosure: aluminum
- B shaft diameter: .25 inches
- C mounting style: face mount
- E output signal: 4...20 mA signal increasing clockwise
- F electrical connection: 6-pin plastic connector

**Full Stroke Range:**

R order code:	R125	OR25	OR50	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 <sup>6</sup>	2.5 x 10 <sup>6</sup>	2.5 x 10 <sup>6</sup>	2.5 x 10 <sup>6</sup>	2.5 x 10 <sup>6</sup>	5 x 10 <sup>5</sup>	5 x 10 <sup>5</sup>	2.5 x 10 <sup>5</sup>	2.5 x 10 <sup>5</sup>

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 <sup>5</sup>	2.5 x 10 <sup>5</sup>	2.5 x 10 <sup>5</sup>	2.5 x 10 <sup>5</sup>	2.5 x 10 <sup>5</sup>	2.5 x 10 <sup>5</sup>	2.5 x 10 <sup>5</sup>	2.5 x 10 <sup>5</sup>	2.5 x 10 <sup>5</sup>

\*-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

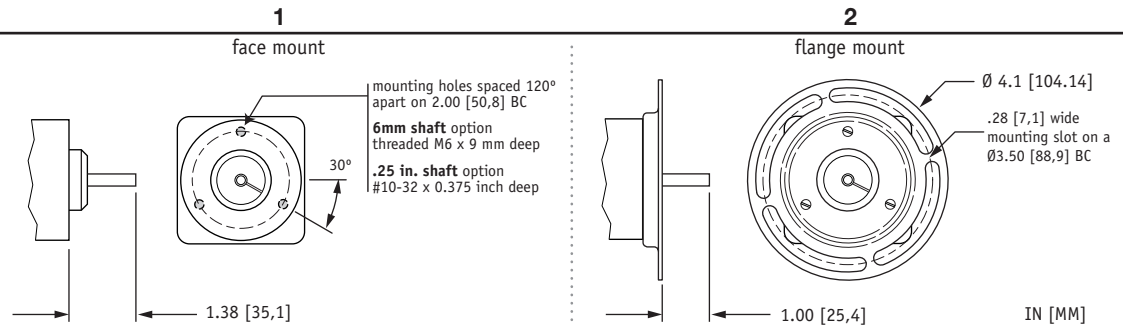
**Shaft Diameter:**

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

Ordering Information (cont.):

**Mounting Style:**

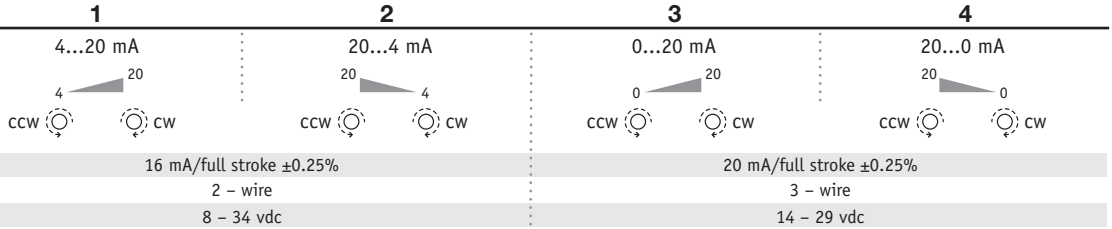
**1** order code:



**Output Signals:**

**1** order code:

output signal options:

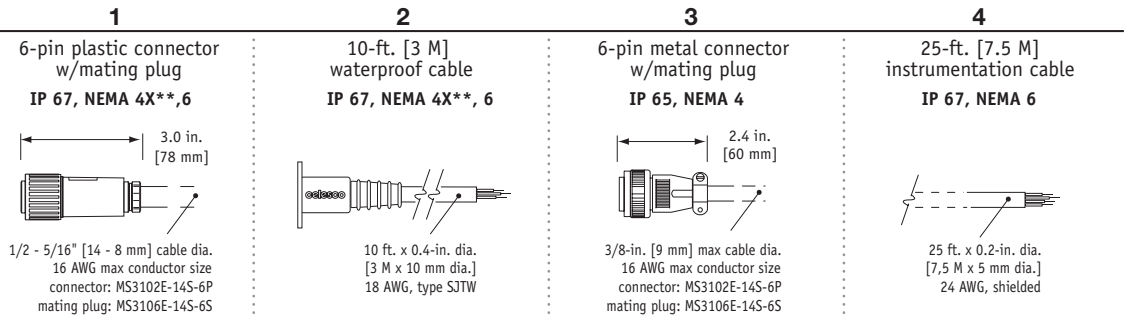


Example:

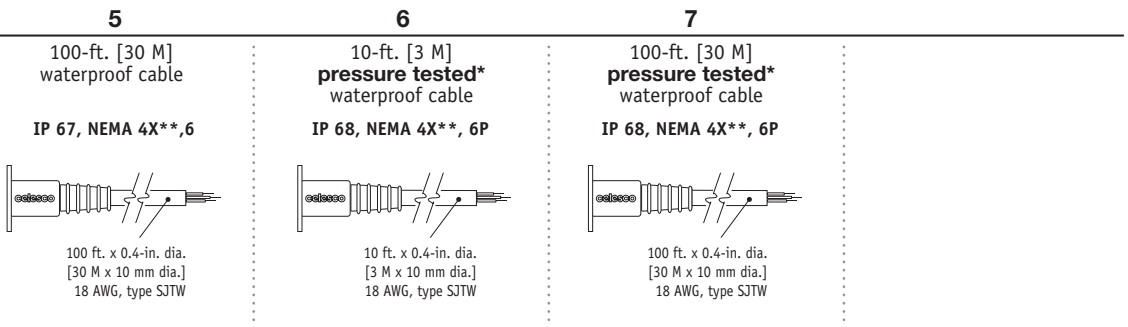


**Electrical Connection:**

**1** order code:



**5** order code:



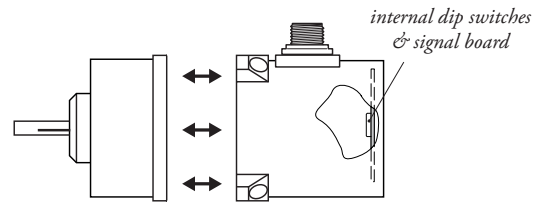
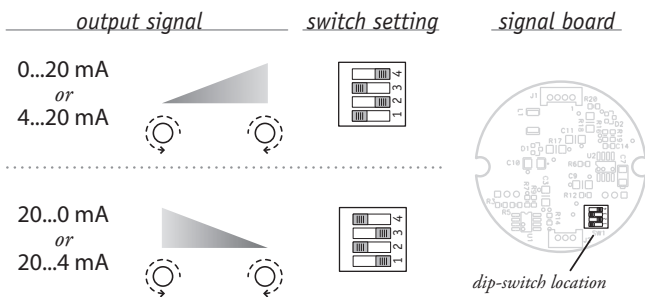
6-pin Mating Plug		Waterproof Cable		Instrumentation Cable	
pin	2-wire	3-wire	2-wire	3-wire	color code
A	8...34 vdc	14...29 vdc	8...34 vdc	14...29 vdc	RED
B	4...20 mA out	common	4...20 mA out	common	BLACK
C	-	0...20 mA out	case ground	0...20 mA out	WHITE
D	case ground	-			GREEN

contact view

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.

## Output Signal Selection:

The output signal direction can be reversed at any time by simply changing the dip-switch settings found on the internal signal board. After the settings have been changed, adjustment of the Zero and Span trimpots will be required to precisely match signal values to the beginning and end points of the stroke.



To gain access to the signal board, remove four Allen-Head Screws and separate the two case halves.



version: 11.1 last updated: August 27, 2014