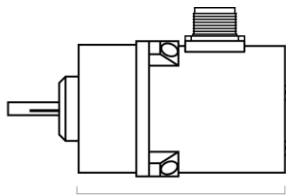


2.5" [64 mm]



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.

## 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

<b>Full Stroke Range</b>	0-0.125 to 0-200 turns
<b>Output Signal Options</b>	4...20 mA (2-wire) and 0...20 mA (3-wire)
<b>Accuracy</b>	0.15% to 1.25%, see ordering information
<b>Repeatability</b>	± 0.05% full stroke
<b>Resolution</b>	essentially infinite
<b>Enclosure Material Options</b>	powder-painted aluminum or stainless steel
<b>Sensor</b>	plastic-hybrid precision potentiometer
<b>Potentiometer Cycle Life</b>	see ordering information
<b>Shaft Loading</b>	up to 10 lbs. radial and 5 lbs. axial
<b>Starting Torque (25°C)</b>	2.0 in-oz., max.
<b>Weight, Aluminum (Stainless Steel) Enclosure</b>	3 lbs. (6 lbs.) max.

### Electrical

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

### EMC COMPLIANCE PER DIRECTIVE 89/336/EEC

<b>Emission/Immunity</b>	EN50081-2/EN50082-2
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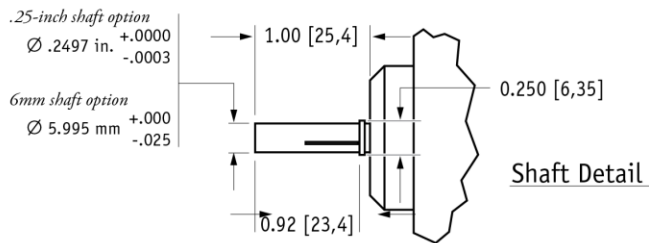
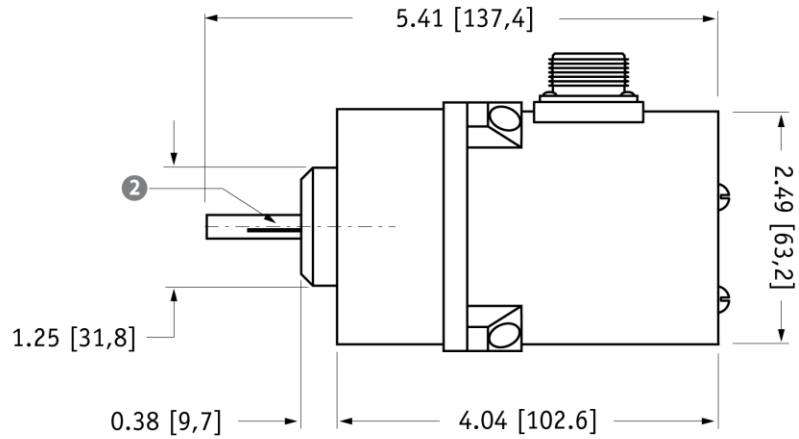
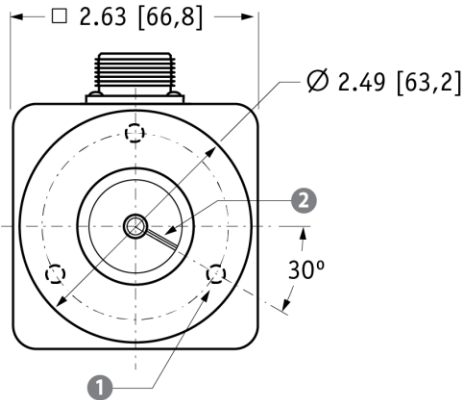
### Environmental

<b>Enclosure</b>	NEMA 4/4X/6, IP 67/68
<b>Operating Temperature</b>	-40° to 200°F (-40° to 90°C)
<b>Vibration</b>	up to 10 g to 2000 Hz maximum

# RT8420

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

## 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-**      -                     -                                                  

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:

<b>R</b> order code:	<b>R125</b>	<b>0R25</b>	<b>0R50</b>	<b>0001</b>	<b>0002</b>	<b>0003</b>	<b>0005</b>	<b>0010</b>	<b>0020</b>
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>

<b>R</b> order code:	<b>0030</b>	<b>0040</b>	<b>0050</b>	<b>0080</b>	<b>0100</b>	<b>0120</b>	<b>0140</b>	<b>0180</b>	<b>0200</b>
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.

# RT8420

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

## Enclosure Material:

<b>A</b> order code:	<b>1</b>	<b>2</b>
	powder-painted aluminum	303 stainless steel

## Shaft Diameter:

<b>B</b> order code:	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
	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. ← 0.025 in.	8.4 mm ← 0.64 mm

## Mounting Style:

<b>C</b> order code:	<b>1</b>	<b>2</b>
	face mount	flange mount
	mounting holes spaced 120° apart on 2.00 [50,8] BC 6mm shaft option threaded M6 x 9 mm deep .25 in. shaft option #10-32 x 0.375 inch deep	Ø 4.1 [104.14] .28 [7,1] wide mounting slot on a Ø3.50 [88,9] BC
	1.38 [35,1]	1.00 [25,4] IN [MM]

## Output Signals:

<b>D</b> order code:	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
output signal options:	4...20 mA	20...4 mA	0...20 mA	20...0 mA
sensitivity:	16 mA/full stroke ±0.25%		20 mA/full stroke ±0.25%	
wiring configuration:	2 - wire		3 - wire	
input voltage:	8 - 34 vdc		14 - 29 vdc	

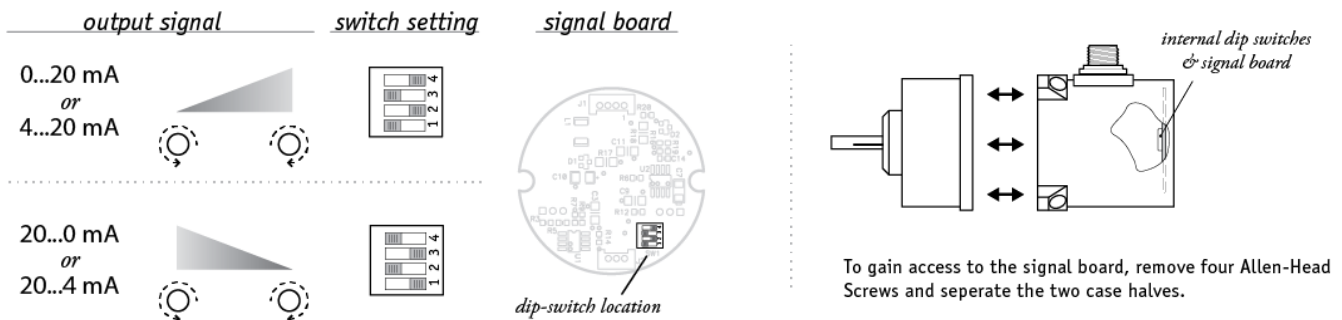
Example:

ordercode = **1** = 4...20 mA

= 4 mA     
 = 20 mA

## 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.



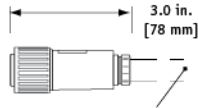
# RT8420

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

## Electrical Connection:

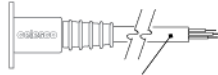
**Order code:**

**1**  
6-pin plastic connector  
w/mating plug  
**IP 67, NEMA 4X\*\*, 6**



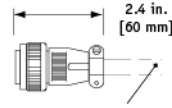
1/2 - 5/16" [14 - 8 mm] cable dia.  
16 AWG max conductor size  
connector: MS3102E-14S-6P  
mating plug: MS3106E-14S-6S

**2**  
10-ft. [3 M]  
waterproof cable  
**IP 67, NEMA 4X\*\*, 6**



10 ft. x 0.4-in. dia.  
[3 M x 10 mm dia.]  
18 AWG, type SJTW

**3**  
6-pin metal connector  
w/mating plug  
**IP 65, NEMA 4**



3/8-in. [9 mm] max cable dia.  
16 AWG max conductor size  
connector: MS3102E-14S-6P  
mating plug: MS3106E-14S-6S

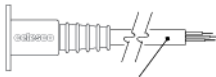
**4**  
25-ft. [7.5 M]  
instrumentation cable  
**IP 67, NEMA 6**



25 ft. x 0.2-in. dia.  
[7,5 M x 5 mm dia.]  
24 AWG, shielded

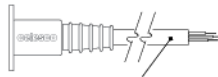
**Order code:**

**5**  
100-ft. [30 M]  
waterproof cable  
**IP 67, NEMA 4X\*\*, 6**



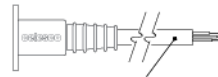
100 ft. x 0.4-in. dia.  
[30 M x 10 mm dia.]  
18 AWG, type SJTW

**6**  
10-ft. [3 M]  
**pressure tested\***  
waterproof cable  
**IP 68, NEMA 4X\*\*, 6P**



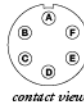
10 ft. x 0.4-in. dia.  
[3 M x 10 mm dia.]  
18 AWG, type SJTW

**7**  
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

6-pin Mating Plug		
pin	2-wire	3-wire
A	8...34 vdc	14...29 vdc
B	4...20 mA out	common
C	-	0...20 mA out
D	case ground	-



contact view

Waterproof Cable		
color code	2-wire	3-wire
WHITE	8...34 vdc	14...29 vdc
BLACK	4...20 mA out	common
GREEN	case ground	0...20 mA out

Instrumentation Cable		
color code	2-wire	3-wire
RED	8...34 vdc	14...29 vdc
BLACK	4...20A out	common
WHITE	n/a	n/a
GREEN	case ground	0...20 mA out

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.

**INTERTECHNOLOGY**  
1-800-465-1600  
INC.

19 Waterman Ave. Toronto, Ont. M4B1Y2  
Tel: 416-445-5500 Fax: 416-445-1170  
Toll Free: 1-800-465-1600  
Email: sales@intertechnology.com  
Website: www.intertechnology.com

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