

Rotational Position Transducer

0/4...20 mA Output

Ranges: 0-45° to 0-200 Turns

Industrial Grade



RT8420



Specification Summary:

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 $\pm 0.05\%$ 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.
Span 0.01% f.s./°F, max.

ENVIRONMENTAL

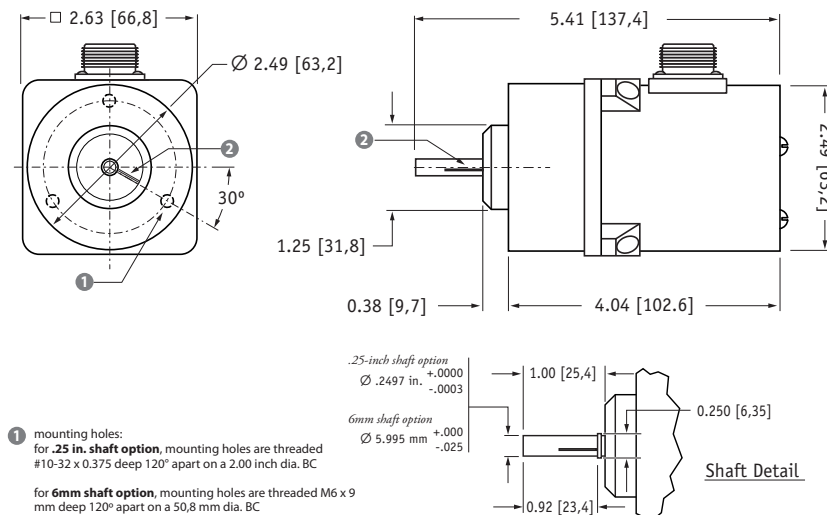
Enclosure NEMA 4/4X/6, IP 67/68
Operating Temperature -40° to 200°F (-40° to 90°C)
Vibration up to 10 G's to 2000 Hz maximum

EMC COMPLIANCE PER DIRECTIVE 89/336/EEC

Emission/Immunity EN50081-2/EN50082-2

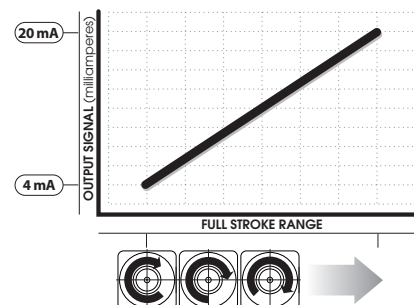
Celeco's model RT8420 provides extended rotational position feedback from as little as 1/8 of a turn f.s. all the way up to 200 turns f.s. The RT8420 combines the superb linearity and resolution of a plastic-hybrid potentiometer with the durability of Celeco's 4...20 mA circuit to provide an accurate 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.



ALL DIMENSIONS ARE IN INCHES [MM]

Output Signal



Ordering Information:

Model Number:

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

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	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.

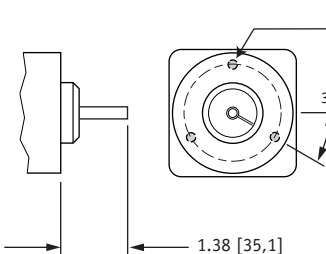
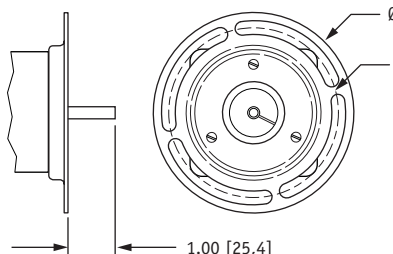
Enclosure Material:

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 –.0003)	 5.995 mm (+.000 –.025)	 0.33 in. 0.025 in.	 8.4 mm 0.64 mm

Mounting Style:

C order code:	1	2
	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 1.38 [35,1] 30°	 Ø 4.1 [104,14] .28 [7,1] wide mounting slot on a Ø3.50 [88,9] BC 1.00 [25,4] IN [MM]

Ordering Information:

Output Signals:

order code:	1	2	3	4
output signal options:	4...20 mA	20...4 mA	0...20 mA	20...0 mA
sensitivity:	16 mA/full stroke $\pm 0.25\%$		20 mA/full stroke $\pm 0.25\%$	
wiring configuration:	2 - wire		3 - wire	
input voltage:	8 - 40 vdc		14 - 29 vdc	

Example:

ordercode = 1 = 4...20 mA

max ccw = 4 mA

max cw = 20 mA

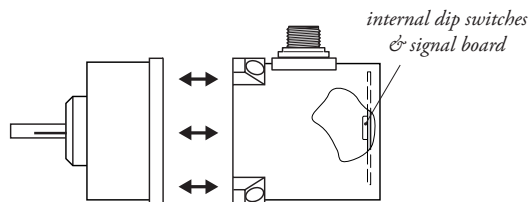
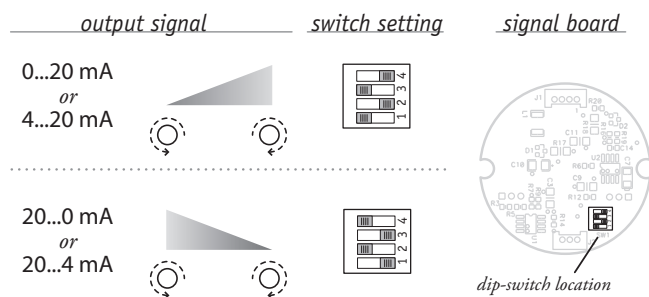
Electrical Connection:

F <i>order code:</i>	1 6-pin plastic connector w/mating plug IP 67, NEMA 4X**, 6 3.0 in. [78 mm] 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 2.4 in. [60 mm] 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																																										
F <i>order code:</i>	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 <table> <tr> <th>pin</th><th>2-wire</th><th>3-wire</th></tr> <tr> <td>A</td><td>8...40 vdc</td><td>14...29 vdc common</td></tr> <tr> <td>B</td><td>4...20 mA out</td><td>0...20 mA out</td></tr> <tr> <td>C</td><td>-</td><td>-</td></tr> <tr> <td>D</td><td>case ground</td><td>-</td></tr> </table> contact view	pin	2-wire	3-wire	A	8...40 vdc	14...29 vdc common	B	4...20 mA out	0...20 mA out	C	-	-	D	case ground	-	Waterproof Cable <table> <tr> <th>color code</th><th>2-wire</th><th>3-wire</th></tr> <tr> <td>WHITE</td><td>8...40 vdc</td><td>14...29 vdc common</td></tr> <tr> <td>BLACK</td><td>4...20 mA out</td><td>0...20 mA out</td></tr> <tr> <td>GREEN</td><td>case ground</td><td>-</td></tr> </table>	color code	2-wire	3-wire	WHITE	8...40 vdc	14...29 vdc common	BLACK	4...20 mA out	0...20 mA out	GREEN	case ground	-	Instrumentation Cable <table> <tr> <th>color code</th><th>2-wire</th><th>3-wire</th></tr> <tr> <td>RED</td><td>8...40 vdc</td><td>14...29 vdc common</td></tr> <tr> <td>BLACK</td><td>4...20 mA out</td><td>n/a</td></tr> <tr> <td>WHITE</td><td>n/a</td><td>case ground</td></tr> <tr> <td>GREEN</td><td>case ground</td><td>0...20 mA out</td></tr> </table>	color code	2-wire	3-wire	RED	8...40 vdc	14...29 vdc common	BLACK	4...20 mA out	n/a	WHITE	n/a	case ground	GREEN	case ground	0...20 mA 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.

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.