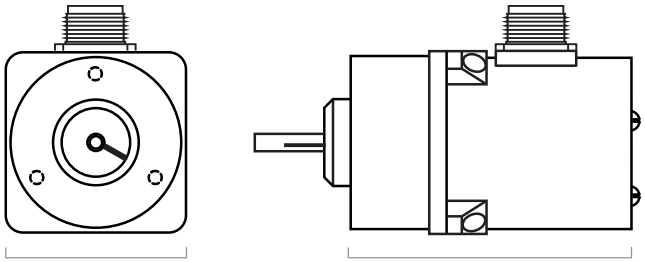
RT8420

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

CE





2.5″ [64 mm] 4.0″ [102 mm]

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 (25ºC)	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 Resitance (Load)	(loop supply voltage - 8)/0.020
Circuit Protection	38 mA max.
Impedence	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./ºF, max.
Thermal Effects, Span	0.01% f.s./ºF, max.

EMC COMPLIENCE PER DIRECTIVE 89/336/EEC

Emission/Immunity	EN50081-2/EN50082-2

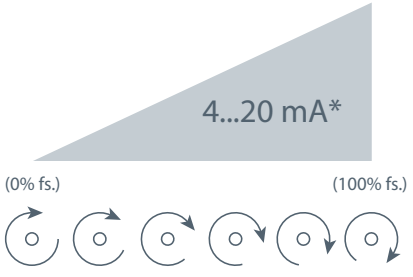
ENVIRONMENTAL

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

Celesco'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 potententiometer with the durability of Celesco'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:

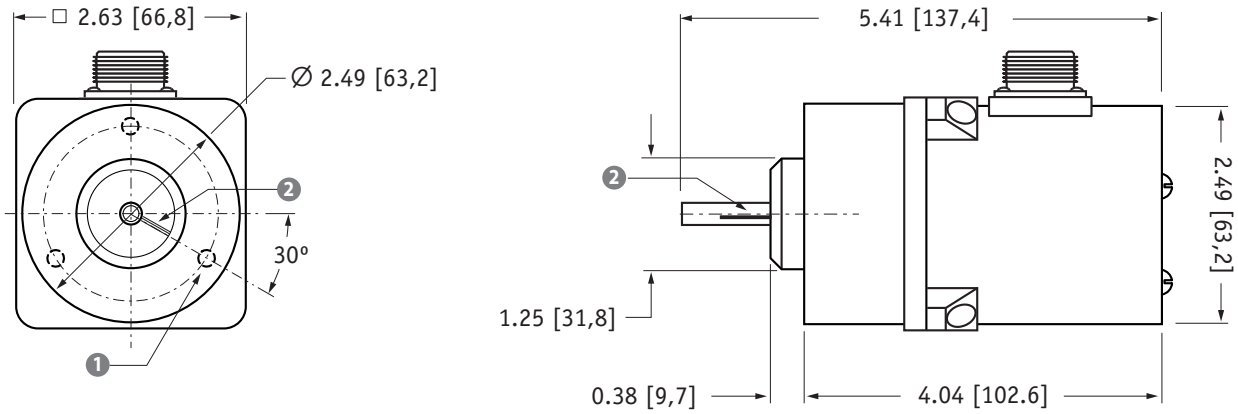


**Optional 3-wire, 0...20mA output signal available.*

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

celesco

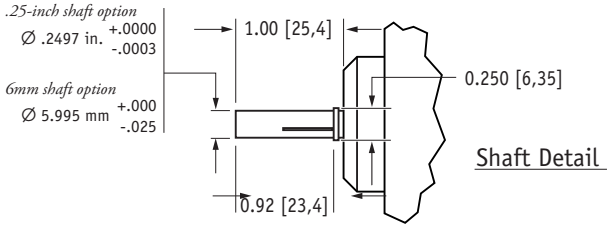
Outline Drawing:



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:

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

Sample Model Number:
RT8420 - 0005 - 111 - 1110

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

Ⓡ *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:

Ⓐ *order code:*	1	2
	powder-painted aluminum	303 stainless steel

Shaft Diameter:

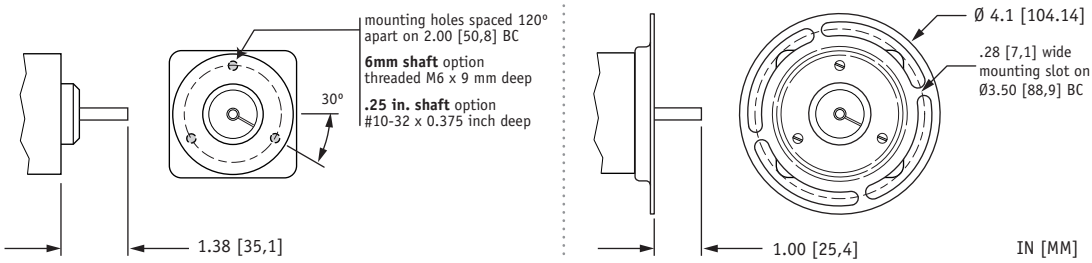
Ⓑ *order code:*	1	2	3	4
	0.25-in. diameter	6 mm diameter	0.25-in. dia. w/flats	6 mm dia. w/flats
	.2497 in. (+.0000 –.0003)	5.995 mm (+.000 –.025)	0.33 in. 0.025 in.	8.4 mm 0.64 mm

Ordering Information (cont.):

Mounting Style:

C *order code:*

1	2
face mount	flange mount



Output Signals:

B *order code:*

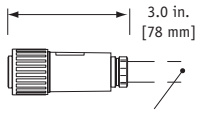
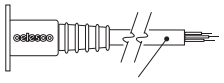
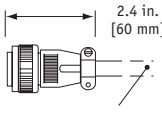
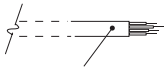
	1	2	3	4
output signal options:	4...20 mA	20...4 mA	0...20 mA	20...0 mA
	4 → 20	20 → 4	0 → 20	20 → 0
	ccw ↺ ↻ cw	ccw ↺ ↻ cw	ccw ↺ ↻ cw	ccw ↺ ↻ cw
sensitivity:	16 mA/full stroke ±0.25%		20 mA/full stroke ±0.25%	
wiring configuration:	2 – wire		3 – wire	
input voltage:	8 – 34 vdc		14 – 29 vdc	

Example:

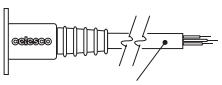
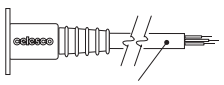
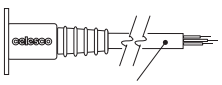
ordercode = **1** = 4...20 mA { max ccw ↺ = 4 mA ; max cw ↻ = 20 mA

Electrical Connection:

F *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. 16 AWG max conductor size connector: MS3102E-14S-6P mating plug: MS3106E-14S-6S	10 ft. x 0.4-in. dia. [3 M x 10 mm dia.] 18 AWG, type SJTW	3/8-in. [9 mm] max cable dia. 16 AWG max conductor size connector: MS3102E-14S-6P mating plug: MS3106E-14S-6S	25 ft. x 0.2-in. dia. [7,5 M x 5 mm dia.] 24 AWG, shielded

F *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. [30 M x 10 mm dia.] 18 AWG, type SJTW	10 ft. x 0.4-in. dia. [3 M x 10 mm dia.] 18 AWG, type SJTW	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

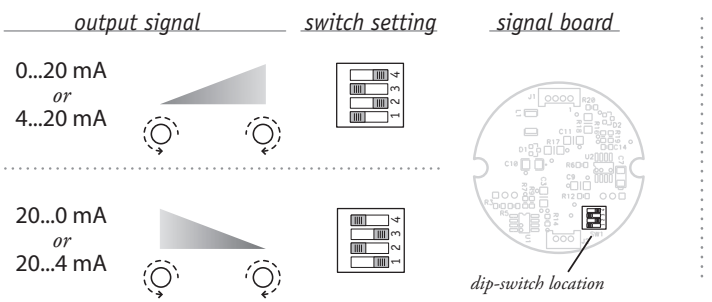
Instrumentation Cable

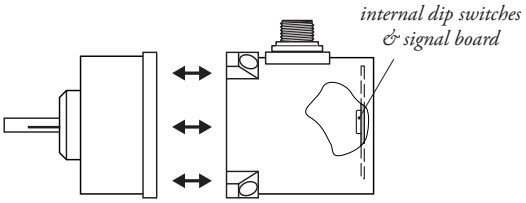
color code	2-wire	3-wire
RED	8...34 vdc	14...29 vdc
BLACK	4...20A out	common
WHITE	n/a	n/a
GREEN	case ground	0...20 mA out

Notes: { * *–Test pressure: 100 feet [30 meters] H_2O (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 seperate the two case halves.