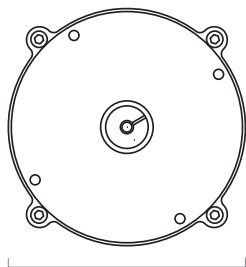


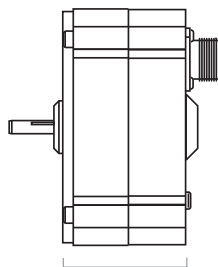
# RT9420

Rotation Position Sensor  
Industrial • 4...20 mA • 0...20mA

**Absolute Rotary Position to 50 turns**  
**Aluminum or Stainless Steel Enclosure Options**  
**IP68 / NEMA 6 • Hazardous Area Certification**



4.5" [114 mm]

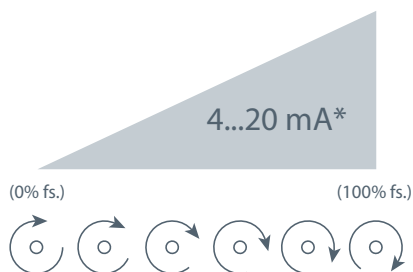


2.4" [59 mm]

The RT9420 provides rotational position feedback via 4...20 mA current loop signal. This device combines the superb linearity and resolution of a plastic-hybrid potentiometer and the durability of our 4...20mA circuit to provide an accurate and reliable electrical signal. Additionally the zero and span settings are adjustable through access holes in the housing.

This innovative sensor is designed to meet NEMA-4 and IP67 standards, is available in full stroke ranges of 1/4 to 50 turns.

## Output Signal



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

## GENERAL

<b>Full Stroke Range Options</b>	0-0.25 to 0-50 turns
<b>Output Signal Options</b>	4...20 mA (2-wire) and 0...20 mA (3-wire)
<b>Accuracy</b>	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 35 lbs. radial and 5 lbs. axial
<b>Weight, Aluminum Enclosure</b>	5 lbs. max.
<b>Weight, Stainless Steel Encl.</b>	10 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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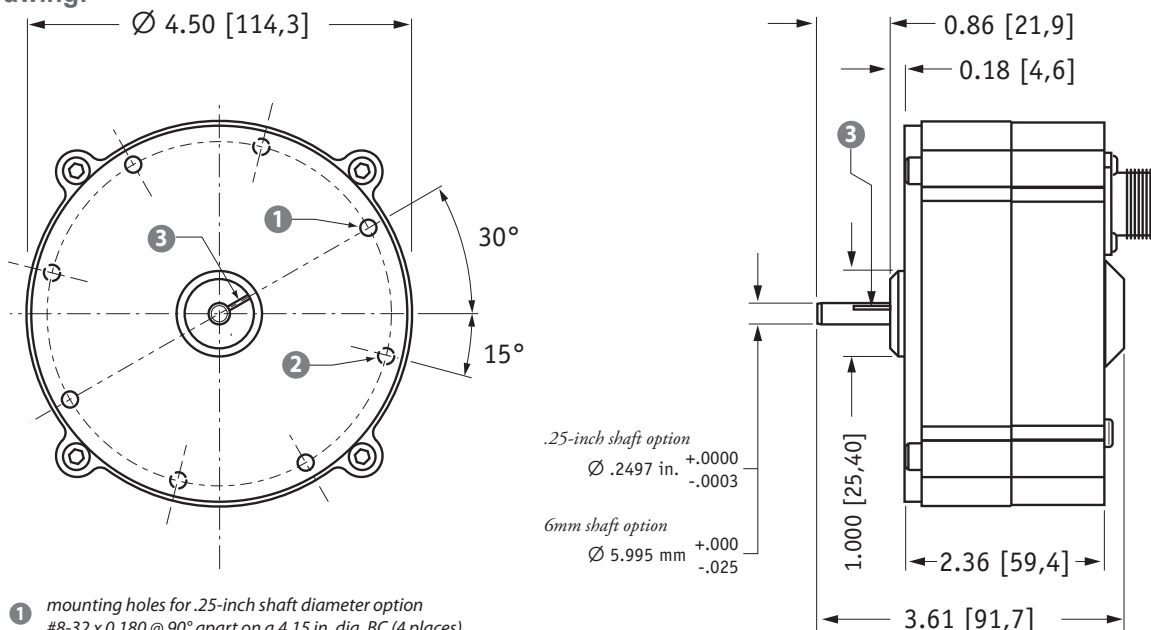
## ENVIRONMENTAL

<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

Industrial • 4–20mA / 0–20mA Output Signal

## Outline Drawing:



- 1 mounting holes for .25-inch shaft diameter option #8-32 x 0.180 @ 90° apart on a 4.15 in. dia. BC (4 places)
- 2 mounting holes for 6-mm shaft diameter option M4 x 4,5 mm @ 90° apart on a 105,4 mm dia. BC (4 places)
- 3 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  $\pm 0.02$  in. [ $\pm 0,5$  mm] unless otherwise noted

## Ordering Information:

### Model Number:

**RT9420-** \_\_\_\_\_ **1** - **1** \_\_\_\_\_ **0**  
 order code:                    R            A            B            C            D            E            F            G

Sample Model Number:

**RT9420 - 0005 - 111 - 1110**

- R range: 5 turns (clockwise shaft rotations)
- A enclosure: aluminum
- B shaft diameter: .25 inches
- 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	0030	0050
clockwise shaft rotations, min:	0.125	0.25	0.50	1	2	3	5	10	20	30	50
accuracy (% of f.s.):	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.2%	0.15%	0.15%	0.15%	0.15%
potentiometer cycle life*:	$2.5 \times 10^6$	$2.5 \times 10^6$	$2.5 \times 10^6$	$2.5 \times 10^6$	$2.5 \times 10^6$	$2.5 \times 10^6$	$5 \times 10^5$	$2.5 \times 10^5$	$2.5 \times 10^5$	$2.5 \times 10^5$	$2.5 \times 10^5$

\*-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:

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. $\begin{matrix} +.0000 \\ -.0003 \end{matrix}$	$5.995$ mm $\begin{matrix} +.000 \\ -.025 \end{matrix}$	$0.33$ in. $\begin{matrix} +.0000 \\ -.0003 \end{matrix}$	$8.4$ mm $\begin{matrix} +.0000 \\ -.0003 \end{matrix}$

## Ordering Information (cont.):

### Output Signals:

Order code:	1	2	3	4	5*	6*
output signal options:	4...20 mA	20...4 mA	0...20 mA	20...0 mA	4...20 mA	20...4 mA
	ccw  cw	ccw  cw	ccw  cw	ccw  cw	ccw  cw	ccw  cw
sensitivity:	16 mA/full stroke ±0.25%		20 mA/full stroke ±0.25%		16 mA/full stroke ±0.25%	
wiring configuration:	2 – wire		3 – wire		2 – wire	
input voltage:	8 – 34 vdc		14 – 29 vdc		14 – 32 vdc	
hazardous area certification:	not certified				CSA	

<i>Example:</i>	ordercode = <b>1</b> = 4...20 mA		= 4 mA		= 20 mA
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<i>Hazardous Area Certifications:</i>	
CSA Standard 22.2	
Class 1	
Groups A, B, C and D	

**\*IMPORTANT:** intrinsically safe when powered from a CSA certified zener barrier rated 28 VDC max, 110 mA max per installation drawing#677984

### Electrical Connection:

Order code:	1	2	3	4
	6-pin plastic connector w/mating plug <b>IP 67, NEMA 4X**, 6</b>	10-ft. [3 M] waterproof cable <b>IP 67, NEMA 4X**, 6</b>	6-pin metal connector w/mating plug <b>IP 65, NEMA 4</b>	25-ft. [7.5 M] instrumentation cable <b>IP 67, NEMA 6</b>
	3.0 in. [78 mm]	10 ft. x 0.4-in. dia. [3 M x 10 mm dia.] 18 AWG, type SJTW	2.4 in. [60 mm]	25 ft. x 0.2-in. dia. [7.5 M x 5 mm dia.] 24 AWG, shielded
	1/2 - 5/16" [14 - 8 mm] cable dia. 16 AWG max conductor size connector: MS3102E-14S-6P mating plug: MS3106E-14S-6S		3/8-in. [9 mm] max cable dia. 16 AWG max conductor size connector: MS3102E-14S-6P mating plug: MS3106E-14S-6S	

Order code:	5	6	7
	100-ft. [30 M] waterproof cable <b>IP 67, NEMA 4X**, 6</b>	10-ft. [3 M] pressure tested* waterproof cable <b>IP 68, NEMA 4X**, 6P</b>	100-ft. [30 M] pressure tested* waterproof cable <b>IP 68, NEMA 4X**, 6P</b>
	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

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

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.  
\*\*\* –14-32 VDC for hazardous area option.