

Cable-Extension Position Transducer

0/4...20 mA Output • Hazardous Area Certification
 Ranges: 0-75 to 0-550 inches
 Industrial Grade



PT9420



Specification Summary:

GENERAL

Full Stroke Range Options—on this datasheet..... 0-75 to 0-550 inches
 Output Signal Options 4...20 mA (2-wire) and 0...20 mA (3-wire)
 Accuracy $\pm 0.12\%$ full stroke
 Repeatability..... $\pm 0.05\%$ full stroke
 Resolution essentially infinite
 Measuring Cable Options..... nylon-coated stainless steel or thermoplastic
 Enclosure Material..... powder-painted aluminum or 303 stainless steel
 Sensor plastic-hybrid precision potentiometer
 Potentiometer Cycle Life 250,000, min.—before signal degradation can occur
 Maximum Retraction Acceleration/ Velocity see ordering information
 Weight, Aluminum (Stainless Steel) Enclosure..... 8 lbs. (16 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

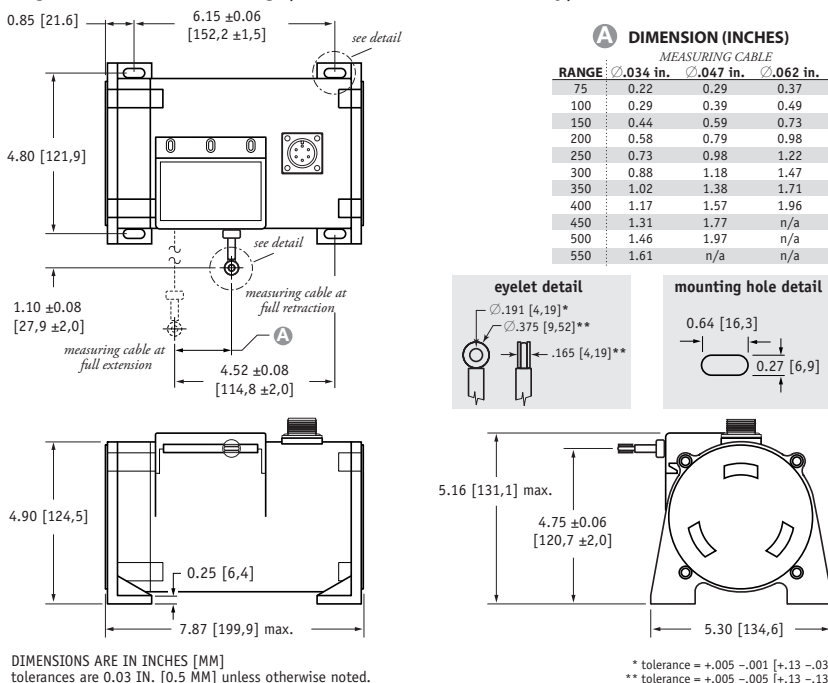
ENVIRONMENTAL

Enclosure NEMA 4/4X/6, IP 67/68
 Hazardous Area Certification see ordering information
 Operating Temperature -40° to 200°F (-40° to 90°C)
 Vibration..... up to 10 G's to 2000 Hz maximum
 Thermal Effects
 Zero 0.01% f.s./°F, max.
 Span..... 0.01%/°F, max.

EMC COMPLIANCE PER DIRECTIVE 89/336/EEC

Emission / Immunity EN50081-2 / EN50082-2

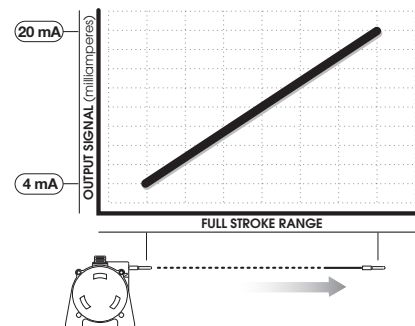
Fig. 1 – Outline Drawing (18 oz. cable tension only)



The PT9420 is a great value for demanding long-range applications requiring a 4 - 20 mA linear position feedback signal. Sealed to meet NEMA 4 standards, this Cable-Extension Transducer will perform even under the harshest of environmental conditions.

As a member of Celesco's innovative family of NEMA-4 rated cable-extension transducers, the PT9420 offers numerous benefits. It installs in minutes, functions properly without perfectly parallel alignment, and when its cable is retracted, it measures only 6".

Output Signal



Ordering Information:

Model Number:

PT9420-
order code: R A B C D E F G

Sample Model Number:

PT9420 - 0500 - 111 - 1110

- R range: 500 inches
- A enclosure/cable tension: aluminum/18 oz.
- B measuring cable: .034 nylon-coated stainless front
- C cable exit: 4...20 mA, 2-wire
- D output signal: 6-pin plastic connector
- E electrical connection:

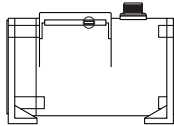
Full Stroke Range:

| R order code: | 0075 | 0100 | 0150 | 0200 | 0250 | 0300 | 0350 | 0400 | 0450* | 0500* | 0550* |
|-------------------------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| full stroke range, min: | 75 in. | 100 in. | 150 in. | 200 in. | 250 in. | 300 in. | 350 in. | 400 in. | 450 in. | 500 in. | 550 in. |

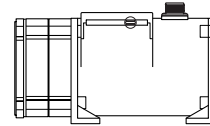
* – 36 oz. cable tension strongly recommended

Enclosure Material and Measuring Cable Tension:

| A order code: | 1 | 3 | 2 | 4 |
|---------------------|-------------------------|---------------------|-------------------------|---------------------|
| tension (±30%): | 18 oz. | | 36 oz. | |
| enclosure material: | powder-painted aluminum | 303 stainless steel | powder-painted aluminum | 303 stainless steel |
| max. acceleration: | 1 G | .33 G | 5 G | 2 G |
| max. velocity: | 60 inches/sec | 20 inches/sec | 200 inches/sec | 80 inches/sec |



standard housing
see fig 1.



dual-spring housing
see fig 2.

Measuring Cable:

| B order code: | 1 | 2 | 3 |
|---------------|---|--|--|
| | ∅.034-inch nylon-coated stainless steel available in <i>all</i> ranges | ∅.047-inch stainless steel all ranges up to <i>500 inches</i> | ∅.062-inch thermoplastic all ranges up to <i>400 inches</i> |

Cable Exit:

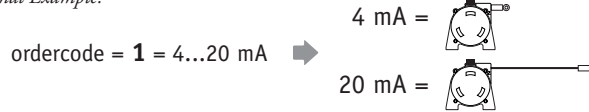
| C order code: | 1 | 2 | 3 | 4 |
|---------------|-------|-----|------|------|
| | front | top | back | down |
| | | | | |

Ordering Information:

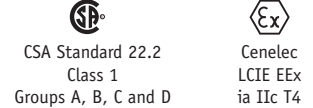
Output Signals:

| | 1 | 2 | 3 | 4 | 5* | 6* |
|-------------------------------|--------------------------|---------------|--------------------------|---------------|--------------------------|---------------|
| order code: | | | | | | |
| output signal options: | 4...20 mA | 20...4 mA | 0...20 mA | 20...0 mA | 4...20 mA | 20...4 mA |
| 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 - 40 vdc | | 14 - 29 vdc | | 14 - 32 vdc | |
| hazardous area certification: | not certified | | | | CSA • Cenelec | |

Output Signal Example:



Hazardous Area Certifications:



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

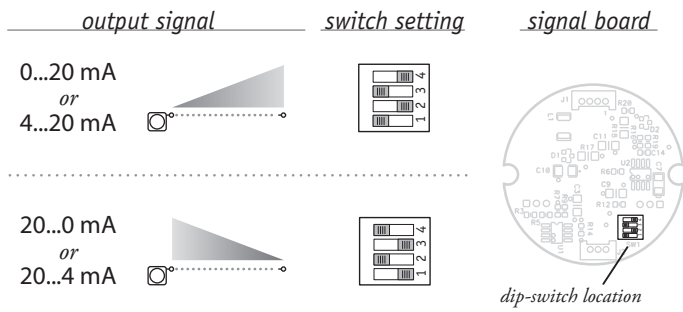
Electrical Connection:

| order code: | 1 | 2 | 3 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------|---|--|--|---|--------|-----|---------------|--------------------|-------|---------------|---------------|-------|-----|-----|-------|-------------|---------------|--|--|------------|--------|--------|-------|---------------|--------------------|-------|---------------|---------------|-------|-------------|---|
| | 6-pin plastic connector w/mating plug IP 67, NEMA 4X**, 6 3.0 in. [78 mm] | 10-ft. [3 M] waterproof cable IP 67, NEMA 4X**, 6 | 6-pin metal connector w/mating plug IP 65, NEMA 4 2.4 in. [60 mm] | 25-ft. [7.5 M] instrumentation cable 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| order code: | 5 | 6 | 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 100-ft. [30 M] waterproof cable IP 67, NEMA 4X**, 6 | 10-ft. [3 M] pressure tested* waterproof cable IP 68, NEMA 4X**, 6P | 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 | 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 <table border="1"> <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> | | 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 border="1"> <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 | - |
| 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 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 border="1"> <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>n/a</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 | n/a | GREEN | case ground | 0...20 mA out | | | | | | | | | | | | | | |
| color code | 2-wire | 3-wire | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RED | 8...40 vdc*** | 14...29 vdc common | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BLACK | 4...20 mA out | n/a | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| WHITE | n/a | n/a | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GREEN | case ground | 0...20 mA out | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Notes: { * -Test pressure: 100 feet [30 meters] H₂O (40 PSID); Test Medium: Air; Duration: 2 hours.
 ** -NEMA 4X applies to stainless steel enclosure only.
 *** -14-32 VDC for hazardous area option.

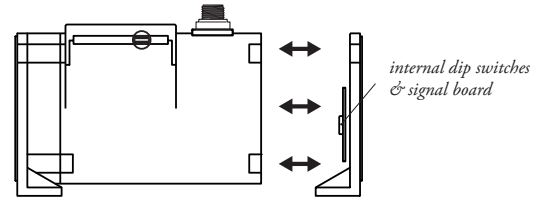
PT9420 • Cable-Extension Transducer: 0/4...20 mA Output Signal

Output Signal Selection (not available with intrinsically safe option):



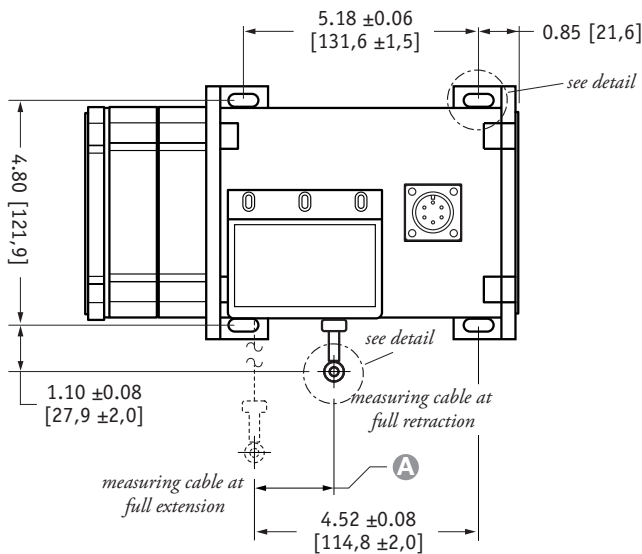
The output signal direction can be reversed at any time by simply changing the dip-switch settings found on the internal signal board. After the settings have been changed, adjustment of the Zero and Span trimpots will be required to precisely match signal values to the beginning and end points of the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

To gain access to the signal board, remove four Allen-Head Screws and remove end cover bracket.



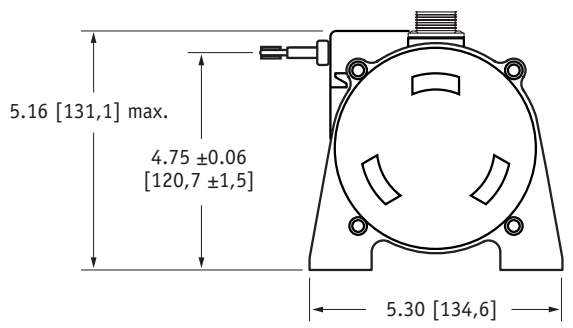
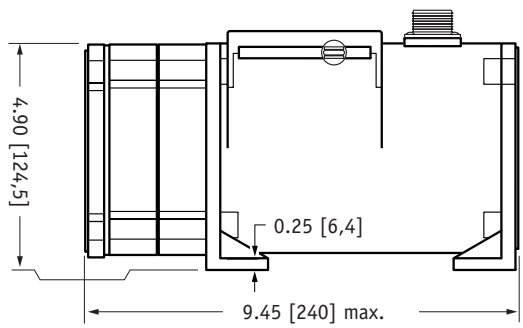
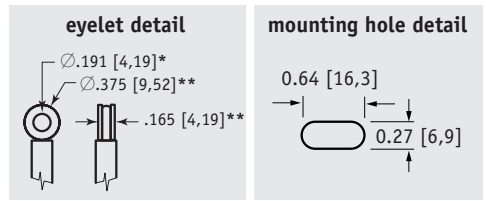
Caution! Do Not Remove Spring-Side End Cover
 Removing spring-side end cover could cause spring to become unseated and permanently damaged.

Fig. 2 – Outline Drawing (36 oz. cable tension only)



A DIMENSION (INCHES)
 MEASURING CABLE

| RANGE | ∅.034 in. | ∅.047 in. | ∅.062 in. |
|-------|-----------|-----------|-----------|
| 75 | 0.22 | 0.29 | 0.37 |
| 100 | 0.29 | 0.39 | 0.49 |
| 150 | 0.44 | 0.59 | 0.73 |
| 200 | 0.58 | 0.79 | 0.98 |
| 250 | 0.73 | 0.98 | 1.22 |
| 300 | 0.88 | 1.18 | 1.47 |
| 350 | 1.02 | 1.38 | 1.71 |
| 400 | 1.17 | 1.57 | 1.96 |
| 450 | 1.31 | 1.77 | n/a |
| 500 | 1.46 | 1.97 | n/a |
| 550 | 1.61 | n/a | n/a |



DIMENSIONS ARE IN INCHES [MM]
 tolerances are 0.03 IN. [0.5 MM] unless otherwise noted.

* tolerance = +.005 -.001 [+13 -.03]
 ** tolerance = +.005 -.005 [+13 -.13]

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PT9420 | 178