



# PT8510

## Cable Actuated Sensor

### Heavy Industrial • 0...5, 0...10 Vdc

**Absolute Linear Position to 60 inches (1524 mm)**

**Aluminum or Stainless Steel Enclosure Options**

**VLS Option to Prevent Free-Release Damage**

**IP68 • NEMA 6 Protection**

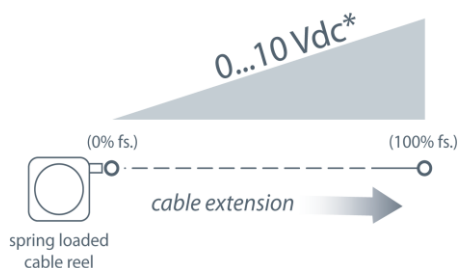
#### General

|                                 |   |
|---------------------------------|---|
| <b>Full Stroke Range</b>        | 0-2 to 0-60 inches  |
| <b>Options</b>                  |   |
| <b>Output Signal</b>            | 0...5, 0...10, -5...+5, -10...+10 VDC                     |
| <b>Accuracy</b>                 | ± 1.00% to ± 0.15% full stroke (see ordering information) |
| <b>Repeatability</b>            | ± 0.05% full stroke                                       |
| <b>Resolution</b>               | essentially infinite                                      |
| <b>Measuring Cable</b>          | nylon-coated stainless steel or thermoplastic             |
| <b>Enclosure Material</b>       | powder-painted aluminum or stainless steel                |
| <b>Sensor</b>                   | plastic-hybrid precision potentiometer                    |
| <b>Potentiometer Cycle Life</b> | see ordering information                                  |
| <b>Maximum Retraction</b>       | see ordering information                                  |
| <b>Acceleration</b>             |   |
| <b>Weight</b>                   | 3 lbs. (6 lbs.) max.                                      |

The PT8510 can operate from an unregulated 14.5 to 40 VDC power supply while providing an output signal that is proportional to the linear movement of its measuring cable. The PT8510 has a maximum measurement range up to 60" and has 4 output signal options to choose from: 0...10, 0...5, -10...+10 and -5...+5 Vdc.

As a member of our innovative family of NEMA-4 rated cable-extension transducers, the PT8510 offers numerous benefits. It installs in minutes, fits into areas unsuited for rod-type measurement devices, and works without perfectly parallel alignment.

#### Output Signal



*\*Also Available: 0...5, -5...+5, -10...+10 Vdc*

#### Electrical

|                                 |                          |
|---------------------------------|--------------------------|
| <b>Input Voltage</b>            | see ordering information |
| <b>Input Current</b>            | 10 mA maximum            |
| <b>Output Impedance</b>         | 1000 ohms                |
| <b>Maximum Load</b>             | 5000 ohms                |
| <b>Zero and Span Adjustment</b> | see ordering information |

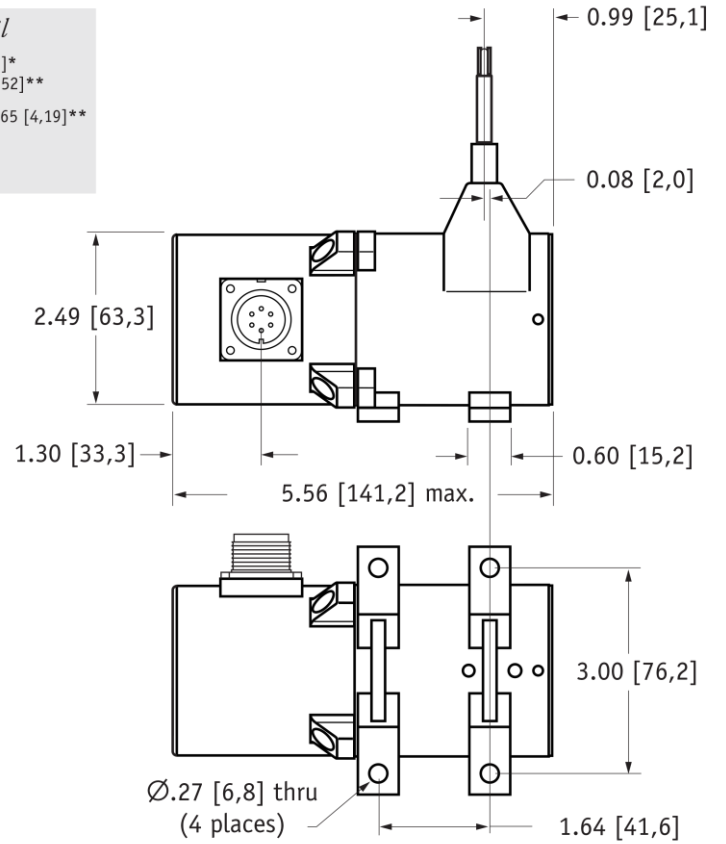
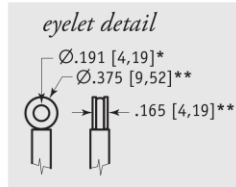
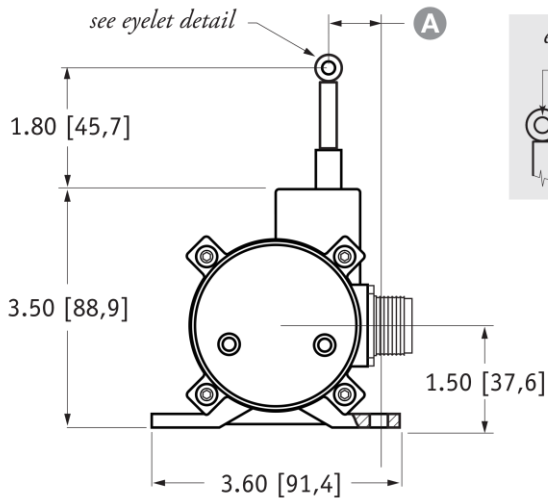
#### Environmental

|                              |                               |
|------------------------------|-------------------------------|
| <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 |

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**Outline Drawing:**



| RANGE        |             | A |
|--------------|-------------|---|
| 2", 10"      | 1.16 [29,5] |   |
| 5", 25", 50" | 0.66 [16,8] |   |
| 15"          | 0.99 [25,7] |   |
| 20", 40"     | 0.85 [21,6] |   |
| 30", 60"     | 0.52 [13,3] |   |

DIMENSIONS ARE IN INCHES [MM]  
 tolerances are ±0.02 in. [±0,5 mm] unless otherwise noted  
 note: \*tolerance = +.005 -.001 [+,.13 -.03]    \*\*tolerance = +.005 -.005 [+,.13 -.13]

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## Ordering Information

### Model Number:

**PT8510-** \_\_\_\_\_ **1** - **1** \_\_\_\_\_  
order code:                      R                      A                      B                      C                      D                      E                      F                      G

Sample Model Number:

**PT8510 - 0030 - 111 - 1110**

- R** range: 30 inches
- A** enclosure/cable tension: aluminum/standard (9 oz.)
- B** measuring cable: .034 nylon-coated stainless
- E** output signal: 0...10 vdc
- F** electrical connection: 6-pin plastic connector
- G** cable guide option: standard nylon cable guide

### Full Stroke Range:

| <b>R</b> order code:       | 0002                  | 0005                  | 0010                | 0015                | 0020                | 0025                | 0030                | 0040                  | 0050                  | 0060                  |
|----------------------------|-----------------------|-----------------------|---------------------|---------------------|---------------------|---------------------|---------------------|-----------------------|-----------------------|-----------------------|
| full stroke range, min:    | 2 in.                 | 5 in.                 | 10 in.              | 15 in.              | 20 in.              | 25 in.              | 30 in.              | 40 in.                | 50 in.                | 60 in.                |
| accuracy (% of f.s.):      | 1.00%                 | 1.00%                 | 0.18%               | 0.18%               | 0.18%               | 0.18%               | 0.18%               | 0.15%                 | 0.15%                 | 0.15%                 |
| potentiometer cycle life*: | 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> | 5 x 10 <sup>5</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> | 2.5 x 10 <sup>5</sup> |

\*-1 cycle is defined as the travel of the measuring cable from full retraction to full extension and back to full retraction

### Enclosure Material and Measuring Cable Tension:

| <b>A</b> order code: | 1        | 5      | 2    | 3             | 6      | 4    | 8             | 7      | 9    |
|----------------------|----------|--------|------|---------------|--------|------|---------------|--------|------|
| enclosure:           | aluminum |        |      | 303 stainless |        |      | 316 stainless |        |      |
| cable tension:       | standard | medium | high | standard      | medium | high | standard      | medium | high |
| max. acceleration:   | 15 g     | 25 g   | 40 g | 6 g           | 12 g   | 18 g | 6 g           | 12 g   | 18 g |

| cable tension option specifications | Range:    | 2 in.   | 5 in.  | 10 in.  | 15 in. | 20 in. | 25 in. | 30 in. | 40 in. | 50 in. | 60 in. |
|-------------------------------------|-----------|---------|--------|---------|--------|--------|--------|--------|--------|--------|--------|
|                                     | Standard: | 39 oz.  | 16 oz. | 39 oz.  | 26 oz. | 20 oz. | 16 oz. | 13 oz. | 20 oz. | 16 oz. | 13 oz. |
|                                     | Medium:   | 65 oz.  | 26 oz. | 65 oz.  | 43 oz. | 33 oz. | 26 oz. | 22 oz. | 33 oz. | 26 oz. | 22 oz. |
|                                     | High:     | 116 oz. | 47 oz. | 116 oz. | 77 oz. | 60 oz. | 47 oz. | 40 oz. | 60 oz. | 47 oz. | 40 oz. |

tension tolerance: ± 50%

### Measuring Cable:

| <b>B</b> order code: | 1  | 2                                    | 3   | 4                                    |
|----------------------|--|--------------------------------------|---|--------------------------------------|
| cable construction:  | Ø.034-inch nylon-coated stainless steel rope | Ø.047-inch bare stainless steel rope | Ø.058-inch PVC jacketed vectra fiber rope | Ø.031-inch bare stainless steel rope |
| available ranges:    | all ranges                                   | 5, 15, 20, 25, 30-inch only          | thru 30 inches only                       | 40, 50, 60-inch only                 |
| general use:         | indoor                                       | outdoor, debris, high temperature    | high voltage or magnetic field            | outdoor, debris, high temperature    |

### Output Signals:

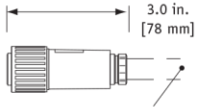
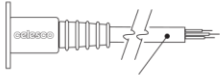
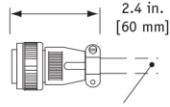

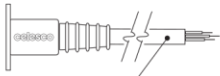
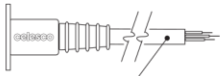
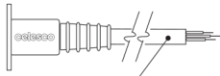

| <b>F</b> order code:   | 1   | 2          | 3             | 4         | 5   | 6             | 7             | 8           |
|------------------------|---|------------|---------------|-----------|---|---------------|---------------|-------------|
| output signal options: | 0...10 VDC  | 10...0 VDC | 0...5 VDC     | 5...0 VDC | -10...+10 VDC                                     | +10...-10 VDC | -5...+5 VDC   | +5...-5 VDC |
| input voltage:         | 14.5 - 40 vdc                                     |            | 10.5 - 40 vdc |           | 14.5 - 40 vdc                                     |               | 10.5 - 40 vdc |             |
| span adjustment:       | to 50% of factory set span                        |            |               |           | to 75% of factory set span                        |               |               |             |
| zero adjustment:       | from factory set zero to 50% of full stroke range |            |               |           | from factory set zero to 25% of full stroke range |               |               |             |

Example:

ordercode = **1** = 0...10 vdc

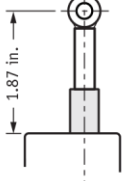
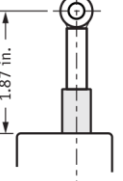
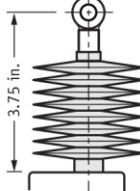
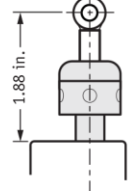


**Electrical Connection:**

| <p><b>F</b> order code:</p> <p><b>1</b></p> <p>6-pin plastic connector w/mating plug<br/><b>IP 67, NEMA 4X** ,6</b></p>  <p>1/2 - 5/16" [14 - 8 mm] cable dia.<br/>16 AWG max conductor size<br/>connector: MS3102E-14S-6P<br/>mating plug: MS3106E-14S-6S</p> | <p><b>2</b></p> <p>10-ft. [3 M] waterproof cable<br/><b>IP 67, NEMA 4X** , 6</b></p>  <p>10 ft. x 0.4-in. dia. [3 M x 10 mm dia.]<br/>3-conductor, 18 AWG type SJTOW</p>                          | <p><b>3</b></p> <p>6-pin metal connector w/mating plug<br/><b>IP 65, NEMA 4</b></p>  <p>3/8-in. [9 mm] max cable dia.<br/>16 AWG max conductor size<br/>connector: MS3102E-14S-6P<br/>mating plug: MS3106E-14S-6S</p> | <p><b>4</b></p> <p>25-ft. [7.5 M] instrumentation cable<br/><b>IP 67, NEMA 6</b></p>  <p>25 ft. x 0.2-in. dia. [7.5 M x 5 mm dia.]<br/>6-conductor, 24 AWG shielded</p> |               |   |               |   |        |   |            |        |       |               |       |               |       |        |  |            |        |     |               |       |               |       |        |  |
|---|--|---|--|---------------|---|---------------|---|--------|---|------------|--------|-------|---------------|-------|---------------|-------|--------|--|------------|--------|-----|---------------|-------|---------------|-------|--------|--|
| <p><b>F</b> order code:</p> <p><b>5</b></p> <p>100-ft. [30 M] waterproof cable<br/><b>IP 67, NEMA 4X** ,6</b></p>  <p>100 ft. x 0.4-in. dia. [30 M x 10 mm dia.]<br/>18 AWG, type SJTOW</p>  | <p><b>6</b></p> <p>10-ft. [3 M] <b>pressure tested*</b> waterproof cable<br/><b>IP 68, NEMA 4X** , 6P</b></p>  <p>10 ft. x 0.4-in. dia. [3 M x 10 mm dia.]<br/>3-conductor, 18 AWG type SJTOW</p> | <p><b>7</b></p> <p>100-ft. [30 M] <b>pressure tested*</b> waterproof cable<br/><b>IP 68, NEMA 4X** , 6P</b></p>  <p>100 ft. x 0.4-in. dia. [30 M x 10 mm dia.]<br/>3-conductor, 18 AWG type SJTOW</p>                 |  |               |   |               |   |        |   |            |        |       |               |       |               |       |        |  |            |        |     |               |       |               |       |        |  |
| <p><b>6-pin Mating Plug</b></p> <table border="1"> <tr> <th>pin</th> <th>signal</th> </tr> <tr> <td>A</td> <td>input voltage</td> </tr> <tr> <td>B</td> <td>output signal</td> </tr> <tr> <td>C</td> <td>common</td> </tr> </table>  <p>contact view</p>     | pin  | signal  | A  | input voltage | B | output signal | C | common | <p><b>Waterproof Cable</b></p> <table border="1"> <tr> <th>color code</th> <th>signal</th> </tr> <tr> <td>WHITE</td> <td>input voltage</td> </tr> <tr> <td>GREEN</td> <td>output signal</td> </tr> <tr> <td>BLACK</td> <td>common</td> </tr> </table> | color code | signal | WHITE | input voltage | GREEN | output signal | BLACK | common | <p><b>Instrumentation Cable</b></p> <table border="1"> <tr> <th>color code</th> <th>signal</th> </tr> <tr> <td>RED</td> <td>input voltage</td> </tr> <tr> <td>GREEN</td> <td>output signal</td> </tr> <tr> <td>BLACK</td> <td>common</td> </tr> </table> <p>Note: WHITE, BLUE, BROWN are not used.</p> | color code | signal | RED | input voltage | GREEN | output signal | BLACK | common |  |
| pin   | signal   |   |  |               |   |               |   |        |   |            |        |       |               |       |               |       |        |  |            |        |     |               |       |               |       |        |  |
| A   | input voltage  |   |  |               |   |               |   |        |   |            |        |       |               |       |               |       |        |  |            |        |     |               |       |               |       |        |  |
| B   | output signal  |   |  |               |   |               |   |        |   |            |        |       |               |       |               |       |        |  |            |        |     |               |       |               |       |        |  |
| C   | common   |   |  |               |   |               |   |        |   |            |        |       |               |       |               |       |        |  |            |        |     |               |       |               |       |        |  |
| color code  | signal   |   |  |               |   |               |   |        |   |            |        |       |               |       |               |       |        |  |            |        |     |               |       |               |       |        |  |
| WHITE   | input voltage  |   |  |               |   |               |   |        |   |            |        |       |               |       |               |       |        |  |            |        |     |               |       |               |       |        |  |
| GREEN   | output signal  |   |  |               |   |               |   |        |   |            |        |       |               |       |               |       |        |  |            |        |     |               |       |               |       |        |  |
| BLACK   | common   |   |  |               |   |               |   |        |   |            |        |       |               |       |               |       |        |  |            |        |     |               |       |               |       |        |  |
| color code  | signal   |   |  |               |   |               |   |        |   |            |        |       |               |       |               |       |        |  |            |        |     |               |       |               |       |        |  |
| RED   | input voltage  |   |  |               |   |               |   |        |   |            |        |       |               |       |               |       |        |  |            |        |     |               |       |               |       |        |  |
| GREEN   | output signal  |   |  |               |   |               |   |        |   |            |        |       |               |       |               |       |        |  |            |        |     |               |       |               |       |        |  |
| BLACK   | common   |   |  |               |   |               |   |        |   |            |        |       |               |       |               |       |        |  |            |        |     |               |       |               |       |        |  |

\*-Test pressure: 100 feet [30 meters] H<sub>2</sub>O (40 PSID); Test Medium: Air; Duration: 2 hours. \*\*-Applies to stainless steel enclosure only.

**Cable Guide Options:**

|   |  |  |   |
|---|--|--|---|
| <p><b>G</b> order code:</p> <p><b>0</b></p> <p>standard cable guide</p>  <p>1.87 in.</p> | <p><b>1</b></p> <p>stainless steel cable guide</p>  <p>1.87 in.</p> | <p><b>2*</b></p> <p>polyurethane cable bellows</p>  <p>3.75 in.</p> | <p><b>3</b></p> <p>integral cable brush</p>  <p>1.88 in.</p> |
|---|--|--|---|

\*note: all ranges up to 25 inches only

