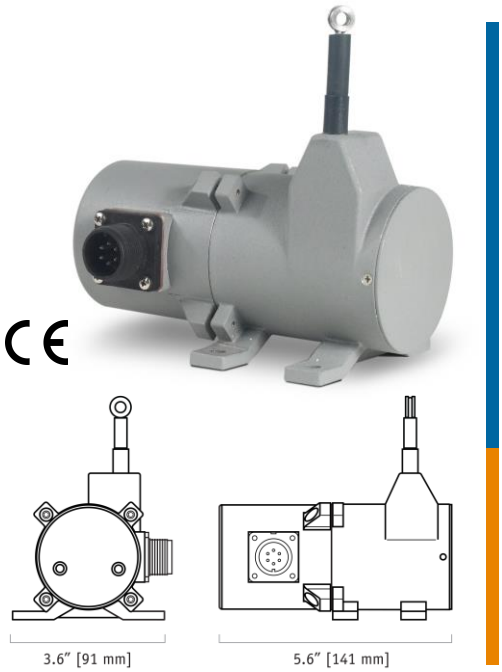



# PT8510

## Cable Actuated Sensor
## Heavy Industrial • 0...5, 0...10 Vdc

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

**Aluminum or Stainless Steel Enclosure Options**

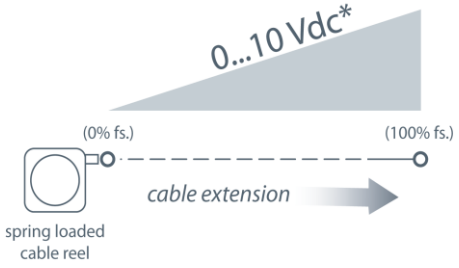
**VLS Option to Prevent Free-Release Damage**

**IP68 • NEMA 6 Protection**

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*

## General

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

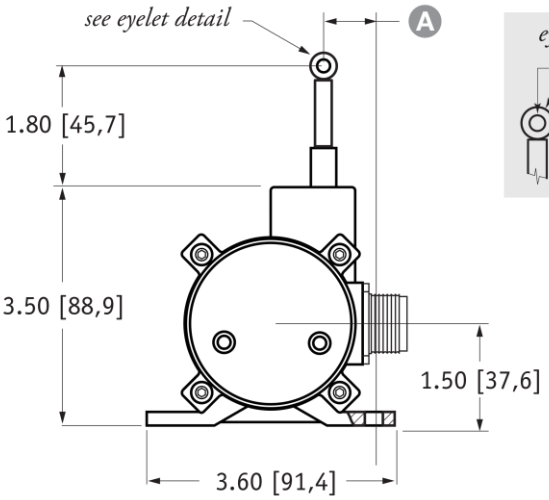
## Electrical

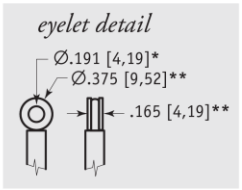
| | |
|---|---|
| **Input Voltage** | see ordering information |
| **Input Current** | 10 mA maximum |
| **Output Impedance** | 1000 ohms |
| **Maximum Load** | 5000 ohms |
| **Zero and Span Adjustment** | see ordering information |

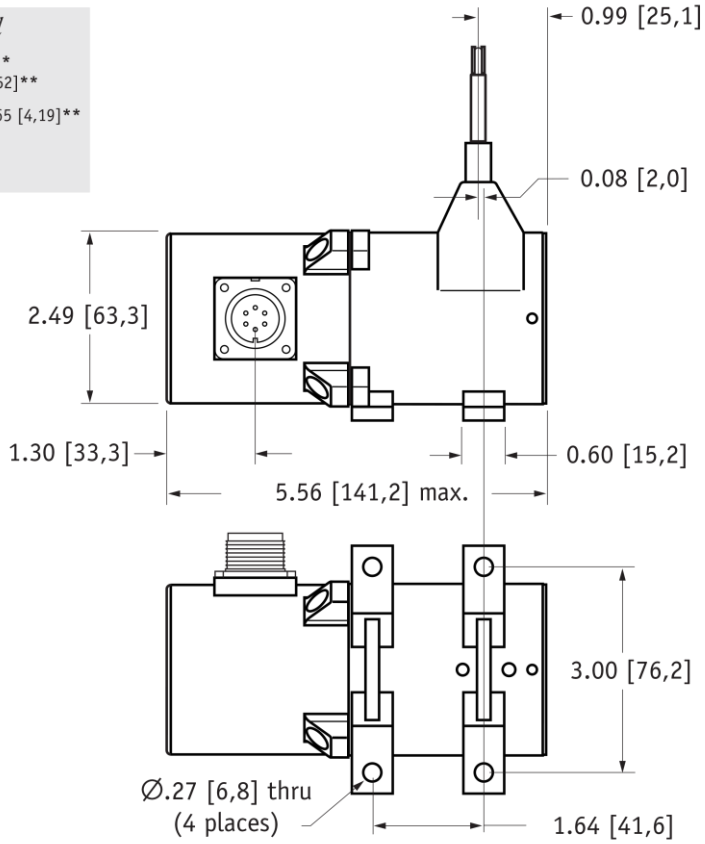
## Environmental

| | |
|---|---|
| **Enclosure** | NEMA 4/4X/6, IP 67/68 |
| **Operating Temperature** | -40º to 200ºF (-40º to 90ºC) |
| **Vibration** | up to 10 g to 2000 Hz maximum |

## 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]

## Ordering Information

### Model Number:

**PT8510-** ____ Ⓡ **-** __ Ⓐ __ Ⓑ **1** Ⓒ **-** **1** Ⓓ __ Ⓔ __ Ⓕ __ Ⓖ
*order code:*

Sample Model Number:

**PT8510 - 0030 - 111 - 1110**

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

### Full Stroke Range:

| Ⓡ *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*: | $2.5 \times 10^6$ | $2.5 \times 10^6$ | $5 \times 10^5$ | $5 \times 10^5$ | $5 \times 10^5$ | $5 \times 10^5$ | $5 \times 10^5$ | $2.5 \times 10^5$ | $2.5 \times 10^5$ | $2.5 \times 10^5$ |

**–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:

| Ⓐ *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:

| Ⓑ *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:

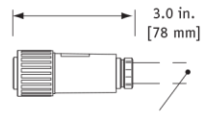
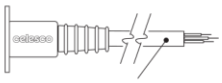
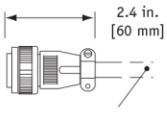
| Ⓔ *order code:* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| output signal options: | 0...10 VDC | 10...0 VDC | 0...5 VDC | 5...0 VDC | -10...+10 VDC | +10...-10 VDC | -5...+5 VDC | +5...-5 VDC |
| input voltage: | 14.5 – 40 vdc | | 10.5 – 40 vdc | | 14.5 – 40 vdc | | 10.5 – 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:*

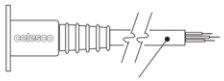
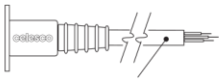
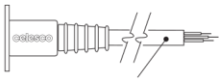
ordercode = **1** = 0...10 vdc { = 0 vdc = 10 vdc

## 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.<br>16 AWG max conductor size<br>connector: MS3102E-14S-6P<br>mating plug: MS3106E-14S-6S | 10 ft. x 0.4-in. dia.<br>[3 M x 10 mm dia.]<br>3-conductor, 18 AWG<br>type SJTOW | 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 | 25 ft. x 0.2-in. dia.<br>[7,5 M x 5 mm dia.]<br>6-conductor, 24 AWG<br>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.<br>[30 M x 10 mm dia.]<br>18 AWG, type SJTOW | 10 ft. x 0.4-in. dia.<br>[3 M x 10 mm dia.]<br>3-conductor, 18 AWG<br>type SJTOW | 100 ft. x 0.4-in. dia.<br>[30 M x 10 mm dia.]<br>3-conductor, 18 AWG<br>type SJTOW |

**6-pin Mating Plug**

| pin | signal |
|---|---|
| A | input voltage |
| B | output signal |
| C | common |

*contact view*

**Waterproof Cable**

| color code | signal |
|---|---|
| WHITE | input voltage |
| GREEN | output signal |
| BLACK | common |

**Instrumentation Cable**

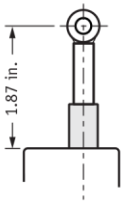
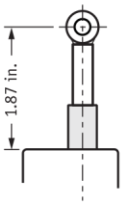
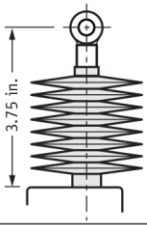
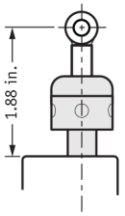
| color code | signal |
|---|---|
| RED | input voltage |
| GREEN | output signal |
| BLACK | common |

*Note: WHITE, BLUE, BROWN are not used.*

**–Test pressure: 100 feet [30 meters] $H_2O$ (40 PSID); Test Medium: Air; Duration: 2 hours. ** –Applies to stainless steel enclosure only.*

## Cable Guide Options:

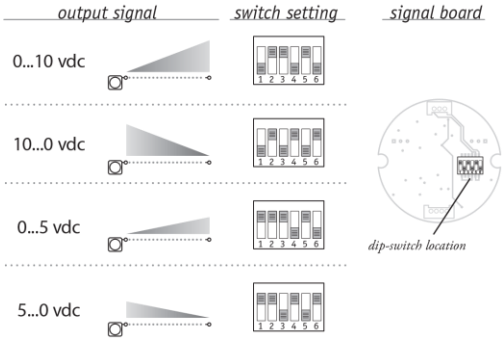
**G** *order code:*

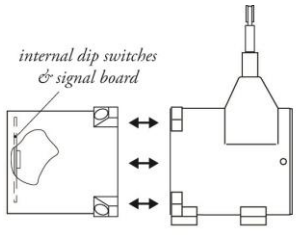
| 0 | 1 | 2* | 3 |
|---|---|---|---|
| standard cable guide | stainless steel cable guide | polyurethane cable bellows | integral cable brush |
|   |   |   |   |

**note: all ranges up to 25 inches only*

## Output Signal Selection (does not apply to -5...+5 and -10...+10 VDC options)

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 rear cover.

## VLS Option - Free Release Protection

The patented Celesco Velocity Limiting System (VLS) is an option for PT8000 Series cable extension transducers that limits cable retraction to a safe 40 to 55 inches per second.

The VLS option prevents the measuring cable from ever reaching a damaging velocity during an accidental free release. This option is ideal for mobile applications that require frequent cable disconnection and reconnection. It prevents expensive unscheduled downtime due to accidental cable mishandling or attachment failure.

VLS is NOT available for medium and high cable tension options or 2, 5 and 15-inch stroke ranges.

### How to Configure Model Number for VLS

VLS8510- ____ - 1 ____ 1 ____ - 1 ____ ____ ____

| R | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 0015 | | 1 | | | 1 | 1 | 0 |
| 0020 | | 2 | | | 2 | 2 | 1 |
| 0025 | | 3 | | | 3 | 3 | 3 |
| 0030 | | 4 | | | 4 | 4 | |
| 0040 | | | | | 5 | 5 | |
| 0050 | | | | | 6 | 6 | |
| 0060 | | | | | 7 | 7 | |
| = available options** | | | | | 8 | | |

*creating VLS model number (example):*

1. select PT8420 model — PT8510-0060-111-1110
2. remove "PT" from the model number — ~~PT~~ 8510-0060-111-1110
3. add "VLS" — VLS + 8510-0060-111-1110
4. completed model number! — VLS8510-0060-111-1110

***Note: please contact factory for a solution to options not supported.*

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