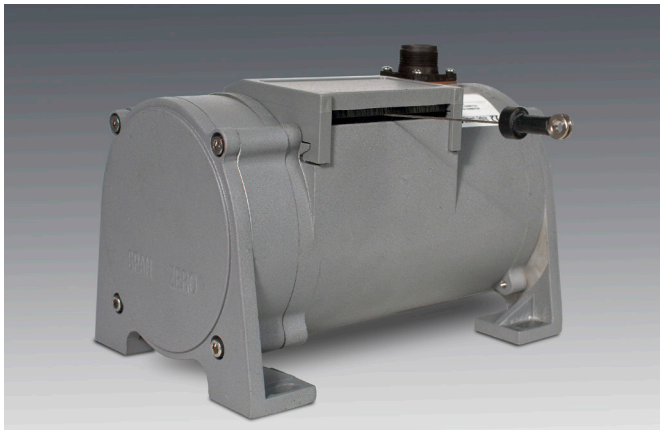
# PT9510

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

**Absolute Linear Position to 550 inches (1400 cm)**
**Aluminum or Stainless Steel Enclosure Options**
**VLS Option To Prevent Free-Release Damage**
**IP68 • NEMA 6 Protection • Hazardous Area Certification**

CE



### GENERAL

| | |
|---|---|
| Full Stroke Range Options (on this datasheet) | 0-75 to 0-550 inches |
| Output Signal Options | 0...10, 0...5, -5...+5, -10...+10 VDC |
| Accuracy | ± 0.12% full stroke |
| Repeatability | ± 0.05% full stroke |
| Resolution | essentially infinite |
| Measuring Cable Options | stainless steel or thermoplastic |
| Enclosure Material | powder-painted aluminum or 303 stainless steel |
| Sensor | plastic-hybrid precision potentiometer |
| Potentiometer Cycle Life | ≥ 250,000 |
| Maximum Retraction Acceleration | see ordering information |
| Maximum Velocity | see ordering information |
| Weight, Aluminum (Stainless Steel) Enclosure | 8 lbs. (16 lbs.) max. |

### ELECTRICAL

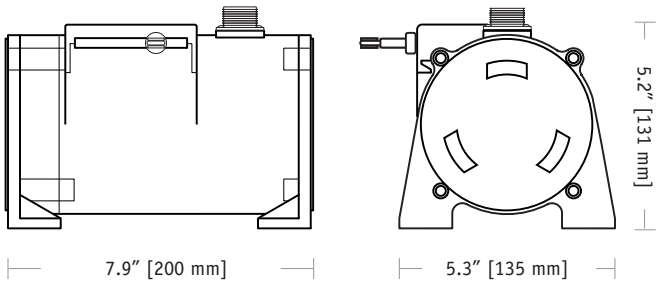
| | |
|---|---|
| Input Voltage | 14.5-40VDC (10.5-40VDC for 0-5 volt output) |
| Input Current | 10 mA maximum |
| Output Impedance | 1000 ohms |
| Maximum Output Load | 5000 ohms |
| Output Signal, Zero Adjust | up to 50% of full stroke range |
| Output Signal, Span Adjust | to 50% of factory set span |

### 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 |

### EMC COMPLIANCE PER DIRECTIVE 89/336/EEC

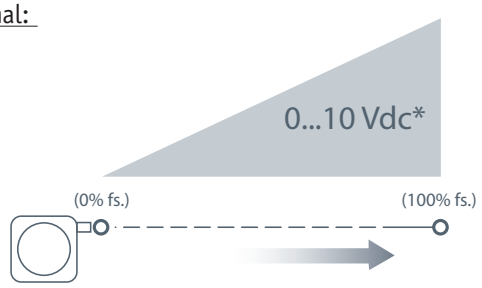
| | |
|---|---|
| Emission / Immunity | EN50081-2 / EN50082-2 |




The PT9510 can operate from an unregulated 14.5 to 40 VDC power supply while providing a regulated output signal over it's full extended range. It provides a 0 - 5 or 0 - 10 VDC position feedback signal proportional to the linear movement of it's stainless steel measuring cable.

As a member of Celesco's innovative family of NEMA-4 rated cable-extension transducers, the PT9510 offers numerous benefits. It installs in minutes, functions properly without perfectly parallel alignment, and when its cable is retracted, it measures only 6".

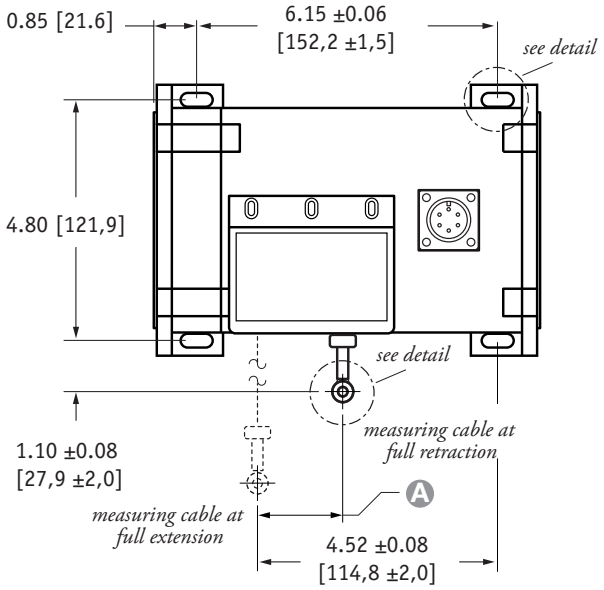
Output Signal:

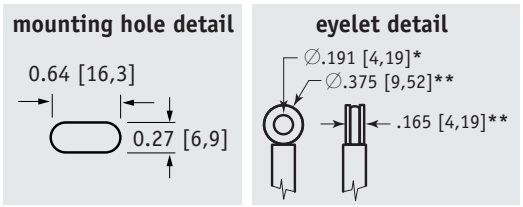



**Additional Output Options: 0...5, ⁻5...⁺5, ⁻10...⁺10 Vdc*

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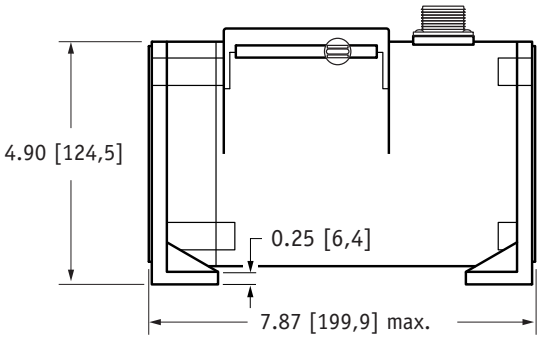
Fig. 1 – Outline Drawing (18 oz. cable tension only)

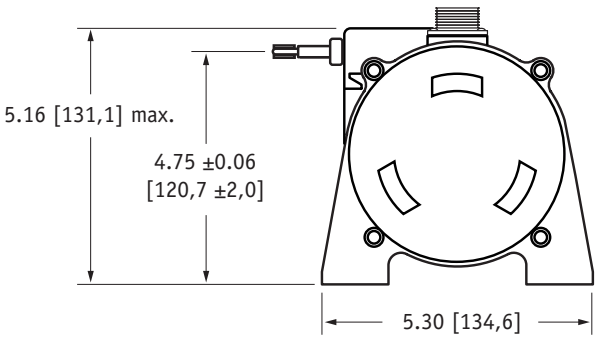



**A DIMENSION (INCHES)**

| | MEASURING CABLE | | | |
|---|---|---|---|---|
| **RANGE** | **∅.031 in.** | **∅.034 in.** | **∅.047 in.** | **∅.062 in.** |
| 75 | n/a | 0.22 | 0.29 | 0.37 |
| 100 | n/a | 0.29 | 0.39 | 0.49 |
| 150 | n/a | 0.44 | 0.59 | 0.73 |
| 200 | n/a | 0.58 | 0.79 | 0.98 |
| 250 | n/a | 0.73 | 0.98 | 1.22 |
| 300 | n/a | 0.88 | 1.18 | 1.47 |
| 350 | n/a | 1.02 | 1.38 | 1.71 |
| 400 | n/a | 1.17 | 1.57 | 1.96 |
| 450 | n/a | 1.31 | 1.77 | n/a |
| 500 | n/a | 1.46 | 1.97 | n/a |
| 550 | 1.61 | 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]

Ordering Information:

## *Model Number:*

**PT9510-**_____ **-** ____ ____ ____ **-** **1** ____ ____ ____ **0**
*order code:* Ⓡ Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ

Sample Model Number:

**PT9510 - 0500 - 111 - 1110**

| | | |
|---|---|---|
| Ⓡ | range: | 500 inches |
| Ⓐ | enclosure/cable tension: | aluminum/18 oz. |
| Ⓑ | measuring cable: | .034 nylon-coated stainless |
| Ⓒ | cable exit: | front |
| Ⓔ | output signal: | 0...10 vdc |
| Ⓕ | electrical connection: | 6-pin plastic connector |

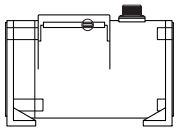
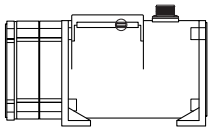
## *Full Stroke Range:*

| Ⓡ *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*

Ordering Information (cont.):

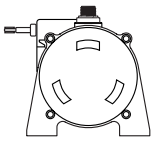
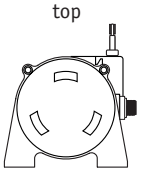
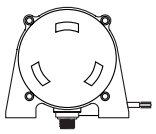
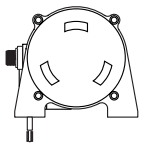
## Enclosure Material and Measuring Cable Tension:

| Ⓐ 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 | 1 g | 5 g | 5 g |
| max. velocity: | 60 inches/sec | 60 inches/sec | 200 inches/sec | 200 inches/sec |
| |  | standard housing *see fig 1.* |  | dual-spring housing *see fig 2.* |

## 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* | *all ranges up to 500 inches* | *all ranges up to 400 inches* | *550-inch range only* |
| general use: | indoor | outdoor, debris, high temperature | high voltage or magnetic field | outdoor, debris, high temperature |

## Cable Exit:

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

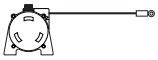
## Output Signals:

| Ⓓ 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 full stroke range | | | | to 75% of full stroke range | | | |
| 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 = 

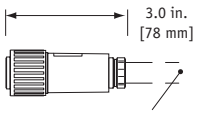
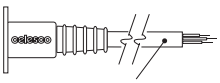
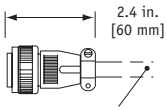
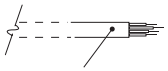
10 vdc = 

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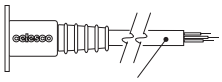
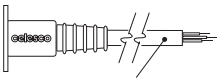
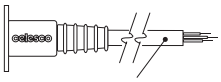
Ordering Information (cont.):

## *Electrical Connection:*

*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>18 AWG, type SJOW | 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>24 AWG, shielded |

*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>18 AWG, type SJTOW | 100 ft. x 0.4-in. dia.<br>[30 M x 10 mm dia.]<br>18 AWG, type SJTOW |

**6-pin Mating Plug**

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



*contact view*

**Waterproof Cable**

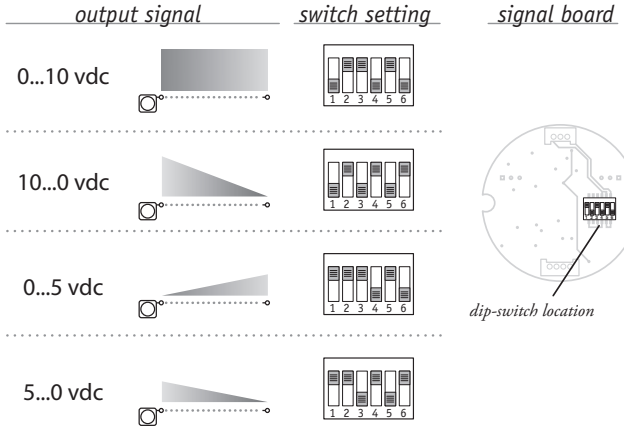
| color code | signal |
|---|---|
| WHITE | input voltage |
| GREEN | output signal |
| BLACK | common |

**Instrumentation Cable**

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

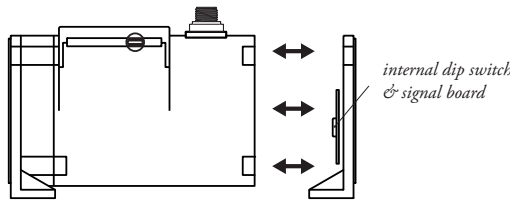
*Notes:* { * *–Test pressure: 100 feet [30 meters] $H_2O$ (40 PSID); Test Medium: Air; Duration: 2 hours.*
** *–NEMA 4X applies to stainless steel enclosure only.*

Output Signal Selection (does not apply to -5...+5 & -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.

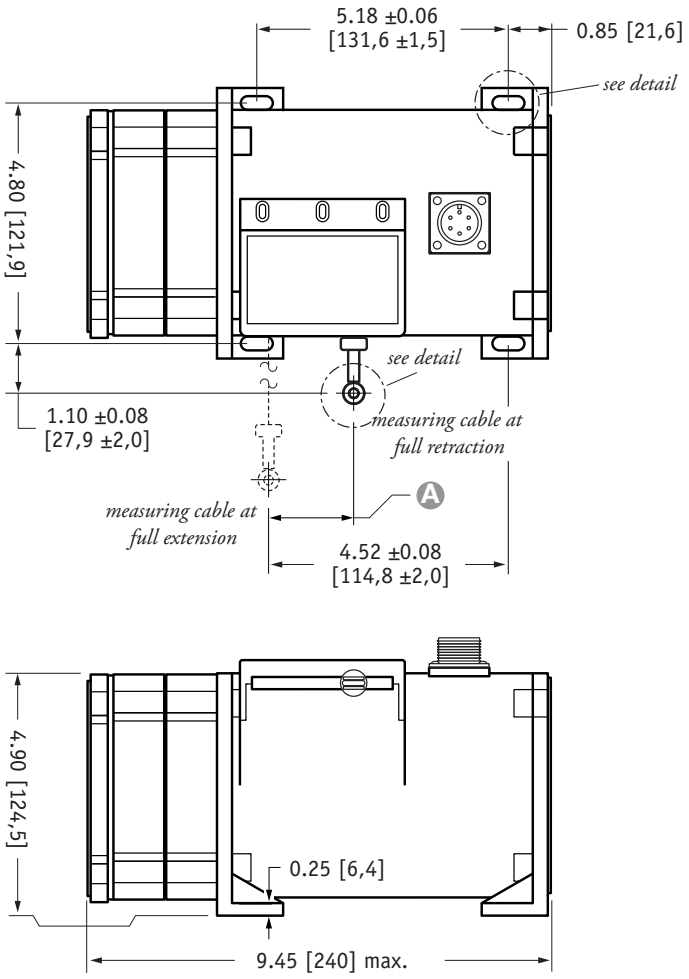
To gain access to the signal board, remove four Allen-Head Screws and remove end cover bracket.

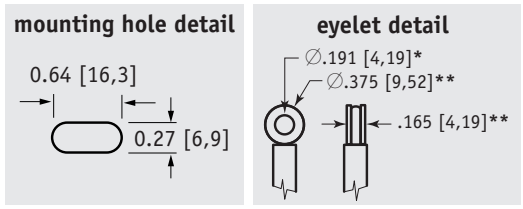



**Caution! Do Not Remove Spring-Side End Cover**

Removing spring-side end cover could cause spring to become unseated and permanently damaged.

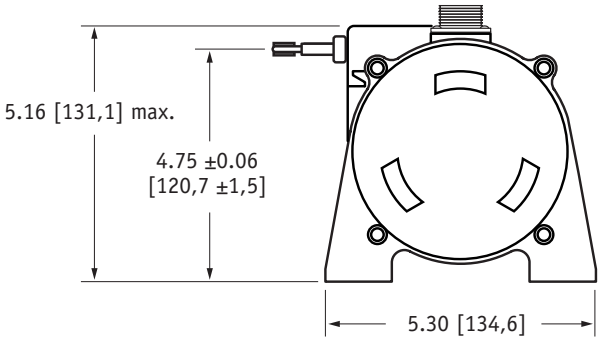
Fig. 2 – Outline Drawing (36 oz. cable tension only)




**A DIMENSION (INCHES)**

| | MEASURING CABLE | | | |
|---|---|---|---|---|
| **RANGE** | **∅.031 in.** | **∅.034 in.** | **∅.047 in.** | **∅.062 in.** |
| 75 | n/a | 0.22 | 0.29 | 0.37 |
| 100 | n/a | 0.29 | 0.39 | 0.49 |
| 150 | n/a | 0.44 | 0.59 | 0.73 |
| 200 | n/a | 0.58 | 0.79 | 0.98 |
| 250 | n/a | 0.73 | 0.98 | 1.22 |
| 300 | n/a | 0.88 | 1.18 | 1.47 |
| 350 | n/a | 1.02 | 1.38 | 1.71 |
| 400 | n/a | 1.17 | 1.57 | 1.96 |
| 450 | n/a | 1.31 | 1.77 | n/a |
| 500 | n/a | 1.46 | 1.97 | n/a |
| 550 | 1.61 | 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]

# **VLS Option** - Free Release Protection

The patented Celesco Velocity Limiting System (VLS) is an option for PT9000 Series cable extension transducers that limits cable retraction to a safe 40 to 55 inches per second for the single spring option and 40 to 80 inches per second for the higher tension dual spring option.

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.

How To Configure Model Number for VLS Option:

1. using guide below, select PT9510 model **PT9510-0100-111-1110**
2. remove "PT" from the model number **~~PT~~ 9510-0100-111-1110**
3. add "VLS" **VLS + 9510-0100-111-1110**
4. completed model number! **VLS9510-0100-111-1110**

**VLS9510 - ____ - ____ ____ ____ - 1 ____ ____ 0**

| R | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 0075 thru 0550 | 1 | 1 | 1 | | 1 | 1 | |
| | 2 | 2 | 2 | | 2 | 2 | |
| | 3 | 3 | 3 | | 3 | 3 | |
| | 4 | 4 | 4 | | 4 | 4 | |
| | | | | | 5 | 5 | |
| | | | | | 6 | 6 | |
| | | | | | 7 | 7 | |
| | | | | | 8 | | |

= available options.

version: **13.0** last updated: **February 11, 2016**

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