# PT9510 (Extended Range)

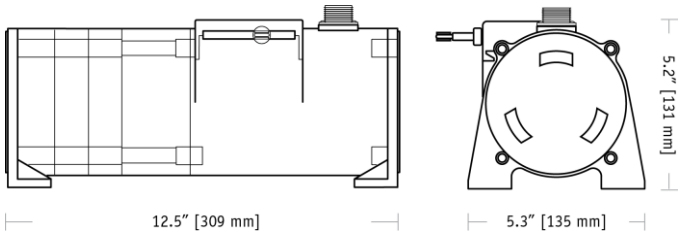
## Cable Actuated Sensor
## Extended Ranges • 0...5 Vdc, 0...10

**Absolute Linear Position to 1700 inches (4300 cm)**

**Stroke Range Options: 0-600 to 0-1700 inches**

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

**IP68 • NEMA 6 Protection**




The PT9510 can operate from an unregulated 14.5 to 40 VDC power supply while providing a regulated output signal over its full extended range of up to 1700". It provides a 0 - 10 VDC position feedback signal proportional to the linear movement of its 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


**Also Available: 0...5, ⁻5...⁺5, ⁻10...⁺10 Vdc*

## General

| | |
|---|---|
| **Full Stroke Range** | 0-600 to 0-1700 inches |
| **Output Signal** | 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 cycles |
| **Maximum Retraction Acceleration** | see ordering information |
| **Maximum Velocity** | see ordering information |
| **Weight, Aluminum (Stainless Steel) Enclosure** | 14 lbs. (28 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 |

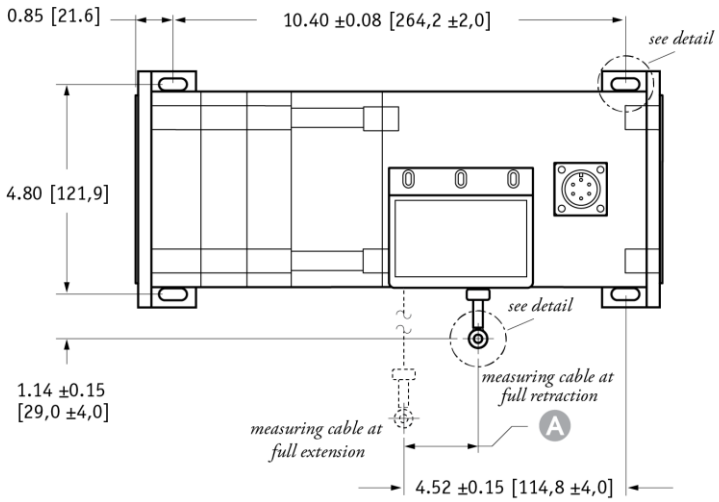
## Environmental

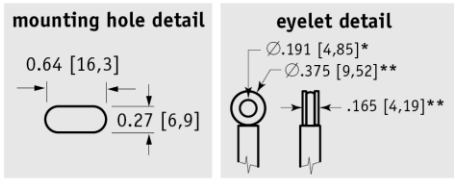
| | |
|---|---|
| **Enclosure** | NEMA 4/4X/6, IP 67 |
| **Operating Temperature** | -40° to 200°F (-40° to 90°C) |
| **Vibration** | up to 10 g to 2000 Hz maximum |

## EMC COMPLIANCE PER DIRECTIVE 89/336/EEC

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

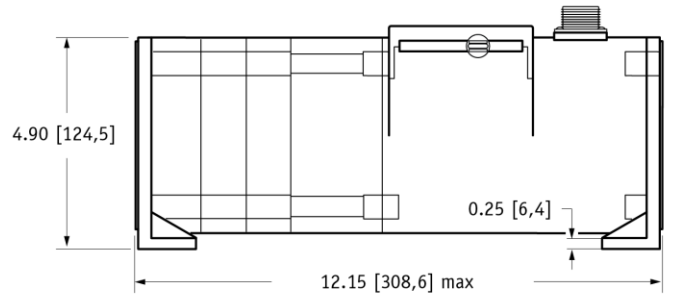
## Outline Drawing

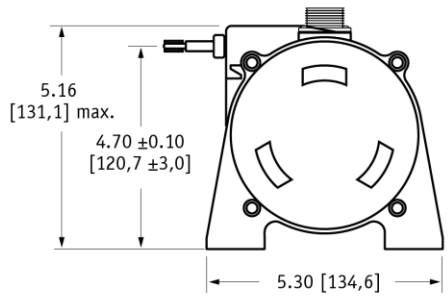



**A DIMENSION**

| RANGE | inches [mm] |
|---|---|
| 600 | 1.76 [44,7] |
| 800 | 1.58 [40,1] |
| 1000 | 1.98 [50,2] |
| 1200 | 1.98 [50,2] |
| 1500 | 1.86 [47,2] |
| 1700 | 2.11 [53,6] |




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.

1. using guide below, select PT9510 model **PT9510-1200-111-1110**
2. remove "PT" from the model number **~~PT~~ 9510-1200-111-1110**
3. add "VLS" **VLS + 9510-1200-111-1110**
4. completed model number! **VLS9510-1200-111-1110**

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

| ⓔ | Ⓐ | Ⓑ | Ⓒ | Ⓓ | Ⓔ | Ⓕ | Ⓖ |
|---|---|---|---|---|---|---|---|
| 0600 | 1 | 1 | 1 | | 1 | 1 | |
| 0800 | 3 | 2 | 2 | | 2 | 2 | |
| 1000 | | | 3 | | 3 | 3 | |
| 1200 | | | 4 | | 4 | 4 | |
| 1500 | | | | | 5 | 5 | |
| 1700 | | | | | 6 | 6 | |
| | | | | | 7 | 7 | |
| | | | | | 8 | | |

= available options.

## Ordering Information

### Model Number:

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

Sample Model Number:

**PT9510 - 1200 - 111 - 1110**

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

### Full Stroke Range:

| Ⓡ order code: | 0600 | 0800 | 1000 | 1200 | 1500 | 1700 |
|---|---|---|---|---|---|---|
| full stroke range, min: | 600 in. | 800 in. | 1000 in. | 1200 in. | 1500 in. | 1700 in. |
| cable tension (±35%): | 27 oz. | 24 oz. | 20 oz. | 19 oz. | 18 oz. | 17 oz. |

### Enclosure Material:

| Ⓐ order code: | 1 | 3 |
|---|---|---|
| enclosure material: | powder-painted aluminum | 303 stainless steel |
| max. acceleration: | 1g | 1g |
| max. velocity: | 60 inches/sec. | 60 inches/sec. |

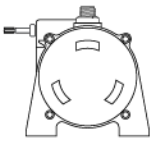
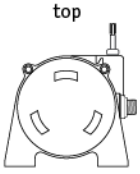
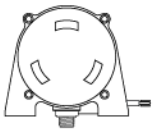
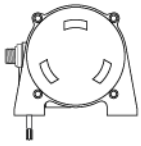
### Measuring Cable:

| Ⓑ order code: | 1 | 2 |
|---|---|---|
| cable construction: | nylon-coated stainless steel rope* | bare stainless steel rope* |
| general use: | *indoor* | *outdoor, debris, high temperature* |

*cable diameter:

| stroke range: | 0600 | 0800 | 1000 | 1200 | 1500 | 1700 |
|---|---|---|---|---|---|---|
| nylon-coated stainless: | .034 in. | .019 in. | .019 in. | .019 in. | .014 in. | .014 in. |
| bare stainless: | .031 in. | .018 in. | .018 in. | .018 in. | .015 in. | .015 in. |

### Cable Exit:

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

### Output Signals:

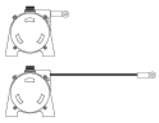
| Ⓔ order code: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| output signal options: | 0...10 VDC | 10...0 VDC | 0...5 VDC | 5...0 VDC | -10...+10 VDC | +10...-10 VDC | -5...+5 VDC | +5...-5 VDC |
| input voltage: | 14.5 – 40 vdc | | 10.5 – 40 vdc | | 14.5 – 40 vdc | | 10.5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

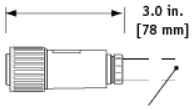
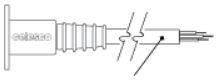
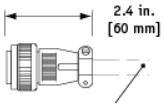
ordercode = **1** = 0...10 VDC

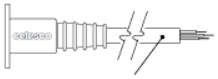
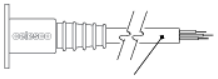
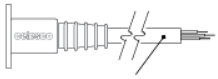
0 vdc =

10 vdc =



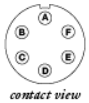
## Electrical Connection:

| 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**

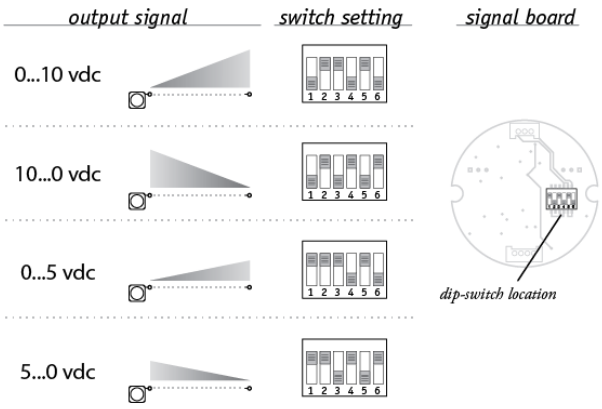
| color code | signal |
|---|---|
| WHITE | input voltage |
| GREEN | output signal |
| BLACK | common |

**Instrumentation Cable**

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

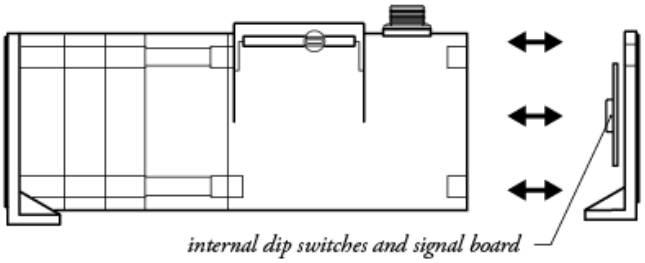
*Notes:* { * –*Test pressure: 100 feet [30 meters] $H_2O$ (40 PSID); Test Medium: Air; Duration: 2 hours.*
** –*NEMA 4X applies to stainless steel enclosure only.*

## Output Signal Settings (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.


*internal dip switches and signal board*

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