

# PT9101

## Heavy Industrial • Voltage Divider

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



### GENERAL

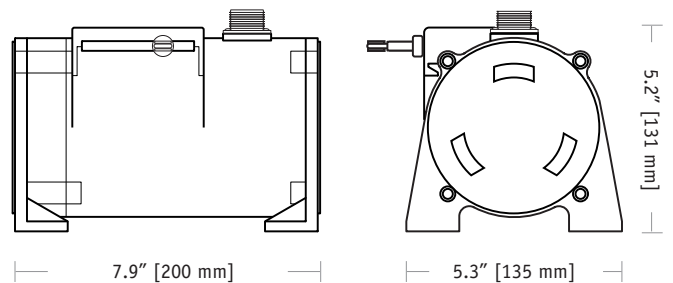
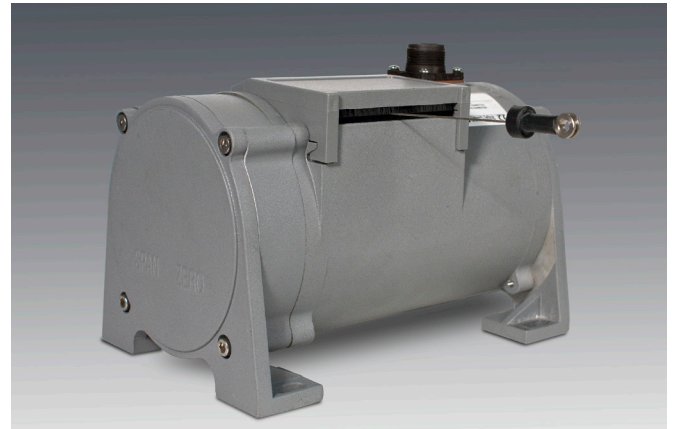
Full Stroke Range Options (on this datasheet)	0-75 to 0-550 inches
Output Signal	voltage divider (potentiometer)
Accuracy	± 0.10% full stroke
Repeatability	± 0.02% full stroke
Resolution	essentially infinite
Measuring Cable Options	stainless steel or thermoplastic
Enclosure Material	powder-painted aluminum 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 Resistance Options	500, 1K, 5K, 10K Ω, bridge
Power Rating, Watts	2.0 at 70°F derated to 0 at 250° F
Recommended Maximum Input Voltage	30V (AC/DC)
Output Signal Change Over Full Stroke Range	94% ±4% of input voltage

### ENVIRONMENTAL

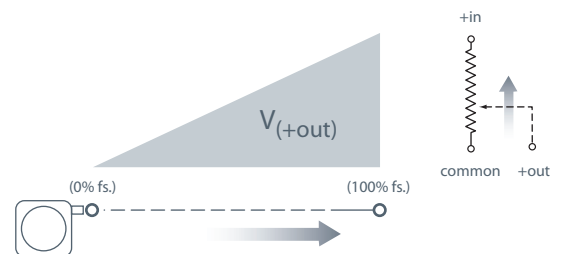
Enclosure	NEMA 4/4X/6, IP 67/68
Operating Temperature	-40° to 200°F (-40° to 90°C)
Vibration	up to 10 g to 2000 Hz maximum



The PT9101 is a work-horse for demanding long-range applications requiring a linear position measurements in ranges up to 1700 inches. Available with either a 500, 1K, 5K, or 10K ohm potentiometer, the PT9101 operates with any basic panel meter or programmable controller.

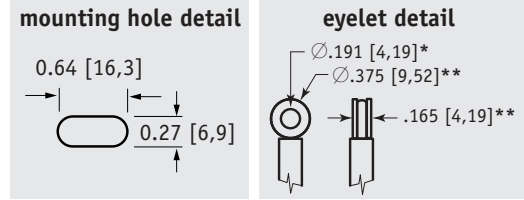
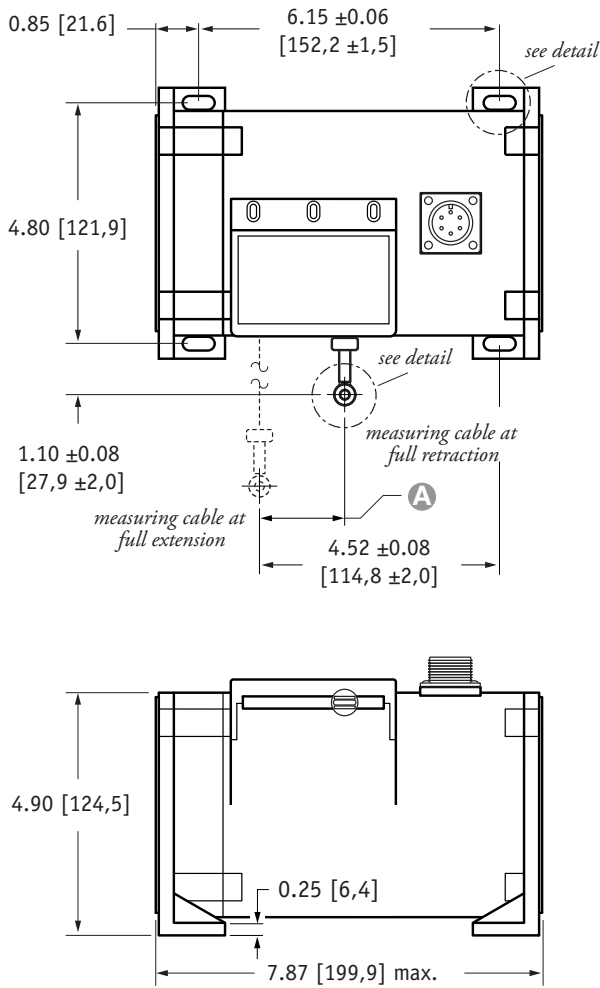
As a member of Celesco's innovative family of NEMA 4 rated cable-extension transducers, the PT9101 offers numerous benefits. It installs in minutes, works without perfect parallel alignment, and when it's stainless-steel cable is retracted, it measures only 6".

### Output Signal:



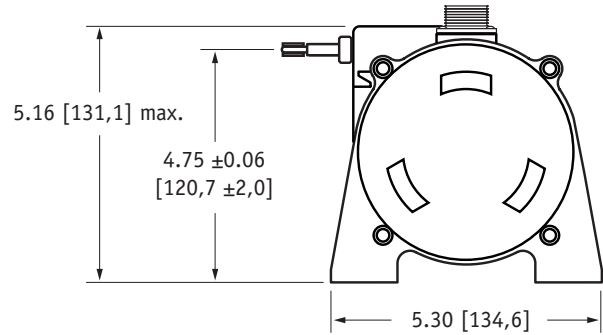
— bridge circuit option available, see ordering information

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



**A DIMENSION (INCHES)**

RANGE	MEASURING CABLE			
	Ø.031 in.	Ø.034 in.	Ø.047 in.	Ø.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:**

**PT9101-** \_\_\_\_\_ **1** **0**  
order code:                    **R**   **A**   **B**   **C**   **D**   **E**   **F**   **G**

Sample Model Number:

**PT9101 - 0500 - 111 - 1110**

- R** range: 500 inches
- A** enclosure/cable tension: aluminum/18 oz.
- B** measuring cable: .034 nylon-coated stainless
- C** cable exit: front
- D** output signal: 500 ohm potentiometer
- F** electrical connection: 6-pin plastic connector

**Full Stroke Range:**

<b>R</b> order code:	<b>0075</b>	<b>0100</b>	<b>0150</b>	<b>0200</b>	<b>0250</b>	<b>0300</b>	<b>0350</b>	<b>0400</b>	<b>0450*</b>	<b>0500*</b>	<b>0550*</b>
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.

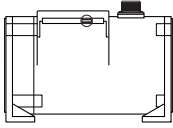
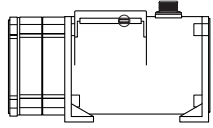
\* – 36 oz. cable tension strongly recommended

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	.33 G	5 G	2 G
max. velocity:	60 inches/sec	20 inches/sec	200 inches/sec	80 inches/sec

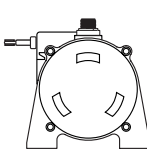
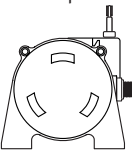
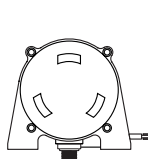
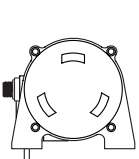
  

	standard housing see fig 1.		dual-spring housing see fig 2.
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**Measuring Cable:**

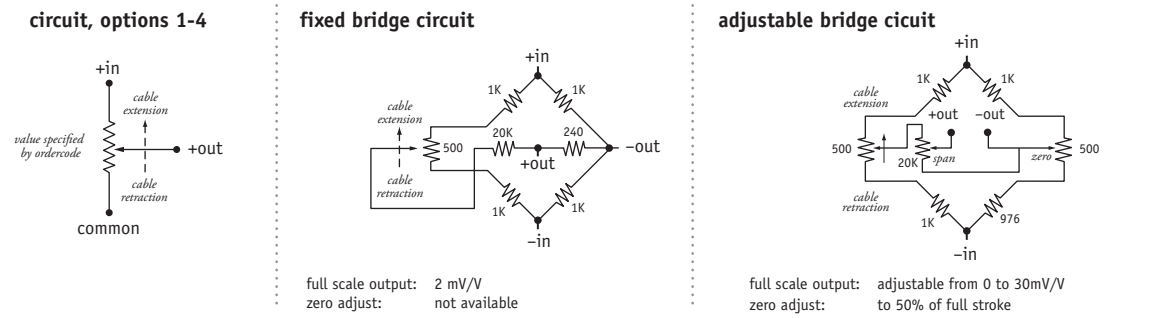
Ⓑ order code:	1	2	3	4
	∅.034-inch nylon-coated stainless steel	∅.047-inch stainless steel	∅.062-inch thermoplastic	∅.031-inch stainless steel
	available in <b>all</b> ranges	all ranges up to <b>500 inches</b>	all ranges up to <b>400 inches</b>	<b>550 inch</b> range only

**Cable Exit:**

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

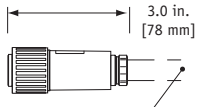
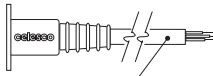
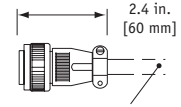

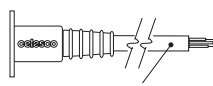
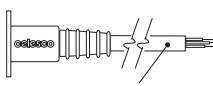
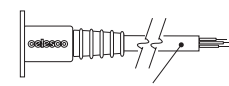
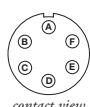
**Output Signals:**

Ⓓ order code:	1	2	3	4	5	6
	500 ohm*	1000 ohm*	5000 ohm*	10,000 ohm*	fixed bridge (2 mV/V)	adjustable bridge (0...30 mV/V)
					*tolerance = ±10%	



Ordering Information (cont.):

**Electrical Connection:**

① order code:	1	2	3	4																																										
	6-pin plastic connector w/mating plug <b>IP 67, NEMA 4X**, 6</b>	10-ft. [3 M] waterproof cable <b>IP 67, NEMA 4X**, 6</b>	6-pin metal connector w/mating plug <b>IP 65, NEMA 4</b>	25-ft. [7.5 M] instrumentation cable <b>IP 67, NEMA 6</b>																																										
	 3.0 in. [78 mm]		 2.4 in. [60 mm]																																											
	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																																										
① order code:	5	6	7																																											
	100-ft. [30 M] waterproof cable <b>IP 67, NEMA 4X**, 6</b>	10-ft. [3 M] <b>pressure tested*</b> waterproof cable <b>IP 68, NEMA 4X**, 6P</b>	100-ft. [30 M] <b>pressure tested*</b> waterproof cable <b>IP 68, NEMA 4X**, 6P</b>																																											
																																														
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	<b>6-pin Mating Plug</b> <table border="1"> <thead> <tr> <th>pin</th> <th>standard</th> <th>bridge</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>+ in</td> <td>+ in</td> </tr> <tr> <td>B</td> <td>common</td> <td>- in</td> </tr> <tr> <td>C</td> <td>+ out</td> <td>- out</td> </tr> <tr> <td>D</td> <td>-</td> <td>+ out</td> </tr> </tbody> </table>  contact view		pin	standard	bridge	A	+ in	+ in	B	common	- in	C	+ out	- out	D	-	+ out	<b>Waterproof Cable</b> <table border="1"> <thead> <tr> <th>color code</th> <th>standard</th> <th>bridge</th> </tr> </thead> <tbody> <tr> <td>WHITE</td> <td>+ in</td> <td>n/a</td> </tr> <tr> <td>BLACK</td> <td>common</td> <td>n/a</td> </tr> <tr> <td>GREEN</td> <td>+ out</td> <td>n/a</td> </tr> </tbody> </table>	color code	standard	bridge	WHITE	+ in	n/a	BLACK	common	n/a	GREEN	+ out	n/a	<b>Instrumentation Cable</b> <table border="1"> <thead> <tr> <th>color code</th> <th>standard</th> <th>bridge</th> </tr> </thead> <tbody> <tr> <td>RED</td> <td>+ in</td> <td>+ in</td> </tr> <tr> <td>BLACK</td> <td>common</td> <td>- in</td> </tr> <tr> <td>GREEN</td> <td>+ out</td> <td>+ out</td> </tr> <tr> <td>WHITE</td> <td>-</td> <td>- out</td> </tr> </tbody> </table>	color code	standard	bridge	RED	+ in	+ in	BLACK	common	- in	GREEN	+ out	+ out	WHITE	-	- out
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Notes: \*—Test pressure: 100 feet [30 meters] H<sub>2</sub>O (40 PSID); Test Medium: Air; Duration: 2 hours. \*\*—NEMA 4X applies to stainless steel enclosure only.

**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.

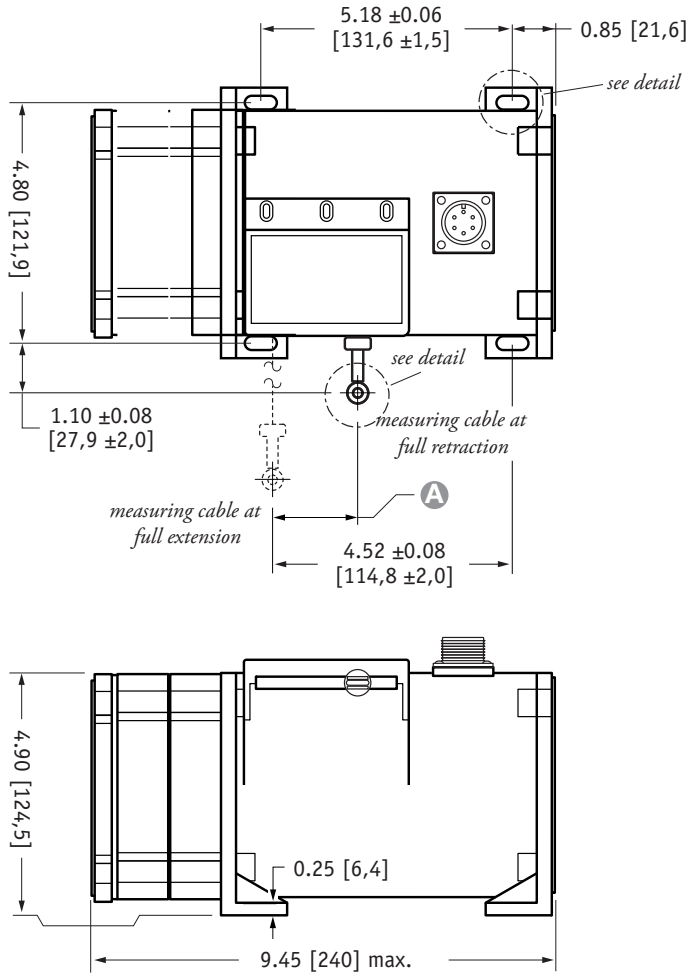
How To Configure Model Number for VLS Option:

**VLS 9101-** \_\_\_\_\_ **R** \_\_\_\_\_ **A** \_\_\_\_\_ **B** \_\_\_\_\_ **C** \_\_\_\_\_ **D** \_\_\_\_\_ **E** \_\_\_\_\_ **F** \_\_\_\_\_ **G**

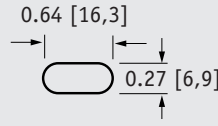
creating VLS model number (example)...

1. select PT9101 model **PT9101-0100-111-1110**
2. remove "PT" from the model number ~~PT~~ **9101-0100-111-1110**
3. add "VLS" **VLS + 9101-0100-111-1110**
4. completed model number ! **VLS9101-0100-111-1110**

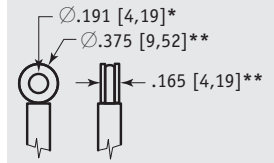
Fig. 2 – Outline Drawing (36 oz. cable tension only)



**mounting hole detail**

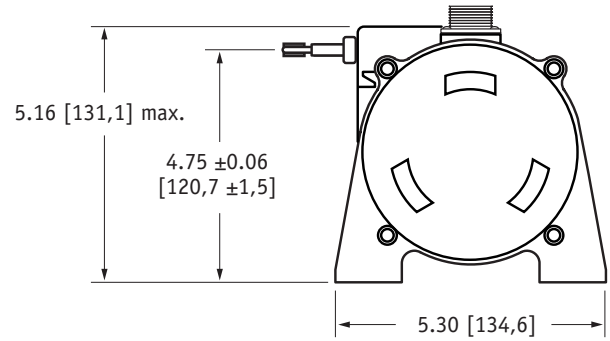


**eyelet detail**



**A DIMENSION (INCHES)**

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DIMENSIONS ARE IN INCHES [MM]  
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\* tolerance = +.005 -.001 [+.13 -.03]  
\*\* tolerance = +.005 -.005 [+1.3 -.13]

version: 9.0 last updated: August 15, 2013