

# Cable-Extension Position Transducer

**Precision Potentiometric Output**  
**Ranges: 0-600 to 0-1700 inches**  
**Industrial Grade**



< Extended Range >

# PT9101



## Specification Summary:

### GENERAL

Full Stroke Range Options—on this datasheet ..... 0-600 to 0-1700 inches  
 Output Signal ..... voltage divider (potentiometer)  
 Accuracy .....  $\pm 0.10\%$  full stroke  
 Repeatability .....  $\pm 0.02\%$  full stroke  
 Resolution ..... essentially infinite  
 Measuring Cable ..... nylon-coated stainless steel  
 Enclosure Material ..... powder-painted aluminum or stainless steel  
 Sensor ..... plastic-hybrid precision potentiometer  
 Potentiometer Cycle Life ..... 250,000 before signal degradation can occur  
 Maximum Retraction Acceleration ..... see ordering information  
 Maximum Velocity ..... see ordering information  
 Weight, Aluminum (Stainless Steel) Enclosure ..... 14 lbs. (28 lbs.) max.

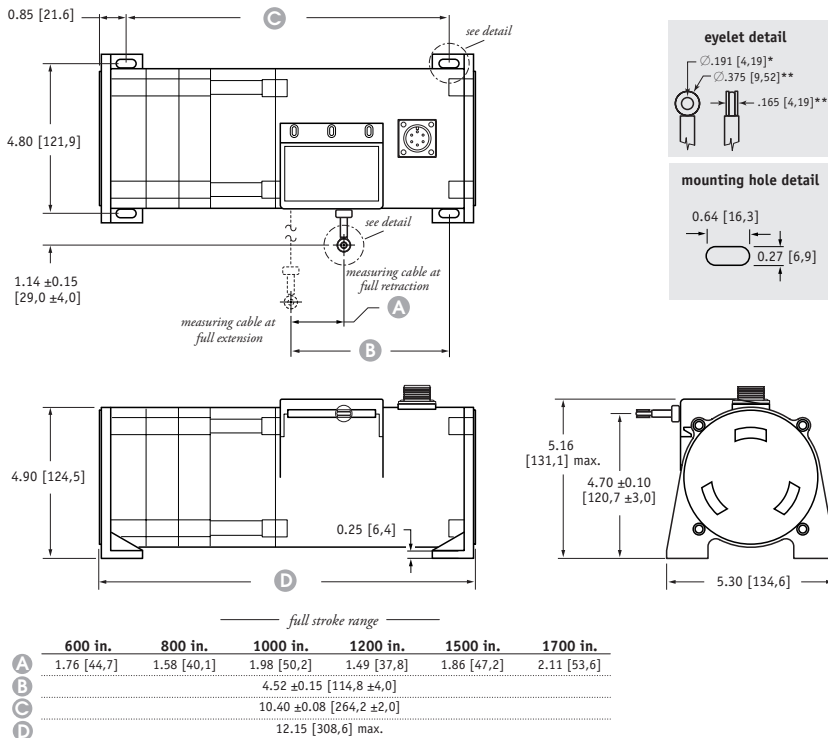
### ELECTRICAL

Input Resistance Options ..... 500, 1K, 5K, 10K  $\Omega$ , bridge, see ordering information  
 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 .....  $.94\% \pm 4\%$  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's to 2000 Hz maximum

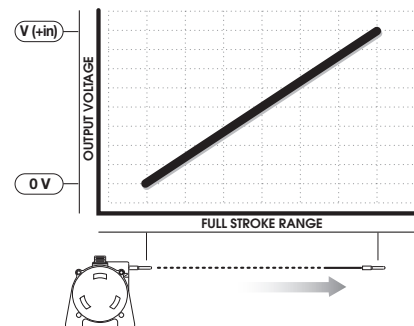
Fig. 1 - Outline Drawing for Output Signal Options 1-4 (500-10K ohms)



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



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

Sample Model Number:

**PT9101 - 1200 - 111 - 1110**

- R** range: 1200 inches
- A** enclosure: aluminum
- 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>0600</b>	<b>0800</b>	<b>1000</b>	<b>1200</b>	<b>1500</b>	<b>1700</b>
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.
measuring cable:	.034-in. dia. nylon-coated stainless	.019-in. dia. nylon-coated stainless	.019-in. dia. nylon-coated stainless	.019-in. dia. nylon-coated stainless	.014-in. dia. nylon-coated stainless	.014-in. dia. nylon-coated stainless

**Enclosure Material:**

<b>A</b> order code:	<b>1</b>	<b>3</b>
enclosure material:	powder-painted aluminum	303 stainless steel
max. acceleration:	1G	.33G
max. velocity:	60 inches/sec.	20 inches/sec.

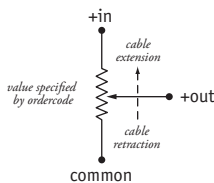
**Cable Exit:**

<b>C</b> order code:	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
	front	top	back	down

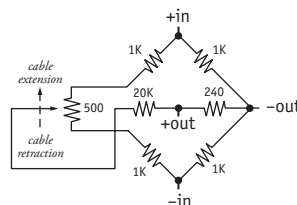
**Output Signals:**

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

circuit, options 1-4

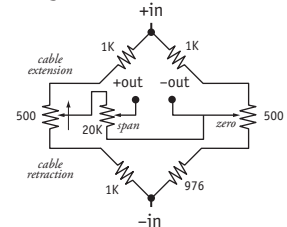


fixed bridge circuit



full scale output: 2 mV/V  
 zero adjust: not available

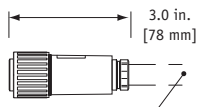
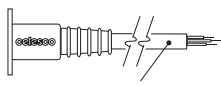
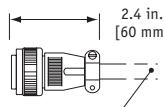

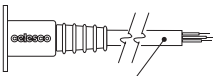
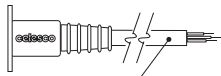
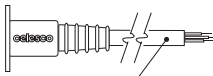
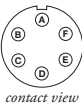
adjustable bridge circuit



full scale output: adjustable from 0 to 30mV/V  
 zero adjust: to 50% of full stroke

**Ordering Information:**

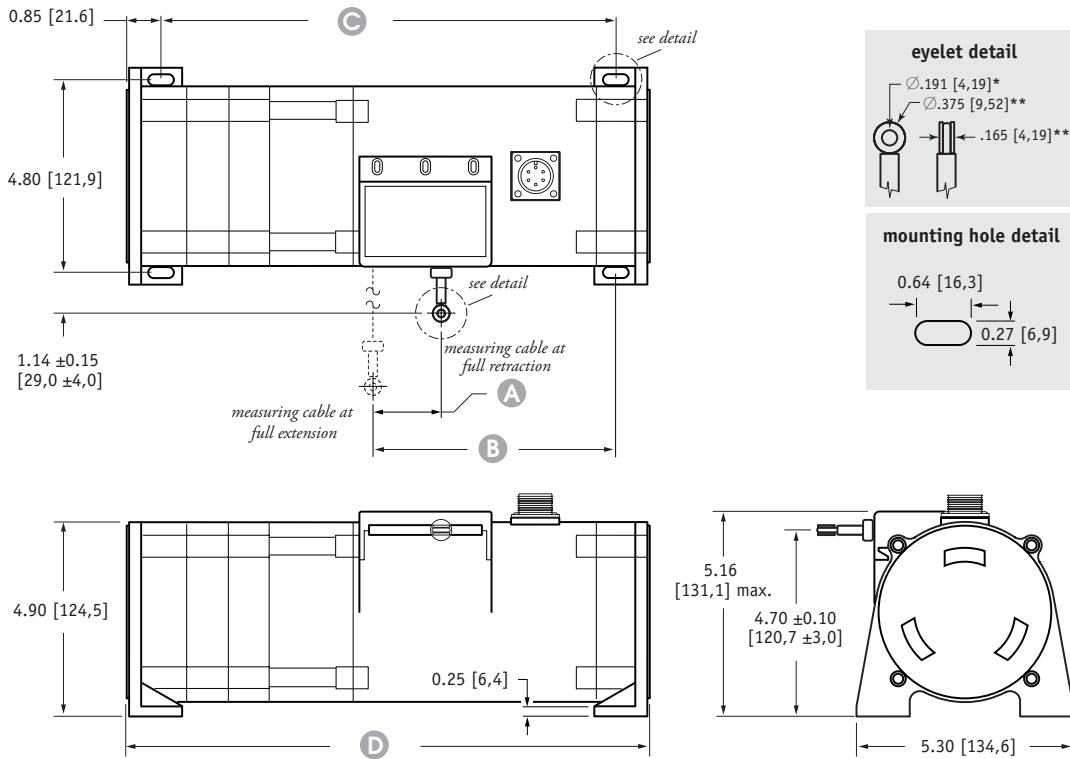
**Electrical Connection:**

<p><b>1</b></p> <p>6-pin plastic connector w/mating plug <b>IP 67, NEMA 4X**, 6</b></p>  <p>1/2 - 5/16" [14 - 8 mm] cable dia. 16 AWG max conductor size connector: MS3102E-14S-6P mating plug: MS3106E-14S-6S</p>	<p><b>2</b></p> <p>10-ft. [3 M] waterproof cable <b>IP 67, NEMA 4X**, 6</b></p>  <p>10 ft. x 0.4-in. dia. [3 M x 10 mm dia.] 18 AWG, type SJTW</p>	<p><b>3</b></p> <p>6-pin metal connector w/mating plug <b>IP 65, NEMA 4</b></p>  <p>3/8-in. [9 mm] max cable dia. 16 AWG max conductor size connector: MS3102E-14S-6P mating plug: MS3106E-14S-6S</p>	<p><b>4</b></p> <p>25-ft. [7.5 M] instrumentation cable <b>IP 67, NEMA 6</b></p>  <p>25 ft. x 0.2-in. dia. [7.5 M x 5 mm dia.] 24 AWG, shielded</p>																																										
<p><b>5</b></p> <p>100-ft. [30 M] waterproof cable <b>IP 67, NEMA 4X**, 6</b></p>  <p>100 ft. x 0.4-in. dia. [30 M x 10 mm dia.] 18 AWG, type SJTW</p>	<p><b>6</b></p> <p>10-ft. [3 M] <b>pressure tested*</b> waterproof cable <b>IP 68, NEMA 4X**, 6P</b></p>  <p>10 ft. x 0.4-in. dia. [3 M x 10 mm dia.] 18 AWG, type SJTW</p>	<p><b>7</b></p> <p>100-ft. [30 M] <b>pressure tested*</b> waterproof cable <b>IP 68, NEMA 4X**, 6P</b></p>  <p>100 ft. x 0.4-in. dia. [30 M x 10 mm dia.] 18 AWG, type SJTW</p>																																											
<p><b>6-pin Mating Plug</b></p> <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>  <p>contact view</p>	pin	standard	bridge	A	+ in	+ in	B	common	- in	C	+ out	- out	D	-	+ out	<p><b>Waterproof Cable</b></p> <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	<p><b>Instrumentation Cable</b></p> <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.

**PT9101 Extended Range • Cable-Extension Transducer: Precision Potentiometric Output**

Fig. 2 – Outline Drawing for Output Signal Options 5-6 (bridge, adj. bridge)



	600 in.	800 in.	1000 in.	1200 in.	1500 in.	1700 in.
<b>A</b>	1.76 [44,7]	1.58 [40,1]	1.98 [50,2]	1.49 [37,8]	1.86 [47,2]	2.11 [53,6]
<b>B</b>	4.52 ±0.15 [114,8 ±4,0]		5.46 ±0.15 [138,7 ±4,0]			
<b>C</b>	10.40 ±0.08 [264,2 ±2,0]		11.34 ±0.08 [288,0 ±2,0]			
<b>D</b>	12.15 [308,6] max.		13.09 [332,5] max.			

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