

# Cable-Extension Position Transducer

**Position and Velocity Output Signals**  
**Ranges: 0-600 to 0-1700 inches**  
**Industrial Grade**

<Extended Range>

# PT9301

## Specification Summary:

### GENERAL

Full Stroke Range Options—on this datasheet . . . . . 0-600 to 0-1700 inches

### POSITION

Output Signal . . . . . voltage divider (potentiometer)  
 Accuracy . . . . .  $\pm 0.10\%$  full stroke  
 Repeatability . . . . .  $\pm 0.02\%$  full stroke  
 Resolution . . . . . *essentially infinite*  
 Sensor . . . . . plastic-hybrid precision potentiometer  
 Potentiometer Cycle Life . . . . . 250,000, min. —before signal degradation can occur  
 Input Resistance Options . . . . . 500, 1K, 5K or 10K  $\Omega$ —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

### VELOCITY

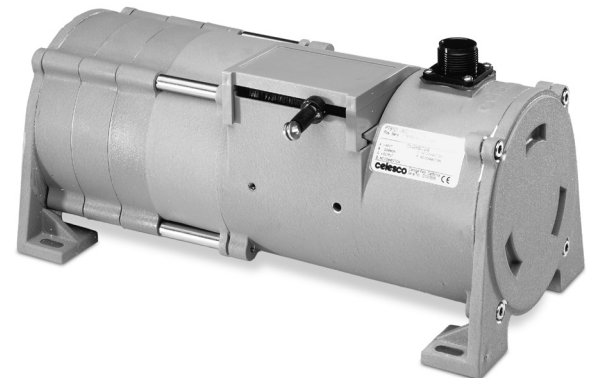
Output Signal . . . . . DC tachometer output  
 Linearity . . . . . better than  $\pm 0.10\%$  of output at any velocity  
 Repeatability . . . . .  $\pm 0.10\%$  of reading  
 Maximum Velocity • Retraction Acceleration . . . . . see ordering information  
 Sensor . . . . . tach generator  
 Input Voltage . . . . . none required  
 Output Voltage @ 100 inches per minute . . . . . 361 mV  $\pm 3\%$   
 Output Impedance . . . . . 350 ohms  $\pm 10\%$   
 Output Ripple (for velocity  $\geq 1.29$  inches per second) . . . . .  $\pm 3\%$  rms

### GENERAL

Measuring Cable . . . . . nylon-coated stainless steel  
 Enclosure Material . . . . . powder-painted aluminum or stainless steel  
 Weight, Aluminum (Stainless Steel) Enclosure . . . . . 14 lbs. (28 lbs.) max.

### ENVIRONMENTAL

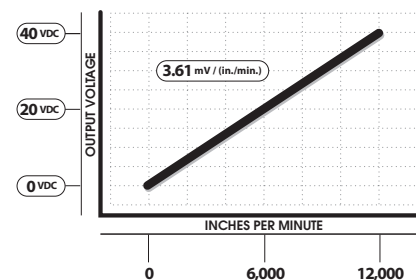
Enclosure . . . . . NEMA 4/4X/6, IP 67/68  
 Operating Temperature . . . . . -40° to 200°F (-40° to 90°C)  
 Vibration . . . . . up to 10 G's to 2000 Hz maximum



The PT9301 is a combination position and velocity transducer for demanding long-range applications requiring a linear position measurements in ranges up to 1700". A precision plastic-hybrid potentiometer provides accurate position feedback while a self-generating DC tachometer provides a velocity signal that is proportional to the speed of the traveling stainless-steel measuring cable.

As a member of Celesco's innovative family of NEMA-4 rated cable-extension transducers, the PT9301 offers numerous benefits. It installs in minutes, functions properly without perfectly parallel alignment, and when its cable is retracted, it measures only 6".

### Velocity Output Signal



# PT9301 Extended Range • Cable-Extension Transducer: Position and Velocity Output Signals

## Ordering Information:

### Model Number:

**PT9301** -      -      **1** -      **1** -      **0**

order code:      R      A      B      C      D      E      F      G

Sample Model Number:

**PT9301 - 1200 - 111 - 1110**

- R** range: 1200 inches
- A** enclosure: aluminum
- C** cable exit: front
- D** output signal: 500 ohm position / DC tachometer velocity
- F** electrical connection: 6-pin plastic connector

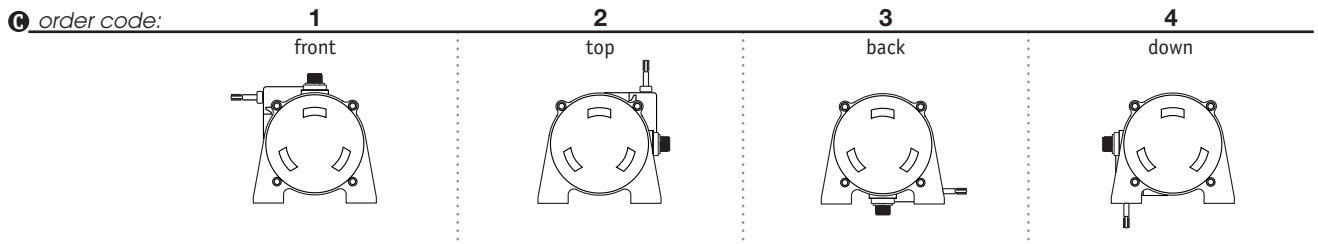
### Full Stroke Range:

<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:

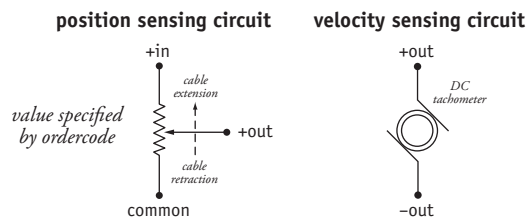
<b>A</b> order code:	<b>1</b>	<b>3</b>
enclosure material:	powder-painted aluminum	303 stainless steel
max. acceleration:	1G	.33G
max. velocity:	60 inches/sec.	20 inches/sec.

### Cable Exit:



### Output Signals:

<b>D</b> order code:	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
position sensing potentiometer:	500 ohms*	1000 ohms*	5000 ohms*	10,000 ohms*



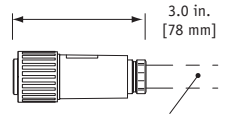
\*-tolerance = ±10%

**Ordering Information:**

**Electrical Connection:**

**order code:**

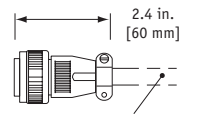
**1**  
6-pin plastic connector with mating plug  
**IP 67, NEMA 4X\*, 6**



3.0 in. [78 mm]

1/2 - 5/16" [14 - 8 mm] cable dia.  
16 AWG max conductor size  
connector: MS3102E-14S-6P  
mating plug: MS3106E-14S-6S

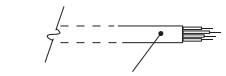
**3**  
6-pin metal connector with mating plug  
**IP 65, NEMA 4**



2.4 in. [60 mm]

3/8-in. [9 mm] max cable dia.  
16 AWG max conductor size  
connector: MS3102E-14S-6P  
mating plug: MS3106E-14S-6S

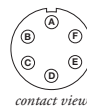
**4**  
25-ft. instrumentation cable  
24 AWG, shielded  
**IP 67, NEMA 6**



25 ft. x 0.2-in. dia. [7.5 M x 5 mm dia.]  
24 AWG, shielded

**6-pin mating plug:**

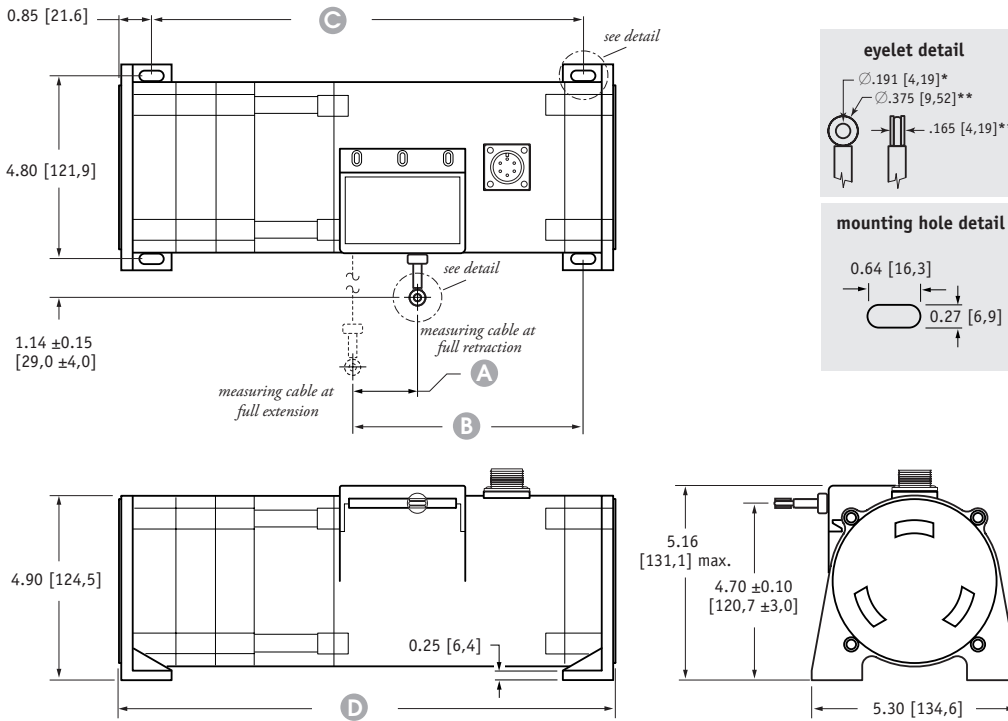
pin	signal	
A	+ in	} position
B	common	
C	+ out	
D	-	} velocity
E	+ out	
F	- out	



**25-ft. instrumentation cable:**

color	signal	
red	+ in	} position
black	common	
green	+ out	
white	+ out	} velocity
brown	- out	

**Outline Drawing**



\*-applies to stainless steel enclosure only

	full stroke range					
	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.		

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]

version: 4.0 last updated: September 6, 2011