

# Cable-Extension Position Transducer

## Position and Velocity Output Signals

Ranges: 0-75 to 0-550 inches

Industrial Grade

# PT9301



### Specification Summary:

#### GENERAL

Full Stroke Range Options—on this datasheet ..... 0-75 to 0-550 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 Options ..... nylon-coated stainless steel or thermoplastic  
 Enclosure Material ..... powder-painted aluminum or stainless steel  
 Weight, Aluminum (Stainless Steel) Enclosure ..... 8 lbs. (16 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

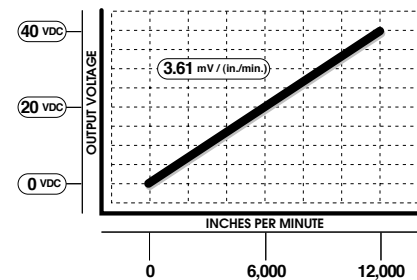
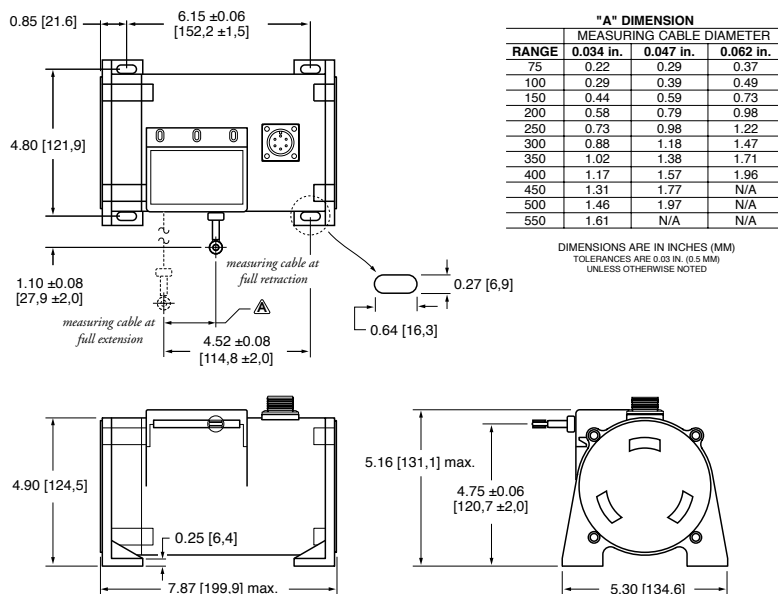


Fig. 1 – Outline Drawing (26 oz. cable tension only)



Celesco Transducer Products, Inc.  
 20630 Plummer Street • Chatsworth, CA 91311  
 tel: 800.423.5483 • +1.818.701.2750 • fax: +1.818.701.2799

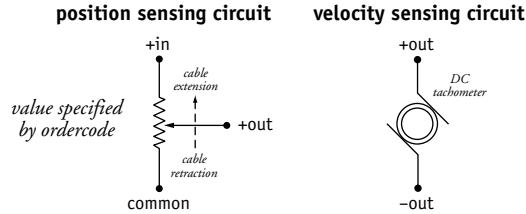
**celesco**  
 celesco.com • info@celesco.com



**Ordering Information:**

**Output Signals:**

<b>1</b> position sensing potentiometer:	<b>2</b> 1000 ohms*	<b>3</b> 5000 ohms*	<b>4</b> 10,000 ohms*
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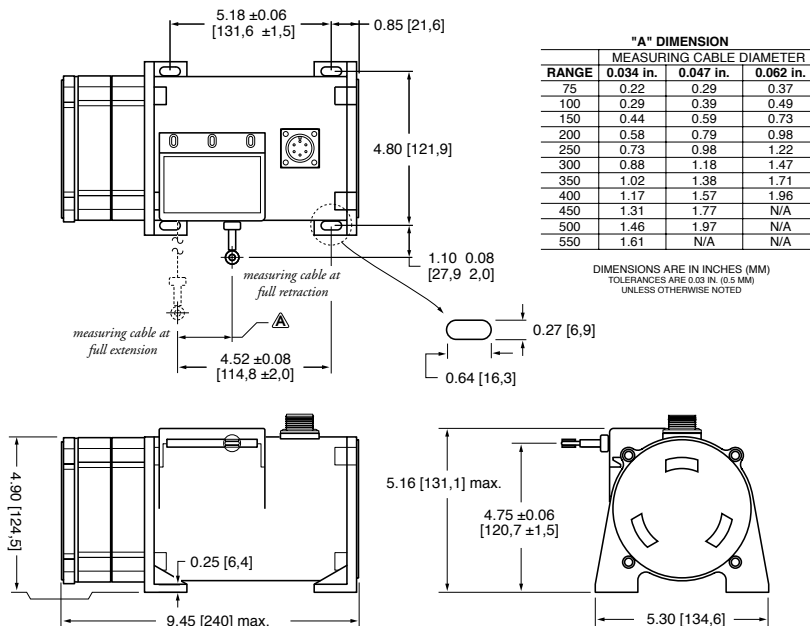
\*-tolerance = ±10%

**Electrical Connection:**

<b>1</b> 6-pin plastic connector with mating plug IP 67, NEMA 4X*, 6	<b>3</b> 6-pin metal connector with mating plug IP 65, NEMA 4	<b>4</b> 25-ft. instrumentation cable 24 AWG, shielded IP 67, NEMA 6																														
3.0 in. [78 mm]	2.4 in. [60 mm]	25 ft. x 0.2-in. dia. [7,5 M x 5 mm dia.] 24 AWG, shielded																														
1/2 - 5/16" [14 - 8 mm] cable dia. 16 AWG max conductor size connector: MS3102E-14S-6P mating plug: MS3106E-14S-6S	3/8-in. [9 mm] max cable dia. 16 AWG max conductor size connector: MS3102E-14S-6P mating plug: MS3106E-14S-6S																															
<p><b>6-pin mating plug:</b></p> <table border="1"> <tr> <th>pin</th> <th>signal</th> <th rowspan="6">} position</th> </tr> <tr> <td>A</td> <td>+ in</td> </tr> <tr> <td>B</td> <td>common</td> </tr> <tr> <td>C</td> <td>+ out</td> </tr> <tr> <td>D</td> <td>-</td> </tr> <tr> <td>E</td> <td>+ out</td> </tr> <tr> <td>F</td> <td>- out</td> <th>} velocity</th> </tr> </table> <p></p>		pin	signal	} position	A	+ in	B	common	C	+ out	D	-	E	+ out	F	- out	} velocity	<p><b>25-ft. instrumentation cable:</b></p> <table border="1"> <tr> <th>color</th> <th>signal</th> <th rowspan="3">} position</th> </tr> <tr> <td>red</td> <td>+ in</td> </tr> <tr> <td>black</td> <td>common</td> </tr> <tr> <td>green</td> <td>+ out</td> <th rowspan="2">} velocity</th> </tr> <tr> <td>white</td> <td>+ out</td> </tr> <tr> <td>brown</td> <td>- out</td> </tr> </table>	color	signal	} position	red	+ in	black	common	green	+ out	} velocity	white	+ out	brown	- out
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\*-applies to stainless steel enclosure only

Fig. 2 – Outline Drawing (42 oz. cable tension only)



version: 3.0 last updated: June 7, 2005