

PT9301

Cable Actuated Sensor

Heavy Industrial • Position/Velocity Output

Linear Position/Velocity to 550 inches (1400 cm)
Rugged Powder-Painted Aluminum Enclosure
VLS Option to Prevent Free-Release Damage
IP68 • NEMA 6 Protection

General

Full Stroke Range	0-75 to 0-550 inches
Measuring Cable Options	stainless steel or thermoplastic
Enclosure Material	powder-painted aluminum
Sensor, Position	plastic-hybrid precision potentiometer
Sensor, Velocity	DC tach generator
Maximum Retraction	see ordering information
Acceleration	
Maximum Velocity	see ordering information
Weight, Aluminum	8 lbs. (16 lbs.) max.
(Stainless Steel) Enclosure	

Position

Output Signal	voltage divider (potentiometer)
Accuracy	± 0.10% full stroke
Repeatability	± 0.02% full stroke
Resolution	essentially infinite
Sensor, Position	plastic-hybrid precision potentiometer
Potentiometer Cycle Life	≥250,000
Input Resistance Options	500, 1K, 5K or 10K Ω (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	94% ±4% of input voltage
Full Stroke Range	

Velocity

Output Signal	DC tachometer output
Linearity	better than ±0.10% of output at any velocity
Repeatability	±0.10% of reading
Sensor	tach generator
Input Voltage	none required
Output Voltage @ 100 inches per minute	361 mV ±3%
Output Impedance	350 ohms ±10%
Output Ripple (for velocity ≥ 1.29 inches per second)	±3% rms

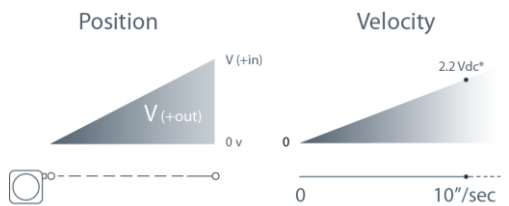
Environmental

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 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".

Output Signal

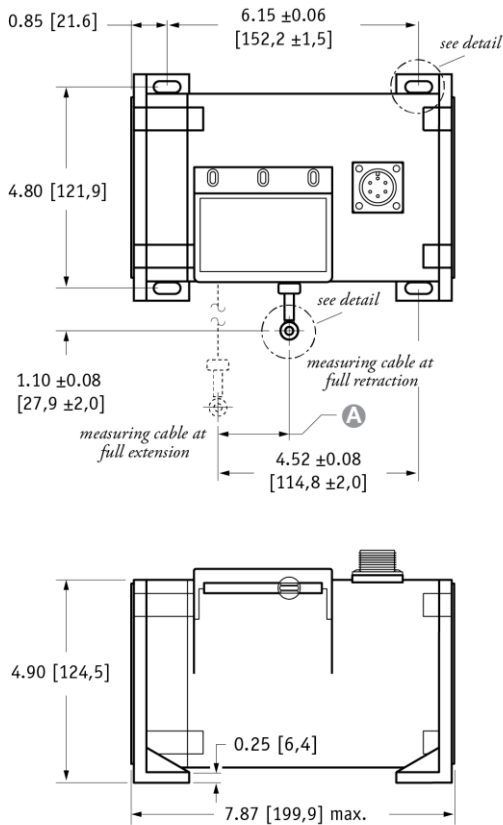


*velocity output rate = 361 mV ± 3% @ 100 inches per min.

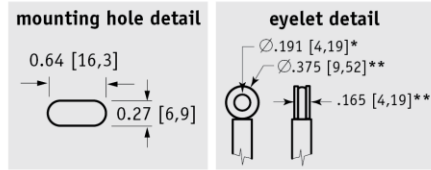
PT9301

Heavy Industrial • Position/Velocity Output

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

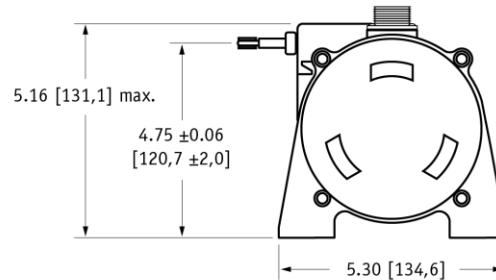


DIMENSIONS ARE IN INCHES [MM]
tolerances are 0.03 IN. [0.5 MM] unless otherwise noted.



A DIMENSION (INCHES)

RANGE	MEASURING CABLE			
	∅.031 in.	∅.034 in.	∅.047 in.	∅.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



* tolerance = +.005 -.001 [+0.13 -.03]
** tolerance = +.005 -.005 [+0.13 -.13]

Ordering Information

Model Number:

PT9301 - - - - - - - -
order code: **R** **A** **B** **C** **D** **E** **F** **G**

Sample Model Number:

PT9301 - 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 position / DC tachometer velocity
- F** electrical connection: 6-pin plastic connector

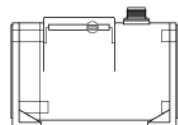
Full Stroke Range:

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

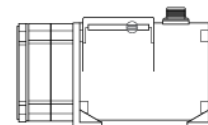
* - 36 oz. cable tension strongly recommended

Enclosure Material and Measuring Cable Tension:

A order code:	1	2
tension (±30%):	18 oz.	36 oz.
enclosure material:	powder-painted aluminum	powder-painted aluminum
max. acceleration:	1 g	5 g
max. velocity:	60 inches/sec	200 inches/sec



standard housing
see fig 1.



dual-spring housing
see fig 2.

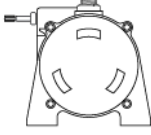
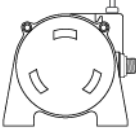
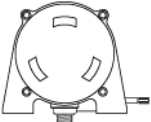
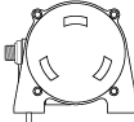
PT9301

Heavy Industrial • Position/Velocity Output

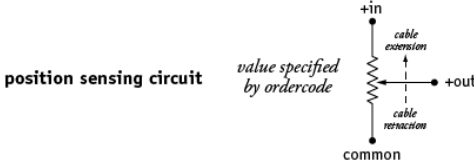

Measuring Cable:

B order code:	1	2	3	4
cable construction:	Ø.034-inch nylon-coated stainless steel rope	Ø.047-inch bare stainless steel rope	Ø.058-inch PVC jacketed vectra fiber rope	Ø.031-inch bare stainless steel rope
available ranges:	<i>all ranges</i>	<i>all ranges up to 500 inches</i>	<i>all ranges up to 400 inches</i>	<i>550-inch range only</i>
general use:	indoor	outdoor, debris, high temperature	high voltage or magnetic field	outdoor, debris, high temperature

Cable Exit:

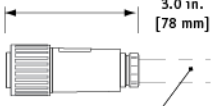
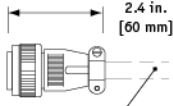

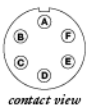
C order code:	1	2	3	4
	front	top	back	down
				

Output Signals:

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

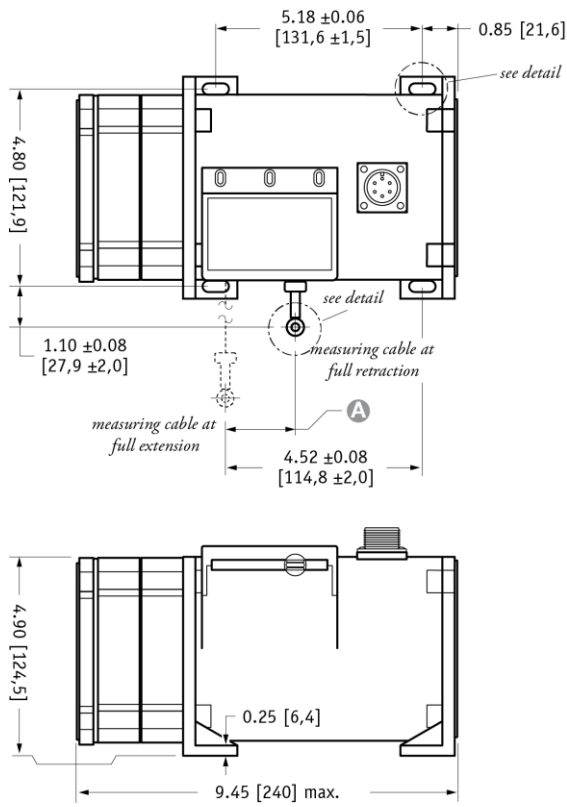
*-tolerance = ±10%

Electrical Connection:

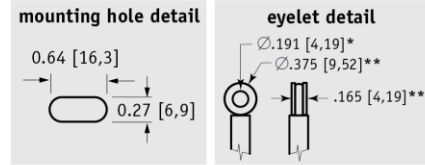
E order code:	1	3	4																															
	6-pin plastic connector with mating plug IP 67, NEMA 4X*, 6	6-pin metal connector with mating plug IP 65, NEMA 4	25-ft. instrumentation cable 24 AWG, shielded IP 67, NEMA 6																															
	 3.0 in. [78 mm]	 2.4 in. [60 mm]																																
	1/2 - 5/16" [14 - 8 mm] cable dia. 16 AWG max conductor size connector: MS3102E-14S-6P mating plug: MS3106E-14S-6S	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																															
	6-pin mating plug:		25-ft. instrumentation cable:																															
	<table border="0"> <tr> <td>pin</td> <td>signal</td> <td rowspan="2">} position</td> </tr> <tr> <td>A</td> <td>+ in</td> </tr> <tr> <td>B</td> <td>common</td> <td rowspan="2">} position</td> </tr> <tr> <td>C</td> <td>+ out</td> </tr> <tr> <td>D</td> <td>-</td> <td rowspan="2">} velocity</td> </tr> <tr> <td>E</td> <td>+ out</td> </tr> <tr> <td>F</td> <td>- out</td> </tr> </table>	pin	signal	} position	A	+ in	B	common	} position	C	+ out	D	-	} velocity	E	+ out	F	- out	<table border="0"> <tr> <td>color</td> <td>signal</td> <td rowspan="2">} position</td> </tr> <tr> <td>red</td> <td>+ in</td> </tr> <tr> <td>black</td> <td>common</td> <td rowspan="2">} position</td> </tr> <tr> <td>green</td> <td>+ out</td> </tr> <tr> <td>white</td> <td>+ out</td> <td rowspan="2">} velocity</td> </tr> <tr> <td>brown</td> <td>- out</td> </tr> </table>	color	signal	} position	red	+ in	black	common	} position	green	+ out	white	+ out	} velocity	brown	- out
pin	signal	} position																																
A	+ in																																	
B	common	} position																																
C	+ out																																	
D	-	} velocity																																
E	+ out																																	
F	- out																																	
color	signal	} position																																
red	+ in																																	
black	common	} position																																
green	+ out																																	
white	+ out	} velocity																																
brown	- out																																	

*-applies to stainless steel enclosure only

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

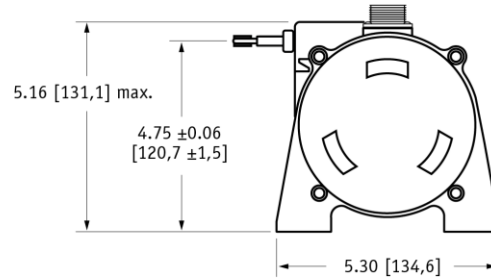


DIMENSIONS ARE IN INCHES [MM]
 tolerances are 0.03 IN. [0.5 MM] unless otherwise noted.



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



* tolerance = +.005 -.001 [+13 -.03]
 ** tolerance = +.005 -.005 [+13 -.13]