



mm PT9301

Description

- Linear Position/Velocity to 550 inches (1400 cm)
- Aluminum or Stainless Steel Enclosure Options
- VLS Option To Prevent Free-Release Damage
- IP68 · NEMA 6 Protection · Hazardous Area Certification



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 our 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".

GENERAL

Full Stroke Range Options (on this datasheet)	0-75 to 0-550 inches
Measuring Cable Options	stainless steel or thermoplastic
Enclosure Material	powder-painted aluminum or 303 stainless steel
Sensor, Position	plastic-hybrid precision potentiometer
Sensor, Velocity	DC tach generator
Maximum Retraction Acceleration	see ordering information
Maximum Velocity	see ordering information
Weight, Aluminum (Stainless Steel) Enclosure	8 lbs. (16 lbs.) max.

VELOCITY

Output Signal	DC tachometer output
Linearity	better than $\pm 0.10\%$ of output at any velocity
Repeatability	$\pm 0.10\%$ of reading
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 ≥ 1.29 inches per second)	$\pm 3\%$ rms

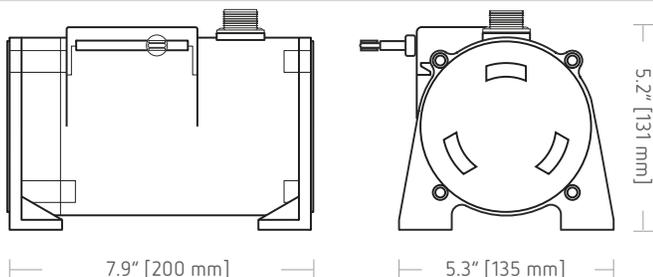
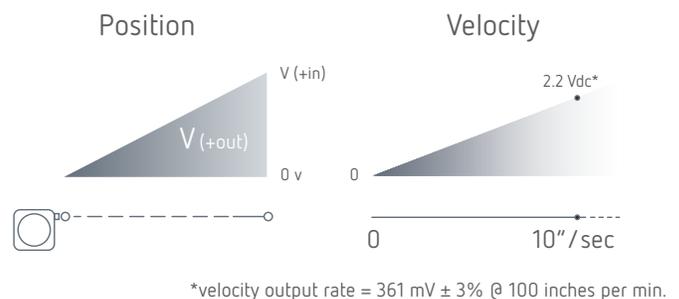
POSITION

Output Signal	voltage divider (potentiometer)
Accuracy	$\pm 0.10\%$ full stroke
Repeatability	$\pm 0.02\%$ full stroke
Resolution	essentially infinite
Sensor, Position	plastic-hybrid precision potentiometer
Potentiometer Cycle Life	$\geq 250,000$
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 Full Stroke Range	94% $\pm 4\%$ of input voltage

ENVIRONMENTAL

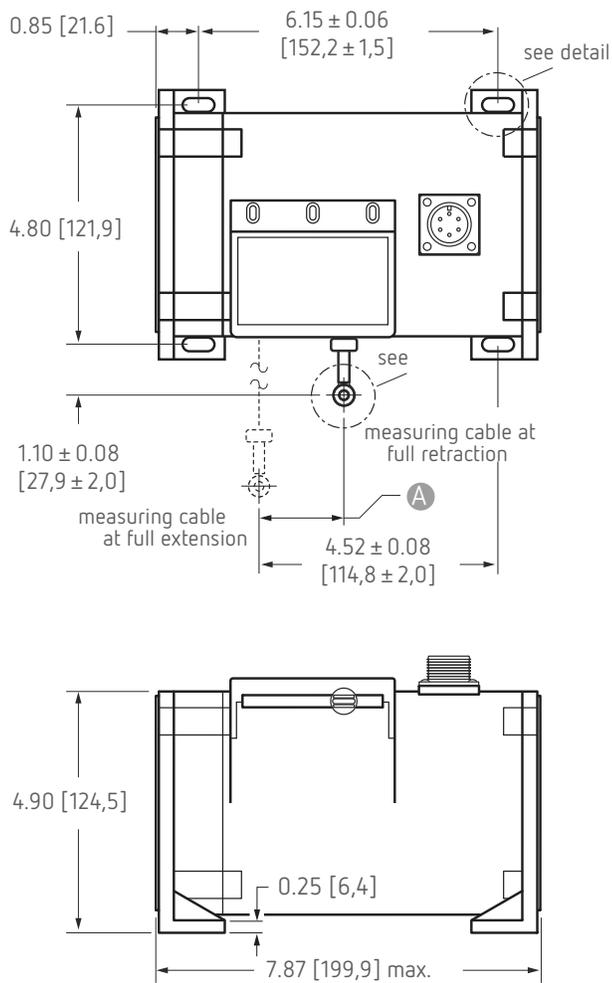
Enclosure	NEMA 4/4X/6, IP 67/68
Operating Temperature	-40° to 200°F (-40° to 90°C)
Vibration	up to 10 g to 2000 Hz maximum

Output signal

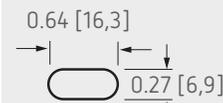


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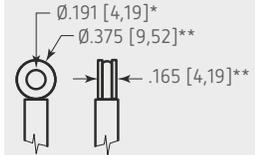
Fig. 1 – Outline Drawing (18 oz. cable tension only)



mounting hole detail

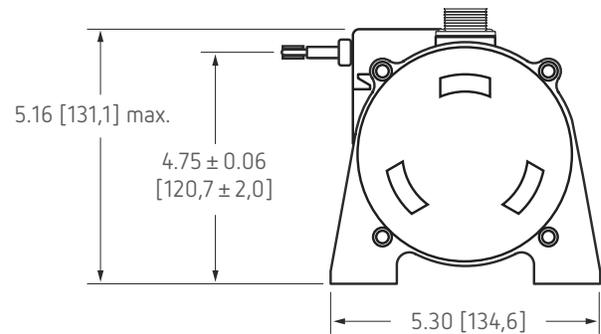


eyelet detail



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

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

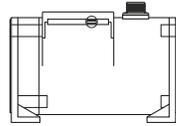
R order code:	0075	0100	0150	0200	0250	0300	0350	0400	0450*	0500*	0550*
full stroke range, min:	75 in.	100 in.	150 in.	200 in.	250 in.	300 in.	350 in.	400 in.	450 in.	500 in.	550 in.

* - 36 oz. cable tension strongly recommended

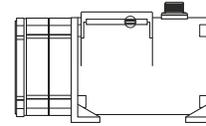
Ordering Information (cont.)

Enclosure Material and Measuring Cable Tension

A order code:	1	3	2	4
tension ($\pm 30\%$):	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.

Measuring Cable

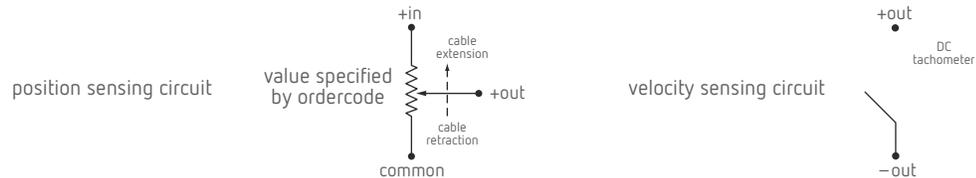
B order code:	1	2	3	4
cable construction:	\varnothing .034-inch nylon-coated stainless steel rope	\varnothing .047-inch bare stainless steel rope	\varnothing .058-inch PVC jacketed vectra fiber rope	\varnothing .031-inch bare stainless steel rope
available ranges:	all ranges	all ranges up to 500 inches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

Cable Exit

C Ordercode:	1	2	3	4
	front	top	back	down

Output Signals

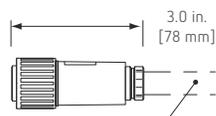
D order code:	1	2	3	4
position sensing potentiometer:	500 ohms*	1000 ohms*	5000 ohms*	10,000 ohms*



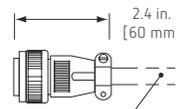
* - tolerance = $\pm 10\%$

Electrical Connection

F 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



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:

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

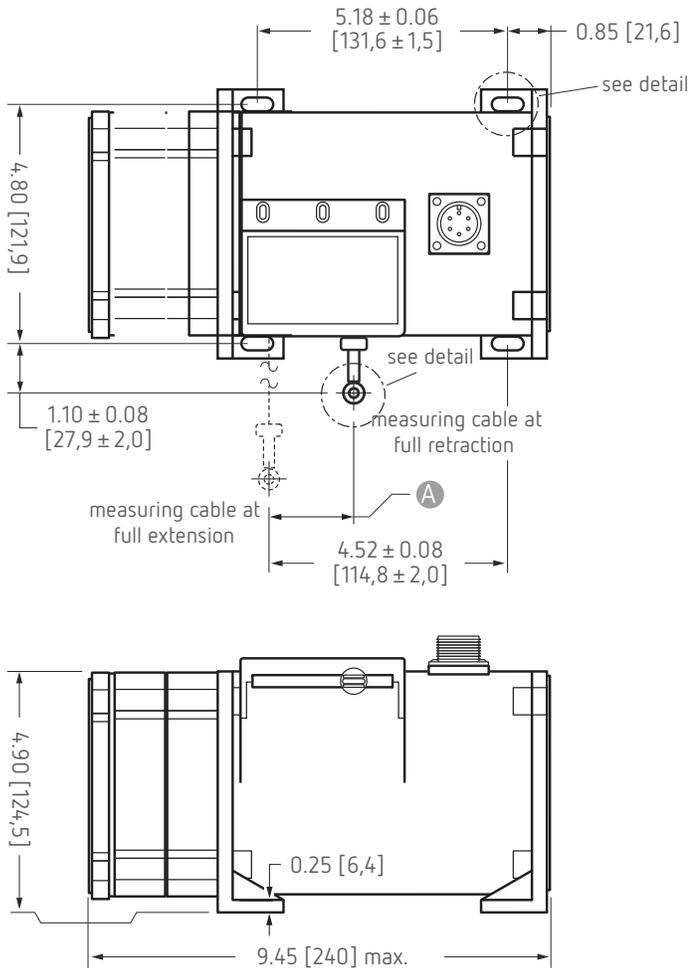


25-ft. instrumentation cable:

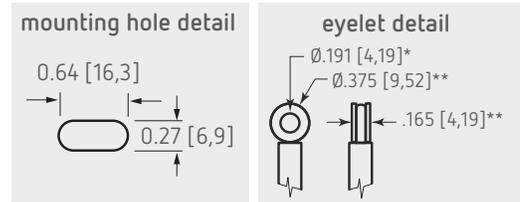
color	signal	
red	+ in	} position
black		
common		} velocity
green	+ out	
white	+ out	
brown	- out	

* - applies to stainless steel enclosure only

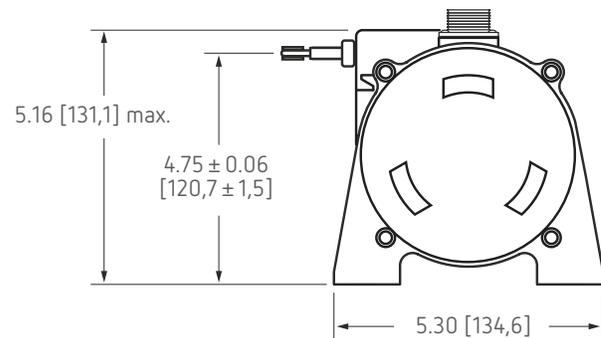
Fig. 2 – Outline Drawing (36 oz. cable tension only)



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550	1.61	1.61	n/a	n/a



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VLS Option - Free Release Protection

The patented 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:

VLS9301 - - - - - - -

creating VLS model number (example)...

1. select PT9301 model
2. remove "PT" from the model number
3. add "VLS"
4. completed model number !

PT9301-0100-111-1110
~~PT~~ 9301-0100-111-1110
 VLS + 9301-0100-111-1110
 VLS9301-0100-111-1110

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The information provided herein is to the best of our knowledge true and accurate, it is provided for guidance only. All specifications are subject to change without prior notification.

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