



mm PT9301

Description

- Linear Position/Velocity to 1700 inches (4300 cm)
- Stroke Range Options: 0-600 to 0-1700 inches
- VLS Option To Prevent Free-Release Damage
- IP68 · NEMA 6 Protection
- Extended range



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) | 0-600 to 0-1700 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 | 14 lbs. (28 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 |

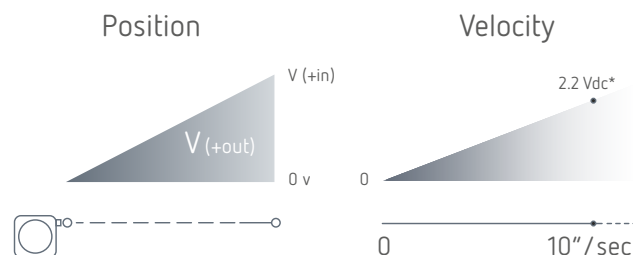
POSITION

| | |
|---|--|
| 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 |

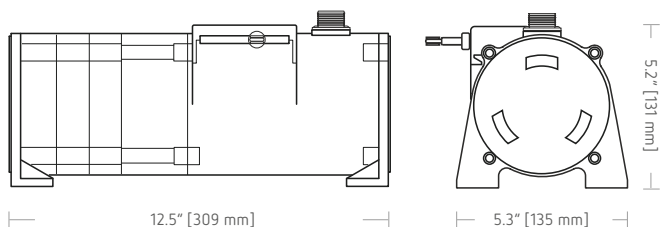
ENVIRONMENTAL

| | |
|-----------------------|-------------------------------|
| 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

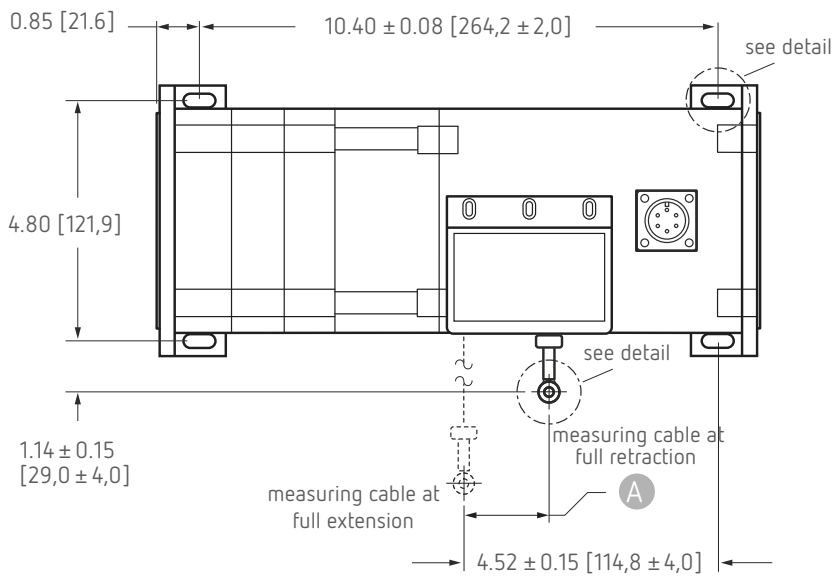


*velocity output rate = 361 mV $\pm 3\%$ @ 100 inches per min.

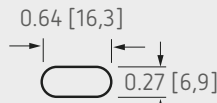


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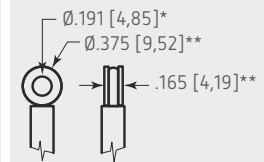
Outline Drawing



mounting hole detail

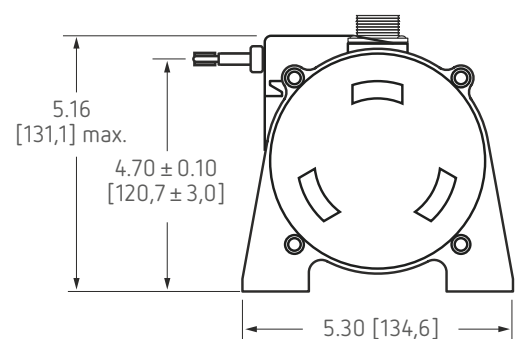
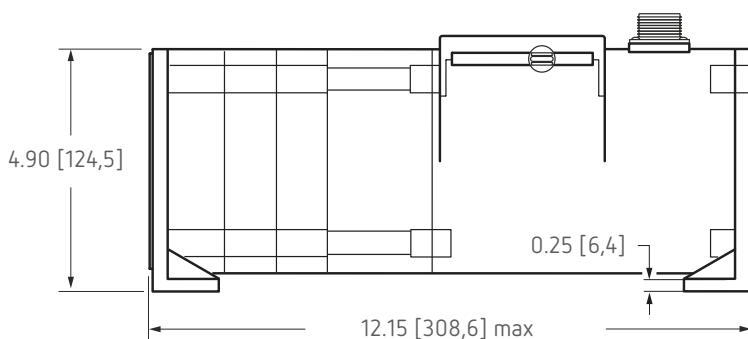


eyelet detail



A DIMENSION

| RANGE | inches [mm] |
|-------|-------------|
| 600 | 1.76 [44,7] |
| 800 | 1.58 [40,1] |
| 1000 | 1.98 [50,2] |
| 1200 | 1.98 [50,2] |
| 1500 | 1.86 [47,2] |
| 1700 | 2.11 [53,6] |



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]

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

VLS 9301- _____ **R** _____ **A** _____ **B** _____ **C** _____ **D** _____ **E** _____ **F** _____ **G**

creating VLS model number (example)...

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

PT9301-1200-111-1110
~~PT~~ 9301-1200-111-1110
 VLS + 9301-1200-111-1110
 VLS9301-1200-111-1110

Ordering Information

Model Number

PT9301- - - - - 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
- B** measuring cable: 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: | 0600 | 0800 | 1000 | 1200 | 1500 | 1700 |
|-------------------------|---------|---------|----------|----------|----------|----------|
| 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. |

Enclosure Material

| A order code: | 1 | 3 |
|----------------------|----------------------------|---------------------|
| enclosure material: | powder-painted aluminum 1g | 303 stainless steel |
| max. acceleration: | 60 inches/sec. | 60 inches/sec. |

Measuring Cable

| B order code: | 1 | 2 |
|----------------------|------------------------------------|-----------------------------------|
| cable construction: | nylon-coated stainless steel rope* | bare stainless steel rope* |
| general use: | indoor | outdoor, debris, high temperature |

*cable diameter: {

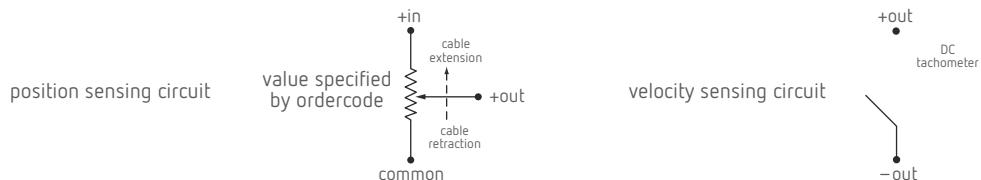
| stroke range: | 0600 | 0800 | 1000 | 1200 | 1500 | 1700 |
|-------------------------|----------|----------|----------|----------|----------|----------|
| nylon-coated stainless: | .034 in. | .019 in. | .019 in. | .019 in. | .014 in. | .014 in. |
| bare stainless: | .031 in. | .018 in. | .018 in. | .018 in. | .015 in. | .015 in. |

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 = ±10%

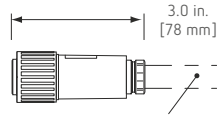
Ordering Information (cont.)

Electrical Connection

order code:

1

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



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

6-pin mating plug:

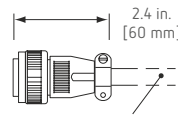
| pin | signal |
|-----|--------|
| A | + in |
| B | common |
| C | + out |
| D | - |
| E | + out |
| F | - out |

} position

} velocity

3

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



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

25-ft. instrumentation cable:

| color | signal |
|-------|--------|
| red | + in |
| black | common |
| green | + out |
| white | + out |
| brown | - out |

} position

} velocity

* - applies to stainless steel enclosure only