

Cable-Extension Position Transducer

CANbus • SAE J1939

Ranges: 0-600 to 0-1700 inches

Industrial Grade

<Extended Range>

PT9CN



Specification Summary:

GENERAL

Full Stroke Range Options—on this datasheet 0-600 to 0-1700 inches
 Electrical Signal Interface CANbus SAE J1939
 Protocol Proprietary B
 Accuracy ± 0.10% full stroke
 Repeatability ± 0.02% full stroke
 Resolution ± 0.003% full stroke
 Measuring Cable Options nylon-coated stainless steel or thermoplastic
 Enclosure Material powder-painted aluminum or stainless steel
 Sensor plastic-hybrid precision potentiometer
 Potentiometer Cycle Life 250,000, min. —before signal degradation can occur
 Maximum Retraction Acceleration see ordering information
 Maximum Velocity see ordering information
 Weight, Aluminum (Stainless Steel) Enclosure 14 lbs. (28 lbs.) max.

ELECTRICAL

Input Voltage 7 - 18 VDC
 Input Current 60 mA max.
 Address Setting/Node ID 0...63 set via DIP switches
 Baud Rate 125K, 250K or 500K set via DIP switches

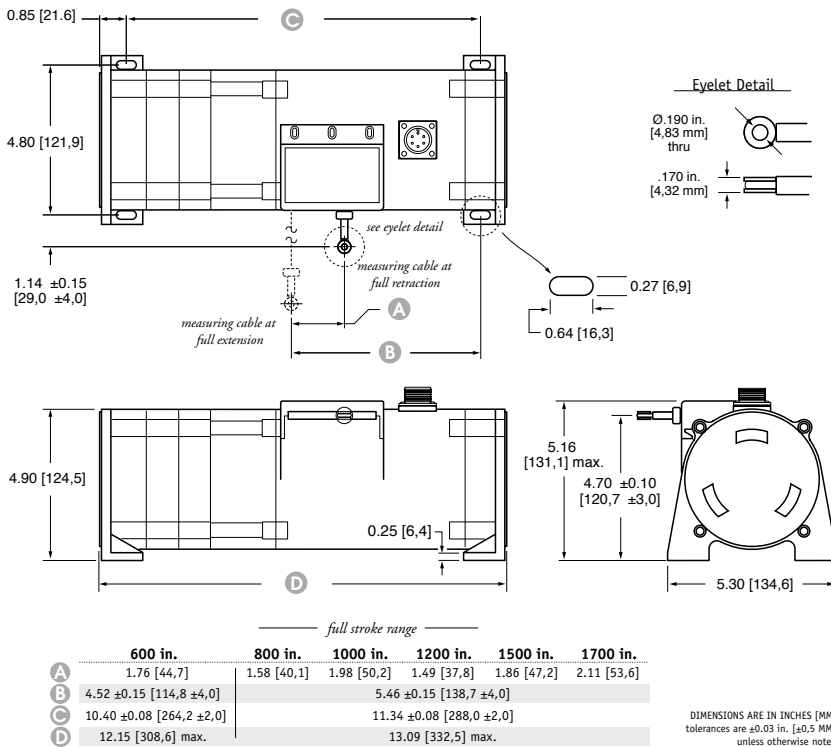
ENVIRONMENTAL

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

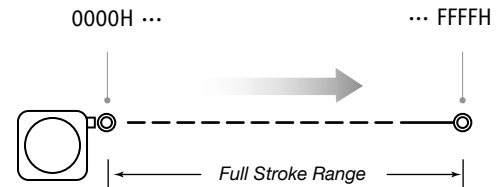
The PT9CN communicates linear position feedback via the CANbus SAE J1939 interface. The PT9CN has been designed for factory and harsh environment applications requiring full stroke ranges up to 1700".

As a member of Celesco's innovative family of NEMA 4 rated cable-extension transducers, the PT9CN installs in minutes by simply mounting its body to a fixed surface and attaching its cable to the movable object. Perfect parallel alignment not required.

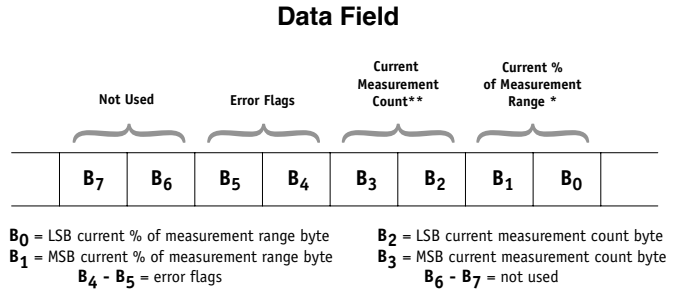
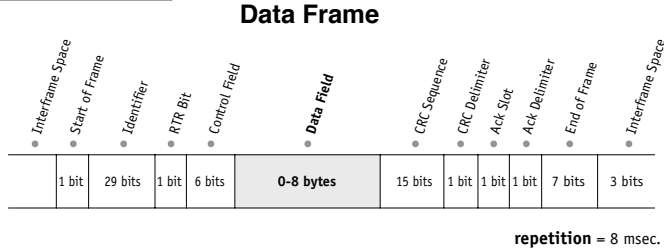
Outline Drawing



Output Signal



I/O Format:



***Current % of Measurement Range**

The Current % of Measurement Range is a 2-byte value that expresses the current linear position as a percentage of the entire full stroke range. Resolution is .1 % of the full stroke measurement range.

This value starts at **0000H** at the beginning of the stroke and ends at **03E8H**.

Example:

Hex	Decimal	Percent
0000	0000	0.0%
0001	0001	0.1%
0002	0002	0.2%
...
03E8	1000	100.0%

****Current Measurement Count**

The Current Measurement Count (CMC) is the output data that indicates the present position of the measuring cable.

The CMC is a 16-bit value that occupies bytes **B₀** and **B₁** of the data field. **B₀** is the **LSB** (least significant byte) and **B₁** is the **MSB** (most significant byte).

The CMC starts at **0000H** with the measuring cable fully retracted and continues upward to the end of the stroke range stopping at **FFFFH**. This holds true for all ranges.

Converting CMC to Inches

If required, the CMC can easily be converted a linear measurement expressed in inches instead of just counts.

This is accomplished by first dividing the CMC by 65,535 (total counts over the range) and then multiplying that value by the FSR:

$$\left(\frac{\text{CMC}}{65,535} \right) \times \text{FSR}$$

Example:

If the full stroke range is **30 inches** and the current position is **OFF2 Hex** (4082 Decimal) then,

$$\left(\frac{4082}{65,535} \right) \times 30.00 \text{ inches} = 1.87 \text{ inches}$$

Setting the Address Setting (Node ID) and Baud Rate

Address Setting (Node ID)

The Address Setting (Node ID) is set via 6 switches located on the 8-pole DIP switch found on the DeviceNET controller board located inside the transducer.

The DIP switch settings are binary starting with switch number 1 (= 2⁰) and ending with switch number 6 (= 2⁵).

DIP-1 (2 ⁰)	DIP-2 (2 ¹)	DIP-3 (2 ²)	DIP-4 (2 ³)	DIP-5 (2 ⁴)	DIP-6 (2 ⁵)	address (decimal)
0	0	0	0	0	0	0
1	0	0	0	0	0	1
0	1	0	0	0	0	2
...
1	1	1	1	1	1	63



Baud Rate

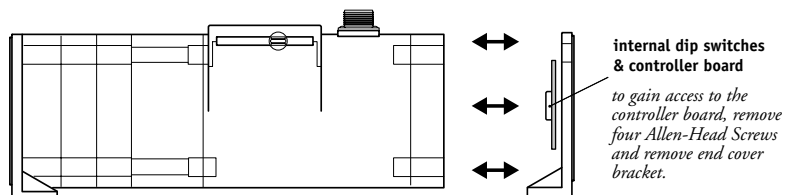
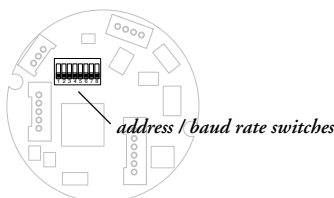
The transmission baud rate may be either factory preset at the time of order or set manually at the time of installation.

The baud rate can be set using switches 7 & 8 on the 8-pole DIP switch found on the DeviceNET controller board located inside the transducer.

DIP-7	DIP-8	baud rate
0	0	125k
1	0	250k
0	1	500k
1	1	125k



CANBus Controller Board and DIP Switch Location



Ordering Information:

Model Number:

PT9CN - - - - **J** - - - -

order code: **R** **A** **B** **C** **D** **E** **F**

Sample Model Number:

PT9CN - 1200 - AL - FR - J - 500 - 32 - SC5

- R** range: 1200 inches
- A** enclosure: aluminum
- B** cable exit: front (horizontal)
- C** interface: CANbus SAE J1939
- D** baud rate: 500 k bits/sec.
- E** node ID: 32 decimal
- F** electrical connection: 5-meter cordset with straight plug

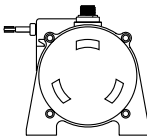
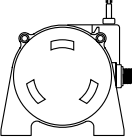
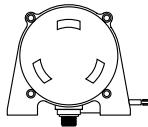
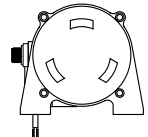
Full Stroke Range:

R <i>order code:</i>	600	800	1000	1200	1500	1700
full stroke range, min:	600 in.	800 in.	1000 in.	1200 in.	1500 in.	1700 in.
cable tension (30%):	25 oz.	25 oz.	24 oz.	24 oz.	23 oz.	23 oz.
measuring cable:	.034-in. dia. nylon-coated stainless	.024-in. dia. nylon-coated stainless	.024-in. dia. nylon-coated stainless	.019-in. dia. nylon-coated stainless	.015-in. dia. non-coated stainless	.015-in. dia. non-coated stainless

Enclosure Material:

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

Cable Exit:

B <i>order code:</i>	FR	UP	BK	DN
	front	top	back	down
				

Baud Rate:

D <i>order code:</i>	125	250	500
	125 kbaud	250 kbaud	500 kbaud

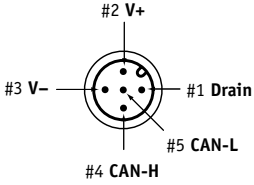


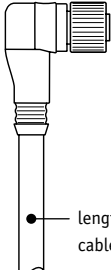
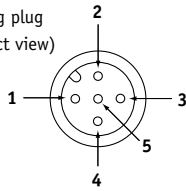
Node ID:

E <i>order code:</i>	0	1	2	3	...	61	62	63
	select address (0 - 63 Decimal)							

Ordering Information:

Electrical Connection:

① *order code:*

blank	MC5	SC5	NC5																		
5-pin micro-connector <i>(no mating plug supplied)</i>	5-pin micro-connector w/ mating plug	5-pin micro-connector and 5 meter length cordset w/straight mating plug	5-pin micro-connector and 5 meter length cordset w/90° mating plug																		
 <p data-bbox="475 659 586 695">connector (contact view)</p>	 <p data-bbox="699 646 932 674">0.16" - 0.32" OD Cable (THIN)</p>	 <p data-bbox="1146 653 1279 705">length: 16ft [5M] cable: Thin</p>	 <p data-bbox="1385 653 1528 705">length: 16ft [5M] cable: Thin</p>																		
	<p data-bbox="769 751 873 804">mating plug (contact view)</p> 	<table border="1"> <thead> <tr> <th data-bbox="1062 772 1089 793">pin</th> <th data-bbox="1146 772 1198 793">signal</th> <th data-bbox="1247 772 1333 793">wire color</th> </tr> </thead> <tbody> <tr> <td data-bbox="1062 800 1073 821">1</td> <td data-bbox="1146 800 1198 821">drain</td> <td data-bbox="1263 800 1308 821">brown</td> </tr> <tr> <td data-bbox="1062 827 1073 848">2</td> <td data-bbox="1146 827 1198 848">V+</td> <td data-bbox="1263 827 1308 848">white</td> </tr> <tr> <td data-bbox="1062 854 1073 875">3</td> <td data-bbox="1146 854 1198 875">V-</td> <td data-bbox="1263 854 1308 875">blue</td> </tr> <tr> <td data-bbox="1062 882 1073 903">4</td> <td data-bbox="1146 882 1198 903">Can-H</td> <td data-bbox="1263 882 1308 903">black</td> </tr> <tr> <td data-bbox="1062 909 1073 930">5</td> <td data-bbox="1146 909 1198 930">Can-L</td> <td data-bbox="1263 909 1308 930">grey</td> </tr> </tbody> </table>	pin	signal	wire color	1	drain	brown	2	V+	white	3	V-	blue	4	Can-H	black	5	Can-L	grey	
pin	signal	wire color																			
1	drain	brown																			
2	V+	white																			
3	V-	blue																			
4	Can-H	black																			
5	Can-L	grey																			

version: 1.0 last updated: March 30, 2005