

Cable-Extension Position Transducer

RS232 Data Communication
Ranges: 0-75 to 0-550 inches
Industrial Grade

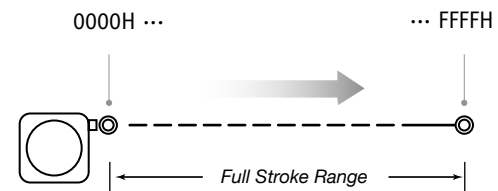
PT9232



The PT9232 delivers position feedback via RS232 serial communication to your data acquisition or controller system. The PT9232 sends a raw 16-bit count from 0000H to FFFFH. Additionally this device can be set to continuously send data or send data only when polled.

As the internal position sensing element is a precision potentiometer, this transducer maintains current accurate position even during power loss and does not need to be reset to a "home" position.

Output Signal



Specification Summary:

GENERAL

Full Stroke Ranges 0-75 to 0-550 inches
 Electrical Interface RS232
 Format HEX
 Accuracy $\pm 0.10\%$ full stroke
 Repeatability $\pm 0.02\%$ full stroke
 Resolution $\pm 0.003\%$ full stroke
 Measuring Cable stainless steel, nylon-coated or thermoplastic
 Enclosure Material powder-painted aluminum or stainless steel
 Sensor plastic-hybrid precision potentiometer
 Potentiometer Cycle Life 250,000 cycles *before signal degradation may occur*
 Maximum Retraction Acceleration *see ordering information*
 Maximum Velocity *see ordering information*
 Weight, Aluminum (Stainless Steel) Enclosure 8 lbs. (16 lbs.), max.

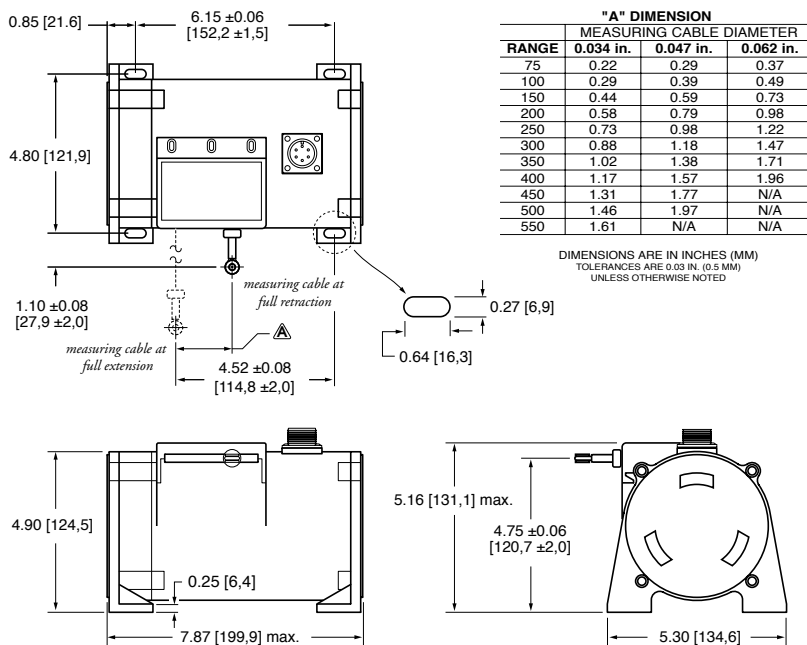
ELECTRICAL

Input Voltage 9...22 VDC
 Input Current 40 mA
 Baud Rate 9600 (selectable to 38.4K)

ENVIRONMENTAL

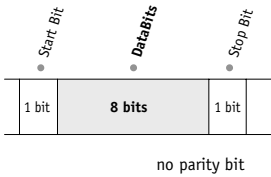
Environmental Suitability NEMA 4X/6, IP 67
 Operating Temperature -40° to 200° F (-40° to 90° C)
 Vibration up to 10 G's to 2000 Hz maximum

Fig. 1 – Outline Drawing



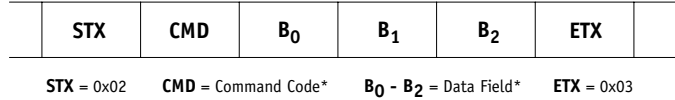
I/O Format:

Data Format



Data Frame

6 byte Hex string:



* -see below

Important! All communications to/from the transducer are in **HEX!**

User Commands:

Description	User Command				Sensor Response			
	<CMD>	<B ₀ >	<B ₁ >	<B ₂ >	<CMD>	<B ₀ >	<B ₁ >	<B ₂ >
Get Sensor Info	0x05	0x00	0x00	0x00	0x05	version ⁽⁴⁾	date ⁽⁵⁾	date ⁽⁵⁾
Get Serial Number	0x15	0x00	0x00	0x00	0x15	serial number ⁽³⁾		
Start Continuous Data	0x25	0x00	0x00	0x00	0x25	0x00	0x00	0x00
Stop Continuous Data	0x35	0x00	0x00	0x00	0x35	0x00	0x00	0x00
Get Position Data	0x45	0x00	0x00	0x00	0x45	CMC ⁽¹⁾	CMC ⁽¹⁾	status ⁽²⁾

(1) CMC - Current Measurement Count (Position)

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 the first two bytes (B₀ and B₁) of the data field. B₀ is the MSB (most significant byte) and B₁ is the LSB (least 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.

(2) Status

The status byte is used as a flag to indicate the validity of the position signal that the internal electronics receives from the potentiometer.

Flags are as follows:
0x00 = GREEN, 0x55 = YELLOW, 0xAA = RED

A "green" flag shows everything OK. A "yellow" or "red" flag indicates that the sensor has either been extended beyond its range or that there is a problem with the potentiometer.

(3) Serial Number

Each sensor has its own unique serial number. This information can be retrieved by sending the sensor the "Get Serial Number" command.

The serial number is a 3 byte value from which ranges from 0 to 9999999 (decimal).

(4) Version

This is a single byte value (0-255 decimal) which indicates the currently installed firmware version of the sensor.

(5) Date

This is a 2 byte value showing the date of currently installed firmware. This value ranges from 01011 - 12319 (decimal). Format is MMDDY. While the month and day are expressed as two digit numbers the year is expressed in a single digit only.

Example: 08054 = August 5, 2004

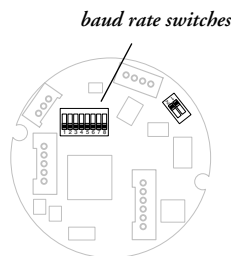
Baud Rate

The baud rate can be set using switches 7 & 8 on the 8-pole DIP switch found on the rs232 controller board located inside the transducer.

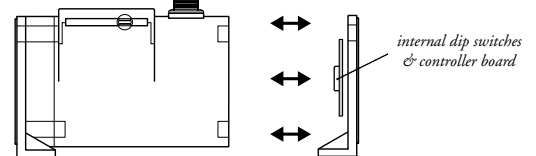
DIP-7	DIP-8	baud rate
0	0	9600
1	0	19200
0	1	38400
1	1	9600



RS232 Controller Board and DIP Switch Location



to gain access to the controller board, remove four Allen-Head screws and remove end-cover bracket.



Ordering Information:

Model Number:

PT9232 - _____
order code: **R** **A** **B** **C** **D** **E**

Sample Model Number:

PT9232 - 200 - AL - N34 - 26 - FR - M6

- R** range: 200 inches
- A** enclosure: aluminum
- B** measuring cable: .034 nylon-coated stainless
- C** measuring cable tension: 26 oz.
- D** cable exit: front (horizontal)
- E** electrical connection: 6-pin plastic connector

Full Stroke Range:

R <i>order code:</i>	75	100	150	200	250	300	350	400	450*	500*	550*
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.

* - 42 oz. cable tension strongly recommended

Enclosure Material:

A <i>order code:</i>	AL	SS
	powder-painted aluminum	303 stainless

Measuring Cable:

B <i>order code:</i>	N34	S47	V62
	.034 nylon-coated stainless steel <i>available in all ranges</i>	.047 stainless steel <i>all ranges up to 500 inches</i>	.062 thermoplastic <i>all ranges up to 400 inches</i>

Measuring Cable Tension:

C <i>order code:</i>	26	42
tension (30%):	26 oz.	42 oz.
enclosure material:	aluminum stainless steel	aluminum 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.

Cable Exit:

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

Ordering Information:

Electrical Connection:

Ⓜ order code:

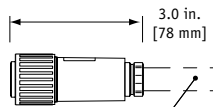
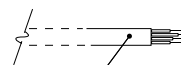
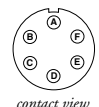
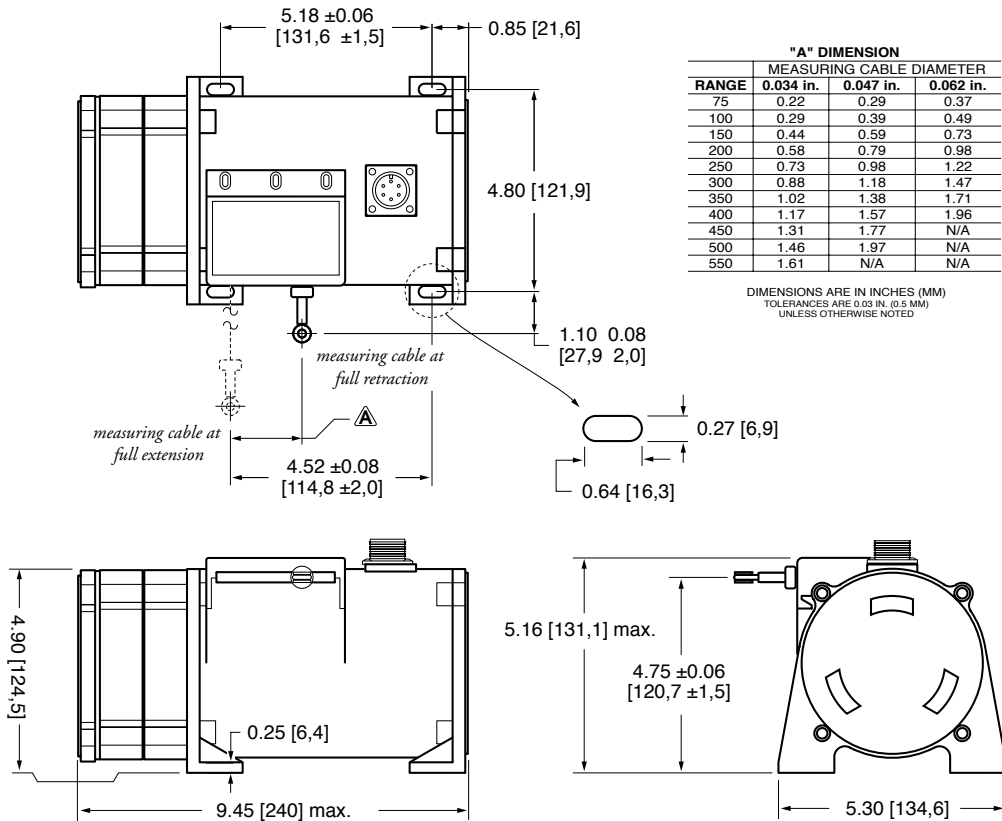
M6		C25																													
6-pin plastic connector with mating plug IP 67, NEMA 6, NEMA 4X (stainless enclosure only)		25-ft. instrumentation cable 24 AWG, shielded IP 67, NEMA 6																													
 <p>3.0 in. [78 mm]</p> <p>.30 - .39 in. [8 - 10 mm] cable dia. 16 AWG max conductor size connector: MS3102E-14S-6P mating plug: MS3106E-14S-6S</p>		 <p>25 ft. x 0.2-in. dia. [7,5 M x 5 mm dia.] 24 AWG, shielded</p>																													
 <p>contact view</p>	<table border="1"> <thead> <tr> <th>pin</th> <th>signal</th> </tr> </thead> <tbody> <tr><td>A</td><td>9...22 VDC common</td></tr> <tr><td>B</td><td>-</td></tr> <tr><td>C</td><td>Transmitted Data</td></tr> <tr><td>D</td><td>Received Data</td></tr> <tr><td>E</td><td>Received Data common</td></tr> <tr><td>F</td><td>-</td></tr> </tbody> </table>	pin	signal	A	9...22 VDC common	B	-	C	Transmitted Data	D	Received Data	E	Received Data common	F	-	<table border="1"> <thead> <tr> <th>color code</th> <th>signal</th> </tr> </thead> <tbody> <tr><td>Red</td><td>9...22 VDC common</td></tr> <tr><td>Black</td><td>-</td></tr> <tr><td>White</td><td>Transmitted Data</td></tr> <tr><td>Green</td><td>Received Data</td></tr> <tr><td>Blue</td><td>Received Data common</td></tr> <tr><td>Brown</td><td>-</td></tr> </tbody> </table>	color code	signal	Red	9...22 VDC common	Black	-	White	Transmitted Data	Green	Received Data	Blue	Received Data common	Brown	-	
pin	signal																														
A	9...22 VDC common																														
B	-																														
C	Transmitted Data																														
D	Received Data																														
E	Received Data common																														
F	-																														
color code	signal																														
Red	9...22 VDC common																														
Black	-																														
White	Transmitted Data																														
Green	Received Data																														
Blue	Received Data common																														
Brown	-																														

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



version: 3.0 last updated: February 1, 2005