

Cable-Extension Position Transducer

RS232 Data Communication
Ranges: 0-2 to 0-60 inches
Industrial Grade

PT8232

Specification Summary:

GENERAL

Full Stroke Ranges.....0-2 to 0-60 inches
 Electrical Interface.....RS232
 Format.....HEX
 Accuracy..... $\pm 0.25\%$ to $\pm 0.10\%$ 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.....*see ordering information*
 Maximum Retraction Acceleration.....*see ordering information*
 Weight, Aluminum (Stainless Steel) Enclosure.....3 lbs. (6 lbs.), max.

ELECTRICAL

Input Voltage.....9...22 VDC
 Input Current.....40 mA
 Baud Rate.....9600 (selectable to 38.4K)
 Update Rate.....32 msec

ENVIRONMENTAL

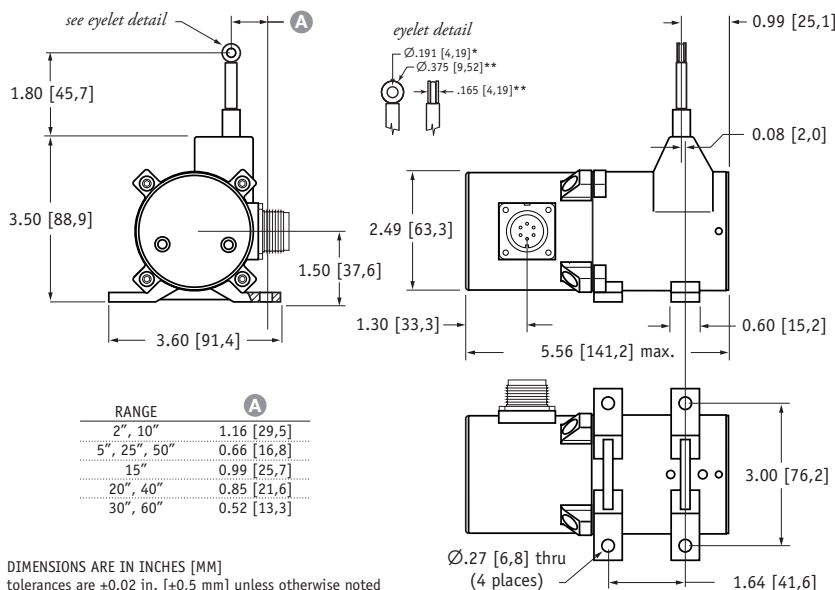
Environmental Suitability.....NEMA 4X/6, IP 67
 Operating Temperature.....-40° to 200°F (-40° to 90°C)
 Vibration.....up to 10 G's to 2000 Hz maximum



The PT8232 delivers position feedback via RS232 serial communication to your data acquisition or controller system. The PT8232 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.

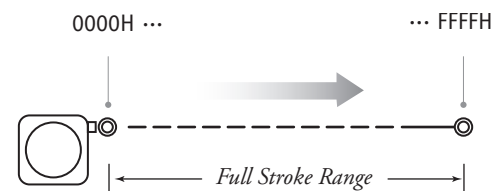
As the internal position sensing element is a precision potentiometer, this transducer maintains current accurate position even during power loss and does not need to be reset to a "home" position.

Outline Drawing

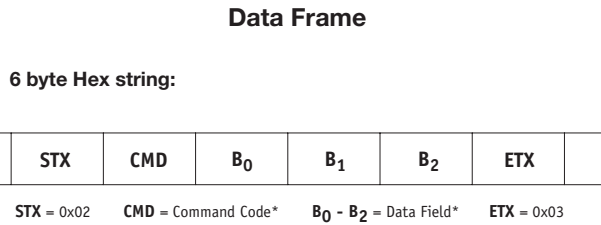
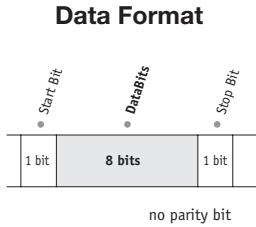


DIMENSIONS ARE IN INCHES [MM]
 tolerances are ± 0.02 in. ($\pm 0,5$ mm) unless otherwise noted
 note: *tolerance = $+0.005 -0.001$ [$+0.13 -0.03$] **tolerance = $+0.005 -0.005$ [$+0.13 -0.13$]

Output Signal



I/O Format



*-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

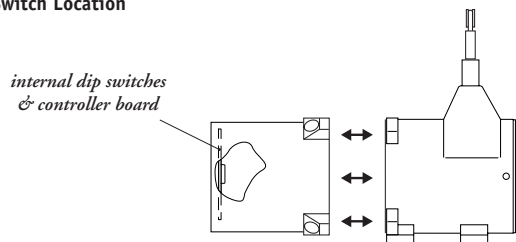
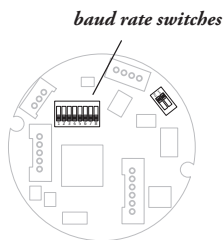
Baud Rate

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 rear cover.

Ordering Information:

Model Number:

PT8232 - **R** - **A** - **B** - **C** - **D** - **E**
order code:

Sample Model Number:

PT8232 - 50 - AL - N34 - T1 - CG - M6

- R** range: 200 inches
- A** enclosure: aluminum
- B** measuring cable: .034 nylon-coated stainless steel
- C** measuring cable tension: standard
- D** cable guide: standard
- E** electrical connection: 6-pin plastic connector

Full Stroke Range:

R order code:	2	5	10	15	20	25	30	40	50	60
full stroke range, min:	2 in.	5 in.	10 in.	15 in.	20 in.	25 in.	30 in.	40 in.	50	60
accuracy (% of f.s.):	0.25%	0.25%	0.15%	0.15%	0.15%	0.15%	0.15%	0.10%	0.10%	0.10%
potentiometer cycle life*:	2.5 x 10 ⁶	2.5 x 10 ⁶	5 x 10 ⁵	5 x 10 ⁵	5 x 10 ⁵	5 x 10 ⁵	5 x 10 ⁵	2.5 x 10 ⁵	2.5 x 10 ⁵	2.5 x 10 ⁵

*-1 cycle is defined as the travel of the measuring cable from full retraction to full extension and back to full retraction

Enclosure Material:

A order code:	AL	SS	316
	powder-painted aluminum	303 stainless steel	316 stainless steel

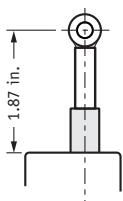
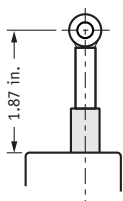
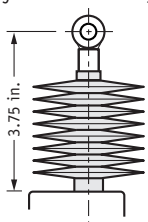
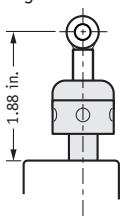
Measuring Cable:

B order code:	N34	S47	V62
	∅.034-inch nylon-coated stainless steel <i>available in all ranges</i>	∅.047-inch stainless steel <i>5, 15, 20, 25, 30-inch ranges only</i>	∅.062-inch thermoplastic <i>all ranges up to 30 inches only</i>

Measuring Cable Tension:

C order code:		T1	T2	T3
		standard tension	medium tension	high tension
<i>full stroke range cable tension specifications</i>	2, 10-inch:	39 oz.	65 oz.	116 oz.
	15-inch:	26 oz.	43 oz.	77 oz.
	20, 40-inch:	20 oz.	33 oz.	60 oz.
	5, 25, 50-inch:	16 oz.	26 oz.	47 oz.
	30, 60-inch:	13 oz.	22 oz.	40 oz.
		tension tolerance: ± 30%		
		<i>maximum acceleration</i>	<i>maximum acceleration</i>	<i>maximum acceleration</i>
aluminum enclosure:	15 G	25 G	40 G	
stainless steel enclosure:	6 G	12 G	18 G	

Cable Guide:

D order code:	CG	SS	CB*	BR
	standard cable guide	stainless steel cable guide	polyurethane cable guide	integral cable brush
				

*note: all ranges up to 25 inches only

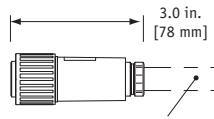
Ordering Information (cont.)

Electrical Connection:

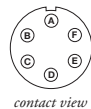
ⓑ order code:

M6

6-pin plastic connector with mating plug
IP 67, NEMA 6, NEMA 4X (stainless enclosure only)



.30 - .39 in. [8 - 10 mm] cable dia.
 16 AWG max conductor size
 connector: MS3102E-14S-6P
 mating plug: MS3106E-14S-6S



contact view

pin	signal
A	9...22 VDC
B	common
C	-
D	Transmitted Data
E	Received Data
F	common

C25

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

color code	signal
Red	9...22 VDC
Black	common
White	-
Green	Transmitted Data
Blue	Received Data
Brown	common