

# Cable-Extension Position Transducer

**RS232 Data Communication**  
**Ranges: 0-10 to 0-250 inches**  
**Industrial Grade**

# PT5232

## Specification Summary:

### GENERAL

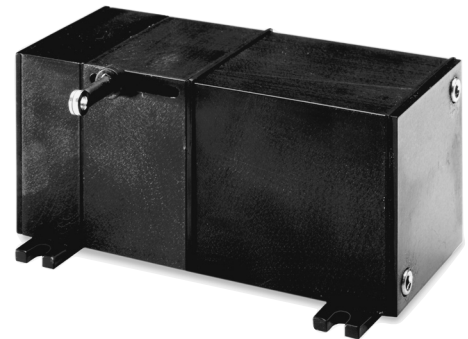
Full Stroke Ranges..... 0-2 to 0-50 inches  
 Electrical Interface..... RS232  
 Format..... Hex  
 Accuracy.....  $\pm 0.75$  to  $0.18\%$  full stroke  
 Repeatability..... *see ordering information*  
 Resolution.....  $\pm 0.003\%$  full stroke  
 Measuring Cable..... thermoplastic or stainless steel  
 Enclosure Material..... hard-anodized aluminum  
 Sensor..... plastic-hybrid precision potentiometer  
 Potentiometer Cycle Life..... *see ordering information*  
 Maximum Cable Velocity • Acceleration..... *see ordering information*  
 Weight..... 5 lbs., max.

### ELECTRICAL

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

### ENVIRONMENTAL

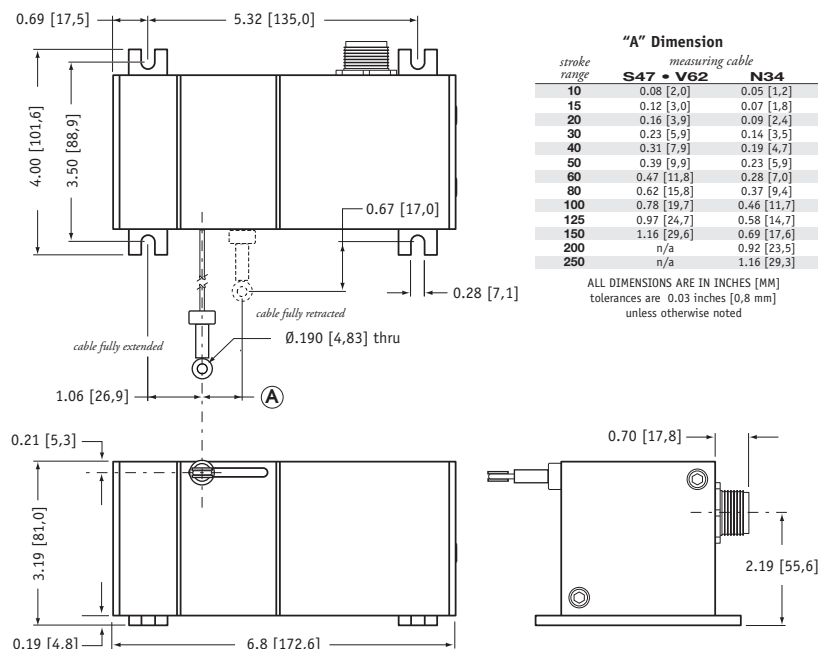
Environmental Suitability..... NEMA 6, IP 67  
 Operating Temperature.....  $-40^{\circ}$  to  $200^{\circ}$ F ( $-40^{\circ}$  to  $90^{\circ}$ C)  
 Vibration..... up to 10 G's to 2000 Hz maximum



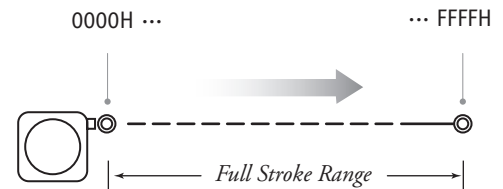
The PT5232, delivers position feedback via RS232 serial communication to your data acquisition or controller system. The PT5232 sends a raw 16-bit position count from 0000 to FFFF (hex). Additionally this device can be set to continuously send data or send data only when polled.

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



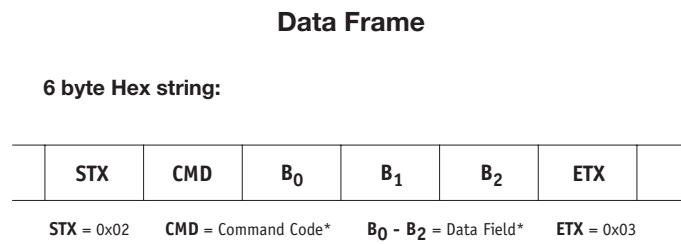
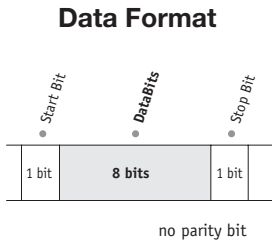
### Output Signal



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**celeco**  
 www.sensorway.cn • sales@sensorway.cn

**I/O Format:**



\* -see below

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

**User Commands:**

| Description           | User Command |                   |                   |                   | Sensor Response |                              |                     |                       |
|-----------------------|--------------|-------------------|-------------------|-------------------|-----------------|------------------------------|---------------------|-----------------------|
|                       | <CMD>        | <B <sub>0</sub> > | <B <sub>1</sub> > | <B <sub>2</sub> > | <CMD>           | <B <sub>0</sub> >            | <B <sub>1</sub> >   | <B <sub>2</sub> >     |
| Get Sensor Info       | 0x05         | 0x00              | 0x00              | 0x00              | 0x05            | version <sup>(4)</sup>       | date <sup>(5)</sup> | date <sup>(5)</sup>   |
| Get Serial Number     | 0x15         | 0x00              | 0x00              | 0x00              | 0x15            | serial number <sup>(3)</sup> |                     |                       |
| 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 <sup>(1)</sup>           | CMC <sup>(1)</sup>  | status <sup>(2)</sup> |

**(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 (B<sub>0</sub> and B<sub>1</sub>) of the data field. B<sub>0</sub> is the MSB (most significant byte) and B<sub>1</sub> 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

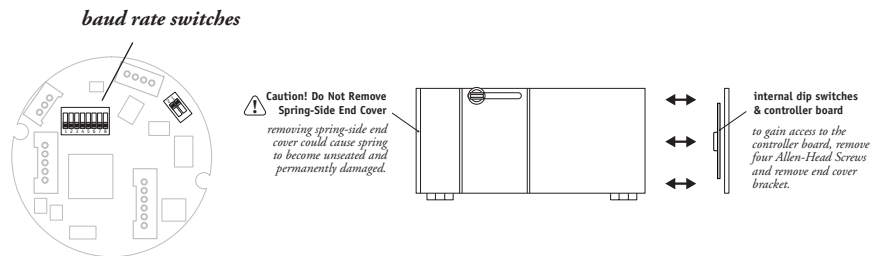
**Baud Rate**

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**



**Ordering Information:**

**Model Number:**

**PT5232** - **R** - **A** - **B** - **C**  
*order code:*

Sample Model Number:

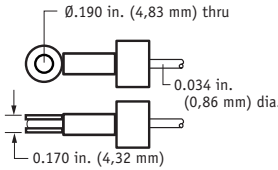
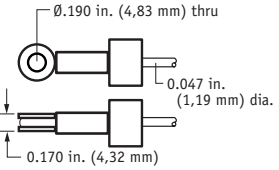
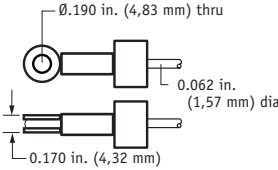
**PT5232 - 50 - N34 - UP - M6**

- R** range: 50 inches
- A** measuring cable: .034 nylon-coated stainless
- B** measuring cable exit: up (top exit)
- C** electrical connection: 6-pin plastic connector

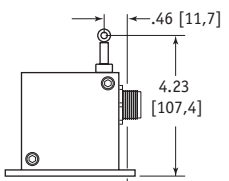
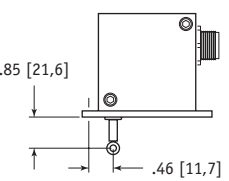
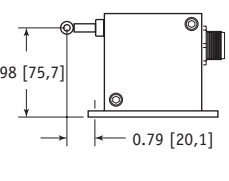
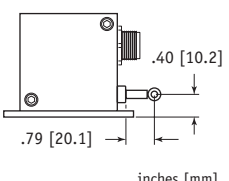
**Full Stroke Range:**

| <b>R</b> <i>order code:</i>       | 10                  | 15     | 20     | 25     | 30     | 40     | 50             | 60     | 80     | 100     | 125     | 150                 | 200            | 250     |
|-----------------------------------|---------------------|--------|--------|--------|--------|--------|----------------|--------|--------|---------|---------|---------------------|----------------|---------|
| full stroke range, min:           | 10 in.              | 15 in. | 20 in. | 25 in. | 30 in. | 40 in. | 50 in.         | 60 in. | 80 in. | 100 in. | 125 in. | 150 in.             | 200 in.        | 250 in. |
| accuracy ( $\pm\%$ of f.s.):      | .75%                | .6%    | .5%    | .5%    | .5%    | .3%    | .3%            | .25%   | .25%   | .25%    | .25%    | .18%                | .18%           | .18%    |
| repeatability ( $\pm\%$ of f.s.): | .1%                 | .1%    | .05%   | .05%   | .05%   | .05%   | .05%           | .02%   | .02%   | .02%    | .02%    | .02%                | .02%           | .02%    |
| potentiometer cycle life:         | 2,500,000 cycles    |        |        |        |        |        | 500,000 cycles |        |        |         |         |                     | 250,000 cycles |         |
| cable tension (20%):              | 41 ounces           |        |        |        |        |        |                |        |        |         |         | 21 ounces           |                |         |
| max. cable velocity/acceleration: | 300 in./sec • 5 G's |        |        |        |        |        |                |        |        |         |         | 120 in./sec • 2 G's |                |         |

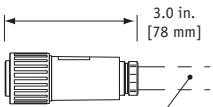
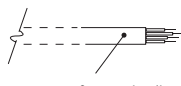
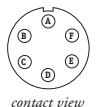
**Measuring Cable:**

| <b>A</b> <i>order code:</i> | N34  | S47   | V62  |
|-----------------------------|--|---|--|
|                             | .034 nylon-coated stainless steel<br><i>available in all ranges</i>                | .047 stainless steel<br><i>all ranges up to 150 inches</i>                          | .062 thermoplastic<br><i>all ranges up to 150 inches</i>                             |
|                             |  |  |  |

**Cable Exit:**

| <b>B</b> <i>order code:</i> | UP  | DN  | FR   | BK  |
|-----------------------------|---|---|--|---|
|                             | up  | down  | front  | back  |
|                             |  |  |  |  |
|                             | inches [mm]   |   |  |   |

**Electrical Connection:**

| <b>C</b> <i>order code:</i> | M6  | C25   |        |   |                   |   |   |   |   |   |                  |   |               |   |        |   |            |        |     |                   |       |   |       |   |       |                  |      |               |       |        |
|-----------------------------|---|---|--------|---|-------------------|---|---|---|---|---|------------------|---|---------------|---|--------|---|------------|--------|-----|-------------------|-------|---|-------|---|-------|------------------|------|---------------|-------|--------|
|                             | 6-pin plastic connector with mating plug<br><b>IP 67, NEMA 6</b>  | 25-ft. instrumentation cable 24 AWG, shielded<br><b>IP 67, NEMA 6</b>                 |        |   |                   |   |   |   |   |   |                  |   |               |   |        |   |            |        |     |                   |       |   |       |   |       |                  |      |               |       |        |
|                             |    |  |        |   |                   |   |   |   |   |   |                  |   |               |   |        |   |            |        |     |                   |       |   |       |   |       |                  |      |               |       |        |
|                             | .30 - .39 in. [8 - 10 mm] cable dia.<br>16 AWG max conductor size<br>connector: MS3102E-14S-6P<br>mating plug: MS3106E-14S-6S   | 25 ft. x 0.2-in. dia.<br>[7,5 M x 5 mm dia.]<br>24 AWG, shielded                      |        |   |                   |   |   |   |   |   |                  |   |               |   |        |   |            |        |     |                   |       |   |       |   |       |                  |      |               |       |        |
|                             | <table border="0"> <tr> <th>pin</th> <th>signal</th> </tr> <tr> <td>A</td> <td>9...22 VDC common</td> </tr> <tr> <td>B</td> <td>-</td> </tr> <tr> <td>C</td> <td>-</td> </tr> <tr> <td>D</td> <td>Transmitted Data</td> </tr> <tr> <td>E</td> <td>Received Data</td> </tr> <tr> <td>F</td> <td>common</td> </tr> </table> | pin   | signal | A | 9...22 VDC common | B | - | C | - | D | Transmitted Data | E | Received Data | F | common | <table border="0"> <tr> <th>color code</th> <th>signal</th> </tr> <tr> <td>Red</td> <td>9...22 VDC common</td> </tr> <tr> <td>Black</td> <td>-</td> </tr> <tr> <td>White</td> <td>-</td> </tr> <tr> <td>Green</td> <td>Transmitted Data</td> </tr> <tr> <td>Blue</td> <td>Received Data</td> </tr> <tr> <td>Brown</td> <td>common</td> </tr> </table> | color code | signal | Red | 9...22 VDC common | Black | - | White | - | Green | Transmitted Data | Blue | Received Data | Brown | common |
| pin                         | signal  |   |        |   |                   |   |   |   |   |   |                  |   |               |   |        |   |            |        |     |                   |       |   |       |   |       |                  |      |               |       |        |
| A                           | 9...22 VDC common   |   |        |   |                   |   |   |   |   |   |                  |   |               |   |        |   |            |        |     |                   |       |   |       |   |       |                  |      |               |       |        |
| B                           | -   |   |        |   |                   |   |   |   |   |   |                  |   |               |   |        |   |            |        |     |                   |       |   |       |   |       |                  |      |               |       |        |
| C                           | -   |   |        |   |                   |   |   |   |   |   |                  |   |               |   |        |   |            |        |     |                   |       |   |       |   |       |                  |      |               |       |        |
| D                           | Transmitted Data  |   |        |   |                   |   |   |   |   |   |                  |   |               |   |        |   |            |        |     |                   |       |   |       |   |       |                  |      |               |       |        |
| E                           | Received Data   |   |        |   |                   |   |   |   |   |   |                  |   |               |   |        |   |            |        |     |                   |       |   |       |   |       |                  |      |               |       |        |
| F                           | common  |   |        |   |                   |   |   |   |   |   |                  |   |               |   |        |   |            |        |     |                   |       |   |       |   |       |                  |      |               |       |        |
| color code                  | signal  |   |        |   |                   |   |   |   |   |   |                  |   |               |   |        |   |            |        |     |                   |       |   |       |   |       |                  |      |               |       |        |
| Red                         | 9...22 VDC common   |   |        |   |                   |   |   |   |   |   |                  |   |               |   |        |   |            |        |     |                   |       |   |       |   |       |                  |      |               |       |        |
| Black                       | -   |   |        |   |                   |   |   |   |   |   |                  |   |               |   |        |   |            |        |     |                   |       |   |       |   |       |                  |      |               |       |        |
| White                       | -   |   |        |   |                   |   |   |   |   |   |                  |   |               |   |        |   |            |        |     |                   |       |   |       |   |       |                  |      |               |       |        |
| Green                       | Transmitted Data  |   |        |   |                   |   |   |   |   |   |                  |   |               |   |        |   |            |        |     |                   |       |   |       |   |       |                  |      |               |       |        |
| Blue                        | Received Data   |   |        |   |                   |   |   |   |   |   |                  |   |               |   |        |   |            |        |     |                   |       |   |       |   |       |                  |      |               |       |        |
| Brown                       | common  |   |        |   |                   |   |   |   |   |   |                  |   |               |   |        |   |            |        |     |                   |       |   |       |   |       |                  |      |               |       |        |
|                             |    |   |        |   |                   |   |   |   |   |   |                  |   |               |   |        |   |            |        |     |                   |       |   |       |   |       |                  |      |               |       |        |
|                             | contact view  |   |        |   |                   |   |   |   |   |   |                  |   |               |   |        |   |            |        |     |                   |       |   |       |   |       |                  |      |               |       |        |

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