The PT1232, part of our compact line of cable extension transducers, delivers position feedback via RS232 serial communication to your data acquisition or controller system. The PT1232 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.

Output Signal

The data stream is as follows:

```
0000x0       ...         FFFFx0
```

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

Environmental

Enclosure: NEMA 4, IP 65
Operating Temperature: 0º to 185ºF (-17º to 85ºC)
Vibration: up to 10 g to 2000 Hz maximum
I/O Format

### Data Format

<table>
<thead>
<tr>
<th>Bit</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 bit</td>
<td>Stop bit</td>
</tr>
<tr>
<td>8 bits</td>
<td>Data bits</td>
</tr>
<tr>
<td>1 bit</td>
<td>Stop bit</td>
</tr>
</tbody>
</table>

**no parity bit**

### Data Frame

<table>
<thead>
<tr>
<th>6 byte Hex string:</th>
<th>STX</th>
<th>CMD</th>
<th>$B_0$</th>
<th>$B_1$</th>
<th>$B_2$</th>
<th>ETX</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0x02</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0x03</td>
</tr>
</tbody>
</table>

- **STX**: 0x02
- **CMD**: Command Code
- **$B_0$ - $B_2$**: Data Field
- **ETX**: 0x03

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

#### User Commands

<table>
<thead>
<tr>
<th>Description</th>
<th>&lt;CMD&gt;</th>
<th>&lt;B_0&gt;</th>
<th>&lt;B_1&gt;</th>
<th>&lt;B_2&gt;</th>
<th>&lt;CMD&gt;</th>
<th>&lt;B_0&gt;</th>
<th>&lt;B_1&gt;</th>
<th>&lt;B_2&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Get Sensor Info</td>
<td>0x05</td>
<td>0x00</td>
<td>0x00</td>
<td>0x00</td>
<td>0x05</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Get Serial Number</td>
<td>0x15</td>
<td>0x00</td>
<td>0x00</td>
<td>0x00</td>
<td>0x15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Start Continuous Data</td>
<td>0x25</td>
<td>0x00</td>
<td>0x00</td>
<td>0x00</td>
<td>0x25</td>
<td>0x00</td>
<td>0x00</td>
<td>0x00</td>
</tr>
<tr>
<td>Stop Continuous Data</td>
<td>0x35</td>
<td>0x00</td>
<td>0x00</td>
<td>0x00</td>
<td>0x35</td>
<td>0x00</td>
<td>0x00</td>
<td>0x00</td>
</tr>
<tr>
<td>Get Position Data</td>
<td>0x45</td>
<td>0x00</td>
<td>0x00</td>
<td>0x00</td>
<td>0x45</td>
<td>CMC(1)</td>
<td>CMC(1)</td>
<td>status(2)</td>
</tr>
</tbody>
</table>

#### User Command

- **Description**: Details of the command
- **<CMD>**: 0x05, 0x15, 0x25, 0x35, 0x45

#### Sensor Response

- **Description**: Response details
- **<B_0> - <B_2>**: Data fields

---

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 ($B_0$ and $B_1$) of the data field. $B_0$ is the MSB (most significant byte) and $B_1$ 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 99999999 (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
Outline Drawing

Dimensions are in inches [mm].

Range          A

2, 10          1.04  [26,4]  4 places
5, 25, 50      0.58  [14,7]
15, 30         0.82  [20,8]
20, 40         0.74  [18,8]

* tolerance = +.005  -0.001  [+0.13  -0.03]
** tolerance = +.005  -.005  [+0.13  -.13]
PT1232
Industrial Grade • RS232

Ordering Information

Model Number:

PT1232 - order code: ________

Full Stroke Range:

<table>
<thead>
<tr>
<th>order code</th>
<th>Full stroke range, min</th>
<th>Accuracy (% of F.S.)</th>
<th>Potentiometer cycle life</th>
<th>Cable Tension (20%)</th>
<th>Max. cable acceleration</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>2 in.</td>
<td>0.25%</td>
<td>2,500,000 cycles</td>
<td>12 oz.</td>
<td>11 g</td>
</tr>
<tr>
<td>A</td>
<td>5 in.</td>
<td>0.15%</td>
<td>500,000 cycles</td>
<td>5 oz.</td>
<td>3 g</td>
</tr>
<tr>
<td>B</td>
<td>10 in.</td>
<td>0.10%</td>
<td>250,000 cycles</td>
<td>9 oz.</td>
<td>11 g</td>
</tr>
<tr>
<td>C</td>
<td>15 in.</td>
<td></td>
<td></td>
<td>6 oz.</td>
<td>5 g</td>
</tr>
<tr>
<td>D</td>
<td>20 in.</td>
<td></td>
<td></td>
<td>5 oz.</td>
<td>4 g</td>
</tr>
<tr>
<td>E</td>
<td>25 in.</td>
<td></td>
<td></td>
<td>9 oz.</td>
<td>3 g</td>
</tr>
<tr>
<td>F</td>
<td>30 in.</td>
<td></td>
<td></td>
<td>6 oz.</td>
<td>5 g</td>
</tr>
<tr>
<td>G</td>
<td>40 in.</td>
<td></td>
<td></td>
<td>5 oz.</td>
<td>4 g</td>
</tr>
<tr>
<td>H</td>
<td>50 in.</td>
<td></td>
<td></td>
<td></td>
<td>3 g</td>
</tr>
</tbody>
</table>

Cable Exit:

<table>
<thead>
<tr>
<th>order code</th>
<th>direction</th>
<th>UP</th>
<th>DN</th>
<th>FR</th>
<th>BK</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>up</td>
<td>1.45 ± 0.13</td>
<td>1.39 ± 0.13</td>
<td>1.39 ± 0.13</td>
<td>1.39 ± 0.13</td>
</tr>
<tr>
<td>B</td>
<td>down</td>
<td>3.47 ± 0.13</td>
<td>[93 ± 0.13]</td>
<td>3.47 ± 0.13</td>
<td>[93 ± 0.13]</td>
</tr>
<tr>
<td>C</td>
<td>front</td>
<td>1.43 ± 0.13</td>
<td>1.39 ± 0.13</td>
<td>1.39 ± 0.13</td>
<td>1.39 ± 0.13</td>
</tr>
<tr>
<td>D</td>
<td>back</td>
<td>1.20 ± 0.13</td>
<td>[93 ± 0.13]</td>
<td>1.20 ± 0.13</td>
<td>[93 ± 0.13]</td>
</tr>
</tbody>
</table>

Electrical Connection:

<table>
<thead>
<tr>
<th>order code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M6</td>
<td>6-pin plastic connector with mating plug</td>
</tr>
<tr>
<td>C25</td>
<td>25-ft. instrumentation cable 24 AWG, shielded</td>
</tr>
</tbody>
</table>

Sample Model Number:

PT1232 - 50 - UP - M6 - SG

Range: 50 inches
Measuring cable exit: up (top exit)
Electrical connection: 6-pin plastic connector
Cable guide: spring loaded

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