PXT-K Series

Pressure Transmitters
This Murphy instrument is susceptible to damage when exposed to static electrical changes. To avoid this damage, observe the following:

- Disconnect all electrical power to the machine.
- Follow the lock out/tag out safety procedures of your company. Ensure the machine cannot operate during installation.
- Follow the safety warning of the machine manufacturer.
- Read and follow all installation instructions.

In order to consistently bring you the highest quality, full-featured products, we reserve the right to change our specifications and designs at any time. The latest version of this manual can be found at www.fwmurphy.com.
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Introduction

The PXT-K (23SYEi) Series pressure transmitters are state-of-the-art instruments providing 4-20 mA outputs. Each pressure transmitter contains a transducer comprised of a piezo resistive silicon chip mounted on a glass-metal feed-through header welded into a stainless steel housing and filled with silicone oil. The very thin laser-welded stainless steel isolation-diaphragm completes the front side. Media pressure is transferred from the stainless steel isolation-diaphragm via the oil inside the cell to the silicon-measuring chip. This construction, combined with the advanced internal signal conditioning circuitry, results in a rugged instrument with extremely small temperature error and class-leading EMI/RFI resistance.
Installation Warnings

Pulsating pressure variations as those caused by liquid or gasses under pressure can destroy any pressure transmitter and should be avoided. To avoid damaging surges and hammers, apply pressure slowly and open/close valves gradually.

To avoid damage from pressure hammer and surges, install a surge chamber or a pressure snubber. One such family of products is the Murphy PD-8100 Series pulsation dampener. Contact Enovation Controls for details or check on www.fwmurphy.com/

Symptoms of fluid hammer and surge damage:

a. Pressure transmitter exhibits an output at zero pressure (large zero offset).

b. Pressure transmitter output remains constant regardless of pressure.

c. In severe cases, there will be no output.
Noise

For minimum noise susceptibility avoid running the transmitter cabling in a conduit that contains high voltage AC power cables or the ignition loom on an engine. Where possible, avoid running the cable near inductive equipment. Shielded cable is always recommended. Typical shield/drain is isolated from the transmitter body and should be grounded on the panel end only. However, PXT-K Series products are not constructed to be isolated, and the shield/drain should not be grounded in the panel.

Mounting

Caution: Transmitters are precision instruments. Do not install in a manner that causes side stress or is subject to excessive vibration.

Transmitters require no special mounting hardware and can be mounted in any plane with negligible position error.

Although the unit can withstand substantial vibration without damage or significant output effects, it is good practice to mount the transmitter where there is minimum vibration.

Apply Teflon tape/sealant to the pressure-fitting threads before installing. When tightening, apply a wrench to the hex wrench flats located just above the pressure fitting. DO NOT tighten by using a pipe wrench on the housing.
PXT-K and PXT Series Pressure Transmitter Cabling Identification

The PXT Series Pressure Transmitters have changed. Previous pressure transmitters in this series were identified as *PXT Pressure Transmitters*. The newest version is the *PXT-K Series Pressure Transmitters*. Identification of electrical cable color is NOT interchangeable between the two series of pressure transmitters.

The following information will assist you in identifying the pressure transmitter unit you have and the correct electrical cable colors to avoid wiring mistakes.

<table>
<thead>
<tr>
<th>Cable Color</th>
<th>Connection</th>
<th>Cable Color</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>RED</td>
<td>POWER</td>
<td>RED</td>
<td>POWER</td>
</tr>
<tr>
<td>BLUE</td>
<td>SIGNAL</td>
<td>BLUE</td>
<td>N/A</td>
</tr>
<tr>
<td>BLACK</td>
<td>CASE GROUND</td>
<td>BLACK</td>
<td>SIGNAL / GROUND</td>
</tr>
<tr>
<td>ORANGE, YELLOW, WHITE</td>
<td>N/A</td>
<td>ORANGE, YELLOW, WHITE</td>
<td>N/A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Installation Instructions</th>
<th>Installation Diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>00-02-0475</td>
<td>05-08-0754</td>
</tr>
<tr>
<td>Installation Manual</td>
<td>Installation Diagram</td>
</tr>
<tr>
<td>00-02-0840</td>
<td>05-08-0763</td>
</tr>
</tbody>
</table>
Hazardous Area Electrical Installation

NOTES:

1. INSTALLATION INSTRUCTIONS FOR CLASS I/II/III, DIVISION 2
   - CLASS I, DIVISION 2, GROUPS A,B,C,D T4
   - CLASS II, DIVISION 2, GROUPS F,G T4
   - CLASS III, DIVISION 2, T4

   UNITS MEET CLASS I, DIV 2 / ZONE 2 WHEN INSTALLED IN ACCORDANCE WITH CLASS I, DIV 2 / ZONE 2 METHODS. EITHER BY USING THE CONDUIT CONNECTION AND GROUND CONNECTION PROVIDED OR BY INSTALLING IN A SUITABLE ENCLOSURE ACCEPTABLE TO THE LOCAL AUTHORITY HAVING JURISDICTION. **NO BARRIER IS REQUIRED.**

2. INSTALLATION INSTRUCTIONS FOR CLASS I/II/III, DIVISION 1
   - CLASS I, DIVISION 1, GROUPS A,B,C,D T4
   - CLASS II, DIVISION 1, GROUPS E,F,G
   - CLASS III, T4

HAZARDOUS AREA

PXT-K
(4-20mA) SERIES
PRESSURE TRANSMITTERS

PXT-KM
(4-20mA) SERIES
PRESSURE TRANSMITTERS

PXT-KD
(4-20mA) SERIES
PRESSURE TRANSMITTERS

POWER
GROUND RETURN
"B"

TRANSMITTER ENTITY PARAMETERS

\[
\begin{array}{|c|c|c|c|c|}
\hline
\text{VMAX} & \text{I\text{MAX}} & \text{C} & \text{L} & \text{P} \\
\hline
30V & 200 mA & 0 \mu F & 0 \mu H & 640 mW \\
\hline
\end{array}
\]

V\text{MAX} >> V\text{OC} \\
I\text{MAX} >> I\text{SC} \\
C = C \text{ cable} << C\text{A} \\
L = L \text{ cable} << L\text{A} \\
P_1 > P_0

USE THE FOLLOWING PARAMETERS IF CABLE PARAMETERS ARE UNKNOWN:

CABLE CAPACITANCE: 60 \mu F/ft

(EX: C\text{cable}=10000 \mu F \times 60 \mu F/ft=0.060 \mu F)

CABLE INDUCTANCE: 0.2 \mu H/ft

(EX: L\text{cable}=10000 \mu F \times 0.2 \mu H/ft=0.02 \mu H)

ALL INTRINSICALLY SAFE WIRING SHALL BE KEPT SEPARATE FROM NON-INTRINSICALLY SAFE WIRING. REFER TO ANSI/NFPA 70, NEC ARTICLES 504 & 505, CANADIAN ELECTRIC CODE (CEC) PART 1, SECTION 18

Printed versions are not controlled. Please access the current version at http://www.fwmurphy.com/pxt-k/
Typical Power Barrier Parameters

<table>
<thead>
<tr>
<th>$V_{dc}$</th>
<th>$I_{sc}$</th>
<th>$C_o$</th>
<th>$L_o$</th>
<th>$P_o$</th>
</tr>
</thead>
<tbody>
<tr>
<td>28 Vdc</td>
<td>93 mA</td>
<td>0.12 μF</td>
<td>3 mH</td>
<td>640 mW</td>
</tr>
</tbody>
</table>

SAFE AREA

CONTROL EQUIPMENT MUST NOT BE CONNECTED TO EQUIPMENT WHICH USES OR GENERATES MORE THAN 250 VRMS WITH RESPECT TO EARTH GROUND

BARRIER NOTES

1. OUTPUT CURRENT MUST BE LIMITED BY A RESISTOR SUCH THAT THE OUTPUT VOLTAGE VS CURRENT PLOT IS A STRAIGHT LINE BETWEEN $V_{dc}$ AND $I_{sc}$

2. BARRIER MUST BE INSTALLED AS INSTRUCTED BY THE MANUFACTURER

3. SELECTED BARRIER INTRINSICALLY SAFE CIRCUITS SHALL BE APPROVED FOR CLASS I / II, DIV 1, GRP A-G

4. TERMINATE BARRIER EARTH GROUND TO THE GROUND BUS OF THE POWER DISTRIBUTION PANEL. RESISTANCE TO GROUND MUST NOT BE GREATER THAN 1 OHM

Printed versions are not controlled. Please access the current version at http://www.fwmurphy.com/pxt-k/
PXT-K Series Physical Dimensions

WARNING! Keep reference vent tube unobstructed and free from excessive moisture or liquid ingress. Readings may be incorrect if tube becomes blocked or bent (kinked).

PXT-KM
PXT-K Operating Range Chart

LOOP RESISTANCE GRAPH
Specifications

Operating Pressure Range: See the Model Number Matrix
Operating Temperature: -30 to 176°F (-30 to 80°C)
Compensated Temperature Range: -20 to 160°F (-29 to 71°C)

Physical Characteristics:
- Process Connection: 1/4 NPT female with 7/8” Hex Nut
- Electrical Connection:
  - PXT-K: 1/2” NPT Male Conduit connection with 60” long cable, vented
  - PXT-KM: M12 Connector
  - PXT-KD: DIN 43650 Connector
- Enclosure: IP65 or better
- Body: 316L Stainless Steel complies with NACE MR0175
- Wetted Parts: 316L Stainless Steel complies with NACE MR0175

Environmental Effect (Humidity): No effect for 0-95%, Non-condensing

Mounting: Transmitter can be installed in any axis. Transmitter position has negligible effect on performance as long as it is perpendicular to the flow being monitored.

Shock Resistance: 1000g per IEC 60068-2-6 (Mechanical Shock)
Vibration Resistance: 20G per IEC 60068-2-6 (Vibration under resonance)

Wiring Protection: Protected against reverse polarity and short circuit, 48 VDC Maximum Supply Voltage: 8 - 30 VDC (Typically 24 VDC)
Insulation: Greater than 10MΩ @ 300 VDC


Voltage Surge/Spike Protection: Protection against a 600 Volt spike per IEC 60-2

Applicable Standards:
- NACE MR0175 Compliant with the requirements
- CSA (c/us): Class I / II / III, Div 1, Groups A-F T4
- Class I / II / III, Div 2, Groups A-D, F,G T4
- ATEX: IBExU 10 ATEX 1124 X
- II 1G Ex ia IIC T6-T4
- II 3G Ex nA IIC T6

Accuracy:

<table>
<thead>
<tr>
<th>% of Span (BFSL)</th>
<th>+/- 0.25% of span*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero/Span Setting Tolerance</td>
<td>+/- 2.5% of full scale* max. (30V/30WC only)</td>
</tr>
<tr>
<td>+/- 0.25% of span* typical, +/-0.5% of span* max (all other ranges)</td>
<td></td>
</tr>
</tbody>
</table>

Operating Temperature

| +/- 2.5% of span T.E.B. |

Compensated Temperature

| +/- 1.7% of span T.E.B. |

Response Time

| <5mS |

* Accuracy Tolerance to be applied at 25°C
Model Number Matrix

PXT-K Series Model Number Matrix

Example: PXT-K-600
Murphy two wire Pressure Transmitter with Flying Lead
Connection, 0-600psig range, 4-20 mAac output. If no
digit follows the pressure range, it is automatically a
4-20 mAac output signal.

**MODEL NUMBER:**

```
<table>
<thead>
<tr>
<th>PXT -</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>OUTPUT SIGNAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>PXT (Flying Lead)</td>
<td></td>
<td></td>
<td></td>
<td>4-20 mAac</td>
</tr>
<tr>
<td>KM</td>
<td>PXM (M12 x 1 Connector)</td>
<td></td>
<td></td>
<td></td>
<td>BLANK</td>
</tr>
<tr>
<td>KD</td>
<td>PXD (DIN 43650 Connector)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

**Range Clarification:**

- **30V30WC**: -30 WC to +30 WC
- **30V30**: -30"Hg to 30 PSI
- **30V100**: -30"Hg to 100 PSI

All other ranges listed are in PSI