Digital Pressure and Temperature Transducers

PTX Series

- One device measures both pressure and temperature in near-real time
- ANSI/ISA 76.00.02-compliant interface compatible with Swagelok® MPC series modular system or 1/4 in. Swagelok tube fitting end connections
- IP64 ingress protection
- ± 1 % full-scale pressure measurement accuracy; ± 4°F (± 2.2°C) absolute temperature measurement accuracy
- Low-volume flow path and rapid purge bowl design dramatically reduce delay time in sample systems
- DeviceNet™ network interface
PTX Series Transducers

The Swagelok PTX is a digital pressure and temperature transducer for monitoring fluid pressure and diaphragm temperature in automated fluid systems.

Features

- MEMS pressure-sensing technology, fast response, excellent long-term stability.
- Network connectivity allows for one cable both to power the unit and to send pressure and temperature feedback in near real time.
- One-piece machined stainless steel diaphragm.
- Innovative flow path with no dead legs in MPC modular surface mount configuration.
- UL certified for use in hazardous areas.
- Measures temperature from 23 to 158°F (–5 to 70°C).

MEMS Technology

The PTX utilizes MEMS (micro-electro-mechanical systems) strain and temperature gauges that are diffused molecularly into the metal diaphragm using inorganic materials and high temperatures. As the temperature is reduced, the inorganic bonding material solidifies and secures the silicon gauges into position, thus creating a one-piece sensing element. With an operating strain at less than 15% of the metal diaphragm’s yield strength, the pressure-sensing element has less fatigue, higher proof/burst pressure capability, and excellent long-term stability. The MEMS gauge outputs are linearized, scaled, and calibrated prior to delivery to the PTX network.

Materials of Construction

<table>
<thead>
<tr>
<th>Component</th>
<th>Material Grade/ASTM Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Top cap</td>
<td>300 series SS</td>
</tr>
<tr>
<td>2 Housing O-ring</td>
<td>Fluorocarbon FKM</td>
</tr>
<tr>
<td>3 Housing</td>
<td>300 series SS</td>
</tr>
<tr>
<td>4 Diaphragm with MEMS sensing element</td>
<td>316 SS/A479</td>
</tr>
<tr>
<td>5 Sensor O-ring</td>
<td>Kalrez® 6375</td>
</tr>
<tr>
<td>6 Body</td>
<td>316 SS/A479</td>
</tr>
</tbody>
</table>

Wetted components listed in italics.
Technical Data

Accuracy (includes repeatability, hysteresis, and nonlinearity)
- Pressure: ± 1% of full scale pressure, temperature compensated from 32 to 158°F (0 to 70°C), following setup in accordance with the Swagelok Pressure and Temperature Transducer User’s Manual, MS-13-222.
- Temperature: ± 4°F (± 2.2°C) absolute accuracy

Overrange Pressure
2 × full scale

Burst Pressure
5 × full scale

Operating Temperature
23 to 158°F (–5 to 70°C)

Storage Temperature
–40 to 158°F (–40 to 70°C)

Power
- Voltage input: 11 to 28 V (dc)
- Maximum current draw: 100 mA (dc) at 24 V (dc)

Approvals / Compliance
- Class I, Division 2, Groups A, B, C, D. Temperature class T5
- ANSI/ISA 12.12.01
- UL 61010-1
- CSA C22.2 No. 213-M
- CSA C22.2 No. 61010-1
- DeviceNet Conformance Tested®, vendor ID 1165

Approvals / Compliance
- EN 61326-1:2006
- RF Emissions: EN 55011
- ESD Immunity: EN 61000-4-2
- RF Immunity: EN 61000-4-3
- EFT Immunity: EN 61000-4-4
- Conducted Immunity: EN 61000-4-6

Electromagnetic Compatibility
- EN 55011
- ESD Immunity: EN 61000-4-2
- RF Immunity: EN 61000-4-3
- EFT Immunity: EN 61000-4-4
- Conducted Immunity: EN 61000-4-6

Ordering Information
Build a PTX series transducer ordering number by adding the designators as shown below.

SS - PTX - D - G050 - SM - K

A Full-Scale Range
- G050 = 0 to 50 psig (3.4 bar)
- G250 = 0 to 250 psig (17.2 bar)
- G500 = 0 to 500 psig (34.4 bar)

B End Connections
- SM = 1.5 in. Swagelok MPC modular surface mount in accordance with ANSI/ISA 76.00.02
- S4 = 1/4 in. Swagelok tube fittings

Calibration
Every Swagelok pressure transducer is factory calibrated to ensure conformance to its stated accuracy. Recalibration is not needed because of the long-term stability of the MEMS sensors and high-precision components.
Safe Product Selection
When selecting a product, the total system design must be considered to ensure safe, trouble-free performance. Function, material compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user.

Caution: Do not mix or interchange parts with those of other manufacturers.

Warranty Information
Swagelok products are backed by The Swagelok Limited Lifetime Warranty. For a copy, visit swagelok.com or contact your authorized Swagelok representative.