

# Intrinsically Safe Pressure and Temperature Transducers



## PTX Series

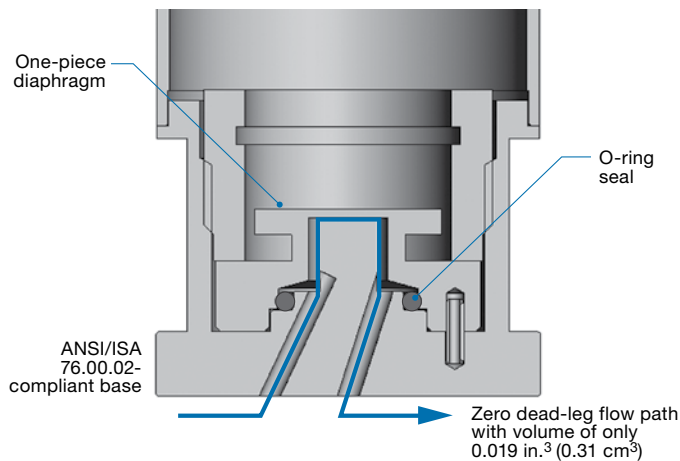
- One device measures both pressure and temperature in near-real time
- ANSI/ISA 76.00.02-compliant interface compatible with Swagelok® MPC series modular system or 1/4 in. and 6 mm Swagelok tube fitting end connections
- IP64 ingress protection
- $\pm 2\%$  full-scale pressure measurement accuracy;  $\pm 9^\circ\text{F}$  ( $\pm 5.0^\circ\text{C}$ ) absolute temperature measurement accuracy
- Low-volume flow path and rapid purge bowl design dramatically reduce delay time in sample systems
- Two analog outputs (0 to 5 V) for pressure and temperature

## PTX Series Transducers

The intrinsically safe PTX series transducer provides two analog outputs to monitor fluid pressure and temperature in automated fluid systems. Each PTX communicates directly with the Swagelok intrinsically safe Intelligent Control Module™ (ICM™) product (patent pending) through one of the analog input connection ports on the unit. Each PTX can also interface with traditional automation equipment with suitable analog inputs such as Programmable Logic Controller (PLC), Distributed Control System (DCS), or Supervisory Control and Data Acquisition (SCADA) system.

### 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 provides fast and complete purge
- UL® and ATEX certified for use in hazardous areas.

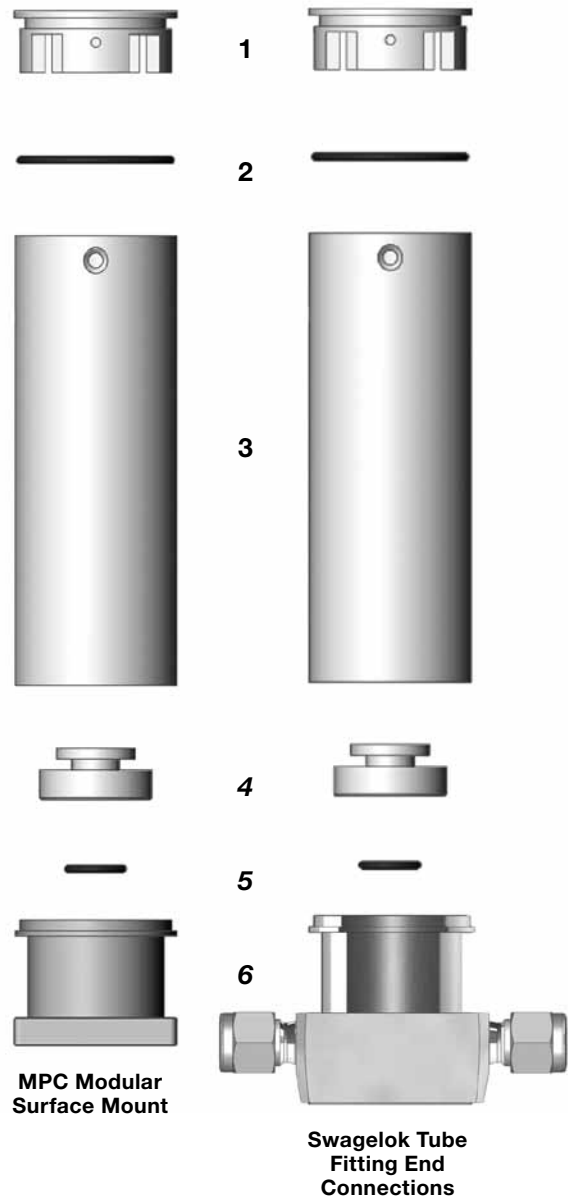


**MPC Modular Surface Mount Configuration**

### MEMS Technology

The intrinsically safe PTX series transducer 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 factory calibrated.

## Materials of Construction



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

Wetted components listed in *italics*.

## Technical Data

**Accuracy** (includes repeatability, hysteresis, and nonlinearity)

- Pressure:  $\pm 2\%$  of full scale pressure, temperature compensated from 32 to 158°F (0 to 70°C), following setup in accordance with the Swagelok *Intrinsically Safe Pressure and Temperature Transducer, PTX, User's Manual, MS-13-229*
- Temperature:  $\pm 9^\circ\text{F}$  ( $\pm 5.0^\circ\text{C}$ ) 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: 9.0 to 28 V (dc)
- Maximum current draw: 20 mA (dc) at 24 V (dc)

## Approvals / Compliance

- ANSI/NFPA Class I, Division 1, Groups A, B, C, D, Temperature class T4
- UL
  - UL 913 - Edition 8
  - UL 60079-0 - Edition 6
  - UL 60079-11 - Edition 6
- cUL
  - CSA C22.2 NO. 157-92 - Edition 3
- ATEX Standards:
  - EN 60079-0:2012+A11:2013
  - EN 60079-11:2012
  - EN 60079-26:2007
- IEC:
  - IEC 60079-0 - Edition 6
  - IEC 60079-11 - Edition 6
  - IEC 60079-26 - Edition 2

## Vibration / Shock Resistance

- Vibration: Sinusoidal Endurance IEC 60068-2-6:2007
  - 10 to 150 Hz, at 2.04 g
  - 10 sweeps at 0.5 Octave/min
- Shock: IEC 6068-2-27:1987
  - 50 g, 11 msec
  - 3 positive and 3 negative pulses each axis

## Electromagnetic Compatibility

- 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

## Calibration

Every Swagelok intrinsically safe PTX series 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.

## Ordering Information

Build a intrinsically safe PTX series transducer ordering number by adding the designators as shown below.

A    B  
 SS - PTX - A - **G050** - **S4** - K

### A Full-Scale Range

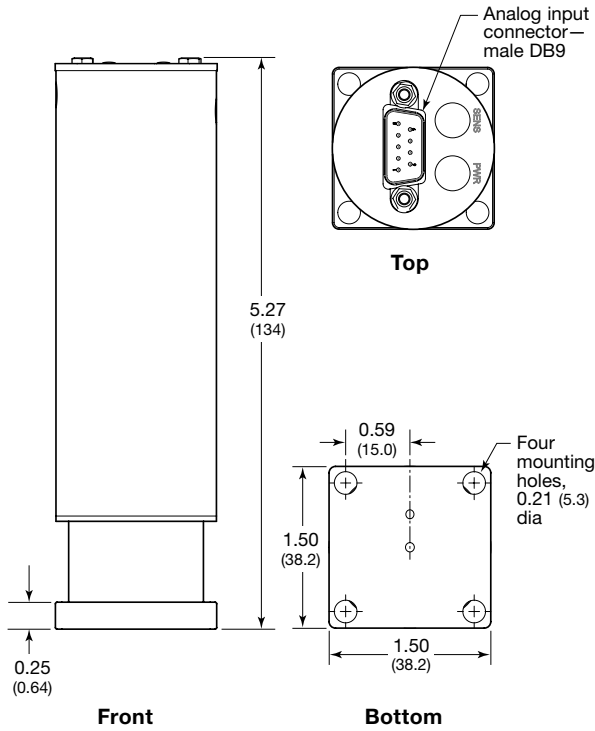
- G050** = 0 to 50 psig (3.4 bar)
- G250** = 0 to 250 psig (17.2 bar)
- G500** = 0 to 500 psig (34.4 bar)

### B End Connections

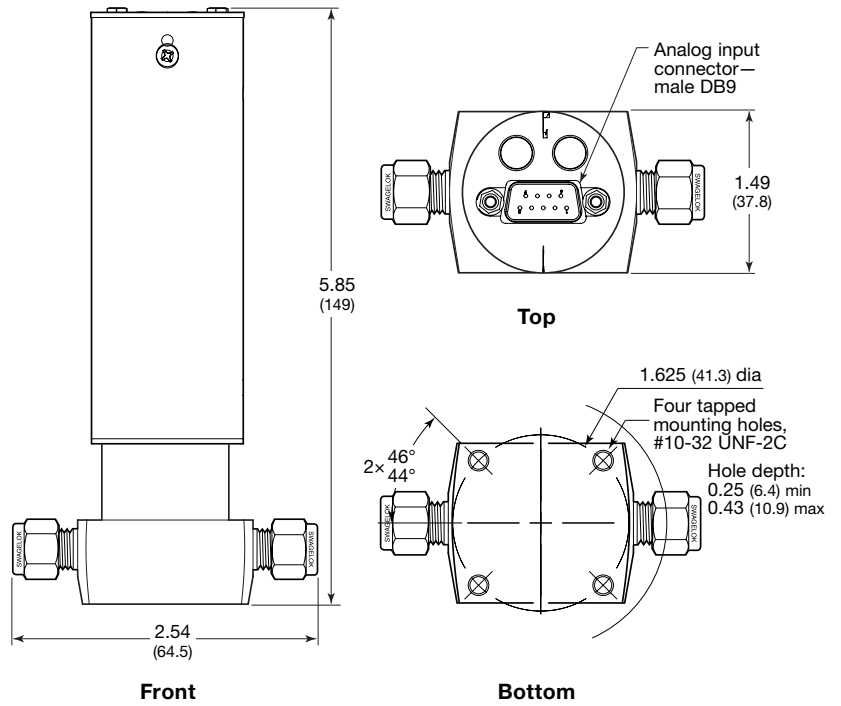
- SM** = 1.5 in. Swagelok MPC modular surface mount in accordance with ANSI/ISA 76.00.02
- S4** = 1/4 in. Swagelok tube fittings
- S6MM** = 6 mm Swagelok tube fittings

## Dimensions

Dimensions, in inches (millimeters) are for reference only and are subject to change.  
Dimensions shown with Swagelok nuts finger-tight.



MPC Modular Surface Mount



Swagelok Tube Fitting End Connections

## Additional Products

For the Swagelok Intelligent Control Module (ICM), see the Swagelok *Intrinsically Safe Intelligent Control Module™ (ICM™) Product catalog*, MS-02-476.



### 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](http://swagelok.com) or contact your authorized Swagelok representative.

Swagelok, Intelligent Control Module, ICM—TM Swagelok Company  
CANopen—TM CAN in Automation e.V.  
UL—TM UL, LLC  
Kalrez—TM DuPont  
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