

PTX 600 Series

Druck Precision Pressure Transmitters



Features

- Ranges 1.5 (100 mbar) through 10,000 psi (700 bar)
- High overload and burst pressures
- Gauge and absolute
- Intrinsically safe
- $\pm 0.08\%$ full scale (FS) best straight line (BSL) accuracy
- $\pm 0.1\%$ FS stability
- Thermal performance 1%, -4°F to 176°F (-20°C to 80°C)

For critical applications in industrial and research environments, the PTX 600 Series of two wire, 4 to 20 mA output pressure transmitters offers high levels of stability, versatility and measurement accuracy from a robust device.

GE's well proven silicon technology has been developed to provide a miniature micro-machined diaphragm which is electrostatically bonded to a glass substrate and stitch bonded within a glass to metal seal assembly to provide exceptional thermal and stress isolation.

The glass to metal seal is completed with an electron beam welded Hastelloy C276 isolation diaphragm and 316 stainless steel pressure port. The reduced internal volume of this assembly and advanced design features of the sensor significantly improves the stability and thermal performance of the transmitter.

The two-wire electronics incorporate power supply regulation and amplifier stages with independent zero and span controls, reverse polarity and over voltage protection with an RFI bulkhead providing feedthrough filters within the body tube assembly.



The PTX 600 Series provides the user with a high accuracy, high stability pressure transmitters, based upon well proven techniques with the benefit of the latest sensor and electronics technology within a rugged, compact design able to withstand the severity of industrial sites and still provide the performance of a precision instrument.

A high level of protection against electrical interference has been combined with surface mount components and total potting of the electronics to ensure integrity under high levels of shock and vibration, with environmental ratings dependant upon the electrical connection selected.

The PTX 600 Series features high accuracy, 0.08% FS Best Straight Line for the combined effects of non-linearity, hysteresis and repeatability, and to fully represent operating conditions, the thermal effects are expressed as a maximum change in output from the calibration at room temperature.

Every sensor is fully calibrated and compensated for thermal effects, and then stocked as a "core" (PTX 600 Series) with the test results in standard pressure ranges.

Prior to dispatch the core is adjusted to the customer specified ranges and pressure units (if required) and completed with the appropriate electrical connection format.

When intermediate ranges are required the core is selected to ensure that the thermal effects remain within specification after adjustment.

The transmitter provides an integral female pressure port and a range of screw-in stainless steel male to male adapters are available as options, mounted by a bonded seal supplied with the adaptor.

The detachable electrical and pressure connection formats allow the user to reconfigure or change these parts on site if they are damaged or an alternate location is required (conduit connections are not detachable).

PTX 600 Series Specifications

Pressure Measurements

Operating Pressure Range

Any pressure unit and (zero Based) span available between:

- 1.5 psi (100 mbar) and 900 psi (60 bar) gauge
- 900 psi (60 bar) and 10,000 psi (700 bar) sealed gauge
- 3.6 psi (250 mbar) and 10,000 psi (700 bar) absolute

Standard Ranges

- Any pressure range and engineering units available, e.g. inH₂Og, mH₂O, mmHg, etc.
- Compound, offset and reversed outputs are available e.g. -15 to 15 psig (-1 to 1 bar), 15 to 45 psig (1 to 3 bar), 45 to 0 psig (3 to 0 bar), for further information please refer to manufacturer.

Overpressure

The rates pressure can be exceeded by the following multiples without degrading performances:

- 4X for ranges up to 7 psi (0.5 bar)
- 3X for 15 to 600 psi (1 to 40 bar)
- 2X for ranges above 600 psi (40 bar)

Pressure Containment

Application of the following pressures may damage the transmitter but process media leakage will not occur

Gauge Reference Versions

- 60 psi (4 bar) for ranges up to 9 psig (600 mbar)
- 150 psi (10 bar) for ranges up to 20 psig (1.4 bar)
- 5X rated pressure (2900 psi (200 bar) maximum) for ranges above 20 to 900 psig (1.4 to 60 bar)

Absolute/sealed gauge reference versions

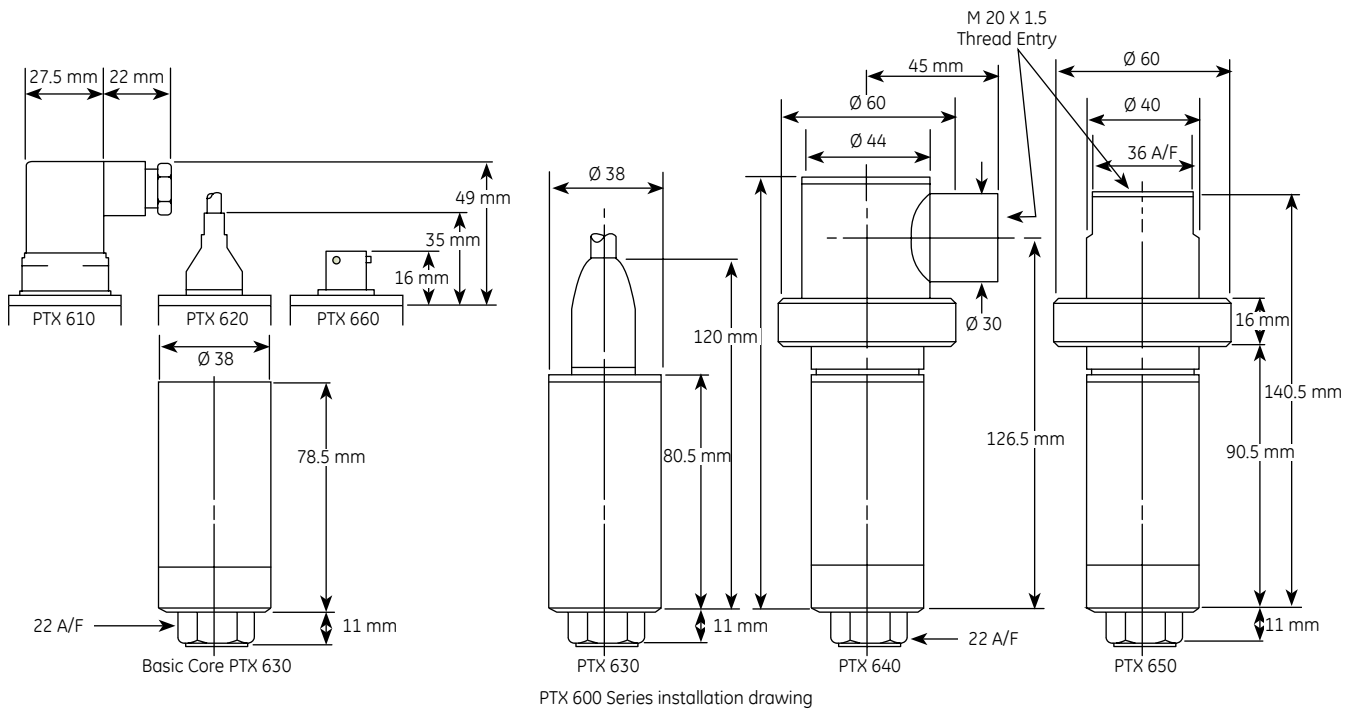
- 2900 psi (200 bar) for ranges up to 900 psia (60 bar)
- 20,000 psi (1400 bar) for ranges above 900 psia (60 bar)

Pressure Media

Fluids compatible with a fully welded assembly of 316 stainless steel and Hastelloy C276 (NACE compatible grades).

Output Current

4 to 20 mA (Two-wire)



Wiring Details

	PTX 610	PTX 620	PTX 630	PTX 640	PTX 650	PTX 660	PTX 690 (US only)
	PTX 611	PTX 621	PTX 631	PTX 641	PTX 651	PTX 661	
Supply +ve	Pin A	Red	Red	+ve	+ve	A	A
Supply -ve	Pin B	Blue	Blue	-ve	-ve	B	B
Ground	Marked	Black			Screw	F	As

Transmitter Supply Voltage

9 to 30 VDC. (28 VDC maximum supply on IS units)
 Minimum supply voltage that must appear across the transmitter terminals is 9 V and is given by:
 $V_{min} = V_S - (0.02 \times R_L)$
 Where V_S = Supply voltage
 R_L = Total loop ohms

Insulation

Greater than 10 MΩ at 500 VDC (3 MΩ at 500 VAC due to RFI filters) from excitation lines to case.

Accuracy

Combined effects for non-linearity, hysteresis and repeatability:

Best Straight Line (BSL) Definition
 $\pm 0.08\%$ F.S. BSL (Typically $\pm 0.05\%$ FS BSL)

Terminal Definition

The output will not deviate from the straight line connecting zero FS output by more than 0.15% FS (typically 0.1% FS).

Zero Offset and Span Setting

- ± 0.05 mA

- $\pm 5\%$ site adjustable by sealed, noninteracting potentiometers (resolution of potentiometers $\pm 1\mu A$) (PTX 630 not adjustable)

Long Term Stability

At standard reference conditions the calibration will not change by more than 0.1% FS/annum (0.05% FS typical)

Operating Temperature Range

- Ambient: $-4^\circ F$ to $176^\circ F$ ($-20^\circ C$ to $80^\circ C$)
- Process media: $-20^\circ F$ to $250^\circ F$ ($-30^\circ C$ to $120^\circ C$)
- Storage: $-40^\circ F$ to $257^\circ F$ ($-40^\circ C$ to $125^\circ C$)

Temperature Effects

For ranges of 6 psi (400 mbar) and above the output will not deviate from room temperature calibration by more than:

- 0.5% FS over $15^\circ F$ to $122^\circ F$ ($-10^\circ C$ to $50^\circ C$)
- 1% FS over $-5^\circ F$ to $175^\circ F$ ($-20^\circ C$ to $80^\circ C$)
- Typically 0.3% FS, $15^\circ F$ to $122^\circ F$ ($-10^\circ C$ to $50^\circ C$)
- 0.7% FS, $-5^\circ F$ to $175^\circ F$ ($-20^\circ C$ to $80^\circ C$)

For ranges below 6 psi (400 mbar) these values will increase pro-rata with calibration span.

Acceleration Sensitivity

0.044% FS/g for 6 psi (400 mbar) decreasing to 0.0003% FS/g for 900 psi (60 bar)

Mechanical Shock

1000 g 1 ms half sine pulse in each of 3 mutually perpendicular axis will not effect calibration.

Vibration

Response less than 0.05% FS/g at 30 g peak 10 Hz-2 kHz, limited 0.5 in (12 mm) double amplitude (MIL-STD 810C Proc 514.2-2 Curve L).

Mounting Position Effect

- Negligible effect
- For ranges below 9 psi (600 mbar) the “g” offset effect on zero can be adjusted using the zero potentiometer.

Physical

Weight

PTX 600 core: 12 oz (0.34 kg) excluding optional electrical connections, cable etc.

CE Marking

Product is CE marked for electromagnetic compatibility, use in potentially explosive atmospheres* and the pressure equipment directive.

*Options where stated.

Hazardous Area Certification

- Certified for use with barrier systems
- FM intrinsically safe
Class I, Division 1, Groups A,B,C&D
Hazardous areas
- CSA intrinsically safe
Class I, Groups A,B,C&D
- UL and cUL intrinsically safe (Models 620, 650 and 651)
Class I, Groups C&D
Class II, Groups E,F&G
- ATEX intrinsically safe ^(Ex)
II 1G EEx ia IIC T4 (-20°C ≤ Ta ≤ 80°C)
Certificate number Baseefa02ATEX0235X
- ATEX intrinsically safe ^(Ex)
II 1GD T135°C EEx ia IIc T4 (-20°C ≤ Ta ≤ 80°C)
certificate number Baseefa05ATEX0108x (PTX 61x and 63x only)

Electrical Connection

- Versions available for IP50 to IP68 ratings (see ordering information)
- Mating parts supplied with plug/socket versions (PTX 610, 660 and 690)
- 3 ft (1 m) integral cable supplied as standard on PTX 620 and PTX 630 models

Pressure Connection

- G 1/4 in female (UK supply)
- 1/4 in NPT female (US supply)
- Screw-in male/male adapters available (see accessories)

Ordering Information

Please state the following:

1. Type number

PTX 6xx-x model number

Code	Electrical Connection
0	Basic core, solder tags (IP50)
1	Industrial plug/socket (DIN 43650/IP65)
2	Integral cable assembly (IP63)
3	Submersible cable assembly (IP68 to 700 mH2Og)
4	Rotable M20 conduit (not US)
5	Conduit 3/4-14 NPT US version (M20 conduit rest of world)
6	MIL-C-26482 plug/socket
9	Industrial plug/socket conduit 1/2 in NPT (US only)

Code	Temperature Effects
0	15°F to 122°F (-10°C to 50°C)
1	-5°F to 175°F (-20°C to 80°C)

Code	Approvals
O	Commercial
I	ATEX intrinsically safe
U	UL intrinsically safe
G	FM intrinsically safe
C	CSA intrinsically safe

PTX 6 - - - - Use this number when ordering.

2. Operating pressure range and units

3. Accessories (if required)

Volumetric Displacement

Not greater than 0.006 in³ (0.1 cm³) for nominal span

Supporting Services

Our highly trained staff can support you, no matter where you are in the world. We can provide training, nationally accredited calibration - both initially and at periodic intervals - extended warranty terms and even rental of portable or laboratory calibrators. Further details can be found in www.ge-mcs.com/en/services-and-support.html

