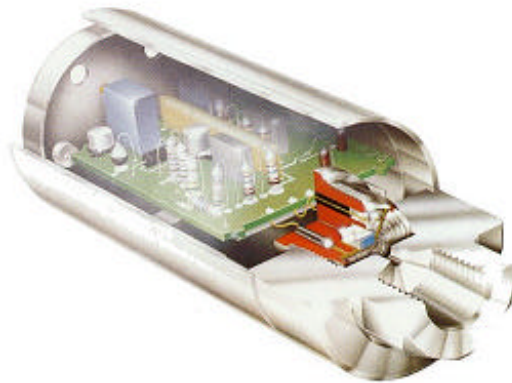


# PTX 600 SERIES

Precision Pressure Transmitters

- High overload and burst pressures
- Ranges 1.5 through 10,000 psi
- Gauge and absolute
- Intrinsically safe
- Featuring:  $\pm 0.08\%$  FS BSL accuracy  
 $\pm 0.1\%$  FS annual stability  
Thermal effects:  $0.005\%$  FS/ $^{\circ}\text{F}$   
 $-20\%$  to  $+250^{\circ}\text{F}$  operation



For critical applications in industrial and research environments the PTX 600 series of two wire, 4-20mA output pressure transmitters improves upon the performance of previous models by offering new levels of stability, versatility and measurement accuracy from a standard production device.

Druck'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, offering NACE compatibility. The reduced internal volume of this assembly and advanced design features of the new 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% F.S. 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 model) with the test results in standard pressure ranges.

Prior to shipping the core is adjusted to intermediate ranges, or alternative pressure units if required, and completed with the appropriate electrical connection format.

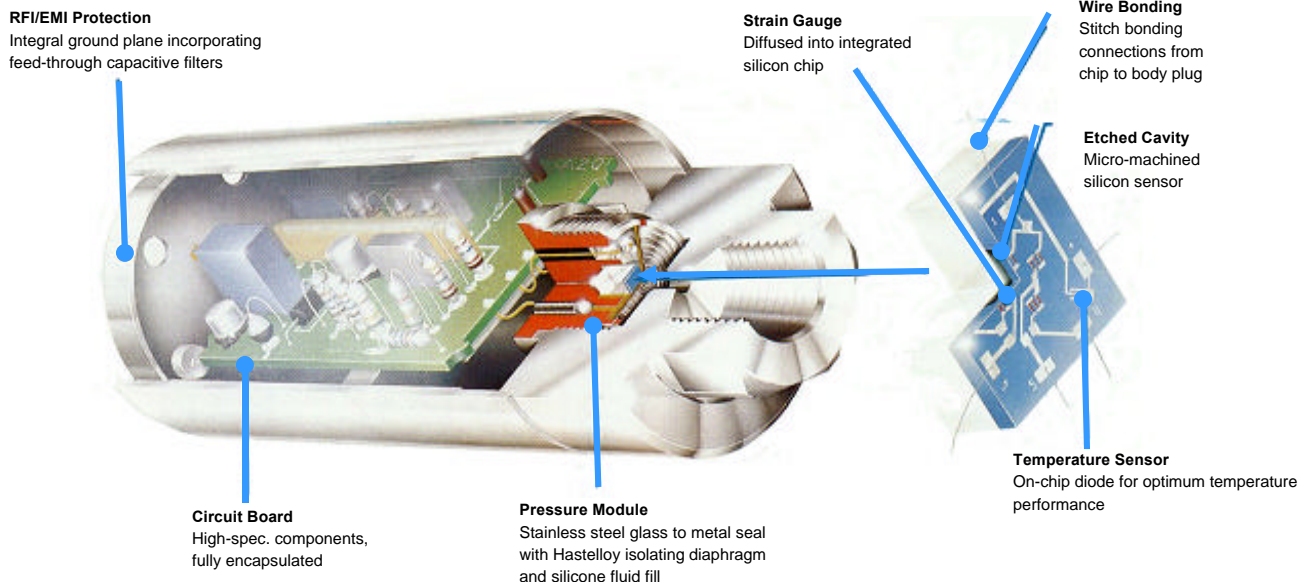
When intermediate ranges are required the core is selected to ensure that the thermal effects remain within specification after adjustment.

The transmitter provides an integral 1/4" NPT female pressure port and a range of screw-in stainless steel male to male adapters are available as options.

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).

The PTX 600 series pressure transmitter core contains at its heart an advanced micro-machined silicon pressure sensor restrained in a high integrity glass to metal seal providing both electrical and physical isolation from the pressure media. An isolating diaphragm of Hastelloy is welded to the seal and transmits system pressure to the sensor via the silicone oil filling. The front end is screwed and welded over the seal to complete the pressure containment module.

A printed circuit board secured to the rear of the pressure module contains the elements required to set the output level, provide temperature compensation and allow customer adjustment of zero and span. A stainless steel body tube encloses the electronics and its encapsulant and permits final assembly of the RFI/EMI protection components.



## STANDARD SPECIFICATION

### Operating Pressure Range

Any pressure unit and (zero Based) span available between 5 psi and 10,000 psi full scale to gauge and absolute formats: spans down to 1.5 psi available in gauge format only.

### Standard Ranges:

0 to 1.5 through 0 to 880 psig  
0 to 881 psi through 0 to 10,000 psi sg  
0 to 3.6 through 0 to 10,000 psia  
Any pressure range and engineering units available, e.g. 400 inH2Og

### Proof Pressure

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

4X for ranges up to 7 psi  
3X for 7 psi to 600 psi  
2X for ranges above 600 psi

### Pressure Containment

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

### Gauge Reference Versions:

150 psi for ranges up to 20 psig  
5X rated pressure (2900 psi max) for ranges above 20 psig to 900 psig

### Absolute/sealed gauge reference versions:

2900 psi for ranges up to 900 psia.  
20,000 psi for ranges above 900 psia.

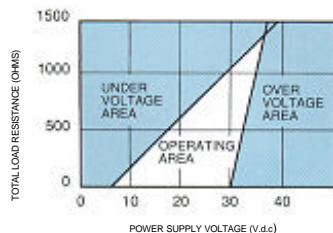
### Pressure Media

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

### Transmitter Supply Voltage

9-30V d.c.

This voltage must appear across the transmitter terminals.



### Supply Sensitivity

0.005% F.S./Volt with excellent 50Hz and 100 Hz supply ripple rejection.

### Insulation

Greater than 10 Mohms at 500V d.c.  
(3 Mohms at 500V a.c. due to RFI filters) from excitation lines to case.

### Output Current

4-20mA (2 wire configuration)  
proportional for zero to full scale pressure.

### Accuracy

Combined effects for non-linearity, hysteresis and repeatability  
 $\pm 0.08\%$  F.S. Best Straight Line  
(Typically  $\pm 0.05\%$  F.S. BSL)

### Zero Offset and Span Setting

$\pm 5\%$  site adjustable by sealed, non-interacting potentiometers (resolution of potentiometers  $\pm 1 \mu A$ ).

### Long Term Stability

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

### Operating Temperature Range

Ambient:  $-5^{\circ}$  to  $+175^{\circ}F$   
Process media:  $-20^{\circ}$  to  $+250^{\circ}F$   
Storage:  $-40^{\circ}$  to  $+250^{\circ}F$

### Temperature Effects

For ranges of 5 psi and above the output will not deviate from room temperature calibration by more than  
0.5%F.S. over  $15^{\circ}$  to  $+122^{\circ}F$   
1%F.S. over  $-5^{\circ}$  to  $+175^{\circ}F$ .  
Typically 0.3%F.S.,  $15^{\circ}$  to  $+122^{\circ}F$ .  
0.7%F.S.,  $-5^{\circ}$  to  $+175^{\circ}F$ .

For ranges below 5 psi these values will increase pro-rata with calibration span.

### Mounting Position Effect

Negligible effect.

For ranges below 8 psi the "g" offset effect on zero can be adjusted using the zero potentiometer.

### Humidity

up to 100% RH non-condensing.  
For condensing atmospheres please refer to manufacturer.

### Weight

PTX 600 core: 12 oz. excluding optional electrical connections, cable etc.

### Intrinsic Safety

FM intrinsically safe  
Class I, Div. 1, Groups A, B, C and D  
Hazardous areas.

CSA intrinsically safe  
Class I, Groups A, B, C and D

UL and cUL intrinsically safe  
(Models 620, 650 and 651)  
Class I, Groups C and D  
Class II, Groups E, F and G

### Electrical Connection

Versions available for IP50 to IP68 ratings (see ordering information).  
Mating parts supplied with plug/socket versions (PTX 610 & 690)  
3 ft integral cable supplied as standard on PTX 620 models.

### Pressure Connection

1/4" NPT female.  
Screw-in male/male adapters available (see accessories).

### Acceleration Sensitivity

0.044% F.S./g for 5 psi decreasing to 0.0003% F.S./g for 900 psi.

### Mechanical Shock

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

### Vibration

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

### Volumetric Displacement

Not greater than 0.006 in<sup>3</sup> for nominal span.

### RFI Protection

Conforms with IT8839 requirements from 10kHz to 500 MHz

Cables in conduit:  $\pm 0.1\%$  span change at 9V/ft

Cables unshielded:  $\pm 1\%$  span change at 3V/ft.

### Voltage Spike Protection

Units will withstand 600V spike test to IEC 60-2 form without damage, applied between excitation lines or excitation line and case.

### Calibration Standards

Transmitters manufactured by Druck Inc. are calibrated against precision pressure calibration equipment which is traceable to NIST (formerly NBS).

Calibration certificate is issued with individual transmitters.

## ACCESSORIES

### Screw-in male/male adapters

1/4 NPT male (P/N 401-US-040)  
7/16 UNF male (MS33656-4 compatible) (P/N 401-US-039)

adapters manufactured in 316 SS

### For PTX 650 Series

3/4 to 1/2 NPT female conduit adapter (P/N 401-US-041)

### For PTX 660 Series

Mating electrical connector available (P/N 163-009)

### Cable

For gauge ranges of 900 psi and below the PTX 610 required this 0.24 in O.D. vented cable.

### Submersible Unit

Druck specializes in submersible units. Please see depth/level data sheet or consult the manufacturer.

### Calibration Equipment

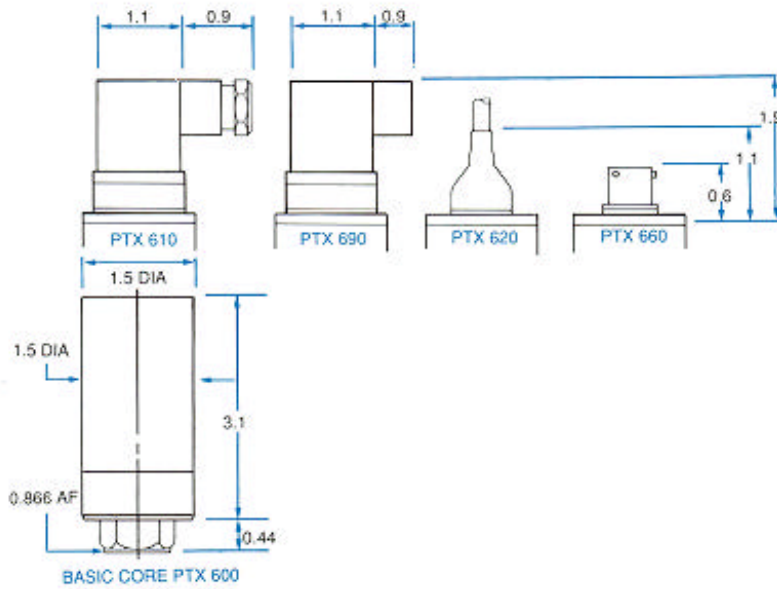
Druck Inc. manufactures precision pressure calibrators for laboratory and field use. Please refer to DPI 610 and DPI 510 data sheets or consult the manufacturer.

*Continuing development sometimes necessitates specification changes without notice.*

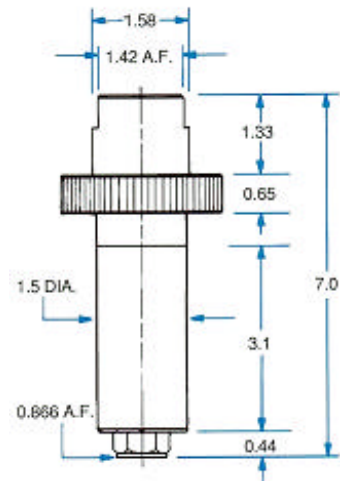
Druck is an ISO 9001 registered company



**INSTALLATION DIMENSIONS: inches**



**DETACHABLE/INTERCHANGEABLE electrical connector versions**



**PTX 650**

**INTEGRAL electrical connector versions**



**Electrical Connections**

Model	Supply Positive	Supply Negative	Ground
PTX 61X/69X	Pin 1	Pin 2	As marked
PTX 62X	Red	Blue	Black
PTX 65X	+ve	-ve	Screw
PTX 66X	Pin A	Pin B	Pin F

**Ordering information**

Please state the following:-  
(1) Type number

**PTX 6X X**

**Temperature Effects**

- 0 — 15° to +122°F
- 1 — -5° to +175°F

**Electrical Connection**

- 0 Basic core for OEM use
- 1 Industrial plug/socket
- 2 Integral cable assembly
- 5 Conduit 3/4" - 14 NPT
- 6 MIL-C-26482 plug/socket
- 9 Industrial plug/socket  
conduit 1/2" NPT

- (2) Operating pressure range and engineering units
- (3) Accessories (if required).



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