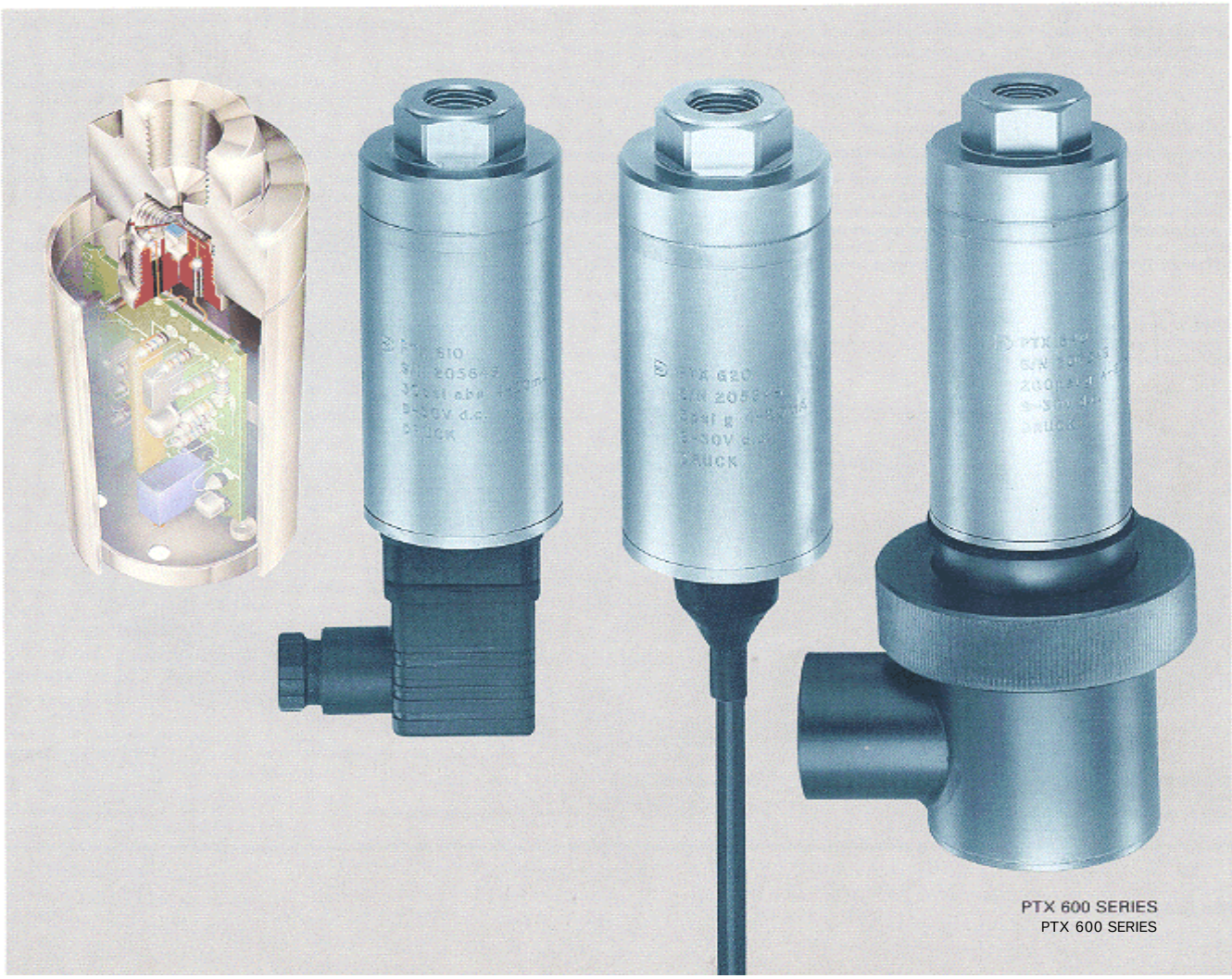
Druck

PTX 600 SERIES

Precision Pressure Transmitters

- **Excellent characteristics**
  Stability: 0.1% F.S./year
  Thermal performance: 1%, -20° to 80°C
  Linearity and hysteresis: ±0.08% F.S.
- **High overload and burst pressure**
- **Hastelloy and stainless steel wetted parts**
- **RFI protected**
- **Intrinsically safe versions available**
- **Electrical and pressure connection options**



PTX 600 SERIES: Precision Pressure Transmitters

INTRODUCTION

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 (NACE compatible materials for sour gas service). 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 transmitter, based upon well proven techniques with the benefit of the latest sensor and electronics technology within a robust, compact design able to withstand the rigours of industrial sites whilst providing 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 available from IP50 to IP68 standards dependant upon the electrical connection selected.

To fully represent operating conditions the transmitters are calibrated in terms of end point characteristics, expressed as the Terminal Straight Line (TSL) for non-linearity, hysteresis and repeatability, and the thermal effects are expressed as a maximum change in output from the calibration as 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 DIN pressure ranges.

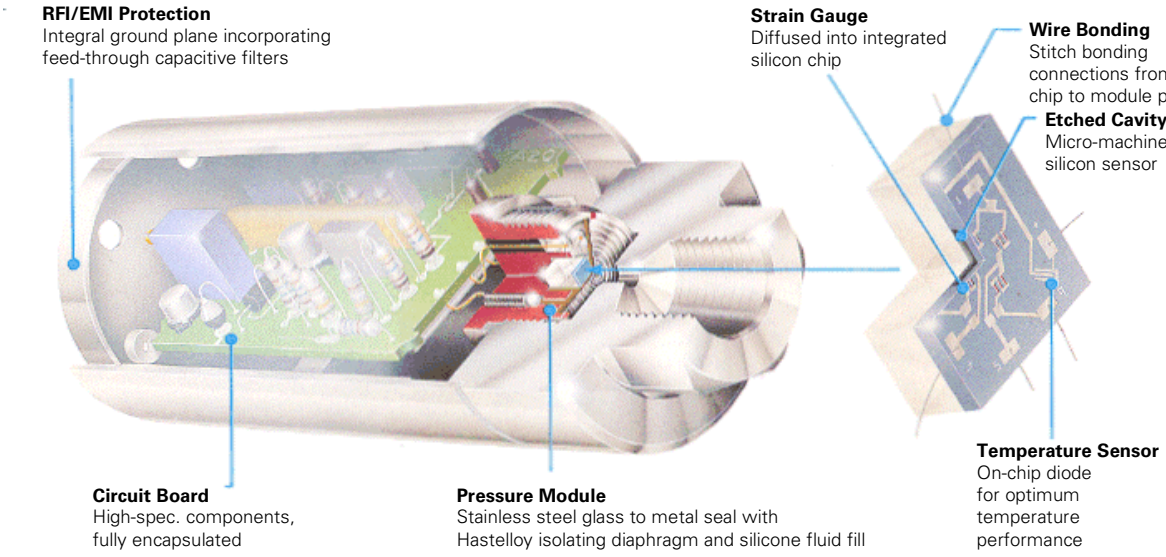
Prior to despatch the core is adjusted to intermediate ranges, or alternative pressure units if required, and completed with the appropriate electrical connection format.

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

The transmitter provides an integral $G^1/_4$ female pressure port and a range of screw-in stainless steel male to male adaptors are available as options, to be mounted via a bonded industrial seal supplied with the option.

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 and submersible connections are not detachable).

The PTX 500/600 series pressure transmitter core contains at its heart and 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 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 rationalise the output, provide temperature compensation and allow customer adjustment of zero and span. A stainless steel body tube encloses the electronics and its encapsulant and permits subsequent fitment of the RFI/EMI protection assembly. Units will be stocked at this level, awaiting orders, leaving only the electrical interface of the customers choice to be assembled prior to dispatch.



PTX 600 SERIES: Specification

Operating Temperature Range
Any pressure unit and (zero Based) span available between 250mbar and 700 bar full scale to gauge and absolute formats: spans down to 100mbar available in gauge format only.

Standard Ranges:
0 to 100, 160mbar (gauge only)
0 to 250, 400, 600 mbar, 1, 1.6, 2.5, 4, 6, 10, 16, 25, 40, 60 bar gauge and absolute.
0 to 100, 160, 250, 400, 600, 700 bar sealed gauge and absolute.

Compound, offset and reversed sensitivity ranges available. e.g.
-1 to +1 barg, +1 to +3 barg,
3 to 0 barg.
For further information please refer to manufacturer.

Overpressure
The rates pressure can be exceeded by the following multiples without degrading performance:-
2 bar for ranges up to 600mbar
3 x for 1 bar to 40 bar ranges.
2 x for ranges above 40 bar.

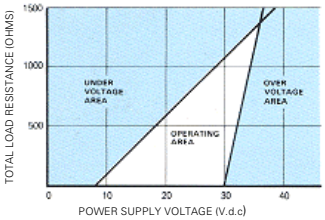
Pressure Containment
Application of the following pressure may damage the transmitter but process media leakage will not occur:-

Gauge Reference Versions:
4 bar for ranges up to 600mbar
10 bar for ranges 600mbar to 1.6 barg
5 x rated pressure (200 bar maximum) for ranges above 1.6 barg to 60 barg.

Absolute/Sealed Gauge Reference Versions:
200 bar for ranges up to 60 bara.
1400 bar for ranges above 60 bara.

Pressure Media
Fluids compatible with a fully welded assembly of 316 stainless steel 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 100Hz supply ripple rejection.

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

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

Combined Non-Linearity, Hysteresis and Repeatability
Terminal definition: The output will not Deviate from the straight line connecting zero and full scale output by more than 0.15% F.S. (Typically 0.1% F.S.).
Best straight line deviation:
±0.05% F.S. (Typically ±0.5% F.S.).

Zero Offset and Span Setting
±0.05mA
±5% site adjustable by sealed, non-interacting potentiometers (resolution of potentiometers ±1 μA).
(PTX 630 not adjustable).

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:	-20° to + 80°C
Process media:	-30° to + 120°C
Storage:	-40° to + 125°C

Temperature Effects
For ranges of 400mbar and above the output will not deviate from room temperature calibration by more than
0.5%F.S. over -10° to +50°C or
1%F.S. over -20° to +80°C.
Typically 0.3%F.S., -10° to +50°C.
0.7%F.S., -20° to +80°C.
For ranges below 400 mbar these values will increase pro-rata with calibration span.

Mounting Position Effect
Negligible effect.
For ranges below 600mbar 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: 330 gms. Excluding optional electrical connections, cable etc.

Intrinsic Safety (Optional)
These transmitters can be certified for use with barrier systems to EEx ia gas group IIC with T4 rating for ambient temperatures up to 80°C to BS5501 part 7 and Cenelec EN50 020.
Maximum integral cable length 29 meters for PTX 620/630-01.
Extra cable can be added during installation in accordance with system certificate.

Electrical Connection
Versions available for IP50 to IP68 ratings (see ordering information).
Mating parts supplied with plug/socket versions (PTX 610 & 660)
1 metre integral cable supplied as standard on PTX 620 and PTX 630 models.

Longer lengths available on request.
For junction box version please refer to PTX 651/PTX 671 data sheet.

Pressure Connection
G $^1/_4$ female.
Screw-in male/male adaptors available (see accessories).

For $^1/_2$ NPT version please refer to PTX 651/PTX 671 data sheet.
For open face please refer to PTX 700 data sheet.

Acceleration Sensitivity
0.044% F.S./g for 400mbar decreasing to 0.0003% F.S./g for 60 bar.

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

Vibration
response less than 0.05% F.S./g at 30G peak 10Hz-2kHz, limited by 12mm double amplitude (MIL-STD 810C Proc 514.2-2 Curve L).

Volumetric Displacement
Not greater than 0.1cm^3 for nominal span.

RFI Protection
From 10kHz to 500MHz:-
Cables in conduit: ±0.1% span change at 30V/m
Cables unshielded: ±1% span change at 10V/m.

Voltage Spike Protection
Units will withstand 2kV spike test to IEC 801-4 form without damage, applied between excitation lines or excitation line and case.

Marine Approval
Certified for use in vessels classed with RINA (certificate 5/437/93).

ACCESSORIES AVAILABLE TO ORDER:

Screw-in Male/Male Adaptors
G $^1/_4$ male (P/N 190-040)
$^1/_4$ NPT male (P/N 190-038)
$^7/_{16}$ UNF male (MS33656-4 compatible) (P/N 190-042)
M14 x 1.5 male (P/N 190-036)
G $^1/_2$ (pressure gauge connection) (P/N 190-039)
Adaptors manufactured in 316 stainless steel).

Bonded Seal (P/N 204-053)
To fit between transmitter and screw-in male/male adaptors (Nitrile and zinc plated steel).

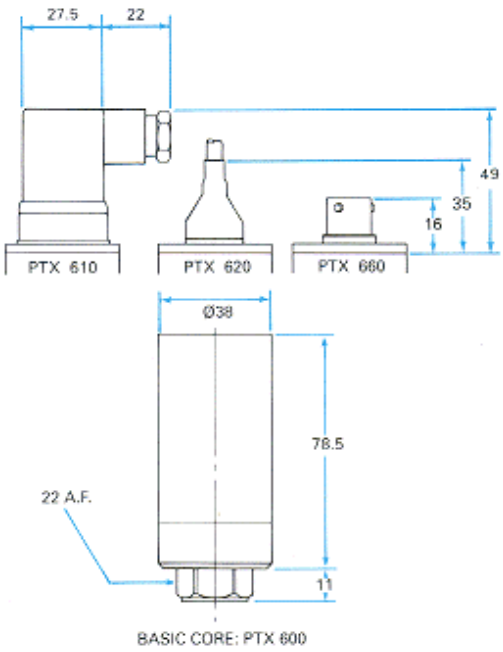
Cable (P/N 192-004)
For gauge ranges of 60 bar and below the PTX 610 required this 6mm O.D. vented cable.

Lighting Suppression (P/N*)
Alternate mating part to DIN 43650 assembly including lightning suppression components. (Not available for Intrinsically Safe models).

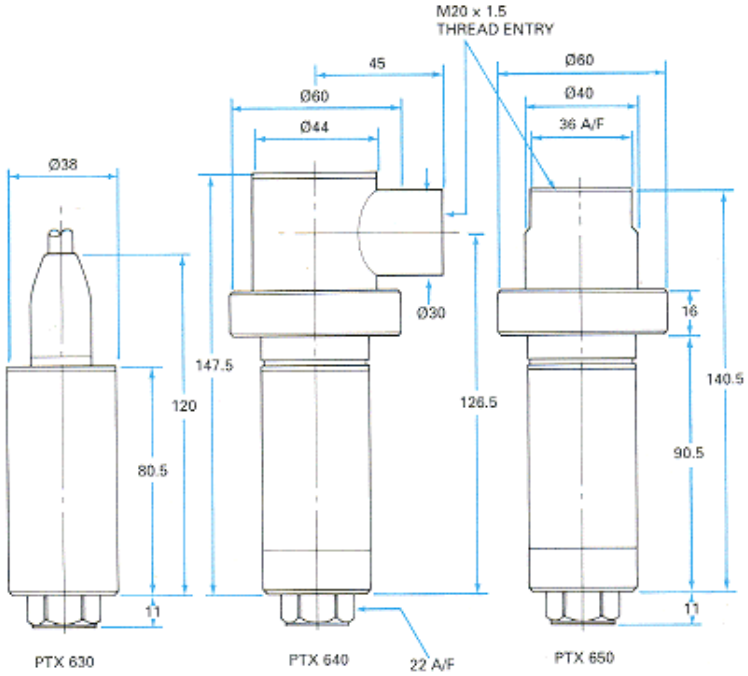
Continuing development sometimes necessitates specification changes without notice.

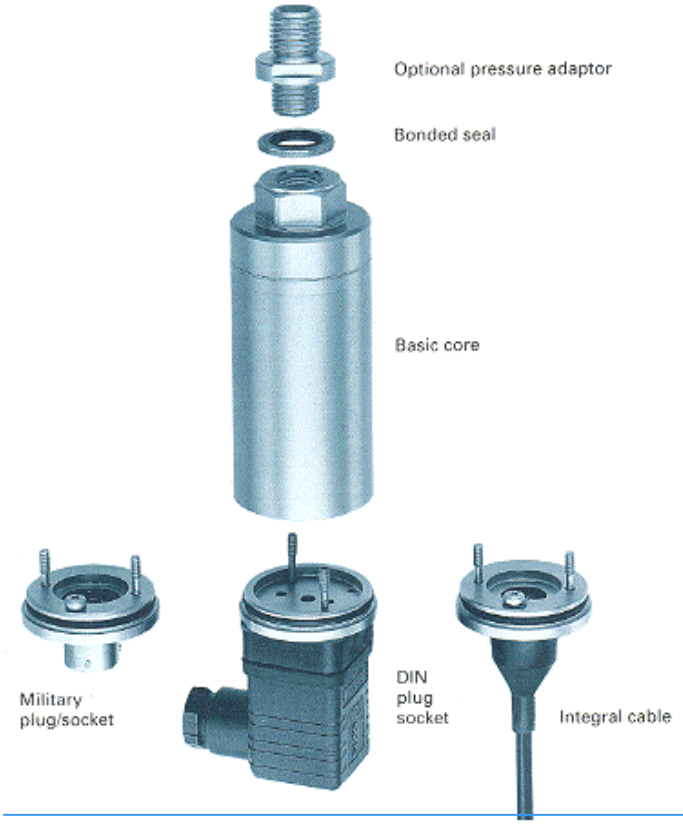
INSTALLATION DRAWINGS Dimensions: mm

DETACHABLE/INTERCHANGEABLE
Electrical Connector Versions



INTEGRAL Electrical Connector Versions





ORDERING INFORMATION

Please state the following:-
(1) Type number

PTX 6X X - X

Approvals

0 Commercial
I Celelec
N N Type*
U U.L.
F F.M.*
L Lloyds*
C C.S.A **Future releases*

Temperature Effects

0 -10° to +50°C
1 -20° to +80°C

Electrical Connection

0 Solder tags (IP50)
1 DIN 43650 plug/socket (IP65)
2 Integral cable assembly (IP63)
3 Submersible cable assembly (IP68 to 700mH_2Og)
4 Rotatable conduit (IP65)
5 M20 conduit (IP65)
6 MIL-C-26482 plug/socket

(2) Operating pressure range.
(3) Accessories (if required).

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