

**Model IDP10 I/A Series<sup>®</sup> Electronic Differential Pressure Transmitters with 4 to 20 mA Analog Output**



IDP10  
LOW PROFILE  
STRUCTURE LP1



IDP10  
TRADITIONAL  
STRUCTURE



IDP10  
LOW PROFILE  
STRUCTURE LP2

*The Foxboro<sup>®</sup> brand Model IDP10 is an analog output, two-wire d/p Cell<sup>®</sup> Transmitter that provides precise, reliable, measurement of differential pressure, and transmits a 4 to 20 mA analog output signal. Contact Global Customer Support for Intelligent IDP10 Transmitters with remote digital communications.*

**HIGH DEPENDABILITY AND VALUE**

- ▶ Available with traditional or low profile structures.
- ▶ Superior Performance and long term stability from microprocessor-based technology.
- ▶ Industry standard 316L ss, Co-Ni-Cr, nickel alloy<sup>(1)</sup>, Monel, or Tantalum sensor materials, depending on transmitter structure.
- ▶ Durable aluminum or 316 ss housing available; both meet NEMA 4X and IP66 ratings.
- ▶ Optional mounting bracket sets allow pipe, surface, or manifold mounting of transmitter.
- ▶ Dual Seal certified to meet ANSI/ISA 12.27.01-2003 requirements.
- ▶ CE marked; complies with applicable EMC, ATEX, and PED European Directives.
- ▶ Designed for hazardous area installations. Versions available to meet agency flameproof and zone requirements.
- ▶ Standard 5-year warranty.

1. Equivalent to Hastelloy<sup>®</sup> C. Hastelloy is a registered trademark of Haynes International, Inc.

## INTELLIGENT TRANSMITTER FEATURES AT AN ECONOMICAL PRICE

When you want the flexibility and performance of a configurable, intelligent transmitter but you don't need a digital output signal, these transmitters provide exceptional benefits at a very affordable price:

- ▶ Liquid Crystal Display (LCD) digital indicator with on-board pushbuttons
- ▶ Pushbutton configuration and calibration:
  - Linear or square root output
  - Adjustable damping
  - Forward or reverse output
  - Failsafe output; upscale or downscale
  - Reranging without applying pressure
- ▶ Easily upgradeable to fully intelligent version (FoxCom™, HART®, or FOUNDATION™ Fieldbus)

## I/A Series PRESSURE TRANSMITTER FAMILY

This complete family of d/p Cell, gauge, absolute, multirange, multivariable, and premium performance transmitters, as well as transmitters with remote or direct connect pressure seals, all using field-proven silicon strain gauge sensors and common topworks.

## MODULAR ELECTRONICS

Select the electronics module you need to provide just the right level of intelligence for your application and budget. If your needs change, the modular design allows easy migration to other protocols — including FoxCom, HART, FOUNDATION Fieldbus, and 1 to 5 V dc versions.

## ELECTRONICS VERSION -A TRANSMITTER

This transmitter uses the -A electronics module. It is a very economical analog output transmitter that provides full configuration capability. This transmitter provides the greatest functionality for the largest number of applications at the least possible cost to you. It even provides the ability to rerange to new calibrated ranges, using the standard LCD indicator, without the need to apply calibration pressure.

It is designed for use in Division 1 hazardous areas, and complies with Division 2 requirements. Also versions are available to meet agency flameproof and zone requirements. See Electrical Safety Specifications section.

## WIDE MEASUREMENT RANGE WITH A MINIMUM OF SENSORS

Five sensors are provided to cover measurement spans from 0.12 to 21 000 kPa (0.018 to 3000 psi). The high turndown capability of the transmitter means that nearly all applications can be satisfied with only these five ranges, greatly simplifying your spare transmitter and spare parts requirements.

## STANDARD LCD DIGITAL INDICATOR

A two-line digital indicator, shown in Figure 17, is provided as standard with this transmitter. The indicator displays the measurement with a choice of units. Two on-board pushbuttons allow zero and span adjustments, as well as local configuration, without the need for a PC-based configurator.

## SENSOR CORROSION PROTECTION

For traditional structure, choice of 316L ss, Co-Ni-Cr, nickel alloy<sup>(2)</sup>, Monel, Gold-Plated 316L ss, and Tantalum materials. High corrosion resistance of Co-Ni-Cr (TI 037-078) means long service life in many difficult applications without the extra cost for exotic materials. See TI 037-75b for process applicability with Co-Ni-Cr and other process wetted materials.

For low profile structures LP1 and LP2, 316L ss and nickel alloy (2) are offered as sensor materials. Refer to the Transmitter Structures section that follows for description and application of traditional and low profile (LP1 and LP2) structures.

## HIGH PERFORMANCE

These transmitters utilize microprocessor-based correction to achieve both excellent accuracy and ambient temperature compensation.

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2. Equivalent to Hastelloy® C.

## EASE OF INSTALLATION

Rotatable Topworks allows transmitter installation in tight places, allows indicator to be positioned in preferred direction, and eases field retrofit.

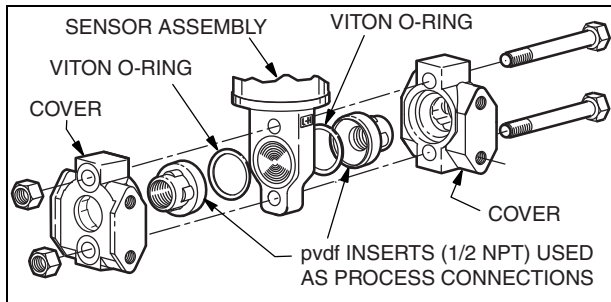
Two Conduit Entrances offer a choice of entry positions for ease of installation and self-draining of condensation regardless of mounting position and topworks rotation.

Wiring Guides and Terminations provide ease of wire entry and support, plenty of space to work and store excess wire, and large, rugged screw terminals for easy wire termination.

## PROCESS CONNECTORS

Removable, gasketed process connectors allow a wide range of selections, including 1/4 NPT, 1/2 NPT, Rc 1/4, Rc 1/2, and weld neck connections. For highly corrosive chemical processes when a traditional structure is used, two 1/2 NPT pvdf inserts (Figure 1) are installed in both 316 ss covers and are used as the process connectors. In these applications, tantalum is used as the sensor diaphragm material.

*Figure 1. Bottomworks Shown with 1/2 NPT pvdf Inserts Installed in HI- and LO-Side Covers with Traditional Structure*



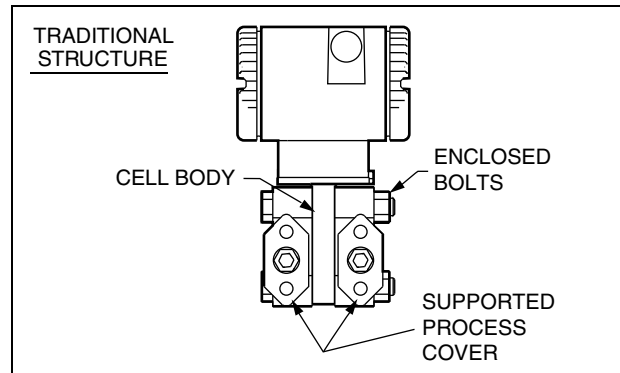
## OPTIONAL MOUNTING BRACKET SETS

In addition to the standard style mounting bracket sets optionally offered with these transmitters, a unique universal style mounting bracket has been developed to allow wide flexibility in transmitter mounting configurations consistent with installation requirements. All mounting bracket sets allow mounting to a surface, pipe, or manifold. Refer to Dimensions - Nominal section.

## UNIQUE PROCESS COVER AND CELL BODY DESIGN

Biplanar Construction (Figure 2) maintains the traditional horizontal process connections and vertical mounting by providing a cell body contained between two process covers, while still achieving light weight, small size, and high standard static pressure rating of 25 MPa (3626 psi). This provides easy retrofit of any conventional differential pressure transmitter, and also is easily mounted in the horizontal position with vertical process connections, when required.

*Figure 2. Biplanar Construction Shown with Traditional Horizontal Process Connections*



Process Covers (Figure 2) are fully supported by the cell body over their entire height. This prevents bending and results in a highly reliable seal. Also, this provides dimensional stability to the process covers, ensuring that they will always mate properly with 3-valve bypass manifolds.

Process Cover Bolts (Figure 2) are enclosed to minimize corrosion and to minimize early elongation with rapid temperature increases. The design makes it less likely for the transmitter to release process liquid during a fire.

Process Cover Gaskets are ptfе as standard; ptfе provides nearly universal corrosion resistance, and eliminates the need to select and stock various elastomers to assure process compatibility.

Light Weight provides ease of handling, installation, and direct mounting without requiring costly pipe stands.

**TRANSMITTER STRUCTURES**

Traditional and low profile structures (LP1 and LP2) are offered to accommodate and to provide flexibility in transmitter installations. See paragraphs below.

**Traditional Structure**

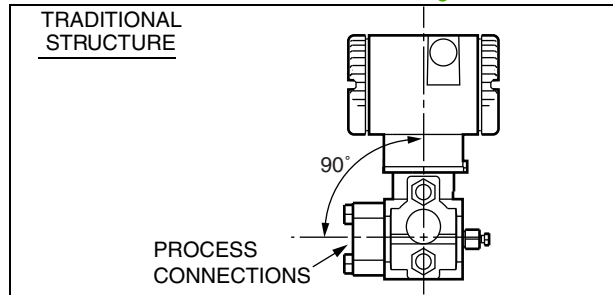
The traditional structure (Figure 3) utilizes the right angle design common to most differential pressure transmitters in use throughout the world. Process connections are oriented 90 degrees from the transmitter centerline.

This traditional structure makes it easy to retrofit any transmitters of similar design.

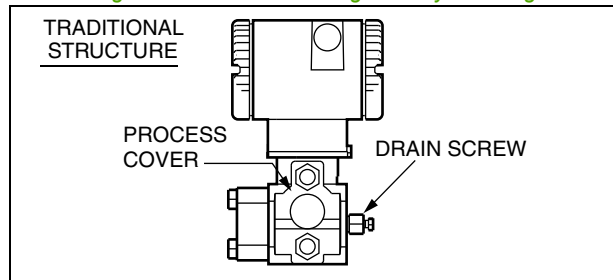
Sensor cavity venting and draining is provided for both vertical and horizontal transmitter installation, using innovative tangential connections to the sensor cavity (Figures 4 and 5). Optional side vents are offered for sensor cavity venting in the upright position (Figure 6).

An extensive variety of process-wetted materials are available for the process covers on this highly versatile and widely used transmitter.

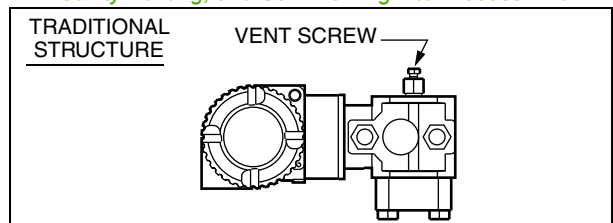
*Figure 3. Vertical Mounting Showing Process Connections at 90 degrees*



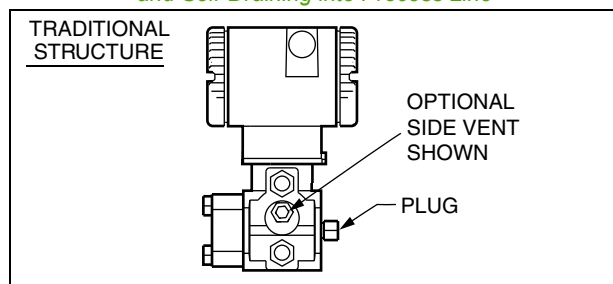
*Figure 4. Vertical Mounting - Cavity Draining*



*Figure 5. Horizontal Mounting - Cavity Venting, and Self-Draining into Process Line*



*Figure 6. Vertical Mounting - Cavity Venting, and Self-Draining into Process Line*



## Low Profile Structures

The low profile structures utilize an in-line design, placing the process connections in line with the transmitter centerline (Figure 7 and Figure 8). This allows mounting of the transmitter in the upright position with the process connections facing downward, for connection to vertical process piping or for mounting directly to a three- or five-valve manifold.

The low profile structures provide a mounting style similar to that used by competitive Coplanar™ transmitters. This makes it easy to select Foxboro transmitters for both retrofit and new applications where this type of installation is desired.

Transmitters with the low profile structure can be attached directly to existing, installed Coplanar manifolds, such as the Rosemount Model 305RC or Anderson Greenwood Models MC3, MC5G, MC5P, and MT3 by use of an optional adapter plate (Figure 9). Also, when assembled to the same process piping or manifold as a Coplanar transmitter, one of the electrical conduit connections is located within  $\pm$  one inch of the similar conduit connection on the competitive transmitter, assuring ease of retrofit or conformance with installation design drawings.

All parts making up the low profile versions are identical to the parts in the traditional version except for the process covers and the external shape of the sensor cell body.

For user convenience, two types of low profile structures are offered, type LP1 and LP2. The process covers are the only transmitter parts that differ between structure types LP1 and LP2.

Refer to the sections that follow for further descriptions of low profile structures LP1 and LP2.

Figure 7. Low Profile Structure - LP1 Shown

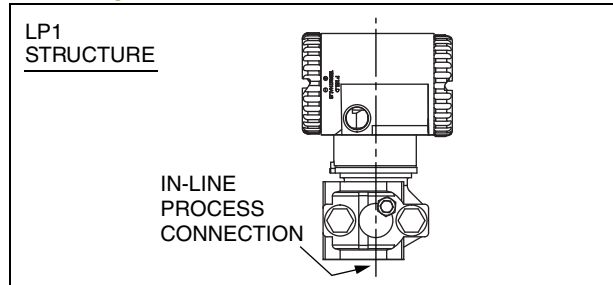


Figure 8. LP1 Shown Directly Mounted to Manifold

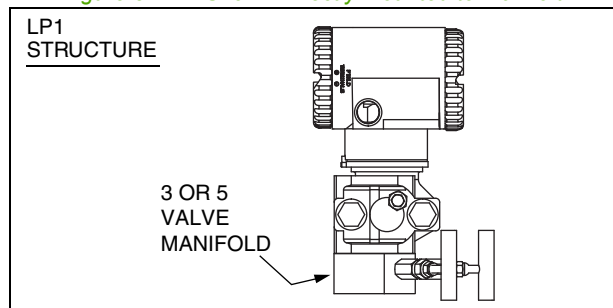
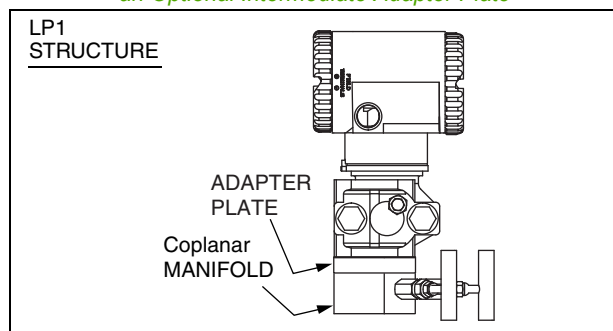


Figure 9. LP1 Shown Mounted to a Coplanar Manifold using an Optional Intermediate Adapter Plate



**Low Profile Structure LP1 – Direct Mount**

Low Profile Structure LP1 is a compact, inexpensive, lightweight design for direct mounting to a separately mounted manifold or process piping. These transmitters are not typically bracket-mounted.

They are supplied as standard with a single vent/drain screw in the side of each process cover. In conjunction with the standard tangential venting and draining design, they are suitable for mounting either vertically (Figure 10) or horizontally, and are suitable for nearly all applications, including liquids, gases, and steam. For horizontal installation, they can simply be “turned over” (rotated 180 degrees - Figures 11 and 12) to orient the high and low pressure sides in the preferred locations. There is no need to unbolt process covers. The topworks housing can also be rotated, as shown, to orient the conduit connections in the desired position.

In the vertical, upright position, they are also self-draining and are ideal for gas flow rate service, when directly mounted to a manifold located above the horizontal pipeline. The vent screw can be omitted for this or other applications, if desired.

Figure 10. Upright Mounting

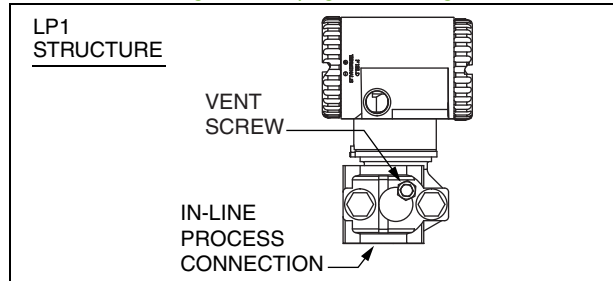


Figure 11. Horizontal Mounting with Vent Screw

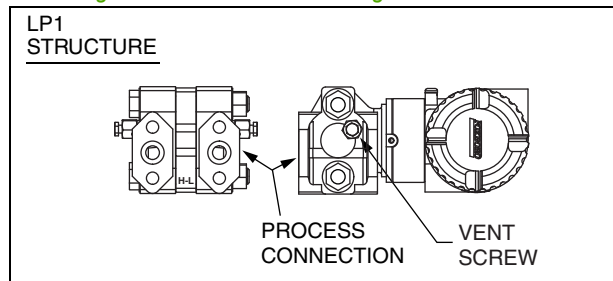
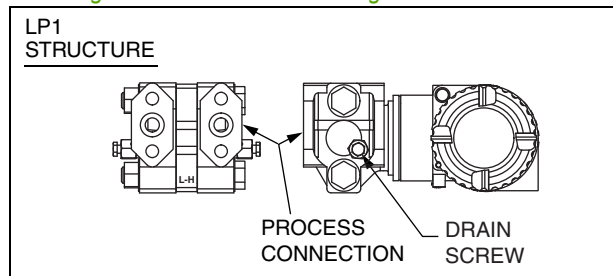


Figure 12. Horizontal Mounting with Drain Screw



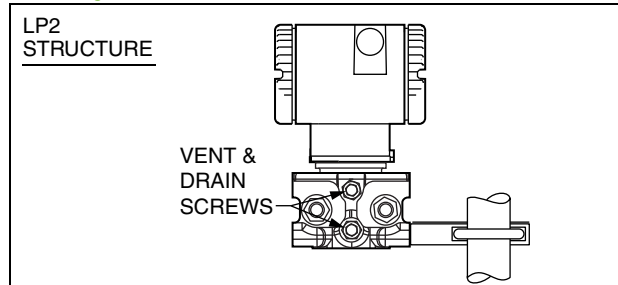
**Low Profile Structure LP2 - Bracket or Direct Mount**

Low Profile Structure LP2 is a universal design for either bracket or direct mounting. Drilled and tapped mounting holes facilitate mounting to either new or existing Foxboro brackets (Options -M1, -M2, and -M3), as well as standard brackets supplied with existing Coplanar transmitters. See Figures 13 and 14.

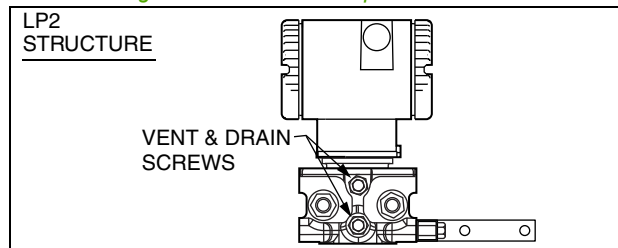
These transmitters can also be directly mounted to manifolds or process piping and are available with the same optional adapter used with low profile structure LP1 to fit existing Coplanar manifolds (Figure 15).

For extra convenience, they use a full-featured vent and drain design, with separate vent and drain screws positioned in each cover for complete venting or draining directly from the sensor cavity. They are normally recommended for upright, vertical installation.

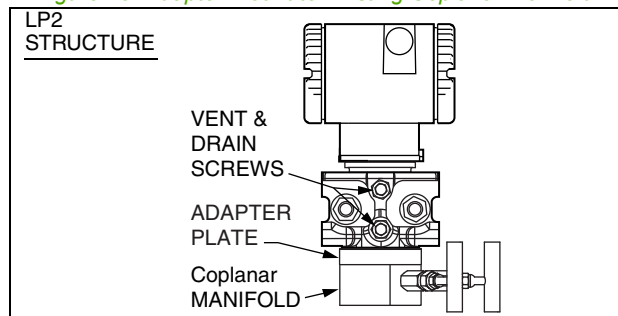
*Figure 13. Shown on Foxboro Universal Bracket*



*Figure 14. Shown on Coplanar Bracket*



*Figure 15. Adapter Mount to Existing Coplanar Manifold*



**PRESSURE SEALS**

Pressure seals are used with transmitters having a traditional structure (see Transmitter Structures section above) when it is necessary to keep the transmitter isolated from the process. A sealed system is used for a process fluid that may be corrosive, viscous, subject to temperature extremes, toxic, sanitary, or tend to collect and solidify.

Table 1 lists the various pressure seals that can be used with an IDP10 Transmitter. To order a transmitter with seals, both a Transmitter Model Number and Seal Model Number are required. For a complete listing of pressure seal models and specifications, see PSS 2A-1Z11 A. Also see Figure 16 for typical pressure seal configurations.



Table 1. Pressure Seals Used with IDP10 Transmitters

Direct Connect Pressure Seal Assemblies		
Seal Model	Seal Description	Process Connections
PSFLT	Flanged, Direct Connect (Flanged Level), Flush or Extended Diaphragm	ANSI Class 150/300/600 flanges and BS/DIN PN 10/40, 10/16, 25/40 flanges
PSSCT	Sanitary, Direct Connect (Level Seal), Flush Diaphragm	Process Connection to Sanitary Piping with 2- or 3-inch Tri-Clamp
PSSST	Sanitary, Direct Connect (Level Seal), Extended Diaphragm	Process Connection to 2-in Mini Spud or 4-in Standard Spud; Tri-Clamp
Remote Mount, Capillary-Connected Pressure Seal Assemblies		
Seal Model	Seal Description	Process Connections
PSFAR	Flanged, Remote Mount, Recessed Diaphragm	ANSI Class 150/300/600/1500 flanges
PSFES	Flanged, Remote Mount, Extended Diaphragm	ANSI Class 150/300/600 flanges and BS/DIN PN 10/40, 10/16, 25/40 flanges
PSFFR	Flanged, Remote Mount, Flush Diaphragm	ANSI Class 150/300/600 and PN 10/40
PSFPS	Flanged, Remote Mount, Flush Diaphragm	ANSI Class 150/300/600 flanges and BS/DIN PN 10/40 flanges
PSISR	In-Line Saddle Weld, Remote Mount, Recessed Diaphragm	Lower housing of seal is in-line saddle welded to nominal 3- or 4-inch (and larger) Pipe
PSSCR	Sanitary, Remote Mount, Flush Diaphragm	Process Connection secured with a Tri-Clamp to a 2- or 3-inch pipe
PSSSR	Sanitary, Remote Mount, Extended Diaphragm	Process Connection to 2-in Mini Spud or 4-in Standard Spud; Tri-Clamp
PSTAR	Threaded, Remote Mount, Recessed Diaphragm	1/4, 1/2, 3/4, 1, or 1 1/2 NPT internal thread

Figure 16. Typical IDP10 Pressure Seals





FUNCTIONAL SPECIFICATIONS

Span Limits for IDP10 d/p Cell Transmitters

Span Code	kPa	psi	mbar	mmHg	mmH <sub>2</sub> O	inH <sub>2</sub> O
A (a)	0.12 and 7.5	0.018 and 1.1	1.2 and 75	0.93 and 56	12 and 750	0.5 and 30
B	0.87 and 50	0.125 and 7.2	8.7 and 500	6.5 and 375	87 and 5000	3.5 and 200
C	7 and 210	1 and 30	70 and 2100	50 and 1500	700 and 21 000	28 and 840
Span Code	MPa	psi	bar	mHg	mH <sub>2</sub> O	ftH <sub>2</sub> O
D	0.07 and 2.1	10 and 300	0.7 and 21	0.5 and 15	7 and 210	23 and 690
E (b)	0.7 and 21 (b)	100 and 3000 (b)	7 and 210 (b)	5 and 150 (b)	70 and 2100 (b)	230 and 6900 (b)

- a. Span Limit Code "A" not available when pressure seals are selected.
- b. When certain options are specified, the upper span and range limits are reduced as shown in the "Options Impact" table below.

Range Limits for IDP10 d/p Cell Transmitters (a)

Span Code	kPa	psi	mbar	mmHg	mmH <sub>2</sub> O	inH <sub>2</sub> O
A (b)	-7.5 and +7.5	-1.1 and +1.1	-75 and +75	-56 and +56	-750 and +750	-30 and +30
B	-50 and +50	-7.2 and +7.2	-500 and +500	-375 and +375	-5000 and +5000	-200 and +200
C	-210 and +210	-30 and +30	-2100 and +2100	-150 and +150	-21000 and +21000	-840 and +840
D	-0.21 and +2.1	-30 and +300	-2.1 and +21	-1.5 and +15	-21 and +210	-69 and +690
E (c)	-0.21 and 21 (c)	-30 and +3000 (c)	-2.1 and +210 (c)	-1.5 and +150 (c)	-21 and +2100 (c)	-69 and +6900 (c)

- a. Positive values indicate HI side of sensor at the high pressure, and negative values indicate LO side of sensor at the high pressure.
- b. Span Limit Code "A" not available when pressure seals are selected.
- c. When certain options are specified, the upper span and range limits are reduced as shown in the "Options Impact" table below.

Impact of Certain Options on Span and Range Limits (a)

Option	Description (Also see Model Code)	Span and Range Limits Derated to:
-B3	B7M Bolts and Nuts (NACE)	20 MPa (2900 psi, 200 bar)
-D1	DIN Construction	16 MPa (2320 psi, 160 bar)
-D5 or -B1	DIN Construction or 316 ss Bolting	15 MPa (2175 psi, 150 bar)
-D2, -D4, -D6, or -D8	DIN Construction	10 MPa (1500 psi, 100 bar) (a)

- a. Refer to Model Code section for application and restrictions related to the items listed in the table.

**Maximum Static and Proof Pressure Ratings for IDP10 d/p Cell Transmitters (a)**

Transmitter Configuration (See Model Code for Description of Options)	Static Pressure Rating			Proof Pressure Rating (b)		
	MPa	psi	bar	MPa	psi	bar
With Option -D9 or -Y	40	5800	400	100	14500	1000
Standard or with Option -B2, -D3, or -D7	25	3626	250	100	14500	1000
With Option -B3	20	2900	200	70	11150	700
With Option -D1	16	2320	160	64	9280	640
With Option -B1 or -D5	15	2175	150	60	8700	600
With Option -D2, -D4, -D6, or -D8	10	1500	100	40	6000	400
With Structure Codes 78 and 79 (pvdf insert)	2.1	300	21	8.4	1200	84

- a. Refer to Model Code section for application and restrictions related to the items listed in the table.
- b. Proof pressure ratings meet ANSI/ISA Standard S82.03-1988. Unit may become nonfunctional after application of proof pressure.

**Output Signal**

4 to 20 mA, Linear or Square Root (Configurable)

**Electrically Adjustable Damping**

Response time is normally 0.75 s, or setting of 0 (none), 2, 4, or 8 seconds, whichever is greater, for a 90% recovery from an 80% input step per ANSI/ISA S51.1. (For 63.2% recovery, 0.50 s with sensors B to E, and 0.60 s with sensor A.)

**Suppressed Zero and Elevated Zero**

Suppressed or elevated zero ranges are acceptable as long as Span and Range limits are not exceeded.

**Field Wiring Reversal**

No transmitter damage.

**Standard Liquid Crystal Display (LCD) Indicator with On-Board Pushbuttons (Figure 17)**

Indicator provides:

- ▶ Two Lines; four numeric characters on top line and seven alphanumeric characters on bottom line.
- ▶ Measurement Readout; value on top line and units label on bottom line.
- ▶ Configuration and Calibration Prompts.

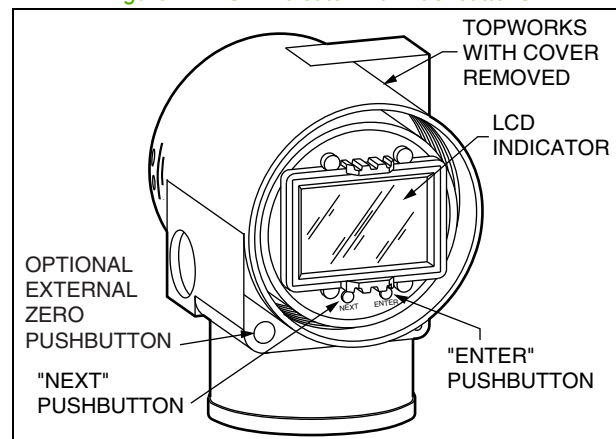
**Zero and Span Adjustments (Figure 17)**

Zero and span adjustments can be accomplished using the pushbuttons on the LCD indicator.

**Optional External Zero Adjustment (Figure 17)**

An external pushbutton mechanism is isolated from the electronics compartment and activates (magnetically) an internal reed switch through the housing. This eliminates a potential leak path for moisture or contaminants to get into the electronics compartment. The optional external zero adjustment can be disabled by a configuration selection.

Figure 17. LCD Indicator with Pushbuttons



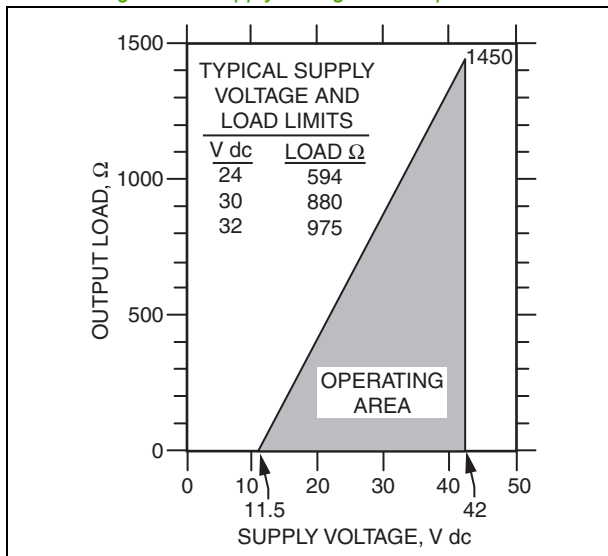
**European Union Directives**

- ▶ Complies with Electromagnetic Compatibility Requirements of European EMC Directive 2004/108/EC by conforming to the following EN and IEC Standards: EN 61326-1, and IEC 61000-4-2 through 61000-4-6.
- ▶ Complies with NAMUR NE 21 Interference Immunity Requirement.
- ▶ Analog output complies with NAMUR NE 43 overrange and underrange annunciations.
- ▶ Conforms to Applicable European Union Directives (“CE” Logo marked on product).

**Supply Voltage Requirements and External Loop Load Limitations (Figure 18)**

Nominal minimum voltage shown in Figure 18 is 11.5 V dc. This can be reduced to 11 V dc using a plug-in jumper across the test receptacles in the field wiring compartment terminal block. An optional plug-in shorting bar (Figure 21) is offered for this purpose.

*Figure 18. Supply Voltage vs. Output Load*



**Square Root Low Flow Cutoff**

User configurable to provide:

- ▶ Cutoff to zero at flows <10% of maximum flow (1% of maximum differential pressure).
- ▶ Or active point-to-point line between zero and 20% of maximum flow (4% of maximum differential pressure).

**Minimum Allowable Absolute Pressure vs. Transmitter Temperature**

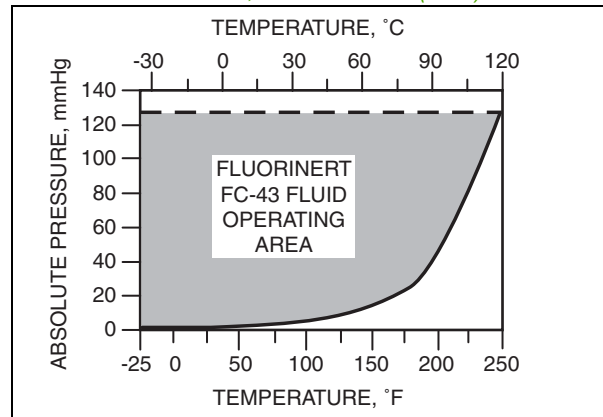
**With Silicone Fill Fluid**

Full vacuum: up to 121°C (250°F)

**With Inert Fill Fluid**

Refer to Figure 19.

*Figure 19. Minimum Allowable Absolute Pressure vs. Transmitter Temperature, Inert FC-43, 2.6 cSt at 25°C (77°F)*



### Configuration and Calibration Data, and Electronics Upgradeability

Factory characterization, user configuration, and calibration data are stored in the sensor (see Figure 20). Therefore the electronics module can be replaced or changed from one type to another.

A module may be replaced without the need for reconfiguration or recalibration. Although module replacement can affect accuracy up to 0.20% of span, this error can be removed by an mA trim without application of pressure.

Changing module types may require reconfiguration and recalibration, as well as a different terminal block, if applicable, but all factory characterization data is retained.

#### Optional Custom Configuration (Option -C2)

For the transmitter to be custom configured by the factory, the user must fill out a data form. If this option is not selected, a standard (default) configuration will be provided; see Table 2 for allowable pressure units, and Table 3 for an example of custom Configuration Option -C2.

Table 2. Allowable Pressure Units for Calibrated Range (a)

inH <sub>2</sub> O	psi	Pa	atm	g/cm <sup>2</sup>
ftH <sub>2</sub> O	inHg	kPa	bar	torr
mmH <sub>2</sub> O	mmHg	MPa	mbar	kg/cm <sup>2</sup>

a. Displayed in upper case only on transmitter.

Table 3. Example of Configuration Option -C2

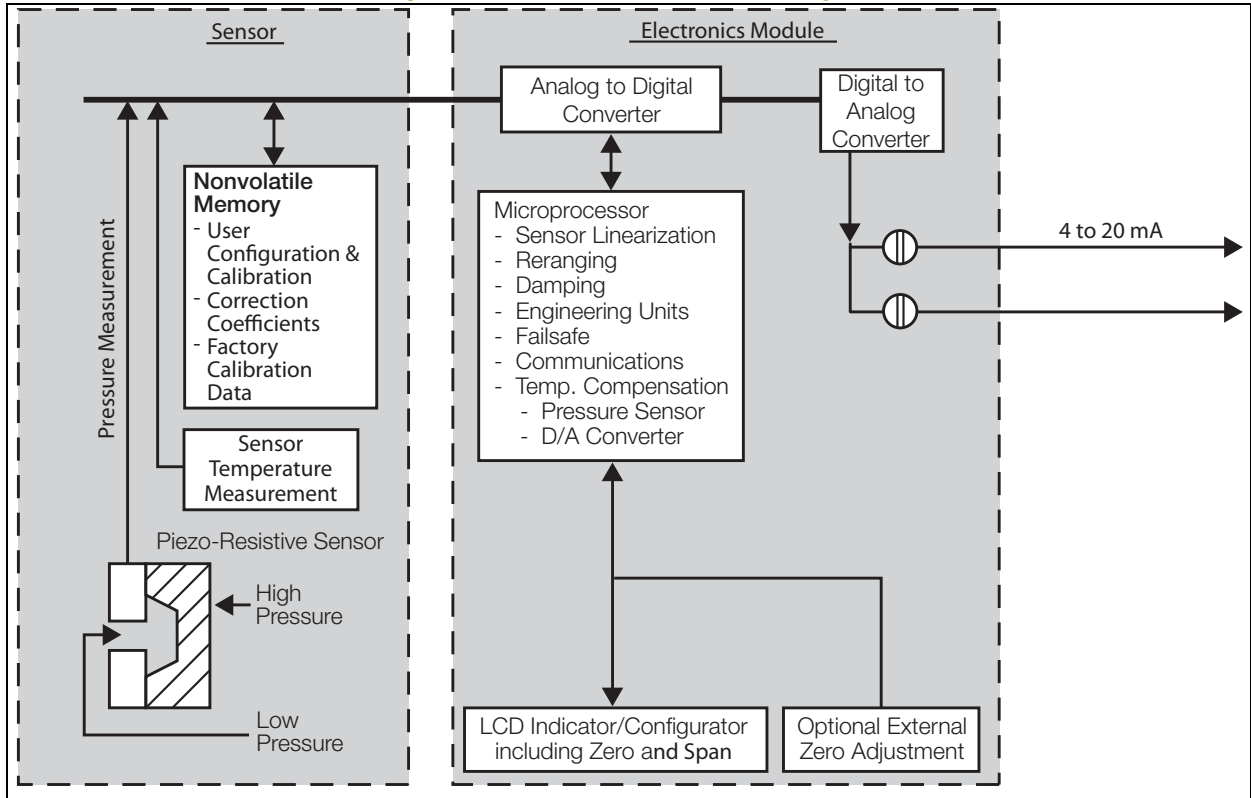
Parameter	Standard (Default) Configuration	Example of Configuration Option -C2
Calibrated Range • Pressure Units • LRV • URV	per S.O. (a) per S.O. per S.O.	INH2O (a) 0 100
Output Mode	Linear	Square Root
Output Direction	Forward	Forward
Damping	None	2
Failsafe Action	Upscale	Downscale
Ext. Zero Option	Enabled	Disabled
Other: If Linear: • Label (2nd line) • Display LRV • Display URV If Square Root: • Label (2nd line) • Display LRV • Display URV	(b) (c) (c) % 0 100	INH2O (b) 0 (c) 100 (c) GPM (d) 0 500 (e)

- Select from list in Table 2.
- Same as units selected for calibrated range, or percent.
- Same as calibrated range, or 0 and 100 for percent.
- Up to 7 letters (upper case), numbers, or available symbols.
- Any value between and including -9999 and 9999.

#### NOTE

There is a maximum of 4 digits for entering range values.

Figure 20. Transmitter Functional Block Diagram



OPERATING, STORAGE, AND TRANSPORTATION CONDITIONS

Influence	Reference Conditions	Normal Operating Conditions (a) (b)	Operative Limits (a) (b)	Transportation/Storage Limits
Process Connection Temp. ▶ with Silicone Fill Fluid	24 ±2°C (75 ±3°F)	-29 to + 82°C (-20 to +180°F)	-46 and +121°C (c) (-50 and +250°F) (c)	Not Applicable
	24 ±2°C (75 ±3°F)	-29 to + 82°C (-20 to +180°F)	-29 and +121°C (-20 and +250°F)	Not Applicable
▶ with Inert Fill Fluid	24 ±2°C (75 ±3°F)	-29 to + 82°C (-20 to +180°F)	-29 and +121°C (-20 and +250°F)	Not Applicable
Electronics Temperature (d)	24 ±2°C (75 ±3°F)	-29 to + 82 °C (e) (-20 to +180 °F) (e)	-40 and +85°C (c) (e) (-40 and +185°F) (c)(e)	-54 and +85°C (-65 and +185°F)
Relative Humidity (f)	50 ±10%	0 to 100%	0 and 100%	0 and 100% Noncondensing
Supply Voltage – mA Output	30 ±0.5 V dc	11.5 to 42 V dc (g)	11.5 and 42 V dc (g)	Not Applicable
Output Load – mA Output	650 Ω	0 to 1450 Ω	0 and 1450 Ω	Not Applicable
Vibration	1 m/s <sup>2</sup> (0.1 “g”)	6.3 mm (0.25 in) Double Amplitude: from 5 to 15 Hz with Aluminum Housing from 5 to 9 Hz with 316 ss Housing 0 to 30 m/s <sup>2</sup> (0 to 3 “g”) from 15 to 500 Hz with Aluminum Housing 0 to 10 m/s <sup>2</sup> (0 to 1 “g”) from 9 to 500 Hz with 316 ss Housing		11 m/s <sup>2</sup> (1.1 “g”) from 2.5 to 5 Hz (in Shipping Package)
Mounting Position	Upright or Horizontal (h)		No Limit	Not Applicable

- When Structure Codes 78/79 (pvd insert) are used, maximum overrange is 2.1 MPa (300 psi), and temperature limits are -7 and +82°C (20 and 180°F); when DIN Construction Options D2/D4/D6/D8 are used, temperature limits are 0 and 60°C (32 and 140°F).
- Normal Operating Conditions and Operative Limits are defined per ANSI/ISA 51.1-1979 (R1993).
- Selection of Option -J extends the low temperature operative limit of transmitters with silicone filled sensors down to -50°C (-58°F). Performance is not assured below -29°C. Sensor damage may occur if process is frozen.
- The operative limits of the standard LCD indicator are -29 and +85°C (-20 and +185°F), and the normal operating conditions are -20 to +82°C (-4 to +180°F). Although the LCD indicator will not be damaged at any temperature within the “Transportation/Storage Limits;” updates will be slowed and readability decreased at temperatures outside the “Normal Operating Conditions.”
- Refer to the Electrical Safety Specifications section for a restriction in ambient temperature with certain electrical certifications.
- With topworks cover on and conduit entrances sealed.
- 11.5 V dc can be reduced to 11 V dc by using a plug-in shorting bar; see “Supply Voltage Requirements” section and Figure 18.
- Sensor process wetted diaphragms in a vertical plane.



**PERFORMANCE SPECIFICATIONS**

*(Zero-Based Calibrations; Co-Ni-Cr or 316L ss Sensor with Silicone Fluid; Under Reference Operating Conditions unless otherwise specified; URL = Upper Range Limit; Span = Calibrated Span.)*

**Accuracy (includes Linearity, Hysteresis, and Repeatability)**

±0.20% of Span. See Table 4 for Small Span Accuracy.

Table 4. Accuracy with Small Spans

For Span Code	If Span is:	Then Small Span Accuracy in % of Span is:
B	< 5% of URL	$\pm \left[ (0.10) + (0.005) \left( \frac{URL}{Span} \right) \right]$
A, C, D, E	< 6.7% of URL	$\pm \left[ (0.10) + (0.0067) \left( \frac{URL}{Span} \right) \right]$

**Stability**

Long term drift is less than ±0.05% of URL per year over a 5-year period.<sup>(3)</sup>

**Calibration Frequency**

The calibration frequency is five years. The five years is derived using the values of allowable error (% span), TPE (% span), performance margin (% span), and stability (% span/month); where:

$$\text{Calibration Frequency} = \frac{\text{Performance Margin}}{\text{Stability}} = \text{Months}$$

**Vibration Effect**

Total effect is ±0.2% of URL per “g” for vibrations in the frequency range of 5 to 500 Hz; with a double amplitude (DA) of 6.3 mm (0.25 in) in the range of 5 to 15 Hz, or accelerations of 3 “g” in the range of 15 to 500 Hz, whichever is smaller, for transmitter with aluminum housing; and with a DA of 6.3 mm (0.25 in) in the range of 5 to 9 Hz, or accelerations of 1 “g” in the range of 9 to 500 Hz, whichever is smaller, for transmitter with 316 ss housing.

**Static Pressure Effect**

The zero and span shift for a 7 MPa, 1000 psi change in static pressure is:

**Zero Shift<sup>(4)</sup>**

Span Code	Zero Shift-Static Pressure Effect
A	±0.30% URL (a)
B and C	±0.10% URL
D	±0.50% URL(a)
E	±0.50% URL

a. Per 3.5 MPa (500 psi) for Span Limit Codes A and D.

**Span Shift**

±0.25% of Reading (±0.30% for Span Limit Code A).

**Ambient Temperature Effect**

Total effect for a 28°C (50°F) change within Normal Operating Condition limits is:

Span Code	Specification
A (a)	±(0.18% URL + 0.15% Span)
B and C	±(0.03% URL + 0.20% Span)
D	±(0.05% URL + 0.18% Span)
E	±(0.08% URL + 0.15% Span)

a. Span Limit Code A specifications apply to a transmitter with a stainless steel sensor only.

**NOTE**

For additional ambient temperature effect when pressure seals are used, see PSS 2A-1Z11 A.

**Supply Voltage Effect**

The output changes less than 0.005% of calibrated span for each 1 V change within the specified supply voltage requirements.

3. Add an additional 0.05% to stability specification for Span Limit Code A.

4. Can be calibrated out by zeroing at nominal line pressure.

### Switching and Indirect Lightning Transients

The transmitter can withstand a transient surge up to 2000 V common mode or 1000 V normal mode without permanent damage. The output shift is less than 1.0%. (Per ANSI/IEEE C62.41-1980 and IEC Std. 61000-4-5.)

### Position Effect

The transmitter may be mounted in any position. Any zero effect caused by the mounting position can be eliminated by rezeroing. There is no span effect.

### RFI Effect

The output error is less than 0.1% of span for radio frequencies in the range of 27 to 1000 MHz and field intensity of 30 V/m when the transmitter is properly installed with shielded conduit and grounding, and housing covers are in place. (Per IEC Std. 61000-4-3.)

## PHYSICAL SPECIFICATIONS

### Process Cover and Connector Material (Process Wetted)

Carbon Steel, 316 ss, Monel, nickel alloy<sup>(5)</sup>, or pvdf (Kynar) inserts in 316 ss covers for transmitter traditional structure; and 316 ss for transmitter low profile structures. For exceptional value and corrosion resistance, 316 ss is the least expensive material.

### Process Cover and Process Connection Gaskets

Glass filled ptfе, or Viton when Structure Codes 78/79 (pvdf inserts) are used.

### Process Cover Bolts and Nuts

ASTM A193, Grade B7 high strength alloy steel for bolts, and ASTM A194 Grade 2H high strength alloy steel for nuts are standard. Options include NACE Class B7M bolting, 17-4 ss bolting, and 316 ss bolting.

### Sensor Material (Process Wetted)

Co-Ni-Cr, 316L ss, Gold-Plated 316L ss, Monel, nickel alloy (5), or Tantalum for transmitter traditional structure; and 316L ss or nickel alloy (5) for transmitter low profile structures. For exceptional value and corrosion resistance, 316L ss is the least expensive material. Refer to TI 037-078 and TI 37-75b for information regarding the corrosion resistance of Co-Ni-Cr and other sensor materials.

### Sensor Fill Fluids

Silicone Oil or Inert (FC-43).

### Environmental Protection

The enclosure has the dusttight and weatherproof rating of IP66 as defined by IEC 60529, and provides the environmental and corrosion resistant protection rating of NEMA 4X.

### Electronics Housing and Housing Covers

Housing has two compartments to separate the electronics from the field connections. The housing and covers are made from low copper (0.6% maximum) die-cast aluminum alloy with an epoxy finish, or from 316 ss. Buna-N O-ring seals are used to seal the threaded housing covers, housing neck, and terminal block.

### Electrical Connections

Field and RTD sensor wires enter through 1/2 NPT, PG 13.5, or M20 threaded entrances, as specified, on either side of the electronics housing. Wires terminate under screw terminals and washers on terminal block in the field terminal compartment. Unused entrance is plugged to insure moisture and RFI/EMI protection. See Figure 21.

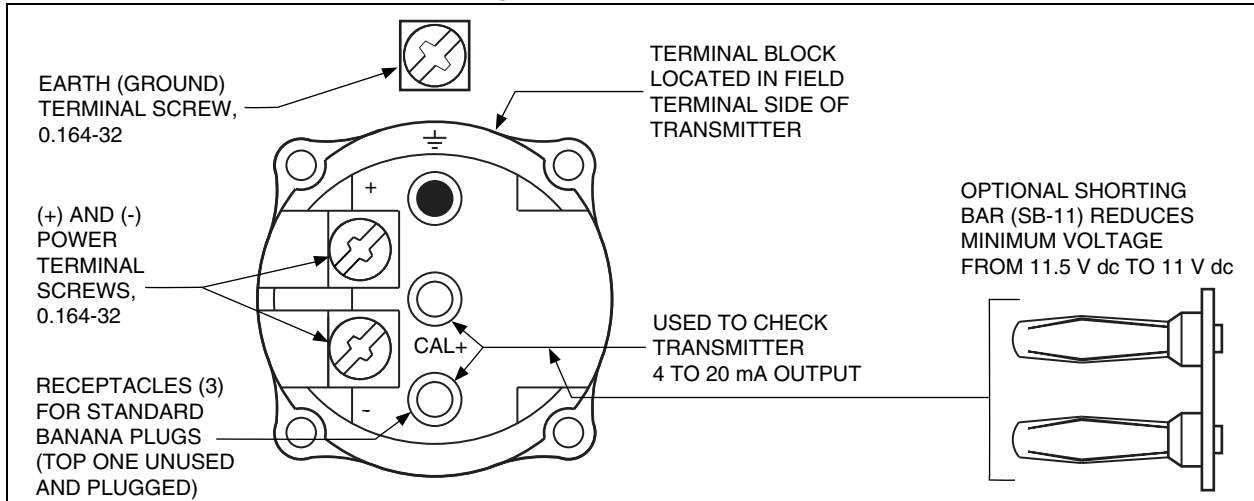
### Electronics Module

Printed wiring assemblies are conformally coated for

5. Equivalent to Hastelloy® C.

moisture and dust protection.

Figure 21. Field Terminal Block



**Mounting Position**

The transmitter may be mounted in any orientation.

**Dimensions**

See "Dimensions - Nominal" section and Dimensional Print DP 020-446.

**Approximate Mass (with Process Connectors)**

- 4.2 kg (9.2 lb) – with Traditional Structure
- Add 0.1 kg (0.2 lb) – with Low Profile Structure LP1
- Add 0.8 kg (1.8 lb) – with Low Profile Structure LP2
- Add 1.1 kg (2.4 lb) – with 316 ss Housing
- Add 0.2 kg (0.4 lb) – with LCD Indicator Option

## ELECTRICAL SAFETY SPECIFICATIONS

Testing Laboratory, Types of Protection, and Area Classification	Application Conditions	Electrical Safety Design Code
ATEX flameproof: II 2 GD, EEx d IIC, Zone 1.	Temperature Class T6, Ta = -40 to +80°C.	D
CSA explosionproof for Class I, Division 1, Groups B, C, and D; dust-ignitionproof for Class II, Division 1, Groups E, F, and G; Class III, Division 1.	Maximum Ambient Temperature 85°C.	C
CSA for Class I, Division 2, Groups A, B, C, and D; Class II, Division 2, Groups F and G; Class III, Division 2.	Temperature Class T6 at 40°C and T4A at 85°C maximum ambient.	C
CSA field device zone certified flameproof Ex d IIC. Also, all certifications of Code C above.	Maximum Ambient Temperature 85°C.	B
FM explosionproof for Class I, Division 1, Groups B, C, and D; dust-ignitionproof for Class II, Division 1, Groups E, F, and G; Class III, Division 1.	Temperature Class T6 at 80°C and T5 at 85°C maximum ambient.	F
FM nonincendive for Class I, Division 2, Groups A, B, C, and D; Class II, Division 2, Groups F and G; Class III, Division 2.	Temperature Class T4A at 40°C and T4 at 85°C maximum ambient.	F
FM field device zone approved flameproof AEx d IIC. Also, all certifications of Code F above.	Temperature Class T6 at 80°C and T5 at 85°C maximum ambient.	G
IECEx flameproof: Ex d IIC.	T6, Ta = 80°C; T5, Ta = 85°C; Ambient Temperature -20 to +85°C.	V

MODEL CODE

Description	Model
I/A Series, Electronic d/p Cell Transmitter for Differential Pressure Measurement	IDP10
<b>Electronics Versions and Output Signal</b>	
Analog; 4 to 20 mA dc (Version -A)	-A
<b>Structure Code - Select from one of the following six groups:</b>	
<b>1. Transmitter with Traditional Structure</b>	
<b>Covers                      Sensor                      Fill Fluid</b>	
Steel                      Co-Ni-Cr                      Silicone	10
Steel                      Co-Ni-Cr                      Inert	11
Steel                      316L ss                      Silicone	12
Steel                      316L ss                      Inert	13
Steel                      Nickel alloy (a)                      Silicone	16
Steel                      Nickel alloy (a)                      Inert	17
316 ss                      Co-Ni-Cr                      Silicone	20
316 ss                      Co-Ni-Cr                      Inert	21
316 ss                      316L ss                      Silicone	22
316 ss                      316L ss                      Inert	23
316 ss                      316L ss, Gold Plated                      Silicone	2G
316 ss                      Monel                      Silicone	24
316 ss                      Monel                      Inert	25
316 ss                      Nickel alloy (a)                      Silicone	26
316 ss                      Nickel alloy (a)                      Inert	27
Monel                      Monel                      Silicone	34
Monel                      Monel                      Inert	35
Nickel alloy (a)                      Nickel alloy (a)                      Silicone	46
Nickel alloy (a)                      Nickel alloy (a)                      Inert	47
Nickel alloy (a)                      Tantalum                      Silicone	48
Nickel alloy (a)                      Tantalum                      Inert	49
pvd Insert (Kynar)                      Tantalum                      Silicone (Used w/Process Connector Type 7)	78 (b)
pvd Insert (Kynar)                      Tantalum                      Inert (Used w/Process Connector Type 7)	79 (b)
<b>2. Transmitter with Low Profile Structure LP1 (Not available with Pressure Seals)</b>	
<b>Covers                      Sensor                      Fill Fluid</b>	
316 ss                      316L ss                      Silicone	LL
316 ss                      316L ss                      Inert	LM
316 ss                      Nickel alloy (a)                      Silicone	LC
316 ss                      Nickel alloy (a)                      Inert	LD
<b>3. Transmitter with Low Profile Structure LP2 (Not available with Pressure Seals)</b>	
<b>Covers                      Sensor                      Fill Fluid</b>	
316 ss                      316L ss                      Silicone	52
316 ss                      316L ss                      Inert	53
316 ss                      Nickel alloy (a)                      Silicone	56
316 ss                      Nickel alloy (a)                      Inert	57



MODEL CODE

MODEL CODE (CONTINUED)

Description	Model		
<b>4. Transmitter Prepared for Foxboro Model Coded Remote Mount Seals (c) (d)</b>			
Transmitter prepared for Remote Seals on Both HI and LO Sides, Silicone Fill in Sensor	S1		
Transmitter prepared for Remote Seals on Both HI and LO Sides, Inert Fill in Sensor	S2		
Transmitter prepared for Remote Seal HI Side, 1/2 NPT Connector LO Side, Silicone Fill in Sensor	S3		
Transmitter prepared for Remote Seal HI Side, 1/2 NPT Connector LO Side, Inert Fill in Sensor	S4		
Transmitter prepared for Remote Seal LO Side, 1/2 NPT Connector HI Side, Silicone Fill in Sensor	S5		
Transmitter prepared for Remote Seal LO Side, 1/2 NPT Connector HI Side, Inert Fill in Sensor	S6		
<b>5. Transmitter Prepared for Foxboro Model Coded Direct Connect Seals (c)</b>			
PSFLT, PSSCT, or PSSST Direct Connect Seal on HI Side; 1/2 NPT Process Connector LO Side; Silicone Fill	F1		
PSFLT, PSSCT, or PSSST Direct Connect Seal on HI Side; 1/2 NPT Process Connector LO Side; Inert Fill	F2		
PSFLT, PSSCT, or PSSST Direct Connect Seal on HI Side; 1/2 NPT Process Connector LO Side; Inert Fill	F3		
PSFLT, PSSCT, or PSSST Direct Connect Seal on HI Side; Remote Seal with Capillary LO Side; Silicone Fill	F4		
PSFLT, PSSCT, or PSSST Direct Connect Seal on HI Side; Remote Seal with Capillary LO Side; Inert Fill			
<b>6. Transmitter Prepared for Non-Foxboro Seals</b>			
Remote Seals on High and Low Sides; Silicone Fill in Sensor	SA		
Remote Seals on High and Low Sides; Inert Fill in Sensor	SB		
Remote Seal on High Side and 1/2 NPT Connector on Low Side, Silicone Fill in Sensor	SC		
Remote Seal on High Side and 1/2 NPT Connector on Low Side, Inert Fill in Sensor	SD		
Remote Seal on Low Side and 1/2 NPT Connector on High Side, Silicone Fill in Sensor	SE		
Remote Seal on Low Side and 1/2 NPT Connector on High Side, Inert Fill in Sensor	SF		
<b>Span Limits (Differential Pressure Units)</b>			
<b>kPa</b>	<b>inH<sub>2</sub>O</b>	<b>mbar</b>	
0.12 and 7.5	0.5 and 30	1.2 and 75	A (e)
0.87 and 50	3.5 and 200	8.7 and 500	B
7 and 210	28 and 840	70 and 2100	C
<b>MPa</b>	<b>psi</b>	<b>bar</b>	
0.07 and 2.1	10 and 300	0.7 and 21	D
0.7 and 21	100 and 3000	7 and 210	E (f)
<b>Process Connector Type (Material Same as Process Cover Material) (g)</b>			
See below:			0
▶ For d/p: No connectors; both covers tapped for 1/4 NPT (316 ss only, no side vents)			
▶ Flange Mount Hi Side: 1/2 NPT, 316 ss Process Connector on Lo Side (F1 and F2 only)			
▶ Flange Mount Hi Side: No connectors; both sides prepared for seals (F3 and F4 only)			
▶ Two Remote Seals: No connectors; both covers tapped for capillary connection (S1, S2, SA, SB only)			
▶ One Remote Seal: 1/2 NPT, 316 ss Process Connector on side opposite seal (S3 to S6, SC to SF only)			
1/4 NPT, Not with Structure Codes 46 to 49, 78, 79; or pressure seals			1
1/2 NPT, Not with Structure Codes 78 or 79, or pressure seals			2
Rc 1/4, Not with Structure Codes 46 to 49, 78, 79; or pressure seals			3
Rc 1/2, Not with Structure Codes 78 or 79, or pressure seals			4
1/2 Schedule 80 Welding Neck, Not with Structure Codes 46 to 49, 78, 79; or pressure seals			6
None; pvdf Insert tapped for 1/2 NPT/Process Inlet on Side of 316 ss Process Covers (only with 78/79 above)			7

**MODEL CODE (CONTINUED)**

Description	Model
<b>Conduit Connection and Housing Material</b>	
1/2 NPT Conduit Connection, Aluminum Housing	1
PG 13.5 Conduit Connection, Aluminum Housing (With Electrical Safety Code D only)	2
1/2 NPT Conduit Connection, 316 ss Housing	3
PG 13.5 Conduit Connection, 316 ss Housing (With Electrical Safety Code D only)	4
M20 Conduit Connection, Both Sides, Aluminum Housing (With Electrical Safety Code D only)	5
M20 Conduit Connection, Both Sides, 316 ss Housing (With Electrical Safety Code D only)	6
<b>Electrical Safety (Also see Electrical Safety Specifications section)</b>	
ATEX II 2 GD, EEx d IIC, Zone 1 (h)	D
CSA Certified Division 1 explosionproof, dust-ignitionproof; and Division 2, Classes I, II, and III	C
CSA zone certified Ex d IIC; also all certifications of Code C above (h)	B
FM approved, Division 1 explosionproof, dust-ignitionproof; and Division 2 nonincendive	F
FM zone approved AEx d IIC; also all approvals of Code F above (h)	G
IECEx flameproof: Ex d IIC	V
<b>Optional Selections (Refer to Optional Selections below)</b>	
<b>Mounting Bracket Set (i)</b>	
Standard Style Painted Steel Bracket with Plated Steel Bolts (not available with LP1 structure)	-M1
Standard Style Stainless Steel Bracket with Stainless Steel Bolts (not available with LP1 structure)	-M2
Universal Style Stainless Steel Bracket with Stainless Steel Bolts (not with Structure Codes LL, LM, LC, or LD)	-M3
<b>Blind (Solid) Cover over Standard LCD Indicator</b>	
Blind (Solid) Cover replaces Window Cover	-L2
<b>DIN 19213 Construction used with Process Connector Code 0 and 316 ss Covers with no side vents (not available when remote or direct connect seals are specified)</b>	
Single Ended Process Cover with M10, B7 Steel Bolting (j) (k)	-D1
Double Ended Process Cover with M10, B7 Steel Bolting (Blind Kidney Flange on Back) (j) (l) (m)	-D2
Single Ended Process Cover with 7/16 in, B7 Steel Bolting; standard pressure rating 25 MPa (3626 psi) (k)	-D3
Double Ended Process Cover with 7/16 in, B7 Steel Bolting (Blind Kidney Flange on Back) (j) (l) (m)	-D4
Single Ended Process Cover with 7/16 in, 316 ss Bolting (j) (k)	-D5
Double Ended Process Cover with 7/16 in, 316 ss Bolting (Blind Kidney Flange on Back) (j) (l) (m)	-D6
Single Ended Process Cover with 7/16 in, 17-4 ss Bolting; standard pressure rating 25 MPa (3626 psi) (k)	-D7
Double Ended Process Cover with 7/16 in, 17-4 ss Bolting (Blind Kidney Flange on Back) (j) (l) (m)	-D8
Single Ended Process Cover with 7/16 in, 17-4 ss Bolting; pressure rating 40 MPa (5800 psi) (k) (Not available with Span Limit Codes A, D, or E; or Option Codes -V, -B1, -B2, -B3, or -Y)	-D9
<b>Cleaning and Preparation - Not Available with Gold-Plated Sensor, Structure 2G or Pressure Seals</b>	
Unit Degreased - for Silicone Filled Sensors Only (Not for Oxygen/Chlorine/Other Fluids that may react with Silicone)	-X1
Cleaned and Prepared for Oxygen Service - for Inert Filled Sensors Only (Not Available with Carbon Steel Covers or with Silicone Filled Sensors)	-X2
Cleaned and Prepared for Chlorine Service - for Inert Filled Sensors Only (n) (Not Available with Carbon Steel Covers or with Silicone Filled Sensors)	-X3
<b>Bolting for Process Covers/Connectors - Not with DIN 19213 Construction or Structure Codes 78 and 79 (o)</b>	
316 ss Bolts and Nuts (Pressure Derated; Not Available with -Y Option) (j)	-B1
17-4 ss Bolts and Nuts (n)	-B2
B7-M Bolts and Nuts (NACE)(Pressure Derated) (j)	-B3

MODEL CODE

MODEL CODE (CONTINUED)

Description	Model
<b>Conduit Thread Adapters (Not available with Conduit Connection Codes 5 and 6)</b>	
Hawke-Type 1/2 NPT Cable Gland for use with Conduit Connection Codes 1 and 3 (p)	-A1
M20 Conduit Thread Adapter for use with Conduit Connection Codes 1 and 3 (p)	-A3
<b>Electronics Housing Features</b>	
External Zero Adjustment	-Z1
Custody Transfer Lock and Seal	-Z2
External Zero Adjustment and Custody Transfer Lock/Seal	-Z3
<b>Custom Factory Configuration</b>	
Full Factory Configuration (Requires Configuration Form to be Filled Out)	-C2
<b>Tubing Connectors - Not available with Structure Codes 78 and 79; also not with Pressure Seals</b>	
Steel, Connecting 6 mm Tubing to 1/4 NPT Process Connector	-E1
Only with Structure Codes 10 to 13; and Process Connector Codes 0 and 1	
Steel, Connecting 12 mm Tubing to 1/2 NPT Process Connector	-E2
Only with Structure Codes 10 to 13; and Process Connector Code 2	
316 ss, Connecting 6 mm Tubing to 1/4 NPT Process Connector	-E3
Only with Structure Codes 10 to 13 and 20 to 23; and Process Connector Codes 0 and 1	
316 ss, Connecting 12 mm Tubing to 1/2 NPT Process Connector	-E4
Only with Structure Codes 10 to 13 and 20 to 23; and Process Connector Code 2	
<b>Vent Screw in Process Cover</b>	
Supply Vent Screw in Side of Each Process Cover	-V
(Available only on Traditional Process Cover Structure Codes 10 to 49)	
Omit Vent Screw in Side of Each Process Cover	-V1
(Available only on Type LP1 Low Profile Process Cover Structures Codes LL, LM, LC, and LD)	
<b>Adapter Plate, Bolts, and Gaskets for Direct Mount to Competitive Manifolds (q)</b>	
See inside pages for manifold compatibility.	
Adapter Set for MC Coplanar Manifolds, B7 Bolts (not with options -B1, -B2, or -B3)	-P1
Adapter Set for MC Coplanar Manifolds, 316 ss Bolts (requires -B1 option)	-P2
Adapter Set for MC Coplanar Manifolds, 17-4 ss Bolts (requires -B2 option)	-P3
Adapter Set for MC Coplanar Manifolds, B7M Bolts (requires -B3 option)	-P4
Adapter Set for MT3 Coplanar Manifolds, Traditional Flange, B7 Bolts (not with options -B1, -B2, or -B3)	-P5
Adapter Set for MT3 Coplanar Manifolds, Traditional Flange, 316 ss Bolts (requires -B1 option)	-P6
Adapter Set for MT3 Coplanar Manifolds, Traditional Flange, 17-4 ss Bolts (requires -B2 option)	-P7
Adapter Set for MT3 Coplanar Manifolds, Traditional Flange, B7M Bolts (requires -B3 option)	-P8
<b>Gaskets</b>	
Gasket for Vacuum Service with Pressure Seals (r)	-G1
<b>Instruction Books (Common MI, Brochure, and Full Documentation Set on DVD is Standard)</b>	
Without Instruction Book and DVD; only "Getting Started" brochure is supplied.	-K1
<b>Miscellaneous Optional Selections</b>	
Low Temperature Operative Limit of Electronics Housing Extended Down to -50°C (-58°F) (s)	-J
Not available with sensors and seals with Inert fill; Structure Codes 78 and 79;	
and DIN Options -D2, -D4, -D6, and -D8	
Supplemental Customer Tag (Stainless Steel Tag wired onto Transmitter)	-T

MODEL CODE (CONTINUED)

Description	Model
Static Pressure Rating to 40 MPa (5800 psi); Only with Span Limit Codes B and C Not available with: ▶ Options -B1, -B2, and -B3 (t) ▶ Options -D1 to -D9 ▶ Structure Codes 34, 35, 78, 79, S1 to S6, SA to SF, F1 to F4	-Y

- a. Equivalent to Hastelloy® C.
- b. Maximum static pressure rating is 2.1 MPa (300 psi); temperature limits are -7 and +82°C (20 and 180°F).
- c. Both Transmitter and Pressure Seal Model Numbers are required. See PSS 2A-1Z11 A for the various pressure seal Model Codes.
- d. Remote Seal Models that may be specified are PSFPS, PSFES, PSFAR, PSTAR, PSISR, PSSCR, and PSSSR.
- e. Span Limit Code A is not available with pressure seals, except for Sanitary Spud Seals Models PSSSR-.4 and PSSST-.4.
- f. Span Limit Code E is not available with Structure Codes 78 and 79 above (pdf insert in HI side cover).
- g. Select Code "0" if a pressure seal is specified. Otherwise select Codes 1 through 7.
- h. Cover lock provided as standard with Electrical Safety Codes D, B, and G.
- i. Mounting sets not offered with direct connect (flange mount) seals.
- j. See Functional Specifications section for pressure deratings when certain DIN 19213 versions and Bolting Options -B1 and -B3 are specified.
- k. Not available with Low Profile Structure Codes 52 to 67.
- l. Temperature limits derated to 0 and 60°C (32 and 140°F). Also not available with Structure Codes 52 to 57, and LL, LM, LC, and LD.
- m. Mounting Bracket Set options are not available with Options -D2, -D4, -D6, and -D8.
- n. When -X3 is specified, the standard bolting is replaced with 17-4 ss bolts and nuts. Therefore, there is no need to specify Option -B2 when selecting the Chlorine Service Option -X3.
- o. Not available with DIN construction options. For stainless steel bolts with DIN construction, specify -D5 to -D9, as required.
- p. Available with Electric Safety Code D only.
- q. Adapter plate options -P1 to -P8 are not available with:
  - Pressure Seal Structure Codes.
  - Process Connector Codes 1-7.
  - DIN Construction Options -D1, -D2, -D4, -D5, -D6, -D7, -D8, -D9.
- r. -G1 is a required option when pressure seal will be used in vacuum applications. This option substitutes vacuum service metal gasket for standard ptfе process cover gasket.
- s. -50°C indicates sensor and electronics ambient temperature capabilities. Performance is not assured below -29°C. Sensor damage may occur if process is frozen.
- t. -B2 Bolt Option (17-4 ss) is not available with the -Y option because 17-4 ss bolts and nuts are supplied as part of the -Y option.

### SUGGESTED RFQ SPECIFICATIONS

The manufacturer shall provide two-wire, 4 to 20 mA dc analog output, differential pressure transmitter(s) suitable for field mounting. They are offered with traditional or low profile structures. Transmitters with a traditional structure can also be provided (as required) with direct connect seals, or remote capillary connected seals. The specifications for these transmitters are:

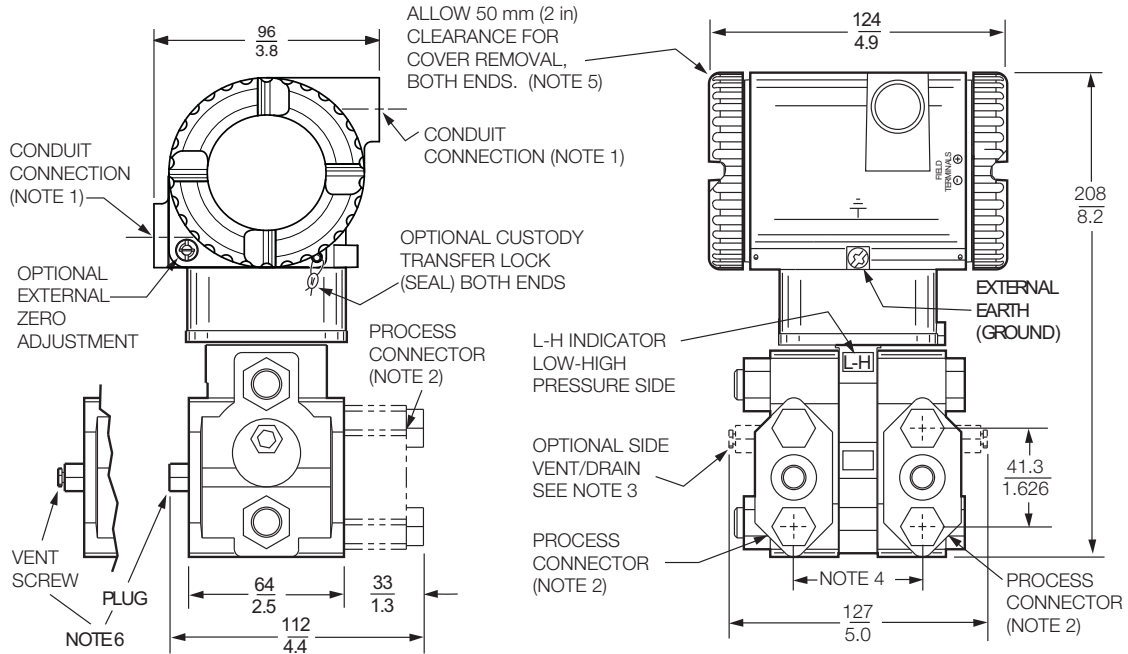
<b>Accuracy:</b>	±0.20% of calibrated span.
<b>Linear or Square Root Output:</b>	Pushbutton configurable to set linear or square root output.
<b>Static Pressure Rating:</b>	25 MPa (3626 psi) for standard transmitter.
<b>Ambient Temperature Effect:</b>	For transmitter only (without pressure seals). Total effect for a 55°C (100°F) change within normal operating conditions is less than ±0.5% of calibrated span at maximum span (less than ±0.7% with 30 inH <sub>2</sub> O URL sensor).
<b>Damping:</b>	Settable for a range of none to 8 seconds.
<b>Proof Pressure:</b>	14 500 psi for standard transmitter
<b>Span Limits:</b>	0.5 and 30 inH <sub>2</sub> O, 3.5 and 200 inH <sub>2</sub> O, 28 and 840 inH <sub>2</sub> O, 10 and 300 psi, or 100 and 3000 psi, as specified; or SI and metric equivalents.
<b>LCD Indicator:</b>	Standard Liquid Crystal Display (LCD) Indicator with on-board pushbuttons for calibration and configuration.
<b>Mounting:</b>	On process piping, on a manifold, or optional mounting bracket
<b>Input Connection:</b>	With process connectors to accept 1/4 NPT, 1/2 NPT, Rc 1/4 or Rc 1/2, 1/2 Schedule 80 welding neck; or 1/2 NPT pvdf inserts installed in 316 ss covers; or prepared for a direct connect seal; or prepared for a single remote capillary connected seal, or two remote capillary connected seals.
<b>Electronics Housing:</b>	316 ss, or aluminum housing with epoxy finish
<b>Modular Electronics:</b>	Easily replaceable modular electronics in a NEMA 4X (IEC IP66) housing sealed with O-rings for protection against moisture or other contaminants.
<b>Process Cover:</b>	Traditional Structures: Steel, 316 ss, Monel, nickel alloy (a) or pvdf insert Low Profile Structures: 316 ss
<b>Sensor Materials:</b>	Traditional Structure: 316L ss, nickel alloy (a), Co-Ni-Cr, Monel, Tantalum, or Gold-Plated 316L ss Low Profile Structures: 316L ss or nickel alloy (a)
<b>Approvals and Certifications:</b>	Must be suitable for Division 1 hazardous locations, and conform to all applicable European Union Directives. Also versions available to meet agency flameproof and zone requirements.
<b>Approximate Mass: (with Process Connectors)</b>	4.2 kg (9.2 lb), with Traditional Structures; Add 0.1 kg (0.2 lb) with Low Profile Structure LP1; Add 0.8 kg (1.8 lb) with Low Profile Structure LP2; Add 1.1 kg (2.4 lb) with 316 ss housing; Add 0.2 kg (0.4 lb) with optional LCD indicator.
<b>Model Codes:</b>	I/A Series IDP10-A Electronic d/p Cell Transmitter, with or without pressure seals, or equivalent.

a. Equivalent to Hastelloy® C.

DIMENSIONS-NOMINAL

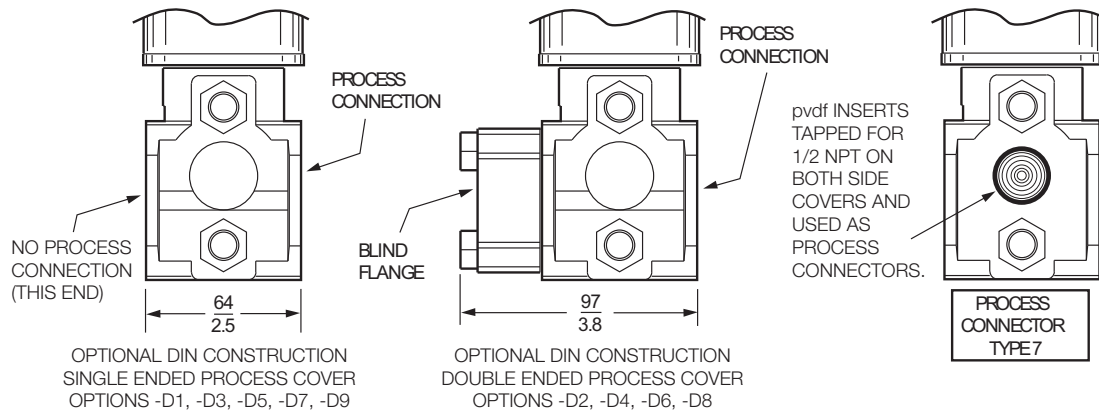
TRANSMITTER WITH TRADITIONAL STRUCTURE

mm  
in



NOTES:

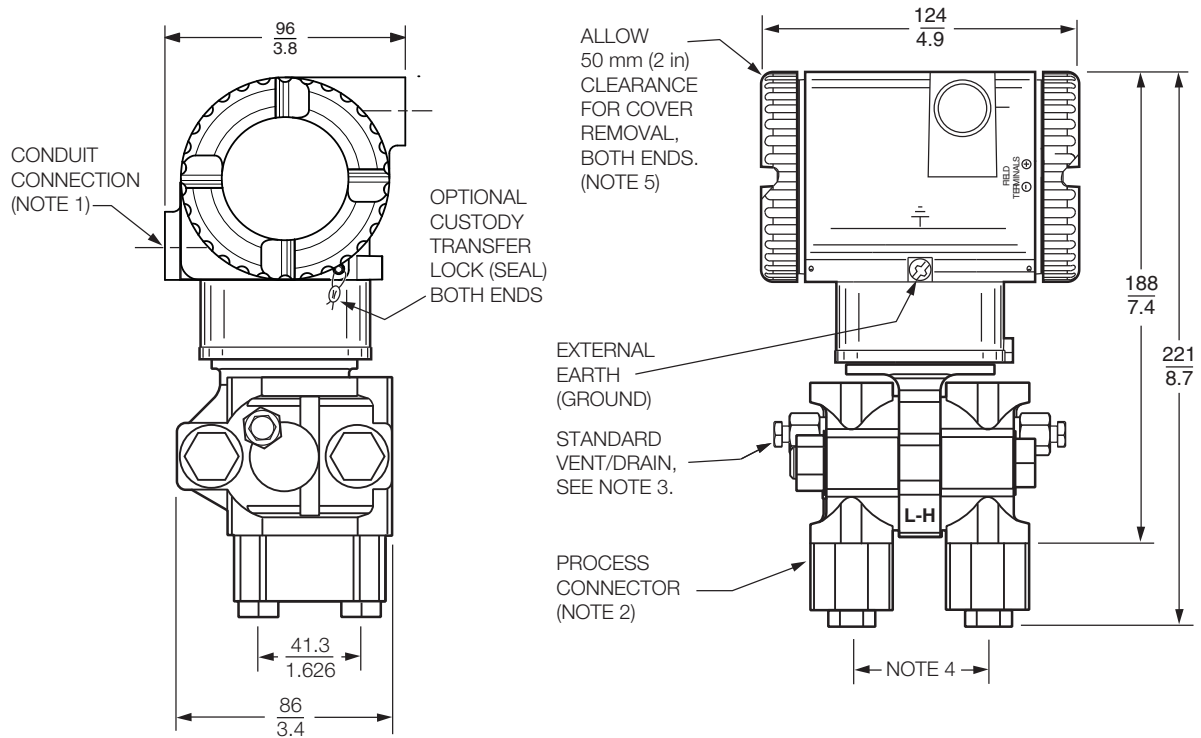
1. CONDUIT CONNECTION 1/2 NPT OR PG 13.5, BOTH SIDES: PLUG UNUSED CONNECTION WITH METAL PLUG (SUPPLIED).
2. PROCESS CONNECTORS MAY BE REMOVED AND TRANSMITTER MOUNTED DIRECTLY ON A MANIFOLD, OR CONNECTIONS MADE DIRECTLY TO PROCESS COVER USING 1/4 NPT INTERNAL THREAD IN PROCESS COVER.
3. PROCESS COVER CAN BE INVERTED MAKING OPTIONAL SIDE VENTS OR SIDE DRAINS
4. PROCESS CONNECTORS CAN BE INVERTED TO GIVE EITHER 51, 54, OR 57 mm (2.0, 2.125, OR 2.25 in) CENTER-TO-CENTER DISTANCE BETWEEN HIGH AND LOW PRESSURE CONNECTIONS.
5. TOPWORKS CAN BE ROTATED TO ANY POSITION WITHIN ONE TURN COUNTERCLOCKWISE OF THE FULLY TIGHTENED POSITION.
6. PROCESS COVER END PLUGS ARE SUBSTITUTED FOR VENT SCREWS WHEN OPTIONAL SIDE VENTS (NOTE 3) ARE SPECIFIED.





$\frac{\text{mm}}{\text{in}}$

TRANSMITTER WITH LOW PROFILE STRUCTURE LP1

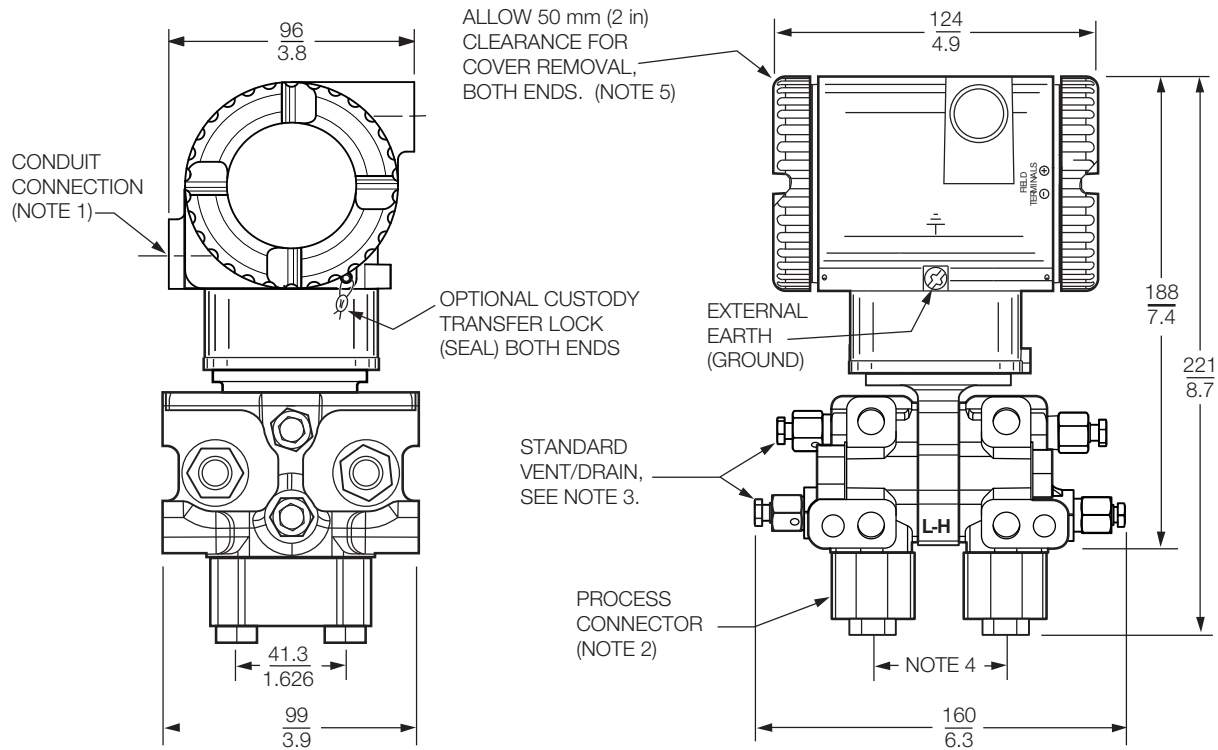


NOTES:

1. CONDUIT CONNECTION 1/2 NPT, PG 13.5, OR M20, BOTH SIDES: PLUG UNUSED CONNECTION WITH METAL PLUG (SUPPLIED).
2. PROCESS CONNECTORS MAY BE REMOVED AND TRANSMITTER MOUNTED DIRECTLY ON A MANIFOLD, OR CONNECTIONS MADE DIRECTLY TO PROCESS COVER USING 1/4 NPT INTERNAL THREAD IN PROCESS COVER.
3. THE TRANSMITTER'S LOW PROFILE STRUCTURE LP1 IS SHOWN IN THE VERTICALLY UPRIGHT POSITION. NOTE THE LOCATION OF THE STANDARD VENT/DRAIN SCREW. IN THIS CONFIGURATION THE TRANSMITTER CAN BE VENTED OR IS SELF-DRAINING. ALSO RECOMMENDED IS A HORIZONTAL INSTALLATION WHERE THE INSTALLED ORIENTATION CAN BE SET TO ALLOW FOR VENTING OR DRAINING.
4. PROCESS CONNECTORS CAN BE INVERTED TO GIVE EITHER 51, 54, OR 57 mm (2.0, 2.125, OR 2.25 in) CENTER-TO-CENTER DISTANCE BETWEEN HIGH AND LOW PRESSURE CONNECTIONS.
5. TOPWORKS CAN BE ROTATED TO ANY POSITION WITHIN ONE TURN COUNTERCLOCKWISE OF THE FULLY TIGHTENED POSITION.

$\frac{\text{mm}}{\text{in}}$

**TRANSMITTER WITH LOW PROFILE STRUCTURE LP2**

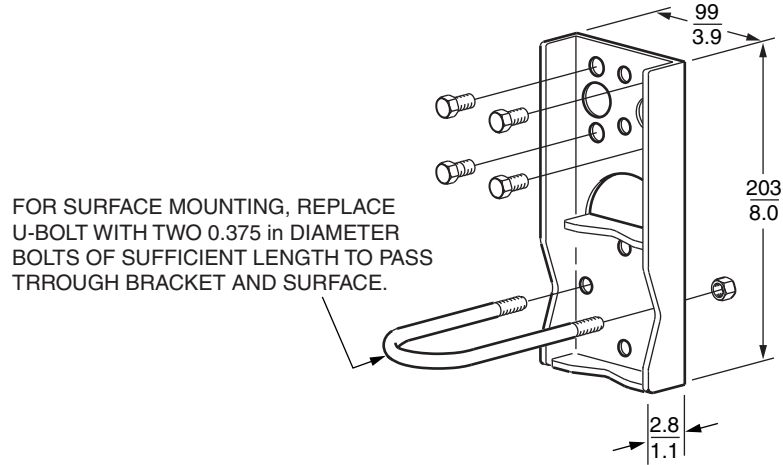


**NOTES**

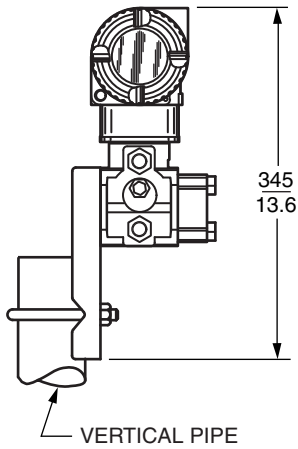
1. CONDUIT CONNECTION 1/2 NPT, PG 13.5, OR M20, BOTH SIDES: PLUG UNUSED CONNECTION WITH METAL PLUG (SUPPLIED).
2. PROCESS CONNECTORS MAY BE REMOVED AND TRANSMITTER MOUNTED DIRECTLY ON A MANIFOLD, OR CONNECTIONS MADE DIRECTLY TO PROCESS COVER USING 1/4 NPT INTERNAL THREAD IN PROCESS COVER.
3. THE TRANSMITTER'S LOW PROFILE STRUCTURE LP2 IS SHOWN IN THE RECOMMENDED VERTICAL UPRIGHT POSITION. NOTE THE STANDARD VENT OR DRAIN SCREWS. HORIZONTAL INSTALLATIONS ARE NOT RECOMMENDED.
4. PROCESS CONNECTORS CAN BE INVERTED TO GIVE EITHER 51, 54, OR 57 mm (2.0, 2.125, OR 2.25 in) CENTER-TO-CENTER DISTANCE BETWEEN HIGH AND LOW PRESSURE CONNECTIONS.
5. TOPWORKS CAN BE ROTATED TO ANY POSITION WITHIN ONE TURN COUNTERCLOCKWISE OF THE FULLY TIGHTENED POSITION.

$\frac{\text{mm}}{\text{in}}$

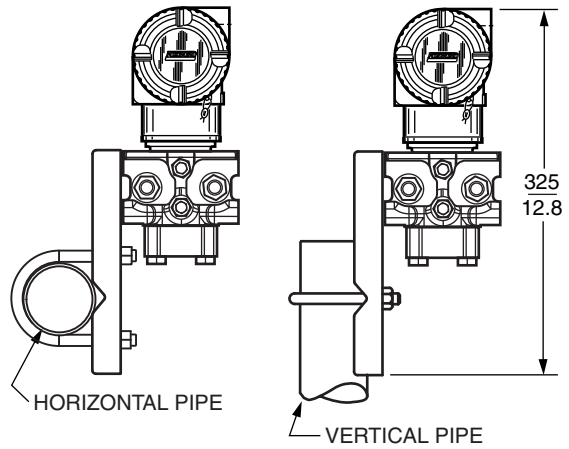
TRANSMITTER WITH STANDARD STYLE MOUNTING BRACKET KIT (Options -M1 and -M2)



TRANSMITTER WITH TRADITIONAL STRUCTURE

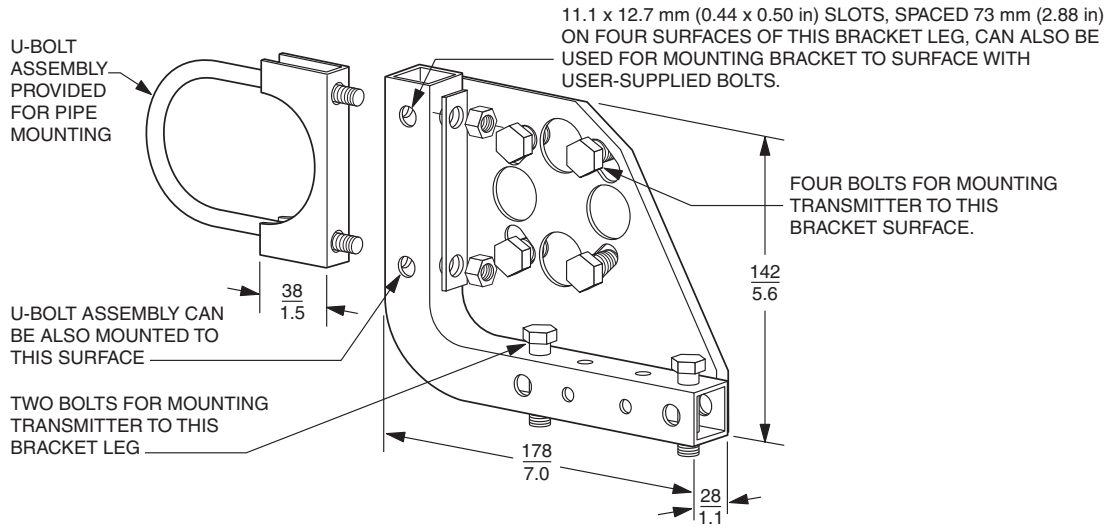


TRANSMITTER WITH LOW PROFILE STRUCTURE LP2

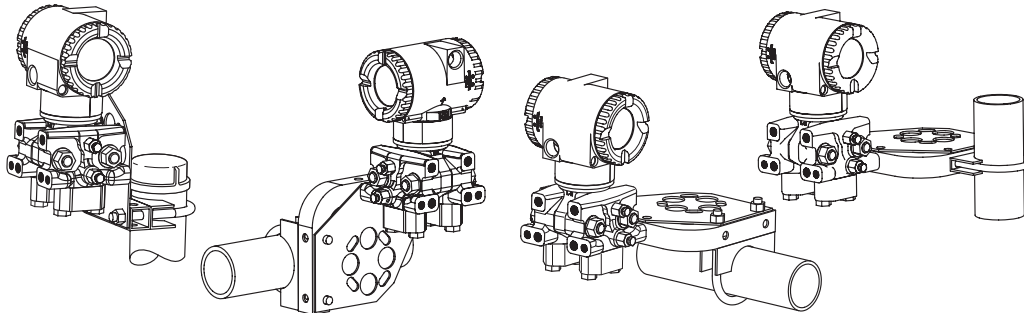


$\frac{\text{mm}}{\text{in}}$

**TRANSMITTER WITH UNIVERSAL STYLE MOUNTING BRACKET KIT (Option -M3)**

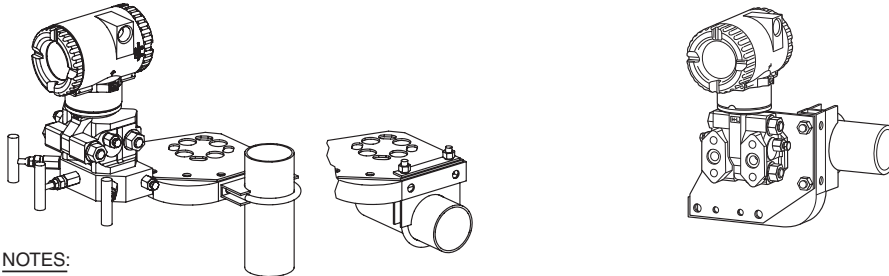


**TYPICAL PIPE MOUNTING WITH LOW PROFILE STRUCTURE LP2**



**TYPICAL PIPE MOUNTING  
LOW PROFILE STRUCTURE LP1**

**TYPICAL PIPE MOUNTING  
WITH TRADITIONAL STRUCTURE**



**NOTES:**

1. FOR SURFACE MOUNTING CONFIGURATIONS, USE THE U-BOLT MOUNTING HOLES FOR ATTACHING THE BRACKET TO A SURFACE RATHER THAN TO THE U-BOLT ASSEMBLY. SURFACE MOUNTING BOLTS FOR ATTACHING THE BRACKET TO A SURFACE ARE USER SUPPLIED.
2. REFER TO DIMENSIONAL PRINT DP 020-446 FOR FURTHER IPD10 MOUNTING CONFIGURATIONS, INCLUDING MOUNTING WITH -P OPTIONAL MOUNTING PLATES.

NOTES

### ORDERING INSTRUCTIONS

1. Model Number(s) as follows:  
 Transmitter only if pressure seals are not selected  
 Both transmitter and pressure seals if pressure seals are selected with traditional structure. See PSS 2A-1Z11 A.
2. Calibrated Pressure Range (using Allowable Pressure Units from the table below).

inH <sub>2</sub> O	inHg	Pa	mbar	psia
ftH <sub>2</sub> O	mmHg	kPa	bar	atm
mmH <sub>2</sub> O	cmHg	MPa	g/cm <sup>2</sup>	kg/cm <sup>2</sup>
cmH <sub>2</sub> O	dy/cm <sup>2</sup>	torr		

3. Configuration Data Form when Factory Calibration Option - C2 is specified.
4. For options and Accessories not in Model Code, refer to PSS 2A-1Z9 E.
5. User Tag Data - Data Plate; 32 characters maximum. For additional tag data, specify Optional Supplemental Tag -T.

### OTHER FOXBORO PRODUCTS

The Foxboro product lines offer a broad range of measurement and instrument products, including solutions for pressure, flow, analytical, temperature, positioning, controlling, and recording. For a list of these offerings, visit our web site at:

[www.fielddevices.foxboro.com](http://www.fielddevices.foxboro.com)