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I/A Series® Electronic Pressure Transmitters Model IDP10 with 4 to 20 mA Analog Output for Differential Pressure Measurement



IDP10
LOW PROFILE
STRUCTURE LP1



IDP10
TRADITIONAL
STRUCTURE



IDP10
LOW PROFILE
STRUCTURE LP2

This analog output, two-wire d/p Cell® Transmitter provides precise, reliable, measurement of differential pressure, and transmits a 4 to 20 mA analog output signal.

HIGH DEPENDABILITY AND VALUE

- Available with traditional or low profile structures.
- Superior Performance and long term stability from micoprocessor-based technology.
- Industry standard 316L ss, Co-Ni-Cr, Hastelloy C, Monel, or Tantalum sensor materials, depending on transmitter structure.
- Durable aluminum or 316 ss housing available; both meet NEMA 4X and IEC IP66.
- Optional mounting bracket sets allow pipe, surface, or manifold mounting of transmitter.
- 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.

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, FOUNDATION Fieldbus, or PROFIBUS)

invensys®
FOXBORO®

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, PROFIBUS, 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. It represents an Invensys Foxboro advancement in providing 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, Hastelloy C, 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 Hastelloy C are offered as sensor materials. Refer to 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.

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.

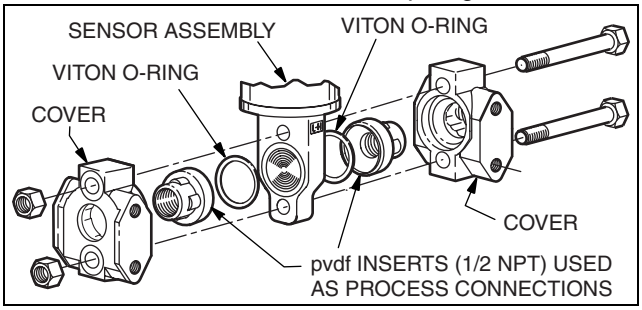


Figure 1. Bottomworks Shown with 1/2 NPT pvdf Inserts Installed in HI- and LO-Side Covers with Traditional Structure

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 (3625 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.

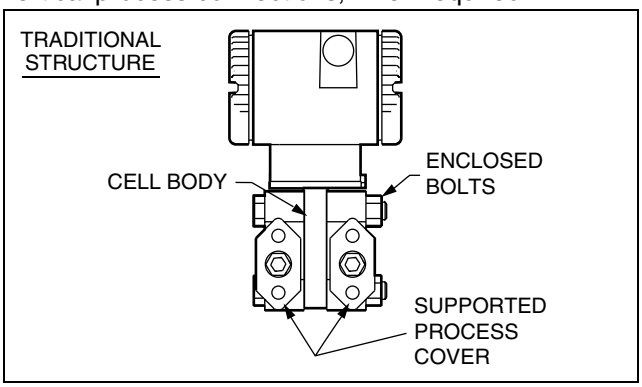


Figure 2. Biplanar Construction Shown with Traditional Horizontal Process Connections

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 ptfe as standard; ptfe 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 DP 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.

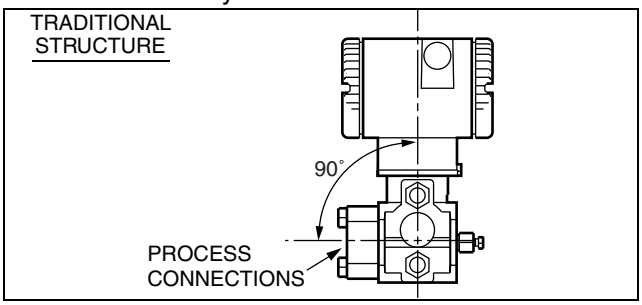


Figure 3. Vertical Mounting Showing Process Connections at 90 degrees

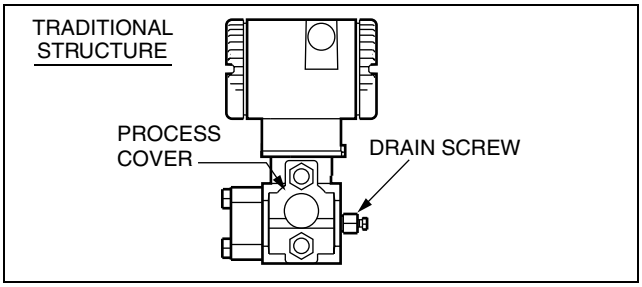


Figure 4. Vertical Mounting - Cavity Draining

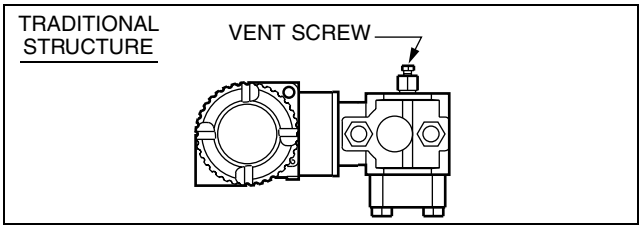


Figure 5. Horizontal Mounting - Cavity Venting, and Self-Draining into Process Line

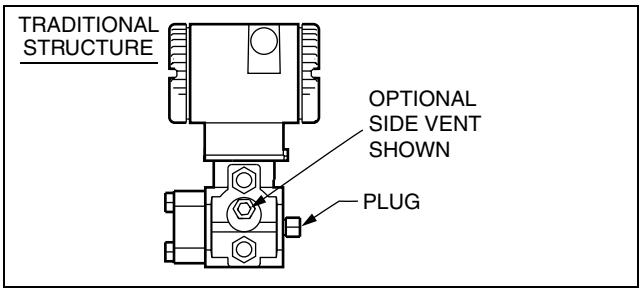


Figure 6. Vertical Mounting - Cavity Venting, and Self-Draining into Process Line

Low Profile Structures

The low profile structures utilize an in-line design, placing the process connections in line with the transmitter centerline (Figures 7 and 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 ± 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.

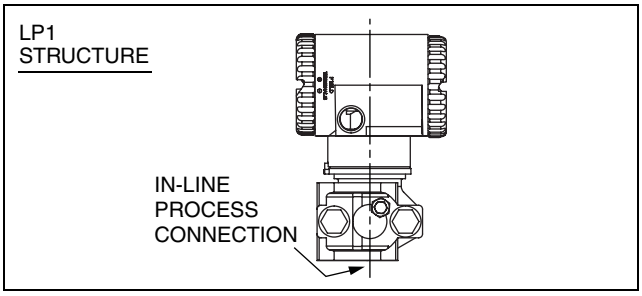


Figure 7. Low Profile Structure - LP1 Shown

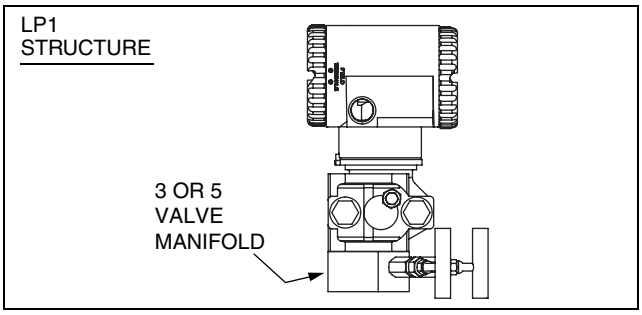


Figure 8. LP1 Shown Directly Mounted to Manifold

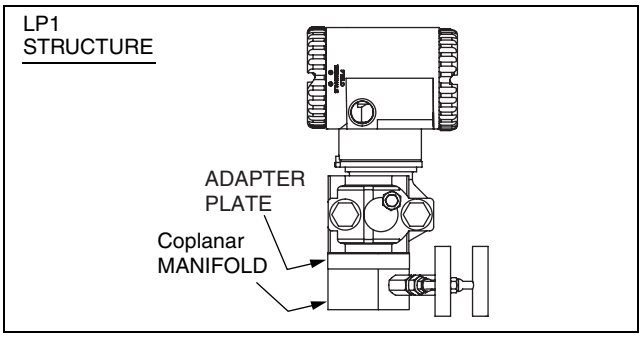


Figure 9. LP1 Shown Mounted to a Coplanar Manifold using an Optional Intermediate Adapter Plate

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.

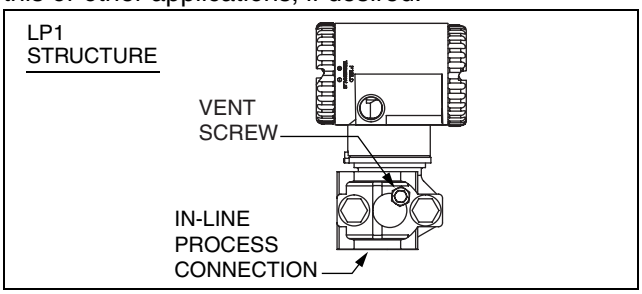


Figure 10. Upright Mounting

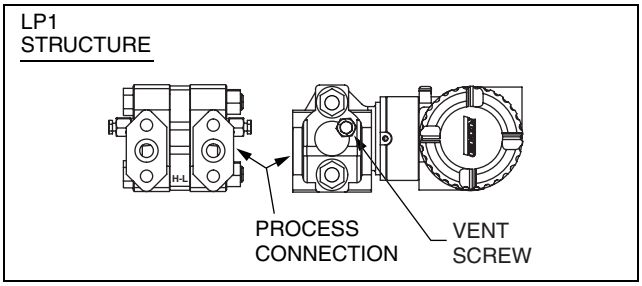


Figure 11. Horizontal Mounting with Vent Screw

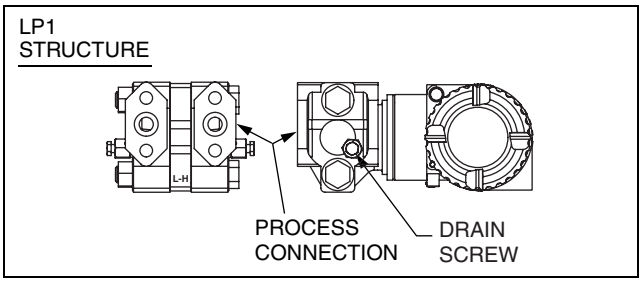


Figure 12. Horizontal Mounting with Drain Screw

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.

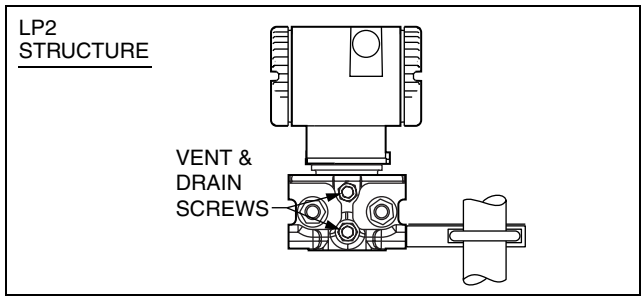


Figure 13. Shown on Foxboro Universal Bracket

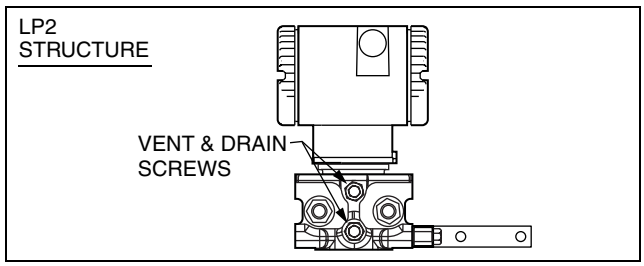


Figure 14. Shown on Coplanar Bracket

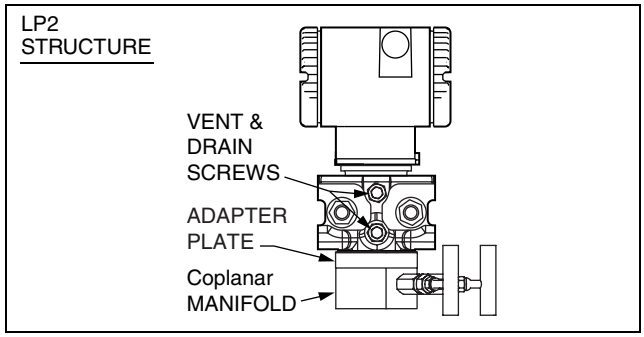


Figure 15. Adapter Mount to Existing Coplanar Manifold

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**
PSFPS	Flanged, Remote Mount, Flush Diaphragm	ANSI Class 150/300/600 flanges and BS/DIN PN 10/40 flanges
PSFES	Flanged, Remote Mount, Extended Diaphragm	ANSI Class 150/300/600 flanges and BS/DIN PN 10/40, 10/16, 25/40 flanges
PSFAR	Flanged, Remote Mount, Recessed Diaphragm	ANSI Class 150/300/600/1500 flanges
PSTAR	Threaded, Remote Mount, Recessed Diaphragm	1/4, 1/2, 3/4, 1, or 1 1/2 NPT internal thread
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



Figure 16. Typical IDP10 Pressure Seals

FUNCTIONAL SPECIFICATIONS

Span Limits for IDP10 d/p Cell Transmitters

Code	kPa	psi	mbar	mmHg	mmH_2O	inH_2O
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
Code	**MPa**	**psi**	**bar or kg/cm^2**	**mHg**	**mH_2O**	**ftH_2O**
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)

Code	kPa	psi	mbar	mmHg	mmH_2O	inH_2O
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	-21 000 and +21 000	-840 and +840
Code	**MPa**	**psi**	**bar or kg/cm^2**	**mHg**	**mH_2O**	**ftH_2O**
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, or kg/cm^2)
-D1	DIN Construction	16 MPa (2320 psi, 160 bar or kg/cm^2)
-D5 or -B1	DIN Construction or 316 ss Bolting	15 MPa (2175 psi, 150 bar or kg/cm^2)
-D2, -D4, -D6, or -D8 (a)	DIN Construction (a)	10 MPa (1500 psi, 100 bar or kg/cm^2) (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 or kg/cm^2	MPa	psi	bar or kg/cm^2
With Option -D9 or -Y	40	5800	400	100	14500	1000
Standard or with Option -B2, -D3, or -D7	25	3625	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.

Zero and Span Adjustments (Figure 17)
Zero and span adjustments can be accomplished using the pushbuttons on the LCD indicator.

FUNCTIONAL SPECIFICATIONS (Cont.)

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.

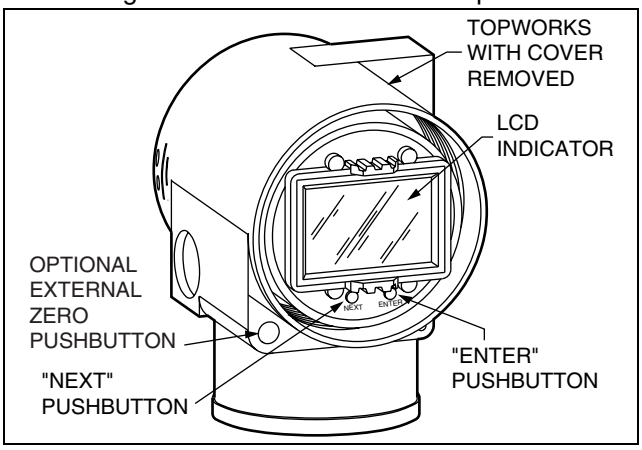


Figure 17. LCD Indicator with Pushbuttons

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.

European Union Directives

- Complies with Electromagnetic Compatibility Requirements of European EMC Directive 89/336/EEC by conforming to the following CENELEC and IEC Standards: EN 50081-2, EN 50082-2, and IEC 801-2 through 801-6.
- Complies with NAMUR Part 1 Interference Immunity Requirement.
- Conforms to Applicable European Union Directives (“CE” Logo marked on product).

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).

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.

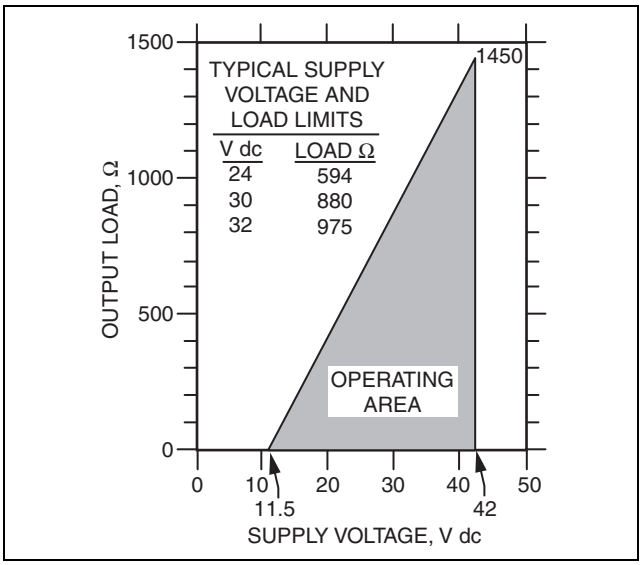


Figure 18. Supply Voltage vs. Output Load

Minimum Allowable Absolute Pressure vs. Transmitter Temperature

WITH SILICONE FILL FLUID

Full vacuum: up to 121°C (250°F)

WITH FLUORINERT FILL FLUID

Refer to Figure 19.

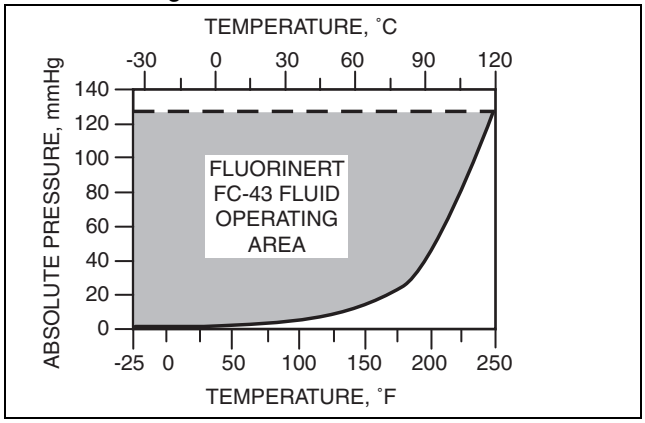


Figure 19. Minimum Allowable Absolute Pressure vs. Transmitter Temperature, Fluorinert FC-43, 2.6 cSt at 25°C (77°F)

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 Configuration Option -C2.

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

inH_2O	psi	Pa	atm	g/cm^2
ftH_2O	inHg	kPa	bar	kg/cm^2
mmH_2O	mmHg	MPa	mbar	torr

(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	per S.O.(a)	INH2O (a)
• LRV	per S.O.	0
• URV	per S.O.	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)	(b)	INH2O (b)
• Display LRV	(c)	0 (c)
• Display URV	(c)	100 (c)
If Square Root:		
• Label (2nd line)	%	GPM (d)
• Display LRV	0	0
• Display URV	100	500 (e)

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

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

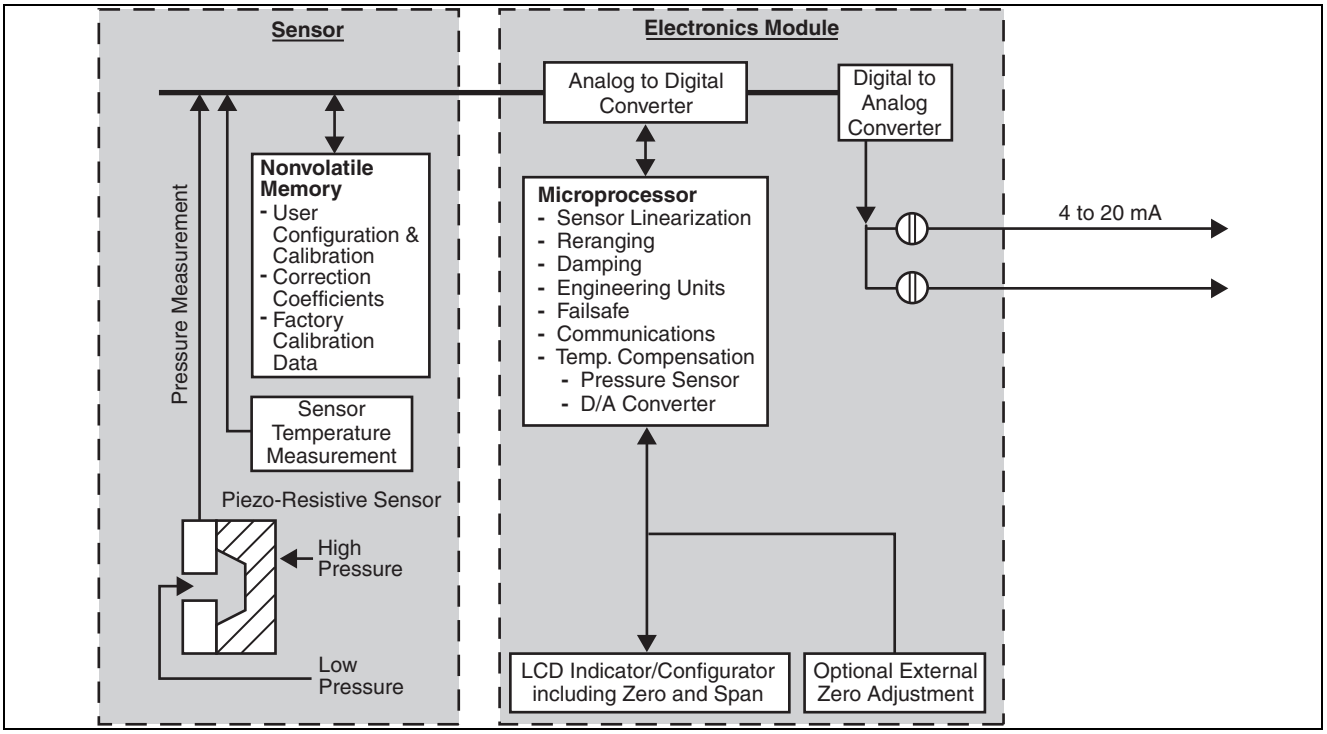


Figure 20. Transmitter Functional Block Diagram

OPERATING, STORAGE, AND TRANSPORTATION CONDITIONS

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

(a) When Structure Codes 78/79 (pvdf inserts in Hi- and Lo-side process covers) 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).

(b) Selection of Option -J extends the low temperature operative limit of transmitters with silicone filled sensors down to -50°C (-58°F).

(c) 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 “Storage and Transportation Limits”, updates will be slowed and readability decreased at temperatures outside the “Normal Operating Conditions”.

(d) With topworks cover on and conduit entrances sealed.

(e) 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.

(f) Sensor process wetted diaphragms in a vertical plane.

(g) Refer to the Electrical Safety Specifications section for a restriction in ambient temperature with certain electrical certifications.

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	$\pm\left[(0.10) + (0.005)\left(\frac{\text{URL}}{\text{Span}}\right)\right]$
A, C, D, E	<6.7% of URL	$\pm\left[(0.10) + (0.0067)\left(\frac{\text{URL}}{\text{Span}}\right)\right]$

Stability

Long term drift is less than ±0.05% of URL per year over a 5-year period.

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:

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

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.)

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.

Supply Voltage Effect

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

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.

Static Pressure Effect

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

ZERO SHIFT (a)

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

(a) Can be calibrated out by zeroing at nominal line pressure.

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

SPAN SHIFT

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

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.)

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 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.

PHYSICAL SPECIFICATIONS

Process Cover and Connector Material (Process Wetted)
Carbon Steel, 316 ss, Monel, Hastelloy C, 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 ptfe, 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, 316 L ss, Gold-Plated 316L ss, Monel, Hastelloy C, or Tantalum for transmitter traditional structure; and 316L ss or Hastelloy C 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 Fluorinert (FC-43)

Environmental Protection
Transmitter is dusttight and weatherproof per IEC IP66 and provides the environmental and corrosion resistant protection of NEMA Type 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, 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 23.

Electronics Module
Printed wiring assemblies are conformally coated for moisture and dust protection.

Mounting Position
The transmitter may be mounted in any orientation.

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

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

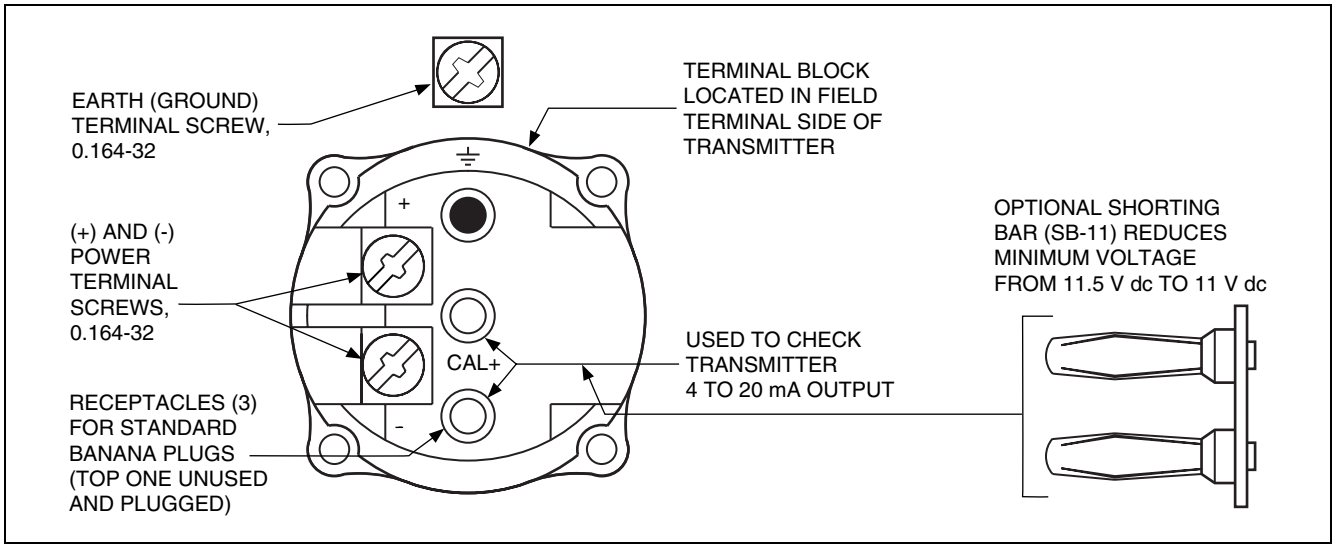


Figure 21. Field Terminal Block

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.	
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.	
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	Covers	Sensor	Fill Fluid	Model
I/A Series, Electronic d/p Cell Transmitter for Differential Pressure Measurement				IDP10
Electronics Versions and Output Signal				
Analog; 4 to 20 mA dc (Version -A)				-A
Structure Code - Select from one of the following six groups:				
1. Transmitter with Traditional Structure				
	Covers	**Sensor**	**Fill Fluid**	
	Steel	Co-Ni-Cr	Silicone	10
	Steel	Co-Ni-Cr	Fluorinert	11
	Steel	316L ss	Silicone	12
	Steel	316L ss	Fluorinert	13
	Steel	Hastelloy C	Silicone	16
	Steel	Hastelloy C	Fluorinert	17
	316 ss	Co-Ni-Cr	Silicone	20
	316 ss	Co-Ni-Cr	Fluorinert	21
	316 ss	316L ss	Silicone	22
	316 ss	316L ss	Fluorinert	23
	316 ss	316L ss, Gold Plated	Silicone	2G
	316ss	Monel	Silicone	24
	316 ss	Monel	Fluorinert	25
	316 ss	Hastelloy C	Silicone	26
	316 ss	Hastelloy C	Fluorinert	27
	Monel	Monel	Silicone	34
	Monel	Monel	Fluorinert	35
	Hastelloy C	Hastelloy C	Silicone	46
	Hastelloy C	Hastelloy C	Fluorinert	47
	Hastelloy C	Tantalum	Silicone	48
	Hastelloy C	Tantalum	Fluorinert	49
	pvdf Insert (Kynar)	Tantalum	Silicone (Used w/Process Connector Type 7)	78 (a)
	pvdf Insert (Kynar)	Tantalum	Fluorinert (Used w/Process Connector Type 7)	79 (a)
2. Transmitter with Low Profile Structure LP1 (Not available with Pressure Seals)				
	Covers	**Sensor**	**Fill Fluid**	
	316 ss	316L ss	Silicone	LL
	316 ss	316L ss	Fluorinert	LM
	316 ss	Hastelloy C	Silicone	LC
	316 ss	Hastelloy C	Fluorinert	LD
3. Transmitter with Low Profile Structure LP2 (Not available with Pressure Seals)				
	Covers	**Sensor**	**Fill Fluid**	
	316 ss	316L ss	Silicone	52
	316 ss	316L ss	Fluorinert	53
	316 ss	Hastelloy C	Silicone	56
	316 ss	Hastelloy C	Fluorinert	57
4. Transmitter prepared for Foxboro Model Coded Remote Mount Seals (b)(c)				
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, Fluorinert 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, Fluorinert 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, Fluorinert Fill in Sensor				S6

Model Code continued on next page

IDP10 DIFFERENTIAL PRESSURE TRANSMITTERS (Cont.)

MODEL CODE (Cont.)

5. Transmitter Prepared for Foxboro Model Coded Direct Connect Seals (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; Fluorinert Fill	F2
PSFLT, PSSCT, or PSSST Direct Connect Seal on HI Side; Remote Seal with Capillary LO Side; Silicone Fill	F3
PSFLT, PSSCT, or PSSST Direct Connect Seal on HI Side; Remote Seal with Capillary LO Side; Fluorinert Fill	F4
6. Transmitter Prepared for non-Foxboro Seals	
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
Span Limits (Differential Pressure Units)	
kPa / **inH_2O** / **mbar**	
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
MPa / **psi** / **bar or kg/cm^2**	
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)
Process Connector Type (Material Same as Process Cover Material) (g)	
See below: • 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)	0
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
Conduit Connection and Housing Material	
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
Electrical Safety (Also see Electrical Safety Specifications section)	
ATEX II 2 GD, EEx d IIC, Zone 1 (d)	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 (d)	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 (d)	G
IECEx flameproof: Ex d IIC	V

Model Code continued on next page

IDP10 DIFFERENTIAL PRESSURE TRANSMITTERS (Cont.)

MODEL CODE (Cont.)

Optional Selections	
Refer to Optional Selections below.	
Mounting Bracket Set (h)	
Standard Style Painted Steel Bracket with Plated Steel Bolts	-M1
Standard Style Stainless Steel Bracket with Stainless Steel Bolts	-M2
Universal Style Stainless Steel Bracket with Stainless Steel Bolts (not with Structure Codes LL, LM, LC, or LD)	-M3
Blind (Solid) Cover over Standard LCD Indicator	
Blind (Solid) Cover replaces Window Cover	-L2
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)	
Single Ended Process Cover with M10, B7 Steel Bolting (j)(s)	-D1
Double Ended Process Cover with M10, B7 Steel Bolting (Blind Kidney Flange on Back) (j)(k)(l)	-D2
Single Ended Process Cover with 7/16 in, B7 Steel Bolting; standard pressure rating 25 MPa (3625 psi) (s)	-D3
Double Ended Process Cover with 7/16 in, B7 Steel Bolting (Blind Kidney Flange on Back) (j)(k)(l)	-D4
Single Ended Process Cover with 7/16 in, 316 ss Bolting (j)(s)	-D5
Double Ended Process Cover with 7/16 in, 316 ss Bolting (Blind Kidney Flange on Back) (j)(k)(l)	-D6
Single Ended Process Cover with 7/16 in, 17-4 ss Bolting; standard pressure rating 25 MPa (3625 psi) (s)	-D7
Double Ended Process Cover with 7/16 in, 17-4 ss Bolting (Blind Kidney Flange on Back) (j)(k)(l)	-D8
Single Ended Process Cover with 7/16 in, 17-4 ss Bolting; pressure rating 40 MPa (5800 psi) (s) Not available with Span Codes A, D, or E; or Option Codes -V, -B1, -B2, -B3, or -Y	-D9
Cleaning and Preparation - Not Available with Gold-Plated Sensor, Structure 2G or Pressure Seals	
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 Fluorinert Filled Sensors Only (Not Available with Carbon Steel Covers or with Silicone Filled Sensors)	-X2
Cleaned and Prepared for Chlorine Service - for Fluorinert Filled Sensors Only (m) (Not Available with Carbon Steel Covers or with Silicone Filled Sensors)	-X3
Bolting for Process Covers/Connectors - Not with DIN 19213 Construction or Structure Codes 78 and 79 (n)	-B1
316 ss Bolts and Nuts (Pressure Derated; Not Available with -Y Option) (j)	-B2
17-4 ss Bolts and Nuts (m)	-B3
B7-M Bolts and Nuts (NACE)(Pressure Derated) (j)	
Conduit Thread Adapters (Not available with Conduit Connection Codes 5 and 6)	
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
Electronics Housing Features	
External Zero Adjustment	-Z1
Custody Transfer Lock and Seal	-Z2
External Zero Adjustment and Custody Transfer Lock/Seal	-Z3
Custom Factory Configuration	
Full Factory Configuration (Requires Configuration Form to be Filled Out)	-C2
Tubing Connectors - Not available with Structure Codes 78 and 79; also not with Pressure Seals	
Steel, Connecting 6 mm Tubing to 1/4 NPT Process Connector Only with Structure Codes 10 to 13; and Process Connector Codes 0 and 1	-E1
Steel, Connecting 12 mm Tubing to 1/2 NPT Process Connector Only with Structure Codes 10 to 13; and Process Connector Code 2	-E2
316 ss, Connecting 6 mm Tubing to 1/4 NPT Process Connector Only with Structure Codes 10 to 13 and 20 to 23; and Process Connector Codes 0 and 1	-E3
316 ss, Connecting 12 mm Tubing to 1/2 NPT Process Connector Only with Structure Codes 10 to 13 and 20 to 23; and Process Connector Code 2	-E4
Vent Screw in Process Cover	
Supply Vent Screw in Side of Each Process Cover (Available only on Traditional Process Cover Structure Codes 22 to 47)	-V
Omit Vent Screw in Side of Each Process Cover (Available only on Type LP1 Low Profile Process Cover Structures Codes LL, LM, LC, and LD)	-V1

Model Code continued on next page

MODEL CODE (Cont.)

Adapter Plate, Bolts, and Gaskets for Direct Mount to Competitive Manifolds (t)	
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
Gaskets	
Gasket for Vacuum Service with Pressure Seals (r)	-G1
Instruction Books (Common MI, Brochure, and Full Documentation Set on CD-ROM is Standard)	
Without Instruction Book and CD; only "Getting Started" brochure is supplied.	-K1
Miscellaneous Optional Selections	
Low Temperature Operative Limit of Electronics Housing Extended Down to -50°C (-58°F) Not available with sensors and seals with fluorinert fill; Structure Codes 78 and 79; and DIN Options -D2, -D4, -D6, and -D8	-J
Supplemental Customer Tag (Stainless Steel Tag wired onto Transmitter)	-T
Static Pressure Rating to 40 MPa (5800 psi); Only with Span Codes B and C Not available with: – Options -B1, -B2, and -B3 (q) – Options -D1 to -D9 – Structure Codes 34, 35, 78, 79, S1 to S6, SA to SF, F1 to F4	-Y

(a) Maximum static pressure rating is 2.1 MPa (300 psi); temperature limits are -7 and +82°C (20 and 180°F).
(b) Both Transmitter and Pressure Seal Model Numbers are required. See PSS 2A-1Z11 A for the various pressure seal Model Codes.
(c) Remote Seal Models that may be specified are PSFPS, PSFES, PSFAR, PSTAR, PSISR, PSSCR, and PSSSR.
(d) Cover lock provided as standard with Electrical Safety Codes D, B, and G.
(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 (pvdf insert in HI side cover).
(g) Select Code "0" if a pressure seal is specified. Otherwise select Codes 1 through 7.
(h) 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) 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.
(l) Mounting Bracket Set options are not available with Options -D2, -D4, -D6, and -D8.
(m) 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.
(n) 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) -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.
(r) -G1 is a required option when pressure seal will be used in vacuum applications. This option substitutes vacuum service metal gasket for standard ptfe process cover gasket.
(s) Not available with Low Profile Structure Codes 52 to 67.
(t) 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.

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:

Accuracy: ±0.20% of calibrated span.

Linear or Square Root Output: Pushbutton configurable to set linear or square root output.

Static Pressure Rating: 25 MPa (3625 psi) for standard transmitter.

Ambient Temperature Effect: 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_2O URL sensor).

Damping: Settable for a range of none to 8 seconds.

Proof Pressure: 14 500 psi for standard transmitter

Span Limits: 0.5 and 30 inH_2O, 3.5 and 200 inH_2O, 28 and 840 inH_2O, 10 and 300 psi, or 100 and 3000 psi, as specified; or SI and metric equivalents.

LCD Indicator: Standard Liquid Crystal Display (LCD) Indicator with on-board pushbuttons for calibration and configuration.

Mounting: On process piping, on a manifold, or optional mounting bracket

Input Connection: 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.

Electronics Housing: 316 ss, or aluminum housing with epoxy finish

Modular Electronics: Easily replaceable modular electronics in a NEMA 4X (IEC IP66) housing sealed with O-rings for protection against moisture or other contaminants.

Process Cover: Traditional Structures:
Steel, 316 ss, Monel, Hastelloy C, or pvdf insert
Low Profile Structures:
316 ss

Sensor Materials: Traditional Structure:
316L ss, Hastelloy C, Co-Ni-Cr, Monel, Tantalum, or Gold-Plated 316L ss
Low Profile Structures:
316L ss or Hastelloy C

Approvals and Certifications: 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.

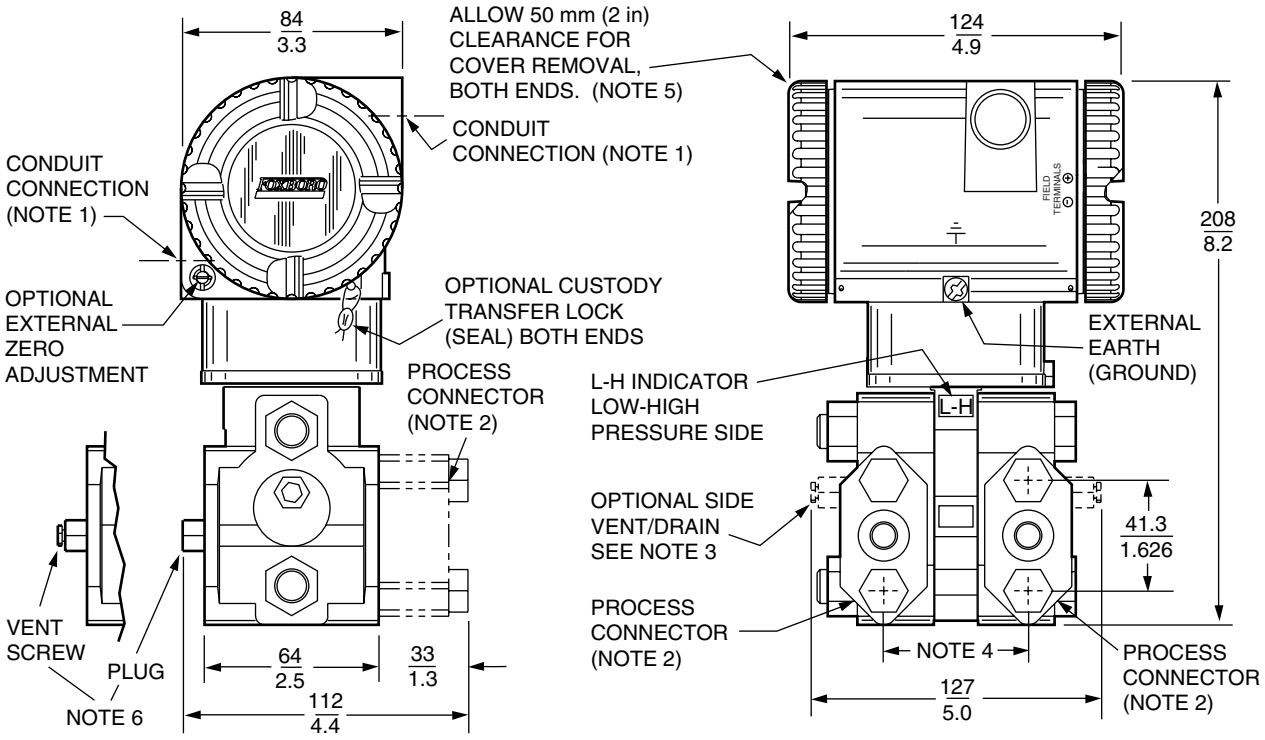
Approximate Mass: (with Process Connectors) 4.2 kg (9.2 lb), with Traditional Structures;
Add 0.1 kg (0.2 lb) with Low Profile Structure LP1;
Add 0.8 kg (1.8 lb) with Low Profile Structure LP2;
Add 1.1 kg (2.4 lb) with 316 ss housing;
Add 0.2 kg (0.4 lb) with optional LCD indicator.

Model Codes: I/A Series IDP10-A Electronic d/p Cell Transmitter, with or without pressure seals, or equivalent.

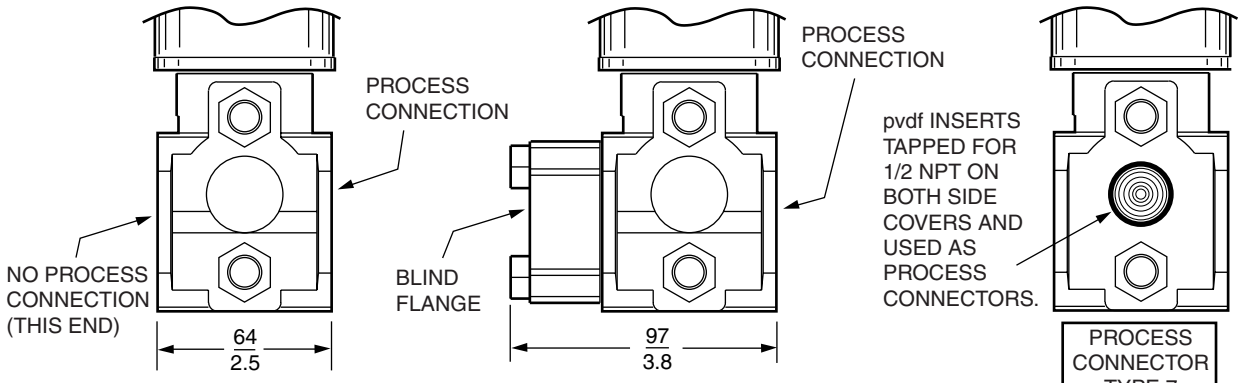
DIMENSIONS-NOMINAL

mm
in

TRANSMITTER WITH TRADITIONAL STRUCTURE



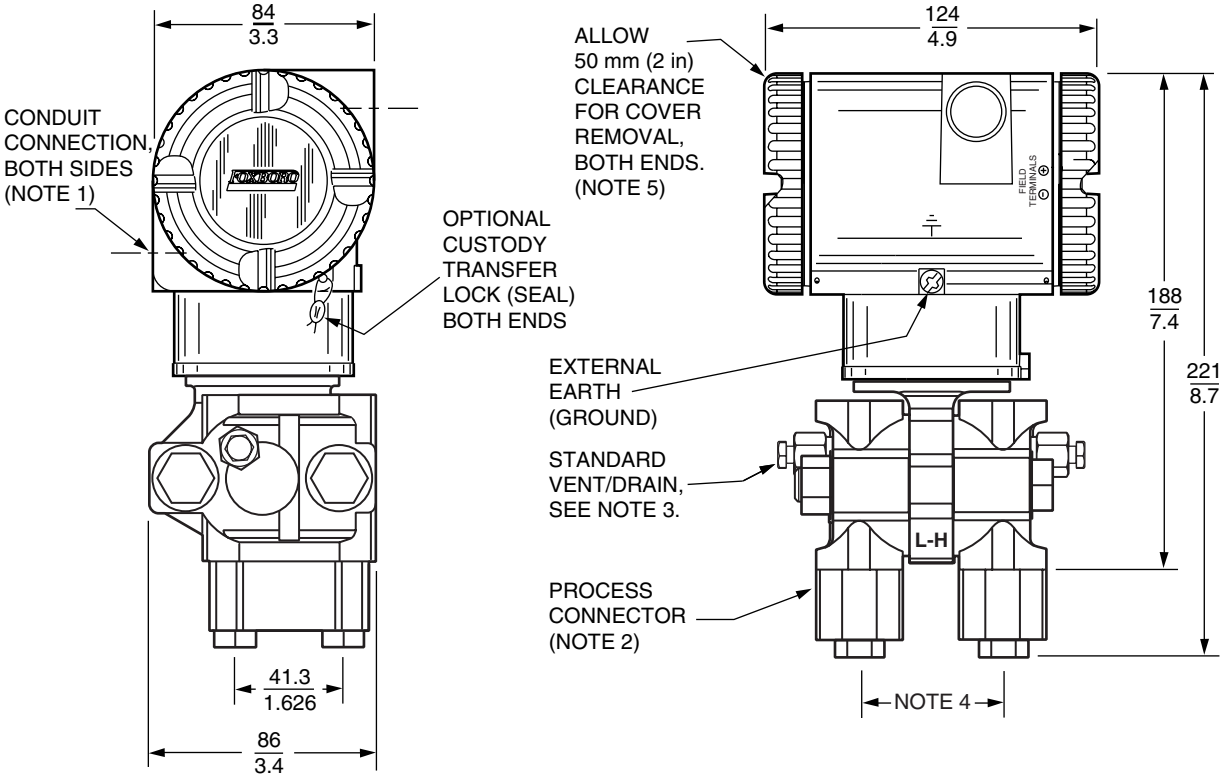
NOTES:
1. CONDUIT CONNECTION 1/2 NPT OR PG 13.5, BOTH SIDES: PLUG UNUSED CONNECTION WITH METAL PLUG (SUPPLIED).
2. PROCESS CONNECTORS MAY BE REMOVED AND TRANSMITTER MOUNTED DIRECTLY ON A MANIFOLD, OR CONNECTIONS MADE DIRECTLY TO PROCESS COVER USING 1/4 NPT INTERNAL THREAD IN PROCESS COVER.
3. PROCESS 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.



DIMENSIONS-NOMINAL (Cont.)

mm
in

TRANSMITTER WITH LOW PROFILE STRUCTURE LP1

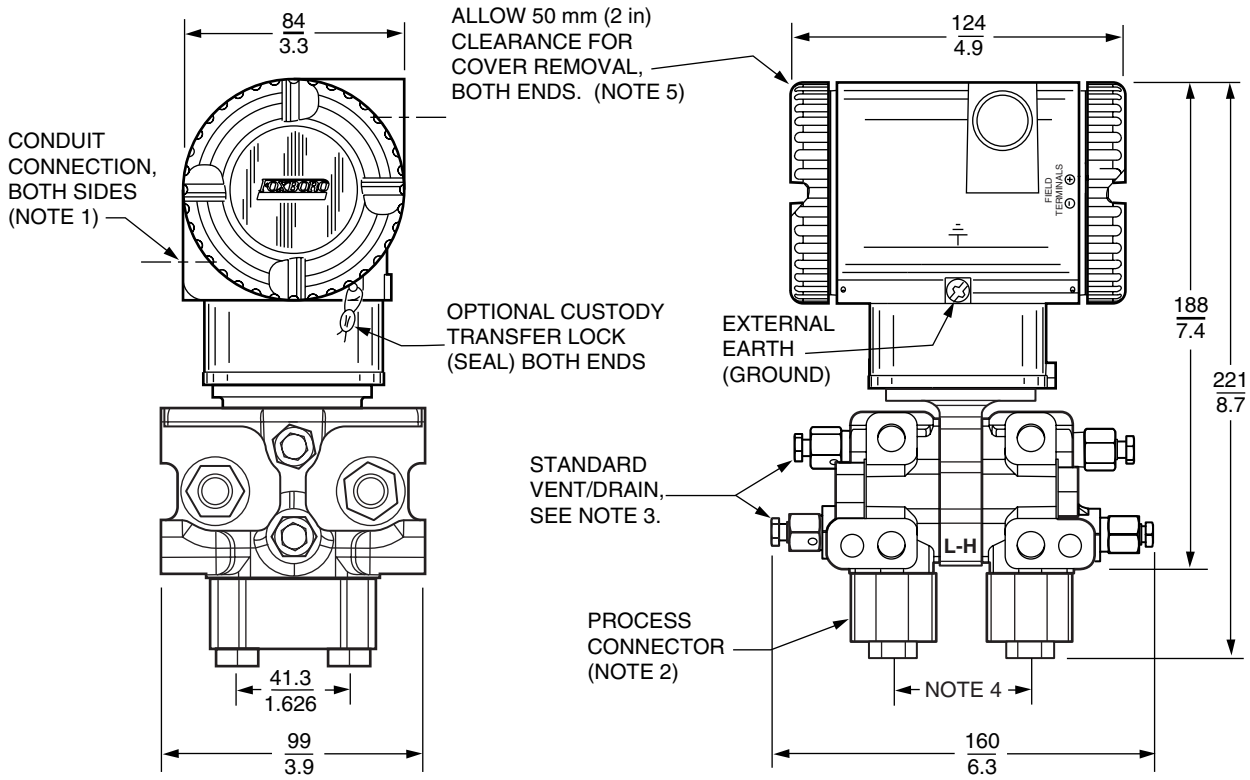


NOTES:
1. CONDUIT CONNECTION 1/2 NPT, PG 13.5, OR M20, BOTH SIDES: PLUG UNUSED CONNECTION WITH METAL PLUG (SUPPLIED).
2. PROCESS CONNECTORS MAY BE REMOVED AND TRANSMITTER MOUNTED DIRECTLY ON A MANIFOLD, OR CONNECTIONS MADE DIRECTLY TO PROCESS COVER USING 1/4 NPT INTERNAL THREAD IN PROCESS COVER.
3. THE 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.

DIMENSIONS-NOMINAL (Cont.)

mm
in

TRANSMITTER WITH LOW PROFILE STRUCTURE LP2



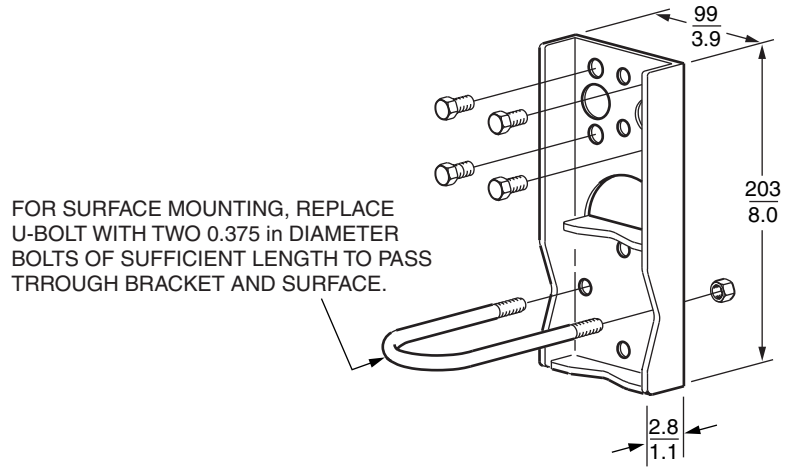
NOTES:

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.

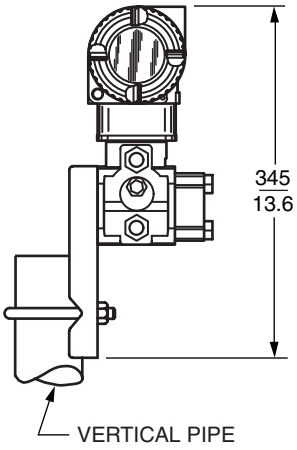
DIMENSIONS-NOMINAL (Cont.)

mm
in

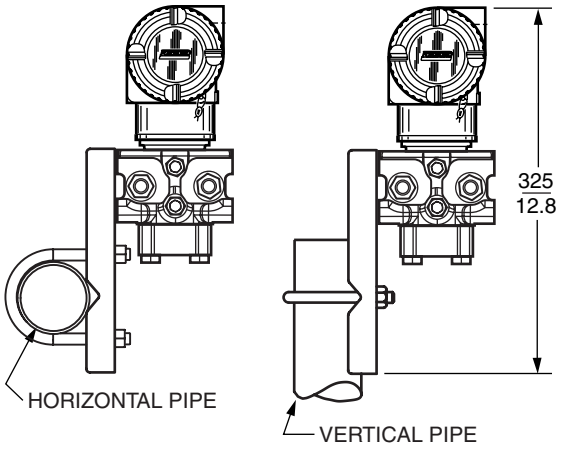
TRANSMITTER WITH STANDARD STYLE MOUNTING BRACKET KIT (Options -M1 and -M2)



TRANSMITTER WITH TRADITIONAL STRUCTURE



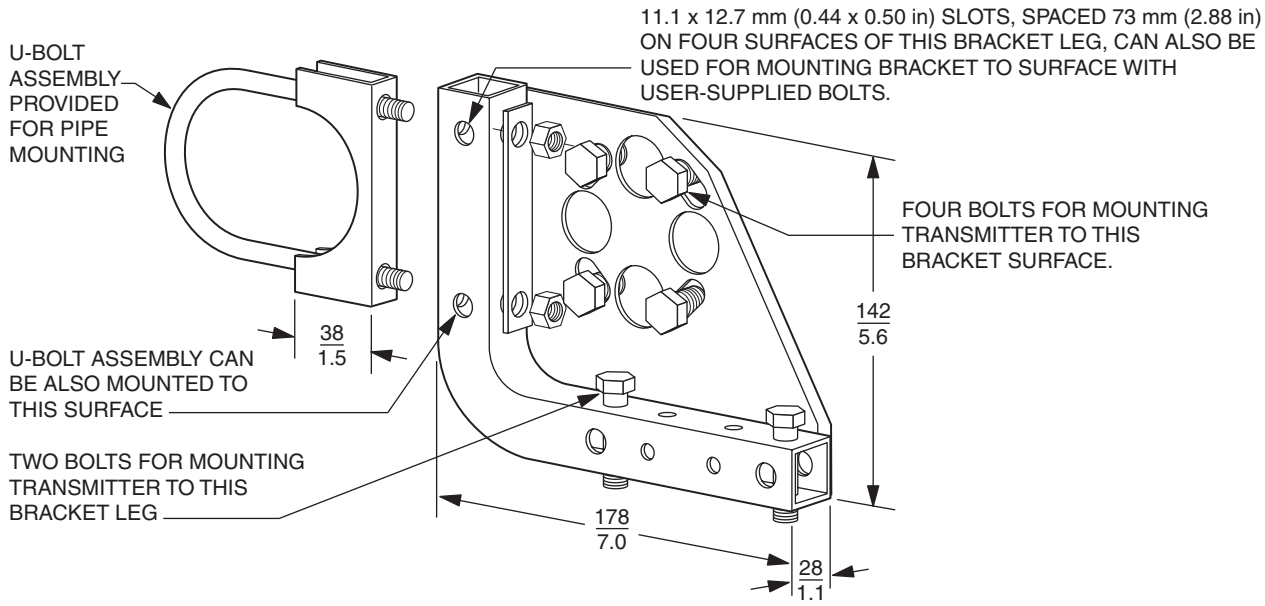
TRANSMITTER WITH LOW PROFILE STRUCTURE LP2



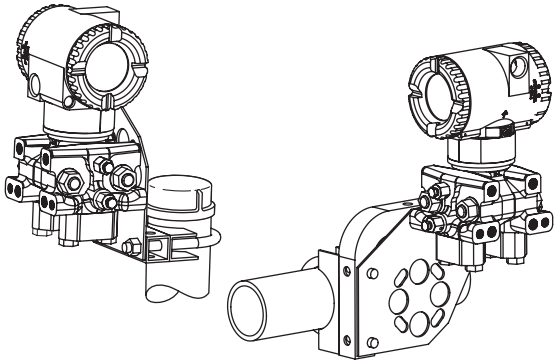
DIMENSIONS-NOMINAL (Cont.)

mm
in

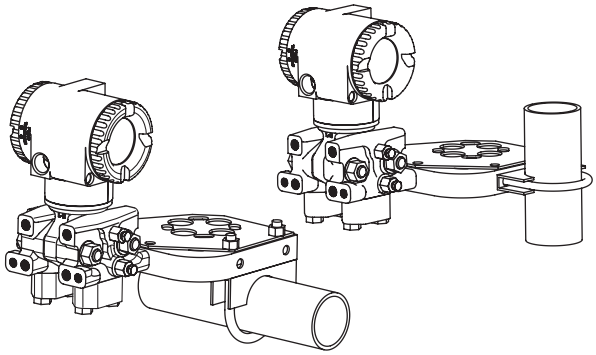
TRANSMITTER WITH UNIVERSAL STYLE MOUNTING BRACKET KIT (Option -M3)



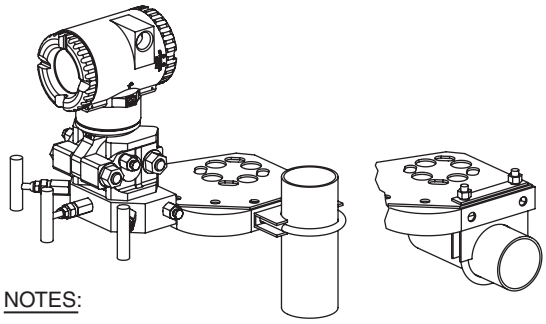
TYPICAL PIPE MOUNTING WITH LOW PROFILE STRUCTURE LP2

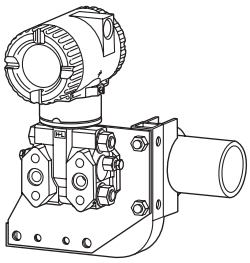


TYPICAL PIPE MOUNTING
LOW PROFILE STRUCTURE LP1



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.

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

Allowable Pressure Units for Calibrated Range (a)

inH_2O	psi	Pa	atm	g/cm^2
ftH_2O	inHg	kPa	bar	kg/cm^2
mmH_2O	mmHg	MPa	mbar	torr

(a) Displayed in upper case only on transmitter.

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