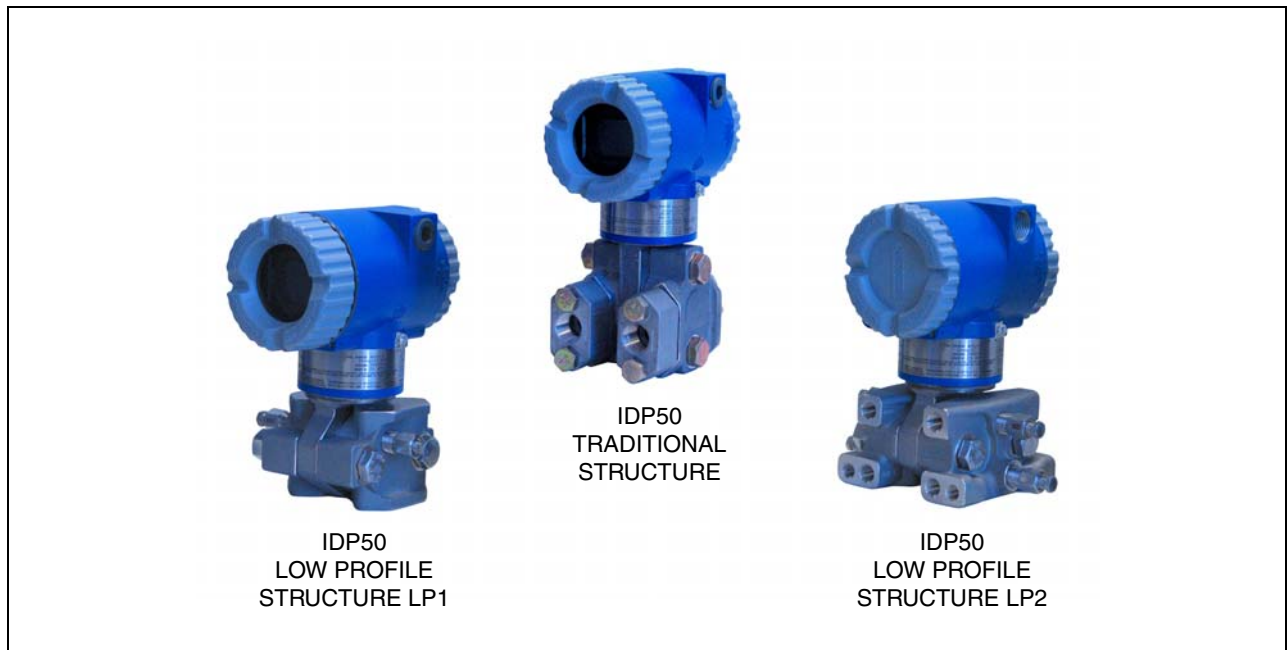


I/A Series® Premium Performance Transmitters Model IDP50 for Differential Pressure Measurement w/FoxCom™, HART®, or FOUNDATION® Fieldbus Communication



These intelligent, premium performance, two-wire d/p Cell® transmitters provide precise, reliable, measurement of differential pressure using only two sensors to provide a very wide measurement range. They transmit a 4 to 20 mA or digital output signal, as applicable, using FoxCom™, HART®, or FOUNDATION® Fieldbus communication protocol for remote configuration, calibration, and monitoring.

FEATURES

- Silicon strain gauge sensors successfully field-proven in many thousands of applications.
- Wide measurement spans from 0.63 to 250 kPa (2.5 to 1000 inH₂O) using only two sensors, each having 80:1 turndown capability.
- Digital precision, stability, and resolution ensure premium measurement performance with accuracy of $\pm 0.05\%$ of calibrated span over full 80:1 turndown.
- A selection of FoxCom, HART, or FOUNDATION Fieldbus Protocols for remote communication.
- Local configuration available with the optional LCD Indicator with on-board pushbuttons.
- Simple sensor packaging with very few parts achieves exceptionally high reliability.
- Transmitter available with traditional or low profile transmitter structures (see photos above).
- Durable aluminum or 316 ss housing available; both meet NEMA® 4X and IEC IP66.
- Industry Standard 316L ss offered for sensor wetted parts materials.
- CE marked; complies with European EMC, ATEX, and PED European Directives.
- Complies with NAMUR Part 1 Interference Immunity Requirement (EMC).
- Designed for hazardous area installations. Versions available to meet Agency flameproof and zone requirements.
- Optional mounting bracket sets allow pipe, surface, or manifold mounting of transmitter.
- Numerous other options also offered.
- Standard 2-year warranty; 5-year optional.

I/A Series® PRESSURE TRANSMITTER FAMILY

The I/A Series Electronic Pressure Transmitters are a complete family of d/p Cell®, gauge, absolute, multirange, multivariable, and premium performance transmitters, as well as transmitters with remote or direct mount seals, all using field-proven silicon strain gauge sensors and common topworks.

PREMIUM PERFORMANCE

These transmitters provide $\pm 0.05\%$ of span accuracy over the full rated 80:1 span turndown range, making them the most versatile of the “premium” or “reference class” transmitters available.

The transmitters have $\pm 0.02\%$ URL per year stability over a five year period and use characterization and microprocessor-based corrections to achieve excellent ambient temperature compensation.

These premium performance specifications, along with reduced static pressure effect on both zero and span, result in an extremely low Total Probable Error (TPE) for the IDP50 transmitter.

VERY WIDE MEASUREMENT RANGE USING ONLY TWO SENSORS

Two d/p Cell range sensors are provided to cover measurement spans from 0.63 to 250 kPa (2.5 to 1000 inH₂O). The high turndown capability of the transmitter means that nearly all d/p applications can be satisfied with only two sensors, greatly simplifying your spare transmitter and spare parts requirements.

PROCESS CONNECTORS

Removable, gasketed process connectors allow a wide range of selections, including 1/4 NPT, 1/2 NPT, R 1/4, R 1/2, and weld neck connections.

SENSOR CORROSION PROTECTION

Industry standard 316L ss sensor material is provided for corrosion protection.

OPTIONAL LCD DIGITAL INDICATOR

A two-line digital indicator with on-board pushbuttons is available to display the measurement with a choice of units. The pushbuttons allow zero and span adjustments, as well as local configuration, without the need for a PC-based configurator.

DIGITAL AND 4 TO 20 mA OUTPUT VERSIONS

The IDP50 Transmitter provides electronic versions with a 4 to 20 or digital output using FoxCom, HART, or FOUNDATION Fieldbus (digital only) communication protocols. See paragraphs that follow.

Digital FoxCom or 4 to 20 mA dc (Configurable) (Version -D Electronics)

FoxCom Digital Output

Provides Measurement Integration with I/A Series systems, transmission of multiple measurements, and workstation configuration and diagnostics. Also provides digital communications with a PC-based Configurator or optional LCD Indicator with on-board pushbuttons for local configuration and calibration.

FoxCom 4 to 20 mA Output

Allows direct analog connection to common receivers while still providing full intelligent transmitter digital communications with a PC-based Configurator, applicable I/A Series system FBMs, or optional LCD Indicator with on-board pushbuttons for local configuration and calibration.

Digital HART and 4 to 20 mA dc (Version -T Electronics)

4 to 20 mA with HART communications. Allows direct analog connection to common receivers while still providing full Intelligent Transmitter Digital Communications using a PC-based Configurator or HART Communicator, or optional LCD indicator with on-board pushbuttons for local configuration and calibration.

Users having HART Communicators for other devices can have them upgraded with Invensys Foxboro software to accommodate these transmitters. Also, Invensys Foxboro makes use of the HART Foundation library of registered DDs (Device Descriptors), and reload the Communicator if the user desires to keep another supplier's DD along with the Foxboro DD.

Digital FOUNDATION Fieldbus (Version -F Electronics)

This all digital, serial, two-way communication system interconnects field devices, such as transmitters, actuators, and controllers. It is a Local Area Network (LAN) with built-in capability to distribute control application across the network. Fieldbus technology consists of a Physical Layer, a Communication Stack, and User Application Blocks. Interoperability of fieldbus devices is achieved using device addresses (IDs) and device descriptors (DDs).

COMPLIANCE WITH EUROPEAN UNION DIRECTIVES

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

HAZARDOUS AREA INSTALLATIONS

Designed for installations requiring intrinsically safe, explosionproof, and nonincendive devices. Versions also available that meet Agency flameproof and zone requirements.

ATEX FLAMEPROOF DESIGN

The transmitter meets the rigorous requirements for ATEX Flameproof rating.

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.

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/CELL BODY DESIGN

Biplanar Construction (Figure 1) 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.

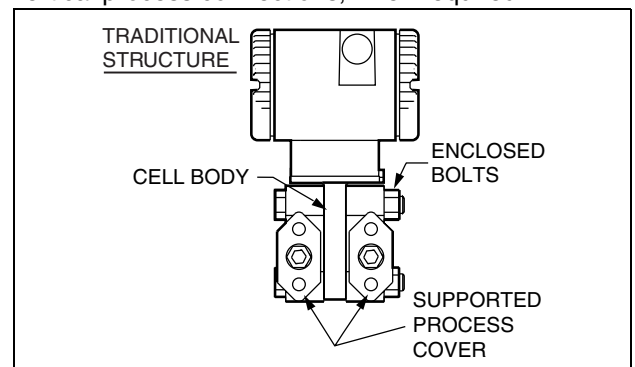


Figure 1. Biplanar Construction Shown with Traditional Horizontal Process Connections

Process Covers (Figure 1) 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 1) 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 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 2) 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 3 and 4). Optional side vents are offered for sensor cavity venting in the upright position (Figure 5).

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

Refer to the pages that follow for descriptions of low profile structure LP1 and low profile structure LP2.

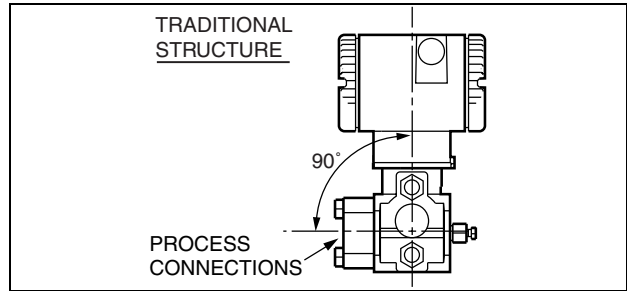


Figure 2. Vertical Mounting Showing Process Connections at 90 degrees

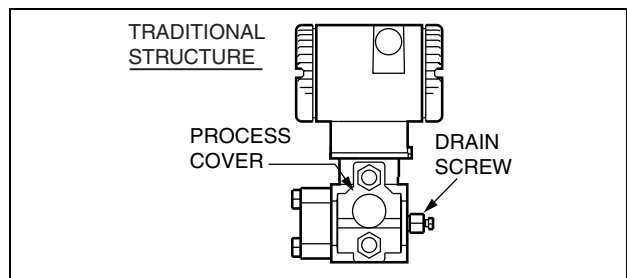


Figure 3. Vertical Mounting - Cavity Draining

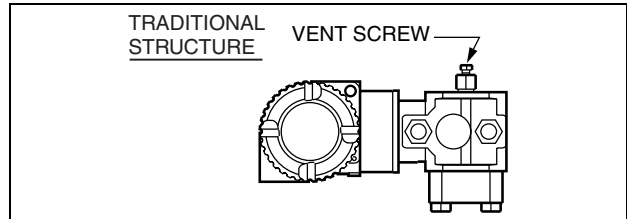


Figure 4. Horizontal Mounting - Cavity Venting, and Self-Draining into Process Line

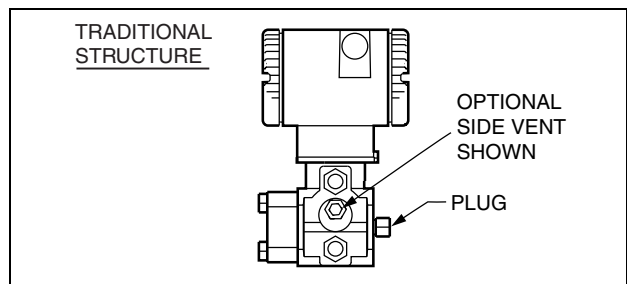


Figure 5. Vertical Mounting - Cavity Venting, and Self-Draining into Process Line

Low Profile Structures

The low profile structures utilize an in-line design, placing the process connections in line with the transmitter centerline (Figures 6 and 7). 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 (see Figure 8). 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 (plus or minus) 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.

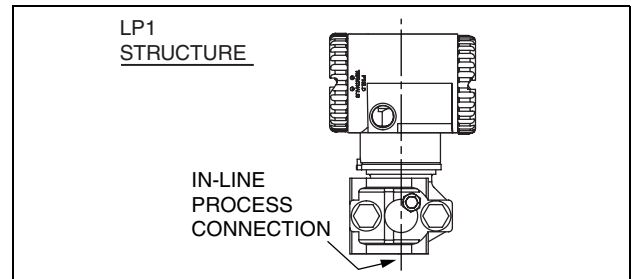


Figure 6. Low Profile Structure - LP1 Shown

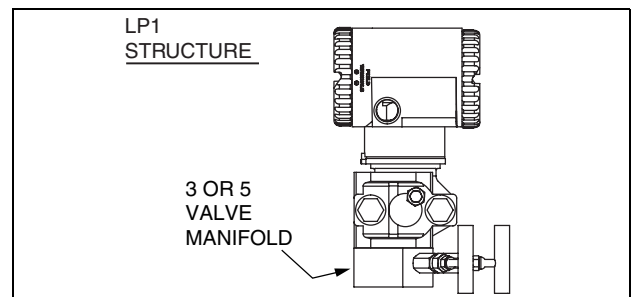


Figure 7. LP1 Shown Directly Mounted to Manifold

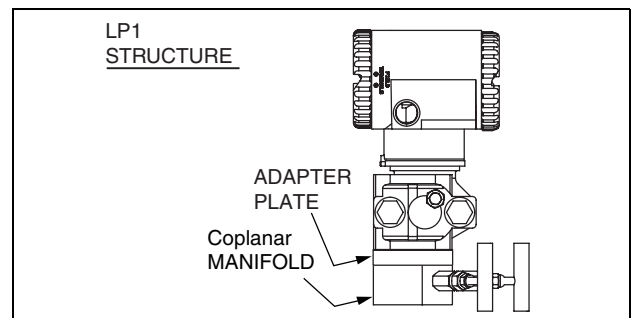


Figure 8. LP1 Shown Mounted to a Coplanar Manifold using an Optional Intermediate Adapter Plate

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 9) 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 10 and 11) 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.

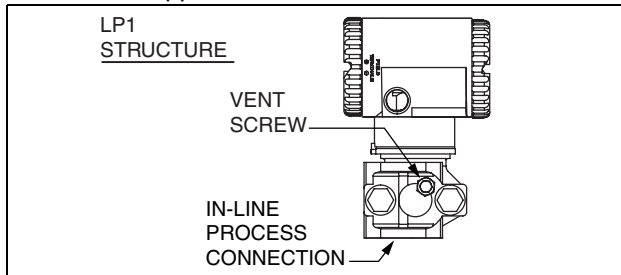


Figure 9. Upright Mounting

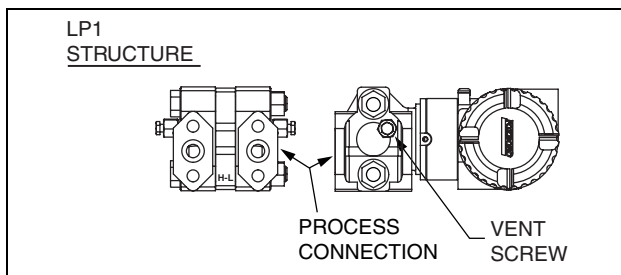


Figure 10. Horizontal Mounting with Vent Screw

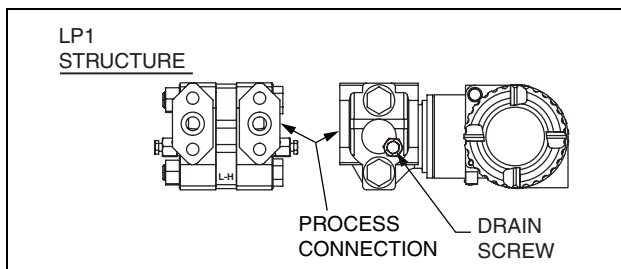


Figure 11. Horizontal Mounting with Drain Screw

Low Profile Structure LP2 - Bracket or Direct Mount

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 12 and 13.

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 14).

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.

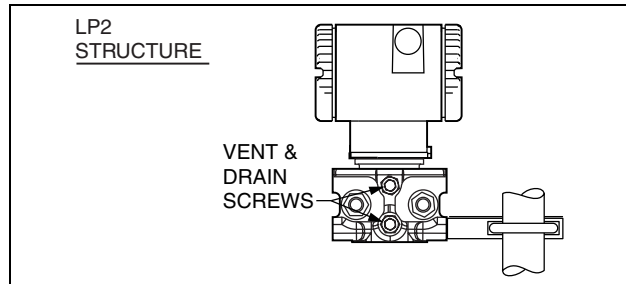


Figure 12. Shown on Foxboro Universal Bracket

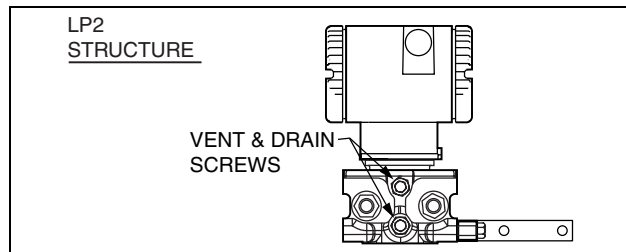


Figure 13. Shown on Coplanar Bracket

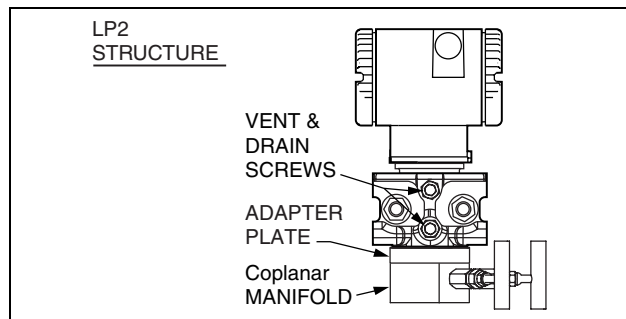


Figure 14. Adapter Mount to Existing Coplanar Manifold

FUNCTIONAL SPECIFICATIONS

Span and Range Limits

Span Limit Code	Span Limits			Range Limits (a)		
	kPa	inH ₂ O	mbar	kPa	inH ₂ O	mbar
B	0.63 and 50	2.5 and 200	6.3 and 500	-50 and +50	-200 and +200	-500 and +500
C	3.1 and 250	12.5 and 1000	31.3 and 2500	-250 and + 250	-1000 and +1000	-2500 and +2500

(a) Positive values indicate HI side of sensor at the high pressure, and negative values indicate LO side of sensor at the high pressure.

Maximum Static and Proof Pressure Ratings for IDP50 Multirange Differential Pressure Transmitters

Span Limit Code	Transmitter Configuration (See Model Code for Description of Options)	Static Pressure Rating (a)			Proof Pressure Rating (b)		
		MPa	psi	bar or kg/cm ²	MPa	psi	bar or kg/cm ²
All	With Option -Y or -D9	40	5800	400	100	14 500	1000
Span Limit Codes	Standard or with Option -B2, -D3, -D7, -P3, -P7	25	3625	250	100	14500	1000
	With Option -B3, -P4, -P8	20	2900	200	70	11150	700
	With Option -D1	16	2320	160	64	9280	640
	With Option -B1, -D5, -P2, -P6	15	2175	150	60	8700	600
	With Option -D2, -D4, -D6, -D8	10	1500	100	40	6000	400

(a) Static pressure rating of 40 MPa (5800 psi) is optionally available by selecting Option Code -Y. See Model Code section for restrictions with certain options.

(b) Proof pressure ratings meet ANSI/ISA Standard S82.03-1988. Unit may become nonfunctional after application of proof pressure.

Output Signal and Configuration

FOXC0M PROTOCOL

Digital FoxCom and/or 4 to 20 mA. Configurable using an I/A Series system (with applicable FBMs), a PC-based configurator, or the optional LCD Indicator.

HART PROTOCOL

4 to 20 mA with HART Communications. When configured for multidrop applications, the mA signal is fixed at 4 mA to provide power to the Transmitter. Configurable using the HART Communicator, a PC-based configurator, or the optional LCD Indicator.

FOUNDATION FIELDBUS PROTOCOL

This digital, serial, two-way communication system runs at 31.25 kbits/s. The digital output signal is superimposed on the dc power signal on the bus, and controlled by a strict cycle schedule and protocol. Configurable using Host Computer (I/A Series System Workstation or a PC) having a fieldbus interface PWA, or optional LCD Indicator.

Electronics and Sensor Temperatures

Readable from I/A Series System, HART Communicator, Fieldbus Host Computer, or PC-based Configurator. Measurement is transmitter temperature, not necessarily process temperature.

Adjustable Damping

The transmitter response time is normally 0.75 s, or the electronically adjustable setting of 0.00 (none), 0.25, 0.50, 1, 2, 4, 8, 16, or 32 seconds, whichever is greater, for a 90% recovery from an 80% input step as defined in ANSI[®]/ISA[®] S51.1 (for 63.2% recovery, 0.50 s). With FOUNDATION Fieldbus, additional damping is available because damping can be set on both the Transducer and AI blocks.

Suppressed Zero and Elevated Zero

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

Zero and Span Adjustments

Zero and span adjustments can be initiated from any of the following: I/A Series Workstation (with applicable FBMs), HART Communicator, a PC-based Configurator, or the optional LCD Indicator with on-board pushbuttons.

Zeroing for Nonzero-Based Ranges

Dual Function Zeroing is provided to allow zeroing with the transmitter open to atmosphere, even when there is a nonzero-based range. This greatly simplifies position effect zeroing on many pressure and level applications. It applies to Optional LCD Indicator Pushbuttons and Optional External Zero Adjustment.

FUNCTIONAL SPECIFICATIONS (Cont.)

Supply Voltage

DIGITAL OUTPUT

Version -D Electronics (FoxCom)

Power supplied through I/A Series System

Version -T Electronics (HART)

Bidirectional digital signal superimposed on the 4 to 20 mA current signal.

Version -F Electronics (FOUNDATION Fieldbus)

Power supplied through a specific Fieldbus power supply connected to the bus.

4 TO 20 mA (FoxCom/-D AND HART/-T)

Minimum supply voltage shown in Figure 15 is 11.5 V dc. This can be reduced to 11 V dc by using a plug-in jumper on the terminal block. See Figure 23.

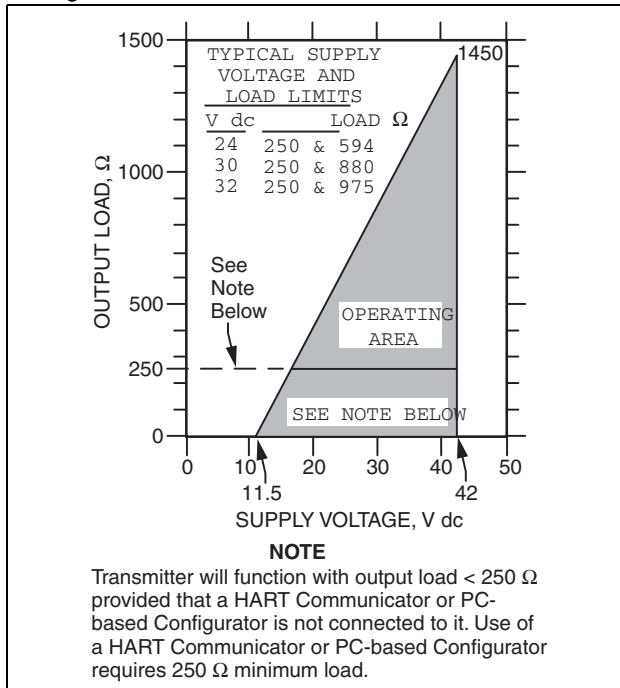


Figure 15. 4 to 20 mA Output, Supply Voltage vs. Output Load

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).
- Flow Cutoff in Engineering Units (Fieldbus Only)

Field Wiring Reversal

No transmitter damage.

Write Protect Jumper

Can be positioned to lock out all configurators from making transmitter database changes. This makes transmitter suitable for Safety Shutdown System Applications that require this feature.

Current Outputs for Overrange, Fail, and Offline Conditions - FoxCom and HART Only

Parameter	FoxCom	HART
OFFLINE	User configurable between 4 and 20 mA	
SENSOR FAILURE	User configurable to Fail LO or Fail HI	
FAIL LO	3.60 mA	3.60 mA
UNDERRANGE	3.75 mA	3.80 mA
OVERRANGE	21.00 mA	20.50 mA
FAIL HI	22.00 mA	21.00 mA

Minimum Allowable Absolute Pressure

The transmitter may be used to full vacuum with process temperatures up to 121°C (250°F).

Configuration and Calibration Data, and Electronics Upgradeability

All factory characterization data, and user configuration and calibration data, are stored in the sensor. This means that 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 trip 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.

FUNCTIONAL SPECIFICATIONS (Cont.)

Configuration Capability (See Note below)

CALIBRATED RANGE

- Input range within Span and Range Limits.
- Pressure EGU (see Table 1).

OUTPUT MEASUREMENT #1 —

DIGITAL PRIMARY VARIABLE;

AND 4 TO 20 mA (FoxCom AND HART ONLY)

Mode

Linear or Square Root

Units for Linear Mode

Same as calibrated range;
or a Custom EGU (FoxCom and Fieldbus only)

Units for Square Root Mode

% of flow;
or a Custom EGU (FoxCom and Fieldbus only)

OUTPUT MEASUREMENT #2 —

DIGITAL SECONDARY VARIABLE

Mode

Linear or Square Root (Independent of Measurement #1)

Units for Linear Mode

A common pressure EGU, or a custom EGU (FoxCom and Fieldbus only)

Units for Square Root Mode

% of flow; or a Custom EGU (FoxCom and Fieldbus only)

Measurements #1 and #2

These measurements may be swapped.

NOTE

Numerous parameters can be configured and/or displayed, such as electronic damping, failsafe direction, transmitter location, calibration, tag data, etc. See configuration documents for details.

FoxCom (Version -D) Communications

DIGITAL MODE (FIXED CURRENT)

Digital Output signal is updated 10 times per second and carries the pressure measurement, and sensor and electronics temperature measurements. See Table 2 for communication parameters.

4 TO 20 mA ANALOG MODE

Analog output is updated a minimum of 30 times per second. A minimum loop load of 200 ohms is required. See Table 2 for communication parameters.

HART (Version -T) Communications

4 TO 20 mA ANALOG MODE

Analog output signal is updated 30 times per second. A minimum loop load of 250 ohms is required. See Table 2 for communication parameters.

MULTIDROP MODE (FIXED CURRENT)

This Mode supports communications with up to 15 transmitters on a single pair of signal/power wires. The output signal is updated 4 times/second. A minimum loop load of 250 ohms is required. See Table 2 for communication parameters.

FOUNDATION Fieldbus (Version -F)

Communications

Fieldbus is a serial, two-way communication system that runs at 31.25 kbits/s. The digital output signal is superimposed on the dc power signal on the bus, and controlled by a strict cycle schedule and protocol. Supply voltage, 9 to 32 V dc, is by a specific Fieldbus power source. Current consumption is 19.5 mA and Virtual Communication Relationship is 20 VCR. The maximum number of devices on a bus is 32 for non-intrinsically safe locations, and 6 when in an intrinsically safe location. See Table 2 for communication parameters.

Table 1.

Allowable Pressure Units for Calibrated Range

inH ₂ O	cmH ₂ O (a)	cmHg (a)	kPa	mbar	kg/cm ²
ftH ₂ O	inHg	dy/cm ² (a)	MPa	bar	psi
mmH ₂ O	mmHg	Pa	torr	g/cm ²	atm

(a) Available with FoxCom electronics (Version -D) only.

Table 2. Communication Parameters - FoxCom, HART, and FOUNDATION Fieldbus

Parameter	FoxCom		HART		Fieldbus
	Analog Mode	Digital Mode	Analog Mode	Multidrop Mode	Digital
Remote Configurator	PC-based Configurator, or I/A Series System		HART Communicator or PC-based Configurator		I/A Series System, PC or Fieldbus Certified Host
Communication Rate	600 baud	4800 baud	1200 baud	1200 baud	31.25 kbits/s
Communication Distance (Rated)	1800 m (6000 ft)	600 m (2000 ft)	3050 m (10 000 ft)	1525 m (5000 ft)	1900 m (a) (6235 ft) (a)

(a) Total cable length includes spur length. Maximum spur length is 120 m (395 ft). Minimum spur length is 1 m (3.3 ft). For intrinsically safe installations, maximum spur length is 30 m (98 ft).

FUNCTIONAL SPECIFICATIONS (Cont.)

Optional LCD Indicator with On-Board Pushbuttons (Figure 16)

Indicator provides:

- Two Lines; five numeric characters on top line (four when a minus sign is needed) and seven alphanumeric characters on bottom line.
- Measurement Readout; value on top line and units label on bottom line.
- Configuration and Calibration Prompts.

Two pushbuttons provide for:

- Configuration Functions
- Calibration Functions

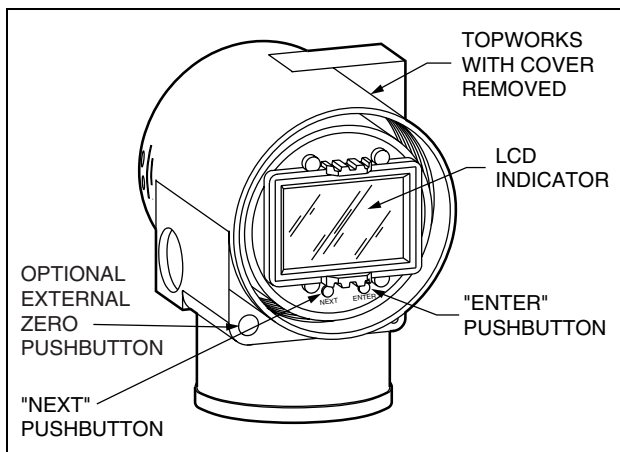


Figure 16. LCD Indicator with Pushbuttons

Optional External Zero Adjustment (Figure 16)

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

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 below for typical standard (default) and custom configurations.

Parameter	Standard (Default) Configuration	Typical Custom Configuration Option -C2
Measurement 1	Linear	Square Root
Device Name	DevNam	FT103A
External Zero	Enabled	Disabled
EGU	%	inH ₂ O
Damping	None	0.5 s

FUNCTIONAL SPECIFICATIONS (Cont.)

Refer to Figures 17 to 22 below for typical FoxCom, HART, and FOUNDATION Fieldbus installation topologies.

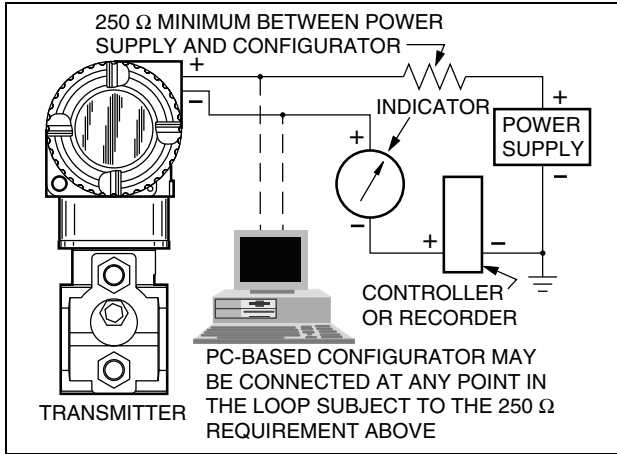


Figure 17. FoxCom 4 to 20 mA Topology

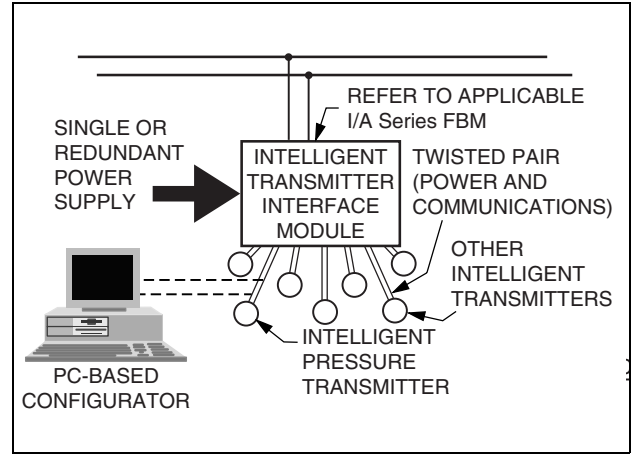


Figure 20. FoxCom Digital Topology

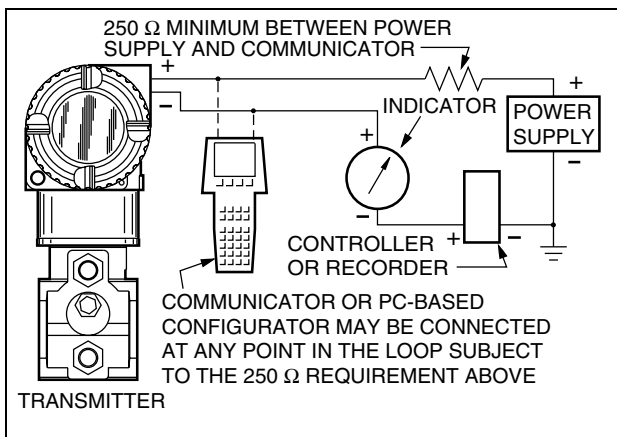


Figure 18. HART 4 to 20 mA Topology

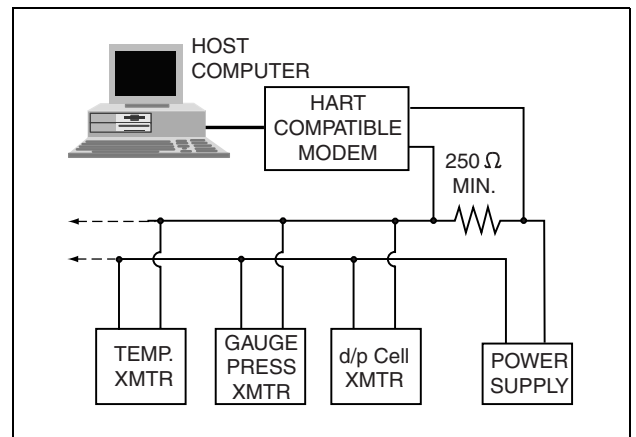


Figure 21. HART Multidrop Topology

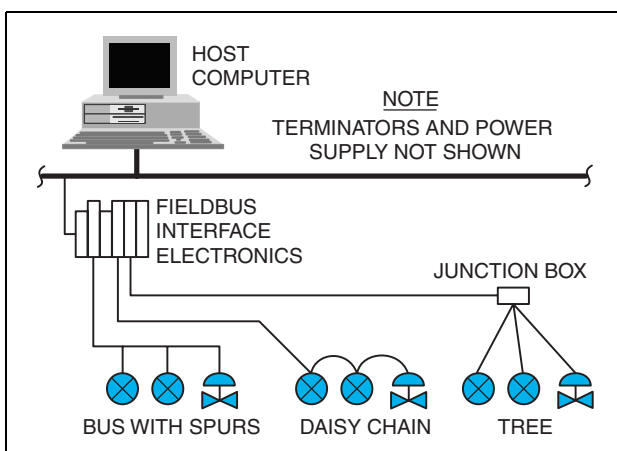


Figure 19. Fieldbus Miscellaneous Topologies

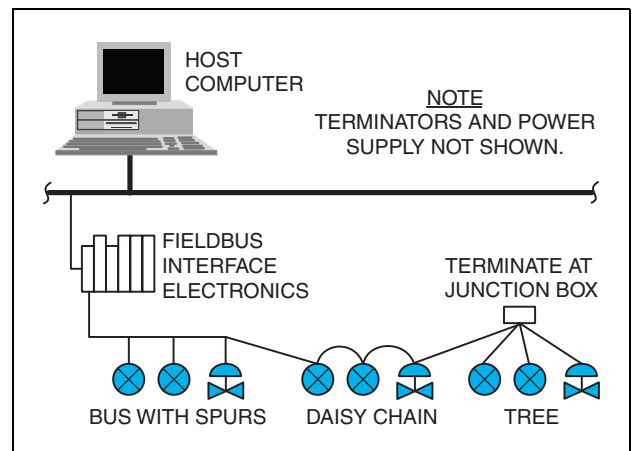


Figure 22. Fieldbus with Mixed Topologies

OPERATING, STORAGE, AND TRANSPORTATION CONDITIONS

Influence	Reference Operating Conditions	Normal Operating Conditions (a)	Operative Limits (a)	Storage and Transportation Limits
Process Connection Temp. (Silicone Fill Fluid)	• 24 ±2°C (75 ±3°F)	• -29 to + 82°C (-20 to +180°F)	• -46 and +121°C (b) (-50 and +250°F) (b)	• Not Applicable
Electronics Temperature • with LCD Indicator (Note c)	• 24 ±2°C (75 ±3°F) • 24 ±2°C (75 ±3°F)	• -29 to + 82 °C (-20 to +180 °F) • -20 to + 82 °C (-4 to +180 °F)	• -40 and +85°C (-40 and +185°F) • -29 and +85°C (-20 and +185°F)	• -54 and +85°C (-65 and +185°F) • -54 and +85°C (-65 and +185°F)
Relative Humidity (Note d)	50 ±10%	0 to 100%	0 and 100%	0 and 100% Noncondensing
Supply Voltage – mA Output FoxCom and HART	30 ±0.5 V dc	11.5 to 42 V dc (Note e)	11.5 and 42 V dc (Note e)	Not Applicable
Output Load – mA Output FoxCom and HART	650 Ω	0 to 1450 Ω (Note f)	0 and 1450 Ω (Note f)	Not Applicable
Supply Voltage FOUNDATION Fieldbus	30 ±0.5 V dc	9 to 32 V dc (Note g)	9 and 32 V dc (Note g)	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 from 5 to 9 Hz with 316 ss Housing 0 to 30 m/s ² (0 to 3 “g”) from 15 to 500 Hz with Aluminum Housing; 0 to 10 m/s ² (0 to 1 “g”) from 9 to 500 Hz with 316 ss Housing	11 m/s ² (1.1 “g”) from 2.5 to 5 Hz (in Shipping Package)	
Mounting Position	Upright or Horizontal (h)		No Limit	Not Applicable

- (a) When DIN Construction Options -D2/-D4/-D6/-D8 are used, temperature limits are reduced to 0 and 60° C (32 and 140°F).
- (b) Selection of Option -J extends the low temperature operative limit of the transmitter down to -50°C (-58°F).
- (c) Although the LCD 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 (not applicable to Fieldbus versions).
- (f) With FoxCom and HART, 250 Ω minimum load required for proper communication.
- (g) Power supplied by a specific Fieldbus power supply.
- (h) Sensor process wetted diaphragms in a vertical plane.

PERFORMANCE SPECIFICATIONS

Zero-Based Calibrations; Stainless Steel Sensor w/Silicone Fluid; Under Reference Operating Conditions unless otherwise Specified; URL = Upper Range Limit and Span = Calibrated Span

Accuracy (Includes Linearity, Hysteresis, and Repeatability)

±0.05% of Span.

Stability

Long term drift is less than ±0.02% of URL per year over a 5-year period.

Power-up Time

Less than 5 seconds for output to reach first valid measurement.

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 cable in conduit and earthing (grounding), and housing covers are in place. (Per IEC Std. 801-3.)

Supply Voltage Effect

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

Vibration Effect

Total effect is ±0.2% of URL per “g” for vibrations in the frequency range of 5 to 500 Hz; with double amplitudes 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 double amplitudes 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.

Position Effect

Transmitter may be mounted in any position. Any zero effect caused by 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

Span Code	Zero Shift-Static Pressure Effect
B	±0.07% of URL
C	±0.02% of URL

SPAN SHIFT

±0.1% of Reading

Ambient Temperature Effect

Total effect for a 28°C (50°F) change within Normal Operating Condition limits is:
±(0.015% URL + 0.030% Span)

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. 801-5.)

PHYSICAL SPECIFICATIONS

Environmental Protection

Transmitter is dusttight and weatherproof per IEC IP66 and provides the environmental and corrosion resistant protection of NEMA Type 4X.

Process Cover and Process Connector Gaskets

Glass filled ptfе (Chemloy)

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 PH ss bolting, and 316 ss bolting.

Sensor Material (Process Wetted)

316L ss

Process Cover and Connector Material (Process Wetted)

316 ss

Sensor Fill Fluid

Silicone Oil

Electronics Module

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

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.

Mounting Position

The transmitter may be mounted in any orientation.

Electrical Connections

Field wires enter through 1/2 NPT, PG 13.5, or M20 threaded entrances on either side of the electronics housing. Wires terminate under screw terminals and washers on terminal block in the field terminal compartment (Figure 23). Unused entrance is plugged to insure moisture and RFI/EMI protection.

Approximate Mass

- 3.5 kg (7.8 lb) – Aluminum housing; and without Process Connectors
- 4.2 kg (9.2 lb) – Aluminum Housing; and with Process Connectors
- 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 DP 020-446.

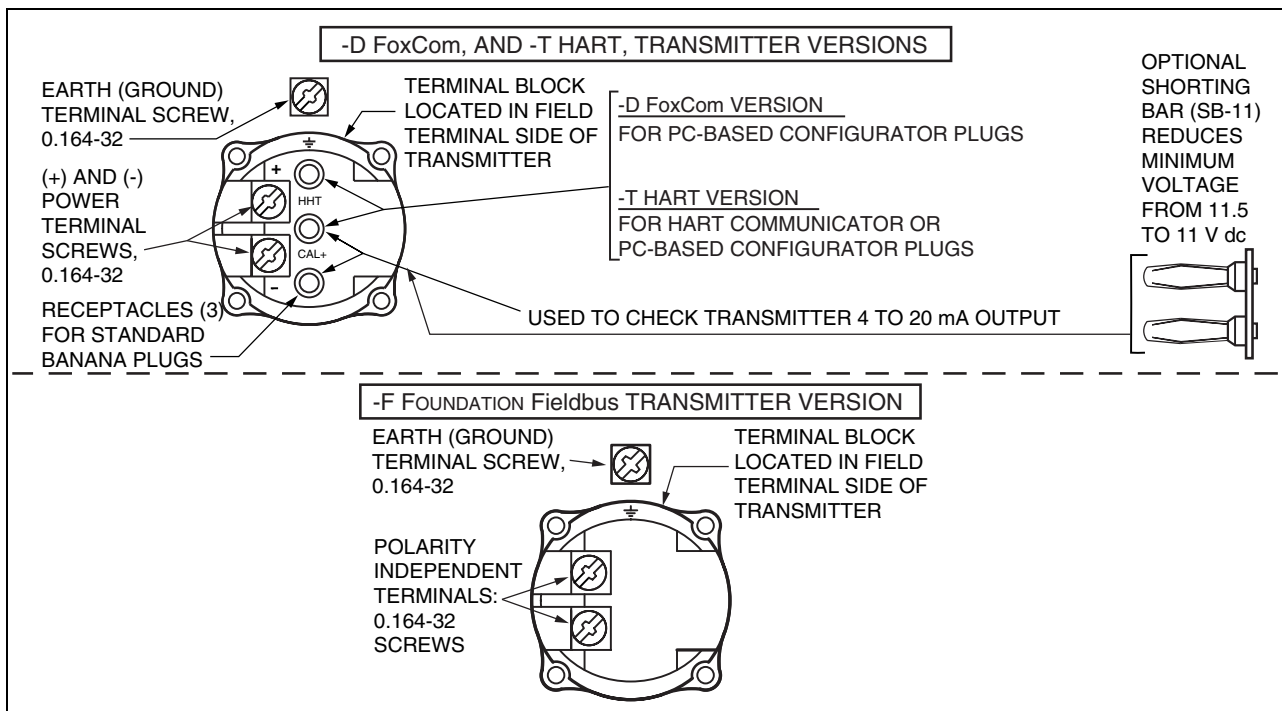


Figure 23. Field Terminals Compartment for FoxCom, HART, and Fieldbus

ELECTRICAL SAFETY SPECIFICATIONS

Testing Laboratory, Types of Protection, and Area Classification	Electrical Safety Design Code
ATEX intrinsically safe; II 1 GD, EEx ia IIC, Zone 0; or II 1/2 G EEx ib IIC, Zone 0/Zone 1.	E
ATEX flameproof; II 2 GD, EEx d IIC, Zone 1.	D
ATEX protection n; II 3 GD, EEx nL IIC, Zone 2.	N
ATEX multiple certifications, ia and ib, d, and n.	M
CSA intrinsically safe for Class I, Division 1, Groups A, B, C, and D, Class II, Division 1, Groups E, F, and G, and Class III, Division 1. Also Class I, Division 2, Groups F and G, and Class III, Division 2. Explosionproof for Class I, Division 1, Groups B, C, and D; and dust-ignitionproof for Class II, Division 1, Groups E, F, and G, and Class III, Division 1. <u>Electronics Version T</u> also zone certified intrinsically safe Ex ia IIC, and also Ex n IIC.	C (Electronics -D and -T only)
CSA explosionproof for Class I, Division 1, Groups B, C, and D; and dust-ignitionproof for Class II, Division 1, Groups E, F, and G, and Class III, Division 1.	C (Electronics -F only)
CSA zone certified flameproof Ex d IIC. Also explosionproof for Class I, Division 1, Groups B, C, and D, and dust-ignitionproof for Class II, Division 1, Groups E, F, and G, and Class III, Division 1. Also intrinsically safe for Class I, Division 1, Groups A, B, C, and D, Class II, Division 1, Groups E, F, and G, and Class III, Division 1; and Class I, Division 2, Groups F and G, and Class III, Division 2. <u>Electronics Version T</u> also zone certified intrinsically safe Ex ia IIC.	B (Electronics -D and -T only)
CSA zone certified flameproof Ex d IIC. Also explosionproof for Class I, Division 1, Groups B, C, and D; and dust-ignitionproof for Class II, Division 1, Groups E, F, and G, and Class III, Division 1.	B (Electronics -F only)
FM intrinsically safe for Class I, Division 1, Groups A, B, C, and D, Class II, Division 1, Groups E, F, and G, and Class III, Division 1. Also nonincendive Class I, Division 2, Groups F and G, and Class III, Division 2. Explosionproof for Class I, Division 1, Groups B, C, and D; and dust-ignitionproof for Class II, Division 1, Groups E, F, and G, and Class III, Division 1. <u>Electronics Version T</u> also zone approved intrinsically safe AEx ia IIC and nonincendive AEx n IIC	F (Electronics -D and -T only)
FM explosionproof for Class I, Division 1, Groups B, C, and D; and dust-ignitionproof for Class II, Division 1, Groups E, F, and G, and Class III, Division 1.	F (Electronics -F only)
FM zone approved flameproof AEx d IIC. Also explosionproof for Class I, Division 1, Groups B, C, and D; and dust-ignitionproof for Class II, Division 1, Groups E, F, and G, and Class III, Division 1. Also intrinsically safe for Class I, Division 1, Groups A, B, C, and D, Class II, Division 1, Groups E, F, and G, and Class III, Division 1; and nonincendive Class I, Division 2, Groups F and G, and Class III, Division 2. <u>Electronics Version T</u> also zone approved intrinsically safe AEx ia IIC and nonincendive AEx n IIC.	G (Electronics -D and -T only)
SAA Ex ia IIC, intrinsically safe, Gas Group IIC, Zone 0	H
SAA Ex d IIC, flameproof, Gas Group IIC, Zone 1.	A
SAA Ex n IIC, nonincendive, Gas Group IIC, Zone 2	K

NOTES

1. Transmitter has been designed to meet the electrical safety descriptions listed. Contact Invensys Foxboro for information or status of testing laboratory approvals or certifications.
2. See Model Code for availability of Electrical Safety Design Codes with particular Electronics Versions and Transmitter Structures.
3. Refer to applicable Instruction Manual for application conditions and connectivity requirements.

WARNING

When selecting ATEX Safety Design Code M, the user must permanently mark (check off in rectangle block on data plate) one type of protection only (ia and ib, d, or n), and must not change this mark.

MODEL CODE

<u>Description</u>	<u>Model</u>
I/A Series, Premium Performance, Differential Pressure Transmitter	IDP50
<u>Electronics Versions and Output Signal</u>	
Intelligent; Digital, FoxCom or 4 to 20 mA dc, Configurable (Version -D)	-D
Intelligent; Digital HART and 4 to 20 mA dc (Version -T)	-T
Intelligent; Digital FOUNDATION Fieldbus (Version -F)	-F
<u>Structure Code - Select from one of the following three groups:</u>	
<u>1. Transmitter with Traditional Structure</u>	
Process Cover 316 ss	Sensor 316L ss
Sensor Fill Fluid Silicone	22
<u>2. Transmitter with Low Profile Structure LP1</u>	
Process Cover 316 ss	Sensor 316L ss
Sensor Fill Fluid Silicone	LL
<u>3. Transmitter with Low Profile Structure LP2</u>	
Process Cover 316 ss	Sensor 316L ss
Sensor Fill Fluid Silicone	52
<u>Span Limits (Differential Pressure Units)</u>	
kPa	inH₂O
0.63 and 50	2.5 and 200
3.1 and 250	12.5 and 1000
	mbar
	6.3 and 500
	31.3 and 2500
	B
	C
<u>Process Connector Type (Removable - Used with and Same Material as Process Cover)</u>	
None; Process Covers have 1/4 NPT Internal Thread	0
1/4 NPT	1
1/2 NPT	2
Rc 1/4	3
Rc 1/2	4
1/2 Schedule 80 Welding Neck	6
<u>Conduit Connection and Housing Material</u>	
1/2 NPT Conduit Connection, Aluminum Housing	1
PG 13.5 Conduit Connection, Aluminum Housing (With Electrical Safety Codes E, D, M, and N only)	2
1/2 NPT Conduit Connection, 316 ss Housing	3
PG 13.5 Conduit Connection, 316 ss Housing (With Electrical Safety Codes E, D, M, and N only)	4
M20 Conduit Connection, Both Sides, Aluminum Housing (With Electrical Safety Codes E, D, M, and N only)	5
M20 Conduit Connection, Both Sides, 316 ss Housing (With Electrical Safety Codes E, D, M, and N only)	6
<u>Electrical Safety (Also see Electrical Safety Specifications section)</u>	
ATEX II 1 GD, EEx ia IIC, Zone 0; or II 1/2 GD, EEx ib IIC, Zone 0/Zone 1(I)	E
ATEX II 2 GD, EEx d IIC, Zone 1 (a)	D
ATEX II 3 GD, EEx nL IIC, Zone 2 (I)	N
ATEX Multiple Certifications (includes ATEX Codes E, D, and N) (a)(I) (See Electrical Safety Specifications section for <u>user marking</u>)	M
CSA for Versions -D and -T only; Division 1 intrinsically safe and explosionproof Also Version -T zone certified Ex ia IIC and Ex n IIC	C
CSA for Version -F only; Division 1 explosionproof	C
CSA for Versions -D and -T only; zone certified Ex d IIC; (a) Also Version -T zone certified Ex ia IIC; Also Versions -D and -T Division 1 explosionproof and intrinsically safe	B
CSA for Version -F only; zone certified Ex d IIC; also Division 1 explosionproof (a)	B
FM for Versions -D and -T only; Division 1 intrinsically safe and explosionproof; Also Version -T zone approved AEx ia IIC and AEx n IIC.	F
FM for Version -F only; Division 1 explosionproof	F
FM for Versions -D and -T only; zone approved AEx d IIC; (a) Also Version -T zone approved AEx ia IIC and AEx n IIC; Also Versions -D and -T approved explosionproof and intrinsically safe	G
SAA Certified Ex ia IIC, Zone 0 (I)	H
SAA Certified Ex, d, IIC, Zone 1 (I)	A
SAA Certified Ex n, IIC, Zone 2 (I)	K

Model Code continued on next page

MODEL CODE (Cont.)

Optional Selections	
Refer to Optional Selections below.	
Mounting Bracket Set	
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 (j)	-M3
Digital Indicator with Pushbuttons	
Digital Indicator, Pushbuttons, and Window Cover	-L1
DIN 19213 Construction used with Process Connector Code 0 and 316 ss Covers with no side vents	
Single Ended Process Cover with M10, B7 Steel Bolting (b)(m)	-D1
Double Ended Process Cover with M10, B7 Steel Bolting; Blind Kidney Flange on Back (b)(c)(d)	-D2
Single Ended Process Cover with 7/16 in, B7 Steel Bolting; Standard Rating 25 MPa (3625 psi) (m)	-D3
Double Ended Process Cover with 7/16 in, B7 Steel Bolting; Blind Kidney Flange on Back (b)(c)(d)	-D4
Single Ended Process Cover with 7/16 in, 316 ss Bolting (b)(m)	-D5
Double Ended Process Cover with 7/16 in, 316 ss Bolting; Blind Kidney Flange on Back (b)(c)(d)	-D6
Single Ended Process Cover with 7/16 in, 17-4 ss Bolting; Standard Rating 25 MPa (3625 psi) (m)	-D7
Double Ended Process Cover with 7/16 in, 17-4 ss Bolting; Blind Kidney Flange on Back (b)(c)(d)	-D8
Single Ended Process Cover with 7/16 in, 17-4 ss Bolting; Rated 400 bar, 5800 psi, 40 MPa (m)	-D9
Not available with Option Codes -V, -B1, -B2, -B3, or -Y	
Cleaning and Preparation	
Unit Degreased - for Silicone Filled Sensors Only (Not for Oxygen/Chlorine/Other Fluids that may react with Silicone)	-X1
Bolting for Process Covers/Connectors (e)	
316 ss Bolts and Nuts (Pressure Derated; Not Available with -Y Option)	-B1
17-4 ss Bolts and Nuts	-B2
B7-M Bolts and Nuts (NACE) (b)(k)	-B3
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 (f)	-A1
Plastic PG 13.5 Cable Gland for use with Conduit Connection Codes 2 and 4 (g)	-A2
M20 Conduit Thread Adapter for use with Conduit Connection Codes 1 and 3 (f)	-A3
Brass PG 13.5 Cable Gland (Trumpet-Shaped) for use w/Conduit Connection Codes 2 and 4 (g)	-A4
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	
Digital Output (4 to 20 mA default if not selected); for Electronics Version -D only	-C1
Full Factory Configuration (Requires Configuration Form to be Filled Out)	-C2
Tubing Connectors	
316 ss, Connecting 6 mm Tubing to 1/4 NPT Process Connector Only with Structure Code 22; and Process Connector Codes 0 and 1	-E3
316 ss, Connecting 12 mm Tubing to 1/2 NPT Process Connector Only with Structure Code 22; and Process Connector Code 2	-E4
Vent Screw in Process Cover	
Supply Vent Screw in Side of Each Process Cover (Available only with Structure Code 22)	-V
Omit Vent Screw in Side of Each Process Cover (Available only with Structure Code LL)	-V1
Adapter Plate, Bolts, and Gaskets for Direct Mount to Competitive Manifolds (n)	
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

Model Code continued on next page

MODEL CODE (Cont.)

<p>Optional Selections (Continued)</p> <p><u>Instruction Books (Common MI, Brochure, and Full Documentation Set on CD-ROM is Standard)</u> Without Instruction Book and CD; only "Getting Started" brochure is supplied.</p> <p><u>Miscellaneous Optional Selections</u> Low Temperature Operative Limit of Electronics Housing Extended Down to -50°C (-58°F) – Not available with DIN Options -D2, -D4, -D6, and -D8 Supplemental Customer Tag (Stainless Steel Tag wired onto Transmitter) Five Year Warranty Static Pressure Rating to 40 MPa (5800 psi); Not available with: – Options -B1, -B2, and -B3 (h) – Options -D1 to -D9</p>	<p>-K1</p> <p>-J</p> <p>-T</p> <p>-W</p> <p>-Y</p>
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- (a) A cover lock is provided as standard with Electrical Safety Codes D, B, G, and M.
- (b) See Functional Specifications section for pressure deratings when some DIN 19213 options and Bolting Options -B1/-B3 are specified.
- (c) 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.
- (d) Mounting Bracket Set options are not available.
- (e) Not available with DIN construction options. For stainless steel bolts with DIN construction, specify -D5 to -D9, as required.
- (f) Available with Electric Safety Codes E, D, M, and N only.
- (g) Available with Electrical Safety Code E only.
- (h) -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.
- (j) Bracket Set Option -M3 is not available with Structure Code LL.
- (k) Selection of Option -B3 normally requires selection of AS Reference MR-01.
- (l) Contact Invensys Foxboro for certification status with Electronics Version -F.
- (t) Not available with Low Profile Structure Codes 52-57.
- (v) Adapter plate options -P1 to -P8 are not available with:
 - DIN Construction Options -D1, -D2, -D4, -D5, -D6, -D7, -D8, -D9.
 - Process Connector Codes 1-7.

SUGGESTED RFQ SPECIFICATIONS

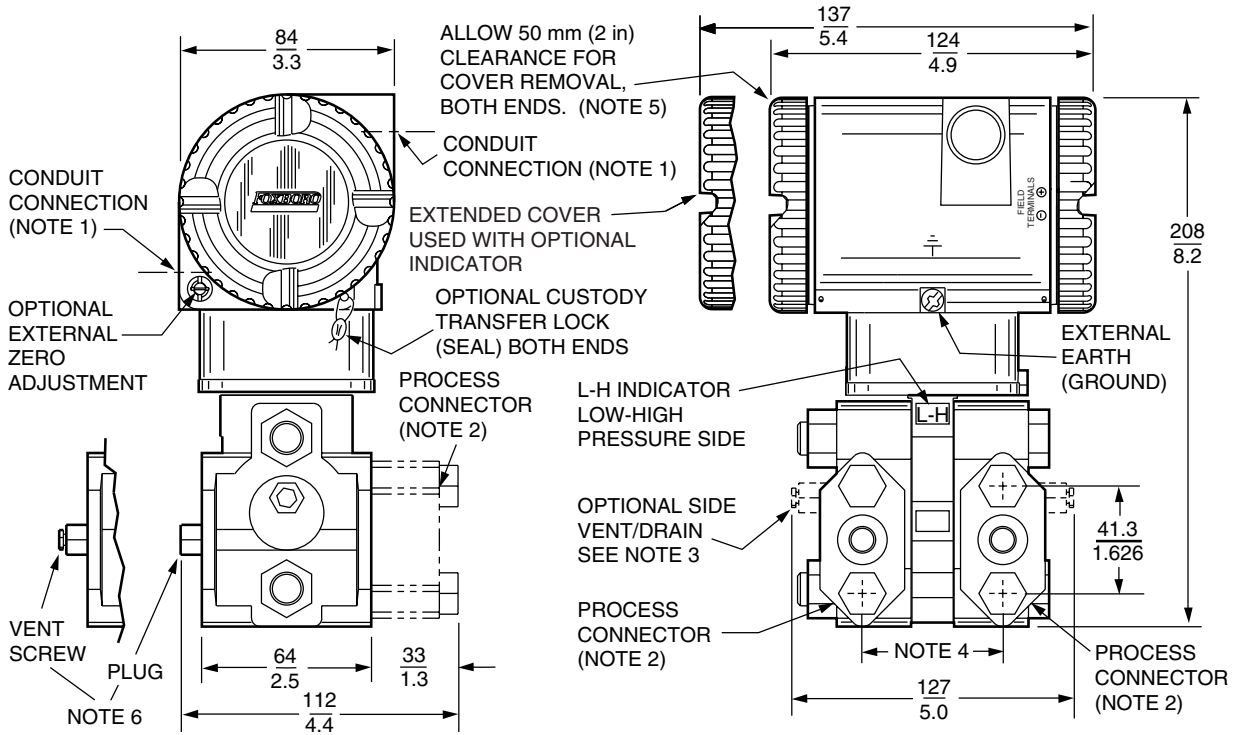
The manufacturer shall provide multirange field-mounted differential pressure transmitters featuring FoxCom, HART, or FOUNDATION Fieldbus Communication Protocol. They shall provide remote digital communications capability for measuring differential pressure, and transmit a digital, or 4 to 20 mA dc (FoxCom and HART only), output signal for use in a standard two-wire dc supply voltage system.

Communication Protocol:	FoxCom: Digital or 4 to 20 mA dc output signal (configurable) HART: Digital and 4 to 20 mA dc output signal FOUNDATION Fieldbus: Digital output signal
Remote Communications:	Must not interfere with output
Accuracy:	±0.05% of calibrated span for any span within span limits
Damping:	Settable for a range of none to 32 seconds
RFI Protection:	0.1% error between 27 and 1000 MHz at 30 V/m field intensity
Proof Pressure:	14 500 psi for standard transmitter
Span Limits:	2.5 and 200 inH ₂ O, or 12.5 and 1000 inH ₂ O, as specified; or SI and metric equivalents.
Mounting:	On process piping, 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.
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. Optional integral LCD Indicator with on-board configuration pushbuttons.
Process Cover:	Traditional Structures Industry standard 316 ss Low Profile Structures: Industry standard 316 ss
Sensor Materials:	Traditional Structure: Industry standard 316L ss Low Profile Structures: Industry standard 316L ss
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 Code:	I/A Series Intelligent Premium Performance IDP50 d/p Cell Transmitter with either FoxCom, HART, or FOUNDATION Fieldbus Communication Protocol, or equivalent.

DIMENSIONS - NOMINAL

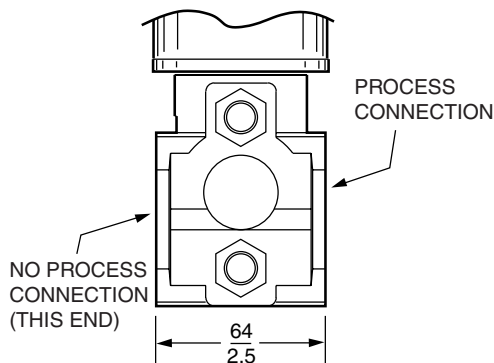
**mm
in**

TRANSMITTER WITH TRADITIONAL STRUCTURE

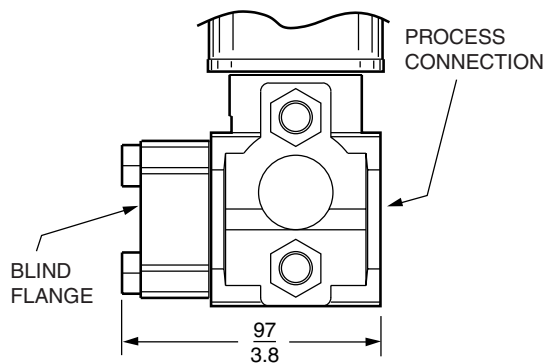


NOTES:

1. CONDUIT CONNECTION 1/2 NPT OR PG 13.5 OR M20, BOTH SIDES: PLUG UNUSED CONNECTION WITH METAL PLUG (SUPPLIED).
2. PROCESS CONNECTORS MAY BE REMOVED AND 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.



OPTIONAL DIN CONSTRUCTION
SINGLE ENDED PROCESS COVER
OPTIONS -D1, -D3, -D5, -D7, -D9

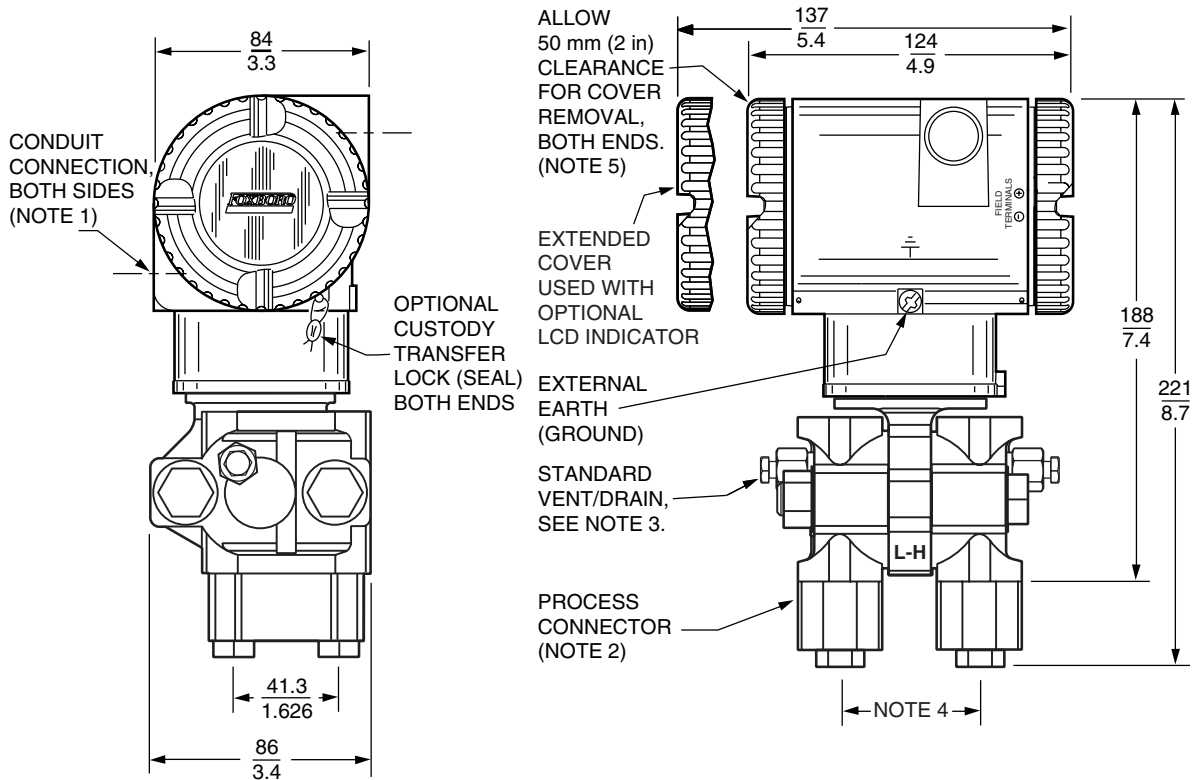


OPTIONAL DIN CONSTRUCTION
DOUBLE ENDED PROCESS COVER
OPTIONS -D2, -D4, -D6, AND -D8

DIMENSIONS - NOMINAL (Cont.)

**mm
in**

TRANSMITTER WITH LOW PROFILE STRUCTURE LP1



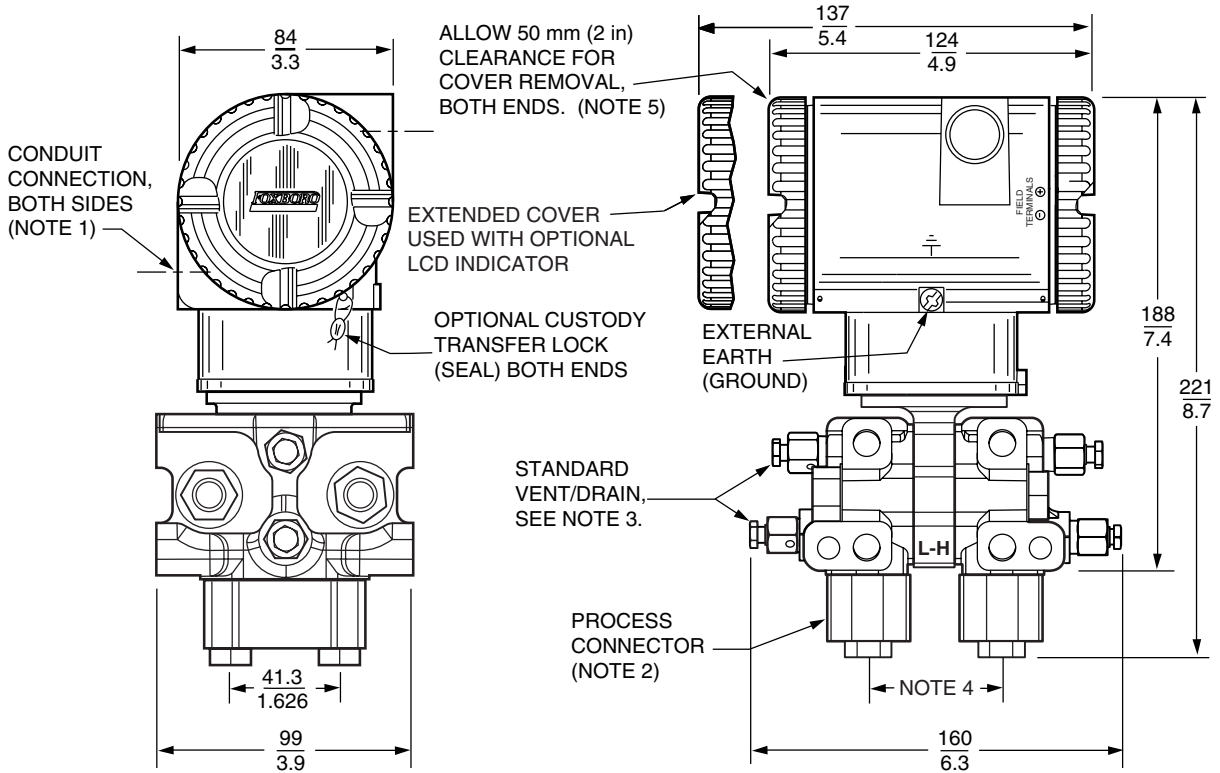
NOTES:

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



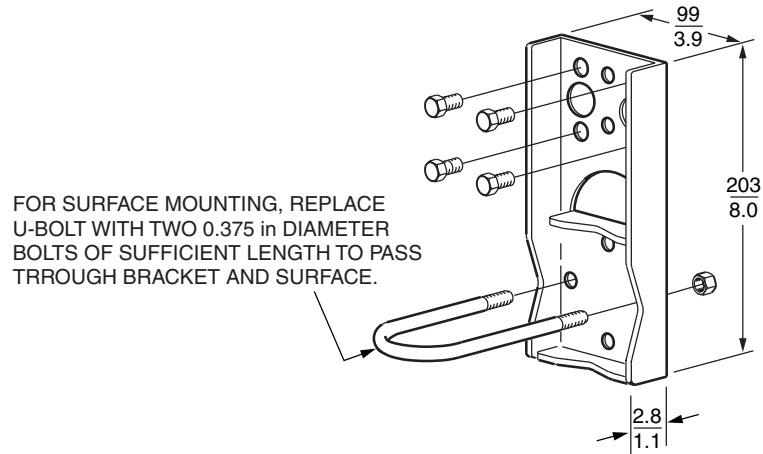
NOTES:

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.

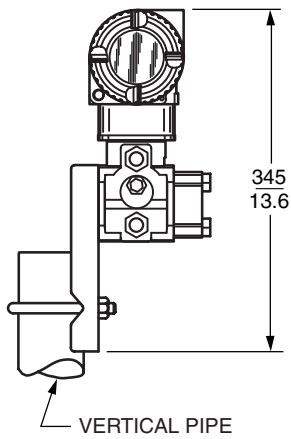
DIMENSIONS - NOMINAL (Cont.)

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

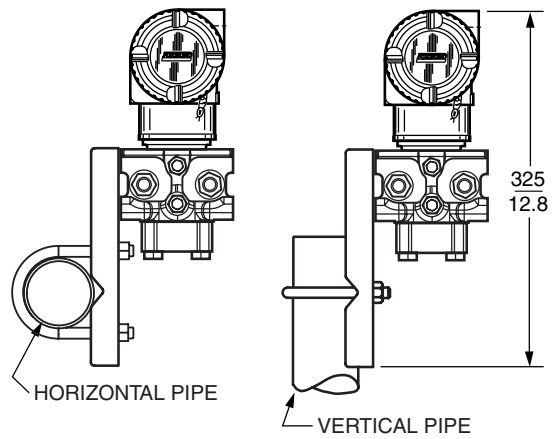
TRANSMITTER WITH STANDARD STYLE MOUNTING BRACKET KIT
OPTIONS -M1 and -M2



TRANSMITTER WITH TRADITIONAL STRUCTURE



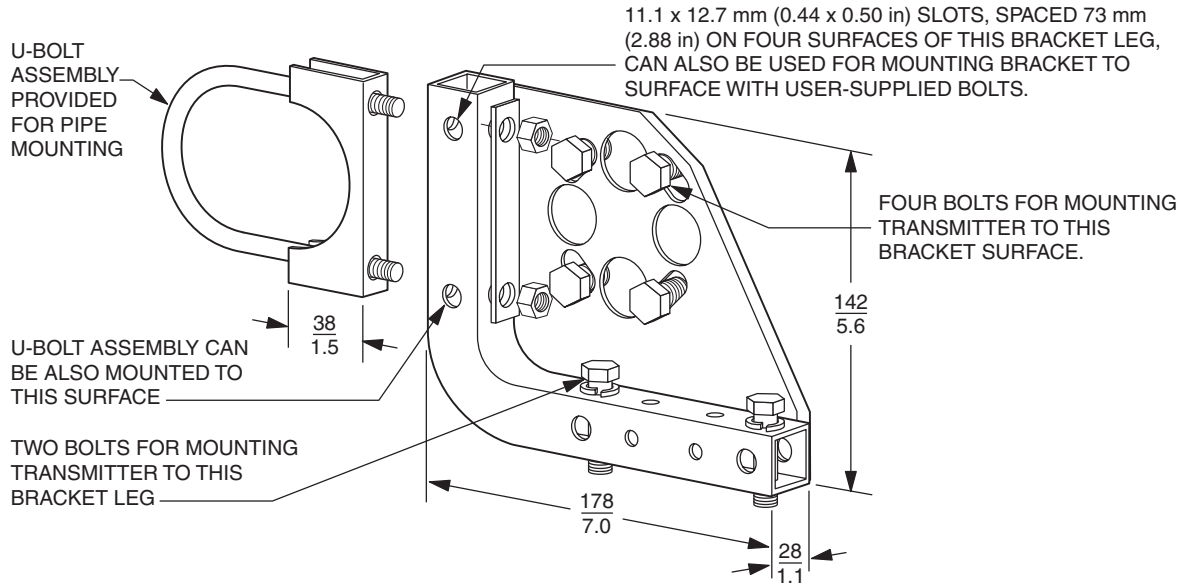
TRANSMITTER WITH LOW PROFILE STRUCTURE LP2



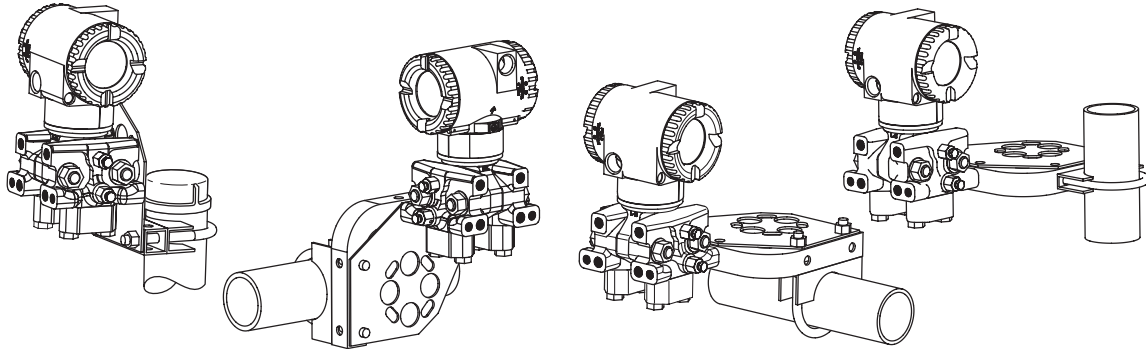
DIMENSIONS - NOMINAL (Cont.)

**mm
in**

**TRANSMITTER WITH UNIVERSAL STYLE MOUNTING BRACKET KIT
OPTION -M3**

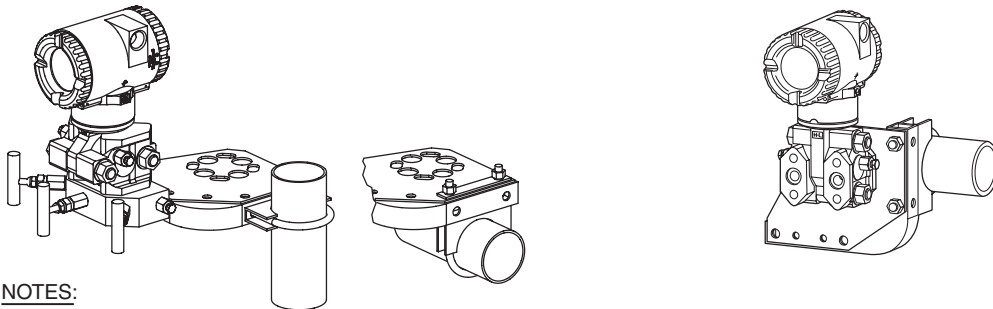


TYPICAL PIPE MOUNTING WITH LOW PROFILE STRUCTURE LP2



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 IDP25 MOUNTING CONFIGURATIONS, INCLUDING MOUNTING WITH -P SERIES OPTIONAL MOUNTING PLATES.