

Introduction

The next generation family of pressure transmitters are intelligent, open-loop, two-wire measuring devices that convert process pressure to a proportional analog and/or digital signal. The versatility of the Value, Advanced, and Performance transmitter families allow you to select the transmitter best suited for your application in terms of features, performance, and price.



Value Performance Transmitters

The competitively priced IAP05S, IGP05S, and IDP05S pressure transmitters provide a robust design without compromising quality. This transmitter family has been designed for applications requiring an accuracy of up to $\pm 0.075\%$ of span, and HART transmitters are SIL 2 certified.

- Remote communication capabilities
- Stability: $< \pm 0.05\%$ of URL/yr for 5 years
- Direct Connect AP/GP response time: < 100 ms
- SIL 2 as standard (HART)
- Robust design: 2-year warranty (optional 5-year warranty)
- DP and Biplanar AP/GP response time: < 125 ms
- High pressure measurement (direct connect GP) and low power options
- In-service time tracking (HART)
- High Turndown Capability¹ (up to 400:1)

Advanced Performance Transmitters

Considered the one transmitter that can do it all, the IAP10S, IGP10S, and IDP10S pressure transmitters cover most of your application needs with a single range. These transmitters offer embedded FoxCal™ technology and multiple points of calibration, which allow you to benefit from wide rangeability and one of the best reference accuracy turndowns on the market. These transmitters have an accuracy of up to $\pm 0.05\%$ of reading, and HART transmitters are SIL 2 certified.

- Remote communication capabilities
- Stability: $< \pm 0.03\%$ of URL/yr for 10 years
- Direct Connect AP/GP response time: < 100 ms
- SIL 2 as standard (HART)
- Robust Design: 5-year warranty (optional 17-year warranty)
- DP and Biplanar AP/GP response time: < 125 ms
- FoxCal™ technology
- In-service time tracking
- High Turndown Capability¹ (up to 400:1)

Premium Performance Transmitters

Transmitters with high accuracy are required for the most demanding applications, and with an accuracy of up to $\pm 0.025\%$ of reading, the IAP50S, IGP50S, and IDP50S pressure transmitters fit the bill. These transmitters offer embedded FoxCal™ technology and multiple points of calibration, which allow you to benefit from wide rangeability and one of the best reference accuracy turndowns on the market. These transmitters also offer more exotic materials to accommodate severe environments, and HART transmitters are SIL 2 certified.

- Remote communication capabilities
- Stability: $< \pm 0.015\%$ of URL/yr for 10 years
- Direct Connect AP/GP response time: < 100 ms
- SIL 2 as standard (HART)
- Robust Design: 5-year warranty (optional 17-year warranty)
- DP and Biplanar AP/GP response time: < 125 ms
- FoxCal™ technology
- In-service time tracking
- High Turndown Capability¹ (up to 400:1)

1. Turndown capability refers to Maximum span/Minimum span

These pressure transmitters provide absolute pressure (AP), gauge pressure (GP), and differential pressure (DP) measurement.

- Absolute pressure transmitters measure pressure relative to vacuum. Gauge pressure transmitters measure pressure relative to ambient air pressure. Both absolute and gauge transmitters are used in a wide variety of oil, gas, water and industrial applications.
- Differential pressure transmitters measure the difference between *two* pressures applied to opposite sides of the sensor. The output signal is proportional to either the differential pressure or its square root.
 - Differential pressure transmitters are often used for measuring fluid flow rates across a primary device such as an orifice plate, but can also be used for other types of differential pressure measurements such as liquid level, interface level, or density measurements.

Transmitters can be connected in series to instruments such as recorders, controllers, and indicators.

This Document

This document discusses the Value Performance family of pressure transmitters. This family provides Absolute Pressure (AP), Gauge Pressure (GP), and Differential Pressure (DP) transmitter options that operate with HART or low power communication.

Key Features

The Value Performance pressure transmitters offer the following features:

- Absolute, Gauge, and Differential Pressure transmitters
- HART digital outputs, 4 to 20 mA outputs, low power analog outputs
- TÜV SIL 2 certification for HART transmitters
- 5-year proof test interval for pressure transmitters installed in SIL 2 Safety loops
- Accuracy up to $\pm 0.075\%$ of span
- Response time of 100 ms for AP/GP transmitters and 125 ms for DP transmitters
- Time in Service meter features cumulative power-up time and time powered since last user reset for HART transmitters
- High Turndown Capabilities² (up to 400:1)
- Ability to locally configure the device with pushbuttons on the local display (optional with HART transmitters)
- Ability to remotely communicate with and configure the device using the device descriptor (DD), Device Type Manager (DTM), or the Field Device Integration (FDI) package
- Optional External Zero Adjustment (HART Only)
- Field-proven piezoresistive silicon microsensors help ensure excellent measurement performance
- Simple, elegant sensor design with very few parts achieves exceptional reliability
- Durable aluminum or 316 ss housing options are available; both meet NEMA Type 4X and IEC IP66/67 ratings
- Differential pressure (DP) transmitters are available with traditional and low profile or Coplanar™ structures
- Sensor diaphragm materials include 316L ss or nickel alloy³
- ½ NPT male, ½ NPT female, or M20 male process connections
- Numerous mounting bracket set options
- Process venting and bleeding options
- Special degreasing and cleaning options
- Low temperature and high pressure options
- Custody transfer lock and seal options
- Many configurations of direct connect or capillary connected seals
- Dual Seal certified by CSA to meet ANSI/ISA 12.27.01-2003 requirements
- Complies with electromagnetic compatibility requirements of European EMC Directive 2014/30/EU by conforming to following EN and IEC Standard: EN 61326-1:2013
- NACE MR0175 and MR0103 compliant for all process wetted parts; optional NACE approved bolt material available
- Optional certification options allow transmitters to meet numerous requirements for hazardous and non-hazardous locations
- CE marked; meets the requirements of applicable EMC, ATEX, RoHS, and PED European Union Directives
- Multi-marking protection concepts available for ATEX, CSA, FM, IECEx, and INMETRO
- Standard 2-year warranty (optional 5-year warranty)

2. Turndown capability refers to Maximum span/Minimum span

3. Equivalent to Hastelloy® C-276. Hastelloy is a registered trademark of Haynes International, Inc.

Transmitters Using HART Communication

Transmitters using HART communication provide the following features:

- Ability to remotely configure the device using a HART communicator or PC-based configurator
- Support for HART 7 communication protocol in single loop or multidrop mode
- Compliance with NAMUR NE 21 interference immunity requirement, and NAMUR NE 43 analog output overrange and underrange annunciations
- Interoperability tested and registered with the FieldComm Group

Low Power Transmitters

When you want the flexibility and performance of a configurable, intelligent transmitter but you don't need a digital output signal, low power transmitters provide exceptional benefits at an affordable price. These transmitters are low power, voltage output transmitters that provide precise, reliable measurement of gauge, absolute, and differential pressure, draw no more than 3 mA, and transmit a 1 to 5 V dc output signal.

Low Power transmitters provide the following features:

- Used with processes that do not need a digital output
- 1 to 5 V dc output signal
- 9 V dc minimum voltage
- 3 mA maximum current
- Offered at an affordable price

High Pressure Gauge Transmitters (Direct Connect GP Only)

High pressure, direct connect gauge transmitters provide the following features:

- Gauge pressure ranges to 105 or 210 MPa (15,000 or 30,000 psi)
- Digital output version available with HART, and analog output version can be either 4 to 20 mA or 1 to 5 V dc for low power installation
- Welded, stainless steel pressure capsule assembly with bonded strain gauge sensor provides an airtight and watertight seal as well as intrinsic overpressure protection

Safety Integrity Level (SIL)

In addition to the traditional Explosion Proof certifications (ATEX or IECEx), Pressure Transmitters with HART communication offer standard SIL 2 certification. Absolute, gauge, and differential transmitters can now be deployed for either standard or safety applications. The transmitters' model codes allow you to customize your transmitter with a red or yellow cover to identify that the transmitter is part of a safety loop. SIL 2 certification is performed by TÜV, an independent third-party laboratory.

Pressure transmitters can be used in SIL 2 safety functions in 1oo1 single mode or in SIL 3 safety functions in 1oo2, dual mode.

Figure 1 - Red or Yellow Covers to Indicate Safety Integrity Level



Acronyms and Definitions

Acronym	Definitions
FIT	Failures in Time (failures per 1E09 hours)
λ	Failure rate
λ_{DD}	Failure rate for Dangerous Detected
λ_{DU}	Failure rate for Dangerous Undetected
λ_S	Failure rate for Safe Detected + failure rate for Safe Undetected
PFD_{AVG}	Average Probability of Failure on Demand
PFH	Probability of Failure per Hour
SFF	Safe Failure Fraction
SIL	Safety Integrity Level

Reliability Data

Failure Data According to IEC 61508

λ	λ_s	λ_{DD}	λ_{DU}	SFF
1113 FIT	698 FIT	356 FIT	58 FIT	94.76%

The PFD_{AVG} value for a single pressure transmitter is 2.6E-4 per year.

Certification Data

- SIL 2 certification is performed by TÜV, an independent laboratory.
- The Pressure Transmitter is classified as a Type B device according to IEC 61508, having a hardware fault tolerance of 0.

NOTE: Type B component: “Complex” component (using microcontrollers or programmable logic); for details see section 7.4.4.1.3 of IEC 61508-2:2010.

- Based on internal diagnostics, the Pressure Transmitter has a Safe Failure Fraction of 94.76% (assuming that the logic solver is configured to detect over-scale and under-scale currents), and therefore may be used up to SIL 2 as a single device.
- The Pressure Transmitter has a proof test interval of up to five years in order to maintain a SIL 2 rating, allowing it to be used as a single device.

NOTE: Per Table 3 of IEC 61508-2:2010 section 7.4.4.2.2, the preceding information allows the Pressure Transmitter, when used in a 1 of 2 system architecture, to be used as a SIL 3 application with an HFT of 1.

Vacuum Service

AP and Biplanar GP Transmitters:

A lower range limit of -100 kPa (-14.7 psi, -1 bar) means that vacuum measurements are easily handled with the versatile direct connect AP, biplanar AP, or biplanar GP transmitters.

Direct Connect GP Transmitters:

A lower range limit of -100 kPa (-14.7 psi, -1 bar) allows vacuum limits for direct connect GP transmitters with Span Codes E, F, G, and H.

Variety of Materials

With process connections of 316L ss and sensor diaphragms available in 316L ss or nickel alloy⁴, direct connect AP/GP transmitters are an excellent choice for the majority of process pressure measurements.

DP transmitters with traditional structures are offered with a choice of 316L ss or nickel alloy⁴.

For DP and biplanar AP/GP transmitters with low profile structures, 316L ss and nickel alloy⁴ are offered as sensor materials. Refer to *Transmitter Structures for DP and Biplanar AP/GP Transmitters*, page 12 for a description and application of traditional and low profile (LP1 and LP2) structures.

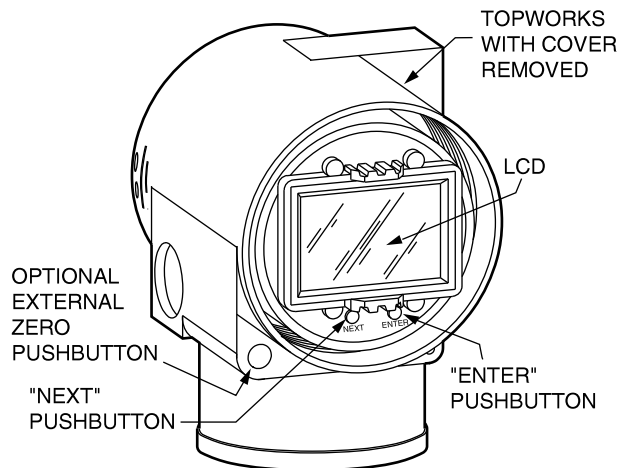
4. Equivalent to Hastelloy® C-276. Hastelloy is a registered trademark of Haynes International, Inc.

Design Specifications

Digital Liquid Crystal Display (LCD)

A two-line local digital display with on-board pushbuttons is provided by default with low power transmitters and as an option with HART transmitters. The display can be rotated into any one of four 90 degree positions and shows the current measurement configured with your choice of units. The pushbuttons allow you to locally configure and calibrate the device, for example, by adjusting the zero and span. Pushbutton pads are designed to help protect the transmitter from electrostatic discharge and moisture.

Figure 2 - Digital LCD with On-Board Pushbuttons



Process Connectors for DP and Biplanar AP/GP Transmitters

Removable, gasketed process connectors allow a wide range of selections, including ¼ NPT, ½ NPT, Rc ¼, Rc ½, and weld neck connections.

Ease of Installation

Pressure transmitters are lightweight and easy to install, and are offered with:

- Rotatable Topworks allows transmitter installation in tight places, allows the display to be positioned in the 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.
- Two-Valve Manifolds, which isolate and vent pressure from biplanar GP transmitters, can be easily mounted directly to transmitter.

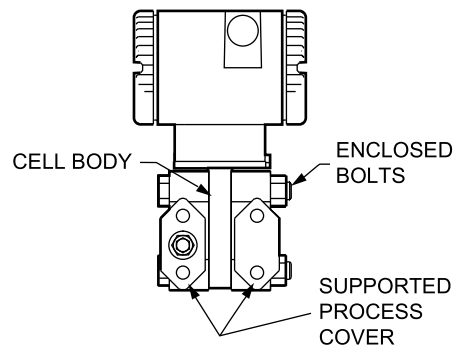
Optional Mounting Bracket Sets for DP and Biplanar AP/GP Transmitters

Mounting bracket sets allow you to mount the transmitter to a surface, pipe, or manifold. In addition to the standard-style mounting bracket sets available, a unique universal style mounting bracket has been developed to allow wide flexibility in transmitter mounting configurations consistent with installation requirements. Refer to *Dimensions*, page 60.

Unique Process Cover and Cell Body Design for DP and Biplanar AP/GP Transmitters

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

Figure 3 - Biplanar Construction Shown with Traditional Horizontal Process Connections



- Process Covers are fully supported by the cell body over their entire height. This helps prevent bending and results in a firm seal. Also, this provides dimensional stability to the process covers, helping ensure they will mate properly with 3-valve bypass manifolds.
- Process Cover Bolts 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, so you do not need to select and stock various elastomers to provide process compatibility.
- Light Weight provides ease of handling, installation, and direct mounting without requiring costly pipe stands.

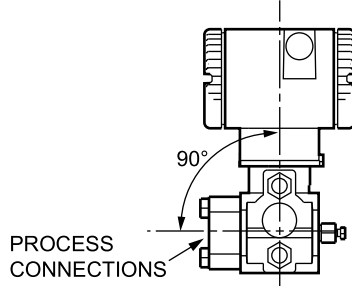
Transmitter Structures for DP and Biplanar AP/GP Transmitters

For DP and biplanar AP and GP transmitters, traditional and low profile structures (LP1 and LP2) are offered to accommodate and to provide flexibility in transmitter installations.

Traditional Structure for DP and Biplanar AP/GP Transmitters

The traditional structure utilizes the right angle design common to most DP and biplanar AP/GP 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.

Figure 4 - Vertical Mounting Showing Process Connections at 90 Degrees



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

Figure 5 - Vertical Mounting – Cavity Draining

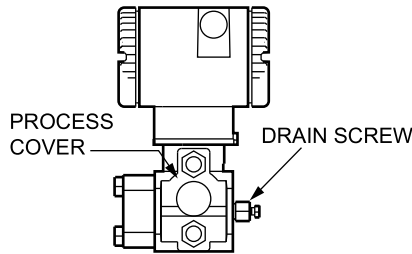


Figure 6 - Horizontal Mounting – Cavity Venting, and Self-Draining into Process Line

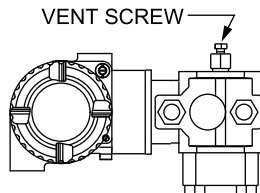
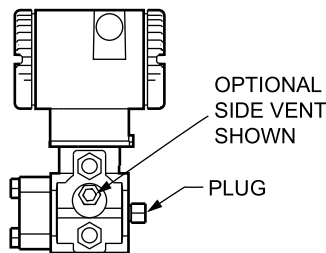


Figure 7 - Vertical Mounting – Cavity Venting, and Self-Draining into Process Line



Low Profile Structures for DP and Biplanar AP/GP Transmitters

The low profile structures use an in-line design, meaning that the process connections are in line with the transmitter centerline. This allows you to mount 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.

For convenience, two types of low profile structures are offered, LP1 and LP2. The process covers and the external shape of the sensor cell body are the only transmitter parts that differ between LP1 and LP2.

Figure 8 - Low Profile (LP1) Structure with In-Line Process Connections

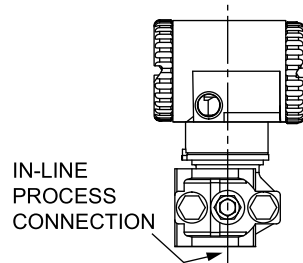
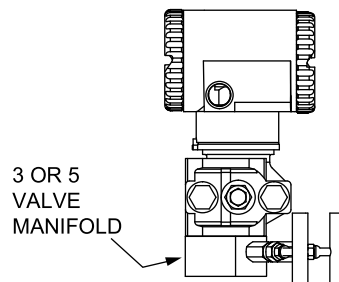


Figure 9 - Low Profile (LP1) Structure Directly Mounted to Manifold



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

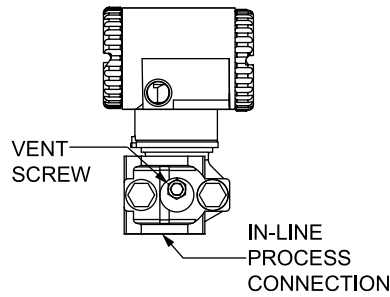
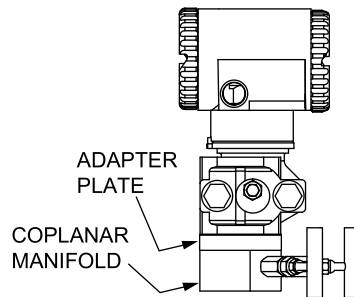
Transmitters with the low profile structure can be attached directly to existing, installed Coplanar manifolds, such as the Anderson Greenwood Models MB3, MB5G, and MB5P by using an optional adapter plate. See *Low Profile (LP1) Transmitter – Mounted to a Coplanar Manifold using an Optional Intermediate Adapter Plate*, page 14. Also, when assembled to the same process piping or manifold as a Coplanar transmitter, one of the electrical conduit connections is located within ± 1 inch of the similar conduit connection on the competitive transmitter, providing for ease of retrofit or conformance with installation design drawings.

Low Profile Structure LP1 – Direct Mount

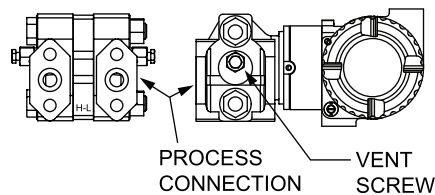
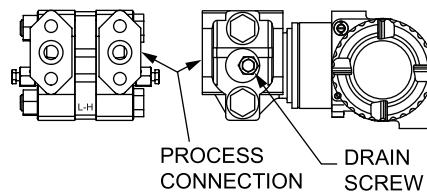
Low Profile Structure LP1 is a compact, inexpensive, lightweight design that you can mount directly to a separately mounted manifold or to process piping. These transmitters are not typically bracket-mounted.

By default, LP1 transmitters are supplied 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 or horizontally, and are suitable for most applications, including liquids, gases, and steam.

In the vertical, upright position, the LP1 transmitter is self-draining and is ideal for gas flow rate service when directly mounted to a manifold located above the horizontal pipeline. If desired, you can omit the vent screw for this or other applications.

Figure 10 - Low Profile (LP1) Transmitter – Upright Mounting**Figure 11 - Low Profile (LP1) Transmitter – Mounted to a Coplanar Manifold using an Optional Intermediate Adapter Plate**

For horizontal installations, rotate the transmitter 180 degrees to orient the high and low pressure sides to the preferred locations. You do not need to unbolt process covers. You can also rotate the topworks housing as shown to orient the conduit connections in the desired position.

Figure 12 - Low Profile (LP1) Transmitter – Horizontal Mounting with Vent Screw**Figure 13 - Low Profile (LP1) Transmitter – 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 Schneider Electric brackets (Options -M1, -M2, and -M3), as well as standard brackets supplied with existing Coplanar™ transmitters.

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.

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

Figure 14 - Low Profile (LP2) Transmitter – Mounted on the Schneider Electric Universal Bracket

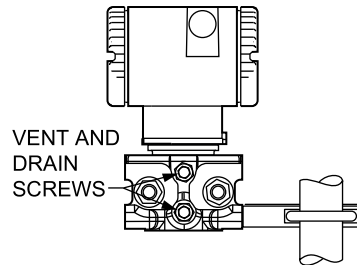


Figure 15 - Low Profile (LP2) Transmitter – Shown on a Coplanar Bracket

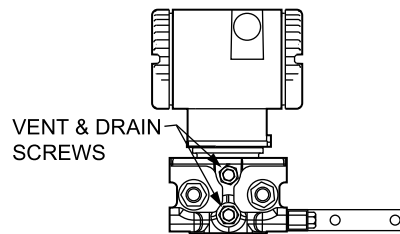
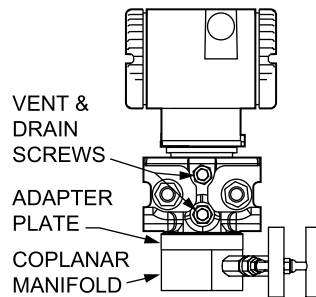


Figure 16 - Low Profile (LP2) Transmitter – Mounted to an Existing Coplanar Manifold Using Adapter Plate



Factory Calibration

Prior to shipment, the factory performs a 2-point calibration on the transmitter based on the calibration range and units you require. A 2-point calibration is useful if your application requires zero-based ranges with greater than 30:1 turndown or when mandated by a specific requirement. Simply indicate the calibration range and units you require in the sales order. See *Units*, page 33.

Table 1 - Example of Custom Factory Calibration for a Low Power Transmitter

Parameter	Standard (Default) Configuration	Example of Custom Factory Calibration
Calibrated Range		
Pressure Engineering Units (EGUs)	per sales order ⁵	inH ₂ O
LRV	per sales order ⁶	0
URV	per sales order ⁷	100
Measurement #1		
Linear (pressure units)	Linear	Square Root
Pressure Engineering Units (EGUs)	per sales order ⁵	gal/m
Range (DP)	per sales order ⁷	0 to 500 gal/m
Output	4 to 20 mA	4 to 20 mA
Measurement #2		
Linear (pressure units)	Linear	Square Root
Pressure Engineering Units (EGUs)	per sales order ⁸	gal/m
Range (DP)	per sales order ⁷	0 to 500 gal/m

Table 2 - Example of Custom Factory Calibration Option -C1 for a HART Transmitter

Parameter	Standard (Default) Configuration	Example of Custom Factory Calibration (Option -C1)
Calibrated Range		
Pressure Engineering Units (EGUs)	per sales order ⁵	inH ₂ O
LRV	per sales order ⁶	0
URV	per sales order ⁷	100
Measurement #1		
Linear (pressure units, AP or GP) or Square Root (flow units, DP only)	Linear	Square Root
Pressure EGU (AP, GP, DP) or Flow EGU (DP only)	per sales order ⁹	gal/m
Range (DP)	per sales order ⁷	0 to 500 gal/m
Output	4 to 20 mA ¹⁰	4 to 20 mA ¹⁰
Measurement #2		
Linear (pressure units, AP or GP) or Square Root (flow units, DP only)	Linear	Square Root
Pressure EGU (AP, GP, DP) or Flow EGU (DP only)	per sales order ⁹	gal/m
Range (DP)	per sales order ⁷	0 to 500 gal/m

5. Pressure units from *Units*, page 33. If not specified, the factory default calibration is zero to maximum span and the default units vary by sensor code.
6. Within Span and Range Limits for selected sensor code.
7. Same as Calibrated Range.
8. Pressure or flow units from *Units*, page 33. If not specified, the factory default calibration is zero to maximum span and the default units vary by sensor code.
9. Pressure or flow units from *Units*, page 33. If not specified, the factory default calibration is zero to maximum span and the default units vary by sensor code.
10. Fixed current is used for multidrop applications.

Optional Factory Configuration (Option -C2)

You also have the option to have the transmitter configured by the factory prior to shipment by selecting Model Code Option -C2. For the transmitter to be custom configured by the factory, you must fill out a data form. If this option is not selected, a standard (default) configuration is provided.

In addition to the example parameters listed in the table, the data form allows you to configure any of the transmitter's user-configurable parameters.

Table 3 - Example Parameters: Factory Configuration Option -C2 for a Low Power Transmitter

Parameter	Standard (Default) Configuration	Example of Factory Configuration (Option -C2)
Calibrated Range		
Pressure Engineering Units (EGUs)	per sales order ¹¹	inH ₂ O
LRV	per sales order ¹²	0
URV	per sales order ¹³	100
Measurement #1		
Linear (pressure units, AP or GP) or Square Root (flow units, DP only)	Linear	Square Root
Pressure EGU (AP, GP, DP) or Flow EGU (DP only)	per sales order ¹⁴	gal/m
Range (DP)	per sales order ¹³	0 to 500 gal/m
Output	4 to 20 mA ¹⁵	4 to 20 mA ¹⁵
Measurement #2		
Linear (pressure units, AP or GP) or Square Root (flow units, DP only)	Linear	Square Root
Pressure EGU (AP, GP, DP) or Flow EGU (DP only)	per sales order ¹⁶	gal/m
Range (DP)	per sales order ¹³	0 to 500 gal/m

Table 4 - Example Parameters: Factory Configuration Option -C2 for a HART Transmitter

Parameter	Standard (Default) Configuration	Example of Factory Configuration (Option -C2)
Calibrated Range		
Pressure Engineering Units (EGUs)	per sales order ¹¹	inH ₂ O
LRV	per sales order ¹²	0
URV	per sales order ¹³	100
Measurement #1		
Linear (pressure units, AP or GP) or Square Root (flow units, DP only)	Linear	Square Root

11. Pressure units from *Units*, page 33. If not specified, the factory default calibration is zero to maximum span and the default units vary by sensor code.

12. Within Span and Range Limits for selected sensor code.

13. Same as Calibrated Range.

14. Pressure or flow units from *Units*, page 33. If not specified, the factory default calibration is zero to maximum span and the default units vary by sensor code.

15. Fixed current is used for multidrop applications.

16. Pressure or flow units from *Units*, page 33. If not specified, the factory default calibration is zero to maximum span and the default units vary by sensor code.

Parameter	Standard (Default) Configuration	Example of Factory Configuration (Option -C2)
Pressure EGU (AP, GP, DP) or Flow EGU (DP only)	per sales order ¹⁷	gal/m
Range (DP)	per sales order ¹⁸	0 to 500 gal/m
Output	4 to 20 mA ¹⁹	4 to 20 mA ¹⁹
Measurement #2		
Linear (pressure units, AP or GP) or Square Root (flow units, DP only)	Linear	Square Root
Pressure EGU (AP, GP, DP) or Flow EGU (DP only)	per sales order ¹⁷	gal/m
Range (DP)	per sales order ¹⁸	0 to 500 gal/m

Pressure Seals

Pressure seals are used 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 that may tend to collect and solidify.

Pressure seals can be used with direct connect AP/GP transmitters as well as DP and biplanar AP/GP transmitters that have a traditional structure (see *Transmitter Structures for DP and Biplanar AP/GP Transmitters, page 12*).

NOTE: When used with pressure seals, the accuracy specifications for Value Performance transmitters do not apply.

The following table describes each pressure seal and indicates with which transmitter types the seal can be used. To order a transmitter with seals, select both a transmitter model code and a seal model code. See PSS 2A-1Z11 B for pressure seal model codes and specifications.

Table 5 - Pressure Seals

Model	Description	Process Connections	Used with Transmitters
Direct Connect Pressure Seal Assemblies			
PSFLT	Flanged, Direct Connect (Flanged Level), Flush or Extended Diaphragm	ANSI Class 150/300/600 flanges and IEC 61518 PN 10/40, 10/16, 25/40 flanges	Biplanar AP, Biplanar GP, DP
PSFAD	Flanged, Direct Connect, Recessed Diaphragm	ANSI Class 150/300/600/1500 flanges	Direct Connect AP, Direct Connect GP
PSFFD	Flanged, Direct Connect, Flush Diaphragm	ANSI Class 150/300/600 and PN 10/40	Direct Connect AP, Direct Connect GP
PSTAD	Threaded, Direct Connect, Recessed Diaphragm	¼, ½, ¾, 1, or 1½ NPT internal thread	Direct Connect AP, Direct Connect GP
PSISD	In-Line Saddle Weld, Direct Connect, Recessed Diaphragm	Lower housing of seal is in-line saddle welded to nominal 3- or 4-inch (or larger) pipe	Direct Connect AP, Direct Connect GP
PSSCT	Sanitary, Direct Connect (Level Seal), Flush Diaphragm	Process Connection to Sanitary Piping with 2- or 3-inch Tri-Clamp	Biplanar AP, Biplanar GP, DP
PSSST	Sanitary, Direct Connect (Level Seal), Extended Diaphragm	Process Connection to 2-inch Mini Spud or 4-inch Standard Spud; Tri-Clamp	Biplanar AP, Biplanar GP, DP
Remote Mount, Capillary-Connected Pressure Seal Assemblies			

17. Pressure or flow units from *Units, page 33*. If not specified, the factory default calibration is zero to maximum span and the default units vary by sensor code.

18. Same as Calibrated Range.

19. Fixed current is used for multidrop applications.

Model	Description	Process Connections	Used with Transmitters
PSFPS	Flanged, Remote Mount, Flush Diaphragm	ANSI Class 150/300/600 flanges and IEC 61518 PN 10/40 flanges	Direct Connect AP, Direct Connect GP, Biplanar AP, Biplanar GP, DP
PSFES	Flanged, Remote Mount, Extended Diaphragm	ANSI Class 150/300/600 flanges and IEC 61518 PN 10/40, 10/16, 25/40 flanges	Direct Connect AP, Direct Connect GP, Biplanar AP, Biplanar GP, DP
PSFFR	Flanged, Remote Mount, Flush Diaphragm	ANSI Class 150/300/600 flanges and IEC 61518 PN 10/40	Direct Connect AP, Direct Connect GP, Biplanar AP, Biplanar GP
PSFAR	Flanged, Remote Mount, Recessed Diaphragm	ANSI Class 150/300/600/1500 flanges	Direct Connect AP, Direct Connect GP, Biplanar AP, Biplanar GP, DP
PSTAR	Threaded, Remote Mount, Recessed Diaphragm	¼, ½, ¾, 1, or 1½ NPT internal thread	Direct Connect AP, Direct Connect GP, Biplanar AP, Biplanar GP, DP
PSISR	In-Line Saddle Weld, Remote Mount, Recessed Diaphragm	Lower housing of seal is in-line saddle welded to nominal 3- or 4-inch (or larger) pipe	Direct Connect AP, Direct Connect GP, Biplanar AP, Biplanar GP, DP
PSSCR	Sanitary, Remote Mount, Flush Diaphragm	Process connection fastened to a 2- or 3-inch pipe with a Tri-Clamp	Direct Connect AP, Direct Connect GP, Biplanar AP, Biplanar GP, DP
PSSSR	Sanitary, Remote Mount, Extended Diaphragm	Process connection to 2-in mini spud or 4-in standard spud; Tri-Clamp	Direct Connect AP, Direct Connect GP, Biplanar AP, Biplanar GP, DP

Figure 17 - Typical Pressure Seals

