

**Models IAP10, IGP10, IAP20, and IGP20  
I/A Series<sup>®</sup> Electronic Absolute and Gauge Pressure Transmitters  
with FoxCom<sup>™</sup> Communication Protocol**



**IAP20/IGP20  
TRANSMITTER**



**IAP10/IGP10  
TRANSMITTER  
STRUCTURE CODES  
52, 53, 60-63,  
D5, D6, S5, S6,  
SH, AND SJ**



**IAP10/IGP10  
TRANSMITTER  
STRUCTURE CODES  
20-23, 30, 31,  
D1, D2, S3, S4,  
SC, AND SD**

*The Foxboro<sup>®</sup> brand Models IAP10, IGP10, IAP20, and IGP20 are available from Invensys Operations Management. These Intelligent, two-wire transmitters provide precise, reliable, measurement of absolute or gauge pressure, and transmit a 4 to 20 mA or digital output signal (software selectable) using FoxCom communication protocol for remote configuration and monitoring.*

**HIGH DEPENDABILITY**

- ▶ Silicon strain gauge sensors successfully field-proven in many thousands of installations.
- ▶ Simple, elegant sensor packaging with very few parts; achieves exceptionally high reliability.
- ▶ Aluminum housing has durable, corrosion-resistant epoxy finish; 316 ss housing also available; both meet NEMA 4X and IEC IP66.
- ▶ Remote configuration with FoxCom; or locally via the optional LCD Indicator with on-board pushbuttons.
- ▶ Can be provided with numerous configurations of direct connect or remote mount seals.
- ▶ The IAP10 and IGP10 are offered with integral process connections for sanitary, and pulp and paper installations. Also, the IGP10 is offered for high gauge pressure applications to 52, 105, or 210 MPa (7500, 15 000, or 30 000 psi).
- ▶ Sensor wetted parts materials include Co-Ni-Cr, 316L ss, and Nickel alloy (1); additionally, Monel, tantalum, and gold-plated 316L ss sensors offered for the IAP20/IGP20.
- ▶ Complies with NAMUR NE 21 Interference Immunity requirement, and NAMUR 105 overrange and underrange annunciations.

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

- ▶ CE marked; complies with applicable EMC, ATEX, and PED European Union Directives.
- ▶ Complies with electromagnetic compatibility requirements of European EMC Directive 2004/108/EC by conforming to following EN and IEC Standards: EN 61326-1, and IEC 61000-4-2 through 61000-4-6.
- ▶ Meet numerous Agency requirements for hazardous locations. Versions available to meet Agency flameproof and zone requirements.
- ▶ Numerous mounting bracket set options. Many other options and accessories offered.
- ▶ Standard 5-year warranty.

### 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 connect pressure seals, all using field-proven silicon strain gauge sensors and common topworks.

Furthermore, if your needs change, the transmitter modular design allows easy migration to other standards, including HART, FOUNDATION Fieldbus, and analog 4 to 20 mA or 1 to 5 V dc versions.

### SELECT THE LEVEL OF TRANSMITTER INTELLIGENCE YOU NEED

The transmitters with FoxCom communication protocol are configurable, thus allowing you to select the degree of transmitter intelligence you need for your application – FoxCom digital or 4 to 20 mA outputs.

#### 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.

### CHOOSE MOUNTING CONFIGURATION NEEDED

#### Direct-Connected Transmitter

Light weight and easy-to-install. Uses 316L ss or Nickel alloy<sup>(2)</sup> process connections and a choice of either 316L ss, cobalt-nickel-chrome, or Nickel alloy<sup>(2)</sup> for the sensing diaphragm. See “DIRECT-CONNECTED TRANSMITTERS — IAP10 AND IGP10 (Figure 1)” on page 4.

#### Bracket-Mounted Transmitter

A large selection of corrosion resistant process covers and sensing diaphragm materials; suitable for applications requiring low spans, vacuum service, and high overrange pressure. See “BRACKET-MOUNTED TRANSMITTERS — IAP20 AND IGP20 (Figure 2)” on page 5.

#### Intelligent Module – Configured for FoxCom Digital Output

All communications between I/A Series system and transmitter are digital, providing true Measurement Integration and eliminating need to use hand-held terminals and personal computers. You can do all of your configuration and transmitter communications directly from the workstation in the control room.

Measurement from sensor lower range limit to upper range limit is automatically accomplished independent of the calibrated range, eliminating the need to rerange the transmitter when process conditions change. Since the measurements are digital, they are more accurate because the inaccuracies of the digital-to-analog converter and the system analog input circuit are eliminated.

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2. Equivalent to Hastelloy® C.

Multiple measurements are transmitted digitally, including not only the primary measurement available in both pressure units and plant engineering units, but also the sensor temperature which can be used to monitor, control, or alarm external heat tracing equipment. Complete transmitter diagnostics are also available at the workstation.

Upload and download capability is provided to send transmitter configuration changes from system to transmitter, and from transmitter to system. Also, transmitter databases can be easily uploaded to the system for viewing, verification, comparison, modification, and saving.

### **INTELLIGENT MODULE – CONFIGURED FOR FoxCom 4 TO 20 mA OUTPUT**

With 4 to 20 mA output, the following items are accessible from a PC-based Configurator, applicable I/A Series system FBMs, or the optional LCD Indicator:

- ▶ Measurements
- ▶ Diagnostics
- ▶ Configuration
- ▶ Calibration, including reranging without pressure

The PC-based Configurator may be connected to the two-wire loop, uses a bidirectional digital signal superimposed on the 4 to 20 mA analog signal, and does not interrupt the 4 to 20 mA output.

### **HIGH PERFORMANCE**

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

### **OPTIONAL LCD DIGITAL INDICATOR**

A two-line digital indicator with on-board pushbuttons displays 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. See Figure 10.

### **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, plenty of space to work and store excess wire, and large, rugged screw terminals for easy wire termination.

## DIRECT-CONNECTED TRANSMITTERS — IAP10 AND IGP10 (FIGURE 1)

### EXCEPTIONAL VALUE

The combination of small size, light weight, direct mounting, standard materials, and wide measurement capability with high performance make this an exceptionally cost effective solution for process pressure measurement.

### DIRECT PROCESS MOUNTING

Because of their light weight and external threaded connection, these transmitters can be installed directly on process piping without mounting brackets. However, for unique requirements, an optional bracket is offered and connection can be made to the standard 1/4 NPT internal thread.

### WIDE RANGEABILITY

Three absolute pressure versions are offered to allow spans from 7 to 21 000 kPa (1 to 3000 psi), and four gauge pressure versions are offered to allow spans from 7 to 42 000 kPa (1 to 6000 psi). Refer to IGP20 Transmitter for gauge pressure vacuum service.

### 316L SS, NICKEL ALLOY <sup>(3)</sup> AND CO-NI-CR PROCESS WETTED PARTS

With process connection of 316L ss or Nickel alloy <sup>(3)</sup>, and sensor diaphragm available in either 316L ss, Nickel alloy <sup>(3)</sup>, or highly corrosion resistant Co-Ni-Cr, this transmitter is an excellent choice for the vast majority of process pressure measurements.

Figure 1. Direct-Connected Transmitter  
(Flameproof Version Shown on Left)



### HIGH GAUGE PRESSURE VERSIONS

Three high gauge pressure versions with upper range limits of 52, 105, and 210 MPa (7500, 15 000, and 30 000 psi) are available in the IGP10 line. Refer to PSS 2A-1C13 F for detailed specifications.

### SANITARY AND PULP AND PAPER VERSIONS

These transmitters are also available with integral process connections for use in sanitary and pulp and paper installations. See PSS 2A-1C13 K and PSS 2A-1C13 L, respectively.

### FLAMEPROOF DESIGN

The IAP10 and IGP10 flameproof versions are designed to meet Agency flameproof and zone requirements.

3. Equivalent to Hastelloy® C.

## BRACKET-MOUNTED TRANSMITTERS — IAP20 AND IGP20 (FIGURE 2)

### SENSOR CORROSION PROTECTION

Choice of 316L ss, Co-Ni-Cr, Nickel alloy <sup>(3)</sup>, Monel, Tantalum, and Gold-Plated 316L ss materials. High corrosion resistance of Co-Ni-Cr (TI 037-078) means long service life in many difficult applications without the extra cost for exotic materials. Also see TI 37-75b for process applicability with Co-Ni-Cr and other wetted parts materials.

### WIDE RANGEABILITY

Gauge pressure measurement spans may be as low as 0.12 kPa (0.5 inH<sub>2</sub>O) to as high as 35 MPa (5000 psi) by choosing one of only six sensors, and absolute pressure measurement spans may be as low as 0.87 kPa (3.5 inH<sub>2</sub>O) to as high as 21 MPa (3000 psi) by choosing one of only four sensors. This provides exceptional measurement range capability with a minimum of versions.

### VACUUM SERVICE

A lower range limit of -100 kPa (-14.7 psi, -1 bar) means that vacuum measurements are easily handled with the versatile IGP20 Gauge Pressure transmitter.

### PROCESS CONNECTOR

Removable, gasketed process connector (Figure 2) allows a wide range of selections, including 1/4 NPT, 1/2 NPT, Rc 1/4, Rc 1/2, and weld neck connections.

For highly corrosive chemical processes, a 1/2 NPT pvdf (Kynar) insert (Figure 3) is installed in the HI-side 316 ss cover and is used as the process connector. In these applications, tantalum is used as the sensor diaphragm material.

Figure 2. Bracket-Mounted Transmitter Shown with Conventional Process Connector

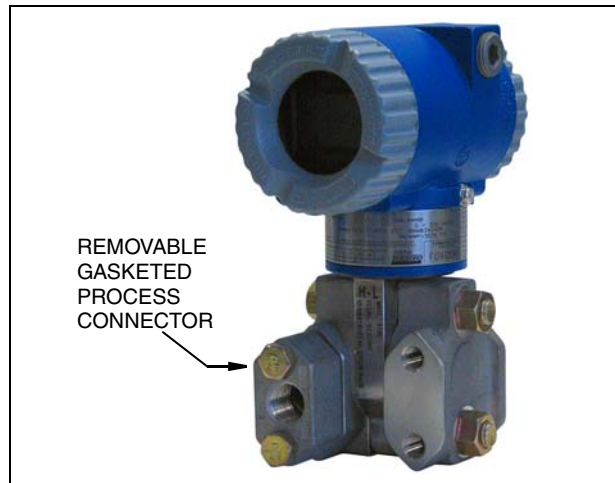
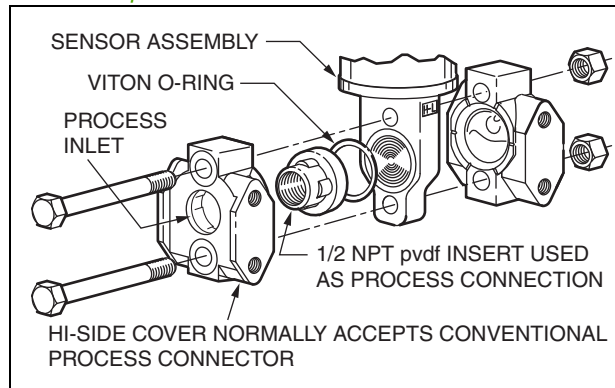


Figure 3. Bracket-Mounted Transmitter Shown with 1/2 NPT pvdf Insert Installed in HI-Side Cover



### EASE OF MOUNTING TWO-VALVE MANIFOLD

Optional two-valve manifold, to isolate transmitter and to vent pressure, is easily mounted directly to transmitter.

### FLAMEPROOF DESIGN

Transmitters meet Agency flameproof and zone requirements.

**PRESSURE SEALS**

Pressure seals are used with the IAP10, IGP10, IAP20, and IGP20 Series Transmitters when it is necessary to keep the transmitter isolated from the process. A sealed system is used for a process fluid that may be corrosive, viscous, subject to temperature extremes, toxic, sanitary, or tend to collect and solidify.

Table 1 and Table 2 lists the various seals that can be used with these transmitters. To order a transmitter with seals, both a Transmitter Model Number and Seal Model Number are required. For a complete listing of pressure seal models and specifications, see PSS 2A-1Z11 A. Also see Figure 4 for typical pressure seal configurations.

**Table 1. Pressure Seals Used with IAP10, IGP10, IAP20, and IGP20 Transmitters**

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



Table 2. I/A Series Pressure Transmitters and Applicable Pressure Seals

Transmitter Model	Used with Pressure Seal Model: (a)													
	FLT	FAD	TAD	ISD	SCT	SST	FPS	FES	FAR	TAR	ISR	SCR	SSR	FFR
IAP10	-	✓	✓	✓	-	-	✓	✓	✓	✓	✓	✓	✓	✓
IGP10	-	✓	✓	✓	-	-	✓	✓	✓	✓	✓	✓	✓	✓
IAP20	-	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓
IGP20	✓	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

a. Pressure Seal models are shown with an abbreviated code; all seal codes have a PS prefix; for example, FLT is really PSFLT.

Figure 4. Typical Pressure Seals used with IAP10, IGP10, IAP20, and IGP20 Transmitters



FUNCTIONAL SPECIFICATIONS

Span and Range Limits for IAP10 and IGP10 Transmitters

Span Code	Span Limits			Range Limits (Absolute or Gauge Units)		
	MPa	psi	bar	MPa	psi	bar
C	0.007 and 0.21	1 and 30	0.07 and 2.1	0 and 0.21	0 and 30	0 and 2.1
D	0.07 and 2.1	10 and 300	0.7 and 21	0 and 2.1	0 and 300	0 and 21
E	0.7 and 21	100 and 3000	7 and 210	0 and 21	0 and 3000	0 and 210
F (a)	14 and 42	2000 and 6000	140 and 420	0 and 42	0 and 6000	0 and 420

a. Span Limit Code F is applicable to IGP10 Transmitter only.

Span and Range Limits for IAP20 and IGP20 Transmitters

Span Code	Span Limits			Range Limits (Absolute or Gauge Units) (a)		
	kPa	inH <sub>2</sub> O	mbar	kPa	inH <sub>2</sub> O	mbar
A (b)	0.12 and 7.5	0.5 and 30	1.2 and 75	-7.5 and +7.5	-30 and +30	-75 and +75
B	0.87 (c) and 50	3.5 (c) and 200	8.7 (b) and 500	-50 (a) and +50	-200 (a) and +200	-500 (a) and +500
	MPa	psi	bar	MPa	psi	bar
C	0.007 and 0.21	1 and 30	0.07 and 2.1	-0.1(a) and 0.21	-14.7(a) and +30	-1(a) and +2.1
D (d)	0.07 and 2.1	10 and 300	0.7 and 21	-0.1 (a) and 2.1	-14.7 (a) and +300	-1 (a) and +21
E (e)	0.7 and 21	100 and 3000	7 and 210	-0.1 (a) and 21	-14.7 (a) and +3000	-1 (a) and +210
F (b)	1.38 and 35	200 and 5000	13.8 and 350	-0.1 and +35	-14.7 and +5000	-1 and +350

- a. For absolute pressure transmitters (IAP20), the lower range limit is 0.
- b. Span Codes A and F applicable to IGP20 Transmitter only. Also, Span Code A is not available when pressure seals are specified.
- c. For IAP20, the minimum span for factory calibration is 1.2 kPa (5 inH<sub>2</sub>O, 12.4 mbar). Can be field reranged within limits shown in table.
- d. Minimum span limit is 30 psi (0.21 MPa, 2.1 bar) for Analog protocol (-A).
- e. When certain options are specified, the upper span and range limit values are reduced as shown in the "Impact of Certain Options on IAP20/IGP20 Span and Range Limits" table.



**Maximum Overrange and Proof Pressure Ratings for IAP10 and IGP10 Transmitters**

Span Code	Maximum Overrange Pressure Rating (a)			Proof Pressure Rating (a) (b)		
	MPa	psi	bar	MPa	psi	bar
C	0.31	45	3.15	0.827	120	8.27
D	3.1	450	31.5	8.27	1200	82.7
E	31	4500	315	79.3	11500	793
F (c)	59	8400	588	152	22000	1517

- a. Values listed are in absolute or gauge pressure units, as applicable. Maximum overrange pressure is the maximum pressure that may be applied without causing damage to the transmitter.
- b. Proof pressure ratings meet ANSI/ISA Standard S82.03-1988. Unit may become nonfunctional after application of proof pressure.
- c. Span Limit Code F is applicable to IGP10 Transmitter only.

**Maximum Overrange and Proof Pressure Ratings for IAP 20 and IGP20 Transmitters (a)**

Transmitter Configuration (See "" on page 22 for Description of Options)	Overrange Pressure Rating			Proof Pressure Rating (b)		
	MPa	psi	bar	MPa	psi	bar
Standard with IGP20 Span Code F only	51.8	7500	518	100	14500	1000
Standard (c) or with Option -B2, -D3, or -D7	25	3626	250	100	14500	1000
With Option -B3	20	2900	200	70	11150	700
With Option -D1	16	2320	160	64	9280	640
With Option -B1 or -D5	15	2175	150	60	8700	600
With Option -D2, -D4, -D6, or -D8	10	1500	100	40	6000	400
With Structure Codes 78 and 79 (pvd insert)	2.1	300	21	8.4	1200	84

- a. Refer to "" on page 22 for application and restrictions related to the items listed in the table.
- b. Proof pressure ratings meet ANSI/ISA Standard S82.03-1988. Unit may become nonfunctional after application of proof pressure.
- c. Standard with IAP20/IGP20 Span Codes A to E.

**Impact of Certain Options on IAP20/IGP20 Span and Range Limits (a)**

Option	Description (Also see "" on page 22)	Span and Range Limits Derated to:
-B3	B7M Bolts and Nuts (NACE)	20 MPa (2900 psi, 200 bar)
-D1	DIN Construction	16 MPa (2320 psi, 160 bar)
-D5 or -B1	DIN Construction or 316 ss Bolting	15 MPa (2175 psi, 150 bar)
-D2, -D4, -D6, or -D8 (a)	DIN Construction (a)	10 MPa (1500 psi, 100 bar) (a)

- a. Refer to "" on page 22 for application and restrictions related to the items listed in the table.

**Output Signal and Configuration**

Digital FoxCom or 4 to 20 mA. Configurable using I/A Series system with applicable FBMs, PC-based Configurator, or optional LCD Indicator with on-board pushbuttons.

**Electronics and Sensor Temperatures**

Readable from I/A Series system or PC-based Configurator. Measurement is transmitter temperature, at the sensor and the electronic module, not necessarily process temperature.

**Field Wiring Reversal**

No transmitter damage.

**Supply Voltage Requirements and External Loop Load Limitations (Figure 5)**

**Digital Output**

Power supplied through I/A Series system.

**4 to 20 mA Output**

Nominal minimum supply voltage shown below is 11.5 V dc. This can be reduced to 11 V dc by using a plug-in jumper across the test receptacles in the field wiring compartment terminal block as shown in the Physical Specifications section.

**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, 0.5 s with sensors B to F, and 0.60 s with sensor A.)

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

**With Silicone Fill Fluid**

Full vacuum: up to 121°C (250°F)

**With Inert Fill Fluid**

Refer to Figure 6.

Figure 5. 4 to 20 mA Output, Supply Voltage vs. Output Load

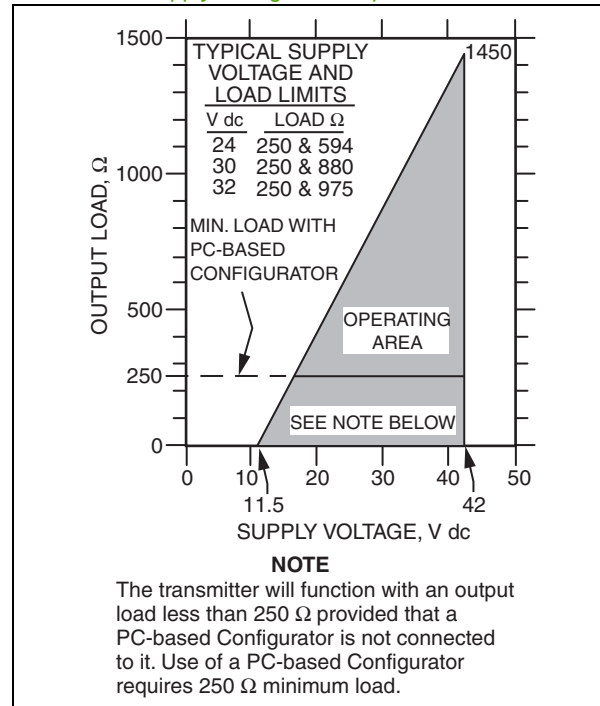
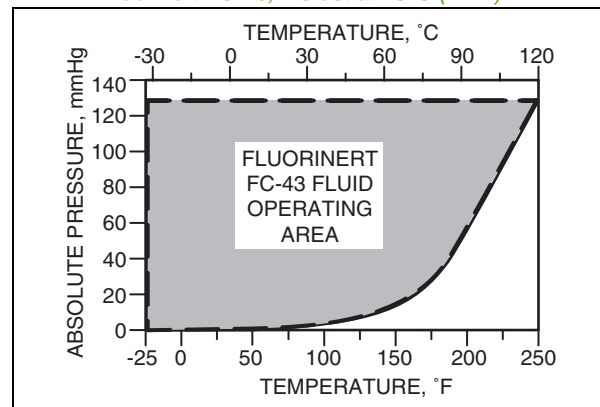


Figure 6. Minimum Allowable Absolute Pressure vs. Transmitter Temperature, Fluorinert FC-43, 2.6 cSt at 25°C (77°F)



**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.

**Suppressed Zero and Elevated Zero**

Suppressed or elevated zero ranges are acceptable as long as the Span and Range Limits are not exceeded (elevated zero applicable to IGP20 only).

**Zero and Span Adjustments**

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

**Optional External Zero Adjustment**

An external pushbutton mechanism (Figure 10) 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 zero adjustment can be disabled by a configuration selection.

**Zeroing for Nonzero-Based Ranges for Gauge Pressure Transmitters Only**

Dual Function Zeroing allows 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 the optional LCD Indicator and optional External Zero Adjustment.

**Current Outputs for Overrange, Fail, and Offline Conditions**

Offline	Configurable between 4 and 20 mA
Sensor Failure	Configurable to Fail LO or Fail HI
Fail Lo	3.60 mA
Underrange	3.75 mA
Overrange	21.00 mA
Fail Hi	22.00 mA

**Communications**

Configurable for either Analog Mode (4 to 20 mA) or Digital Mode (fixed current). Digital communications is provided in both modes based upon the FSK (Frequency Shift Keying) technique which alternately superimposes one of two different frequencies on the uninterrupted current carried by the two signal/power wires. See Figure 8 and Figure 9.

**Analog Mode (4 to 20 mA)**

The 4 to 20 mA output signal is updated 30 times per second, minimum. Digital communications between the transmitter and a PC-based Configurator, or applicable I/A Series system FBM is rated for distances up to 1800 m (6000 ft). The digital communications rate is 600 baud and requires a minimum loop load of 250 ohms.

**Digital Mode (Fixed Current)**

Digital Mode requires connection to an applicable I/A Series system FBM. The digital output signal is updated 10 times per second (matching the FBM) and carries not only the pressure measurement, but also the sensor and electronics temperatures (internal recalculation rate for temperature is one time per second). Digital communications between the transmitter and the FBM, or between the transmitter and PC-based Configurator is rated for distances up to 600 m (2000 ft). The digital communications rate is 4800 baud and requires a minimum loop load of 250 ohms.

### Remote Communications

If the transmitter is configured for digital output and is digitally integrated into an I/A Series system, the system has full access to all of the “Display” and “Display and Reconfigure” items listed below.

Also, regardless of whether the transmitter is configured for digital output or analog 4 to 20 mA output, the PC-based Configurator, and applicable I/A Series system FBMs have full access to all of the “Display” and “Display and Reconfigure” items listed below. The PC-based Configurator may be connected anywhere along the communications wiring loop, and does not disturb the communications signals. Plug-in connection points are provided on the transmitter terminal block.

#### “Display” Items

- ▶ Process Measurement
- ▶ Transmitter Temperature (Electronics and Sensor)
- ▶ mA Output (if so configured)
- ▶ Transmitter Model and Serial Number

#### “Display and Reconfigure” Items

- ▶ Output in mA, %, or Engineering Units (EGU)
- ▶ Zero and Span, Including Reranging without Pressure
- ▶ Zero Elevation and Suppression
- ▶ 4 to 20 mA or Digital Output
- ▶ Pressure and Plant EGU
- ▶ Temperature Sensor Failure Strategy
- ▶ Electronic Damping
- ▶ Failsafe Direction (High or Low)
- ▶ Tag Number, Tag Name, and Device Name
- ▶ Transmitter Location
- ▶ Calibrator's Initials
- ▶ Date of Last Calibration

### Configuration and Calibration Data, and Electronics Upgradeability

All factory characterization data and user configuration and calibration data are stored in the sensor (Figure 7). This means that the electronics module may be replaced, with one of like type, without the need for reconfiguration or recalibration.

Although module replacement can affect accuracy by a maximum of 0.20% of span, this error can be removed by an mA trim without application of pressure.

Changing module types (e.g., from one communication protocol to another communication protocol) may require reconfiguration and recalibration, as well as a different terminal block, but all factory characterization data is retained.

### Configuration Capability

#### Calibrated Range

- Input range within Span and Range Limits.
- One of pressure units shown in Table 3.

#### Output Measurement #1 — Digital Primary Variable and 4 to 20 mA

*Mode:* Linear

*Units:* Calibrated range unit, or a custom unit

#### Output Measurement #2 — Digital Secondary Variable

*Mode:* Linear

*Units:* Table 3 unit, or a custom unit.

#### Measurements #1 and #2

These measurements may be swapped.

Table 3. Gauge Pressure Units

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

a. Absolute or gauge pressure units, as applicable.

Figure 7. Transmitter Functional Block Diagram

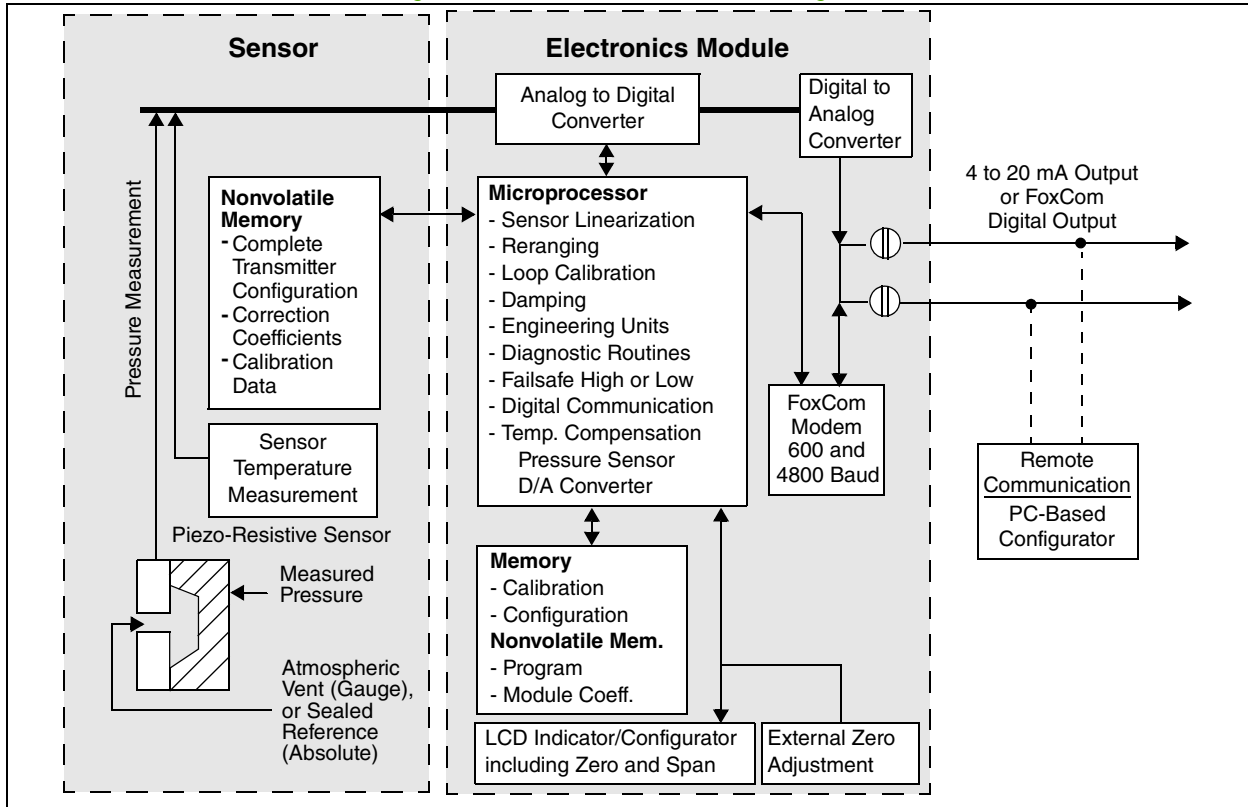


Figure 8. 4 to 20 mA Output Block Diagram

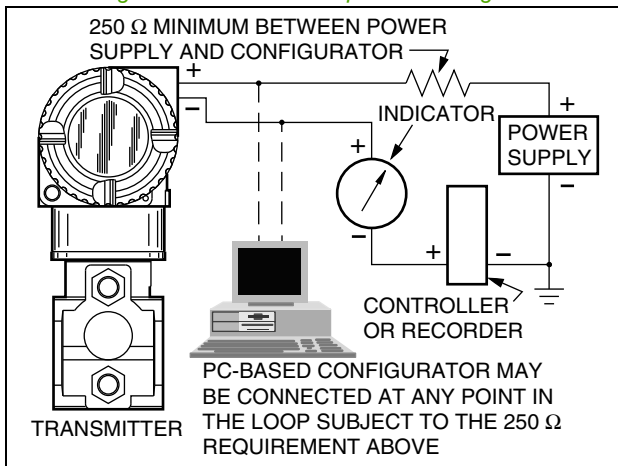
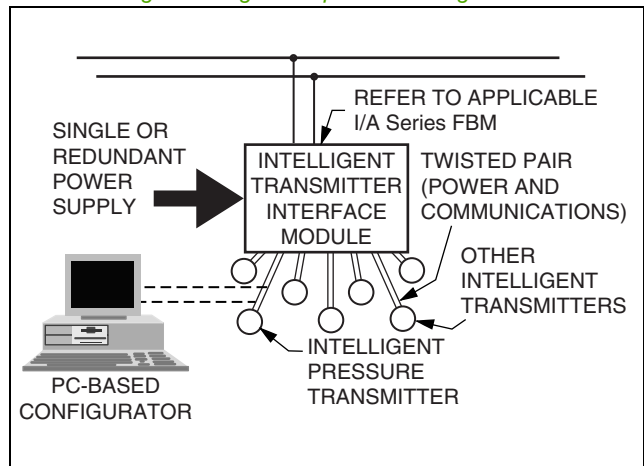


Figure 9. Digital Output Block Diagram



### Optional Liquid Crystal Display (LCD) Indicator w/Pushbuttons (Figure 10)

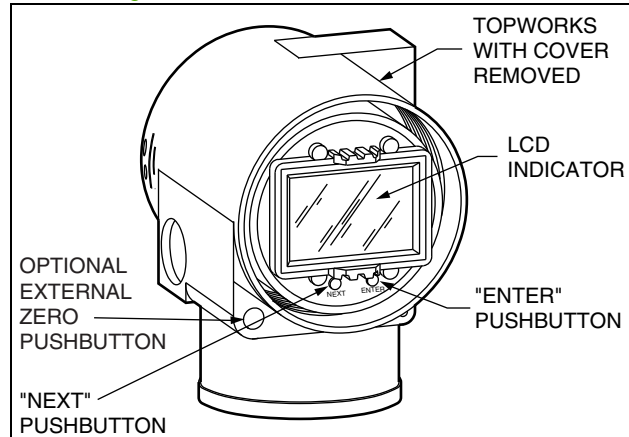
Indicator Provides:

- ▶ 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 displayed on top line, and units label displayed on bottom line.
- ▶ Configuration and Calibration Prompts.

Pushbuttons (two) Provide the Following Configuration and Calibration Functions:

- ▶ Zero and Span settings, non-interactive to automatically set output to either 4 mA or 20 mA using the "NEXT" and "ENTER" pushbuttons.
- ▶ 4 and 20 mA Jog Settings, allowing the user to easily increment the mA output signal up or down in fine steps to match a value shown on an external calibrator.
- ▶ Forward or Reverse Output
- ▶ Damping Adjustment
- ▶ Enable/Disable Optional External Zero
- ▶ Failsafe Direction (High or Low)
- ▶ Units Label (Bottom Line of Display)
- ▶ Settable Lower and Upper Range Values (for Transmission and Display (Top Line)
- ▶ Reranging without Pressure
- ▶ Secondary Digital Measurement
- ▶ mA Output Value during Offline Conditions
- ▶ Pushbutton Password Protection; two Levels: to lock out Configuration or to lock out Calibration and Configuration
- ▶ Tag

Figure 10. LCD Indicator with Pushbuttons



### 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; for example, see Table 4:

Table 4. Custom Configuration

Parameter	Standard (Default) Configuration	Example of Custom Configuration Option -C2
Tagging Info. Tag Number (12 char. max.) Tag Name (14 char. max.) Location (14 char. max.) Device Name (6 char. max.)	per S.O.  Tag Name  Location  DevNam	LT103A  Water Tank  Building 4  LT103A
Calibrated Range Pressure EGU LRV URV	per S.O. (a) per S.O. (b) per S.O. (b)	inH <sub>2</sub> O 0 185
Measurement #1 EGU Range Output	per S.O. (c) per S.O. (c) 4 to 20 mA	Gallon 0 to 15 000 4 to 20 mA
Measurement #2 EGU Range	psig(a) 0 to 100	inH <sub>2</sub> O 0 to 185
Other Electronic Damping Failure Strategy Failsafe Direction Ext. Zero Option	None Continue Upscale Enabled	0.5 s Failsafe Downscale Disabled

Any of these configurable parameters in Table 4 can easily be changed using the PC-based Configurator, or the I/A Series Workstation.

- a. From Table 3. Otherwise, the factory default calibration is zero to maximum span; default units vary by sensor code.
- b. Within Span and Range Limits for a selected sensor code.
- c. Same as calibrated range.



**OPERATING, STORAGE, AND TRANSPORTATION CONDITIONS**

Influence	Reference Operating Conditions	Normal Operating Conditions (a)	Operative Limits (a)	Storage and Transportation Limits
Process Connection Temp. ▶ with Silicone Fill Fluid  ▶ with Fluorinert Fill Fluid	▶ 24 ±2°C (75 ±3°F)  ▶ 24 ±2°C (75 ±3°F)	▶ -29 to + 82°C (-20 to +180°F)  ▶ -29 to + 82°C (-20 to +180°F)	▶ -46 and +121°C (b) (-50 and +250°F) (b)  ▶ -29 and +121°C (-20 and +250°F)	▶ Not Applicable  ▶ Not Applicable
Electronics Temperature  ▶ with LCD Indicator (c)	▶ 24 ±2°C (75 ±3°F)  ▶ 24 ±2°C (75 ±3°F)	▶ -29 to + 82°C (d) (-20 to +180°F) (d)  ▶ -20 to + 82°C (d) (-4 to +180°F) (d)	▶ -40 and +85°C (d) (-40 and +185°F) (d)  ▶ -29 and +85°C (d) (-20 and +185°F) (d)	▶ -54 and +85°C (-65 and +185°F)  ▶ -54 and +85°C (-65 and +185°F)
Relative Humidity (e)	50 ±10%	0 to 100%	0 and 100%	0 and 100% Noncondensing
Supply Voltage - mA Output	30 ±0.5 V dc	11.5 to 42 V dc (f)	11.5 and 42 V dc (f)	Not Applicable
Output Load - mA Output	650 Ω	0 to 1450 Ω	0 and 1450 Ω	Not Applicable
Vibration	1 m/s <sup>2</sup> (0.1 “g”)	6.3 mm (0.25 in) Double Amplitude: from 5 to 15 Hz with Aluminum Housing and from 5 to 9 Hz with 316 ss Housing ----- 0 to 30 m/s <sup>2</sup> (0 to 3 “g”) from 15 to 500 Hz with Aluminum Housing; and 0 to 10 m/s <sup>2</sup> (0 to 1 “g”) from 9 to 500 Hz with 316 ss Housing		11 m/s <sup>2</sup> (1.1 “g”) from 2.5 to 5 Hz (in Shipping Package)
Mounting Position	Upright (g)	Upright (g)	No Limit	Not Applicable

- a. Temperature limits are derated as follows:  
IAP20 and IGP20 Transmitters:  
to -7 and +82°C (20 and 180°F) when Structure Codes 78/79 (pvdf inserts) are used, and to 0 and 60°C (32 and 140°F) when DIN Construction Options D2/D4/D6/D8 are used.
- b. Selection of Option -J extends the low temperature limit of transmitters with silicone filled sensors 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. Refer to the “ELECTRICAL SAFETY SPECIFICATIONS” on page 19 for a restriction in ambient temperature with certain electrical certifications.
- e. With topworks covers on and conduit entrances sealed.
- f. 11.5 V dc can be reduced to 11 V dc by using a plug-in shorting bar; see “PHYSICAL SPECIFICATIONS” on page 18.
- g. Sensor process wetted diaphragms in a vertical plane for IAP20 and IGP20 Transmitter.

**PERFORMANCE SPECIFICATIONS**

*Zero-Based Calibrations; 316L ss or Co-Ni-Cr Diaphragms with Silicone Fluid for IGP10 and IAP10; Cobalt-Nickel-Chromium or 316L Stainless Steel Sensor with Silicone Fluid for IGP20; Under Reference Operating Conditions unless otherwise Specified; URL = Upper Range Limit, and Span = Calibrated Span.*

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

Accuracy, % of Span (a) (b)	
Spans ≥10% URL	Spans <10% URL
±0.075%	±[0.04 + 0.0035 (URL/Span)]%

- a. Add ±0.05% for Span Code A, and ±0.02% for Span Codes E and F.
- b. Subtract ±0.025% for digital output accuracy.

**Stability**

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

**Calibration Frequency**

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

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

**Power-Up Time**

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

**Supply Voltage Effect**

The output changes less than 0.005% of span for each 1 V change within the specified supply voltage requirements. See Figure 5.

**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 transmitters with aluminum housings; 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 transmitters with 316 ss housings.

**RFI Effect**

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

**Position Effect**

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

**Switching and Indirect Lightning Transients**

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

**Ambient Temperature Effect**

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

**For the IAP10 and IGP10 Transmitters**

Span Code (a)	Ambient Temperature Effect
C, D, E, and F	± (0.03% URL + 0.060% Span)

a. Span Code F applicable to IGP10 Transmitter only.

**For the IAP20 and IGP20 Transmitters**

Span Code	Ambient Temperature Effect
A (a)	± (0.18% URL + 0.025% Span)
B and C	± (0.03% URL + 0.060% Span)
D	± (0.05% URL + 0.045% Span)
E and F (a)	± (0.08% URL + 0.025% Span)

a. Span Codes A and F applicable to IGP20 transmitters only.

**NOTE**

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

**PHYSICAL SPECIFICATIONS**

Description	Direct Connected Absolute and Gauge Pressure Transmitters IAP10 and IGP10	Bracket Mounted Absolute and Gauge Pressure Transmitters IAP20 and IGP20
Process Wetted Parts Mat'ls. (High Pressure Side) <ul style="list-style-type: none"> <li>▶ Process Connection</li> <li>▶ Gaskets</li> <li>▶ Sensor Diaphragm</li> </ul>	<ul style="list-style-type: none"> <li>▶ 316L ss or Nickel alloy (a)</li> <li>▶ Not Applicable</li> <li>▶ 316L ss, Co-Ni-Cr, or Nickel alloy (a)</li> </ul>	<ul style="list-style-type: none"> <li>▶ Carbon Steel, 316 ss, Nickel alloy (a), Monel, or pvdf (Kynar)</li> <li>▶ Glass Filled ptfе (Chemloy), Viton</li> <li>▶ Co-Ni-Cr, 316L ss, Gold-Plated 316L ss, Nickel alloy (a), Monel, or Tantalum</li> </ul>
Reference Side Mat'ls. (Atmospheric Pressure Side)	IGP10 Transmitter: Silicon, Pyrex, RTV, and 316 ss IAP10 Transmitter: N/A	Sensor Diaphragm: Same as specified for High Pressure side process wetted material. Cover: 316 ss
Sensor Fill Fluid	Silicone or Fluorinert	Silicone or Fluorinert
Bolts and Nuts for Process Cover and Connector	N/A	Standard Bolting: ASTM A193, Grade B7 Bolts ASTM A194, Grade 2H Nuts Optional Bolting: 316 ss, Type 17-4 ss, or B7M (NACE)
Electrical Housing and Housing Covers	Two compartments to separate electronics from field connections. Material is low copper (0.6% maximum) die-cast aluminum alloy with epoxy finish, or 316 ss.	
Environmental Protection	Dusttight and weatherproof per IEC IP66 and NEMA 4X.	
Electronics Module	Printed wiring assemblies are conformally coated for moisture and dust protection.	
Electrical Connections	1/2 NPT or PG 13.5 entrances on both sides of electronics housing, as specified. Unused entrance must be plugged to ensure moisture and RFI protection (Aluminum or 316 ss plug supplied by Invensys).	
Mounting Position	The transmitter may be mounted in any orientation.	

Description	Direct Connected Absolute and Gauge Pressure Transmitters IAP10 and IGP10	Bracket Mounted Absolute and Gauge Pressure Transmitters IAP20 and IGP20
Approximate Mass (Does not include seals. Refer to PSS 2A-1Z11 A for integral transmitter and seal systems)	Standard Transmitter 1.5 kg (3.3 lb) With 316 ss Housing Add 1.1 kg (2.4 lb) With LCD Indicator Option Add 0.2 kg (0.4 lb)	Approximate Mass (Does not include seals. Refer to PSS 2A-1Z11 A for integral transmitter and seal systems)
Field Terminal Connections		

a. Equivalent to Hastelloy ® C.

ELECTRICAL SAFETY SPECIFICATIONS

IAP10 and IGP10 Transmitters

Testing Laboratory, Types of Protection, and Area Classification	Application Conditions	Electrical Safety Design Code
<b>ATEX</b> flameproof; II 2 GD, EEx d IIC, Zone 1.	Temperature Class T6, T85°C, Ta = -40°C to +75°C.	D
<b>ATEX</b> intrinsically safe; II 1 GD, EEx ia IIC, Zone 0 or II 1/2 GD, EEx ib IIC, Zone 0 and 1.	Temperature Class T4 at 80°C; T5 at 40°C; T6 at 40°C maximum ambient.	E
<b>ATEX</b> protection n; II 3 GD, EEx nL IIC, Zone 2.	Temperature Class T4 at 80°C; T5 at 70°C; T6 at 40°C maximum ambient.	N
<b>ATEX</b> multiple certifications, ia and ib, and n. Refer to ATEX Codes E and N for details.	Applies to Codes E and N but not to Code D.	M
<b>ATEX</b> multiple certifications, ia and ib, d, and n. Refer to ATEX Codes D, E, and N for details.	Applies to Codes D, E, and N.	P

IAP10 and IGP10 Transmitters (Continued)

Testing Laboratory, Types of Protection, and Area Classification	Application Conditions	Electrical Safety Design Code
<b>CSA</b> intrinsically safe for Class I, Division 1, Groups A, B, C, and D; Class II, Division 1, Groups E, F, and G; Class III, Division 1.	Temperature Class T6 at 40°C, and T4A at 85°C maximum ambient.	C
<b>CSA</b> 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.	Maximum Ambient Temperature 85°C.	
<b>CSA</b> Class I, Division 2, Groups A, B, C, and D; Class II, Division 2, Groups F and G; and Class III, Division 2.	Temperature Class T6 at 40°C and T4A at 85°C maximum ambient.	
<b>CSA</b> field device zone certified flameproof Ex d IIC. Also, all certifications of Code C above.	Maximum Ambient Temperature 85°C.	B
<b>FM</b> intrinsically safe for Class I, Division 1, Groups A, B, C, and D; Class II, Division 1, Groups E, F, and G; Class III, Division 1.	Temperature Class T4A at 40°C and T4 at 85°C maximum ambient.	F
<b>FM</b> 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.	Temperature Class T6 at 80°C and T5 at 85°C maximum ambient.	
<b>FM</b> nonincendive Class I, Division 2, Groups A, B, C, and D; Class II, Division 2, Groups F and G, and Class III, Division 2.	Temperature Class T4A at 40°C and T4 at 85°C maximum ambient.	
<b>FM</b> field device zone certified flameproof AEx d IIC. Also, all certifications of Code F above.	Temperature Class T6 at 75°C maximum ambient.	G
<b>IECEx</b> flameproof, Ex d IIC, Zone 1.	Temperature Class T6, Ta = -40°C to +75°C.	V

NOTES

- 1 Transmitter has been designed to meet the electrical safety descriptions listed. Contact Global Customer Support for information or status of testing laboratory approvals or certifications.
- 2 See "" on page 22 for availability of Electrical Safety Design Codes with particular Transmitter Models and Structures.
- 3 Refer to applicable Instruction Manual for application conditions and connectivity requirements.
- 4 When selecting ATEX Safety Design Code M or P, the user must permanently mark (check off in rectangle block on data plate) one type of protection only (ia and ib, d, or n). Do not change this mark.

## IAP20 and IGP20 Transmitters

Testing Laboratory, Types of Protection, and Area Classification	Application Conditions	Electrical Safety Design Code
<b>ATEX</b> flameproof; II 2 GD, EEx d IIC, Zone 1.	Temperature Class T6, T85°C, Ta = -40°C to +80°C.	D
<b>ATEX</b> intrinsically safe; II 1 GD, EEx ia IIC, Zone 0 or II 1/2 GD, EEx ib IIC, Zone 0 and 1.	Temperature Class T4 at 80°C, T5 at 40°C. and T6 at 40°C maximum ambient.	E
<b>ATEX</b> protection n; II 3 GD, EEx nL IIC, Zone 2.	Temperature Class T4 at 80°C, T5 at 70°C. and T6 at 40°C maximum ambient.	N
<b>ATEX</b> multiple certifications, ia and ib, d, and n. Refer to ATEX Codes D, E and N for details.	Applies to Codes D, E, and N.	M
<b>CSA</b> intrinsically safe for Class I, Division 1, Groups A, B, C, and D; Class II, Division 1, Groups E, F, and G; Class III, Division 1.	Temperature Class T6 at 40°C and T4A at 85°C maximum ambient.	C
<b>CSA</b> 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.	Maximum Ambient Temperature 85°C.	
<b>CSA</b> Class I, Division 2, Groups A, B, C, and D; Class II, Division 2, Groups F and G; and Class III, Division 2.	Temperature Class T6 at 40°C and T4A at 85°C maximum ambient.	
<b>CSA</b> field device zone certified flameproof Ex d IIC. Also, all certifications of Code C above.	Maximum Ambient Temperature 85°C.	B
<b>FM</b> intrinsically safe for Class I, Division 1, Groups A, B, C, and D; Class II, Division 1, Groups E, F, and G; Class III, Division 1.	Temperature Class T4A at 40°C and T4 at 85°C maximum ambient.	F
<b>FM</b> 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.	Temperature Class T6 at 80°C and T5 at 85°C maximum ambient.	
<b>FM</b> nonincendive Class I, Division 2, Groups A, B, C, and D; Class II, Division 2, Groups F and G; and Class III, Division 2.	Temperature Class T4A at 40°C and T4 at 85°C maximum ambient.	
<b>FM</b> field device zone certified flameproof AEx d IIC. Also, all certifications of Code F above.	Temperature Class T6 at 80°C and T5 at 85°C maximum ambient.	G
<b>IECEx</b> flameproof, Ex d IIC.	T6, Ta = 80°C; T5, Ta = 85°C Ambient Temperature -20°C to +85°C.	V

## NOTES

- 1 Transmitter has been designed to meet the electrical safety descriptions listed. Contact Global Customer Support for information or status of testing laboratory approvals or certifications.
- 2 See "" on page 22 for availability of Electrical Safety Design Codes with particular Transmitter Models and Structures.
- 3 Refer to applicable Instruction Manual for application conditions and connectivity requirements.
- 4 When selecting ATEX Safety Design Code M or P, the user must permanently mark (check off in rectangle block on data plate) one type of protection only (ia and ib, d, or n). Do not change this mark.

MODEL CODES - IAP10 AND IGP10 TRANSMITTERS

Description	Model			
I/A Series, Electronic, Direct Connected Absolute Pressure Transmitter	IAP10 (a)			
I/A Series, Electronic, Direct Connected Gauge Pressure Transmitter	IGP10 (a)			
<b>Electronics Versions and Output Signal</b>				
Intelligent; Digital FoxCom or 4 to 20 mA dc, configurable (Version -D)	-D			
<b>Structure Code - Select from one of the following six groups:</b>				
<b>1. Transmitter Only (no Seals)</b>				
<b>Process</b>				
<b>Connection</b>	<b>Sensor</b>	<b>Fill Fluid</b>	<b>Connection Type</b>	
316L ss	Co-Ni-Cr	Silicon	1/2 NPT External Thread, 1/4 NPT Internal Thread	20
316L ss	Co-Ni-Cr	Inert	1/2 NPT External Thread, 1/4 NPT Internal Thread	21
316L ss	316L ss	Silicon	1/2 NPT External Thread, 1/4 NPT Internal Thread	22
316L ss	316L ss	inert	1/2 NPT External Thread, 1/4 NPT Internal Thread	23
316L ss	Nickel alloy (b)	Silicon	1/2 NPT External Thread, 1/4 NPT Internal Thread	30
316L ss	Nickel alloy (b)	Inert	1/2 NPT External Thread, 1/4 NPT Internal Thread	31
<b>2. Transmitter Prepared for Foxboro Model Coded Seals (c)</b>				
Transmitter Prepared for Foxboro Direct Connect Seal; Silicone Fill in Sensor (d)				D1
Transmitter Prepared for Foxboro Direct Connect Seal; Inert Fill in Sensor (IGP10 only) (d)				D2
Transmitter Prepared for Foxboro Remote Mount Seal; Silicone Fill in Sensor (e)				S3
Transmitter Prepared for Foxboro Remote Mount Seal; Inert Fill in Sensor (IGP10 only) (e)				S4
<b>3. Transmitters Prepared for non-Foxboro Seals</b>				
Transmitter Prepared for Remote Seal; Silicone Fill in Sensor (f)				SC
Transmitter Prepared for Remote Seal; Inert Fill in Sensor (g)				SD
<b>4. Flameproof Transmitter Only (no Seals)</b>				
<b>Process</b>				
<b>Connection</b>	<b>Sensor</b>	<b>Fill Fluid</b>	<b>Connection Type</b>	
316L ss	316L ss	Silicone	1/2 NPT External Thread, 1/4 NPT Internal Thread	52
316L ss	316L ss	Inert	1/2 NPT External Thread, 1/4 NPT Internal Thread	53
316L ss	Nickel alloy (b)	Silicone	1/2 NPT External Thread, 1/4 NPT Internal Thread	60
316L ss	Nickel alloy (b)	Inert	1/2 NPT External Thread, 1/4 NPT Internal Thread	61
Nickel alloy (b)	Nickel alloy (b)	Silicone	1/2 NPT External Thread, 1/4 NPT Internal Thread	62
Nickel alloy (b)	Nickel alloy (b)	Inert	1/2 NPT External Thread, 1/4 NPT Internal Thread	63
<b>5. Flameproof Transmitter Prepared for Foxboro Model Coded Seals (c)</b>				
Flameproof Transmitter Prepared for Direct Connect Seal; Silicone Fill in Sensor (d)				D5
Flameproof Transmitter Prepared for Direct Connect Seal; Inert Fill in Sensor (IGP10 only) (d)				D6
Flameproof Transmitter Prepared for Remote Mount Seal; Silicone Fill in Sensor (e)				S5
Flameproof Transmitter Prepared for Remote Mount Seal; Inert Fill in Sensor (IGP10 only) (e)				S6
<b>6. Flameproof Transmitter Prepared for non-Foxboro Seals</b>				
Flameproof Transmitter Prepared for Remote Seal; Silicone Fill in Sensor (f)				SH
Flameproof Transmitter Prepared for Remote Seal; Inert Fill in Sensor (g)				SJ
<b>Span Limits - Absolute or Gauge Pressure Units, as Applicable</b>				
<b>MPa</b>	<b>psi</b>	<b>bar</b>		
0.007 and 0.21	1 and 30	0.07 and 2.1		C
0.07 and 2.1	10 and 300	0.7 and 21		D
0.7 and 21	100 and 3000	7 and 210		E
14 and 42	2000 and 6000	140 and 420 (IGP10 only)		F



**MODEL CODES - IAP10 AND IGP10 TRANSMITTERS (CONTINUED)**

Description	Model
<b>Conduit Connection and Housing Material</b>	
1/2 NPT Conduit Connection, Aluminum Housing	1
PG 13.5 Conduit Connection, Aluminum Housing (Electrical Safety Codes E, D, M, N, P only)	2
1/2 NPT Conduit Connection, 316 ss Housing	3
PG 13.5 Conduit Connection, 316 ss Housing (Electrical Safety Codes E, D, M, N, P only)	4
M20 Conduit Connection, Aluminum Housing (Electrical Safety Codes E, D, M, N, P only)	5
M20 Conduit Connection, 316 ss Housing (Electrical Safety Codes E, D, M, N, P only)	6
<b>Electrical Safety (See "ELECTRICAL SAFETY SPECIFICATIONS" on page 19 for Description)</b>	
ATEX II 1 GD, EEx ia IIC, Zone 0; or II 1/2 GD, EEx ib IIC, Zone 0/1	E
ATEX II 2 GD, EEx d IIC, Zone 1 (h) (i)	D
ATEX II 3 GD, EEx nL IIC, Zone 2	N
ATEX Multiple Certifications (includes ATEX Codes E and N) (See "ELECTRICAL SAFETY SPECIFICATIONS" on page 19 for user marking)	M
ATEX Multiple Safety (includes ATEX Codes E, D, and N) (h) (i) (See "ELECTRICAL SAFETY SPECIFICATIONS" on page 19 for user marking)	P
CSA Certifications: (j) Division 1 intrinsically safe, explosionproof, dust-ignitionproof Division 2, Classes I, II, and III	C
CSA zone certified flameproof Ex d IIC. Also all certifications of Code C above. (h) (i)	B
FM Approvals: (i) Division 1 intrinsically safe, explosionproof, dust-ignitionproof Division 2 nonincendive, Classes I, II, and III	F
FM zone approved flameproof AEx d IIC. Also all certifications of Code F above. (h) (i)	G
IECEx flameproof, Ex d IIC, Zone 1 (h) (i)	V
<b>Optional Selections</b> See descriptions below.	
<b>Mounting Bracket Set (k)</b>	
Painted Steel Bracket with Plated Steel Bolts, 1/2 NPT (Conduit Connection Codes 1 and 3 only)	-M1
Stainless Steel Bracket with Stainless Steel Bolts, 1/2 NPT (Conduit Connection Codes 1 and 3 only)	-M2
Painted Steel Bracket with Plated Steel Bolts, PG 13.5 (Conduit Connection Codes 2 and 4 only)	-M3
Stainless Steel Bracket with Stainless Steel Bolts, PG 13.5 (Conduit Connection Codes 2 and 4 only)	-M4
Painted Steel Bracket with Plated Steel Bolts, M20 (with Conduit Connection Codes 5 and 6 only)	-M5
Stainless Steel Bracket with Stainless Steel Bolts, M20 (Conduit Connection Codes 5 and 6 only)	-M6
<b>Digital Indicator with Pushbuttons</b>	
Digital Indicator, Pushbuttons, and Window Cover	-L1
<b>Vent Screw and Block &amp; Bleed Valve</b>	
316 ss Vent Screw in Process Connection (Not with Structure Codes 32 or 33, or Pressure Seals)	-V1
Block and Bleed Valve, Carbon Steel (Not with Pressure Seals)	-V2
Block and Bleed Valve, 316 ss (Not with Pressure Seals)	-V3
Block and Bleed Valve, 316 ss w/Monel Trim (Not with Pressure Seals)	-V4

**MODEL CODES - IAP10 AND IGP10 TRANSMITTERS (CONTINUED)**

<u>Description</u>	<u>Model</u>
<b>Conduit Thread Adapters</b>	
Hawke-Type 1/2 NPT Cable Gland for use with Conduit Connection Codes 1 and 3 only (l)	-A1
Plastic PG 13.5 Cable Gland for use with Conduit Connection Codes 2 and 4 only (m)	-A2
M20 Connector for use with Conduit Connection Codes 1 and 3 only <sup>(l)</sup>	-A3
Brass PG 13.5 Cable Gland (Trumpet-Shaped), use with Conduit Connection Codes 2 and 4 only (m)	-A4
<b>Electronics Housing Features</b>	
External Zero Adjustment	-Z1
Custody Transfer Lock and Seal	-Z2
External Zero Adjustment and Custody Transfer Lock and Seal	-Z3
<b>Custom Factory Configuration</b>	
Digital Output (4 to 20 mA default if not selected)	-C1
Full Factory Configuration (Requires Configuration Form to be filled out)	-C2
<b>Cleaning and Preparation</b>	
Unit Degreased - for Silicone Filled Sensors Only Not for Oxygen/Chlorine Service, Option -V1, or Pressure Seals	-X1
Cleaned and Prepared for Oxygen Service - for Fluorinert Filled Sensors Only Not with Option -V1, or Pressure Seals	-X2
Cleaned and Prepared for Chlorine Service - with Structure Code 33 Only Not with Option -V1, or Pressure Seals	-X3
<b>Instruction Books (Common MI, Brochure, and Full Documentation Set on DVD is Standard)</b>	
Without Instruction Book and DVD - Only "Getting Started" Brochure is supplied	-K1
<b>Miscellaneous Optional Selections</b>	
G 1/2 B Manometer Process Connection (Not Available with Option -V1 or Pressure Seals)	-G
Low Temperature Operative Limit of Electronics Housing Extended Down to -50°C (-58°F) (n)	-J
R 1/2 Process Connection (1/2 NPT to R 1/2 Adapter) (o)	-R
Supplemental Customer Tag (Stainless Steel Tag wired onto Transmitter)	-T

- a. Refer to PSS 2A-1C13 F for very high GP versions with upper range limits of 52, 105, and 210 MPa (7500, 15000, and 30000 psi). Refer to PSS 2A-1C13 K and PSS 2A-1C13 L for AP and GP versions for sanitary and pulp/paper industries, respectively.
- b. Equivalent to Hastelloy® C.
- c. Both transmitter and pressure seal Model Numbers are required. Refer to PSS 2A-1Z11 A for pressure seal Model Codes.
- d. Direct Connect Seal Models that may be specified are PSTAD, PSFAD, and PSISD.
- e. Remote Mount Seal Models that may be specified are PSFPS, PSFES, PSFAR, PSTAR, PSISR, PSSCR, and PSSSR.
- f. For transmitters with Silicone fill prepared for remote seal by others, specify Structure Code 22 or 52.
- g. For transmitters with Inert fill prepared for remote seal by others, specify Structure Code 23 or 53.
- h. Electrical Safety Codes B, D, G, V, and P are only available with flameproof transmitter Structure Codes 52, 53, 60, 61, 62, 63, D5, D6, S5, S6, SH, and SJ.
- i. A cover lock is provided as standard with Electrical Safety Codes D, B, G, V, and P
- j. Electrical Safety Codes C and F are not available with flameproof transmitter Structure Codes 52, 53, 60, 61, 62, 63, D5, D6, S5, S6, SH, and SJ.
- k. Mounting sets not offered with direct mounted seals, except if a direct mounted PSTAD threaded seal with a 1/4 NPT process connection is used, then a mounting set is recommended.
- l. Available with Electrical Safety Codes E, D, M, N, and P only.
- m. Available with Electrical Safety Code E only.
- n. Not available with Inert fill in sensor or seal.
- o. Not available with pressure seals, or Nickel alloy (b) sensors.

MODEL CODES - IAP20 AND IGP20 TRANSMITTERS

Description	Model
I/A Series, Electronic, Bracket-Mounted Absolute Pressure Transmitter	IAP20
I/A Series, Electronic, Bracket-Mounted Gauge Pressure Transmitter	IGP20
<b>Electronics Versions and Output Signal</b>	
Intelligent; Digital FoxCom or 4 to 20 mA dc, configurable (Version -D)	-D
<b>Structure Code - Select from one of the following three groups:</b>	
<b>1. Transmitter Only (No Seals)</b>	
<b>Hi-Side Cover      Sensor      Fill Fluid</b>	
Steel      Co-Ni-Cr      Silicone	10
Steel      Co-Ni-Cr      Inert	11
Steel      316L ss      Silicone	12
Steel      316L ss      Inert	13
Steel      Nickel alloy (a)      Silicone	16
Steel      Nickel alloy (a)      Inert	17
316 ss      Co-Ni-Cr      Silicone	29
316 ss      Co-Ni-Cr      Inert	21
316 ss      316L ss      Silicone	22
316 ss      316L ss      Inert	23
316 ss      316L ss, Gold Plated      Silicone	2G
316 ss      Monel      Silicone	24
316 ss      Monel      Inert	25
316 ss      Nickel alloy (a)      Silicone	26
316 ss      Nickel alloy (a)      Inert	27
Monel      Monel      Silicone	34
Monel      Monel      Inert	35
Nickel alloy (a)      Nickel alloy (a)      Silicone	46
Nickel alloy (a)      Nickel alloy (a)      Inert	47
Nickel alloy (a)      Tantalum      Silicone	48
Nickel alloy (a)      Tantalum      Inert	49
pvdf Insert (Kynar)      Tantalum      Silicone (Used with Process Connector Type 7)	78 (b)
pvdf Insert (Kynar)      Tantalum      Inert (Used with Process Connector Type 7)	79 (b)
<b>2. Transmitter Prepared for Foxboro Model Coded Seals (c)</b>	
Transmitter Prepared for Remote Seal on HI Side; Silicone fill in sensor (IAP20 and IGP20)	S3 (d)
Transmitter Prepared for Remote Seal on HI Side; Inert fill in sensor (IGP20)	S4 (d)
Transmitter Prepared for PSFLT, PSSCT, or PSSST Seal, HI Side; Silicone fill in sensor (IGP20)	F1
Transmitter Prepared for PSFLT, PSSCT, or PSSST Seal, HI Side; Inert fill in sensor (IGP20)	F2
<b>3. Transmitter Prepared for non-Foxboro Seals</b>	
Transmitter Prepared for Remote Seal; Silicone Fill in Sensor	SC
Transmitter Prepared for Remote Seal; Inert Fill in Sensor	SD
<b>Span Limits (Absolute or Gauge Pressure Units)</b>	
<b>kPa      inH<sub>2</sub>O      mbar</b>	
0.12 and 7.5      0.5 and 30      1.2 and 75 (IGP20 only)	A (e)
0.87 and 50      3.5 and 200      8.7 and 500	B
<b>MPa      psi      bar</b>	
0.007 and 0.21      1 and 30      0.07 and 2.1	C
0.07 and 2.1      10 and 300      0.7 and 21	D
0.7 and 21      100 and 300      07 and 210	E (f)
1.38 and 35      200 and 5000      13.8 and 350 (IGP20 only)	F (f)

**MODEL CODES - IAP20 AND IGP20 TRANSMITTERS (CONTINUED)**

Description	Model
<b>Process Connector Type (Material Same as Process Cover Material)</b>	
None; connect directly to process cover (not available with Structure Codes 78 and 79)	0
1/4 NPT (not available with Structure Codes 46, 47, 48, 49, 78, 79)	1
1/2 NPT (not available with Structure Codes 78, 79)	2
Rc 1/4 (not available with Structure Codes 46, 47, 48, 49, 78, 79)	3
Rc 1/2 (not available with Structure Codes 78, 79)	4
1/2 Schedule 80 Welding Neck (not available with Structure Codes 46, 47, 48, 49, 78, 79)	6
None; pvdf (Kynar) insert tapped for 1/2 NPT on side of 316 ss Process Cover (only with Codes 78/79)	7
<b>Conduit Connection and Housing Material</b>	
1/2 NPT Conduit Connection, Aluminum Housing	1
PG 13.5 Conduit Connection, Aluminum Housing (Electrical Safety Codes E, D, M, N only)	2
1/2 NPT Conduit Connection, 316 ss Housing	3
PG 13.5 Conduit Connection, 316 ss Housing (Electrical Safety Codes E, D, M, N only)	4
M20 Conduit Connection, Aluminum Housing (Electrical Safety Codes E, D, M, N only)	5
M20 Conduit Connection, Both Sides, 316 ss Housing (Electrical Safety Codes E, D, M, N only)	6
<b>Electrical Safety (Also see "ELECTRICAL SAFETY SPECIFICATIONS" on page 19 for descriptions)</b>	
ATEX II 1 GD, EEx ia IIC; or II 1/2 GD, EEx ib IIC	E
ATEX II 2 GD, EEx d IIC (g)	D
ATEX II 3 GD, EEx nL IIC	N
ATEX Multiple Certifications (includes ATEX Codes E, D, and N) (g)	M
(See "ELECTRICAL SAFETY SPECIFICATIONS" on page 19 for user marking)	
CSA Certifications:	C
Division 1 intrinsically safe, explosionproof, dust-ignitionproof	
Division 2, Classes I, II, and III	
CSA zone certified flameproof Ex d IIC. Also all certifications of Code C above. (g)	B
FM Approvals:	F
Division 1 intrinsically safe, explosionproof, dust-ignitionproof	
Division 2 nonincendive, Classes I, II, and III.	
FM zone approved flameproof AEx d IIC. Also all certifications of Code F above. (g)	G
IECEX flameproof, Ex d IIC	V
<b>Optional Selections</b>	
Refer to Optional Selection descriptions below.	
<b>Mounting Bracket Set - Not available with Direct Connect Seals, Structure Codes F1 and F2</b>	
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	-M3
<b>Digital Indicator with Pushbuttons</b>	
Digital Indicator, Pushbuttons, and Window Cover	-L1

MODEL CODES - IAP20 AND IGP20 TRANSMITTERS (CONTINUED)

Description	Model																																													
<b>DIN 213 Construction used with Process Connector Code "0" and 316 ss Process Covers Only (h)</b>																																														
<table border="0"> <thead> <tr> <th>Process Cover Type</th> <th>Cover Screw Material</th> <th>Size</th> <th>Connector Screw Material</th> <th></th> </tr> </thead> <tbody> <tr> <td>Single Ended (i)</td> <td>Steel</td> <td>M10 (by User)</td> <td>N/A</td> <td>-D1</td> </tr> <tr> <td>Double Ended (i) (j) (Blind Kidney Flange on back)</td> <td>Steel</td> <td>M10</td> <td>Steel</td> <td>-D2</td> </tr> <tr> <td>Single Ended</td> <td>Steel</td> <td>7/16 (by User)</td> <td>N/A</td> <td>-D3</td> </tr> <tr> <td>Double Ended (i) (j) (Blind Kidney Flange on back)</td> <td>Steel</td> <td>7/16</td> <td>Steel</td> <td>-D4</td> </tr> <tr> <td>Single Ended (i)</td> <td>316 ss</td> <td>7/16 (by User)</td> <td>N/A</td> <td>-D5</td> </tr> <tr> <td>Double Ended (i) (j) (Blind Kidney Flange on back)</td> <td>316 ss</td> <td>7/16</td> <td>316 ss</td> <td>-D6</td> </tr> <tr> <td>Single Ended</td> <td>17-4 ss</td> <td>7/16 (by User)</td> <td>N/A</td> <td>-D7</td> </tr> <tr> <td>Double Ended (i) (j) (Blind Kidney Flange on back)</td> <td>17-4 ss</td> <td>7/16</td> <td>17-4 ss</td> <td>-D8</td> </tr> </tbody> </table>	Process Cover Type	Cover Screw Material	Size	Connector Screw Material		Single Ended (i)	Steel	M10 (by User)	N/A	-D1	Double Ended (i) (j) (Blind Kidney Flange on back)	Steel	M10	Steel	-D2	Single Ended	Steel	7/16 (by User)	N/A	-D3	Double Ended (i) (j) (Blind Kidney Flange on back)	Steel	7/16	Steel	-D4	Single Ended (i)	316 ss	7/16 (by User)	N/A	-D5	Double Ended (i) (j) (Blind Kidney Flange on back)	316 ss	7/16	316 ss	-D6	Single Ended	17-4 ss	7/16 (by User)	N/A	-D7	Double Ended (i) (j) (Blind Kidney Flange on back)	17-4 ss	7/16	17-4 ss	-D8	
Process Cover Type	Cover Screw Material	Size	Connector Screw Material																																											
Single Ended (i)	Steel	M10 (by User)	N/A	-D1																																										
Double Ended (i) (j) (Blind Kidney Flange on back)	Steel	M10	Steel	-D2																																										
Single Ended	Steel	7/16 (by User)	N/A	-D3																																										
Double Ended (i) (j) (Blind Kidney Flange on back)	Steel	7/16	Steel	-D4																																										
Single Ended (i)	316 ss	7/16 (by User)	N/A	-D5																																										
Double Ended (i) (j) (Blind Kidney Flange on back)	316 ss	7/16	316 ss	-D6																																										
Single Ended	17-4 ss	7/16 (by User)	N/A	-D7																																										
Double Ended (i) (j) (Blind Kidney Flange on back)	17-4 ss	7/16	17-4 ss	-D8																																										
<b>Cleaning and Preparation - Not Available w/Gold-Plated Sensor. Structure 2G (h)</b>																																														
Unit Degreased - for Silicone Filled Sensors Only (Not for Oxygen/Chlorine/Other Fluids that may react with Silicone)	-X1																																													
Cleaned and Prepared for Oxygen Service - for Inert Filled Sensors Only (Not available with Carbon Steel Covers or with Silicone Filled Sensors)	-X2																																													
Cleaned and Prepared for Chlorine Service - for Inert Filled Sensors Only (k) (Not available with Carbon Steel Covers or with Silicone Filled Sensors)	-X3																																													
<b>Bolting for Process Covers/Connectors (l)</b>																																														
316 ss Bolts and Nuts (Pressure Derated) (i)	-B1																																													
17-4 ss Bolts and Nuts (k)	-B2																																													
B7M Bolts and Nuts (NACE)(Pressure Derated) (i)	-B3																																													
<b>Conduit Thread Adapters</b>																																														
Hawke-Type 1/2 NPT Cable Gland for use with Conduit Connection Codes 1 and 3 (m)	-A1																																													
Plastic PG 13.5 Cable Gland for use with Conduit Connection Codes 2 and 4 (n)	-A2																																													
M20 Connector for use with Conduit Connection Codes 1 and 3 (m)	-A3																																													
Brass PG 13.5 Cable Gland (Trumpet-Shaped) for use with Conduit Connection Codes 2 and 4 (n)	-A4																																													
<b>Electronics Housing Features</b>																																														
External Zero Adjustment	-Z1																																													
Custody Transfer Lock and Seal	-Z2																																													
External Zero Adjustment and Custody Transfer Lock and Seal	-Z3																																													
<b>Custom Factory Configuration</b>																																														
Digital Output (4 to 20 mA default if not selected)	-C1																																													
Full Factory Configuration (Requires Configuration Form to be filled out)	-C2																																													
<b>Tubing Connectors - Specify Only One (Only 316 ss process covers; no side vents on cover) (h)</b>																																														
Steel, Connecting 6 mm Tubing to 1/4 NPT Process Connector	-E1																																													
Steel, Connecting 12 mm Tubing to 1/2 NPT Process Connector	-E2																																													
316 ss, Connecting 6 mm Tubing to 1/4 NPT Process Connector	-E3																																													
316 ss, Connecting 12 mm Tubing to 1/2 NPT Process Connector	-E4																																													
<b>Gaskets</b>																																														
Gasket for Vacuum Service with Pressure Seals (o)	-G1																																													

**MODEL CODES - IAP20 AND IGP20 TRANSMITTERS (CONTINUED)**

Description	Model
<b>Instruction Books (Common MI, Brochure, and Full Documentation Set on DVD is Standard)</b>	
Without Instruction Book and DVD - Only "Getting Started" Brochure is supplied	-K1
<b>Miscellaneous Optional Selections</b>	
Low Temperature Operative Limit of Electronics Housing Extended Down to -50°C (-58°F) Not available with sensors and seals with inert fill, Structure Codes 78 and 79, or DIN Options -D2, -D4, -D6, and -D8	-J
Vent Screw in side of Process Cover (with 316 ss process covers only) Not available with seals, DIN construction options, or Structure Codes 78 and 79	-V
Supplemental Customer Tag (Stainless Steel Tag wired onto Transmitter)	-T
<b>Examples:</b> IGP20-D20B21F-M1Z2; IAP20-DS3C11F-T	

- a. Equivalent to Hastelloy® C.
- b. Maximum overrange pressure is 2.1 MPa (300 psi); temperature limits are -7 and +82°C (20 and 180°F).
- c. Transmitter and Pressure Seal Model Codes are both required. See PSS 2A-1Z11 A for the various pressure seal model codes.
- d. Remote Seal Models that may be specified are PSFPS, PSFES, PSFAR, PSTAR, PSISR, PSSCR, and PSSSR.
- e. Span Limit Code A is not available with pressure seals (Structure Codes F1, F2, S3, S4, SC, SD).
- f. Span Limit Codes E and F not available with Structure Codes 78 and 79 (pvdF insert in HI Side Cover).
- g. A cover lock is provided as standard with Electrical Safety Codes D, B, G, and M.
- h. Not available when Remote Mount or Direct Connect Pressure Seals are specified.
- i. Pressure derated. See derating table in specifications section.
- j. Temperature limits derated to 0 and 60°C (32 and 140°F). Also Mounting Sets -M1 and -M2 not available.
- k. When -X3 is specified, the standard bolting is replaced with 17-4 ss bolts and nuts. Therefore, there is no need to specify Option -B2 when selecting the Chlorine Service Option -X3.
- l. Not available with DIN construction options. For stainless steel bolts with DIN construction, specify -D5 to -D8, as required.
- m. Available with Electrical Safety Codes E, D, M, and N only.
- n. Available with Electrical Safety Code E only.
- o. Standard offering with IAP20 Transmitters with pressure seals. However, -G1 is a required option with IGP20 Transmitters when pressure seal (Structure Codes S3, S4, F1, F2, SC, and SD) will be used in vacuum applications. This option substitutes vacuum service metal gasket for standard ptfE process cover gasket.

### SUGGESTED RFQ SPECIFICATIONS

The manufacturer shall provide direct connected or bracket mounted pressure transmitters featuring remote digital communications capability for measuring absolute or gauge pressure and transmitting a FoxCom digital and/or 4 to 20 mA output signal (software configurable) for use in a standard two-wire dc supply voltage system. These transmitters shall also be provided (as required) with direct connect pressure seals, or remote capillary connected pressure seals. The specifications for these transmitters are as follows:

Communication Protocol:	FoxCom, digital or 4 to 20 mA dc output signal, configurable
Remote Communications:	Must not interfere with output.
Accuracy:	Digital Output: $\pm 0.050\%$ of calibrated span. 4 to 20 mA Output: $\pm 0.075\%$ of calibrated span.
RFI Protection:	0.1% error between 27 and 1000 MHz at 30 V/m field intensity
Proof Pressure:	120, 1200, 11 500, or 22 000 psi for direct connected transmitters; 27 250 psi for bracket mounted transmitters, as specified.
Span Limits:	From 1 to 6000 psi for standard direct connected transmitters; and from 0.5 inH <sub>2</sub> O to 5000 psi for standard bracket mounted transmitters, as specified; or SI and Metric equivalents.
Electronics Housing:	IEC IP66 (NEMA 4X); 316 ss or aluminum housing with Epoxy finish; two compartments (field wiring and electronics); housing sealed with O-rings for double protection against moisture or other contaminants.
Modular Electronics:	Easily replaceable modular electronics; optional integral LCD Digital Indicator with on-board configuration pushbuttons.
Mounting:	Direct to process or bracket mounted to pipe or surface.
Process Connection:	IAP10/IGP10 Transmitters: Direct to process piping or pressure seal with 1/2 NPT; optional Rc 1/2 or G 1/2 B external threads to process piping. Internal 1/4 NPT thread also provided as plumbing connection to process; or prepared for a direct connect or capillary connected seal. IAP20/IGP20 Transmitters: Used with process connectors to accept 1/4 NPT, 1/2 NPT, Rc 1/4, Rc 1/2, Schedule 80 welding neck; or a pvdf insert (tapped for 1/2 NPT) in HI side process cover is used as process connection. Process connection can also be prepared to accept a direct connect seal; or prepared for a remote capillary connected seal.
Process Cover Materials:	Applicable to IAP20/IGP20 transmitters only. Industry Standard 316 ss, Carbon Steel, Monel, and Nickel alloy (a).
Sensor Materials:	Co-Ni-Cr, 316L ss, and Nickel alloy (a) for IAP10/IGP10 transmitters; and Co-Ni-Cr, 316L ss, Nickel alloy (a), Monel, Tantalum, and Gold-Plated 316L ss for IAP20/IGP20 transmitters.
Electrical Classification:	Nonincendive for Class I and Class II, Division 2 locations; intrinsically safe or explosionproof for Class I and Class II, Division 1 locations. Versions available to meet Agency flameproof and zone requirements; comply with applicable European Union Directives.
Approximate Mass:	Direct Connected Transmitter: 1.5 kg (3.3 lb) Bracket-Mounted Transmitter: 3.5 kg (7.8 lb) w/o process connector 4.2 kg (9.2 lb) w/process connector With 316 ss Electronics Housing: Add 1.1 kg (2.4 lb) With Optional LCD Indicator: Add 0.2 kg (0.4 lb) With Pressure Seals: See PSS 2A-1Z11 A
Model Code:	I/A Series IGP10 or IAP10 Directed Connected Gauge or Absolute Pressure Transmitters; or IGP20 or IAP20 Bracket Mounted Gauge or Absolute Pressure Transmitters; all with FoxCom Communication Protocol; with or without pressure seals; or equivalent.

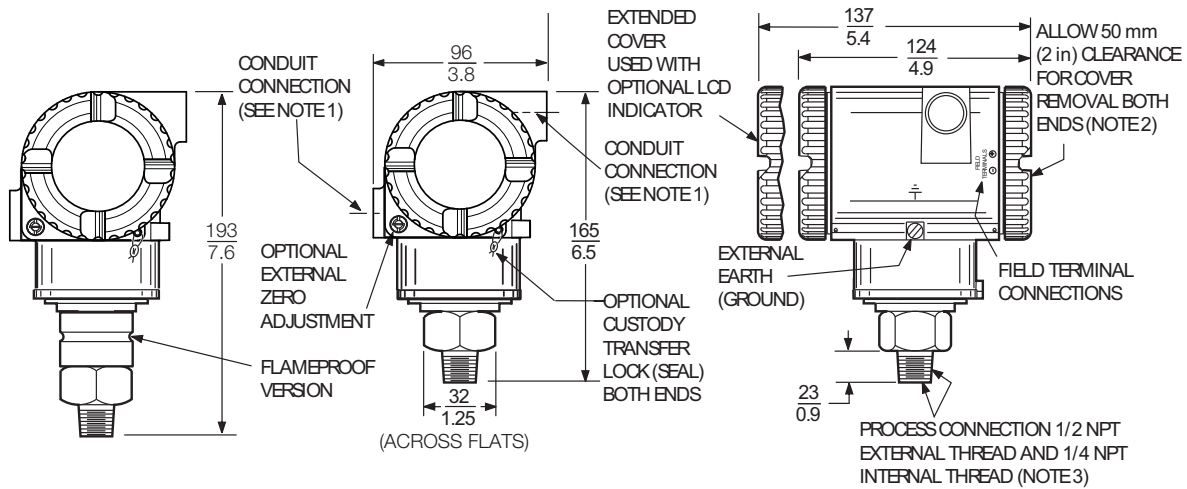
a. Equivalent to Hastelloy® C.



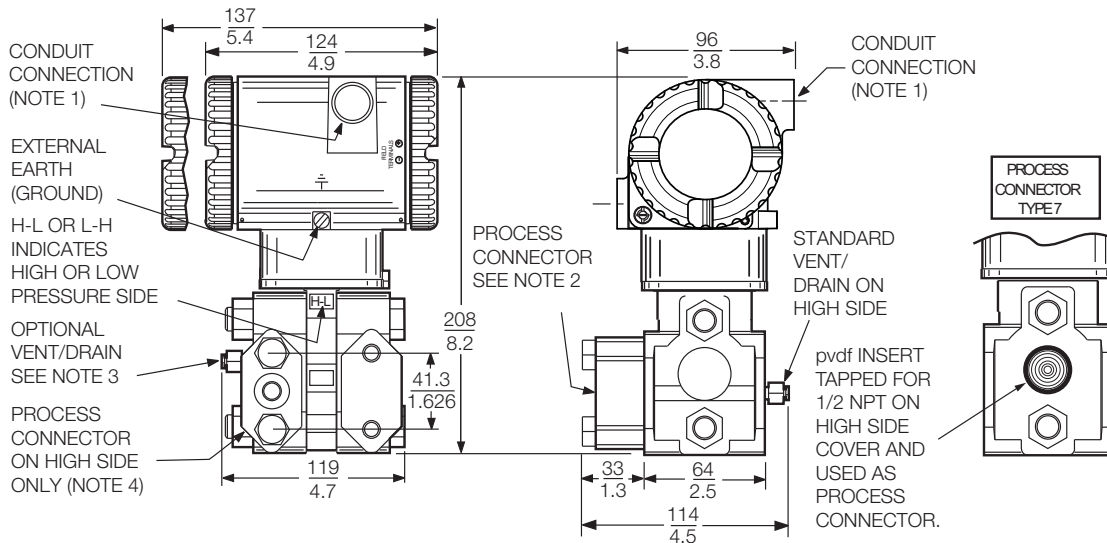
DIMENSIONS-NOMINAL

IAP10 AND IGP10 DIRECT CONNECTED TRANSMITTERS

mm  
in



IAP20 AND IGP20 BRACKET MOUNTED TRANSMITTERS

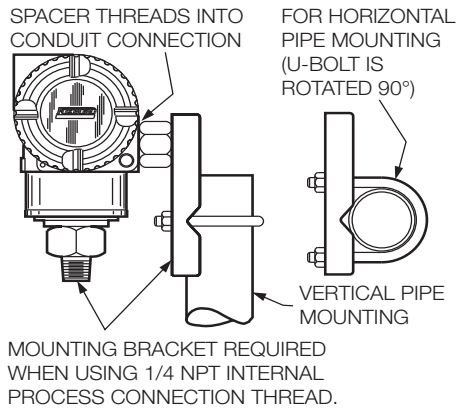


NOTES

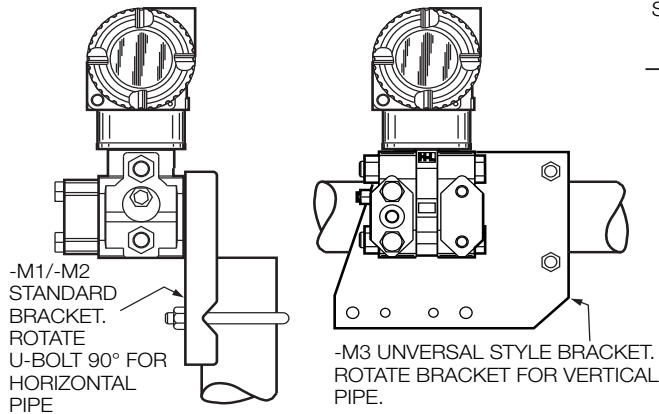
1. CONDUIT CONNECTION 1/2 NPT, PG 13.5, OR M20, BOTH SIDES : PLUG UNUSED CONNECTION WITH METAL PLUG (SUPPLIED).
2. PROCESS CONNECTOR CAN BE REMOVED AND CONNECTION MADE DIRECTLY TO PROCESS COVER USING 1/4 NPT INTERNAL THREAD IN PROCESS COVER. NOTE THAT WITH PROCESS CONNECTION CODE "0", THERE IS NO CONNECTOR.
3. PROCESS COVER CAN BE INVERTED MAKING OPTIONAL SIDE VENT A SIDE DRAIN.
4. FOR USERS WHO DESIRE THE PROCESS CONNECTOR ON THE RIGHT SIDE, MERELY ROTATE TRANSMITTER 180° AND RELOCATE PROCESS CONNECTOR SHOWN TO THE RIGHT SIDE.
5. TOPWORKS ROTATABLE TO ANY POSITION WITHIN ONE TURN COUNTERCLOCKWISE OF FULLY TIGHTENED POSITION.
6. DO NOT USE THE 1/4 NPT INTERNAL THREAD TO DIRECT-CONNECT THE TRANSMITTER.

mm  
in

IAP10/IGP10 WITH OPTIONS -M1 TO -M6



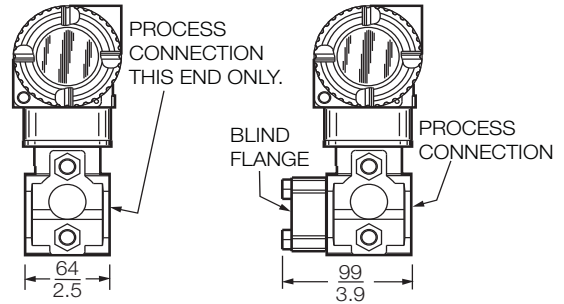
IAP20/IGP20 WITH OPTIONS -M1, -M2, AND -M3



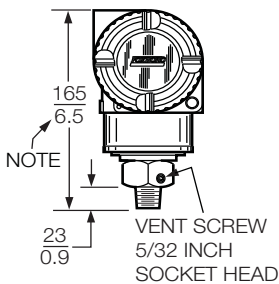
IAP20/IGP20 WITH DIN CONSTRUCTION OPTIONS

SINGLE ENDED PROCESS COVER OPTIONS  
-D1, -D3, -D5, -D7

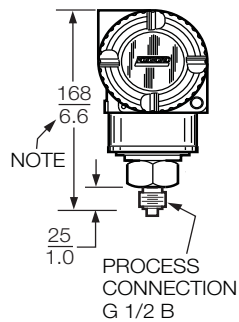
DOUBLE ENDED PROCESS COVER OPTIONS  
-D2, -D4, -D6, -D8



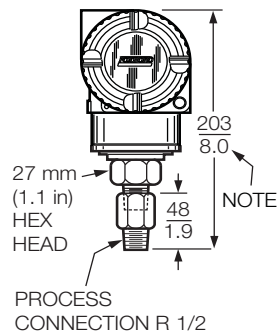
IAP10/IGP10 OPTION -V1



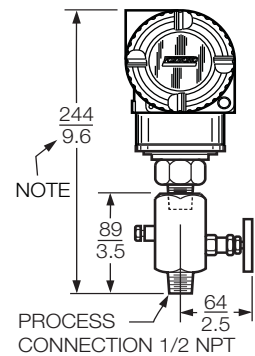
IAP10/IGP10 OPTION -G



IAP10/IGP10 OPTION -R



IAP10/IGP10 -V2, -V3, -V4



NOTES

1. FOR FLAMEPROOF TRANSMITTERS, ADD 28 mm (1.1 in) TO OVERALL HEIGHT DIMENSION.
2. REFER TO DIMENSIONAL PRINT DP 020-447 FOR FURTHER INFORMATION.

### ORDERING INSTRUCTIONS

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

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

(a) Absolute or gauge pressure units, as applicable.

3. Configuration Data Form when Factory Calibration Option -C2 is specified.
4. Options and Accessories not in Model Code (see PSS 2A-1Z9 E).
5. User Tag Data - Data Plate; 32 characters maximum. For additional tag data, specify Optional Supplemental Tag -T.
6. User Tag Data - Software (Database); 12 characters maximum (user configured).

### OTHER FOXBORO PRODUCTS

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

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