Specification

Smart Pressure Transmitters
Platinum Standard Series
Series PTS/PTH

- Accurate, Stable and Reproducible Measurements
- Standard Hastelloy C276 Wetted Diaphragm
- Easy Zero and Span Validation
- +/-0.08% Reference Accuracy for Precise Measurements
- Turndown Ratio from 0.5:1 to 40:1
- Enhanced Remote Communications
- Low Range Differential Pressure Units
- Optional Two-Line, Seven Character Liquid Crystal Display
- Advanced Electronics Ensures Reliability
- Dual Chamber Housing
- Direct Replacement of Existing Analog Two-Wire Transmitters
- Digital FSK Bus Compatibility or HART
- Transmitter Diagnostics
- Agency Certifications

Series PTS/PTH
Platinum Standard Series

Smart Transmitters
Platinum Standard Series

Type PTS Platinum Standard Smart Pressure Transmitters measure absolute, gage, differential pressure, level and flow of corrosive or non-corrosive liquids, vapors and gases. The transmitter can be configured to provide a polled digital process variable signal (digital field bus mode) or a 4 to 20 milliamp process variable signal (analog mode).

Both P Cell (Type PTSP) and D Cell (Type PTSD) pressure transmitters measure absolute or gage pressures. For these applications, Type PTSD pressure transmitters can withstand greater overpressures, have a greater variety of wetted materials and provide lower measurement spans. Type PTSP pressure transmitters offer greater turndown ratios and are more economical.

PTS pressure transmitter communicates with the Type STT04E Smart Transmitter Terminal using FSK or HART protocol. The STT04E terminal configures, monitors the output, runs diagnostic checks, tests cell status and inspects the calibration of the transmitter from a remote location.

Theory of Operation

D Cell (Type PTSD Pressure Transmitter)

Type PTSD pressure transmitters use an electrically isolated differential reluctance cell as the sensing device. The cell has two half-shells clasping a measuring diaphragm, centered and welded at the edges under stress. A core is welded to each side and at the center of the diaphragm.

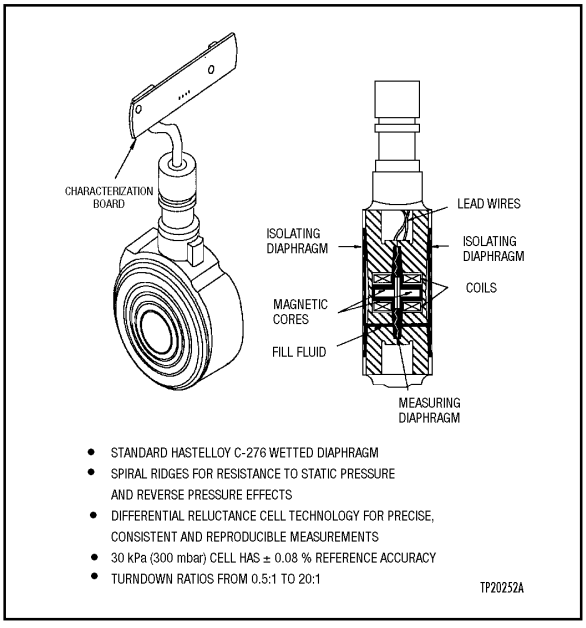

Figure 1 - D Cell

Two inductive coils are at each side of the cores in the two half-shells. Two welded walls isolate them from the fill fluid. Two isolating diaphragms, welded to the edges, isolate the measuring diaphragm to protect against corrosion and overloads. A welded housing protects the cell from the surroundings. The cell used for measuring absolute pressure has a vacuum sealed reference chamber. The pressure, transmitted by the isolating diaphragms and fill fluid, moves the measuring diaphragm. An AC voltage excites the two series coils. The mid point voltage of these coils varies as a function of the movement of the magnetic cores welded to the measuring diaphragm.

P Cell (Type PTSP Pressure Transmitter)

Type PTSP pressure transmitters use an electrically isolated piezo-resistive mono-crystal silicon chip as the sensing device. A Wheatstone bridge is implanted on the silicon chip in the deflecting areas of the sensor.

The pressure transfers through the fill fluid that is between the isolating diaphragm and the silicon chip. The resistance of the bridge varies as a function of the pressure. A regulated current, applied to the bridge, results in an unbalanced voltage across the bridge. This voltage is proportional to the applied pressure.

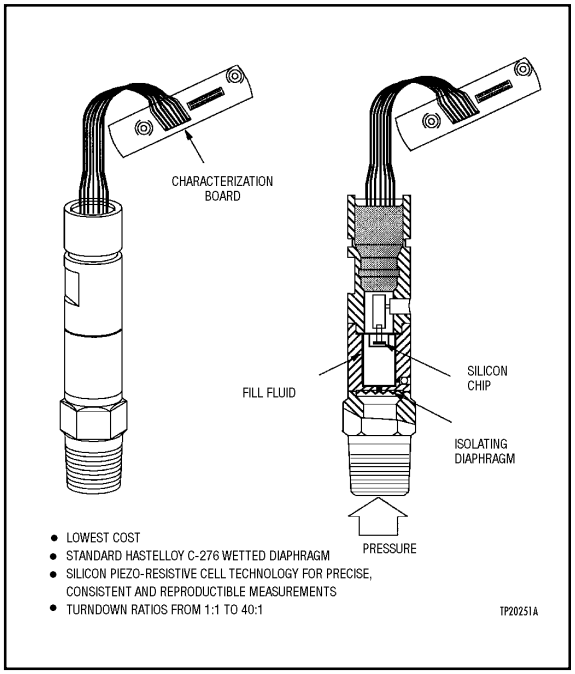

Figure 2 - P Cell

Software Functions

Communications

A high frequency AC voltage imposed on the signal wires, known as frequency shift keying (FSK), allows communications between the Type PTS pressure transmitter and the Type STT04E terminal. The location of the Type PTS pressure transmitter may be up to 1.6 kilometers (1.0 mile) form the Type STT04E terminal. The FSK remote communication method provides excellent noise immunity. The transmitter is configured in the analog (four to 20 milliamp) point-to-point mode or the digital field bus & HART mode.

Configuring the transmitter in the digital mode causes the microcontroller to set the output of the transmitter to less than four milliamps for low power consumption. The transmitter then provides a digital process variable signal. The transmitter reports its output (in percent) up to ten times per second for control purposes (see Figure 4).

Type STT04E Smart Transmitter Terminal

The Type STT04E Smart Transmitter Terminal is a battery powered, hand-held communication device designed for use with all ABB Group smart/HART electronic instrumentation. The Type STT04E terminal allows configuration, calibration, parameter modification, troubleshooting and verification of operation of the transmitter from various remote locations.

The Type STT04E terminal operates for approximately 24 hours continuous when fully charged cadmium (NiCd) rechargeable batteries. A battery charger comes with each Type STT04E terminal ordered. Information in the internal non-volatile memory remains for approximately ten years.

Temperature Compensation

The transmitter electronics monitors the temperature of the cell assemble. This is accomplished in D cells by monitoring the resistance of the coils within the cell, and in P cells by monitoring the resistance of one of the legs of the Wheatstone bridge. This technique provides a true cell temperature measurement and the transmitter uses it to calculate an advanced correction for the cell output based on the programmed cell temperature characteristics. The transmitter also compensates the four to 20 milliamp output for temperature changes within the electronics housing. Type PTSD pressure transmitters monitor and compensate for the dynamic temperature difference between the high and low sides of the cell. The cell temperature can be monitored on the Type STT04E terminal.

Diagnostics

Continuous self-diagnostics are accessible through the Type STT04E terminal. Areas monitored include: cell; cell temperature; electronics temperature; dynamic temperature; calibration; configured pressure limits; input circuits; analog to digital converter; microcontroller ROM, SEEPROM, EEPROM; and reference voltages. Diagnostics identify the malfunctioning section of the transmitter. The diagnostics may indicate if a calibration error occurs.

Configuration and Operational Commands

Configuration and operational commands allow the input of an ID tag for the transmitter configuration, selection of engineering units (primary and secondary), and definition of the output. The output can be a linear, square root, 3/2 or 5/2 power representation of the input. 3/2 and 5/2 powers apply to open channel measurements to find flow rates through flumes and weirs in processes such as water delivery and treatment. 3/2 power is used for flumes, while 5/2 power is used for weirs. Other calculated outputs include volume of a spherical or horizontal flat end tank, or a function generator that follows a curve consisting of sic straight line segments. The output can be set for normal or reverse acting and fixed to a specific value for plant startup and troubleshooting purposes. Other commands allow the output to be set default values upon transmitter power up and failure. The Type STT04E terminal also supports configuration, input, output and transmitter status monitoring.

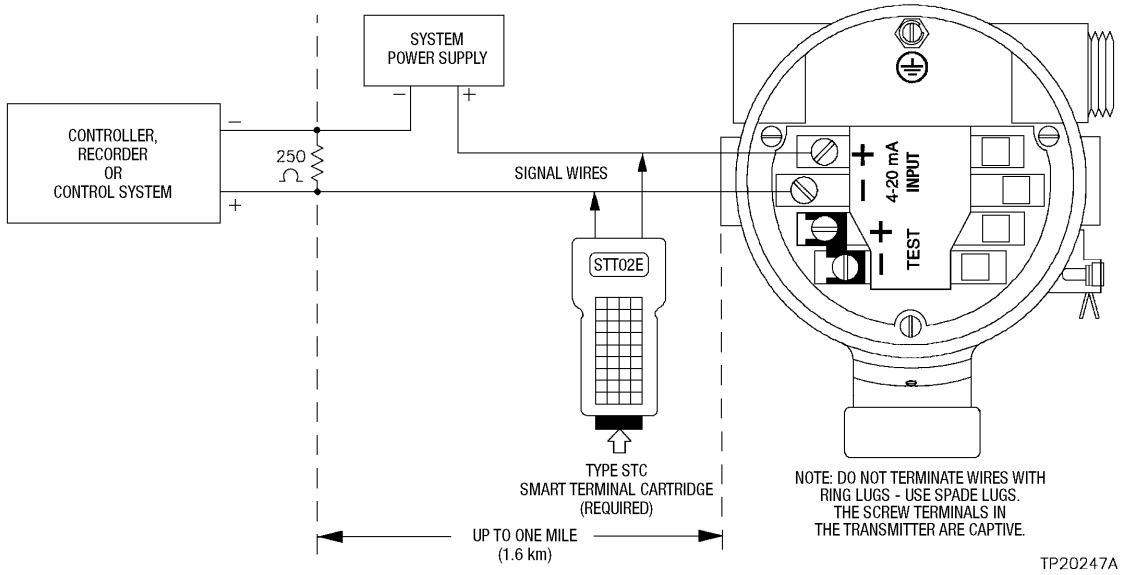

Figure 3. Point-to-Point Wiring Diagram for Transmitters Configured in the Analog 4 to 20 mA Mode

Technical Specifications

Temperature Limits for Electronics, Cell and Optional Liquid Crystal Display (Reference Conditions are 25°C(77°F))

Humidity Limits: 5 to 100% noncondensing continuous when the covers are properly installed and the conduit is sealed.

Supply Voltage: 12 to 53 VDC (12 to 42 VDC for hazardous area applications). The minimum supply voltage necessary to support communications is 17 VDC.

Power Supply Effect:
Analog Mode - +-0.005/5 of URL per volt.
Digital Field Bus Mode - +-0.003% of URL per volt.

Output Signal (User selected):
Analog Mode – 4 to 20 mA.
Digital Field Bus Mode – Bailey FSK Communication / HART

Output Current Limiting:
Maximum - >-21.6 mA.
Minimum - <-3.7 mA.

Damping (One time constant – approximately 62% of final reading): Analog and digital response to a step input change is adjustable from 0.0 to 32.0 seconds and is entered during configuration. This value is in addition to:
Cell response time: dependent on cell and fill fluid.
Electronics response time: approximately 0.25 seconds.

Parameter	Temperature					
	Electronics[1]		Cell [1,2,3]		LCD[4]	
	°C	°F	°C	°F	°C	°F
Normal Operating	-40 to +85	-40 to +185	-40 to +85	-40 to +185	0 to +50	+32 to +122
Extreme Operating	-50 to +85	-58 to +185	-50 to +120	-58 to +248	0 to +50	+32 to +122
Storage & Transport	-55 to +85	-67 to +185	-55 to +85	-67 to +185	-20 to +70	-4 to +158

Note:
1. *The normal operating temperature range presented in that at which the transmitter meets all specifications. The extreme operating temperature presented is that at which the transmitter remains powered without damage.*
2. *All TYPE PTS/PTH flourinated oil fill pressure transmitters can only be operated with fluid temperatures from 14º to -176ºF (-10º to +80ºC).*
3. *Type PTSDN flanged diaphragm level transmitters can only be operated with fluid temperatures up to 300ºF (149ºC)*
4. *The normal operating temperature presented for the LCD is that at which the LCD and transmitter remains functional for the temperature listed. Extreme operating temperatures may limit suitable amplifier operations to no less than 19ºC (-15ºC).*

Damping (One time constant – approximately 62% of final reading): Analog and digital response to a step input change is adjustable from 0.0 to 32.0 seconds and is entered during configuration. This value is in addition to:

Cell response time: dependent on cell and fill fluid.

Electronics response time: approximately 0.25 seconds.

RFI/EMI Effects: +-0.1% of URL in fields from 4 to 1000 MHz @ 10 V/m.

Surge Tolerance: Complies to IEEE 472 test criteria. 2.5 kV, 1.5 MHz, 150 W source resistance.

Vibration Effect: <-0.1% of URL for 1g from 10 to 2000 Hz in any axis of the transmitter.

Enclosure Rating: NEMA 4X and IP67.

Agency Certifications: CSA (Canadian Standards Association) and FM (Factory Mutual) as explosionproof, dust-ignitionproof, intrinsically safe and nonincendive for the following classes:

Explosionproof and Dust-ignitionproof: Class I, Division 1, Groups B, C and D; Class II, Division 1, Groups E, F and G; Class III

Intrinsically Safe: Classes I, II and III, Division 1; applicable groups when connected per drawing B222611.

Nonincendive: Class I, II and III, Division 2; Groups A, B, C and D; Class II, Division 2; Groups E, F and G; Class III

Ambient Condition Limits for Certified Applications

Factory Mutual (FM)

Category	T_{min}		T_{max}		P_{min}		P_{max}		Q_{2max}
	°C	°F	°C	°F	kPa	psia	kPa	psia	%
Explosionproof	-25	-13	80	176	86	12.5	108	15.7	21
Dust-Ignitionproof	-25	-13	80	176	86	12.5	108	15.7	21
Intrinsically Safe	-25	-13	65 (T4)	149 (T4)	86	12.5	108	15.7	21
Nonincendive	-25	-13	65 (T4)	149 (T4)	86	12.5	108	15.7	21

Canadian Standards Association (CSA)

Category	T_{min}		T_{max}		P_{min}		P_{max}		Q_{2max}
	°C	°F	°C	°F	kPa	psia	kPa	psia	%
Explosionproof	-25	-13	60	176	86	12.5	108	15.7	21
Dust-Ignitionproof	-25	-13	60	176	86	12.5	108	15.7	21
Intrinsically Safe	-25	-13	40 (T3A) 60 (T3A)	104 (T3C) 140 (T3A)	86	12.5	108	15.7	21
Nonincendive	-25	-13	60 (T4A)	140 (T4A)	86	12.5	108	15.7	21

Options and Accessories

Type STTO4E Smart Transmitter Terminal: Hand-held communication device for calibration, configuration and troubleshooting.

EZ CAL Option: External nonintrusive device for zero and span validation. Add on Kit No. 2585762_1.

Liquid Crystal Display: Two-line seven character display for local output indication. Displays output in percent, input in primary engineering units, output in user-defined secondary engineering units, cell temperature and the transmitter ID tag. Mounts in four orientations for easy viewing. Add on Kit 258550_1.

Flange Adapter (Football): 1/2 NPT stainless steel 316 or Hastelloy C-276 (Type PTSD only).

Flange Adapter (Straight): 1/2 NPT female stainless steel or Hastelloy C-276 (Type PTSP only).

Mounting Bracket: Universal support for mounting on 1.5 in. to 2.0 in. pipe or panel. Available in zinc plated, chromate dipped carbon steel or stainless steel 316.

Manifolds: Two-way carbon steel or stainless steel 316 manifolds that attach directly to the transmitter in place of flange adapters.

Lightning Arrestor: Mounts internally to suppress lightning induced transients. Tested to suppress 10 successive 8 by 20 used pulses with a peak value of 20 kA (reference IEEE C62.41). Replacement Kit No. 258563_1.

Available Drawings:

D3055060 - Dimension drawing for Type PTSDD (differential) pressure transmitter series.

D3055061 - Dimension drawing for Types PTSDA (absolute) and PTSDG (gage) pressure transmitter series.

D3055062 - Dimension drawing for Types PTSPA (absolute) and PTSPG (gage) pressure transmitter series.

D3055063 - Dimension drawing for Type PTSDL level transmitter.

D3055064 - Dimension drawing for optional indicator.

D3055065 - Amplifier connections.

Configuration Option: The Type PTS pressure transmitters are delivered with a standard configuration. Special configurations can be ordered by selecting that option in nomenclature position 15. The factory programmed configuration is listed below, as well as a column to aid in ordering special configurations.

Parameter	Standard Configuration	Custom Configuration
ID Tag	PTS	
Operating Mode	Analog	
Output Function	Linear - Normal Acting	
Damping	0.5 sec.	
Engineering Units	in. H_2O/psi	
Lower Range Value (LRV)	0.0	
Upper Range Value (URV)	Upper Range Limit of Transmitter	
Initialize Output	Low	
Fail Output	Low	
Secondary Engineering Units	..MA	
Secondary Lower Range Limit	4.00	
Cell Temperature Low Alarm	-40°F (-40°C)	
Cell Temperature High Alarm	185°F (85°C)	

Nomenclature for Type PTSD / PTHD (D Cell) Pressure Transmitter

P T __ D **__ __ __ __ __ __ __ __ __ __**
03 05 06 07 08 09

Version
SMART (Bailey FSK) ..... S
HART™ ..... H

Measurement Application
Absolute Pressure ..... A
Differential Pressure ..... D
Gage Pressure ..... G

Measurement Range

Nominal Range		Mininum Range		Available Types
kPa	In. H_2O/psi	kPa	in. H_2O/psi	
0 to 1.5	0 to 6 in. H_2O	0 to 0.1	0 to 0.4 in. H_2O	PT_DD.....A
0 to 7.5	0 to 30 in. H_2O	0 to 0.4	0 to 1.5 in H_2O	PT_DD & PT_DG.....B
0 to 30	0 to 120 in. H_2O	0 to 1.5	0 to 6 in H_2O	PT_DD & PT_DG.....C
0 to 90	0 to 360 in. H_2O	0 to 4.5	0 to 18 in. H_2O	ALL.....D
0 to 500	0 to 75 psi	0 to 25	0 to 3.8 psi	ALL.....F
0 to 1800	0 to 260 psi	0 to 90	0 to 13 psi	PT_DD & PTSDG.....G
0 to 6000	0 to 900 psi	0 to 300	0 to 60 psi	PT_DD & PTSDG.....H

Diaphragm Material and Fill Fluid

Diaphragm	Fill Fluid	Available Types
Hast C-276	Silicone Oil	ALL 1
Hast C-276	Fluorinated Oil	ALL ..... A

High Pressure Side Flange

Material	Purge Valve	Available Types
316 Stainless Steel	Side	ALL 2
316 Stainless Steel	Rear	ALL 4
Hast C-276	Side	ALL ..... B
Hast C-276	Rear	ALL ..... D

Low Pressure Side Flange

Material	Purge Valve	Available Types
316 Stainless Steel	Side	ALL 2
316 Stainless Steel	Rear	ALL 4
Hast C-276	Side	PT_DD ..... B
Hast C-276	Rear	PT_DD ..... D

P T __ D __ __ __ __ __ __ __ __ __ __ __

10 11 12 13

Bolting and O-Rings

Bolting Mat'l	Pressure Ratingt kPa	psi	O-Ring Mat'ln	Available Types	
Carbon Steel	25000	3625	Viton	ALL	1
Stainless Steel	20000	2900	Viton	ALL	2
ASTM A193 B7M for NACE Class 2	20000	2900	Viton	ALL but PT_D_ _ Q	3
Carbon Steel	41000	6000	Viton	Selected PT_DD	4
Stainless Steel	41000	6000	Viton	Selected PT_DD	5
ASTM A193 B7M for NACE Class 2	41000	6000	Viton	Selected PT_DD	6
Carbon Steel	25000	3625	Teflon(PTFE)	ALL	A
Stainless Steel	20000	2900	Teflon(PTFE)	ALL	B
ASTM A193 B7M for NACE Class 2	20000	2900	Teflon(PTFE)	ALL but PT_D_ _Q	C
Carbon Steel	41000	6000	Teflon(PTFE)	Selected PT_	D
Stainless Steel	41000	6000	Teflon(PTFE)	Selected PT_DD	E
ASTM A193 B7M for NACE Class 2	41000	6000	Teflon(PTFE)	Selected PT_DD	F

Adapters and Mounting Bracket

Adapters (2 for PTSDD)	Mounting Bracket	Available Types	
None	None	ALL	0
None	Zinc Plated Carbon Steel	ALL	1
None	316L SST	ALL	3
1/2 NPT 316 SST	None	ALL	A
1/2 NPT 316 SST	Zinc Plated Carbon Steel	ALL	B
1/2 NPT 316 SST	316L SST	ALL	D
1/2 NPT Hast C-276	None	ALL	M
1/2 NPT Hast C-276	Zinc Plated Carbon Steel	ALL	N
1/2 NPT Hast C-276	16L SST	ALL	Q

Certifications

NEMA 4X - ABB Standard	0
NEMA 4X and FM and CSA Explosion-proof & Intrinsically Safe	2
NEMA 4X and CENELEC Flame-proof & Intrinsically Safe	1

Housing & Electrical Connection

Housing	Electrical Connection	Available Types	
Std-Low Copper Light Alloy AL	Two 1/2 NPT with One Plug	ALL	1
Stainless Steel 316 Housing	Two 1/2 NPT with One Plug	ALL	A

P T __ D __ __ __ __ __ __ __ __ __ __ __

14 15

Indicator, Transient Suppresser and EZ Cal Option

Local Indicator	Transient Suppresser	EZ CAL Option✡	Available Types	
Not Included	Not Included	Not Included	ALL	0
Not Included	Included	Not Included	ALL	1
Not Included	Not Included	Included	ALL	3
Not Included	Included	Included	ALL	4
Liq. Crystal Display	Not Included	Not Included	ALL	A
Liq. Crystal Display	Included	Not Included	ALL	B
Liq. Crystal Display	Not Included	Included	ALL	D
Liq. Crystal Display	Included	Included	ALL	E

Configuration, Tagging and Accessories (Manifolds/Flow Elements)

Configuration	Customer Tagging	Accessories	Available Types	
Standard*	Not Included	None	ALL	0
Standard*	Riveted SST***	None	ALL	1
Standard*	Wired SST***	None	ALL	2
Standard*	Not Included	Mounted	ALL	4
Standard*	Riveted SST***	Mounted	ALL	5
Standard*	Wired SST***	Mounted	ALL	6
Custom**	Not Included	None	ALL	A
Custom**	Riveted SST***	None	ALL	B
Custom**	Wired SST***	None	ALL	C
Custom**	Not Included	Mounted	ALL	E
Custom**	Riveted SST***	Mounted	ALL	F
Custom**	Wired SST***	Mounted	ALL	G

* Standard: Transmitter will be calibrated to the nominal measurement range.

** Custom: Transmitter will be calibrated to customer's specified measurement range.

*** All units are provided with nameplates (SS) riveted which include serial number and full model number. This option provides 2 lines of 15 characters for additional customer tagging information.

Notes:

- ❖ For gage pressures above 10 psig (277" H2O), we recommend you consider the PTSP or PTHP style units.
- ♦ The pressure rating for measurement range A transmitters is 2000 kPa (300 psi).
- ■ Ethylene Propylene O-ring — available on request
- ● Process adapters are not required with the filled system
- ✡ EZ CAL cannot be used with Stainless Steel Housing Field 13 Item A.

Specifications for Type PTSDD (Differential) Pressure Transmitter

Measurement Range, Turndown Ration, Zero Suppression and Zero Elevation: Lower range value (zero) and upper range value (100%) can be calibrated at any value pressure provided that:

1. Their algebraic difference (the calibrated span) corresponds to an authorized turndown ratio.
2. Both are within the following applicable limits.

Type	International System Units							
	Range Limits		Span and Turndown Ratio (TDR)					
	Upper (kPa)	Lower (kPa)	Nominal (kPa)		Maximum (kPa)		Minimum (kPa)	
PTSDDA	1.5	-1.5	1.5	1:1 TDR	3	0.5:1 TDR	0.1	15:1 TDR
PTSDDB	7.5	-7.5	7.5	1:1 TDR	15	0.5:1 TDR	0.4	20:1 TDR
PTSDDC	30	-30	30	1:1 TDR	60	0.5:1 TDR	1.5	20:1 TDR
PTSDDD	90	-90	90	1:1 TDR	180	0.5:1 TDR	4.5	20:1 TDR
PTSDDF	500	-500	500	1:1 TDR	1000	0.5:1 TDR	25	20:1 TDR
PTSDDG	1800	-1800‘	1800	1:1 TDR	3600	0.5:1 TDR	90	20:1 TDR
PTSDDH	6000	-6000	6000	1:1 TDR	12000	0.5:1 TDR	400	15:1 TDR

Type	American Units							
	Range Limits		Span and Turndown Ratio (TDR)					
	Upper (In. H_2O)	Lower (In. H_2O)	Nominal (In. H_2O)		Maximum (In. H_2O)		Minimum (In. H_2O)	
PTSDDA	6	-6	6	1:1 TDR	12	0.5:1 TDR	0.4	15:1 TDR
PTSDDB	30	-30	30	1:1 TDR	60	0.5:1 TDR	1.5	20:1 TDR
PTSDDC	120	-120	120	1:1 TDR	240	0.5:1 TDR	6	20:1 TDR
PTSDDD	360	-360	360	1:1 TDR	720	0.5:1 TDR	18	20:1 TDR
	(psi)	(psi)	(psi)		(psi)		(psi)	
PTSDDF	75	-75	75	1:1 TDR	150	0.5:1 TDR	3.8	20:1 TDR
PTSDDG	260	-260	260	1:1 TDR	520	0.5:1 TDR	13	20:1 TDR
PTSDDH	900	-900	900	1:1 TDR	1800	0.5:1 TDR	60	15:1 TDR

Reference Accuracy-per IEC 770 and SAMA PMC

31.1: The reference accuracy includes the effects of linearity, hysteresis, repeatability and dead band. The value listed may vary depending on the URL and calibrated span of the particular transmitter. The equation used in determining the accuracy of a transmitter is:

$$RA \text{ or } \frac{CF \times URL}{Span} \text{ whichever is greater}$$

Where RA = reference accuracy @ 1:1 TDR and
CF = compensation factordue to TDR.

Type	URL		RA	CF
	(kPa)	(in. H_20)	(% of Span)	(% of Span)
PTSDDA	1.5	6	±0.20	±0.032
PTSDDB	7.5	30	±0.10	±0.020
PTSDDC	30	120	±0.08	±0.012
PTSDDD	90	360	±0.08	±0.012
	(kPa)	(psi)		
PTSDDF	500	75	±0.10	±0.016
PTSDDG	1800	260	±0.10	±0.016
PTSDDH	6000	900	±0.20	±0.02

All reference accuracy values are for transmitters with zero based spans, silicone oil fill and Hastelloy C-276 isolating diaphragms at a reference temperature of 25ºC (77ºF).

Stability per 12 Month Period: ±0.1% of URL (±0.2%) of URL for Type PTSDDA transmitter) at reference conditions.

Static Pressure and Overpressure Limits: The minimum static pressure for all types is 3.4 kPa absolute (14.0 in. H_2O absolute or 0.5 psi absolute). The maximum static pressure is listed in the following table.

Type	URL		Pressure rating/Bolting					
			Carbon Steel		Stainless Steel and NACE		High Static Pressure	
	(kPa)	(in. H_2O/psi)	(kPa)	(psi)	(kPa)	(psi)	(kPa)	(psi)
PTSDDA	1.5	6 in. in H_2O	2000	300	2000	300	N/A	N/A
PTSDDB	7.5	30 in. H_2O	25000	3625	25000	2900	41000	6000
PTSDDC	30	120 in. H_2O	25000	3625	20000	2900	41000	6000
PTSDDD	90	360 in H_2O	25000	3625	20000	2900	41000	6000
PTSDDF	500	75 psi	25000	3625	20000	2900	41000	6000
PTSDDG	1800	260 psi						
PTSDDH	6000	900 psi	14000	2000	14000	2000	N/A	N/A

Static Pressure Effect on Zero and Span: The values listed for Type PTSDDA pressure transmitters are for a variation of 1000 kPa (150 psi) for line pressures between 0 and 2000 kPa (0 and 300 psi).

The values listed for Types PTSDDB, PTSDDC, PTSDDD, PTSDDF and PTSDDH pressure transmitters are for a variation of 7000 kPa (1000 psi) for line pressures between 0 and 14000 kPa (0 and 2000 psi).

Type	URL		Zero Effect	Span Effect
	(kPa)	(In. H_2O/psi)	(% of URL)	(% of Reading)
PTSDDA	1.5	6 in. H_2O	±0.20	±0.10
PTSDDB	7.5	30 in H_2O	±0.30	±0.25
PTSDDC	30	120 in. H_2O	±0.20	±0.25
PTSDDD	90	360 in H_2O	±0.20	±0.25
PTSDDF	500	75 psi	±0.30	±0.75
PTSDDG	1800	260 psi	±0.30	±0.75
PTSDDH	6000	900 psi	±0.30	±0.50

These values are for transmitters with zero based spans, silicone oil fill and Hastelloy C-276 isolating diaphragms at a reference temperature of 25°C (77°F)

NOTE: Zero effect can be calibrated out at line pressure.

Ambient Temperature Effect on Zero and Span:
The effects listed are for a variation of ±25°C (±45°F) from a calibration done at a temperature between -30° and +80°C (-22°F and +176°F), as long the variation does not take the transmitter out of the temperature specifications listed in Table 1.

Weight: 4.3 kg (9.5 lbs) without options or accessories.

Type	URL		Total
	(kPa)	(In. H_2O/psi)	Effect
PTSDDA	1.5	6 in. H_2O	±(0.15% URL + 0.30% span)
PTSDDB	7.5	30 in H_2O	±(0.10% URL + 0.15% span)
PTSDDC	30	120 in. H_2O	±(0.06% URL + 0.13% span)
PTSDDD	90	360 in H_2O	±(0.08% URL + 0.13% span)
PTSDDF	500	75 psi	±(0.10% URL + 0.15% span)
PTSDDG	1800	260 psi	±(0.10% URL + 0.15% span)
PTSDDH	6000	900 psi	±(0.15% URL + 0.25% span)

These values are for transmitters with zero based spans, silicone oil fill and Hastelloy C-276 isolating diaphragms.

Specifications for Type PTSDG (Gage) Pressure Transmitter

Measurement Range, Turndown Ratio, Zero Suppression and Zero Elevation: Lower range value (zero) and upper range value (100%) can be calibrated at any value of pressure provided that:

1. Their algebraic difference (the calibrated span) corresponds to an authorized turndown ratio.
2. Both are within the following applicable limits.

Type	International System Units					
	Range Limits		Span and Turndown Ratio (TDR)			
	Upper (kPa)	Lower (kPa)	Nominal (kPa)		Maximum (kPa)	
PTSDGB	7.5	-7.5	7.5	1:1 TDR	0.4	20:1 TDR
PTSDGC	30	-30	30	1:1 TDR	1.5	20:1 TDR
PTSDGD	90	-90	90	1:1 TDR	4.5	20:1 TDR
PTSDGF	500	-100	500	1:1 TDR	25	20:1 TDR
PTSDGG	1800	-100	1800	1:1 TDR	90	20:1 TDR
PTSDGH	6000	-100	6000	1:1 TDR	400	15:1 TDR

Type	American Units					
	Range Limits		Span and Turndown Ratio (TDR)			
	Upper (In. H_2O)	Lower (In. H_2O)	Nominal (In. H_2O)		Maximum (In. H_2O)	
PTSDGB	30	-30	30	1:1 TDR	1.5	20:1 TDR
PTSDGC	120	-120	120	1:1 TDR	6	20:1 TDR
PTSDGD	360	-360	360	1:1 TDR	18	20:1 TDR
	(psi)	(psi)	(psi)		(psi)	
PTSDGF	75	-14	75	1:1 TDR	3.8	20:1 TDR
PTSDGG	260	-14	260	1:1 TDR	13	20:1 TDR
PTSDGH	900	-14	900	1:1 TDR	60	15:1 TDR

Reference Accuracy-per IEC 770 and SAMA PMC

31.1: The reference accuracy includes the effects of linearity, hysteresis, repeatability and dead band. The value listed may vary depending on the URL and calibrated span of the particular transmitter. The equation used in determining the accuracy of a transmitter is:

$$RA \text{ or } \frac{CF \times URL}{Span} \text{ whichever is greater,}$$

Where RA = reference accuracy @ 1:1 TDR and CF = compensation factor due to TDR.

Type	URL		RA	CF
	(kPa)	(in. H_20)	(% of Span)	(% of Span)
PTSDGB	7.5	30	±0.10	±0.020
PTSDGC	30	120	±0.10	±0.012
PTSDGD	90	360	±0.10	±0.012
	(kPa)	(psi)		
PTSDGF	500	75	±0.10	±0.016
PTSDGG	1800	260	±0.20	±0.020
PTSDGH	6000	900	±0.20	±0.020

All reference accuracy values are for transmitters with zero based spans, silicone oil fill and Hastelloy C-276 isolating diaphragms at a reference temperature of 25°C (77°F).

Stability: ±0.1% of URL per 12 month period at reference conditions.

Pressure Limits: The minimum pressure for all types is 3.4 kPa absolute (14.0 in. H2O absolute or 0.5 psi absolute). The maximum overpressure depends on the type of bolting used to maintain the transmitter flanges.

- Carbon Steel – 25000 kPa (3625 psi) for all but PTSDGH with a limit of 14000 kPa (2000 psi).
- Stainless Steel and NACE – 20000 kPa (2900 psi) for all but PTSDGH with a limit of 14000 kPa (2000 psi).

Ambient Temperature Effect on Zero and Span:
The effects listed are for a variation of ±25°C (±45°F) from a calibration done at a temperature between –30° and +80°C (-22° and 176°F), as long as the variation does not take the transmitter out of the temperature specifications listed in Table 1.

Type	URL		Total Effect
	(kPa)	(In. H_2O/psi)	
PTSDGB	7.5	30 in H_2O	±(0.10% URL + 0.15% span)
PTSDGC	30	120 in. H_2O	±(0.06% URL + 0.13% span)
PTSDGD	90	360 in H_2O	±(0.80% URL + 0.13% span)
PTSDGF	500	75 psi	±(0.10% URL + 0.15% span)
PTSDGG	1800	260 psi	±(0.10% URL + 0.15% span)
PTSDGH	6000	900 psi	±(0.15% URL + 0.25% span)

These values are for transmitters with zero based spans, silicone oil fill and Hastelloy C-276 isolating diaphragms

Weight: 4.3 kg (9.5 lbs) without options or accessories.

Specifications for Type PTSDA (Absolute) Pressure Transmitter

Measurement Range, Turndown Ratio, Zero Suppression and Zero Elevation: Lower range value (zero) and upper range value (100%) can be calibrated at any value of pressure provided that:

1. Their algebraic difference (the calibrated span) corresponds to an authorized turndown ratio.
2. Both are within the following applicable limits.

Type	International System Units					
	Range Limits		Span and Turndown Ratio (TDR)			
	Upper (kPa)	Lower (kPa)	Nominal (kPa)		Maximum (kPa)	
PTSDAD	90	0	90	1:1 TDR	4.5	20:1 TDR
PTSDAF	500	0	500	1:1 TDR	25	20:1 TDR

Type	American Units					
	Range Limits		Span and Turndown Ratio (TDR)			
	Upper (In. H_2O)	Lower (In. H_2O)	Nominal (In. H_2O)		Maximum (In. H_2O)	
PTSDAD	360	0	360	1:1 TDR	18	20:1 TDR
	(psi)	(psi)	(psi)		(psi)	
PTSDAF	75	0	75	1:1 TDR	3.8	20:1 TDR

Reference Accuracy-per IEC 770 and SAMA PMC 31.1. The reference accuracy includes the effects of linearity, hysteresis, repeatability and dead band.

$$\pm 0.20\% \text{ of Span or } \frac{0.016 \times \text{URL}}{\text{Span}} \text{ (\% of Span) whichever is greater}$$

This value is for transmitters with zero based spans, silicone oil fill and Hastelloy C-276 isolating diaphragms at a reference temperature of 25°C (77°F).

Stability per 12 Month Period: ±0.2% of URL at reference conditions.

Pressure Limits: The minimum pressure for all types is 3.4 kPa absolute (14.0 in. H_2O absolute or 0.5 psi absolute). The maximum overpressure depends on the type of bolting used to maintain the transmitter flanges.

- Carbon steel - 25000 kPa (3625 psi).
- Stainless Steel and NACE - 20000 kPa (2900 psi).

Ambient Temperature Effect on Zero and Span: The effects listed are for a variation of ±25°C (±45°F) from a calibration done at a temperature between –30° and +80°C (-22° and ±176°f), as long as the variation does not take the transmitter out of the temperature specifications listed in Table 1.

±(0.10% URL + 0.15% Span).

This value is for transmitters with zero based spans, silicone oil fill and Hastelloy C-276 isolating diaphragms.

Weight: 4.3 kg (9.5 lbs) without options or accessories.

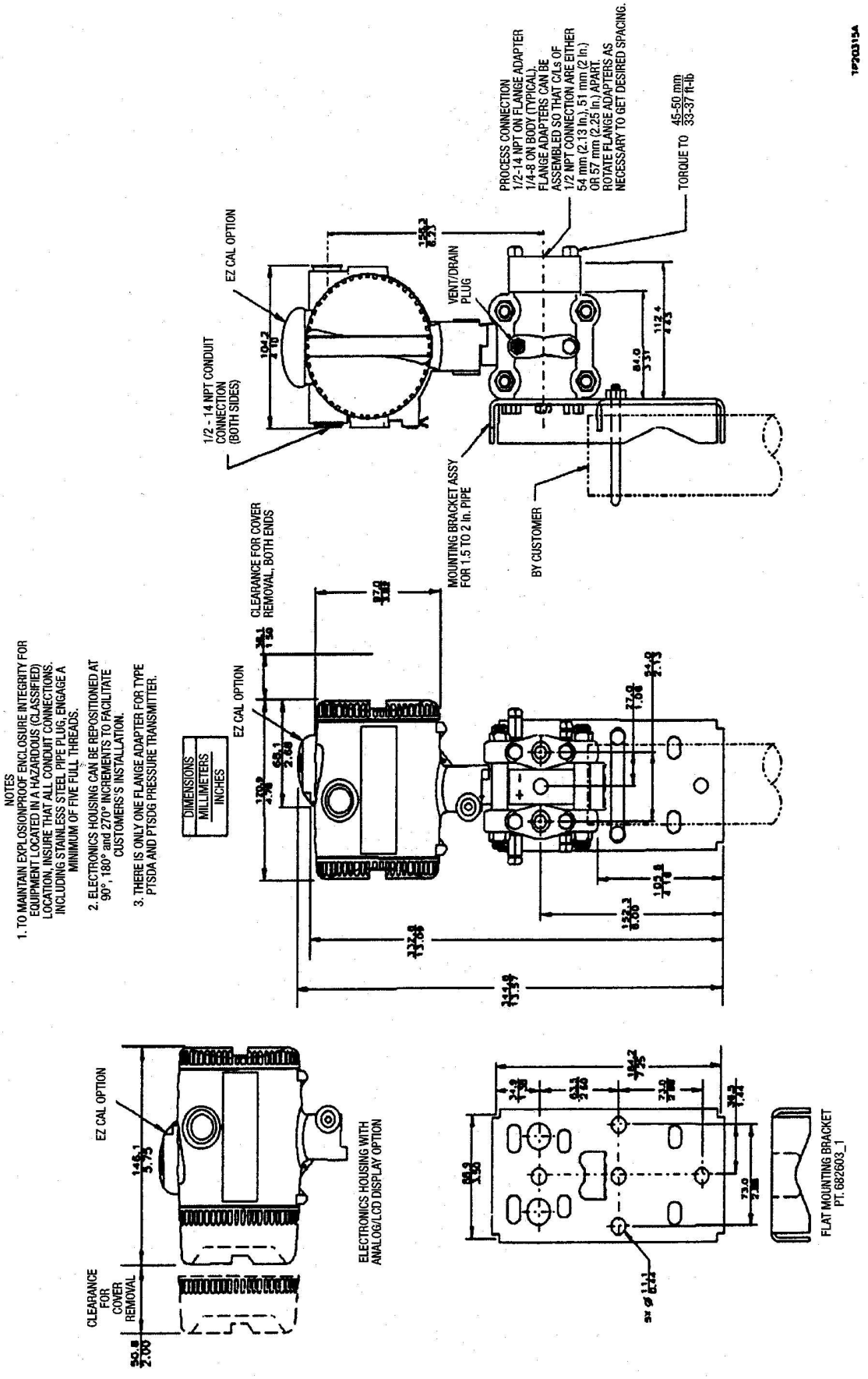

Figure 4. External and Mounting Dimensions for Type PTHD Pressure Transmitters

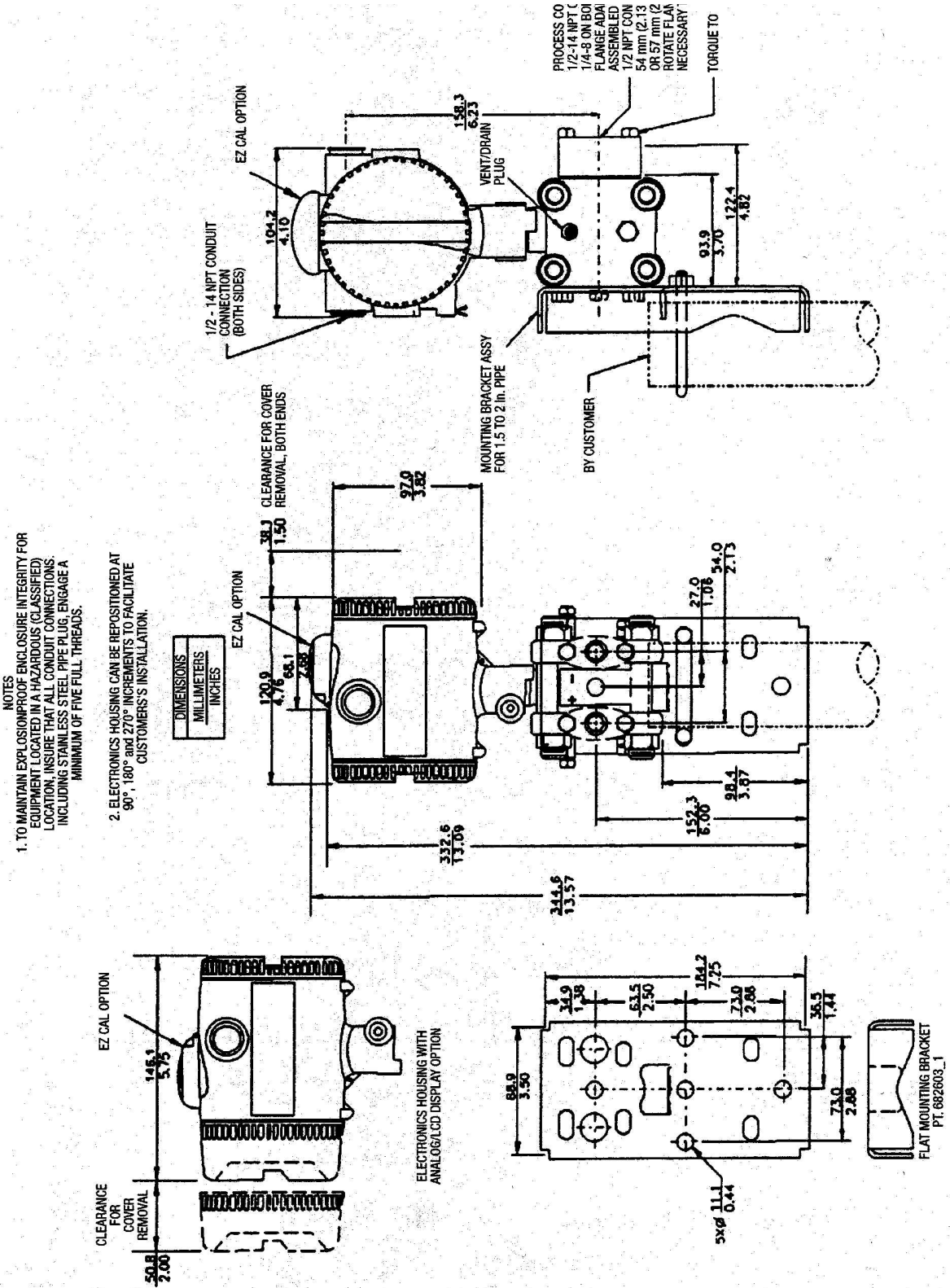

Figure 5. External and Mounting Dimensions for Type PTHP Pressure Transmitter

Nomenclature for Type PTSP / PTHP (P Cell) Pressure Transmitter

PT__ P __ __ __ __ __ __ __ __ __ __ __

03 05 06 07 08 09 10 11 12

Version
- SMART (Bailey FSK) ..... S
- HART™ ..... H

Measurement Type
- Absolute ..... A
- Gage ..... G

Measurement Range

Nominal Range		Minimum Range		Available Types	
kPa	psi	kPa	psi		
0 to 200	0 to 30	0 to 5	0 to 0.8	ALL	E
0 to 690	0 to 100	0 to 69	0 to 10	ALL	F
0 to 3000	0 to 450	0 to 75	0 to 11.3	PT_PA	G
0 to 3000	0 to 450	0 to 200	0 to 30	PT_PG	H
0 to 4000	0 to 5800	0 to 1000	0 to 145	ALL	J

Diaphragm, Material, and Fill Fluid

Diaphragm	Fill Fluid	Available Types	
Hast C-276	Silicone Oil	ALL	1

Pressure Connection Material
- Stainless Steel 316 1
- Hastelloy C-276 ..... A

Not Used - Enter Zero/Zero 00

Adapters and Mounting Bracket

Adapters (1 for PTSP)	Mounting Bracket	Available Types	
None	None	ALL	0
None	Zinc Plated Carbon Steel	ALL	1
None	316L SST	ALL	3
1/2 NPT Female 316 SST	None	ALL	A
1/2 NPT Female 316 SST	Zinc Plated Carbon Steel	ALL	B
1/2 NPT Female 316 SST	316L SST	ALL	D
1/2 NPT Female Hast C-276		None	M
1/2 NPT Female Hast C-276		Zinc Plated Carbon Steel	N
1/2 NPT Hast C-276	316L SST	ALL	Q

Certifications
- NEMA 4X - Bailey Standard 0
- NEMA 4X and FM and CSA Explosion-proof & Intrinsically Safe 2
- NEMA 4X and CENELEC Flame-proof & Instrinsically Safe 1

PT__ P _ _ _ _ _ _ _ _ _ _ _

13 14 15

Housing & Electrical Connection

Housing	Electrical Connection	Available Types	
Std-Low Copper Light Alloy AL	Two 1/2 NPT with One Plug	ALL	1
Stainless Steel 316 Housing	Two 1/2 NPT with One Plug	ALL	A

Indicator, Transient Suppressor and EZ Cal Option

Local Indicator	Transient Suppressor	EZ CAL Option W	Available Types	
Not Included	Not Included	Not Included	ALL	0
Not Included	Included	Not Included	ALL	1
Not Included	Not Included	Included	ALL	3
Not Included	Included	Included	ALL	4
Liq. Crystal Display	Not Included	Not Included	ALL	A
Liq. Crystal Display	Included	Not Included	ALL	B
Liq. Crystal Display	Not Included	Included	ALL	D
Liq. Crystal Display	Included	Included	ALL	E

Configuration, Tagging and Accessories (Manifolds)

Configuration	Customer Tagging	Accessories	Available Types	
Standard*	Not Included	None	ALL	0
Standard*	Riveted SST***	None	ALL	1
Standard*	Wired SST***	None	ALL	2
Standard*	Not Included	Mounted	ALL	4
Standard*	Riveted SST***	Mounted	ALL	5
Standard*	Wired SST***	Mounted	ALL	6
Custom**	Not Included	None	ALL	A
Custom**	Riveted SST***	None	ALL	B
Custom**	Wired SST***	None	ALL	C
Custom**	Not Included	Mounted	ALL	E
Custom**	Riveted SST***	Mounted	ALL	F
Custom**	Wired SST***	Mounted	ALL	G

* Standard: Transmitters will be calibrated to the nominal measurement range

** Custom: Transmitters will be calibrated to customer's specified measurement range.

*** All units are provided with nameplates (SS) riveted which include serial number and full model number. This option provides 2 lines of 15 characters for additional customer tagging information.

✷ EZ CAL cannot be used with Stainless Steel Housing Field 13 Item A.

Specifications for Type PTSPG (Gage) Pressure Transmitter

Measurement Range, Turndown Ratio, Zero Suppression and Zero Elevation: Lower range value (zero) and upper range value (100%) can be calibrated at any value of pressure provided that:

1. Their algebraic difference (the calibrated span) corresponds to an authorized turndown ratio
2. Both are within the following applicable limits

Type	International System Units					
	Range Limits		Span and Turndown Ratio (TDR)			
	Upper (kPa)	Lower (kPa)	Nominal (kPa)		Maximum (kPa)	
PTSPGF	690	-100	690	1:1 TDR	69	10:1 TDR
PTSPGG	3000	0	3000	1:1 TDR	200	15:1 TDR
PTSPGJ	40000	0	40000	1:1 TDR	1000	40:1 TDR

Type	American Units					
	Range Limits		Span and Turndown Ratio (TDR)			
	Upper (In. H_2O)	Lower (In. H_2O)	Nominal (In. H_2O)		Maximum (In. H_2O)	
PTSPGF	100	-14	100	1:1 TDR	10	10:1 TDR
PTSPGG	450	0	450	1:1 TDR	30	15:1 TDR
PTSPGJ	5800	0	5800	1:1 TDR	145	40:1 TDR

Types PTSPGG and PTSPGJ pressure transmitters are not compensated for baromatic pressure

Reference Accuracy-per IEC 770 and SAMA PMC

31.1: The reference accuracy includes the effects of linearity, hysteresis, repeatability and dead band. These values are for transmitters with zero based spans, silicone oil fill and Hastelloy C-276 isolating diaphragms at a reference temperature of 25°C (77°F). The value listed may vary depending on the URL and calibrated span of the particular transmitter.

- PTSPGF ±0.20% of Span or $\frac{0.016 \times URL}{Span}$ (% of Span) whichever is greater

- PTSPGG&PTSPGJ ±0.10% of Span or $\frac{0.008 \times URL}{Span}$ (% of Span) whichever is greater

Stability per 12 Month Period:

- PTSPGF -- ±0.2% of URL at reference conditions.
- PTSPFF & PTSPGJ -- ±0.1% of URL at reference conditions.

Overpressure Limit:

Type	URL		Overpressure Limit	
	kPa	psi	kPa	psi
PTSPGF	690	100	1250	180
PTSPGG	3000	450	6000	870
PTSPGJ	40000	5800	60000	8700

Overpressure Effect: This value is for transmitters with zero based spans, silicone oil fill and Hastelloy C-276 isolating diaphragms at a reference temperature of 25°C (77°F).

±0.05% of URL for line pressures 1.5 times URL

Ambient Temperature Effect on Zero and Span: These values are for transmitters with zero based spans, silicone oil fill and Hastelloy C-276 isolating diaphragms. The effects listed are for a variation of ±25°C (±45°F) from a calibration done at a temperature between –30° and +80°C (-22° and +176°F), as long as the variation does not take the transmitter out of the temperature specifications listed in Table —.

- PTSPGF -- ±(0.15% URL + 0.10% span).
- PTSPGG and PTSPGJ -- ±(0.08% URL + 0.10% span).

Weight: 1.3 kg (2.9 lbs) without options or accessories.

Specifications for Type PTSPA (Absolute) Pressure Transmitter

Measurement Range, Turndown Ratio, Zero Suppression and Zero Elevation: Lower range value (zero) and upper range value (100%) can be calibrated at any value of pressure provided that:

1. Their algebraic difference (the calibrated span) corresponds to an authorized turndown ratio.
2. Both are within the following applicable limits..

Type	International System Units					
	Range Limits		Span and Turndown Ratio (TDR)			
	Upper (kPa)	Lower (kPa)	Nominal (kPa)		Maximum (kPa)	
PTSPGF	690	-100	690	1:1 TDR	69	10:1 TDR
PTSPGG	3000	0	3000	1:1 TDR	200	15:1 TDR
PTSPGJ	40000	0	40000	1:1 TDR	1000	40:1 TDR

Type	American Units					
	Range Limits		Span and Turndown Ratio (TDR)			
	Upper (In. H_2O)	Lower (In. H_2O)	Nominal (In. H_2O)		Maximum (In. H_2O)	
PTSPGF	100	-14	100	1:1 TDR	10	10:1 TDR
PTSPGG	450	0	450	1:1 TDR	30	15:1 TDR
PTSPGJ	5800	0	5800	1:1 TDR	145	40:1 TDR

Reference Accuracy-per IEC 770 and SAMA PMC 31.1: The reference accuracy includes the effects of linearity, hysteresis, repeatability and dead band. These values are for transmitters with zero based spans, silicone oil fill and Hastelloy C-276 isolating diaphragms at a reference temperature of 25°C (77°F).

- PTSPAE ±0.20% of Span or

$$\frac{0.016 \times URL}{Span}$$ (% of Span) whichever is greater

- PTSPAG&PTSPAJ ±0.10% of Span or

$$\frac{0.008 \times URL}{Span}$$ (% of Span) whichever is greater

Stability per 12 Month Period: ±0.10% of URL at reference conditions.

Overpressure Limit:

Type	URL		Overpressure Limit	
	kPa	psi	kPa	psi
PTSPAE	200	30	600	87
PTSPAG	3000	450	6000	870
PTSPAJ	40000	5800	60000	8700

Overpressure Effect: ±0.05% of URL for line pressures 1.5 times URL

Ambient Temperature Effect on Zero and Span: These values are for transmitters with zero based spans, silicone oil fill and Hastelloy C-276 isolating diaphragms. The effects listed are for a variation of ±25°C (±45°F) from a calibration done at a temperature between -30° and +80°C (-22° and +176°F), as long as the variation does not take the transmitter out of the temperature specifications listed in Table 1.

- PTSPAE -- ±(0.10% URL + 0.10% span)
- PTSPAG & PTSPAJ -- ±(0.08% URL +0.10% span)

Weight: 1.3 kg (2.9 lbs) without options or accessories.

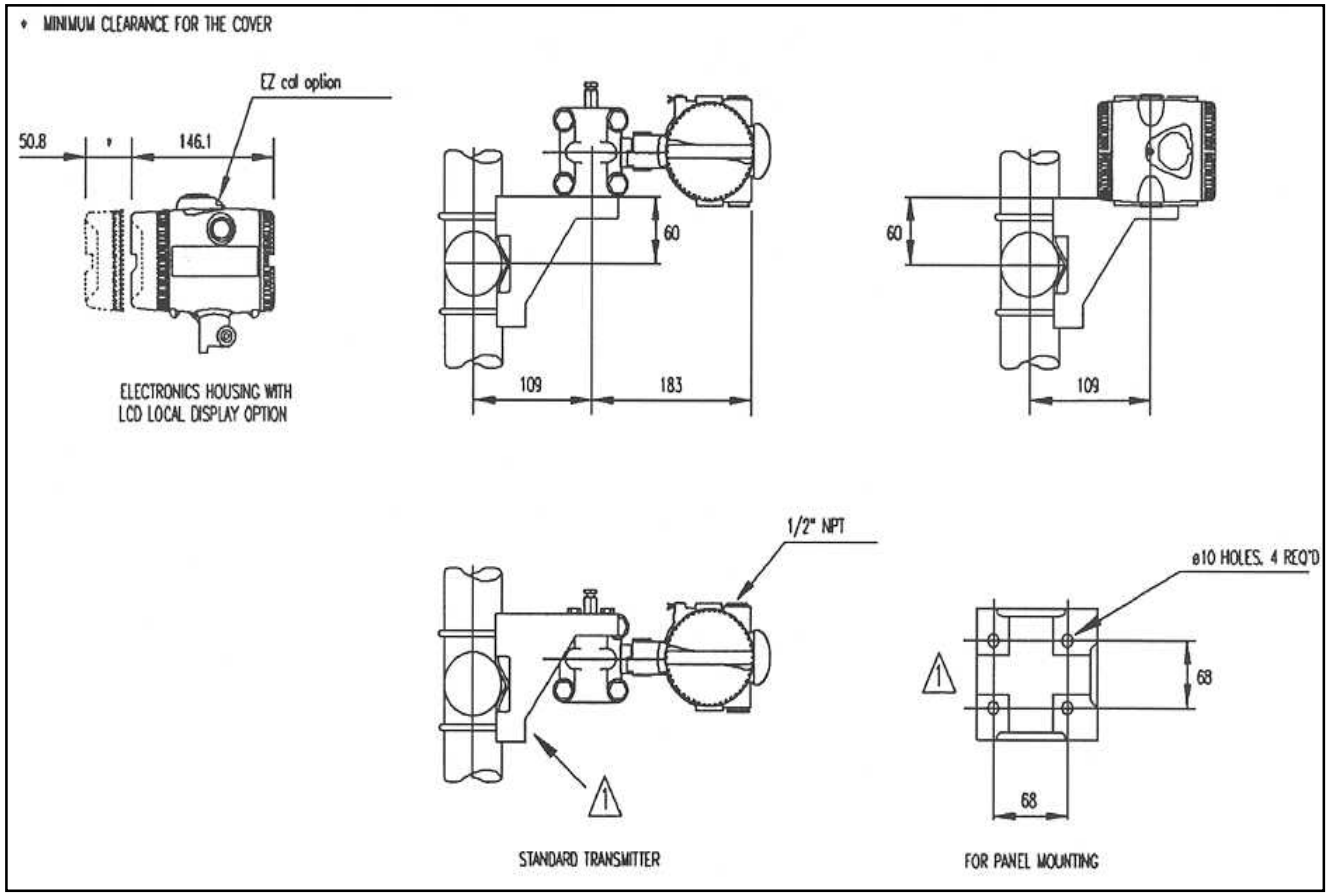

Figure. 6 - External and Mounting Dimensions for Type PTSDA, PTSDD and PTSDG Pressure Transmitters with L-shape mounting bracket

Nomenclature for Type PTSDN / PTHDN (D Cell) Pressure Transmitter

PT__ DN __ __ __ __ __ __ __ __ __ __

03 06 07 08 09 10 11

Version

SMART (Bailey FSK)	S
HART®	H

Measurement Range

Nominal Range kPa	Nominal Range In. H_2O / psi	Minimum Range kPa	Minimum Range In. H_2O/psi	
0 to 30	0 to 120 in. H_2O	0 to 5.0	0 to 20 in. H_2O	C
0 to 90	0 to 360 in. H_2O	0 to 5.0	0 to 20 in. H_2O	D
0 to 500	0 to 75 psi	0 to 25	0 to 3.8 psi	F

High Pressure Diaphragm & Extension Material, Extension Length and Base Size

Diaphragm & Extension	Length	Size	
316 SS	Flush	3 inch	1
316 SS	2 inch	3 inch	2
316 SS	4 inch	3 inch	3
316 SS	6 inch	3 inch	4
316 SS	Flush	4 inch	5
316 SS	2 inch	4 inch	6
316 SS	4 inch	4 inch	7
316 SS	6 inch	4 inch	8
Hastelloy C-276	Flush	3 inch	A
Hastelloy C-276	2 inch	3 inch	B
Hastelloy C-276	4 inch	3 inch	C
Hastelloy C-276	6 inch	3 inch	D
Hastelloy C-276	Flush	4 inch	E
Hastelloy C-276	2 inch	4 inch	F
Hastelloy C-276	4 inch	4 inch	G
Hastelloy C-276	6 inch	4 inch	H

High Pressure Side Flange Size and Material

Material	Size	
316 SS	ANSI 150 lb	A
316 SS	ANSI 300 lb	B

Fill Fluid & Low Pressure Diaphragm

Fill Fluid	Diaphragm Material	
Silicone Oil	Hastelloy C-276	1
Fluorinated Oil	Hastelloy C-276	E

Low Side Flange Material, Threading & Adapter

Flange Material	1/2 Inch Adapter	
316 SST	Not Included	A
316 SST	Included	B

Bolting Mat'l	O-Ring Materal	
Carbon Steel	Viton	1
Stainless Steel	Viton	2
ASTM A193 B7M for NACE Class 2	Viton	3
Carbon Steel	Teflon (PTFE)	A
Stainless Steel	Teflon (PTFE)	B
ASTM A193 B7M for NACE Class 2	Teflon (PTFE)	C

PT__ DN __ __ __ __ __ __ __ __ __ __

12 13 14 15

Certifications

NEMA 4X - ABB Standard	0
NEMA 4X and FM and CSA Explosion-proof & Intrinsically Safe	2
NEMA 4X and CENELEC Flame-proof & Intrinsically Safe	1

Housing & Electrical Connection

Housing	Electrical Connection	Available Types	
Std-Low Copper Light Alloy AL	Two 1/2 NPT with One Plug	ALL	1
Stainless Steel 316 Housing	Two 1/2 NPT with One Plug	ALL	A

Indicator, Transient Suppresser and EZ Cal Option

Local Indicator	Transient Suppresser	EZ CAL Optionv	Available Types	
Not Included	Not Included	Not Included	ALL	0
Not Included	Included	Not Included	ALL	1
Not Included	Not Included	Included	ALL	3
Not Included	Included	Included	ALL	4
Liq. Crystal Display	Not Included	Not Included	ALL	A
Liq. Crystal Display	Included	Not Included	ALL	B
Liq. Crystal Display	Not Included	Included	ALL	D
Liq. Crystal Display	Included	Included	ALL	E

Configuration, Tagging and Accessories

Configuration	Customer Tagging	Accessories	Available Types	
Standard*	Not Included	None	ALL	0
Standard*	Riveted SST***	None	ALL	1
Standard*	Wired SST***	None	ALL	2
Standard*	Not Included	Mounted	ALL	4
Standard*	Riveted SST***	Mounted	ALL	5
Standard*	Wired SST***	Mounted	ALL	6
Custom**	Not Included	None	ALL	A
Custom**	Riveted SST***	None	ALL	B
Custom**	Wired SST***	None	ALL	C
Custom**	Not Included	Mounted	ALL	E
Custom**	Riveted SST***	Mounted	ALL	F
Custom**	Wired SST***	Mounted	ALL	G

* Standard: Transmitter will be calibrated to the nominal measurement range.

** Custom: Transmitter will be calibrated to customer's specified measurement range.

*** All units are provided with nameplates (SS) riveted which include serial number and full model number. This option provides 2 lines of 15 characters for additional customer tagging information.

v EZ CAL cannot be used with Stainless Steel Housing Field 13 Item A.

Specifications for Type PTSDN Level Transmitter

Measurement Range, Turndown Ratio, Zero Suppression and Zero Elevation: Lower range value (zero) and upper range value (100%) can be calibrated at any value of pressure provided that:

1. Their algebraic difference (the calibrated span) corresponds to an authorized turndown ratio.
2. Both are within the following applicable limits.

Type	International System Units							
	Range Limits		Span and Turndown Ratio (TDR)					
	Upper (kPa)	Lower (kPa)	Nominal (kPa)		Maximum (kPa)		Minimum (kPa)	
PTSDLC	30	-30	30	1:1 TDR	60	0.5:1 TDR	5	6:1 TDR
PTSDLD	90	-90	90	1:1 TDR	180	0.5:1 TDR	5	18:1 TDR
PTSDLF	500	-500	500	1:1 TDR	1000	0.5:1 TDR	25	20:1 TDR

Type	American Units							
	Range Limits		Span and Turndown Ratio (TDR)					
	Upper (In. H_2O)	Lower (In. H_2O)	Nominal (In. H_2O)		Maximum (In. H_2O)		Minimum (In. H_2O)	
PTSDLC	120	-120	120	1:1 TDR	240	0.5:1 TDR	20	6:1 TDR
PTSDLD	360	-360	360	1:1 TDR	720	0.5:1 TDR	20	18:1 TDR
	(psi)	(psi)	(psi)		(psi)		(psi)	
PTSDDF	75	-75	75	1:1 TDR	150	0.5:1 TDR	3.8	20:1 TDR

Reference Accuracy-per IEC 770 and SAMA PMC 31.1: The reference accuracy includes the effects of linearity, hysteresis, repeatability and dead band. These values are for transmitters with zero based spans, silicone oil fill and Hastelloy C-276 isolating diaphragms at a reference temperature of 25°C (77°F).

- PTSPAE ±0.15% of Span or $\frac{0.016 \times URL}{Span}$ (% of Span) whichever is greater

Stability per 12 Month Period (at reference conditions): ±0.2% of URL

Pressure Limits: The minimum static pressure for all types is 3.4 kPa absolute (14.0 in H2O absolute or 0.5 psi absolute). The maximum pressure is limited by the pressure rating of the flange mounted on the high pressure side of the transmitter.

Ambient Temperature Effect on Zero and Span: These values are for transmitters with zero based spans, silicone oil fill and Hastelloy C-276 isolating diaphragms. The effects listed are for a variation of ±25°C (±45°F) form a calibration done at a temperature between -30° and +80°C (-22° and +176°F), as long as the variation does not take the transmitter out of the temperature specifications listed in Table 1.

- Range C with Extension - ±(0.50% URL + 0.20% Span).
- All Others - ±(0.25% URL + 0.15% Span).

Weight:

Type of Flange	Type of Extension							
	None		2 inch (50 mm)		4 inch (100 mm)		6 inch (150 mm)	
	(lbs)	(kg)	(lbs)	(kg)	(lbs)	(kg)	(lbs)	(kg)
3 in. ANSI 150 lb	22.4	10.2	24.6	11.2	25.8	11.6	26.4	12.0
3 in. ANSI 300 lb	27.9	12.7	28.6	13.0	29.7	13.5	30.8	14.0
4 in. ANSI 150 lb	27.9	12.7	30.1	13.7	31.5	14.3	33.0	15.0
4 in. ANSI 300 lb	38.5	17.5	39.6	18.0	40.9	18.6	41.8	19.0

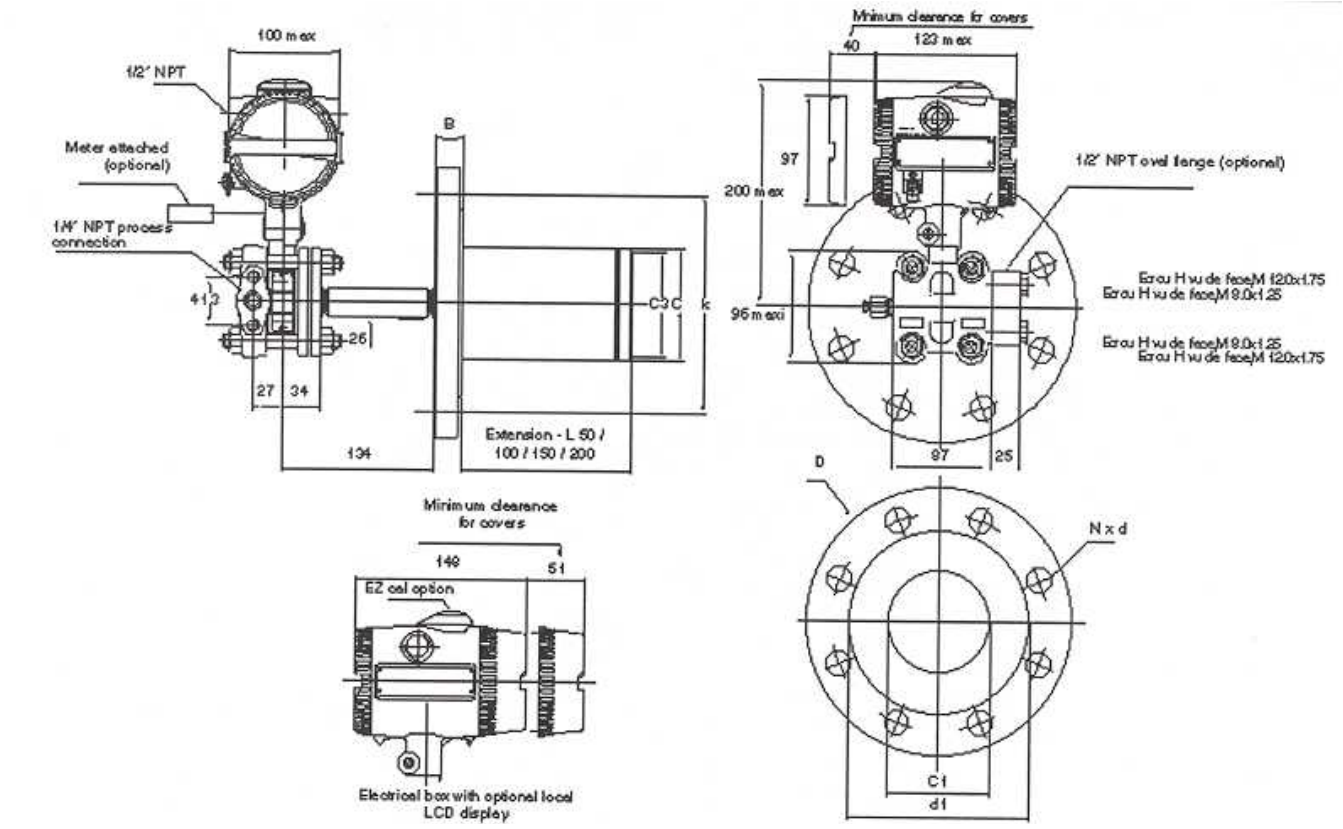

Figure 7 - External and Mounting Dimensions for type PTSDN Intelligent Tramsitter - Version 2 (Standard Version)

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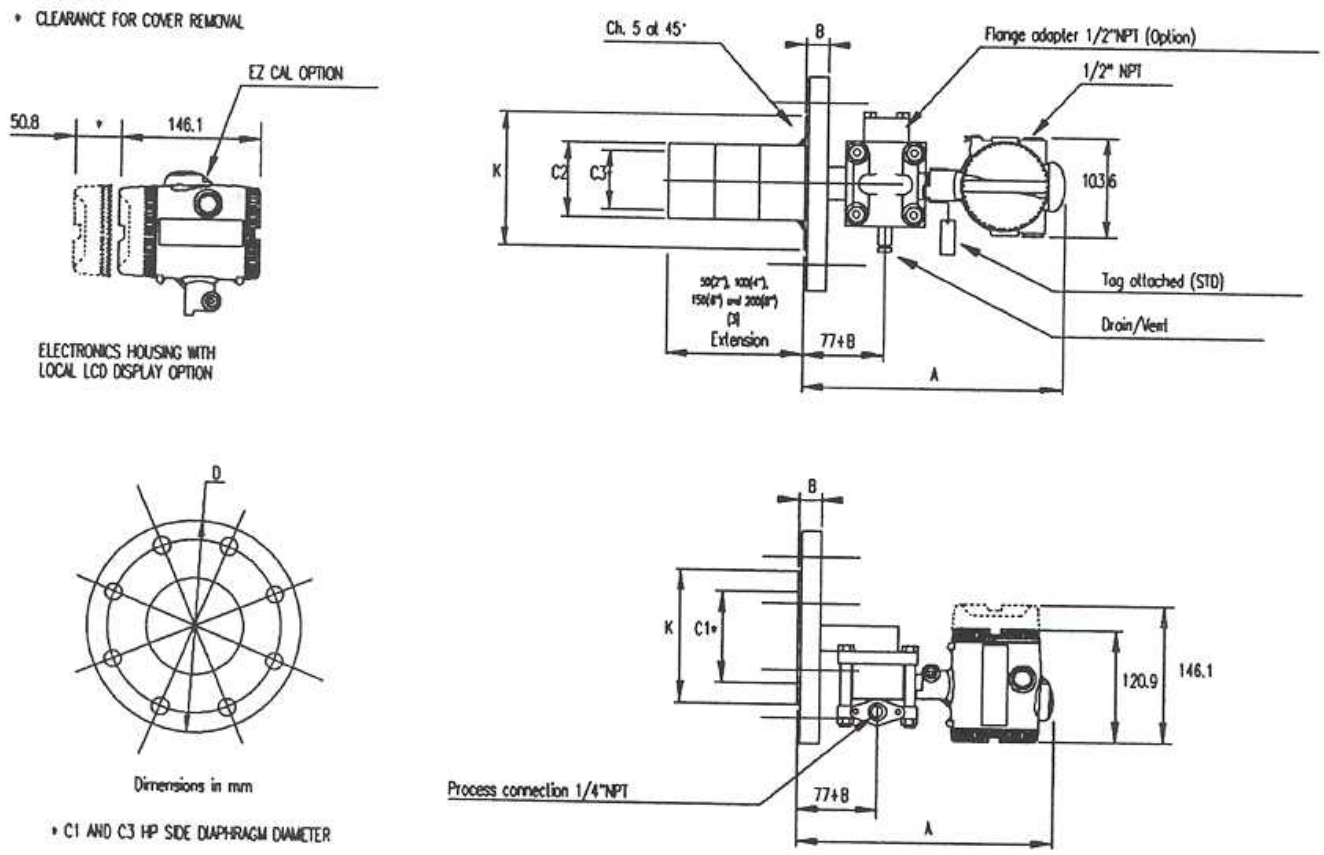

Figure 8 - External and Mounting Dimensions for Type PTSDN Intelligent Transmitter - Version 1.

Flange Dimensions								Bolt Holes		
DN	**PN**	**B**	**C1 (1)**	**C1 (2)**	**C3**	**D**	**K**	**NO**	**∅**	**Drilling**
80	16/40	24	89	73	72	200	138	8	18	160
100	16	20	89	94	89	220	158	8	18	180
100	40	24	89	94	89	235	162	8	22	190
3"	150 LB.	24	89	73	72	191	127	8	20	152.4
3"	300 LB.	29	89	73	72	210	127	8	23	168.3
4"	150 LB.	24	89	94	89	229	157.2	8	20	190.5
4"	300 LB.	32	89	94	89	254	157.2	8	23	200

(1) Diaphragm diameter for model field with extension.
(2) Extension diameter
(3) Only for 200 mm (8") extension with DN100 PN16 Flange.

Type STT04E Smart Transmitter Terminal Specifications

Display Format:
Type – LCD
Number of Rows – 4
Characters per Row – 20

Configuration Storage Capacity: 75 Configurations

Keyboard Type: Tactile feedback embossed membrane; 32 keys.

Cable Length: 1.8 m (6.0 ft) from Type STTO4E terminal.

Temperature Limits:
Operating - 0° to 50°C (32° to 122°F).
Storage - -20° to 70°C (-4° to 158°F).

Humidity Limits: Type – AA NiCd rechargeable.

Batteries:
Type AA NiCd rechargeable
Continuous Run Time – 6 days (approx.)
Charge Time – 2.8 hours

Weight: 680 g (24 oz)

Dimensions (h by w by d): 197 x 109 x 51 mm (7.75 x 4.30 x 2.00 in.)

Case Material: Plastic, polycarbonate (Lexan® 940 or equivalent

Battery Charger: Used to recharge AA NiCd rechargeable batteries (120 VAC, 50/60 Hz). ABB Part No. 1948580_1 (included with Type STT02E terminal).

Agency Certifications[1]: Factory Mutual (FM Canadian Standards Association (CSA) and Standards Association of Australia (SAA) certifications pending in the following categories:
- Nonincendive: CSA/FM: Class I, Division 1, Groups A, B, C and D; SAA: Ex N, Zone 2, IIC.

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