

STA700 SmartLine Absolute Pressure Specification 34-ST-03-120, Jan 2021



Introduction

Part of the SmartLine® family of products, the STA700 and STA70L are suitable for monitoring, control and data acquisition featuring piezoresistive sensor technology combining pressure sensing with on chip temperature compensation capabilities providing high accuracy, stability and performance over a wide range of application pressures and temperatures. The SmartLine family is also fully tested and compliant with Experion® PKS providing the highest level of compatibility assurance and integration capabilities. SmartLine easily meets the most demanding application needs for pressure measurement applications.

Best in Class Features:

- Accuracies up to 0.065% of span
- Stability up to 0.020% of URL per year for 10 years
- Automatic temperature compensation
- Rangeability up to 100:1
- Response times as fast as 100ms
- Easy to use and intuitive display capabilities
- Intuitive external zero, span, & configuration capability
- Comprehensive on-board diagnostic capabilities
- Integral Dual Seal design for safety based on ANSI/NFPA 70-202 and ANSI/ISA 12.27.0
- Full compliance to SIL 2/3 requirements
- Modular design characters
- Available with additional 4-year warranty

Communications/Output Options:

- HART® (version 7.0)



Figure 1 – STA700 InLine and Dual Head Absolute Pressure Transmitters feature field-proven piezoresistive sensor technology

Span & Range Limits:

Model	URL mmHgA (mbarA)	LRL mmHgA (mbarA)	Min Span mm HgA (mbarA)
STA725/72S	780 (1040)	0 (0)	50 (65.0)
Model	psia (barA)	psi (barA)	psi (barA)
STA745/74S	500 (35)	0 (0)	5 (.35)
STA77S	3000 (210)	0 (0)	30 (2.1)

Description

The SmartLine family pressure transmitters are designed around a high performance piezo-resistive sensor. This one sensor actually integrates multiple sensors linking process pressure measurement with on-board static pressure (DP Models) and temperature compensation measurements.

Indication/Display Option

Standard LCD Display Features

- Modular (may be added or removed in the field)
- Supports HART protocol variant
- 0, 90,180, & 270 degree position adjustments
- Configurable (HART only) and standard (Pa, KPa, MPa, KGcm2, Torr, ATM, inH₂O, mH₂O, bar, mbar, inHG, FTH₂O, mmH₂O, mm HG, & psi) measurement units.
- 2 Lines 6 digits PV (9.95H x 4.20W mm) 8 Characters
- Write protect Indication
- Built in Basic Device Configuration through Internal or External Buttons – Range/Engineering Unit/Loop Test /Loop Calibration/Zero /Span Setting
- Multiple language capabilities (EN, RU)

Diagnostics

SmartLine transmitters all offer digitally accessible diagnostics which aid in providing advanced warning of possible failure events minimizing unplanned shutdowns, providing **lower overall operational costs**

System Integration

- SmartLine communications protocols all meet the most current published standards for HART.
- All ST 700 units are Experion tested to provide the highest level of compatibility assurance

Configuration Tools

External two button option for zero/span setting

Suitable for all electrical and environmental requirements, SmartLine offers the ability to configure the transmitter and display, for all basic parameters, via two externally accessible buttons when a display option is selected. Zero/span capabilities are also optionally available via two external buttons with or without selection of the display option.

Internal Two Button Configuration Option

The Standard display has two buttons that can be used for Basic configuration such as re ranging, PV Engineering unit setting, Zero/Span settings, Loop testing and calibration functions

Hand Held Configuration

SmartLine transmitters feature two-way communication and configuration capability between the operator and the transmitter. All Honeywell transmitters are designed and tested for compliance with the offered communication protocols and are designed to operate with any Standards compliant handheld configuration device.

Personal Computer Configuration

Field Device Manager (FDM) Software and FDM Express are also available for managing HART device configurations.

Modular Design

To help contain maintenance & inventory costs, all ST 700 transmitters are modular in design supporting the user's ability to replace meter bodies, standard displays or electronic modules without affecting overall performance. Each meter body is uniquely characterized to provide in-tolerance performance over a wide range of application variations in temperature and pressure.

Modular Features

- Meter body replacement
- Add or remove standard displays
- Add or remove lightning protection (terminal connection)

With no performance effects, *Honeywell's unique modularity results in lower inventory needs and lower overall operating costs.*

Performance Specifications

Reference Accuracy: (conformance to +/-3 Sigma)

Table 1

Model	URL	LRL	Min Span	Maximum Turndown Ratio	Stability (% URL/Year for 10 years)	Reference Accuracy ^{1,2} % Span Standard
STA725	780 mmHgA (1040 mbarA)	0.0 mmHgA (0.0 mbarA)	50 mmHgA (65.0 mbarA)	15:1	0.02	0.065
STA745	500 psia (35 barA)	0.0 mmHgA (0.0 mbarA)	5 psia (0.35 barA)	100:1		
STA72S	780 mmHgA (1040 mbarA)	0.0 mmHgA (0.0 mbarA)	50 mmHgA (65.0 mbarA)	15:1		
STA74S	500 psia (35 barA)	0.0 mmHgA (0.0 mbarA)	5 psia (0.35 barA)	100:1		
STA77S	3000 psi (210 barA)	0.0 mmHgA (0.0 mbarA)	30 psia (2.1 barA)	100:1		

Zero and span may be set anywhere within the listed (URL/LRL) range limits

Accuracy at Specified Span and Temperature: (Conformance to +/-3 Sigma)

Table 2

		Accuracy ^{1,2} (% of Span)				Combined Zero & Span temperature Effect (% Span / 28°C(50°F))			
		Model	URL	Reference Turndown	A	B	C (see URL units)	D	E
Standard Accuracy	STA725	780 mmHgA (1040 mbarA)	6.5:1	0.005	0.060	120 (160)	0.075	0.060	
	STA745	500 psia (35 barA)	16.7:1			30 (2.07)	0.075	0.015	
	STA72S	780 mmHgA (1040 mbarA)	4.3:1			180 (240)	0.075	0.120	
	STA74S	500 psia (35 barA)	16.7:1			30 (2.07)	0.075	0.020	
	STA77S	3000 psi (210 barA)	5:1			600 (41.37)	0.075	0.015	
Turn Down Effect							Temp Effect		
$\pm [A + B] \text{ if Span} \geq C$ $\pm \left[A + B \left(\frac{C}{\text{Span}} \right) \right] \text{ if Span} < C$							$\pm \left[D + E \left(\frac{\text{URL}}{\text{Span}} \right) \right]$		

Total Performance (% of Span):

Total Performance Calculation: = +/- $\sqrt{(\text{Accuracy})^2 + (\text{Temperature Effect})^2}$

Total Performance Examples (for comparison): (standard accuracy, 5:1 Turndown, +/-50 °F (28°C) shift)

STA725 @ 156 mmHgA: 0.381% of span

STA72S @ 156 mmHgA: 0.679% of span

STA745 @ 100 psia: 0.163% of span

STA74S @ 100 psia: 0.187% of span

STA77S @ 600 psia: 0.163% of span

Typical Calibration Frequency:

Calibration verification is recommended every two (2) years

Notes:

1. Terminal Based Accuracy - Includes combined effects of linearity, hysteresis, and repeatability. Analog output adds 0.006% of span.
2. For zero based spans and reference conditions of: 25°C (77°F), 10 to 55% RH, and 316 Stainless Steel barrier diaphragm.

Operating Conditions – All Models

Parameter	Reference Condition		Rated Condition		Operative Limits		Transportation and Storage	
	°C	°F	°C	°F	°C	°F	°C	°F
Ambient Temperature¹	25±1	77±2	-40 to 85	-40 to 185	-40 to 85	-40 to 185	-55 to 120	-67 to 248
Meter Body Temperature								
STA725 / STA72S	25±1	77±2	See Figure 2		See Figure 2		-55 to 125	-67 to 257
STA745, 74S, 77S	25±1	77±2	-40 to 110	-40 to 230	-40 to 125	-40 to 257	-55 to 125	-67 to 257
Humidity %RH	10 to 55		0 to 100		0 to 100		0 to 100	
Vacuum Region - Minimum Pressure STA725, 72S, 745, 74S, 77S	See Figure 2. Operate within specifications above 25 mmHgA (33 mbarA). Short term ² exposure to full vacuum will not result in damage.							
Supply Voltage, Current, and Load Resistance	10.8 to 42.4 Vdc at terminals (IS versions limited to 30 Vdc) 0 to 1,440 ohms (as shown in Figure 3)							
Maximum Allowable Working Pressure (MAWP)^{3, 4}	STA725, 72S = 780 mmHgA (1,040 mbarA) STA745, 74S = 500 psia (35 barA) STA77S = 3,000 psia (210 barA)							

¹ LCD Display operating temperature -20°C to +70°C Storage temperature -30°C to 80°C.

² Short term equals 2 hours at 70°C (158°F).

³ Units can withstand overpressure of 1.5 x MAWP without damage.

⁴ Consult factory for MAWP of ST 700 transmitters with CRN approval.

⁵ Silicone minimum temperature rating is -40°C (-40°F). CTFE minimum temperature rating is -30°C (-22°F).

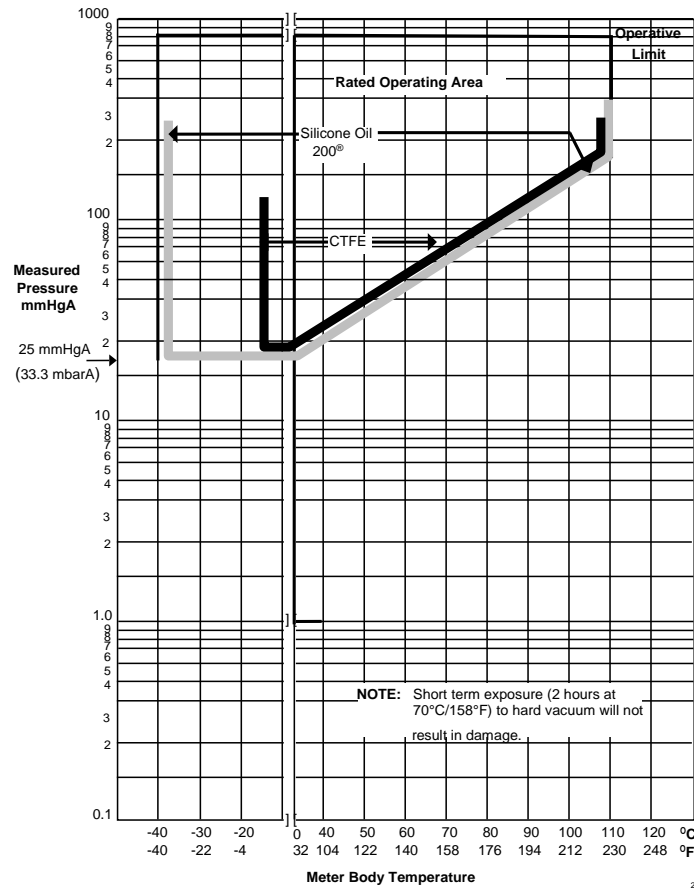


Figure 2 - Measured pressure versus meter body temperature chart for ST 700 Dual Head and Inline models

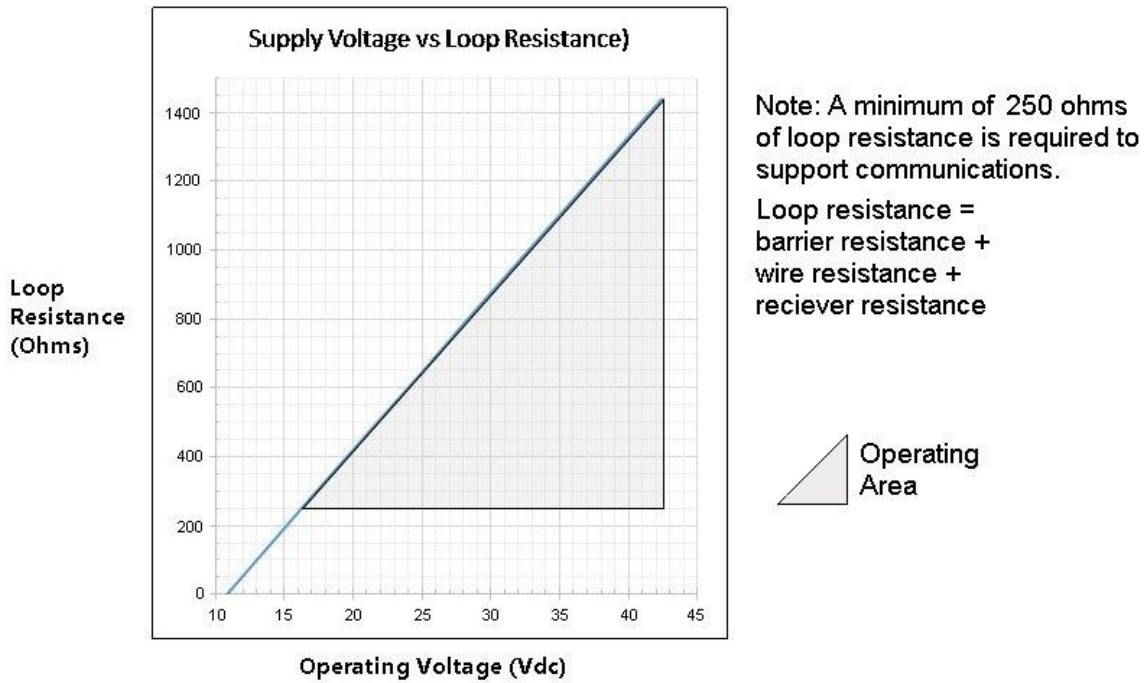


Figure 3 - Supply voltage and loop resistance chart & calculations

Performance Under Rated Conditions – All Models

Parameter	Description												
Analog Output Digital Communications:	Two-wire, 4 to 20 mA HART 7 protocol												
HART Output Failure Modes	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;"></th> <th style="width: 35%; text-align: center;">Honeywell Standard:</th> <th style="width: 35%; text-align: center;">NAMUR NE 43</th> </tr> </thead> <tbody> <tr> <td>Compliance:</td> <td></td> <td></td> </tr> <tr> <td>Normal Limits:</td> <td style="text-align: center;">3.8 – 20.8 mA</td> <td style="text-align: center;">3.8 – 20.5 mA</td> </tr> <tr> <td>Failure Mode:</td> <td style="text-align: center;">≤ 3.6 mA and ≥ 21.0 mA</td> <td style="text-align: center;">≤ 3.6 mA and ≥ 21.0 mA</td> </tr> </tbody> </table>		Honeywell Standard:	NAMUR NE 43	Compliance:			Normal Limits:	3.8 – 20.8 mA	3.8 – 20.5 mA	Failure Mode:	≤ 3.6 mA and ≥ 21.0 mA	≤ 3.6 mA and ≥ 21.0 mA
	Honeywell Standard:	NAMUR NE 43											
Compliance:													
Normal Limits:	3.8 – 20.8 mA	3.8 – 20.5 mA											
Failure Mode:	≤ 3.6 mA and ≥ 21.0 mA	≤ 3.6 mA and ≥ 21.0 mA											
Supply Voltage Effect	0.005% of span per volt.												
Transmitter Turn on Time (includes power up & test algorithms)	2.5 sec												
Response Time (delay + time constant)	100ms												
Damping Time Constant	Adjustable from 0 to 32 seconds in 0.1 increments. Default Value: 0.5 seconds												
Vibration Effect	Less than +/- 0.1% of URL w/o damping Per IEC60770-1 field or pipeline, high vibration level (10-2000Hz: 0.21 displacement/3g max acceleration)												
Electromagnetic Compatibility	Meets IEC61326-3-1												
Lightning Protection Option	Leakage Current: 10uA max @ 42.4VDC 93C Impulse rating: <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; text-align: center;">8/20uS</td> <td style="width: 33%; text-align: center;">5000A (>10 strikes)</td> <td style="width: 33%; text-align: center;">10000A (1 strike min.)</td> </tr> <tr> <td style="text-align: center;">10/1000uS</td> <td style="text-align: center;">200A (> 300 strikes)</td> <td></td> </tr> </table>	8/20uS	5000A (>10 strikes)	10000A (1 strike min.)	10/1000uS	200A (> 300 strikes)							
8/20uS	5000A (>10 strikes)	10000A (1 strike min.)											
10/1000uS	200A (> 300 strikes)												

Materials Specifications (see model selection guide for availability/restrictions with various models)

Parameter	Description
Barrier Diaphragms Material	STA7x5 Dual Head: 316L SS, Hastelloy® C-276 ² STA7xS Inline: 316L SS, Hastelloy C-276 ²
Process Head Material	STA700 Dual Head: Carbon Steel (Zinc Plated) ⁵ , 316 SS ⁴ , Hastelloy® C-276 ⁶ STA700 Inline: 316L SS ⁴ , Hastelloy® C-276 ⁶
Vent/Drain Valves & Plugs ¹	STA700 Dual Head: 316 SS ⁴ , Hastelloy® C-276 ² STA700 Inline: N/A
Head Gaskets	STA700 Dual Head: Glass-filled PTFE standard. Viton® and graphite are optional. STA700 Inline: N/A
Meter Body Bolting	STA700 Dual Head: Carbon Steel (Zinc plated) standard. Options include 316 SS, NACE A286 SS bolts and nuts or NACE A286 SS bolts nuts and Super Duplex STA700 Inline: N/A
Mounting Bracket	Carbon Steel (Zinc-plated) or 304 or 316 Stainless Steel. See Figures 4 & 5
Fill Fluid	Silicone 200, CTFE (Chlorotrifluoroethylene)
Electronic Housing	Pure Polyester Powder Coated Low Copper (<0.4%)-Aluminum. Meets NEMA 4X, IP66, IP67 and NEMA 7 (explosion proof). All stainless steel housing is optional.
Process Connections	STA700 Dual Head: ½ -inch NPT (female) STA700 Inline: ½ -inch NPT (female), ½ -inch NPT male, 9/16 Aminco. G½ -B Male Thread
Wiring	Accepts up to 16 AWG (1.5 mm diameter).
Dimensions	See Figure 4 and Figure 5
Net Weight	STA700 Dual Head: 8.3 pounds (3.8 Kg). STA700 InLine: 3.6 pounds (1.6 Kg) with Aluminum Housing

¹ Vent/Drains are sealed with Teflon®² Hastelloy® C-276 or UNS N10276⁴ Supplied as 316 SS or as Grade CF8M, the casting equivalent of 316 SS.⁵ Carbon Steel heads are zinc-plated and not recommended for water service due to hydrogen migration. For that service, use 316 stainless steel wetted Process Heads.⁶ Hastelloy® C-276 or UNS N10276. Supplied as indicated or as Grade CW12MW, the casting equivalent of Hastelloy® C-276

Communications Protocols & Diagnostics

HART Protocol

Version:

HART 7

Power Supply

Voltage: 10.8 to 42.4 Vdc at terminals

Load: Maximum 1440 ohms See [Figure 3](#)

Minimum Load: 0 ohms. (For handheld communications a minimum load of 250 ohms is required)

Standard Diagnostics

ST 700 top level diagnostics are reported as either critical or non-critical and readable via the DD/DTM tools or integral display as shown below.

Critical Diagnostics

HART DD/DTM Tools	Standard Display
Electronic Module DAC Failure	Fault Comm EI
Meter Body NVM Corrupt	Fault Mtrbody
Config. Data Corrupt	Fault Comm EI
Electronic Module Diag Failure	Fault Comm EI
Meter Body Critical Failure	Fault Mtrbody
Sensor Comms Timeout	Fault Mbd Com

Non-Critical Diagnostics

HART DD/DTM Tools
Display Failure
Electronic Module Comm Failure
Meter Body Excess Correct
Sensor Over Temperature
Fixed Current Mode
PV Out of Range
No Factory Calibration
LRV Set Error – Zero Config. Button
URV Set Error – Zero Config. Button
AO Out of Range
Loop Current Noise
Meter Body Unreliable Comm
No DAC Calibration
Sensor Supply Voltage Low

Refer to ST 700 diagnostics tech note for additional level diagnostic information.

Hazardous Area Certifications:

MSG CODE	AGENCY	TYPE OF PROTECTION	COMM. OPTION	ELECTRICAL PARAMETERS	AMBIENT TEMP (Ta)
A	FM Approvals™ USA	Explosionproof: Class I, Division 1, Groups A, B, C, D; Dust Ignition Proof: Class II, III, Division 1, Groups E, F, G; T6..T5 Class I, Zone 0/1, AEx db IIC T6..T5 Ga/Gb Class II, Zone 21, AEx tb IIIC T95° Db	All	Note 1	T5: -50 °C to 85°C T6: -50 °C to 65°C
		Intrinsically Safe: Class I, II, III, Division 1, Groups A, B, C, D, E, F, G: T4 Class I, Zone 0, AEx ia IIC T4 Ga FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2a	-50 °C to 70°C
		Nonincendive: Class I, Division 2, Groups A, B, C, D locations, T4 Class I, Zone 2, AEx nA IIC T4 Gc	Foundation Fieldbus	Note 2b	-50 °C to 70°C
		Enclosure: Type 4X/ IP66/ IP67	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50 °C to 85°C
			All	All	-
		STANDARDS: FM Class 3600:2011; FM Class 3610: 2010; FM Class 3611: 2004; FM Class 3615: 2006; FM Class 3616: 2011; FM Class 3810: 2005; ANSI/ISA 60079-0: 2013; ANSI/UL 60079-1: 2015; ANSI/UL 60079-11: 2014; ANSI/ISA 60079-15: 2012; ANSI/UL 60079-26: 2017; ANSI/UL 60079-31: 2015; ANSI/NEMA 250: 2003; ANSI/ IEC 60529: 2004			
B	Canadian Standards Association (CSA) USA and Canada	Explosion Proof: Class I, Division 1, Groups A, B, C, D; Class II, Division 1, Groups E, F, G; Class III, Division 1, T6..T5 Class I Zone 1 AEx db IIC T6..T5 Ga/Gb Ex db IIC T6..T5 Ga/Gb Zone 22 AEx tb IIIC T95° Db Ex tb IIIC T95° Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Class I, II, III, Division 1, Groups A, B, C, D; Class II, Division 1, Groups E, F, G; Class III, Division 1, T4 Class I Zone 0, AEx ia IIC T4 Ga Class I Zone 2, AEx ic IIC T4 Gc Ex ia IIC T4 Ga Ex ic IIC T4 Gc FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
		Nonincendive: Class I, Division 2, Groups A, B, C, D; Class II, Division 2, Groups F, G; Class III, Division 2, T4 Class I Zone 2 AEx nA IIC T4 Gc Ex nA IIC T4 Gc	Foundation Fieldbus	Note 2	-50°C TO 70°C
		Enclosure: Type 4X/ IP66/ IP67	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C to 85°C
			All	All	-

MSG CODE	AGENCY	TYPE OF PROTECTION	COMM. OPTION	ELECTRICAL PARAMETERS	AMBIENT TEMP (Ta)
		STANDARDS: CSA C22.2 No. 0-10; CSA C22.2 No. 94-M91; CSA C22.2 No. 25-1966; CSA C22.2 No. 30-M1986; CSA C22.2 No. 142-M1987; CSA C22.2 No. 157-92; CSA C22.2 No. 213-M1987; CSA-C22.2 No. 60529:05; CSA-C22.2 No. 60079-0:11; CSA-C22.2 No. 60079-1:11; CSA-C22.2 No. 60079-11:11; CSA-C22.2 No. 60079-15:12; CSA-C22.2 No. 60079-31:12; ISA 12.12.01-2010; ISA 60079-0: 2009; ISA 60079-11: 2011; ISA 60079-15: 2009; ISA 60079-26: 2008; ISA-60079-27:2007 (12.02.04)-2006 (R2011); UL 913 Ed. 6; UL 916:1998; ANSI/ISA-12.27.01-2011			
C	ATEX	Flameproof: SIRA 12ATEX2233X II 1/2 G Ex db IIC T6..T5 Ga/Gb II 2 D Ex tb IIIC T95°C...T120°C Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: SIRA 12ATEX2233X II 1 G Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) II 1 G Ex ia IIC T4 Ga	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Zone 2, Increase Safety: SIRA 12ATEX4234X II 3 G Ex ec IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		Zone 2, Intrinsically Safe: SIRA 12ATEX4234X II 3 G Ex ic IIC T4 Gc FISCO Field Device (Only for FF Option) II 3 G Ex ic IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 2	-50°C TO 85°C
		Enclosure: IP66/ IP67	All	All	-
STANDARDS: EN 60079-0: 2012/A11: 2013; EN 60079-1: 2014; EN 60079-7: 2015; EN 60079-11: 2012; EN 60079-26: 2015; EN 60079-31: 2009					
D	IECEX World	Flameproof: IECEx SIR 12.0100X Ex db IIC T6..T5 Ga/Gb Ex tb IIIC T95°C...T120°C Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: IECEx SIR 12.0100X Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Zone 2, Increase Safety: IECEx SIR 12.0100X Ex ec IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		Zone 2, Intrinsically Safe: IECEx SIR 12.0100X Ex ic IIC T4 Gc FISCO Field Device (Only for FF Option) Ex ic IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 2	-50°C TO 85°C
		Enclosure: IP66/ IP67	All	All	-
STANDARDS: IEC 60079-0: 2011; IEC 60079-1: 2014; IEC 60079-7: 2017; IEC 60079-11: 2011; IEC 60079-26: 2014; IEC 60079-31: 2013					

E	SAEx South Africa	Flameproof : Ex d IIC T6...T5 Ga/Gb Ex tb IIIC T95°C...T120°C Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Ex ia IIC Ga T4 FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Zone 2, Increase Safety: II 3 G Ex ec IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		Zone 2, Intrinsically Safe: Ex ic IIC T4 Gc FISCO Field Device (Only for FF Option) Ex ic IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 2	-50°C TO 85°C
		Enclosure: IP66/ IP67	All	All	-
F	INMETRO Brazil	Flameproof: Ex db IIC T6..T5 Ga/Gb Ex tb IIIC T95°C...T120°C Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2a	-50°C TO 70°C
			Foundation Fieldbus	Note 2b	-50°C TO 70°C
		Zone 2, Increase Safety: II 3 G Ex ec IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		Zone 2, Intrinsically Safe: Ex ic IIC T4 Gc FISCO Field Device (Only for FF Option) Ex ic IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 2	-50°C TO 85°C
		Enclosure : IP 66/67	All	All	-
G	NEPSI CHINA	Flameproof: Ex db IIC T6..T5 Ga/Gb Ex tb IIIC T 95°C Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Zone 2, Increase Safety: II 3 G Ex ec IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		Zone 2, Intrinsically Safe: Ex ic IIC T4 Gc FISCO Field Device (Only for FF Option) Ex ic IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 2	-50°C TO 85°C
		Enclosure : IP 66/67	All	All	-

I	EAC Russia, Belarus and Kazakhstan	Flameproof: Ga/Gb Ex d IIC T6..T5 Ex tb IIIC Db T 85°C	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Ga Ex ia IIC T4 X FISCO Field Device (Only for FF Option) Ga Ex ia IIC T4 X	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Zone 2, Non Sparking: 2 Ex nA IIC T4 Gc X	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		Zone 2, Intrinsically Safe: Ga Ex ic IIC T4 X FISCO Field Device (Only for FF Option) 2 Ex ic IIC T4 Gc X	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 2	-50°C TO 85°C
		Enclosure : IP 66/67	All	All	
J	CCoE INDIA	Flameproof: Ex d IIC T6..T5 Ga/Gb	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Non Sparking Ex nA IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		Enclosure: IP66/ IP67	All	All	-
K	UATR UKRAINE	Flameproof: II 1/2 G Ex db IIC T6..T5 Ga/Gb II 2 D Ex tb IIIC T95°C...T120°C Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: II 1 G Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) II 1 G Ex ia IIC T4 Ga	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Enclosure: IP66/ IP67	All	All	-

Notes:

1. Operating Parameters:

Voltage= 11 to 42 V DC Current= 4-20 mA Normal

2. Intrinsically Safe Entity Parameters

a. Analog/ DE/ HART Entity Values:

V_{max}= U_i = 30V I_{max}= I_i= 105mA C_i = 4.2nF L_i =984 uH P_i =0.9W

Transmitter with Terminal Block Revision E or Later

V_{max}= U_i = 30V I_{max}= I_i= 225mA C_i = 4.2nF L_i = 0 P_i =0.9W

Note : Transmitter with Terminal Block Revision E or later

The revision is on the label that is on the module. There will be two lines of text on the label:

- First is the Module Part #: 50049839-001 or 50049839-002
- Second line has the supplier information, along with the REVISION:
XXXXXX-EXXXX, THE "X" is production related, THE POSITION of the "E" IS THE REVISION.

Other Certification Options**Materials**

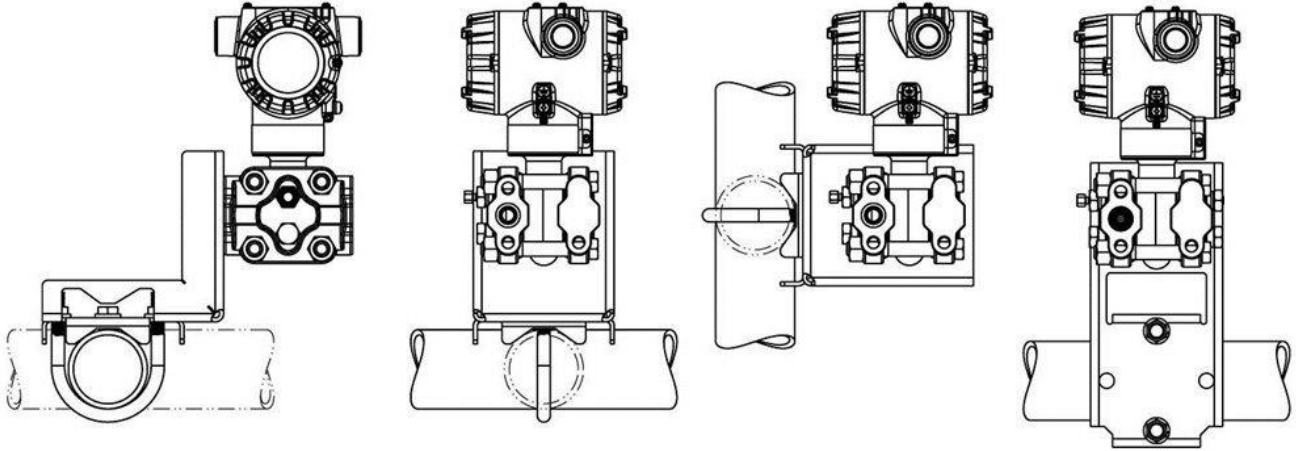
oNACE MRO175, MRO103, ISO15156

SIL 2/3 Certification	IEC 61508 SIL 2 for non-redundant use and SIL 3 for redundant use according to EXIDA and TÜV Nord Sys Tec GmbH & Co. KG under the following standards: IEC61508-1: 2010; IEC 61508-2: 2010; IEC61508-3: 2010.
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Mounting & Dimensional Drawings

Reference Dimensions: $\frac{\text{millimeters}}{\text{inches}}$

Mounting Configurations (Dual head design)



Dimensions (Dual head design)

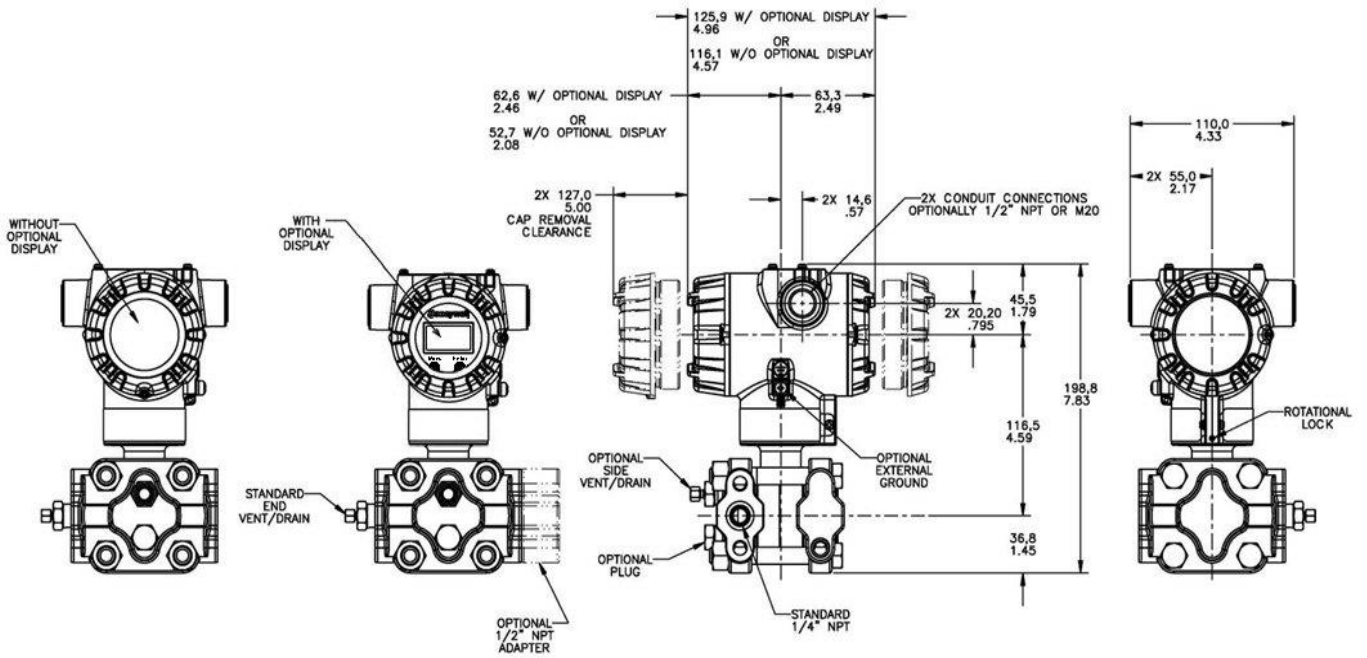
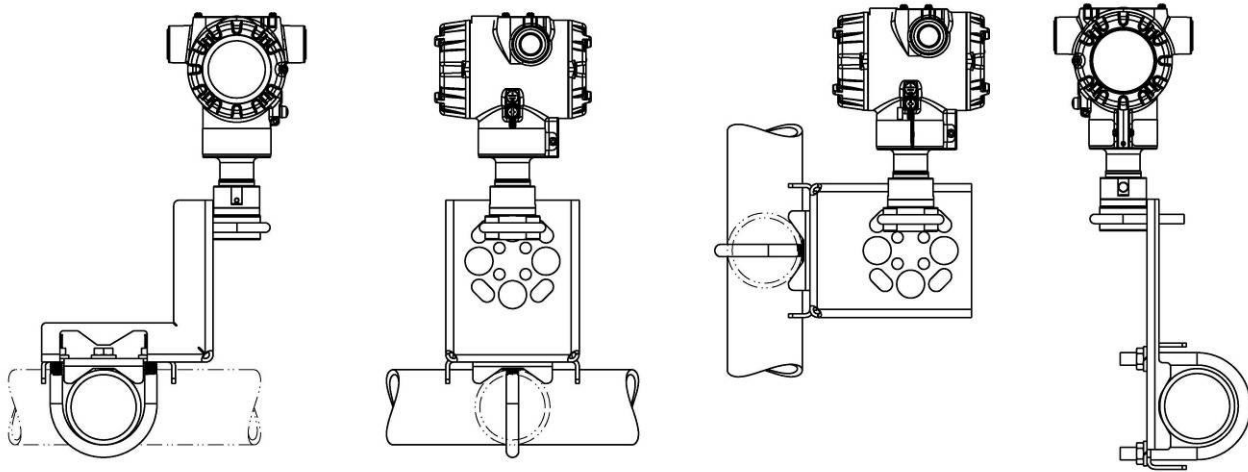


Figure 4 -- Typical mounting dimensions of STA725 & STA745 for reference

Reference Dimensions: $\frac{\text{millimeters}}{\text{inches}}$

Mounting Configurations (Inline Designs)



Dimension (Inline Design)

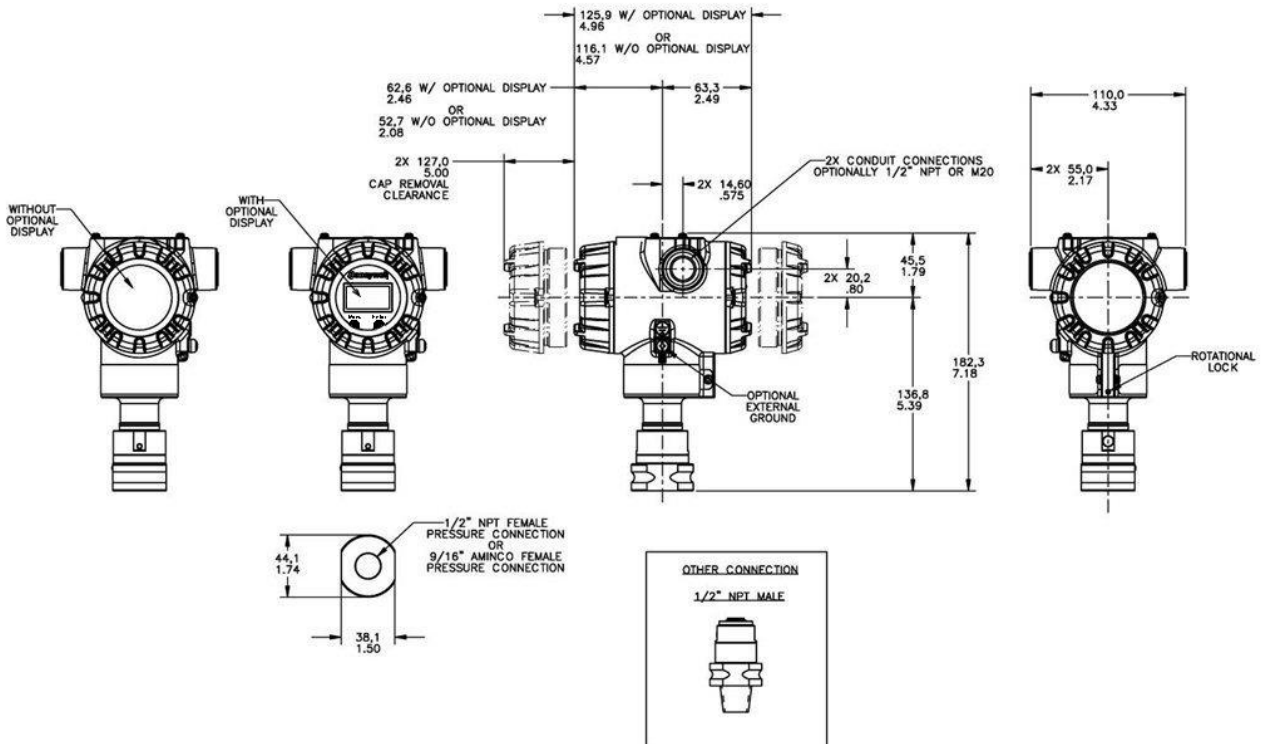


Figure 5 – Typical mounting dimensions of STA72S, STA74S, & STA77S for reference

Model Selection Guide

Model Selection Guides are subject to change and are inserted into the specifications as guidance only.

**Model STA700
Absolute Pressure Transmitters**

Model Selection Guide
34-ST-16-120 Issue 9

Instructions: Make selections from all Tables using column below the proper arrow. Asterisk indicates availability. Letter (a) refers to restrictions highlighted in the restrictions table. Tables delimited with dashes.

Key I II III IV V VI VII VIII IX
 STA7__ - _____ - __ - __ - ____ - ____ - __ - _____ - _____ - 0000

KEY NUMBER	URL/Max Span	LRL	Min Span	Units
Absolute Dual Head	780 (1040)	0 (0)	50 (65.0)	mm HgA (mbarA)
	500 (35)	0 (0)	5 (.35)	psia (barA)
Absolute In-Line	780 (1040)	0 (0)	50 (65.0)	mm HgA (mbarA)
	500 (35)	0 (0)	5 (.35)	psia (barA)
	3000 (210)	0 (0)	30 (2.1)	psia (barA)

Selection	Availability
STA725	↓
STA745	↓
STA72S	↓
STA74S	↓
STA77S	↓

TABLE I METER BODY SELECTIONS

a. Process Head & Diaphragm Materials	Process Head/Reference Head Mat^{1b}		Barrier Diaphragm Material	
	Plated Carbon Steel /Plated Carbon Steel		316L SS Hastelloy [®] C - 276	
	316 Stainless Steel /316 Stainless Steel		316L SS Hastelloy C - 276	
	Hastelloy C - 276 /316 Stainless Steel		Hastelloy C - 276	
b. Fill Fluid	Silicone Oil 200 Fluorinated Oil CTFE			
c. Process Connection	Size/Type		Material	
	9/16" Aminco		Same as Process Head	
	1/2" NPT (female)		Same as Process Head ^{1a}	
	1/2" NPT (male)		Same as Process Head	
	G 1/2 B Threaded Fitting M20 (male)		Same as Process Head	
d. Bolt/Nuts Materials	None Carbon Steel 316 SS Grade 660 (NACE A286) with NACE 304 SS Nuts Grade 660 (NACE A286) Bolts & Nuts Super Duplex			
	Head Type	Vent Type	Vent Location	Vent Material
	None	None	None	None
	Single Ended	None	None	None
	Single Ended	Std Vent	Side	Matches Head Material ¹
Single Ended	Center Vent	Side	Stainless Steel Only	
Dual Ended	Std Vent	End	Matches Head Material ¹	
Dual Ended	Center Vent	End	Stainless Steel Only	
Dual Ended	Std Vent/ Plug	Side/End	Matches Head Material ¹	
f. Gasket Materials	None Teflon [®] or PTFE (Glass Filled) Viton [®] Graphite			

A _____	*	
B _____	*	
E _____	*	*
F _____	*	*
J _____	*	*
_ 1 _____	*	*
_ 2 _____	*	*

__ A ____	*	
__ G ____	*	*
__ H ____	*	*
__ B ____	*	*
__ N ____	*	*
__ 0 ____	*	*
__ C ____	*	*
__ S ____	*	*
__ N ____	*	*
__ K ____		p
__ D ____		p

__ 0 ____	*	*
__ 1 ____	*	*
__ 2 ____	*	*
__ 3 ____		t
__ 4 ____	*	*
__ 5 ____		t
__ 6 ____	*	*
__ 0 ____	*	*
__ A ____	*	*
__ B ____	*	*
__ C ____	*	*

¹ Except Carbon Steel Heads shall use 316SS Vent/Drain & Plugs

^{1a} STA725,745 supplied via 1/2" flange adapter same material as process head except carbon steel shall use 316 SS

^{1b} Reference head available only with Dual head models. In-line models supplied with process head only

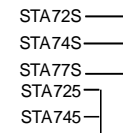
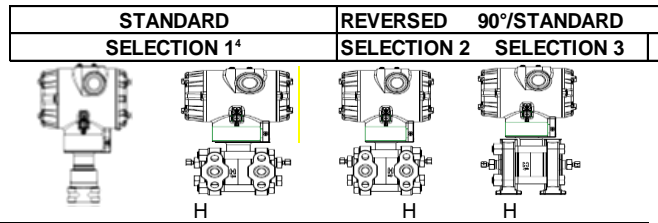


TABLE II		Meter Body & Connection Orientation	
Head/Connect Orientation	Standard	High Side Left, Ref Side Right ² / Std Head Orientation	
	Reversed	Ref Side Left, High Side Right ²	
	90/Standard	High Side Left, Ref Side Right ² / 90° Head Rotation	

1	*	*
2	*	*
3	h	

TABLE III		AGENCY APPROVALS	
Approvals	No Approvals Required		
	<FM> Explosion proof, Intrinsically Safe, Non-incendive, & Dustproof		
	CSA Explosion proof, Intrinsically Safe, Non-incendive, & Dustproof		
	ATEX Explosion proof, Intrinsically Safe & Non-incendive		
	IECEX Explosion proof, Intrinsically Safe & Non-incendive		
	SAEx Explosion proof, Intrinsically Safe & Non-incendive		
	INMETRO Explosion proof, Intrinsically Safe & Non-incendive		
	NEPSI Explosion proof, Intrinsically Safe & Non-incendive		
	EAC-Customs Union(Russia,Belarus and Kazakhstan)EX Approval Flameproof,Intrinsically Safe		
	CCoE Explosion proof, Intrinsically Safe & Non-incendive		
UATR Flameproof, Intrinsically Safe & Dustproof			

0	*	*
A	*	*
B	*	*
C	*	*
D	*	*
E	*	*
F	*	*
G	*	*
I	*	*
J	*	*
K	*	*

TABLE IV		TRANSMITTER ELECTRONICS SELECTIONS		
a. Electronic Housing Material & Connection Type	Material		Connection	Lightning Protection
	Polyester Powder Coated Aluminum		1/2 NPT	None
	Polyester Powder Coated Aluminum		M20	None
	Polyester Powder Coated Aluminum		1/2 NPT	Yes
	Polyester Powder Coated Aluminum		M20	Yes
	316 Stainless Steel (Grade CF8M)		1/2 NPT	None
	316 Stainless Steel (Grade CF8M)		M20	None
	316 Stainless Steel (Grade CF8M)		1/2 NPT	Yes
316 Stainless Steel (Grade CF8M)		M20	Yes	
b. Output/ Protocol	Analog Output		Digital Protocol	
	4-20mA dc		HART Protocol	
c. Customer Interface Selections	Indicator	Ext Zero,Span & Config Buttons	Languages	
	None	None	None	
	None	Yes (Zero/Span Only)	None	
	Standard(w/Internal Zero,Span&Config Buttons)	None	EN, RU	
Standard(w/Internal Zero,Span&Config Buttons)	Yes	EN, RU		

A__	*	*
B__	*	*
C__	*	*
D__	*	*
E__	*	*
F__	*	*
G__	*	*
H__	*	*

H	*	*
-----	---	---

__0	*	*
__A	*	*
__S	*	*
__T	*	*

TABLE V		CONFIGURATION SELECTIONS		
a. App SW	Diagnostics			
	Standard Diagnostics			
b. Output Limit, Failsafe & Write Protect Settings	Write Protect	Fail Mode	High & Low Output Limits ³	
	Disabled	High> 21.0mAdc	Honeywell Std (3.8 - 20.8 mAdc)	
	Disabled	Low< 3.6mAdc	Honeywell Std (3.8 - 20.8 mAdc)	
	Enabled	High> 21.0mAdc	Honeywell Std (3.8 - 20.8 mAdc)	
Enabled	Low< 3.6mAdc	Honeywell Std (3.8 - 20.8 mAdc)		
c. General Configuration	General Configuration			
	Factory Standard Customer Configuration (Unit Data Required)			

1__	*	*
-----	---	---

1	*	*
2	*	*
3	*	*
4	*	*

__S	*	*
__C	*	*

² Left side/Right side as view ed from the customer connection perspective

³ NAMUR Output Limits 3.8 - 20.5mAdc can be configured by the custom

⁴ Process Connections w ill vary on In -Line models

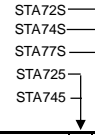


TABLE VI CALIBRATION & ACCURACY SELECTIONS			
a. Accuracy and Calibration	Accuracy	Calibrated Range	Calibration Qty
	Standard	Factory Std	Single Calibration
	Standard	Custom (Unit Data Required)	Single Calibration

A	*	*
B	*	*

TABLE VII ACCESSORY SELECTIONS		
	Bracket Type	Material
a. Mounting Bracket	None	None
	Angle Bracket	Carbon Steel
	Angle Bracket	304 SS
	Angle Bracket	316 SS
	Marine Approved Bracket	304 SS
	Flat Bracket	Carbon Steel
	Flat Bracket	304 SS
b. Customer Tag	Customer Tag Type	
	No customer tag One Wired Stainless Steel Tag (Up to 4 lines 26char/line)	
c. Unassembled Conduit Plugs & Adapters	Unassembled Conduit Plugs & Adapters	
	No Conduit Plugs or Adapters Required	
	1/2 NPT Male to 3/4 NPT Female 316 SS Certified Conduit Adapter	
	1/2 NPT 316 SS Certified Conduit Plug M20 316 SS Certified Conduit Plug	

0	---	*	*
1	---	*	*
2	---	*	*
3	---	*	*
4	---	*	*
5	---	*	*
6	---	*	*
7	---	*	*

_ 0	_ _	*	*
_ 1	_ _	*	*

_ _ A0		*	*
_ _ A2		n	n
_ _ A6		n	n
_ _ A7		m	m

TABLE VIII OTHER Certifications & Options: (String in sequence comma delimited (XX, XX, XX,...))	
Certifications & Warranty	None - No additional options
	NACE MR0175; MR0103; ISO15156 Process wetted parts only
	NACE MR0175; MR0103; ISO15156 Process wetted and non-wetted parts
	Marine (DNV,ABS,BV,KR,LR)
	EN10204 Type 3.1 Material Traceability
	Certificate of Conformance
	Calibration Test Report & Certificate of Conformance
	Certificate of Origin
	FMEDA(SIL 2/3) Certification
	Over-Pressure Leak Test Certificate (1.5X MAWP)
	Cert Clean for O ₂ or CL ₂ service per ASTM G93
	PM Certification ⁵
	Extended Warranty Additional 1 year
	Extended Warranty Additional 2 years
	Extended Warranty Additional 3 years
Extended Warranty Additional 4 years	

00	*	*
FG	*	*
F7	c	c
MT	d	d
FX	*	*
F3	*	*
F1	*	*
F5	*	*
FE	j	j
TP	*	*
OX	e	e
PM	*	*
01	*	*
02	*	*
03	*	*
04	*	*

TABLE IX Manufacturing Specials	
Factory	Factory Identification

0 0 0 0	*	*
---------	---	---

RESTRICTIONS

Restriction Letter	Available Only with		Not Available with	
	Table	Selection(s)	Table	Selection(s)
c	Id	_ 0,N,K,D _ _		
d	Iva	C, D, G, H _ _	VIIa	1, 2, 3, 5, 6, 7 _ _ _
e	Ib	_ 2 _ _ _		
h			Ie	4, 5, 6
			VIIa	1, 2, 3, 4, 5, 6, 7 _ _ _
j			Vb	_ 1, 2 _
m	IVa	B,D,F,H _ _		
n	IVa	A,C,E,G _ _		
p			III	B - No CRN number available
t			1a	J _ _ _ _ _
s	Ia	A,E _ _ _ _		
b	Select Only one option from this group			

⁵The PM option is available on all Smartline Pressure Transmitter process wetted parts such as process heads, flanges, bushings and vent plugs except plated carbon steel process heads and flanges. PM option information is also available on diaphragms except STG and STA in-line construction pressure transmitters.

FIELD INSTALLABLE ACCESSORY KITS

Description
Terminal Strip w/o Lightning Protection Kit for HART Module
Terminal Strip w/Lightning Protection for HART Module
HART Electronics Module
HART Electronics Module w/connection for external Zero/Span buttons
Standard Display Module

Kit Number
50129832-501
50129832-502
50129828-501
50129828-502
50126003-501

PRODUCT MANUALS

Description
ST 700 Smart Transmitter User Manual - English
ST 700 Smart Transmitter HART Communications Manual - English
ST 700 Smart Transmitter Safety Manual - English

Part Number
34-ST-25-44
34-ST-25-47
34-ST-25-37

Sales and Service

For application assistance, current specifications, ordering, pricing, and name of the nearest Authorized Distributor, contact one of the offices below.

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(TAC) hfs-tac-support@honeywell.com

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FP-Sales-Apps@Honeywell.com

or

(TAC)

hfs-tac-support@honeywell.com

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Knowledge Base search
engine <http://bit.ly/2N5Vldi>

AMERICAS

Honeywell Process Solutions,
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Web

Knowledge Base search
engine <http://bit.ly/2N5Vldi>

Specifications are subject to change without notice.

For more information

To learn more about SmartLine Pressure
Transmitters visit www.honeywellprocess.com
Or contact your Honeywell Account Manager

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