

### STA700 SmartLine Absolute Pressure Specification 34-ST-03-120, July 2020



#### 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, KGcm<sup>2</sup>, Torr, ATM, inH<sub>2</sub>O, mH<sub>2</sub>O, bar, mbar, inHG, FTH<sub>2</sub>O, mmH<sub>2</sub>O, 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 <sup>1,2</sup> % 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 <sup>1,2</sup> (% 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	
						<b>Turn Down Effect</b>		<b>Temp Effect</b>	
						$\pm [A + B] \text{ if Span} \geq C$ $\pm \left[ A + B \left( \frac{C}{\text{Span}} \right) \right] \text{ if Span} < C$		$\pm \left[ D + E \left( \frac{\text{URL}}{\text{Span}} \right) \right]$	

**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**

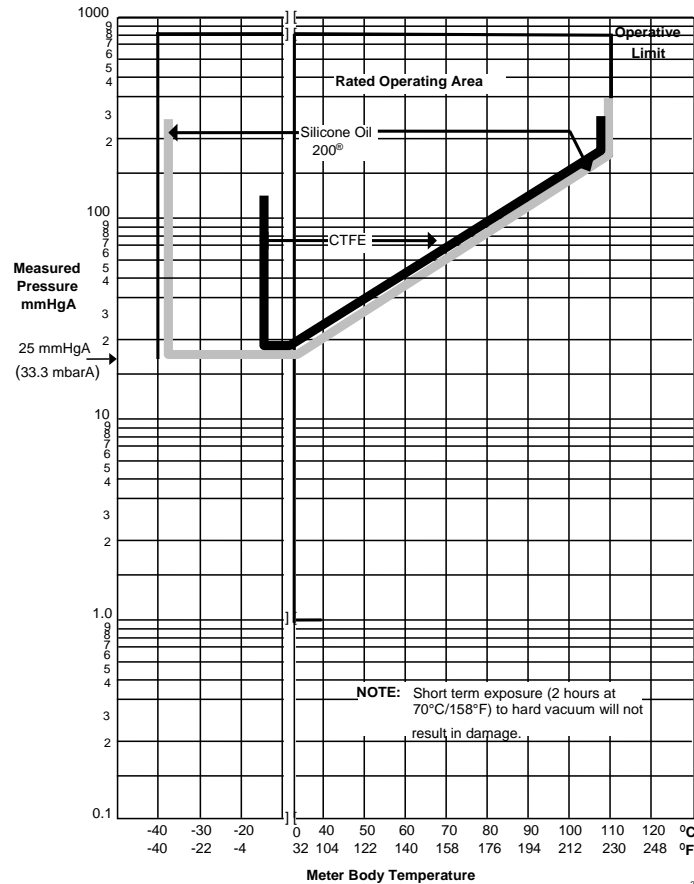
Parameter	Reference Condition		Rated Condition		Operative Limits		Transportation and Storage	
	°C	°F	°C	°F	°C	°F	°C	°F
<b>Ambient Temperature<sup>1</sup></b>	25±1	77±2	-40 to 85	-40 to 185	-40 to 85	-40 to 185	-55 to 120	-67 to 248
<b>Meter Body Temperature</b>								
STA725 / STA72S	25±1	77±2	See Figure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

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

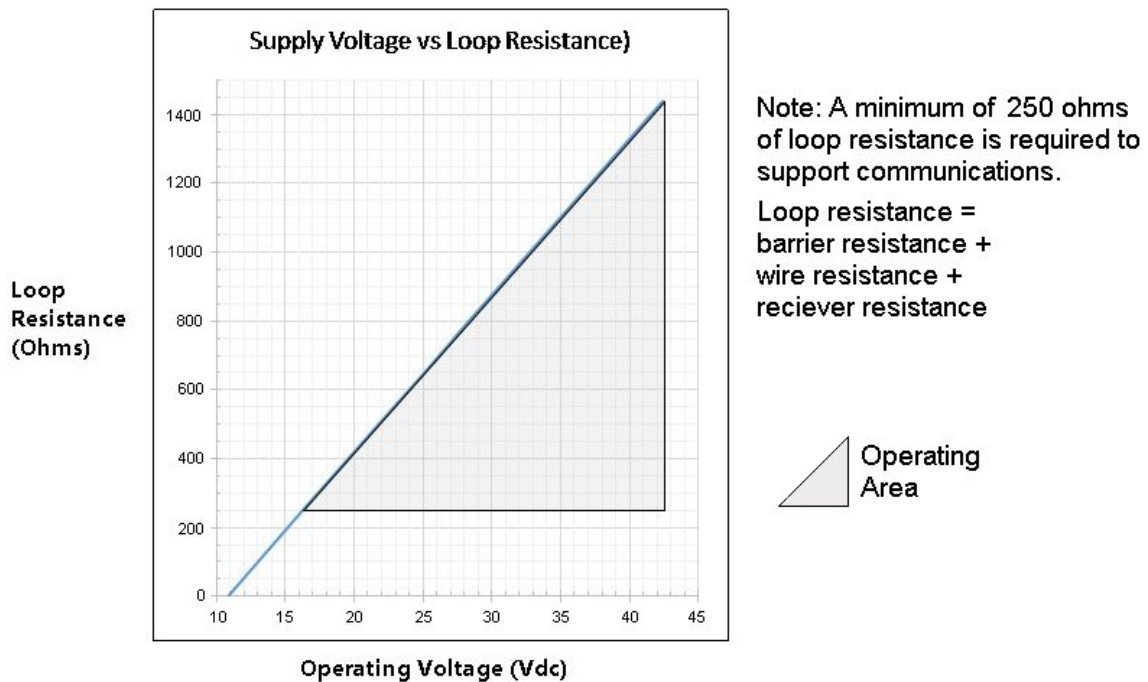
<sup>2</sup> Short term equals 2 hours at 70°C (158°F)

<sup>3</sup> Units can withstand overpressure of 1.5 x MAWP without damage

<sup>4</sup> Consult factory for MAWP of ST 700 transmitters with CRN approval



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



$$RL_{max} = 45.6 \times (\text{Power Supply Voltage} - 10.8)$$

Figure 3 - Supply voltage and loop resistance chart & calculations

**Performance Under Rated Conditions – All Models**

Parameter	Description									
<b>Analog Output</b> <b>Digital Communications:</b>	Two-wire, 4 to 20 mA HART 7 protocol									
<b>HART Output Failure Modes</b>	<table border="0" style="width: 100%;"> <tr> <td style="width: 33%;"><b>Compliance:</b></td> <td style="width: 33%; text-align: center;"><b>Honeywell Standard:</b></td> <td style="width: 33%; text-align: center;"><b>NAMUR NE 43</b></td> </tr> <tr> <td><b>Normal Limits:</b></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><b>Failure Mode:</b></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> </table>	<b>Compliance:</b>	<b>Honeywell Standard:</b>	<b>NAMUR NE 43</b>	<b>Normal Limits:</b>	3.8 – 20.8 mA	3.8 – 20.5 mA	<b>Failure Mode:</b>	≤ 3.6 mA and ≥ 21.0 mA	≤ 3.6 mA and ≥ 21.0 mA
<b>Compliance:</b>	<b>Honeywell Standard:</b>	<b>NAMUR NE 43</b>								
<b>Normal Limits:</b>	3.8 – 20.8 mA	3.8 – 20.5 mA								
<b>Failure Mode:</b>	≤ 3.6 mA and ≥ 21.0 mA	≤ 3.6 mA and ≥ 21.0 mA								
<b>Supply Voltage Effect</b>	0.005% of span per volt.									
<b>Transmitter Turn on Time (includes power up &amp; test algorithms)</b>	2.5 sec									
<b>Response Time (delay + time constant)</b>	100ms									
<b>Damping Time Constant</b>	Adjustable from 0 to 32 seconds in 0.1 increments. <b>Default Value:</b> 0.5 seconds									
<b>Vibration Effect</b>	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)									
<b>Electromagnetic Compatibility</b>	Meets IEC61326-3-1									
<b>Lightning Protection Option</b>	<b>Leakage Current:</b> 10uA max @ 42.4VDC 93C <b>Impulse rating:</b> <table border="0" style="width: 100%; margin-top: 5px;"> <tr> <td style="width: 33%;">8/20uS</td> <td style="width: 33%; text-align: center;">5000A (&gt;10 strikes)</td> <td style="width: 33%; text-align: center;">10000A (1 strike min.)</td> </tr> <tr> <td>10/1000uS</td> <td style="text-align: center;">200A (&gt; 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
<b>Barrier Diaphragms Material</b>	<b>STA7x5 Dual Head:</b> 316L SS, Hastelloy® C-276 <sup>2</sup> <b>STA7xS Inline:</b> 316L SS, Hastelloy C-276 <sup>2</sup>
<b>Process Head Material</b>	<b>STA700 Dual Head:</b> Carbon Steel (Zinc Plated) <sup>5</sup> , 316 SS <sup>4</sup> , Hastelloy® C-276 <sup>6</sup> <b>STA700 Inline:</b> 316L SS <sup>4</sup> , Hastelloy® C-276 <sup>6</sup>
<b>Vent/Drain Valves &amp; Plugs</b> <sup>1</sup>	<b>STA700 Dual Head:</b> 316 SS <sup>4</sup> , Hastelloy® C-276 <sup>2</sup> <b>STA700 Inline:</b> N/A
<b>Head Gaskets</b>	<b>STA700 Dual Head:</b> Glass-filled PTFE standard. Viton® and graphite are optional. <b>STA700 Inline:</b> N/A
<b>Meter Body Bolting</b>	<b>STA700 Dual Head:</b> Carbon Steel (Zinc plated) standard. Options include 316 SS, NACE A286 SS bolts and nuts or NACE A286 SS bolts nuts and Super Duplex <b>STA700 Inline:</b> N/A
<b>Mounting Bracket</b>	Carbon Steel (Zinc-plated) or 304 or 316 Stainless Steel. See Figures 4 & 5
<b>Fill Fluid</b>	Silicone 200, CTFE (Chlorotrifluoroethylene)
<b>Electronic Housing</b>	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.
<b>Process Connections</b>	<b>STA700 Dual Head:</b> ½ -inch NPT (female) <b>STA700 Inline:</b> ½ -inch NPT (female), ½ -inch NPT male, 9/16 Aminco. G½ -B Male Thread
<b>Wiring</b>	Accepts up to 16 AWG (1.5 mm diameter).
<b>Dimensions</b>	See <a href="#">Figure 4</a> and <a href="#">Figure 5</a>
<b>Net Weight</b>	<b>STA700 Dual Head:</b> 8.3 pounds (3.8 Kg). <b>STA700 InLine:</b> 3.6 pounds (1.6 Kg) with Aluminum Housing

<sup>1</sup> Vent/Drains are sealed with Teflon®

<sup>2</sup> Hastelloy® C-276 or UNS N10276

<sup>4</sup> Supplied as 316 SS or as Grade CF8M, the casting equivalent of 316 SS.

<sup>5</sup> 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.

<sup>6</sup> 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)
<b>A</b>	<b>FM Approvals™ USA</b>	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
			Foundation Fieldbus	Note 2b	-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	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50 °C to 85°C
		Enclosure: Type 4X/ IP66/ IP67	All	All	-
		<b>STANDARDS:</b> 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>B</b>	<b>Canadian Standards Association (CSA) USA and Canada</b>	<b>Explosion Proof:</b> 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
		<b>Intrinsically Safe:</b> 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
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		<b>Nonincendive:</b> 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	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C to 85°C
		Enclosure: Type 4X/ IP66/ IP67	All	All	-

MSG CODE	AGENCY	TYPE OF PROTECTION	COMM. OPTION	ELECTRICAL PARAMETERS	AMBIENT TEMP (Ta)
		<b>STANDARDS:</b> 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	<b>Flameproof: SIRA 12ATEX2233X</b> 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
		<b>Intrinsically Safe: SIRA 12ATEX2233X</b> 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
		<b>Zone 2, Increase Safety: SIRA 12ATEX4234X</b> II 3 G Ex ec IIC T4 Gc	4-20 mA / DE/ HART/	Note 1	-50°C TO 85°C
		<b>Zone 2, Intrinsically Safe: SIRA 12ATEX4234X</b> 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
		<b>Enclosure: IP66/ IP67</b>	All	All	-
		<b>STANDARDS:</b> 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	<b>Flameproof: IECEx SIR 12.0100X</b> 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
		<b>Intrinsically Safe: IECEx SIR 12.0100X</b> 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
		<b>Zone 2, Increase Safety: IECEx SIR 12.0100X</b> Ex ec IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		<b>Zone 2, Intrinsically Safe: IECEx SIR 12.0100X</b> 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
		<b>Enclosure: IP66/ IP67</b>	All	All	-
		<b>STANDARDS:</b> 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	<b>Flameproof :</b> 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
		<b>Intrinsically Safe:</b> 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
		<b>Zone 2, Increase Safety:</b> II 3 G Ex ec IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		<b>Zone 2, Intrinsically Safe:</b> 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
		<b>Enclosure:</b> IP66/ IP67	All	All	-
F	INMETRO Brazil	<b>Flameproof:</b> 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
		<b>Intrinsically Safe:</b> 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
		<b>Zone 2, Increase Safety:</b> II 3 G Ex ec IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		<b>Zone 2, Intrinsically Safe:</b> 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
		<b>Enclosure :</b> IP 66/67	All	All	-
G	NEPSI CHINA	<b>Flameproof:</b> 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
		<b>Intrinsically Safe:</b> 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
		<b>Zone 2, Increase Safety:</b> II 3 G Ex ec IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		<b>Zone 2, Intrinsically Safe:</b> 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
		<b>Enclosure :</b> IP 66/67	All	All	-

I	EAC Russia, Belarus and Kazakhstan	<b>Flameproof:</b> 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
		<b>Intrinsically Safe:</b> 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
		<b>Zone 2, Non Sparking:</b> 2 Ex nA IIC T4 Gc X	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		<b>Zone 2, Intrinsically Safe:</b> 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
		<b>Enclosure :</b> IP 66/67	All	All	
J	CCoE INDIA	<b>Flameproof:</b> Ex d IIC T6..T5 Ga/Gb	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		<b>Intrinsically Safe:</b> 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
		<b>Non Sparking</b> Ex nA IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		<b>Enclosure:</b> IP66/ IP67	All	All	-
K	UATR UKRAINE	<b>Flameproof:</b> 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
		<b>Intrinsically Safe:</b> 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
		<b>Enclosure:</b> 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:

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

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**

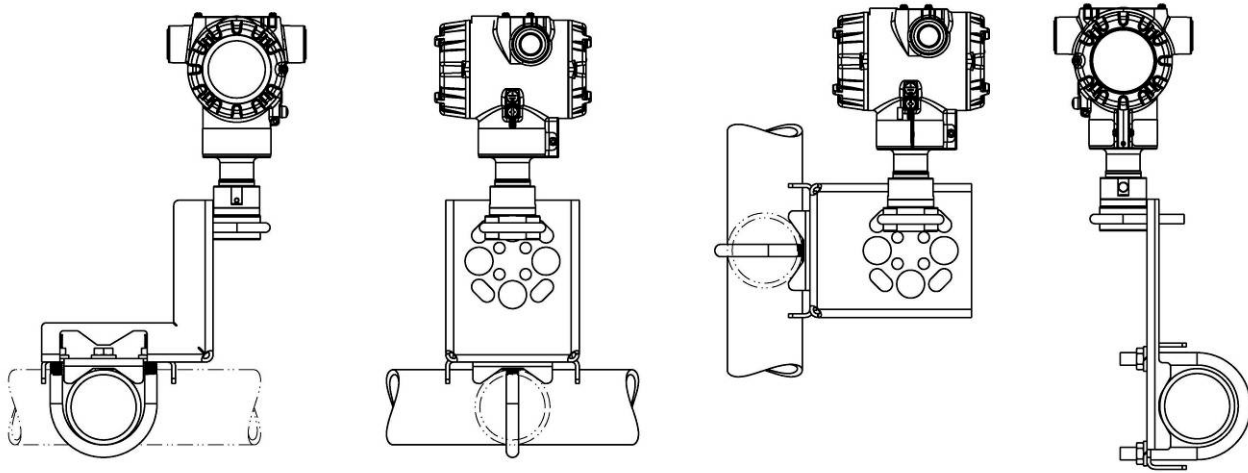
oNACE MRO175, MRO103, ISO15156

<b>SIL 2/3 Certification</b>	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.
------------------------------	---



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

**Mounting Configurations (Inline Designs)**



**Dimension (Inline Design)**

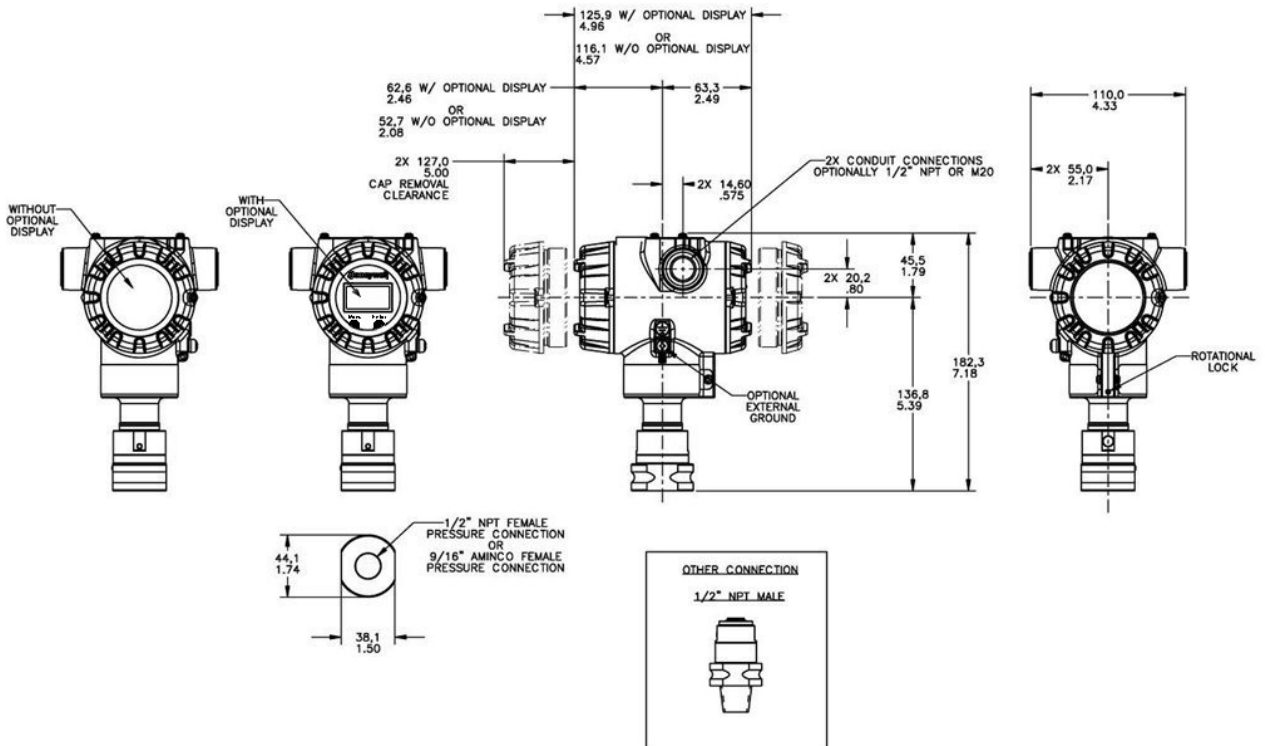


Figure 5 – Typical mounting dimensions of STA72S, STA74S, & STA77S for reference



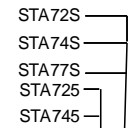
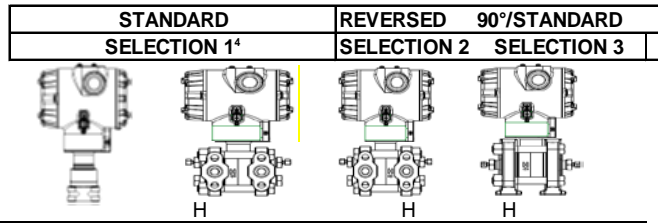


TABLE II Meter Body & Connection Orientation	
<b>Head/Connect Orientation</b>	Standard High Side Left, Ref Side Right <sup>2</sup> / Std Head Orientation
Reversed	Ref Side Left, High Side Right <sup>2</sup>
90/Standard	High Side Left, Ref Side Right <sup>2</sup> / 90° Head Rotation

1	*	*
2	*	
3	h	

TABLE III AGENCY APPROVALS	
<b>Approvals</b>	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			
<b>a. Electronic Housing Material &amp; Connection Type</b>	<b>Material</b>	<b>Connection</b>	<b>Lightning Protection</b>
	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>b. Output/ Protocol</b>	<b>Analog Output</b>		<b>Digital Protocol</b>
	4-20mA dc		HART Protocol
<b>c. Customer Interface Selections</b>	<b>Indicator</b>	<b>Ext Zero,Span &amp; Config Buttons</b>	<b>Languages</b>
	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			
<b>a. App S/W</b>	<b>Diagnostics</b>		
	Standard Diagnostics		
<b>b. Output Limit, Failsafe &amp; Write Protect Settings</b>	<b>Write Protect</b>	<b>Fail Mode</b>	<b>High &amp; Low Output Limits<sup>3</sup></b>
	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)
<b>c. General Configuration</b>	<b>General Configuration</b>		
	Factory Standard Customer Configuration (Unit Data Required)		

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

_1_	*	*
_2_	*	*
_3_	*	*
_4_	*	*

__S	*	*
__C	*	*

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

<sup>3</sup> NAMUR Output Limits 3.8 - 20.5mAdc can be configured by the custom

<sup>4</sup> Process Connections will vary on In-Line models

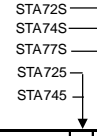


TABLE VI CALIBRATION & ACCURACY SELECTIONS			
a. Accuracy and Calibration	Accuracy		Calibrated Range
	Standard	Factory Std	Single Calibration
	Standard	Custom (Unit Data Required)	Single Calibration

A	*	*
B	*	*

TABLE VII ACCESSORY SELECTIONS			
a. Mounting Bracket	Bracket Type		Material
	None	None	None
	Angle Bracket	Carbon Steel	Carbon Steel
	Angle Bracket	304 SS	304 SS
	Angle Bracket	316 SS	316 SS
	Marine Approved Bracket	304 SS	304 SS
	Flat Bracket	Carbon Steel	Carbon Steel
	Flat Bracket	304 SS	304 SS
Flat Bracket	316 SS	316 SS	
b. Customer Tag	Customer Tag Type		
	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 <sub>2</sub> or CL <sub>2</sub> service per ASTM G93
	PM Certification <sup>5</sup>
	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

0000	*	*
------	---	---

**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			

<sup>5</sup>The 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	Kit Number
Terminal Strip w/o Lightning Protection Kit for HART Module	50129832-501
Terminal Strip w/Lightning Protection for HART Module	50129832-502
HART Electronics Module	50129828-501
HART Electronics Module w/connection for external Zero/Span buttons	50129828-502
Standard Display Module	50126003-501

**PRODUCT MANUALS**

Description	Part Number
ST 700 Smart Transmitter User Manual - English	34-ST-25-44
ST 700 Smart Transmitter HART Communications Manual - English	34-ST-25-47
ST 700 Smart Transmitter Safety Manual - English	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.

### ASIA PACIFIC

Honeywell Process Solutions,  
Phone: + 800 12026455 or  
+44 (0) 1202645583  
(TAC) [hfs-tac-support@honeywell.com](mailto:hfs-tac-support@honeywell.com)

#### Australia

Honeywell Limited  
Phone: +(61) 7-3846 1255  
FAX: +(61) 7-3840 6481  
Toll Free 1300-36-39-36  
Toll Free Fax:  
1300-36-04-70

#### China – PRC - Shanghai

Honeywell China Inc.  
Phone: (86-21) 5257-4568  
Fax: (86-21) 6237-2826

#### Singapore

Honeywell Pte Ltd.  
Phone: +(65) 6580 3278  
Fax: +(65) 6445-3033

#### South Korea

Honeywell Korea Co Ltd  
Phone: +(822) 799 6114  
Fax: +(822) 792 9015

### EMEA

Honeywell Process Solutions,  
Phone: + 800 12026455 or  
+44 (0) 1202645583

#### Email: (Sales)

[FP-Sales-Apps@Honeywell.com](mailto:FP-Sales-Apps@Honeywell.com)

or

(TAC)

[hfs-tac-support@honeywell.com](mailto:hfs-tac-support@honeywell.com)

#### Web

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

### AMERICAS

Honeywell Process Solutions,  
Phone: (TAC) (800) 423-9883  
or (215) 641-3610  
(Sales) 1-800-343-0228

#### Email: (Sales)

[FP-Sales-Apps@Honeywell.com](mailto:FP-Sales-Apps@Honeywell.com)

or

(TAC)

[hfs-tac-support@honeywell.com](mailto:hfs-tac-support@honeywell.com)

#### 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](http://www.honeywellprocess.com)  
Or contact your Honeywell Account Manager

### Process Solutions

Honeywell  
1250 W Sam Houston Pkwy S  
Houston, TX 77042

Honeywell Control Systems Ltd  
Honeywell House, Skipped Hill Lane  
Bracknell, England, RG12 1EB

Shanghai City Centre, 100 Jungi Road  
Shanghai, China 20061

[www.honeywellprocess.com](http://www.honeywellprocess.com)



34-ST-03-120  
July 2020

©2020 Honeywell International Inc.