

### STT700 SmartLine Temperature Transmitter Specification

34-TT-03-19, October 2020



#### Introduction

Part of the SmartLine® family of products, the SmartLine STT700 is a high performance temperature transmitter offering high accuracy and stability over a wide range of process and ambient temperatures. SmartLine easily meets the most demanding needs for temperature measurement applications.

**Best in Class Features:** The STT700 is single or a dual input temperature transmitter that supports millivolt, thermocouple and RTD sensors. It is available with either HART or DE protocol output.

#### High performance

- Digital accuracy up to 0.15 Deg C for Pt100
- Stability up to  $\pm 0.05\%$  of URL per year for ten years
- 500 mSec update time (single input)
- 1 Sec update time (dual input)

#### Reliable measurement

- Built in galvanic isolation
- Sensor break detection
- Comprehensive on-board diagnostic capabilities
- Full compliance to SIL 2/3 requirements.
- Available with 4-year warranty
- Supports Namur 89 Wire break
- Direct entry of Callendar-van Dusen coefficients  $R_0$ ,  $\alpha$ ,  $\delta$  and  $\beta$  for calibrated RTD sensors.

#### Lower Cost of Ownership

- Universal input
- Dual sensor option
- Polarity insensitive loop wiring

#### Mounting Options:

- Direct sensor head mounting in DIN Form A aluminum housing.
- Other mounting options available include wall, pipe, DIN Rail or single compartment field housing



**Figure 1 – SmartLine STT700 Temperature Transmitter. Top image shown with housing. Bottom image with (HART) module only shown with dual input capability.**

#### Communications/Output Options:

- 4-20 mA DC
- HART® (version 7.0)
- Honeywell Digitally Enhanced (DE)

All transmitters are available with the above listed output and communications protocol option.

## Description

Part of the SmartLine® family of products, the SmartLine STT700 is a high performance temperature transmitter offering high accuracy and stability over a wide range of process and ambient temperatures. The STT700 addresses the broadest market applications by providing a temperature transmitter that can meet the bulk of the industrial application needs. The STT700's versatility, including the ability to select single or dual input, HART or DE protocol, with or without display, various mounting configurations, and the ability to connect to 2, 3 or 4-wire sensor types, allows your site to standardize on a single product and thus simplifying support and training.

## Indication/Display Option

The STT700 accommodates a Standard alphanumeric LCD display.

### Standard LCD Display Features

- Modular (may be added or removed in the field)
- 0, 90, 180 & 270 degree position adjustments
- Deg C, F, R and Kelvin measurement units
- 2 Lines 6 digits PV (9.95H x 4.20W mm), 8 Characters
- Built in Basic Device Configuration through internal buttons – Range/Engineering Unit/Loop Test/ Loop Calibration/Zero-Span Setting
- Write Protect indication

## Configuration Tools

### Hand Held Configuration

SmartLine transmitters feature two-way communication and configuration capability between the operator and the transmitter. This is accomplished via Honeywell's field-rated Multiple Communication Configuration tool. The Honeywell handheld MC Toolkit is capable of field configuring HART and DE devices and can also be ordered for use in intrinsically safe environments.

All Honeywell transmitters are designed and tested for compliance with the offered communication protocols and are designed to operate with any properly validated handheld configuration device.

### Personal Computer Configuration

HART Communicator Model 375, 475 or MC Toolkit for HART 7 Models.

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

Smart Field Communicator (SFC) for DE Models.

## 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

- All SmartLine products communications protocols meet all of the most current published standards for HART
- SmartLine STT700 is fully compatible with Honeywell's DE protocol.

## STT250 Compatibility

The STT700 design allows it to easily replace an existing STT250 Temperature Transmitter. The STT700 physically fits into an existing STT250 mount and the STT700 offers the same functions as a STT250.

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## Performance Specifications<sup>1,3</sup>

Reference Accuracy <sup>2</sup> (conformance to +/-3 Sigma)

Input Type	Maximum Range Limits		Digital Accuracy (+/-)	Output D/A Accuracy (% of span)	Standards
	° C	° F			
<b>RTD (2,3,4 wire)</b>					
	° C	° F	° C	%	
Pt100 ( $\alpha=0.00385$ )	-200 to 450 -200 to 850	-328 to 842 -328 to 1562	0.15 0.25	0.025	IEC751:1990
Pt200 ( $\alpha=0.00385$ )	-200 to 450 -200 to 850	-328 to 842 -328 to 1562	0.30 0.40	0.025	IEC751:1990
Ni 120 <sup>5</sup> ( $\alpha=0.00672$ )	-80 to 260	-112 to 500	0.12	0.025	Edison Curve #7
Pt50 <sup>5</sup> ( $\alpha=0.00391$ )	-200 to 450 -200 to 600	-328 to 842 -328 to 1112	0.32 0.55	0.025	GOST 6651-94
Pt100 <sup>5</sup> ( $\alpha=0.00391$ )	-200 to 450 -200 to 600	-328 to 842 -328 to 1112	0.16 0.27	0.025	GOST 6651-94
Cu 50 <sup>5</sup> ( $\alpha=0.00426$ )	-50 to 200	-58 to 392	0.42	0.025	GOST 6651-94
Cu 100 <sup>5</sup> ( $\alpha=0.00426$ )	-50 to 200	-58 to 392	0.50	0.025	GOST 6651-94
Cu 50 <sup>5</sup> ( $\alpha=0.00428$ )	-200 to 200	-328 to 392	0.55	0.025	GOST 6651-94
Cu 100 <sup>5</sup> ( $\alpha=0.00428$ )	-200 to 200	-328 to 392	0.32	0.025	GOST 6651-94
<b>Thermocouples</b>	° C	° F	° C	%	
B	550 to 1820 200 to 1820	1022 to 3308 392 to 3308	1.00 3.00	0.025	ANSI / ASTM E-230 (ITS-90)
C <sup>5</sup>	0 to 1650 0 to 2300	32 to 3002 32 to 4172	1.20 1.70	0.025	ANSI / ASTM E-230 (ITS-90)
E	0 to 1000 -200 to 1000	32 to 1832 -328 to 1832	0.30 0.60	0.025	ANSI / ASTM E-230 (ITS-90)
J	0 to 800 -200 to 1200	32 to 1472 -200 to 2192	0.30 0.70	0.025	ANSI / ASTM E-230 (ITS-90)
K	-120 to 1370 -200 to 1370	-191 to 2498 -328 to 2498	0.60 0.90	0.025	ANSI / ASTM E-230 (ITS-90)
N	0 to 1300 -200 to 1300	32 to 2372 -328 to 2372	0.40 1.50	0.025	ANSI / ASTM E-230 (ITS-90)
R	500 to 1760 -50 to 1760	-58 to 3200 -58 to 3200	0.60 1.00	0.025	ANSI / ASTM E-230 (ITS-90)
S	500 to 1760 -50 to 1760	-58 to 3200 -58 to 3200	0.60 1.00	0.025	ANSI / ASTM E-230 (ITS-90)
T	-100 to 400 -250 to 400	-148 to 752 -418 to 752	0.30 0.50	0.025	ANSI / ASTM E-230 (ITS-90)
L <sup>5</sup>	-0 to 800 -200 to 800	-32 to 1472 -328 to 1472	0.50 0.90	0.025	GOST R 8.585-2001

Other Input Types	Maximum Range Limits	Digital Accuracy (+/-)	Output D/A Accuracy (% of span)	Standards
Millivolts	-7 to 22 mV	0.010 mV	0.025	
Millivolts	-20 to 125 mV	0.015 mV	0.025	
Ohms	0 to 500 Ohms	0.35 Ohms	0.025	
Ohms	0 to 2000 Ohms	0.50 Ohms	0.025	

1. Digital Accuracy is accuracy of the digital value accessed by the Host system and the handheld communicator
2. Total analog accuracy is the sum of digital accuracy and output D/A Accuracy
3. Output D/A Accuracy is applicable to the 4 to 20 mA Signal output
4. For TC inputs, CJ accuracy shall be added to digital accuracy to calculate the total digital accuracy
5. Not available in DE transmitters.
6. Japanese Pt100J ( $\alpha = 0.003916$ ) may be obtained by using the CVD algorithm with Pt100D.

### Differential Temperature Measurement

SmartLine STT700 Temperature supports differential temperature measurements for dual input transmitters. When the loop current mode is set to "Differential" then the input range is from A to B for sensor 1 & 2 where

$$A = \text{Sensor 1 Minimum} - \text{Sensor 2 Maximum}$$

$$B = \text{Sensor 1 Maximum} - \text{Sensor 2 Minimum}$$

### Digital Accuracy for differential temperature measurement

- If both input types are the same, then the digital accuracy equals 1.5 times the worst case accuracy for that input type.
- If the input types are different, then the digital accuracy equals the sum of the worst case sensor 1 and sensor 2 accuracies. For example, assume that input 1 is a J T/C and input 2 is an R T/C. Assume that the desired operating range is between 0 and +400 °C. The digital accuracy for a J T/C in this range is 0.30 °C and the digital accuracy for an R T/C in this range is 1.00 °C. Therefore, the worst case digital accuracy would be 1.30 °C.

### Callendar - Van Dusen Algorithm (CVD)

The easy to use Callendar - Van Dusen (CVD) algorithm allows the use of calibrated platinum RTD sensors to increase the overall system accuracy. Simply enable the algorithm and then enter the four CVD coefficients supplied with the calibrated RTD sensor into the transmitter. Honeywell can preprogram the CVD constants at the factory when the Custom Configuration option is selected and the CVD constants are supplied at order entry.

### Performance under Rated Conditions – All models

Parameter	Description
Input Span Adjustment Range	No limits to adjustments within the maximum range except minimum span limit of 1 engineering unit
Analog Output	Two-wire, 4 to 20 mA
Digital Communications:	HART 7 protocol compliant Honeywell Digitally Enhanced (DE) protocol compliant
Output Failure Modes	Honeywell Standard:                      NAMUR NE 43 Compliance: <b>Normal Limits:</b> 3.8 – 20.8 mA                      3.8 – 20.5 mA <b>Failure Mode:</b> ≤ 3.6 mA and ≥ 21.5 mA                      ≤ 3.6 mA and ≥ 21.5 mA
Output Accuracy	±0.025 % span
Supply Voltage Effect	0.005 % span per volt.
Transmitter Turn on Time (includes power up & test algorithms)	HART or DE: 6 sec.

<b>Analog Input</b>	<b>Stability:</b> 0.05% of URL per year for 10 years <b>Maximum Lead Wire Resistance:</b> Thermocouples and millivolts: 25 ohms/leg RTD and ohms: 25 ohms/leg
<b>Response Time (delay + time constant)</b>	<b>Analog Output</b> 500 mSec to reach 96% of final value with 0 seconds damping
<b>Update time</b>	500 mSec for Single Input Units 1 Sec for Dual Input Units
<b>Damping Time Constant</b>	<b>HART:</b> Adjustable from 0 to 102 seconds in 0.1 increments. <b>Default:</b> 0.50 seconds <b>DE:</b> Discrete values 0.0, 0.3, 0.7, 1.5, 3.1, 6.3, 12.7, 25.5, 51.1, 102.3 seconds. <b>Default:</b> 0.3 seconds
<b>Ambient Temperature Effect</b>	<b>Digital Accuracy</b> For all RTD (except Pt200) and 500 ohm Input Types: 0.017 ohms/°C For RTD Pt200 and 2000 ohm Input Types: 0.034 ohms/C. <b>Output D/A:</b> 0.0045 % of span/°C
<b>Cold Junction Accuracy</b>	±0.5 °C
<b>Total Reference Accuracy</b>	<b>Digital Mode</b> Digital Accuracy + C/J Accuracy (T/C input types only) <b>Analog Mode (HART only)</b> Digital Accuracy + Output D/A Accuracy + C/J Accuracy (T/C input types only) Example: Transmitter in Analog Mode with Pt100 sensor and 0 to 200°C range Total Reference Accuracy = 0.15 °C + (200 °C / 100%) * 0.025% = 0.20 °C
<b>Sensor Burnout</b>	Burnout detection is user selectable. Upscale or down scale with critical status.
<b>Vibration Effect</b>	Per IEC60770-1 field or pipeline, high vibration level (10-2000Hz: 0.21 displacement/3g max acceleration)
<b>Electromagnetic Compatibility</b>	IEC 61326-3-1
<b>Isolation</b>	2000 VDC (1400Vrms) Galvanic isolation between inputs and output.

### Performance under Rated Conditions – All models

<b>Stray Rejection</b>	<b>Common Mode</b> <i>AC (50 or 60 Hz):</i> 120 dB (with maximum source impedance of 100 ohms) or ± 1 LSB (least significant bit) whichever is greater with line voltage applied. <i>DC:</i> 120 dB (with maximum source impedance of 50 ohms) or a ±1 LSB whichever is greater with 120 VDC applied. <i>DC (to 1 KHz):</i> 50 dB (with maximum source of impedance of 50 ohms) or ±1 LSB whichever is greater with 50 VAC applied. <b>Normal Mode</b> <i>AC (50 or 60 Hz):</i> 60 dB (with 100% span peak-to-peak maximum)
<b>EMC Compliance</b>	EN 61326-1 and EN 61326-3-1 (SIL)
<b>Lightning Protection Option</b>	<b>Leakage Current:</b> 10 uA max @ 42.4 VDC 85 °C <b>Impulse rating:</b> 8/20 uS      5000 A (>10 strikes)      10000 A (1 strike min.) 10/1000 uS      200 A (> 300 strikes)

### Materials Specifications - All models

Parameter	Description
Terminal Block and Module Housing	Lexan 500R (Polycarbonate, Glass Fiber Reinforced 10%)
Connection Screws	M3 Nickel Plated Brass
Weight	0.075 kg (0.2 lbs)

**Operating Conditions – All models**

Parameter	Reference Condition		Rated Condition		Operative Limits		Transportation and Storage	
	°C	°F	°C	°F	°C	°F	°C	°F
Ambient Temperature	25±1	77±2	-40 to 85	-40 to 185	-40 to 85	-40 to 185	-55 to 120	-67 to 248
Humidity %RH	10 to 55		0 to 100		0 to 100		0 to 100	
Supply Voltage Load Resistance	<b>HART Models:</b> 12.2 to 35.0 VDC at terminals (IS installations limited to 30 VDC) 0 to 1,000 ohms (as shown in <a href="#">Figure 2</a> ) <b>DE Models:</b> 12.2 to 35 VDC at terminals (IS installations limited to 30 VDC) 0 to 700 ohms (as shown in <a href="#">Figure 3</a> )							

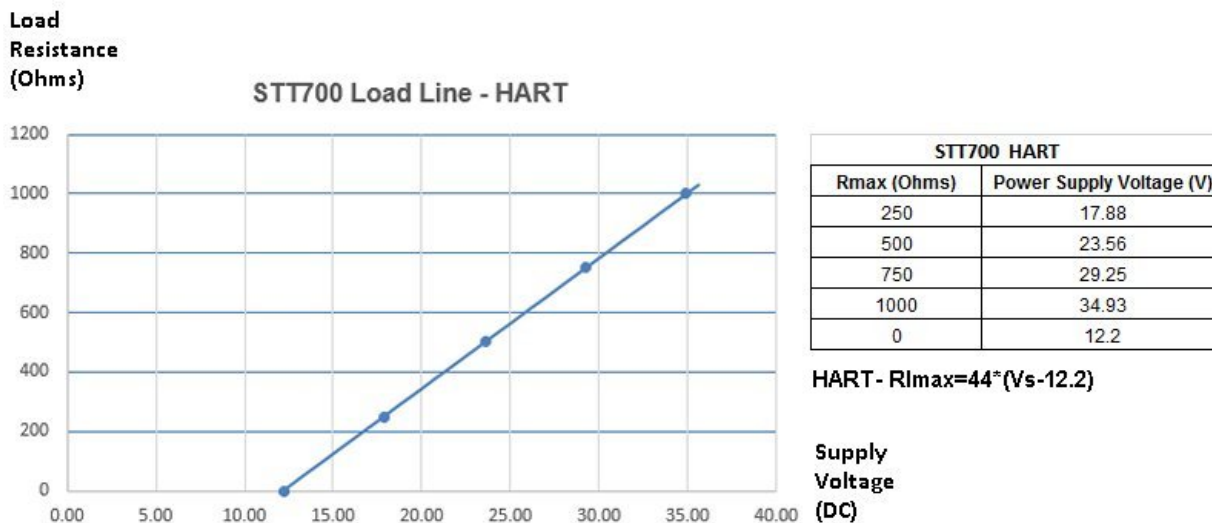


Figure 2 – HART Supply voltage and loop resistance chart & calculations

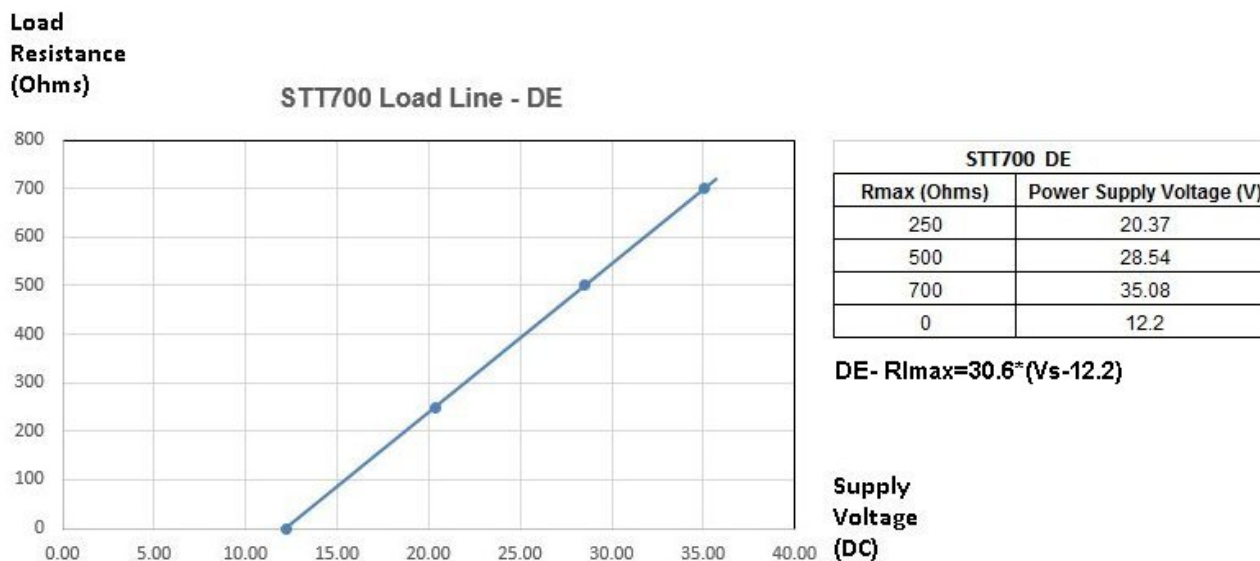


Figure 3 – DE Supply voltage and loop resistance chart & calculations

### Physical Mounting and Construction

The STT700 Temperature Transmitter is designed to be mounted in a DIN Form A aluminum housing for direct installation with the temperature sensor or can be provided in a remote pipe or wall mount housing. Details for the available housings are in document #EN01-6032. The STT700 temperature transmitter module can also be DIN rail mounted to a top hat or “G” rail via a clip.

### Mounting Module in Housing

The STT700 module can be installed in a variety of housings suitable for field mounting (2” or 50mm pipe mount), direct head mounting, or wall mounting. See [Table 1](#). Also, see STT700 Transmitter User’s manual, 34-ST-25-17, for more details.

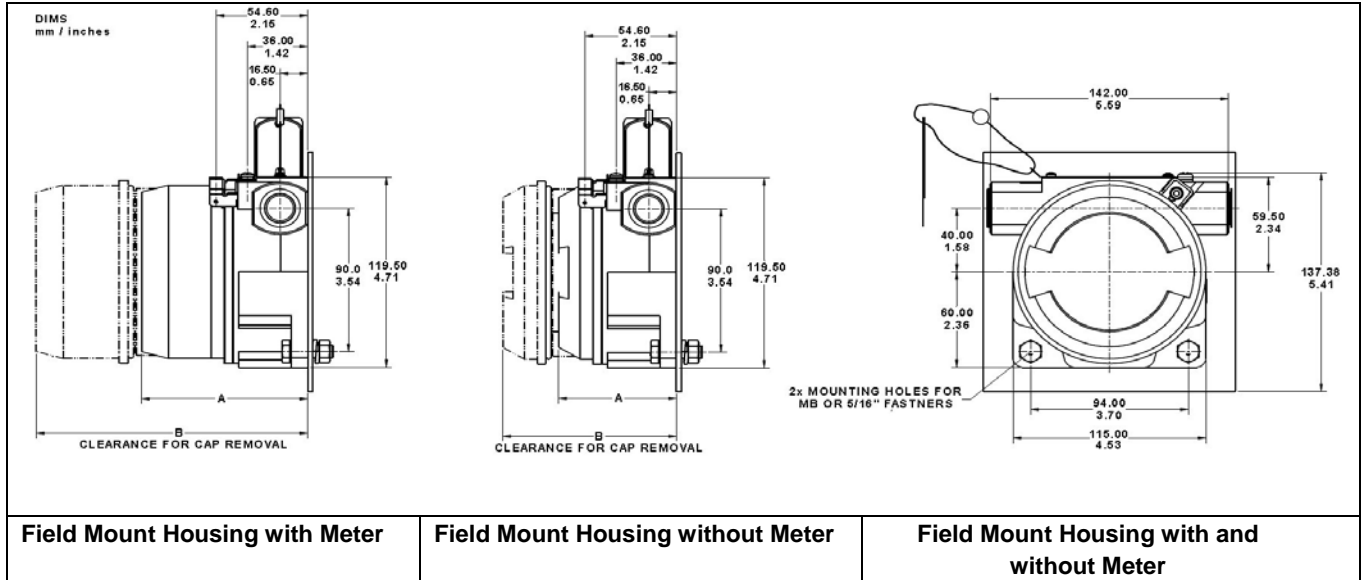


Figure 4: Wall Mounting Dimensions

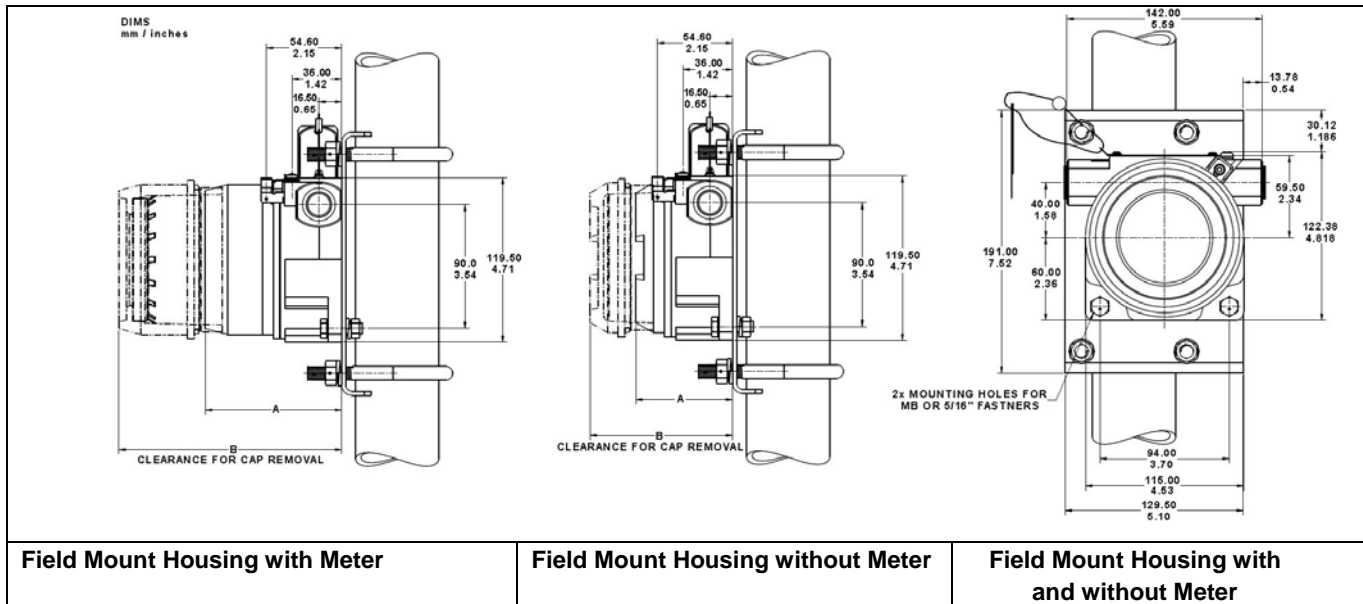


Figure 5: Pipe Mounting Dimensions

**Table 1: Dimension table for use with Figure 4 and Figure 5**

Dimensions	Aluminum (field mount housing)	
	A	B
Without integral meter	70 mm [2.76 inch]	120,8 mm [4.76 inch]
With integral meter	127 mm [5.00 inch]	210,8 mm [8.30 inch]

### Lightning Protector

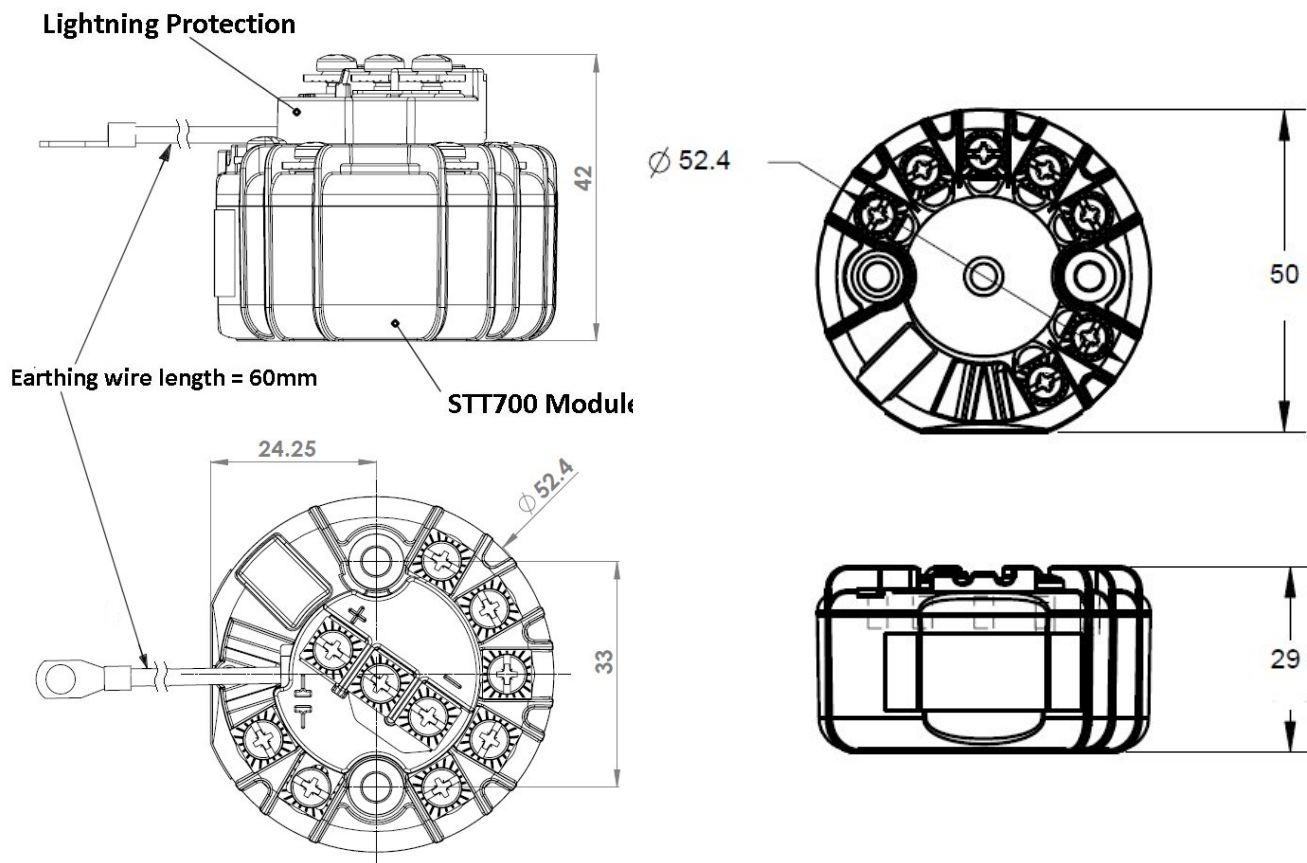
This device is designed to give the Smart temperature transmitter maximum protection against surges such as those generated by lightning strikes. It mounts right on the top of the STT700 transmitter module, providing easy field wiring and also protection for the meter if used. The compact mounting allows the use of a variety of housings including the Honeywell explosion proof field mount housing. See

Figure 6.

Refer to document #34-TT-03-20, Lightning Protection spec for more details.

The device can be used in both intrinsic safety and flame/explosion proof applications.

### Mounting & Dimensional Drawings



**Figure 6 – STT700 transmitter module with lightning protection (left) and without (right)**



## Wiring Diagrams

### RTD Thermocouple, mV and Ohm Connections

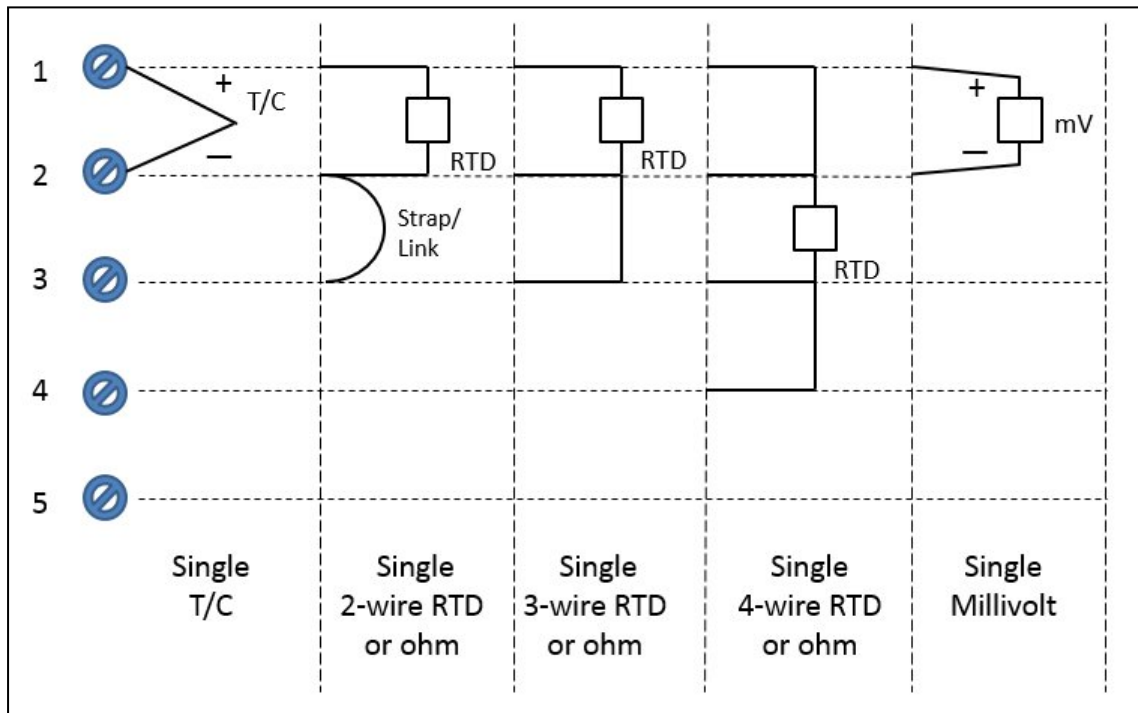


Figure 7 - HART/DE Input Wiring Diagram for single sensor connection

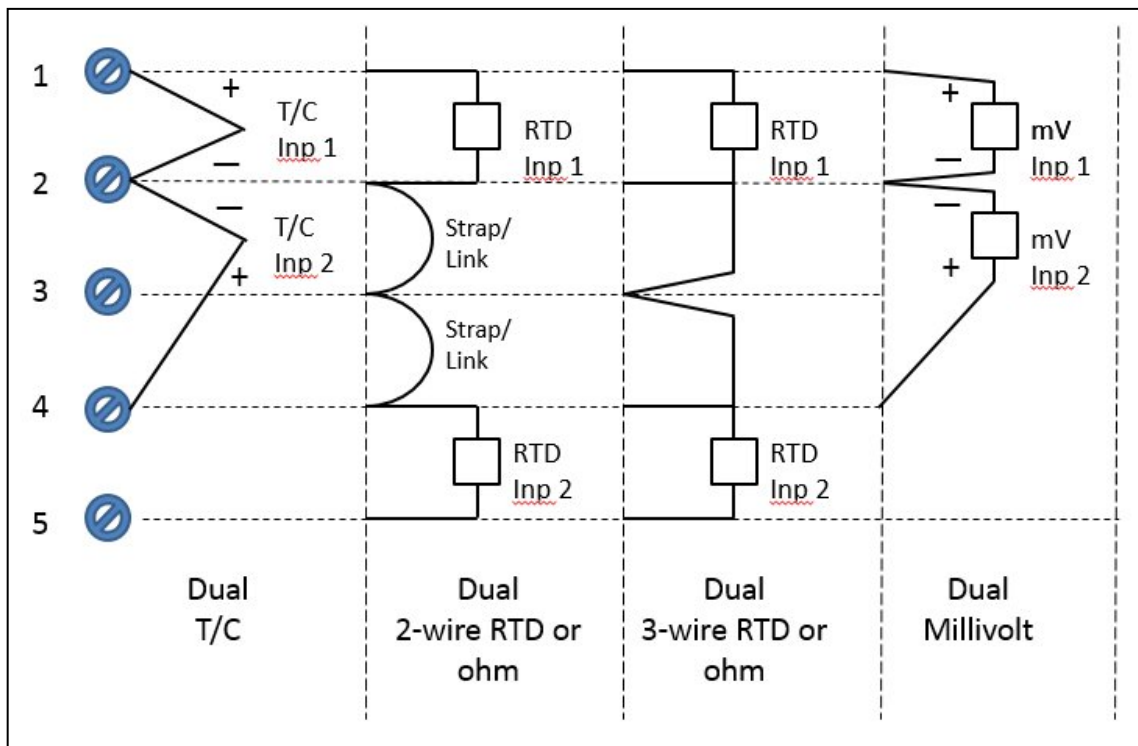







Figure 8 – Wiring Diagram for HART Dual Sensor Connections

## Approval Certifications:

AGENCY	MSG Code	TYPE OF PROTECTION	Electrical Parameters	Ambient Temperature	
FM Approvals™ (USA)	F1	<b>Intrinsically Safe</b> Certificate: FM17US0112X Class I, Division 1, Groups A, B, C, D; T6.. T4 Class I Zone 0 AEx ia IIC T6.. T4 Ga	Note 2	T6: -40°C to +40°C T5: -40°C to +55°C T4: -40°C to +70°C	
		<b>Non-Incendive and Zone 2 Intrinsically Safe</b> Certificate: FM17US0112X Class I, Division 2, Groups A, B, C, D; T6..T4 Class I Zone 2 AEx nA IIC T6..T4 Gc Class I Zone 2 AEx ic IIC T6..T4 Gc	Note 1 Note 2 for "ic"	T6: -40°C to +40°C T5: -40°C to +55°C T4: -40°C to +85°C	
	F2	<b>Intrinsically Safe</b> Certificate: FM17US0112X Class I, Division 1, Groups A, B, C, D; Class II, Division 1, Groups E, F, G; Class III, Division 1: T6..T4 Class I Zone 0 AEx ia IIC T6.. T4 Ga	Note 2	T6: -40°C to +40°C T5: -40°C to +55°C T4: -40°C to +70°C	
		<b>Explosion proof</b> Certificate: FM17US0112X Class I, Division 1, Groups A, B, C, D; T6..T5 Class 1, Zone 1, AEx db IIC T6..T5 Gb <b>Dust-Ignition proof</b> Class II, Division 1, Groups E, F ,G; T5 Zone 21, AEx tb IIIC T95°C Db	Note 1	T6: -40°C to +65°C T5: -40°C to +85°C	
		<b>Non-Incendive and Zone 2 Intrinsically Safe</b> Certificate: FM17US0112X Class I, Division 2, Groups A, B, C, D; T6..T4 Class I Zone 2 AEx nA IIC T6.. T4 Gc Class I Zone 2 AEx ic IIC T6.. T4 Gc	Note 1	T6: -40°C to +40°C T5: -40°C to +55°C T4: -40°C to +85°C	
	<b>Enclosure</b>		TYPE 4X/ IP66		
	<b>Standards :</b> FM 3600: 2018; ANSI/ UL 60079-0: 2013 FM 3615 : 2018; ANSI/ UL 60079-1: 2015 ; FM 3610: 2018; ANSI/ UL 60079-11 : 2014 FM 3810 : 2018 ; FM 3611:2018; ANSI/ UL 60079-15 : 2013				

AGENCY	MSG Code	TYPE OF PROTECTION	Electrical Parameters	Ambient Temperature
CSA- Canada and USA	C1	<b>Intrinsically Safe</b> Certificate: 70113941 Class I, Division 1, Groups A, B, C, D; T4 Class I Zone 0 AEx ia IIC T4 Ga Ex ia IIC T4 Ga	Note 2	T4: -40°C to +70°C
		<b>Non-Incendive and Zone 2 Intrinsically Safe</b> Certificate: 70113941 Class I, Division 2, Groups A, B, C, D; T4 Class I Zone 2 AEx ic IIC T4 Gc Ex ic IIC T4 Gc Class I Zone 2 AEx nA IIC T4 Gc Ex nA IIC T4 Gc	Note 1 Note 2 for "ic"	T4: -40°C to +85°C
	C2	<b>Explosion proof</b> Certificate: 70113941 Class I, Division 1, Groups A, B, C, D; T6..T5 Ex db IIC T6..T5 Gb Class 1, Zone 1, AEx db IIC T6..T5 Gb <b>Dust-Ignition Proof:</b> Class II, III, Division 1, Groups E, F, G; T5 Ex tb IIIC T 95°C Db Zone 21 AEx tb IIIC T 95°C Db	Note 1	T6: -40°C to +65°C T95°C/T5:-40°C to +85°C
		<b>Intrinsically Safe</b> Certificate: 70113941 Class I, II, III, Division 1, Groups A, B, C, D, E, F, G; T4 Class I Zone 0 AEx ia IIC T4 Ga Ex ia IIC T4 Ga	Note 2	T4: -40°C to +70°C
		<b>Non-Incendive and Zone 2 Intrinsically Safe</b> Certificate: 70113941 Class I, Division 2, Groups A, B, C, D; T4 Class I Zone 2 AEx nA IIC T4 Gc Ex nA IIC T4 Gc Class I Zone 2 AEx ic IIC T4 Gc Ex ic IIC T4 Gc	Note 1 Note 2 for "ic"	T4: -40°C to +85°C
		<b>Enclosure:</b> Type 4X/ IP66/ IP67		
	<b>Standards:</b> CSA C22.2 No. 0-10: 2015; CSA 22.2 No. 25: 2017; CSA C22.2 No. 30-M1986 (reaffirmed 2016); CSA C22.2 No. 94.2:2015; CSA C22.2 No. 61010-1: 2012; CSA-C22.2No.157-92 (reaffirmed 2016); C22.2 No. 213: 2016; C22.2 No. 60529:2016; C22.2 No. CSA 60079-0:2015; C22.2 No. 60079-1: 2016; C22.2 No. 60079-11: 2014; C22.2 No. 60079-15: 2016; C22.2 No. 60079-31: 2015; ANSI/ ISA 12.12.01 : 2015 ; FM 3600: 2011; ANSI/ UL 61010-1 : 2016; ANSI/ UL 60079-0: 2013 ; FM 3616 : 2011; FM 3615 : 2011; ANSI/ UL 60079-1: 2015 ; ANSI/ UL 60079-31: 2015; ANSI/ UL 60079-11 : 2014; FM 3611: 2016; ANSI/ UL 60079-15 : 2013 ; ANSI/ UL 913: Edition 7; ANSI/ UL 50E: 2015			

AGENCY	MSG Code	TYPE OF PROTECTION	Electrical Parameters	Ambient Temperature
ATEX	A1	<b>Intrinsically Safe</b> <b>Certificate:</b> SIRA 17ATE2162X  II 1 G Ex ia IIC T4 Ga	Note 2	T4: -40°C to +70°C
		<b>Non Sparking and Zone 2 Intrinsically Safe</b> <b>Certificate:</b> SIRA 17ATE4161X  II 3 G Ex ec IIC T4 Gc II 3 G Ex ic IIC T4 Gc	Note 1 Note 2 for "ic"	T4: -40°C to +70°C
	A2	<b>Flameproof</b> <b>Certificate:</b> SIRA 17ATE2162X  II 2 G Ex db IIC T6..T5 Gb II 2 D Ex tb IIIC T 95°C Db	Note 1	T6: -40°C to +65°C T95°C/T5:-40°C to +85°C
		<b>Intrinsically Safe</b> <b>Certificate:</b> SIRA 17ATE2162X  II 1 G Ex ia IIC T4 Ga	Note 2	T4: -40°C to +70°C
		<b>Category 3 Increased Safety Intrinsically Safe</b> <b>Certificate:</b> SIRA 17ATE4161X  II 3 G Ex ec IIC T4 Gc II 3 G Ex ic IIC T4 Gc	Note 1 Note 2 for "ic"	T4: -40°C to +85°C
		<b>Enclosure:</b> IP66/ IP67 <b>Standards :</b> EN 60079-0: 2012+A11 : 2013; EN 60079-1 : 2014 ; EN 60079-11: 2012 ; EN 60079-7 : 2015 ; EN 60079-31 : 2014		
	IECEx	E1	<b>Intrinsically Safe</b> <b>Certificate:</b> SIR 17.0035X Ex ia IIC T4 Ga	Note 2
<b>Non Sparking, Zone 2 Intrinsically Safe</b> <b>Certificate:</b> SIR 17.0035X Ex ec IIC T4 Gc Ex ic IIC T4 Gc			Note 1 Note 2 for "ic"	T4: -40°C to +85°C
E2		<b>Flameproof</b> <b>Certificate:</b> SIR 17.0035X Ex db IIC T6..T5 Gb Ex tb IIIC T 95°C Db	Note 1	T6: -40°C to +65°C T95°C/T5: -40°C to +85°C
		<b>Intrinsically Safe</b> <b>Certificate:</b> SIR 17.0035X Ex ia IIC T4 Ga	Note 2	T4: -40°C to +70°C
		<b>Zone 2- Increased Safety and Intrinsically Safe</b> <b>Certificate:</b> SIR 17.0035X Ex ec IIC T4 Gc Ex ic IIC T4 Gc	Note 2	T4: -40°C to +85°C
		<b>Enclosure:</b> IP66/ IP67 <b>Standards:</b> IEC 60079-0: 2011; IEC 60079-1 : 2014; IEC 60079-11 : 2011; IEC 60079-31 : 2014; IEC 60079-7 : 2015		

AGENCY	MSG Code	TYPE OF PROTECTION	Electrical Parameters	Ambient Temperature
CCoE INDIA	P1	<b>Intrinsically Safe</b> <b>Certificate:</b> P417399/1 Ex ia IIC T4 Ga	Note 2	T4: -40°C to +70°C
	P2	<b>Flameproof</b> <b>Certificate:</b> P417399/1 Ex db IIC T6..T5 Gb	Note 1	T6: -40°C to +65°C T5: -40°C to +85°C
		<b>Intrinsically Safe</b> <b>Certificate:</b> P417399/1 Ex ia IIC T4 Ga	Note 2	T4: -40°C to +70°C
		<b>Enclosure:</b> IP66/ IP67		
NEPSI (China)	N1	<b>Intrinsically Safe</b> <b>Certificate:</b> GYJ18.1420X Ex ia IIC T4 Ga	Note 2	T4: -40°C to +70°C
		<b>Non Sparking, Zone 2 Intrinsically Safe</b> <b>Certificate:</b> GYJ18.1420X Ex ec IIC T6..T4 Gc Ex ic IIC T6..T4 Gc	Note 1 Note 2 for "ic"	T4: -40°C to +85°C
	N2	<b>Flameproof</b> <b>Certificate:</b> GYJ18.1420X Ex db IIC T6..T5 Gb Ex tD A21 IP6X T80 °C/ T95°C	Note 1	T6: -40°C to +65°C T95°C/T5: -40°C to +85°C
		<b>Intrinsically Safe</b> <b>Certificate:</b> GYJ18.1420X Ex ia IIC T4 Ga	Note 2	T4: -40°C to +70°C
		<b>Zone 2 Intrinsically Safe</b> <b>Certificate:</b> GYJ18.1420X Ex ic IIC T4 Gc	Note 2	T4: -40°C to +85°C
		<b>Enclosure:</b> IP66/ IP67		
SAEx South Africa	S1	<b>Intrinsically Safe</b> <b>Certificate:</b> XPL 18.0865X Ex ia IIC T4 Ga	Note 2	T4: -40°C to +70°C
		<b>Non Sparking, Zone 2 Intrinsically Safe</b> <b>Certificate:</b> XPL 18.0865X Ex ec IIC T4 Gc Ex ic IIC T4 Gc	Note 1 Note 2 for "ic"	T4: -40°C to +85°C
	S2	<b>Flameproof</b> <b>Certificate:</b> XPL 18.0865X Ex db IIC T6..T5 Gb Ex tb IIIC T 95°C Db	Note 1	T6: -40°C to +65°C T95°C/T5: -40°C to +85°C
		<b>Intrinsically Safe</b> <b>Certificate:</b> XPL 18.0865X Ex ia IIC T4 Ga	Note 2	T4: -40°C to +70°C
		<b>Zone 2 Intrinsically Safe</b> <b>Certificate:</b> XPL 18.0865X Ex ic IIC T4 Gc	Note 2	T4: -40°C to +85°C
		<b>Enclosure:</b> IP66/ IP67		

INMETRO (Brazil)	M1	<b>Intrinsically Safe:</b> Ex ia IIC Ga	Note 2	T4: -40°C to 70°C
		<b>Non Sparking:</b> Ex ec IIC T4 Gc Ex ic IIC T4 Gc	Note 1 Note 2 for “ic”	T4: -40°C to 85°C
	M2	<b>Flameproof:</b> Ex db IIC T6..T5 Gb Ex tb IIIC T 95°C..Db	Note 1	T6: -40 °C to 65°C T95 °C/T5: -40 °C to 85°C
		<b>Intrinsically Safe:</b> Ex ia IIC Ga	Note 2	T4: -40°C to 70°C
		<b>Zone 2 Intrinsically Safety and Intrinsically Safe:</b> Ex ec IIC T4 Gc Ex ic IIC T4 Gc	Note 1 Note 2 for “ic”	T4: -40°C to 85°C
KOSHA (Korea)	K1	<b>Intrinsically Safe:</b> Ex ia IIC Ga	Note 2	T4: -40°C to 70°C
	K2	<b>Flameproof:</b> Ex d IIC T6..T5 IP66/IP67 Ex tD A21 IP66/IP67 T95°C	Note 1	T6: -40 °C to 65°C T95 °C/T5: -40 °C to 85°C
		<b>Intrinsically Safe:</b> Ex ia IIC	Note 2	T4: -40°C to 70°C

## Notes

### 1. Operating Parameters:

4-20 mA/HART (Loop Terminal) - Voltage= 10.58 to 35 V, Current= 4-20 mA Normal (3.8 – 21.5 mA Faults)

### 2. Intrinsically Safe Entity Parameters

For details see Control Drawing in the STT700 Transmitter User’s manual (#34-TT-25-17)

**Model Selection Guide**

The Model Selection Guide is subject to change and is inserted into the specification as guidance only.

**Model STT700  
Smart Temperature Transmitter**

Model Selection Guide

34-44-16-21 Issue 7

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

<b>Key</b>	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>	<b>V</b>	<b>VI</b>	<b>VII</b>	<b>VIII</b>
STT700	-	-	-	-	-	-	-	00000

KEY NUMBER	Input Type
	Universal Input

Availability Selection	↓
STT700	*

Table I	Inputs and Outputs	
a. No. Inputs	Single sensor input (4 terminations)	
	Dual TC or RTD sensor inputs (5 terminations)	
b. Output / Protocol	Analog Output	Digital Protocol
	4-20mA DC	HART Protocol
	4-20mA DC	DE Protocol

1_	*
3_	a

_H	*
_D	s

TABLE II	Agency Approvals (see specification data sheet for Approval Code Details)	
a. Approvals	No Approvals Required	
	ATEX Intrinsically Safe & Non Sparking	
	ATEX Intrinsically Safe, Flameproof, Dust and Non Sparking	
	CSA Intrinsically Safe & Non-incendive/Non Sparking	
	CSA Intrinsically Safe, Flameproof/Explosion proof, Dustproof & Non-incendive/Non	
	IEC Ex Intrinsically Safe & Non Sparking	
	IEC Ex Intrinsically Safe, Flameproof & Dusttight	
	FM Approval Intrinsically Safe & Non-incendive	
	FM Approval Intrinsically Safe, Explosion proof & Non-incendive	
	KOSHA Intrinsically Safe & Non-incendive	
	KOSHA Intrinsically Safe, Explosion proof & Dusttight	
	NEPSI Intrinsically Safe & Non Sparking	
	NEPSI Intrinsically Safe, Flameproof & Dusttight	
	CCoE Intrinsically Safe & Non Sparking	
	CCoE Intrinsically Safe, Flameproof & Dusttight	
	SAEx Intrinsically Safe & Non Sparking	
	SAEx Intrinsically Safe, Flameproof & Dusttight	
b. Safety	INMETRO Intrinsically Safe & Non-incendive	
	INMETRO Explosion proof, Intrinsically Safe & Non-incendive	
	EAC Intrinsically Safe & Non-Incendive	
	EAC Explosion proof, Intrinsically Safe & Non-Incendive	
	No SIL	
SIL 2/3 certified		

00_	*
A1_	v
A2_	k
C1_	v
C2_	k
E1_	v
E2_	k
F1_	v
F2_	k
K1_	v
K2_	k
N1_	v
N2_	k
P1_	v
P2_	k
S1_	v
S2_	k
M1_	v
M2_	k
J1_	v
J2_	k
--0	*
--E	m

TABLE III		TRANSMITTER HOUSING and ELECTRONICS SELECTIONS		
a. Housing	Housing and Material			
	None			0 _ _ _ _ *
	Polyester Powder Coated Aluminum (STT3000)- 2 conduit (1/2 NPT) connections, body 316 Stainless Steel (Grade CF8M, STT3000) - 2 conduit (1/2 NPT) connections, body			U _ _ _ _ * X _ _ _ _ *
b. End Cap	End Cap and Material			
	None			_ 0 _ _ _ c
	Polyester Powder Coated Aluminum (STT3000)- end cap			_ U _ _ _ u
	Polyester Powder Coated Aluminum (STT3000)- end cap with window			_ V _ _ _ u
	316 Stainless Steel (Grade CF8M, STT3000) - end cap			_ X _ _ _ x
316 Stainless Steel (Grade CF8M, STT3000) - end cap with window			_ Z _ _ _ x	
c. Paint Option - Housing	Item			
	Housing - standard offering			_ _ 0 _ _ *
d. Paint Option - Cap	Item			
	End cap - no change			_ _ _ 0 _ _ *
e. Interface Selections	Integral Display	Buttons	Languages	
	None	None	None	_ _ _ _ 0 _ *
	EU Meter	None	English	_ _ _ _ 1 _ f
	Standard	Yes (Integral)	English	_ _ _ _ 2 _ g
f. Lightning Protection	No lightning protection			_ _ _ _ 0 _ *
	Lightning protection			_ _ _ _ P _ *

TABLE IV		ACCESSORY SELECTIONS		Availability		
a. Mounting Arrangement	Bracket Type		Material		Selection	↓
	None		None		0 _ _ _	*
	Mounting Bracket for 2" pipe (STT3000 housing)		Carbon Steel		8 _ _ _	*
	Mounting Bracket for 2" pipe (STT3000 housing)		316 SS		9 _ _ _	*
	Spring Loaded Mounting set DIN Rail Mounting via Clip				6 _ _ _	v
b. Customer Tag	Customer Tag Type					
	No customer tag			_ 0 _ _	*	
	One Stainless Steel Tag (Up to 4 lines, 26 char / line), wired-on			_ 1 _ _	n	
	Two Stainless Steel Tag (Up to 4 lines, 26 char / line), wired-on			_ 2 _ _	n	
	One Wired Stainless Steel Blank Tag (Up to 4 lines, 26 char / line)			_ 5 _ _	n	
c. Unassembled Conduit Plugs & Adapters	Unassembled Conduit Plugs & Adapters					
	No Conduit Plugs or Adapters Required			_ _ A0	*	
	1/2 NPT Male to M20 Female 316 SS Certified Conduit Adapter (qty 2)			_ _ A1	*	
	1/2 NPT Male to 3/4 NPT Female 316 SS Certified Conduit Adapter (qty 2)			_ _ A2	*	
	1/2 NPT 316 SS Certified Conduit Plug			_ _ A6	*	

TABLE V		CONFIGURATION SELECTIONS		
a. Application Support	Diagnostics			
	Standard Diagnostics			1 _ _ *
b. Output Limit, Failsafe & Write Protect Settings	Write Protect	Fail Mode	High & Low Output Limits <sup>3</sup>	
	Disabled	High> 21.0mA dc	Honeywell Std (3.8 - 20.8 mA dc)	
	Disabled	Low< 3.6mA dc	Honeywell Std (3.8 - 20.8 mA dc)	
	Enabled	High> 21.0mA dc	Honeywell Std (3.8 - 20.8 mA dc)	
	Enabled	Low< 3.6mA dc	Honeywell Std (3.8 - 20.8 mA dc)	
c. General Configuration	Factory Standard			_ _ S _ *
	Custom Configuration			_ _ C _ *

TABLE VI		CALIBRATION & ACCURACY SELECTIONS		
Accuracy and Calibration	Accuracy	Calibrated Range	Calibration Qty	
	Standard	Factory Std	Single Calibration	
	Standard	Custom (Unit data required)	Single Calibration	

<sup>3</sup> NAMUR Output Limits 3.8 - 20.5mA dc can be configured by the customer or select custom configuration Table Vc



TABLE VII	Other Certifications and Options
Certifications and Warranty	None - no additional options
	Certificate of Conformance
	Calibration Test Report & Certificate of Conformance
	Certificate of Origin
	SIL 2/3 Certificate
	Extended Warranty Additional 1 year
	Extended Warranty Additional 2 years
	Extended Warranty Additional 3 years
	Extended Warranty Additional 4 years

00	*	b
F3	*	
F1	*	
F5	*	
FE	<b>p</b>	b
W1	*	
W2	*	
W3	*	
W4	*	

TABLE VIII	Manufacturing Specials
Factory	Factory Identification

00000	*
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**MODEL RESTRICTIONS**

Restriction Letter	Available Only with		Not Available with	
	Table	Selection(s)	Table	Selection(s)
a			lb	_ D
c	IIIa	0		
f	IIIb	_ V, Z	IIa	A2,C2,E2,S2,N2,M2
g	IIa	00,A2,C2,E2,S2,N2,M2		
	IIIb	_ V, Z		
k	IIIa	U, X		
m	IIIb	_ P		
n			IIIa	0
p	IIb	_ E		
s			IIb	E
			IIIe	_ 1
u	IIIa	U		
v			IIIa	U, X
x	IIIa	X		
b	Select only one option from this group			

**REPLACEMENT PARTS**

Description	Kit Number
DIN rail mounting clip	51156364-501
Spring loaded mounting clip	46188416-501
Mounting bracket - carbon steel, 2 inch pipe	30755905-501
Cap - blind, carbon steel	46188471-501
Cap - window, carbon steel	46188471-502
EU Meter - replacement	51451985-501
EU Meter - mounting bracket	46188056-502
Standard display - replacement	50126003-501
Standard display - upgrade from EU meter	50150171-501

**PRODUCT MANUALS**

Description	Part Number
Paper Manual STT700 Smart Temperature Transmitter User Manual - English	34-TT-25-17
Paper Manual STT700 Smart Temperature Transmitter Safety Manual - English	34-TT-25-20
Paper Manual STT700 Smart Temperature Transmitter HART/DE Communications Manual - English	34-TT-25-18

All product documentation is available at [www.honeywellprocess.com](http://www.honeywellprocess.com).

## Sales and Service

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

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*Specifications are subject to change without notice.*

For more information  
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34-TT-03-19  
October 2020  
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