

Technical Information

STT700 SmartLine Temperature Transmitter Specification

34-TT-03-19, December 2018



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 , α , δ and β for calibrated RTD sensors.

Lower Cost of Ownership

- Universal input
- Dual sensor option
- External zero, span, & configuration capability
- Polarity insensitive loop wiring

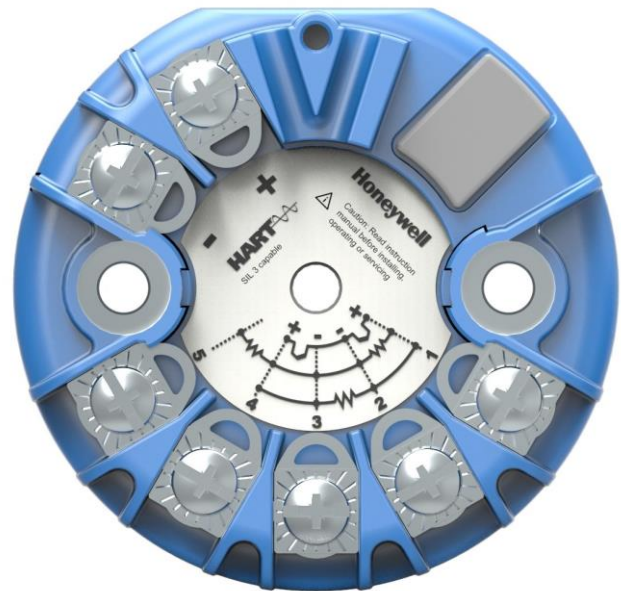


Figure 1– SmartLine STT700 Temperature Transmitter (HART) module shown with dual input capability

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.

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.

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 sensors types, allows your site to standardize on a single product and thus simplifying support and training.

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.

Performance Specifications^{1,3}

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

Input Type	Maximum Range Limits		Digital Accuracy (+/-)	Output D/A Accuracy (% of span)	Standards
	° C	° F			
RTD (2,3,4 wire)					
	° 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 ⁵ ($\alpha=0.00672$)	-80 to 260	-112 to 500	0.12	0.025	Edison Curve #7
Pt50 ⁵ ($\alpha=0.00391$)	-200 to 450 -200 to 600	-328 to 842 -328 to 1112	0.32 0.55	0.025	GOST 6651-94
Pt100 ⁵ ($\alpha=0.00391$)	-200 to 450 -200 to 600	-328 to 842 -328 to 1112	0.16 0.27	0.025	GOST 6651-94
Cu 50 ⁵ ($\alpha=0.00426$)	-50 to 200	-58 to 392	0.42	0.025	GOST 6651-94
Cu 100 ⁵ ($\alpha=0.00426$)	-50 to 200	-58 to 392	0.50	0.025	GOST 6651-94
Cu 50 ⁵ ($\alpha=0.00428$)	-200 to 200	-328 to 392	0.55	0.025	GOST 6651-94
Cu 100 ⁵ ($\alpha=0.00428$)	-200 to 200	-328 to 392	0.32	0.025	GOST 6651-94
Thermocouples	° 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 ⁵	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 ⁵	-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 = Sensor 1 Minimum - Sensor 2 Maximum
 B = Sensor 1 Maximum - 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: Normal Limits: 3.8 – 20.8 mA 3.8 – 20.5 mA Failure Mode: ≤ 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.

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

Performance under Rated Conditions – All models

Stray Rejection	Common Mode <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. Normal Mode <i>AC (50 or 60 Hz):</i> 60 dB (with 100% span peak-to-peak maximum)
EMC Compliance	EN 61326-1 and EN 61326-3-1 (SIL)
Lightning Protection Option	Leakage Current: 10 uA max @ 42.4 VDC 85 °C Impulse rating: 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	HART Models: 12.2 to 35.0 VDC at terminals (IS installations limited to 30 VDC) 0 to 1,000 ohms (as shown in Figure 2) DE Models: 12.2 to 35 VDC at terminals (IS installations limited to 30 VDC) 0 to 700 ohms (as shown in Figure 3)							

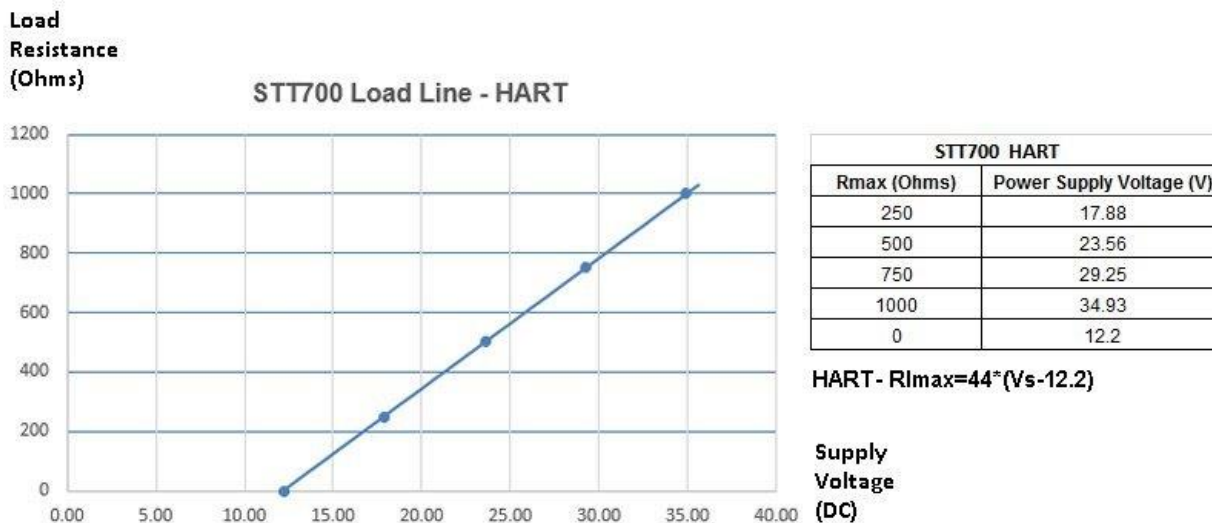


Figure 2 – HART Supply voltage and loop resistance chart & calculations

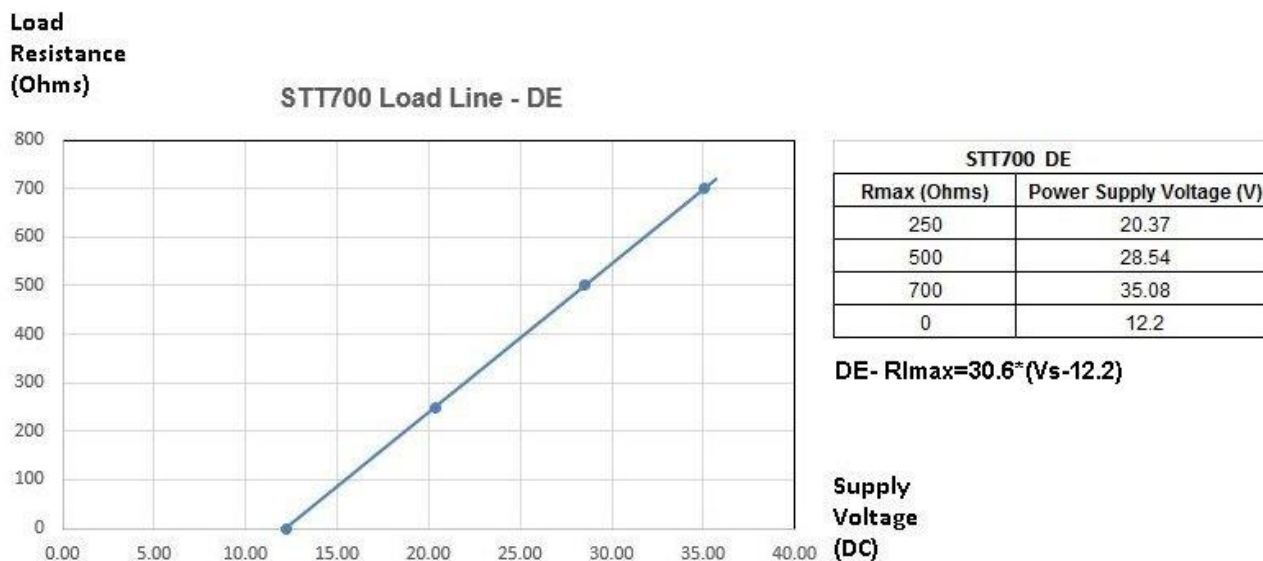


Figure 3 – DE Supply voltage and loop resistance chart & calculations

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.

Integral Meters

Honeywell's Series STT700 temperature transmitters can be supplied with local or remote indication. An Engineering Units (EU) meter can be mounted integral to the transmitter inside the field mount housing. Order an integral meter as part of the model number; Table III __ _ 1 _ . Order a remote meter as model RMA300. The EU meter displays temperature in engineering units. DE transmitters can use the EU Meter as long as they are configured to operate in the analog mode. Refer to document #34-ST-25-08D for more details.

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.

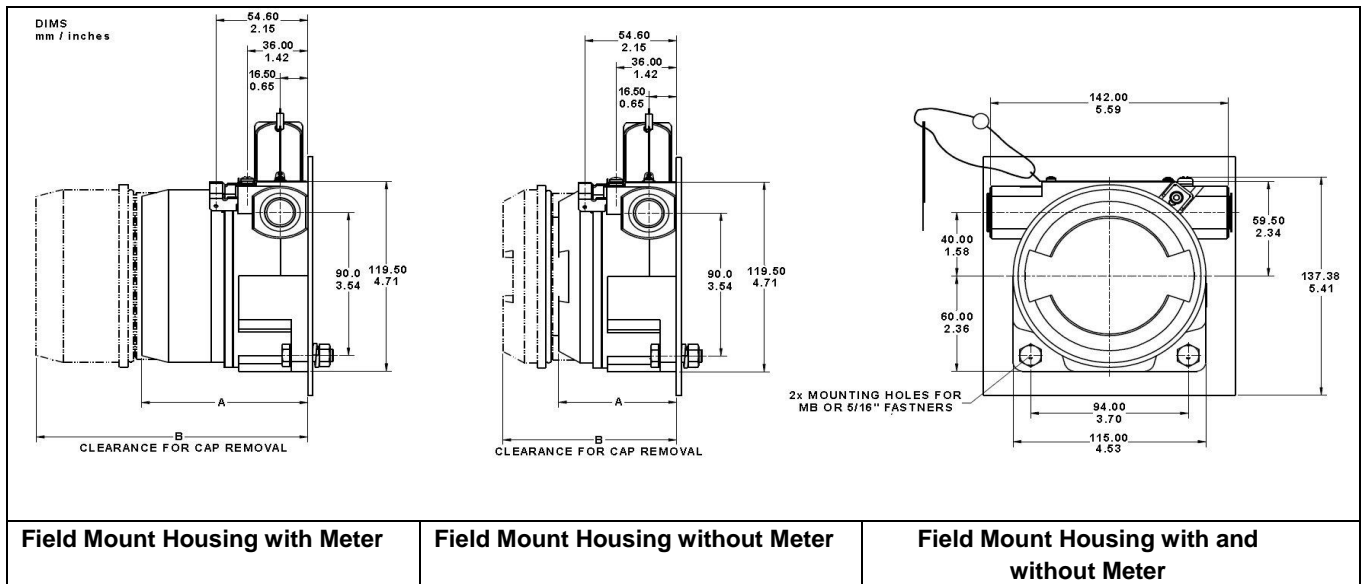


Figure 4: Wall Mounting Dimensions

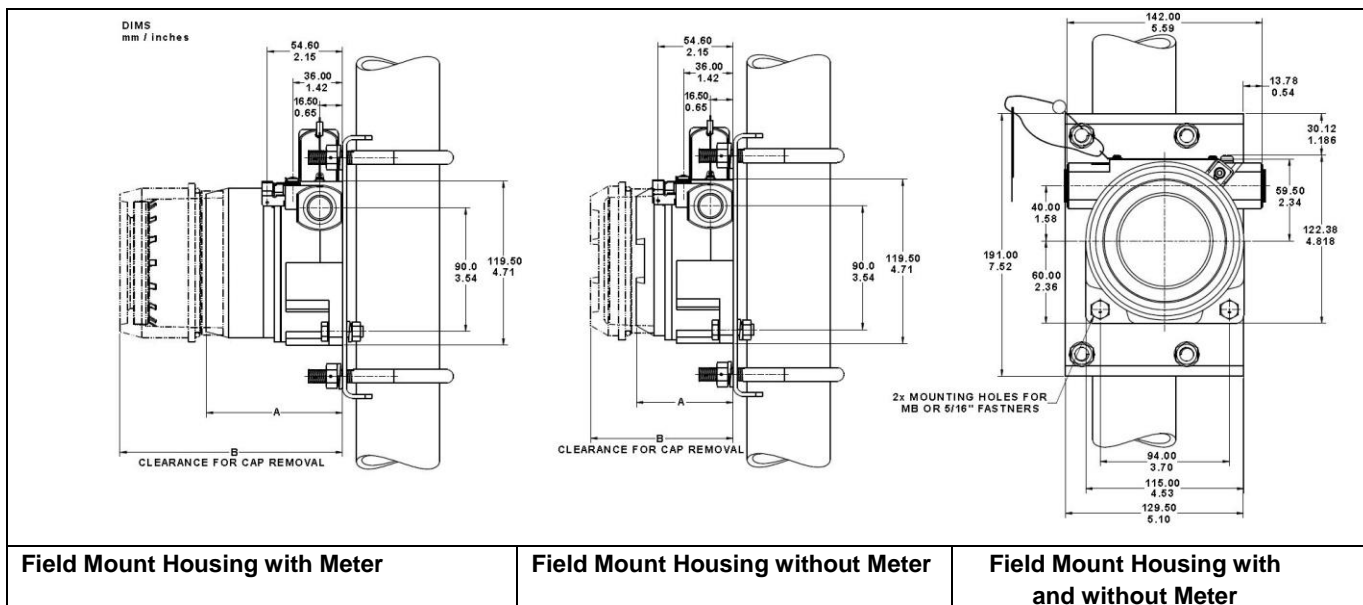


Figure 5: Pipe Mounting Dimensions

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 EU meter if used.

It mounts on the top of the STT700 transmitter module, providing easy field wiring. 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

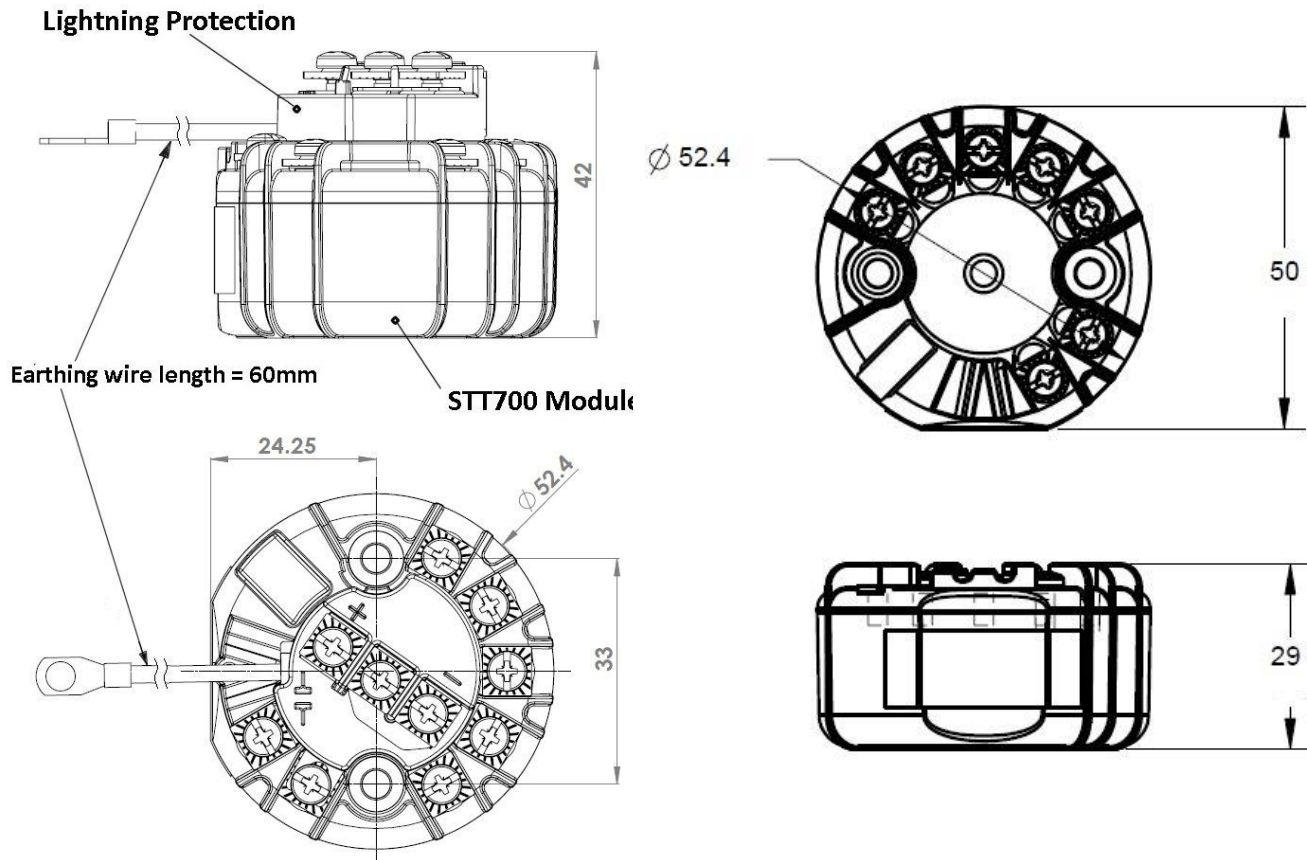


Figure 6 – STT700 transmitter module with lightning protection (left) and without (right)

Wiring Diagrams

RTD Thermocouple, mV and Ohm Connections

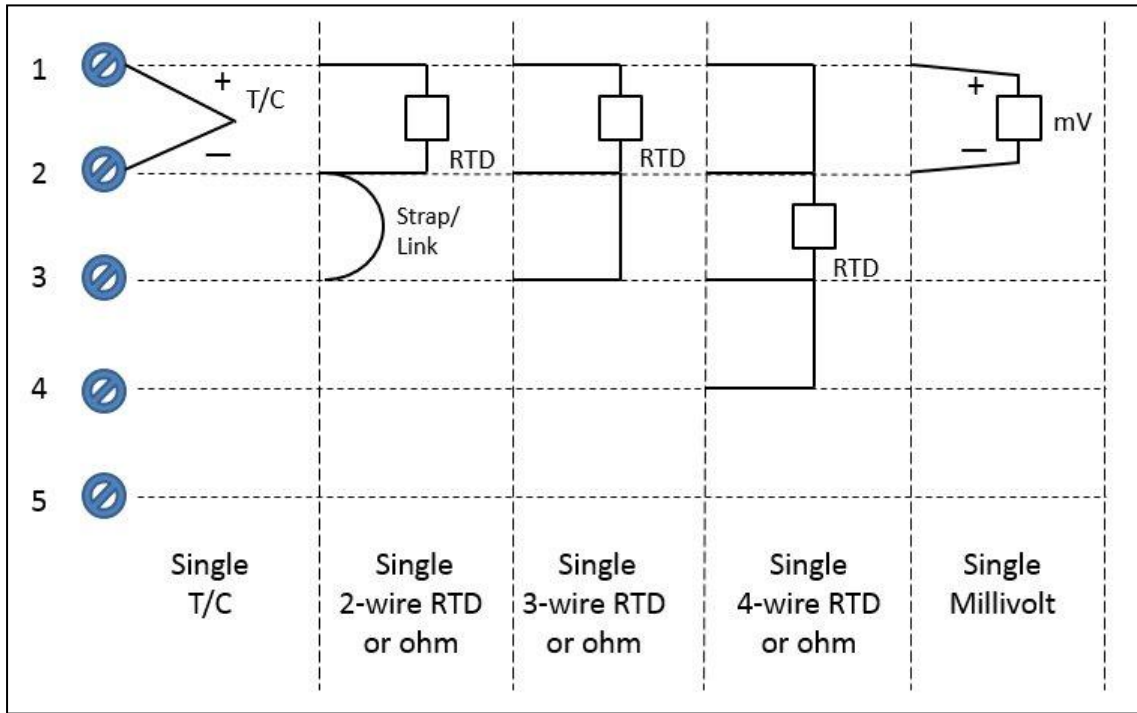


Figure 7 - HART/DE Input Wiring Diagram for single sensor connection

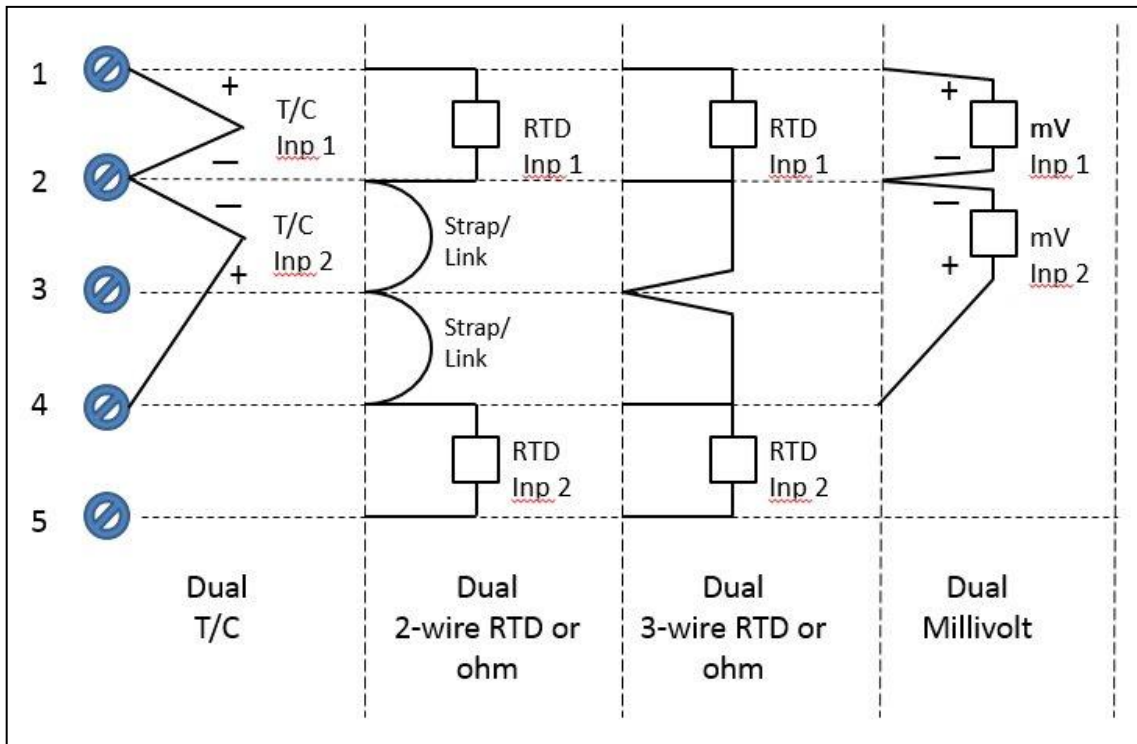










Figure 8 - Wiring Diagram for HART Dual Sensor Connections

Approval Certifications:

MSG CODE	AGENCY	TYPE OF PROTECTION	Electrical Parameters	Ambient Temperature
F1	FM Approvals™ (USA)	Intrinsically Safe 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
		Non-Incendive and Zone 2 Intrinsically Safe 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 (No EU Meter)	FM Approvals™ (USA)	Explosion proof Certificate: FM17US0112X Class I, Division 1, Groups A, B, C, D; T6..T5 Class 1, Zone 1, AEx db IIC T6..T5 Gb	Note 1	T6: -40 °C to +65 °C T5: -40 °C to +85 °C
		Non-Incendive Certificate: FM17US0112X Class I, Division 2, Groups A, B, C, D; T6..T4	Note 1	T6: -40 °C to +40 °C T5: -40 °C to +55 °C T4: -40 °C to +85 °C
F2 (W/ EU Meter)	FM Approvals™ (USA)	Explosion proof Certificate: FM17US0112X Class I, Division 1, Groups A, B, C, D; T6..T5 Class I, Zone 1, AEx db IIC T6..T5 Gb	Note 1	T6: -40 °C to +65 °C T5: -40 °C to +85 °C
		Non-Incendive and Zone 2 Intrinsically Safe Certificate: FM17US0112X Class I, Division 2, Groups A, B, C, D; T4	Note 1	T4: -40 °C to +85 °C
		Standards: FM 3600:2018; ANSI/ UL 60079-0: 2013 FM 3615 : 2018; ANSI/ UL 60079-1: 2015 ; FM 3610:2018; ANSI/ UL 60079-11 : 2013 FM 3810 : 2018 ; FM 3611:2018; ANSI/ UL 60079-15 : 2013		

C1	CSA-Canada and USA	Intrinsically Safe Certificate: 70113941 Class I, Division 1, Groups A, B, C, D; T6..T4 Class I Zone 0 AEx ia IIC T6..T4 Ga Ex ia IIC T4 Ga	Note 2	T4: -40 °C to +70 °C
		Non-Incendive and Zone 2 Intrinsically Safe Certificate: 70113941 Class I, Division 2, Groups A, B, C, D; T6.. T4 Class I Zone 2 AEx ic IIC T6..T4 Gc Ex ic IIC T4 Gc	Note 1 Note 2 for "ic"	T4: -40 °C to +85 °C
C2	CSA-Canada and USA	Explosion proof 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 Dust-Ignition Proof: 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
		Intrinsically Safe Certificate: 70113941 Class I, II, III, Division 1, Groups A, B, C, D, E, F, G; T4 Class I Zone 0 AEx ia IIC T6..T4 Ga Ex ia IIC T4 Ga	Note 2	T6: -40 °C to +40 °C T5: -40 °C to +55 °C T4: -40 °C to +70 °C
		Non-Incendive and Zone 2 Intrinsically Safe Certificate: 70113941 Class I, Division 2, Groups A, B, C, D; T6..T4 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
		Enclosure: Type 4X/ IP66/ IP67		
		Standards: CSA C22.2 No. 0-10: 2006; CSA 22.2 No. 25-1966 (reaffirmed 2009); CSA C22.2 No. 30-M1986 (reaffirmed 2012); CSA C22.2 No. 94-M91; CSA C22.2 No. 61010-1: 2013; CSA-C22.2No.157-92 (reaffirmed 2012); C22.2 No. 213: 2016; C22.2 No. 60529-05 C22.2 No. CSA 60079-0:2011; C22.2 No. 60079-1: 2011; C22.2 No. 60079-11: 2011; C22.2 No. 60079-15: 2012; C22.2 No. 60079-31: 2012; FM 3600:2011; ANSI/ UL 60079-0: 2013 FM 3616 : 2011; FM 3615 : 2011; ANSI/ UL 60079-1: 2015 ; ANSI/ UL 60079-31: 2015; FM 3610:2015; ANSI/ UL 60079-11 : 2013 FM 3810 : 2005 ; FM 3611:2016; ANSI/ UL 60079-15 : 2013 ANSI/ UL 913: Edition 7; ANSI/ UL 916 : Edition 4 ;		

A1	ATEX	Intrinsically Safe Certificate: SIRA 17ATE2162X  II 1 G Ex ia IIC T6..T4 Ga	Note 2	T4: -40 °C to +70 °C	
		Non Sparking and Zone 2 Intrinsically Safe Certificate: SIRA 17ATE4161X  II 3 G Ex ec IIC T6..T4 Gc  II 3 G Ex ic IIC T6..T4 Gc	Note 1 Note 2 for "ic"	T4: -40 °C to +70 °C	
A2	ATEX	Flameproof Certificate: 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	
		Intrinsically Safe Certificate: SIRA 17ATE2162X  II 1 G Ex ia IIC T4 Ga	Note 2	T4: -40 °C to +70 °C	
		Category 3 Non Sparking Certificate : HON 17.0202X  II 3 G Ex ec IIC T4 Gc Category 3 Intrinsically Safe Certificate: SIRA 17ATE4161X  II 3 G Ex ic IIC T4 Gc	Note 1 Note 2 for "ic"	T4: -40 °C to +85 °C	
		Enclosure: IP66/ IP67			
		Standards : EN 60079-0: 2012+A11 : 2013; EN 60079-1 : 2014 ; EN 60079-11: 2012 ; EN 60079-7 : 2015 ; EN 60079-31 : 2014			
E1	IECEX	Intrinsically Safe Certificate: SIR 17.0035X Ex ia IIC T4 Ga	Note 2	T4: -40 °C to +70 °C	
		Non Sparking, Zone 2 Intrinsically Safe Certificate: 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	IECEX	Flameproof Certificate: 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	
		Intrinsically Safe Certificate: SIR 17.0035X Ex ia IIC T4 Ga	Note 2	T4: -40 °C to +70 °C	
		Zone 2 Intrinsically Safe Certificate: SIR 17.0035X Ex ic IIC T4 Gc	Note 2	T4: -40 °C to +85 °C	
		Enclosure: IP66/ IP67			
		Standards: IEC 60079-0: 2011; IEC 60079-1 : 2014; IEC 60079-11 : 2011; IEC 60079-31 : 2014			

P1	CCoE-INDIA	Intrinsically Safe Certificate: P417399/1 Ex ia IIC T4 Ga	Note 2	T4: -40 °C to +70 °C
P2	CCoE-INDIA	Flameproof Certificate: P417399/1 Ex db IIC T6..T5 Gb	Note 1	T6: -40 °C to +65 °C T5: -40 °C to +85 °C
		Intrinsically Safe Certificate: P417399/1 Ex ia IIC T4 Ga	Note 2	T4: -40 °C to +70 °C
		Enclosure: IP66/ IP67		
N1	NEPSI (China)	Intrinsically Safe Certificate: GYJ18.1420X Ex ia IIC T4 Ga	Note 2	T4: -40 °C to +70 °C
		Non Sparking, Zone 2 Intrinsically Safe Certificate: 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	NEPSI (China)	Flameproof Certificate: 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
		Intrinsically Safe Certificate: GYJ18.1420X Ex ia IIC T4 Ga	Note 2	T4: -40 °C to +70 °C
		Zone 2 Intrinsically Safe Certificate: GYJ18.1420X Ex ic IIC T4 Gc	Note 2	T4: -40 °C to +85 °C
		Enclosure: IP66/ IP67		
S1	SAEx South Africa	Intrinsically Safe Certificate: XPL 18.0865X Ex ia IIC T4 Ga	Note 2	T4: -40 °C to +70 °C
		Non Sparking, Zone 2 Intrinsically Safe Certificate: 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	SAEx South Africa	Flameproof Certificate: 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
		Intrinsically Safe Certificate: XPL 18.0865X Ex ia IIC T4 Ga	Note 2	T4: -40 °C to +70 °C
		Zone 2 Intrinsically Safe Certificate: XPL 18.0865X Ex ic IIC T4 Gc	Note 2	T4: -40 °C to +85 °C
		Enclosure: IP66/ IP67		

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 4

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.

Key	I	II	III	IV	V	VI	VII	VIII
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 Sparking	
	IEC Ex Intrinsically Safe & Non Sparking	
	IEC Ex Intrinsically Safe, Flameproof & Dusttight	
	FM Approval Intrinsically Safe & Non-incendive	
	FM Approval Explosion proof & Non-incendive	
	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	No SIL	
	SIL 2/3 certified	

00	*
A1	v
A2	k
C1	v
C2	k
E1	v
E2	k
F1	v
F2	k
N1	v
N2	k
P1	v
P2	k
S1	v
S2	k
_0	*
_E	m

TABLE III	TRANSMITTER HOUSING and ELECTRONICS SELECTIONS		
a. Housing	Housing and Material		
	None		
	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		
b. End Cap	End Cap and Material		
	None		
	Polyester Powder Coated Aluminum (STT3000)- end cap		
	Polyester Powder Coated Aluminum (STT3000)- end cap with window		
	316 Stainless Steel (Grade CF8M, STT3000) - end cap 316 Stainless Steel (Grade CF8M, STT3000) - end cap with window		
c. Paint Option - Housing	Item Housing - standard offering		
d. Paint Option - Cap	Item End cap - no change		
e. Interface Selections	Integral Display	Buttons	Languages
	None EU Meter	None None	None English
f. Lightning Protection	No lightning protection		
	Lightning protection		

0	*
U	*
X	*
_0	c
_U	u
_V	u
_X	x
_Z	x
_0	*
_0	*
_0	*
_1	f
_0	*
_P	*

TABLE IV		ACCESSORY SELECTIONS		Availability Selection											
a. Mounting Arrangement	Bracket Type		Material		<table border="1"> <tr><td>0 ___</td><td>*</td></tr> <tr><td>8 ___</td><td>*</td></tr> <tr><td>9 ___</td><td>*</td></tr> <tr><td>6 ___</td><td>v</td></tr> <tr><td>7 ___</td><td>c</td></tr> </table>	0 ___	*	8 ___	*	9 ___	*	6 ___	v	7 ___	c
	0 ___	*													
	8 ___	*													
	9 ___	*													
	6 ___	v													
7 ___	c														
None		None													
Mounting Bracket for 2" pipe (STT3000 housing)		Carbon Steel													
Mounting Bracket for 2" pipe (STT3000 housing)		316 SS													
Spring Loaded Mounting set															
DIN Rail Mounting via Clip															
b. Customer Tag	Customer Tag Type				<table border="1"> <tr><td>_ 0 _ _</td><td>*</td></tr> <tr><td>_ 1 _ _</td><td>n</td></tr> <tr><td>_ 2 _ _</td><td>n</td></tr> <tr><td>_ 5 _ _</td><td>n</td></tr> </table>	_ 0 _ _	*	_ 1 _ _	n	_ 2 _ _	n	_ 5 _ _	n		
	_ 0 _ _	*													
	_ 1 _ _	n													
	_ 2 _ _	n													
	_ 5 _ _	n													
No customer tag															
One Stainless Steel Tag (Up to 4 lines, 26 char / line), wired-on															
Two Stainless Steel Tag (Up to 4 lines, 26 char / line), wired-on															
One Wired Stainless Steel Blank Tag (Up to 4 lines, 26 char / line)															
c. Unassembled Conduit Plugs & Adapters	Unassembled Conduit Plugs & Adapters				<table border="1"> <tr><td>_ _ A0</td><td>*</td></tr> <tr><td>_ _ A1</td><td>*</td></tr> <tr><td>_ _ A2</td><td>*</td></tr> <tr><td>_ _ A6</td><td>*</td></tr> </table>	_ _ A0	*	_ _ A1	*	_ _ A2	*	_ _ A6	*		
	_ _ A0	*													
	_ _ A1	*													
	_ _ A2	*													
	_ _ A6	*													
No Conduit Plugs or Adapters Required															
1/2 NPT Male to M20 Female 316 SS Certified Conduit Adapter (qty 2)															
1/2 NPT Male to 3/4 NPT Female 316 SS Certified Conduit Adapter (qty 2)															
1/2 NPT 316 SS Certified Conduit Plug															

TABLE V		CONFIGURATION SELECTIONS				Availability Selection								
a. Application Support	Diagnostics					<table border="1"> <tr><td>1 _ _</td><td>*</td></tr> </table>	1 _ _	*						
	1 _ _	*												
Standard Diagnostics														
b. Output Limit, Failsafe & Write Protect Settings	Write Protect	Fail Mode	High & Low Output Limits ³			<table border="1"> <tr><td>_ 1 _</td><td>*</td></tr> <tr><td>_ 2 _</td><td>*</td></tr> <tr><td>_ 3 _</td><td>*</td></tr> <tr><td>_ 4 _</td><td>*</td></tr> </table>	_ 1 _	*	_ 2 _	*	_ 3 _	*	_ 4 _	*
	_ 1 _	*												
	_ 2 _	*												
	_ 3 _	*												
	_ 4 _	*												
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					<table border="1"> <tr><td>_ _ S</td><td>*</td></tr> <tr><td>_ _ C</td><td>*</td></tr> </table>	_ _ S	*	_ _ C	*				
	_ _ S	*												
_ _ C	*													
Custom Configuration														

TABLE VI		CALIBRATION & ACCURACY SELECTIONS			Availability Selection					
Accuracy and Calibration	Accuracy	Calibrated Range	Calibration Qty			<table border="1"> <tr><td>A</td><td>*</td></tr> <tr><td>C</td><td>*</td></tr> </table>	A	*	C	*
	A	*								
	C	*								
Standard	Factory Std	Single Calibration								
Standard	Custom (Unit data required)	Single Calibration								

³ 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		Availability Selection																				
Certifications and Warranty	None - no additional options			<table border="1"> <tr><td>00</td><td>*</td><td rowspan="5">b</td></tr> <tr><td>F3</td><td>*</td></tr> <tr><td>F1</td><td>*</td></tr> <tr><td>F5</td><td>*</td></tr> <tr><td>FE</td><td>p</td></tr> <tr><td>W1</td><td>*</td><td rowspan="5">b</td></tr> <tr><td>W2</td><td>*</td></tr> <tr><td>W3</td><td>*</td></tr> <tr><td>W4</td><td>*</td></tr> </table>	00	*	b	F3	*	F1	*	F5	*	FE	p	W1	*	b	W2	*	W3	*	W4	*
	00	*	b																					
	F3	*																						
	F1	*																						
	F5	*																						
	FE	p																						
	W1	*	b																					
	W2	*																						
	W3	*																						
	W4	*																						
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																								

TABLE VIII		Manufacturing Specials		Availability Selection		
Factory	Factory Identification			<table border="1"> <tr><td>00000</td><td>*</td></tr> </table>	00000	*
00000	*					

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 _ _ _ _		
k	IIIa	U, X _ _ _ _		
m	IIIf	_ _ _ _ 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

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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