SmartLine

Honeywell

STT700 SmartLine Temperature Transmitter Specification
34-TT-03-19, March 2024

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

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

Reliable measurement

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

Lower Cost of Ownership

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

Mounting Options:

- o Direct sensor head mounting in DIN Form A aluminum housing.
- o 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:

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

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

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**
	AC (50 or 60 Hz): 120 dB (with maximum source impedance of 100 ohms) or ± 1 LSB (least significant bit) whichever is greater with line voltage applied.
	DC: 120 dB (with maximum source impedance of 50 ohms) or a ±1 LSB whichever is greater with 120 VDC applied.
	DC (to 1 KHz): 50 dB (with maximum source of impedance of 50 ohms) or ±1 LSB whichever is greater with 50 VAC applied.
	Normal Mode
	AC (50 or 60 Hz): 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)

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 #EN0I-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.
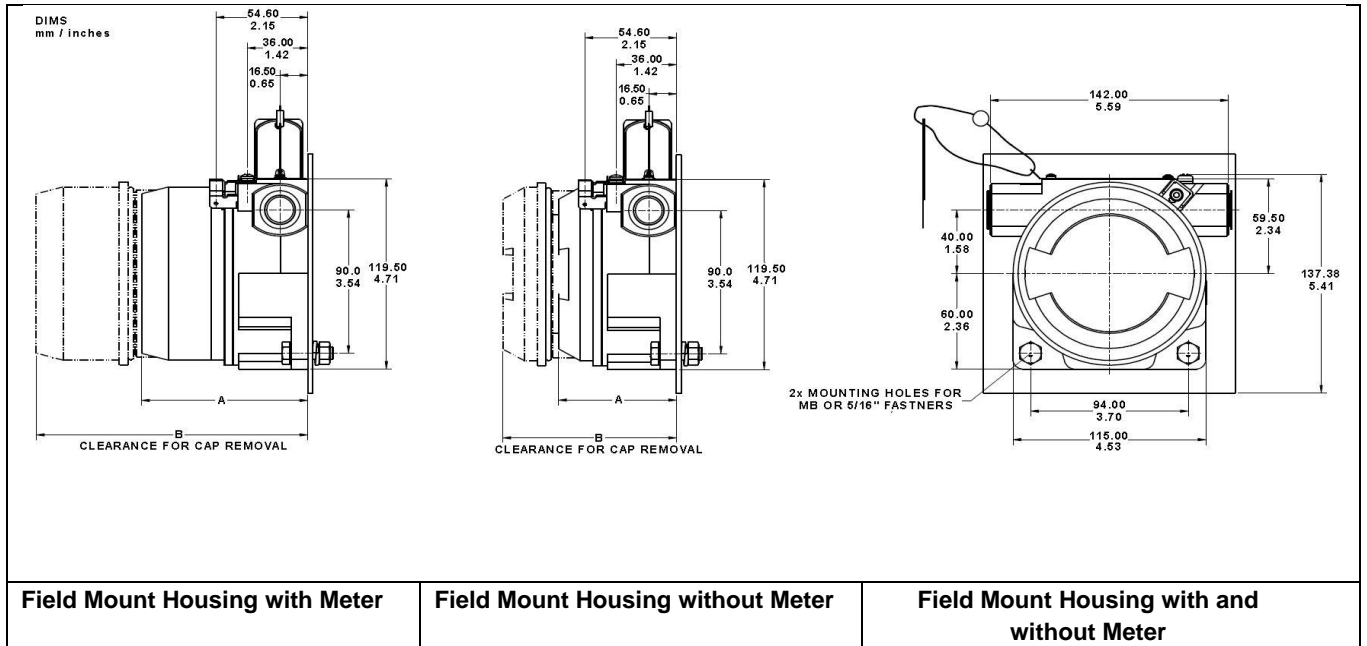

| Field Mount Housing with Meter | Field Mount Housing without Meter | Field Mount Housing with and without Meter |

Figure 4: Wall Mounting Dimensions

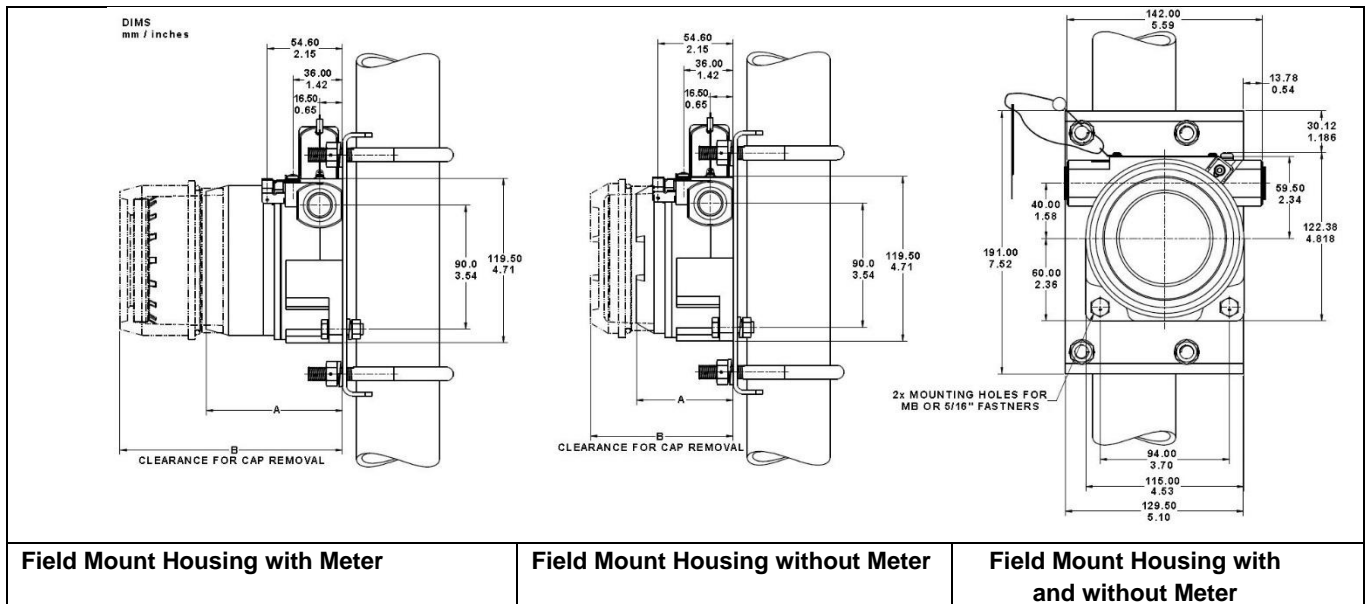| Field Mount Housing with Meter | Field Mount Housing without Meter | Field Mount Housing with and without Meter |

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.

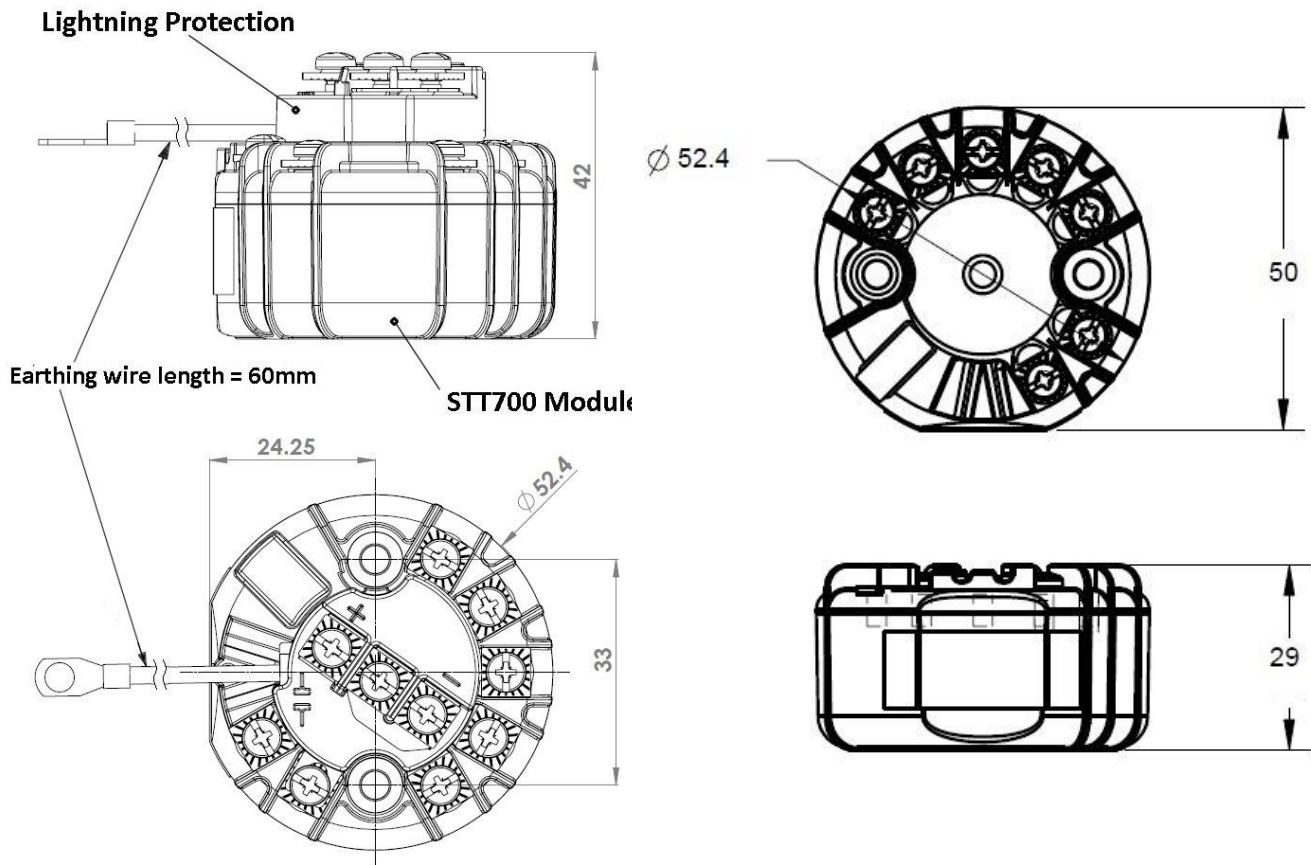## Mounting & Dimensional Drawings

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