

STT700 SmartLine Temperature Transmitter

Quick Start Installation Guide

34-TT-25-19, Revision 7, May 2023

This document provides descriptions and procedures for the Quick Installation of Honeywell's family of SmartLine Temperature Transmitters.

The STT700 is available in a variety of models for measuring Thermocouples, RTD, Millivolts and Ohm sensor types.

For full details refer to the manuals listed below for Operation, Installation, Protocol, Configuration, Calibration, Maintenance, Parts, Safety and Approvals etc. including options.

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Documentation

To access complete documentation, including language variants, scan the QR code below using your smart phone/device or QR code scanner.

Go to the APP store for your free Smartphone QR scanner

Or you can follow the URL to access the online SmartLine HUB page.

The HUB page will contain direct links to open SmartLine product documentation.

URL

<https://hwl.co/SmartLineHUB>

QR Code



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Installation

For start-up, operation (including configuration), maintenance and calibration refer to the STT700 Transmitter User's manual, #34-TT-25-17

Evaluate the site selected for the Transmitter installation with respect to the process system design specifications and Honeywell's published performance characteristics for your particular model. Conditions to be considered include:

Table 1: Installation considerations

Environmental Conditions:	Process Parameters
– Ambient temperature	– Temperature
– Relative Humidity	– Maximum Sensor Input Ratings
Potential Noise Sources:	Vibration Sources
– Radio Frequency Interference (RFI)	– Pumps
– Electromagnetic Interference (EMI)	– Motorized System Devices (e.g., pumps)
	– Valve Cavitation

In preparation for post-installation processes, refer to the *MC Toolkit User Manual*, Document # #34-ST-25-50 (MCT404), for battery conditioning and device operation and maintenance information.

DEVICE CONFIGURATION

This transmitter comes with a standard factory configuration. Consult the nameplate for basic information. Reconfiguration for your particular application can be accomplished by following instructions in the Transmitter User's manual. This can be found by following the website URL or QR code on page 1 of this document.

Features and Options

As shown in [Figure 1](#), the STT700 is packaged in a single module. The elements in this module are connected to the process sensors, measure the process variables, respond to setup commands and execute the software and protocol for the different temperature measurement types.



Figure 1 – STT700 Temperature Transmitter (HART left, DE right)



Figure 2 – STT700 Temperature Transmitter with display module

The transmitter measures process temperature and outputs a signal proportional to the measured process variable (PV). Available output communication protocols include 4 to 20mA, Honeywell Digitally Enhanced (DE) and HART protocols.

Mounting the Transmitter

DIN Rail Mounting

If the STT700 is to be installed on DIN Rail then the main considerations are electrical connections and mechanical fixing. Electrical connections are identical to the bench test instructions except that thermocouple wire is likely to be used with thermocouples. Mechanical fixing of the module is by means of the snap-in DIN Rail Clips which are screwed to the bottom lugs of the module.

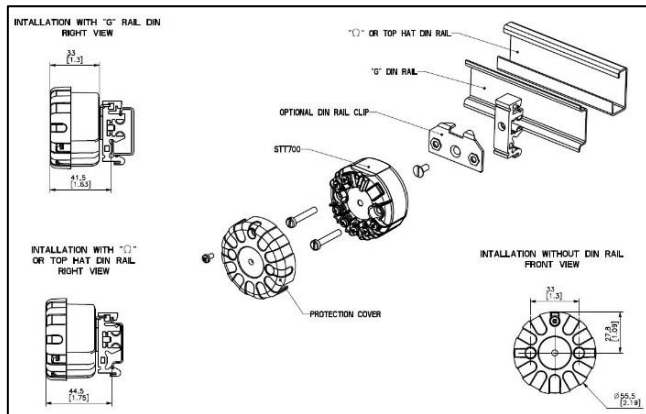


Figure 3: DIN Rail Mounting

The DIN Rail needs to be connected to Earth Ground, refer to STT700 SmartLine transmitter user's manual, #34-TT-25-17.

Uninstalling/Installing EU Meter from Housing

EU Meter:

1. Remove the EU METER from the mounting bracket.
2. Unfasten the 2 mounting screws.
3. Remove the bracket.

To put the EU meter back follow the above sequence in the reverse order.

Uninstalling/Installing Standard Display from Housing

Standard Display:

1. Loosen the bracket screws
2. Move the display in clockwise direction till the STT700 connections are exposed
3. Slide and remove the cable joint from the display panel bracket
4. Disconnect the cables from the display panel and STT700 transmitter
5. Remove the Standard Display from the bracket.

To reinstall the Standard Display reverse the above sequence.

Housing Cover and O Ring:

1. Review O-ring condition & replace, if damaged. New O-ring can be ordered from spare parts list.
2. Apply O-ring lubricant to the end cap O-ring. Relax O-ring twists, if any.

Assemble housing cover with sufficient torque for securing against IP.

Mounting Module in Housing

The STT700 module can be installed in a variety of housings suitable for direct head mounting, 2" (50mm) pipe mounting or wall mounting.

Table 2: Mounting Dimensions

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]

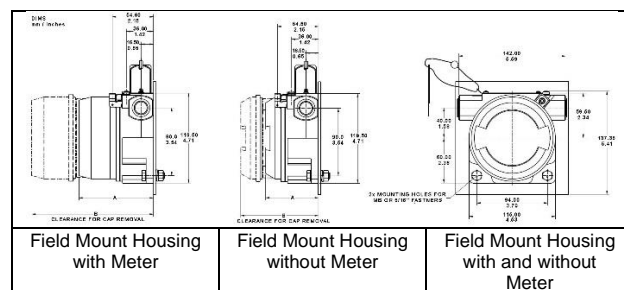


Figure 4: Wall Mounting Dimensions

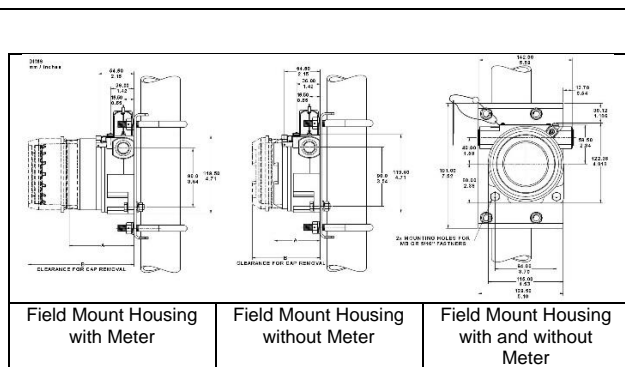


Figure 5: Pipe Mounting Dimensions

Spring Loading

Spring loading is available worldwide with direct head mounting. In North America, the spring loading is typically included in the sensor/thermowell assembly and is available with all housings. For non-North American spring loading as shown in Figure 6, simply include the springs under the 33 mm pitch mounting screws, pass the screws through the module and sensor mounting plate and snap in the retaining circlip to the screws to hold the assembly together. Guide the sensor assembly through the housing sensor entry and screw down the 33 mm screws until the limit is reached as the sensor presses against the bottom of thermowell.

For wall or 2" pipe mounting, the temperature sensor can be remote from the STT700 field mount housing or integral to the housing. For remote installations, the sensor wiring should be run in shielded, twisted pair wiring and connected via one of the housing wiring entries. For explosionproof/flameproof installations, ensure that the cable entries are fitted with flameproof adaptors and that the wiring grade complies with local standards.

For more details on wiring and dimensions for Aluminum Direct head and Cast iron Direct head refer to STT700 SmartLine transmitter user's manual, #34-TT-25-17.

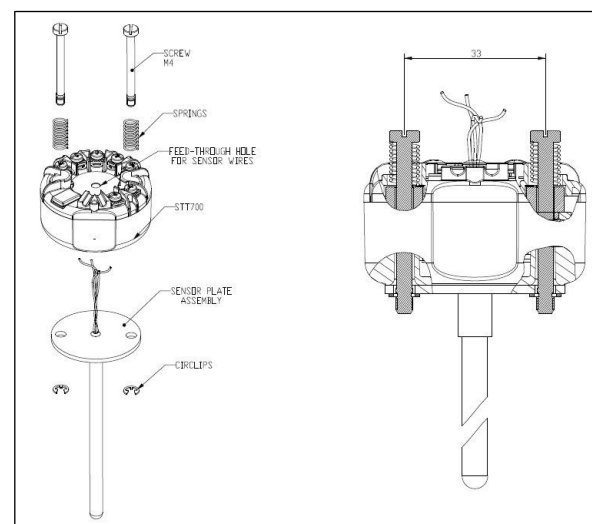


Figure 6: Spring Loading and Sensor Assembly

Wiring Connections and Power Up

Summary

The transmitter is designed to operate in a two-wire power/current loop with loop resistance and power supply voltage within the HART and DE operating ranges shown in Figure 7.

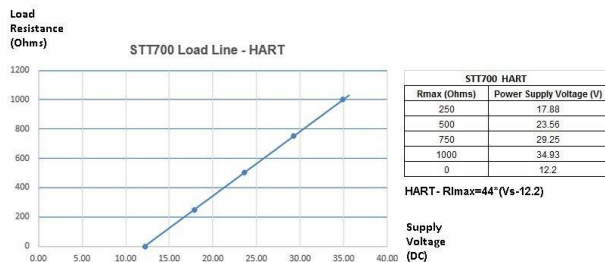


Figure 7: STT700 HART Transmitter Operating Ranges

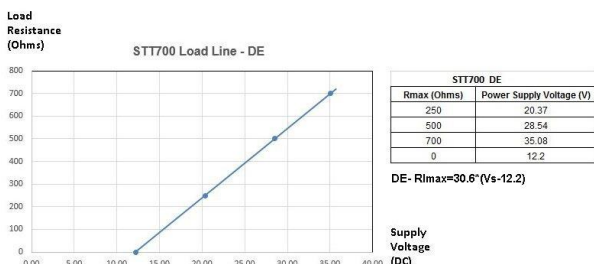


Figure 8: STT700 DE Transmitter Operating Ranges

Loop wiring is connected to the transmitter by simply attaching the positive (+) and negative (-) loop wires to the positive (+) and negative (-) terminals on the transmitter terminal block in the electronics housing shown in Figure 9. Route the wires through the pre-molded channels on the connector cap. Connect the loop power wiring shield to earth ground only at the power supply end. Note that loop-power for this transmitter is not polarity-sensitive.

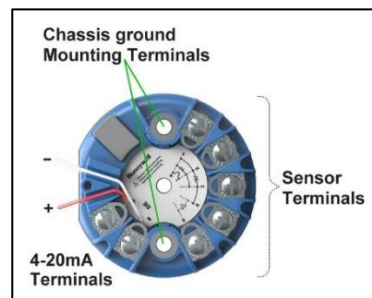


Figure 9: STT 700 Terminal connections

This transmitter uses the two mounting screws to connect it to earth ground. Grounding the transmitter for proper operation is required, as doing so tends to minimize the possible effects of noise on the output signal and affords protection against lightning and static discharge. An optional lightning protection module is available for use in areas that are highly susceptible to lightning strikes. As noted above, the loop power wiring shield should only be connected to earth ground at the power supply end.



Wiring must comply with local codes, regulations and ordinances. Grounding may be required to meet various approval body certification, for example CE conformity. Refer to the STT700 SmartLine Transmitter User's Manual 34-TT-25-17 for details

For HART and DE the transmitter is designed to operate in a two-wire power/current loop with loop resistance and power supply voltage within the operating range; see Figure 9. With an optional remote meter, the voltage drop for this must be added to the basic power supply voltage requirements to determine the required transmitter voltage (VXMTR) and maximum loop resistance (RLOOP MAX). Additional consideration is required when selecting intrinsic safety barriers to ensure that they will supply at least minimum transmitter voltage (VXMTR MIN), including the required 250 ohms of resistance (typically within the barriers) needed for digital communications.

Wiring Variations

The above procedures are used to connect power to a transmitter. For loop wiring and external wiring, detailed drawings are provided for transmitter installation in non-intrinsically safe areas and for intrinsically safe loops in hazardous area locations.

This procedure shows the steps for connecting power to the transmitter.

The screw terminals suitable for wirings up to (16AWG)

- Shielded, twisted-pair cable such as Belden 9318 or equivalent must be used for all signal/power wiring.

Note: If solid core wire is used strip insulation 1/4 in (6 mm). Once inserted under the square washer the stripped portion should be contained under the square washer. If multi-stranded wire is used, a ferrule is to be used and the stripped wire should be in the insulated portion of the ferrule. The ferrule can be also be used on the solid core wire.

- The cable shield must be connected at only one end of the cable. Connect it to the power supply side and leave the shield insulated at the transmitter side.

After wiring the Transmitter as outline in the next sections, torque the screws to 1.1 Nm (10 lb-in)

Grounding and Lightning Protection

Connect a wire from the mounting screws to earth ground to make the protection effective. Use a size 8 AWG or (8.37mm²) bare or green covered wire for this connection. For ungrounded thermocouple, mV, RTD or ohm inputs, connect the input wiring shield(s) to the same earth ground connection. For grounded thermocouple inputs, connect the internal ground connection shown in Figure 9 to the same earth ground as used by the thermocouple. As noted above, the loop power wiring shield should only be connected to earth ground at the power supply end.

For DE, the burnout direction needs to be selected in the hardware and this will be detected at power on time.

Input Sensor Wiring

Connect the input sensors as shown in Figure 10 below: RTD Thermocouple, mV, Ohm and Millivolt connections.

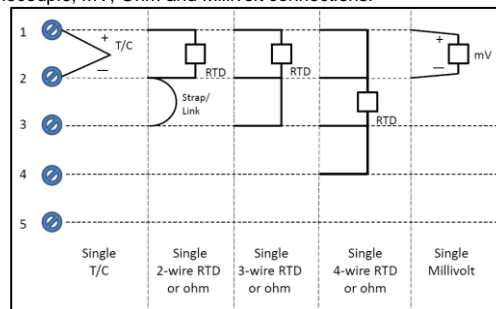


Figure 10: HART/DE Input Wiring Diagram for single sensor connection

The single sensor connections can also be used on a dual input transmitter when a second input is not required. In this case, it is recommended that the second input be configured to none in software. In case of RTD type being configured to 4-wire, this is automatically done.

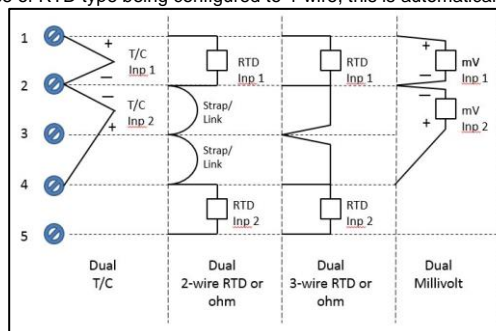


Figure 11: Wiring Diagram for HART Dual Sensor Connections

Explosion-Proof Conduit Seal

⚠ When installed as explosion proof in a Division 1 Hazardous Location, keep covers tight while the Transmitter is energized. Disconnect power to the Transmitter in the non-hazardous area prior to removing end caps for service.

When installed as non-incendive equipment in a Division 2 hazardous location, disconnect power to the Transmitter in the non-hazardous area, or determine that the location is non-hazardous before disconnecting or connecting the Transmitter wires.

Transmitters installed as explosion proof in Class I, Division 1, Group A Hazardous (classified) locations in accordance with ANSI/NFPA 70, the US National Electrical Code, require a LISTED explosion proof seal to be installed in the conduit, within 18 inches (457.2 mm) of the transmitter.

LIGHTNING PROTECTOR

This device is designed to give the SmartLine temperature transmitter maximum protection against surges such as those generated by lightning strikes. The lightning protector mounts right on the top of the STT700 terminal block, providing easy field wiring and also protection for the EU meter if used. For more details refer to STT700 SmartLine temperature transmitter user's manual, #34-TT-25-17.

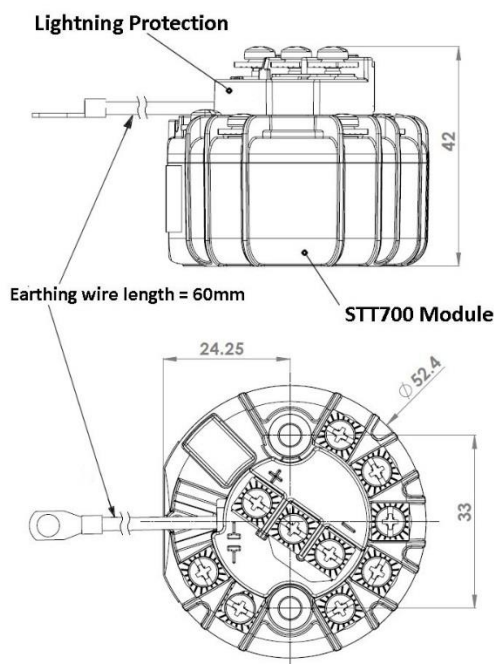


Figure 12: Lightning Protector Dimensions

Installation

- If an EU meter is used, remove the shunt on the Lightning Protector. In all other cases, the shunt must be present.
- If Standard Display is used, no need to remove the shunt.
- Remove the cover/cap of the housing (if applicable). The device fits on the top of the transmitter module terminal block and the transmitter output screws (+ and -) fix mechanically the device.
- If Standard Display is used, remove the cover of the housing and connect the display cable to the 8-Pin connector provided on the transmitter.
- Attach the grounding wire to the ground screw in the housing. Connect a wire from the transmitter enclosure to local earth ground. Use size 14 AWG or 2.0mm² bare or green covered wire.
- If an EU meter is used, wire according to Figure 14.
- If Standard Display is used, wire according to Figure 15.
- Connect the 4 – 20mA loop to the + and – terminal screws of the surge protection and close the cap of the housing.

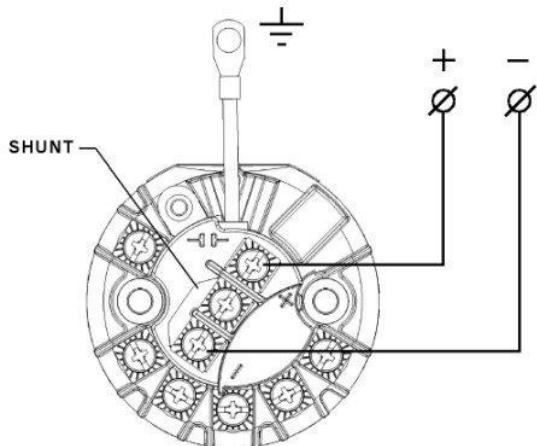


Figure 13: Installation without EU Meter

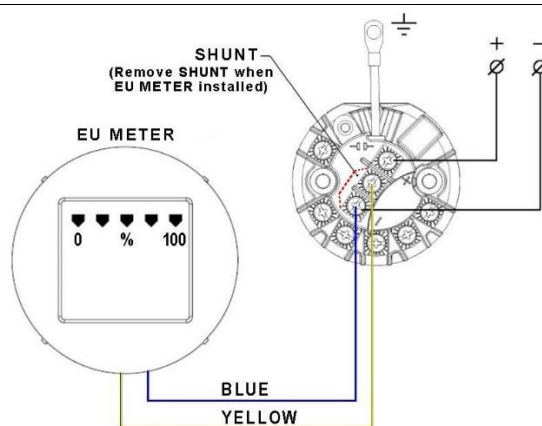


Figure 14: Installation with EU Meter

For start-up, operation (including configuration), maintenance and calibration refer to the STT700 Transmitter User's manual, #34-TT-25-17

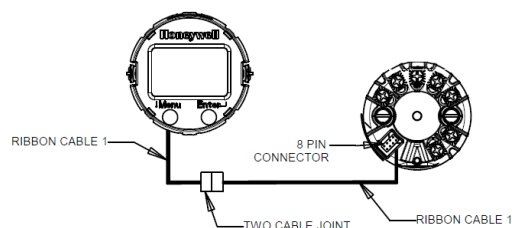


Figure 15: Installation with Standard Display

Appendix A. PRODUCT CERTIFICATIONS

A1. Safety Instrumented Systems (SIS) Installations

For Safety Certified Installations, please refer to STT700 Safety Manual #34-TT-25-05 for installation procedure and system requirements.

A2. China RoHS

China RoHS compliance information is located here: (Pending)
<https://www.honeywellprocess.com/library/support/Public/Documents/50136434.pdf>

A3. European Directive Information (EU)



APPV-STT700-CE Revision: E

EU DECLARATION OF CONFORMITY

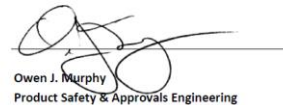
We,
Honeywell International Inc.
Honeywell Field Solutions
512 Virginia Drive
Fort Washington, PA 19034 USA

declare under our sole responsibility that the following products,
**STT 700 – Smart Series Temperature Transmitter
with and without Integral Meter**

to which this declaration relates, is in conformity with the provisions of the European Community Directives, including the latest amendments, as shown in the attached schedule.

Assumption of conformity is based on the application of the harmonized standards and when applicable or required, a European Community notified body certification, as shown in the attached schedule.

The authorized signatory to this declaration, on behalf of the manufacturer, and the Responsible Person is identified below.


Owen J. Murphy
Product Safety & Approvals Engineering
Issue Date: 14 January 2022
Fort Washington, PA 19034, USA



SCHEDULE

APPV-STT700-CE Revision: E

EMC Directive (2014/30/EU)

EN 61326-1:2013 Electrical Equipment for Measurement, Control and Laboratory Use – EMC Requirements.

Overview of EMC Testing

Summary of Tests Performed:

PORT	TEST	STANDARD	CRITERIA (IEC 61326-1)	CRITERIA (IEC 61326-3-1)	RESULTS
Enclosure	Radiated Emission	CISPR 11	Group1, Class A 30 – 230 MHz: 40 dB 230 – 1000 MHz: 47 dB	Group1, Class A 30 – 230 MHz: 40 dB 230 – 1000 MHz: 47 dB	PASS
	ESD Immunity	IEC61000-4-2	+/- 4KV Contact +/- 8KV Air	+/- 6KV Contact +/- 8KV Air	PASS
	EM Field - RF Radiated Susceptibility	IEC61000-4-3	10 V/m - 80 MHz to 1GHz 3 V/m - 1.4 GHz to 2.0 GHz 1 V/m - 2.0 GHz to 2.7 GHz	20 V/m - 80MHz to 1GHz 10 V/m - 1.4GHz to 2.0 GHz 3 V/m - 2.0GHz to 2.7GHz	PASS PASS PASS
	50Hz/60Hz Magnetic Field Immunity	IEC 6100-4-8	30 A/m	30 A/m	N/A 1
	EFT(B) Immunity	IEC61000-4-4	+/- 1KV	+/- 2KV	PASS
DC Power	Surge Immunity	IEC61000-4-5	+/- 1KV	+/- 2KV	PASS
	RF Conducted Susceptibility	IEC61000-4-6	3V	3 V Except the following: 10 V 3.39 to 3.410MHz 10 V 6.765 to 6.795MHz 10 V 13.553 to 13.567MHz 10 V 26.957 to 27.283MHz 10 V 40.66 to 40.70MHz	PASS
I/O Signal/ Control (Including Earth Lines)	EFT(Burst) Immunity	IEC61000-4-4	+/- 1KV	+/- 2KV	2
	Surge Immunity	IEC61000-4-5	+/- 1KV	+/- 2KV	2
	RF Conducted Susceptibility	IEC61000-4-6	3V	3 V Except the following: 10 V 3.39 to 3.410MHz 10 V 6.765 to 6.795MHz	2

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SCHEDULE

APPV-STT700-CE Revision: E

PORT	TEST	STANDARD	CRITERIA (IEC 61326-1)	CRITERIA (IEC 61326-3-1)	RESULTS
AC Power	Voltage Dip	IEC61000-4-11	0% during 1 Cycle 40% during 10-12 Cycles 70% during 25-30 Cycles	10 V 13.553 to 13.567MHz 10 V 26.957 to 27.283MHz 10 V 40.66 to 40.70MHz	N/A ¹
	Short Interruptions	IEC61000-4-11	0% during 250-300 Cycles		N/A ¹
	EFT(Burst) Immunity	IEC61000-4-4	2KV		N/A ¹
	Surge Immunity	IEC61000-4-5	1KV/ 2KV		N/A ¹
	RF Conducted Susceptibility	IEC61000-4-6	3V		N/A ¹

1. There is no magnetic sensitive circuitry.
2. Done as part of the DC Power Testing.
3. Product is DC Powered.

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<p align="center">SCHEDULE</p> <p align="center">APPV-STT700-CE Revision: E</p>	
<p>ATEX Directive (2014/34/EU)</p> <p>EC-Type Examination Certificate No: SIRA 17ATEX2162X Protection: Flameproof, Dust and Intrinsically Safe</p> <p>Equipment Group II Category 1 G (Transmitter Only): Ex ia IIC T4 Ga T4: Ta= -40°C to +70°C</p> <p>Equipment Group II Category 1 G, Group II Category 2 G and Group II Category 2 D (Transmitter With and Without EU Meter): Ex ia IIC T4 Ga T4: Ta= -40°C to +70°C Ex db IIC T6..T4 Gb T5: Ta= -40°C TO 85°C ; T6 : Ta= -40°C TO 65°C ; Ex tb IIIC T95°C Db Ta= -40°C TO 85°C</p> <p>Harmonized Standards : EN 60079-0: 2012+A11 : 2013; EN 60079-1 : 2014; EN 60079-11: 2012; EN 60079-31 : 2014</p> <p>Note: The above standards are no longer harmonized. As allowed by the ATEX decision paper ExNB/ 09/ 347, an evaluation was done by Honeywell. The EHSR's are met by the now Harmonized Standards: IEC EN 60079-0: 2018</p> <p>Type Examination Certificate No: SIRA 17ATEX4161X - Protection: Increased Safety and Zone 2 Intrinsic Safety Certificate</p> <p>Equipment Group II Category 3 G (Transmitter Only): Ex ic IIC T4 Gc T4: Ta= -40°C to +85°C Ex ec IIC T4 Gc T4: Ta= -40°C to +85°C</p> <p>Equipment Group II Category 3 G, with Enclosure : Ex ic IIC T4 Gc T4: -40°C to +85°C Ex ec IIC T4 Gc T4: Ta= -40°C to +85°C</p> <p>Harmonized Standards : EN 60079-0: 2012+A11 : 2013; EN 60079-11: 2012; EN 60079-7 : 2015;</p> <p>Note: The above standards are no longer harmonized. As allowed by the ATEX decision paper ExNB/ 09/ 347, an evaluation was done by Honeywell. The EHSR's are met by the now Harmonized Standards: IEC EN 60079-0: 2018 EN 60079-7 : 2015/A1 : 2018;</p> <p>ATEX Notified Body for EC Type Certificates CSA Group Netherlands B.V., [Notified Body Number: 2813] Utrechtseweg 310 (B42), 6812 Arnhem Netherlands</p>	

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<p align="center">SCHEDULE</p> <p align="center">APPV-STT700-CE Revision: E</p>	
<p>ATEX Notified Body for Quality Assurance DEKRA Certification B.V. [Notified Body Number: 0344] Maender 1051 6825 MJ Arnhem The Netherlands</p> <p>Restriction of Hazardous Substances Directive (RoHS) (2011/ 65/ EU) with Amendment 2015/863/EU ENS0581: 2012 Technical documentation for the assessment 01 electrical and electronic products with respect to the restriction 01 hazardous substances.</p>	

A4. Hazardous Locations Certifications

AGENCY	MSG Code	TYPE OF PROTECTION	Electrical Parameters	Ambient Temperature
FM Approvals™ (USA)	F1	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 ec 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	Intrinsically Safe 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
		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
		Dust-Ignition proof Class II, Division 1, Groups E, F, G; T5 Zone 21, AEx tb IIIC T95°C Db		
		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 ec 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
Enclosure			TYPE 4X/ IP66	
Standards : 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 60079-7 : 2017				

AGENCY	MSG Code	TYPE OF PROTECTION	Electrical Parameters	Ambient Temperature
CSA-Canada and USA	C1	Intrinsically Safe 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
		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 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	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	T4: -40°C to +70°C
		Non-Incendive and Zone 2 Intrinsically Safe 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
		Enclosure: Type 4X/ IP66/ IP67		

Standards: 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	Intrinsically Safe Certificate: SIRA 17ATE2162X Ex ia IIC T4 Ga	Note 2	T4: -40°C to +70°C
		Non Sparking and Zone 2 Intrinsically Safe Certificate: SIRA 17ATE4161X Ex ec IIC T4 Gc Ex ic IIC T4 Gc	Note 1 Note 2 for "ic"	T4: -40°C to +70°C
	A2	Flameproof Certificate: SIRA 17ATE2162X Ex db IIC T6..T5 Gb Ex tb IIIC T95°C Db 95°C Db	Note 1	T6: -40°C to +65°C T95°C/T5: -40°C to +85°C
		Intrinsically Safe Certificate: SIRA 17ATE2162X Ex ia IIC T4 Ga	Note 2	T4: -40°C to +70°C
		Category 3 Increased Safety Intrinsically Safe Certificate: SIRA 17ATE4161X Ex ec IIC T4 Gc 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		

AGENCY	MSG Code	TYPE OF PROTECTION	Electrical Parameters	Ambient Temperature
IECEX	E1	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	Flameproof Certificate: SIR 17.0035X Ex db IIC T6..T5 Gb Ex tb IIIC T95°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- Increased Safety and Intrinsically Safe Certificate: SIR 17.0035X Ex ec IIC T4 Gc 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; IEC 60079-7 : 2015		

AGENCY	MSG Code	TYPE OF PROTECTION	Electrical Parameters	Ambient Temperature
CCoE INDIA	P1	Intrinsically Safe Certificate: P417399/1 Ex ia IIC T4 Ga	Note 2	T4: -40°C to +70°C
	P2	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 Enclosure: IP66/ IP67	Note 2	T4: -40°C to +70°C
NEPSI (China)	N1	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	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 Enclosure: IP66/ IP67	Note 2	T4: -40°C to +85°C

AGENCY	MSG Code	TYPE OF PROTECTION	Electrical Parameters	Ambient Temperature
SAEx South Africa	S1	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	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 Enclosure: IP66/ IP67	Note 2	T4: -40°C to +85°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

A.5 WARNINGS and Cautions:

Intrinsically Safe and Non-Incendive Equipment:

WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR USE IN HAZARDOUS LOCATIONS.

Explosion-Proof/ Flameproof:

WARNING: DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT

Non-Incendive Equipment:

WARNING: DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE MAYBE PRESENT

All Protective Measures:

WARNING: FOR CONNECTION IN AMBIENTS ABOVE 60°C USE WIRE RATED 105°C

A.6 Conditions of Use" for Ex Equipment", Hazardous Location Equipment or "Schedule of Limitations":

The installer shall provide transient over-voltage protection external to the equipment such that the voltage at the supply terminal of the equipment does not exceed 140% of the voltage rating of the equipment.

Intrinsically Safe: Must be installed per drawing 50133855

Division 2: This equipment is suitable for use in a Class I, Division 2, Groups A, B, C, D; T4 or Non-Hazardous Locations Only.

Transmitter only Selection:

For US Installations: The transmitter is to be installed within an enclosure with a minimum degree of protection of IP54 in accordance with ANSI/ISA 60079-15 and in a tool-secured enclosure which meets the requirements of ANSI/ISA 60079-0 and ANSI/ISA 60079-15 and the ultimate application.

For ATEX or IECEx: The transmitter is to be installed within an enclosure with a minimum degree of protection of IP54 in accordance with EN/ IEC 60079-7 and in a tool-secured enclosure which meets the requirements of EN/ IEC 60079-0 and EN/ IEC 60079-15 and the ultimate application.

Transmitter in Enclosure Selections:

Consult the manufacturer for dimensional information on the flameproof joints for repair.

Painted surface of the Aluminum Enclosure may store electrostatic charge and become a source of ignition in applications with a low relative humidity less than approximately 30% relative humidity where the painted surface is relatively free of surface contamination such as dirt, dust or oil. Cleaning of the painted surface should only be done with a damp cloth.

The enclosure is manufactured from low copper aluminum alloy. In rare cases, ignition sources due to impact and friction sparks could occur. This shall be considered during Installation, particularly if equipment is installed a Zone 0 location.

If a charge-generating mechanism is present, the exposed metallic part on the enclosure is capable of storing a level of electrostatic that could become Incendive for IIC gases. Therefore, the user/ installer shall implement precautions to prevent the buildup of electrostatic charge, e.g. earthing the metallic part. This is particularly important if equipment is installed a Zone 0 location.

For Installation of the NPT Plug or Adapter follow instructions as outlined in 34-XY-33-03.

A.7 Control Drawing

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PRE REL	ISS	REVISION & DATE	APPD
E	01-DEC-2021	ECN 2021-4827	OJM

STT700 Temperature Transmitter, ANALOG, and HART/DE Communications

- Intrinsically safe installation shall be in accordance with:
 - FM (USA): ANSI/NFPA 70, NEC Articles 504 and 505.
 - CSA (Canada): Canadian Electrical Code (CEC), part I, section 18.
 - ATEX: Requirements of EN 60079-14, 12.3 (See also 5.2.4).
 - IECEx: Requirements of IEC 60079-14, 12.3 (See also 5.2.4).
- ENTITY approved equipment shall be installed in accordance with the manufacturer's Intrinsic Safety Control Drawing.
- The Intrinsic Safety ENTITY concept allows the interconnection of two ENTITY Approved Intrinsically safe devices with ENTITY parameters not specifically examined in combination as a system when:
 $U_o, V_o, \text{ or } V_i \leq U_i \text{ or } V_{max}, I_o, \text{ or } I_i \leq I_i \text{ or } I_{max}; C_a \text{ or } C_o \geq C_i + C_{cable}, L_a \text{ or } L_o \geq L_i + L_{cable}, P_o \leq P_i$
Where two separate barrier channels are required, one dual-channel or two single-channel barriers may be used, where in either case, both channels have been Certified for use together with combined entity parameters that meet the above equations.
- System Entity Parameters:
STT700 Transmitter: $V_{max} V_o, \text{ or } U_o, I_{max} I_o, \text{ or } I_i$
STT700 Transmitter: $C_i + C_{cable} \leq \text{Control Apparatus } C_a$
SMV 800 Transmitter: $L_i + L_{cable} \leq \text{Control Apparatus } L_a$
- When the electrical parameters of the cable are unknown, the following values may be used:
Capacitance: 197pF/m (60 pF/ft)
Inductance: 0.66µH/m (0.020µH/ft).
- Control equipment that is connected to Associated Equipment must not use or generate more than 250 V.
- Associated equipment must be FM, CSA ATEX or IECEx (depending on location) listed. Associated equipment may be installed in a Class I, Division 2 or Zone 2 Hazardous (Classified) location if so approved.
- Non-Galvanically isolated equipment (grounded Zener Barriers) must be connected to a suitable ground electrode per:
 - FM (USA): NFPA 70, Article 504 and 505. The resistance of the ground path must be less than 1.0 ohm.
 - CSA (Canada): Canadian Electrical Code (CEC), part I, section 10.
 - ATEX: Requirements of EN 60079-14, 12.2.4.
 - IECEx: Requirements of IEC 60079-14, 12.2.4.
- Intrinsically Safe Division 1/ Zone 0 WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR USE IN HAZARDOUS LOCATIONS.
- Division 2/ Zone 2: WARNING: DO NOT OPEN WHEN AN EXPLOSIVE GAS ATMOSPHERE IS PRESENT.
- NO REVISION OF THIS CONTROL DRAWING IS PERMITTED WITHOUT AUTHORIZATION FROM THE AGENCIES LISTED.
- For release approvals see ECN 2017-1972.

DRAWN				Honeywell
CHECKED				
DEV ENG				CONTROL DRAWING
MFNG ENG				STT700 SERIES TEMP TRANSMITTER
QA ENG				DIVISIONS 1 & 2 / ZONE 0 & 2
TOLERANCE UNLESS NOTED				
MASTER FILE TYPE: MS WORD				
ANGULAR DIMENSION				
SCALE: None				
USED ON				
SH. 1 OF 4				

STT700 HART/DE WITHOUT LP, WITHOUT INTEGRAL METER OR EU METER (WITHOUT ENCLOSURE)

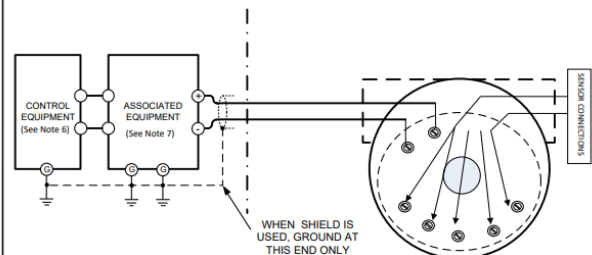
Terminal	ENTITY PARAMETERS (Divisions and Zones Ex Ia and Ex Ic)	Associated Apparatus
1, 2, 3, 4, 5 (Loop)	$U_i \text{ or } V_{max} = 30V$ $I_i \text{ or } I_{max} = 225 \text{ mA}$ $P_i \text{ or } P_{max} = 0.9W$ $C_i = 16 \text{ nF}$ $L_i = 0 \mu H$ $C_o = 31.3 \mu F$ $L_o = 657 \mu H$	$U_o, V_o, \text{ or } V_i \leq 30V$ $I_o \text{ (Isc or It)} \leq 225 \text{ mA}$ $P_o \leq 0.9W$ $C_a \text{ or } C_o \geq C_{cable} + C_{IT700}$ $L_a \text{ or } L_o \geq L_{cable} + L_{IT700}$

NON-HAZARDOUS LOCATION

HAZARDOUS (CLASSIFIED) LOCATION

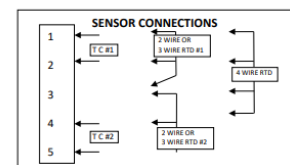
CLASS I DIVISION 1, GROUPS A, B, C, D; CLASS I ZONE 0 IIC/ ZONE 0 IIC

CLASS I DIVISION 2, GROUPS A, B, C, D; CLASS I ZONE 2 IIC/ ZONE 2 IIC



FOR NON INCENDIVE DIV 2 / NON-SPARKING ZONE 2 INSTALLATIONS

CONTROL EQUIPMENT PARAMETERS
Voltage= 35V, Current= 25 mA, Po ≤ 1 W
NOTE: ASSOCIATED EQUIPMENT NOT REQUIRED EXCLUDING NON INCENDIVE FIELD WIRING (NIFW).



Honeywell

A/A4	50133855
SCALE: None	REV E
DATE 12/1/2021	SH. 2 of 4

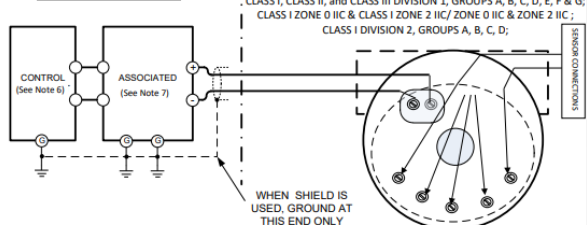
STT700 HART/DE WITH OR WITHOUT LP, WITH OR WITHOUT INTEGRAL METER, WITHOUT EU METER (WITH ENCLOSURE)

Terminal	ENTITY PARAMETERS (Divisions and Zones Ex Ia and Ex Ic)	Associated Apparatus
-, + (Loop)	Ui or Vmax = 30V	Ui, Voc or Vt ≤ 30V
	Ii or Imax = 225 mA	Ii (Isc or It) ≤ 225 mA
	Pi or Pmax = 0.9W	Po ≤ 0.9 W
	Cl = 16 nF	Ca or Co ≥ C _{stable} + C _{trim}
1, 2, 3, 4, 5 (SENSOR)	Li = 0 μH	La or Lo ≥ L _{stable} + L _{trim}
	Co = 31.3 μF	-----
	Lo = 657 μH	-----

NOTE: FOR INTEGRAL METER, STT700 TRANSMITTER SHALL BE THE REVISION LISTED OR LATER:

STT700 TRANSMITTER	REVISION
S1454896-001: SINGLE INPUT, HART COMMUNICATIONS	E
S1454896-002: DUAL INPUT, HART COMMUNICATIONS	E
S1454896-003: SINGLE INPUT, DE COMMUNICATIONS	F

NON-HAZARDOUS LOCATION



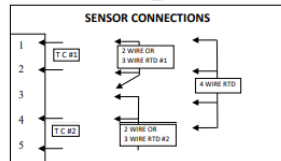
FOR NON INCENDIVE DIV 2 / NON-SPARKING ZONE 2 INSTALLATIONS

CONTROL EQUIPMENT PARAMETERS

Voltage= 35V, Current= 25 mA, Po ≤ 1 W
NOTE: ASSOCIATED EQUIPMENT NOT REQUIRED EXCLUDING
NON INCENDIVE FIELD WIRING (NIFW).

HAZARDOUS (CLASSIFIED) LOCATION

CLASS I, CLASS II, and CLASS III DIVISION 1, GROUPS A, B, C, D, E, F & G;
CLASS I ZONE 0 IIC & CLASS I ZONE 2 IIC/ ZONE 0 IIC & ZONE 2 IIC;
CLASS I DIVISION 2, GROUPS A, B, C, D;



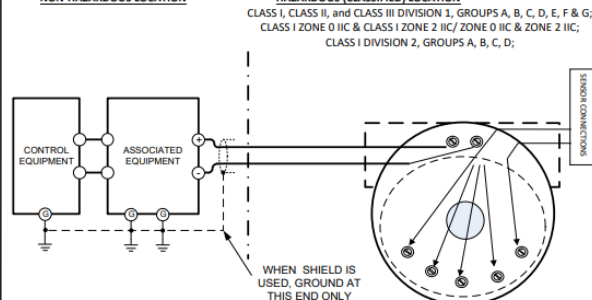
Honeywell

A/A4	50133855
SCALE: None	REV E
DATE	12/1/2021
SH	3 of 4

STT700 HART/DE WITH OR WITHOUT LP, WITHOUT INTEGRAL METER, WITH EU METER (WITH ENCLOSURE)

Terminal	ENTITY PARAMETERS (Divisions and Zones Ex Ia and Ex Ic)	Associated Apparatus
-, + (Terminal Strip)	Ui or Vmax = 30V	Ui, Voc or Vt ≤ 30V
	Ii or Imax = 225 mA	Ii (Isc or It) ≤ 225 mA
	Pi or Pmax = 0.9W	Po ≤ 0.9 W
	Cl = 16 nF	Ca or Co ≥ C _{stable} + C _{trim}
1, 2, 3, 4, 5 (SENSOR)	Li = 0 μH	La or Lo ≥ L _{stable} + L _{trim}
	Co = 31.3 μF	-----
	Lo = 657 μH	-----

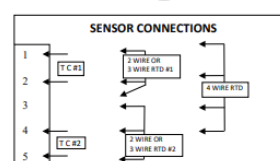
NON-HAZARDOUS LOCATION



FOR NON INCENDIVE DIV 2 / NON-SPARKING ZONE 2 INSTALLATIONS

CONTROL EQUIPMENT PARAMETERS

Voltage= 35V, Current= 25 mA, Po ≤ 1 W
NOTE: ASSOCIATED EQUIPMENT NOT REQUIRED EXCLUDING
NON INCENDIVE FIELD WIRING (NIFW).



Honeywell

A/A4	50133855
SCALE: None	REV E
DATE	12/1/2021
SH	4 of 4

Sales and Service

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

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Toll Free 1300-36-39-36, Toll Free Fax: 1300-36-04-70

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Email: (Sales) FP-Sales-Apps@Honeywell.com

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

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

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

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

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If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace without charge those items it finds defective. The foregoing is Buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

For more information

To learn more about SmartLine transmitters,
visit <https://process.honeywell.com/>

Or contact your Honeywell Account Manager

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34-TT-25-19 Rev.7

May 2023

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