

**STT 650 SmartLine DIN Rail
2-Wire Programmable Temperature
Transmitter**

**Document number: 34-TT-25-10
Version: V104
April 2015**

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STT 650 SMARTLINE DIN RAIL 2-WIRE UNIVERSAL PROGRAMMABLE TEMPERATURE TRANSMITTER

- *RTD, TC, Ohm, or mV input*
- *Extremely high measurement accuracy*
- *Galvanic isolation*
- *Programmable sensor error value*
- *1- or 2-channel version*

APPLICATION

- Linearised temperature measurement with Pt100...Pt1000, Ni100...Ni1000, or TC sensor.
- Conversion of linear resistance variation to a standard analogue current signal, for instance from valves or Ohmic level sensors.
- Amplification of a bipolar mV signal to a standard 4...20 mA current signal.

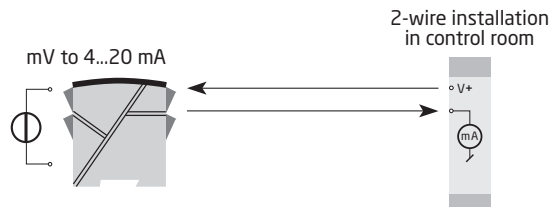
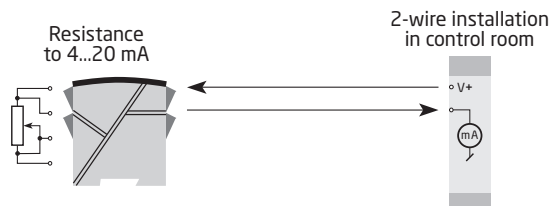
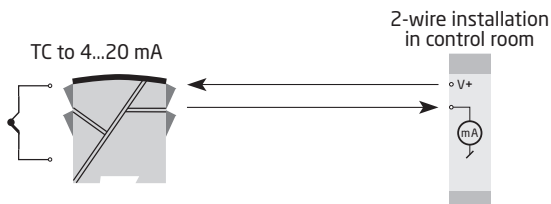
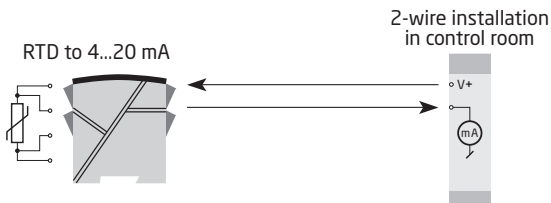
TECHNICAL CHARACTERISTICS

- Within a few seconds the user can program STT 650 UNI PROG to measure temperatures within all ranges defined by the norms.
- The RTD and resistance inputs have cable compensation for 2-, 3- and 4-wire connection.
- Continuous check of vital stored data for safety reasons.

MOUNTING / INSTALLATION

- Mounted vertically or horizontally on a DIN rail. Using the 2-channel version up to 84 channels per metre can be mounted.

APPLICATIONS



ELECTRICAL SPECIFICATIONS

Specifications range:

-40°C to +85°C

Common specifications:

Supply voltage, DC

Standard..... 7.2...35 V

ATEX Ex 7.2...30 VDC

Internal consumption..... 0.17...0.8 W

Voltage drop 7.2 VDC

Isolation voltage, test / operation..... 1.5 kVAC / 50 VAC

Isolation voltage, channel 1 / channel 2:

Standard..... 3.75 kVAC

ATEX Ex 1500 VAC

Warm-up time 5 min.

Communications interface STT17C

Signal / noise ratio Min. 60 dB

Response time (programmable)..... 1...60 s

EEPROM error check..... < 3.5 s

Signal dynamics, input..... 20 bit

Signal dynamics, output..... 16 bit

Calibration temperature..... 20...28°C

Accuracy, the greater of general and basic values:

Sensor Type RTD (2,3,4 wire)	Basic Accuracy*		Rated Range		Minimum Span**	Temperature Effects per 1.0 °C (1.8 °F)*** Change in Ambient Temperature	
	Fixed	% of span	°C	°F		Fixed	% of span
Pt100	0.2°C (0.36°F)	0,05%	-200 to 850	-328 to 1562	25°C (45°F)	0.01°C (0.018°F)	+/- 0.01
Ni 100	0.2°C (0.36°F)	0,05%	-60 to 250	-76 to 482	25°C (45°F)	0.01°C (0.018°F)	+/- 0.01
B	2°C (3.6°F)	0,05%	400 to 1820	+752 to 3308	100°C (180°F)	0.2°C (0.36°F)	+/- 0.01
E	1°C (1.8°F)	0,05%	-100 to 1000	-148 to 1832	50°C (90°F)	0.05°C (0.09°F)	+/- 0.01
J	1°C (0.1.8°F)	0,05%	-100 to 1200	-148 to 2192	50°C (90°F)	0.05°C (0.09°F)	+/- 0.01
K	1°C (0.1.8°F)	0,05%	-180 to 1372	-292 to 2501	50°C (90°F)	0.05°C (0.09°F)	+/- 0.01
L	1°C (0.1.8°F)	0,05%	-100 to 900	-148 to 1652	50°C (90°F)	0.05°C (0.09°F)	+/- 0.01

N	1°C (0.1.8°F)	0,05%	-180 to 1300	-292 to 2372	50°C (90°F)	0.05°C (0.09°F)	+/- 0.01
R	2°C (3.6°F)	0,05%	-50 to 1760	-58 to 320	100°C (180°F)	0.2°C (0.36°F)	+/- 0.01
S	2°C (3.6°F)	0,05%	-50 to 1760	-58 to 3200	100°C (180°F)	0.2°C (0.36°F)	+/- 0.01
T	1°C (1.8°F)	0,05%	-200 to 400	-328 to 752	50°C (90°F)	0.05°C (0.09°F)	+/- 0.01
U	1°C (1.8°F)	0,05%	-200 to 600	-328 to 1112	50°C (90°F)	0.05°C (0.09°F)	+/- 0.01
W3	2°C (3.6°F)	0,05%	0 to 2300	+32 to 4172	100°C (180°F)	0.2°C (0.36°F)	+/- 0.01
W5	2°C (3.6°F)	0,05%	0 to 2300	+32 to 4172	100°C (180°F)	0.2°C (0.36°F)	+/- 0.01
+Lr	2°C (3.6°F)	0,05%	-200 to 800	-328 to 1472	50°C (90°F)	0.2°C (0.36°F)	+/- 0.01
Ohms	0.1 Ω	0,05%	0 to 5000 Ω		30 Ω	10m Ω	+/- 0.01
mV	10μ	0,05%	-12 to 800 mV		5 mV	1μ	+/- 0.01

EMC immunity influence..... < ±0.5% of span

Extended EMC immunity:

NAMUR NE 21, A criterion, burst < ±1% of span

Effect of supply voltage variation < 0.005% of span / VDC
 Max. wire size 1 x 1.5 mm² stranded wire
 Humidity < 95% RH (non-cond.)
 Dimensions 109 x 23.5 x 104 mm
 Protection degree IP20
 Weight (1 / 2 channels) 145 / 185 g

Electrical specifications, input:

Max. offset 50% of selec. max. value

RTD and linear resistance input:

RTD type	Min. value	Max. value	Min. span	Standard
Pt100	-200°C	+850°C	25°C	IEC 60751
Ni100	-60°C	+250°C	25°C	DIN 43760
Lin. R	0 W	5000 W	30 W	-----

Cable resistance per wire (max.) 5 Ω
 Sensor current Nom. 0.2 mA
 Effect of sensor cable resistance
 (3- / 4-wire) < 0.002 Ω/Ω
 Sensor error detection Yes

TC input:

Type	Min. temperature	Max. temperature	Min. span	Standard
B	+400°C	+1820°C	100°C	IEC584
E	-100°C	+1000°C	50°C	IEC584
J	-100°C	+1200°C	50°C	IEC584
K	-180°C	+1372°C	50°C	IEC584
L	-100°C	+900°C	50°C	DIN 43710
N	-180°C	+1300°C	50°C	IEC584
R	-50°C	+1760°C	100°C	IEC584
S	-50°C	+1760°C	100°C	IEC584
T	-200°C	+400°C	50°C	IEC584
U	-200°C	+600°C	50°C	DIN 43710
W3	0°C	+2300°C	100°C	ASTM E988-90
W5	0°C	+2300°C	100°C	ASTM E988-90
LR	-200°C	+800°C	50°C	GOST 3044-84

Cold junction compensation	< $\pm 1.0^{\circ}\text{C}$
Sensor error detection	Yes
Sensor error current:	
When detecting	Nom. 33 μA
Else	0 μA

Voltage input:

Measurement range	-12...800 mV
Min. span	5 mV
Input resistance	10 M Ω

Output:

Current output:

Signal range	4...20 mA
Min. signal range	16 mA
Updating time	440 ms
Output signal at EEprom error	$\leq 3.5 \text{ mA}$
Load resistance	$\leq (V_{\text{supply}} - 7.2) / 0.023 [\Omega]$
Load stability	< $\pm 0.01\%$ of span / 100 Ω

Sensor error detection:

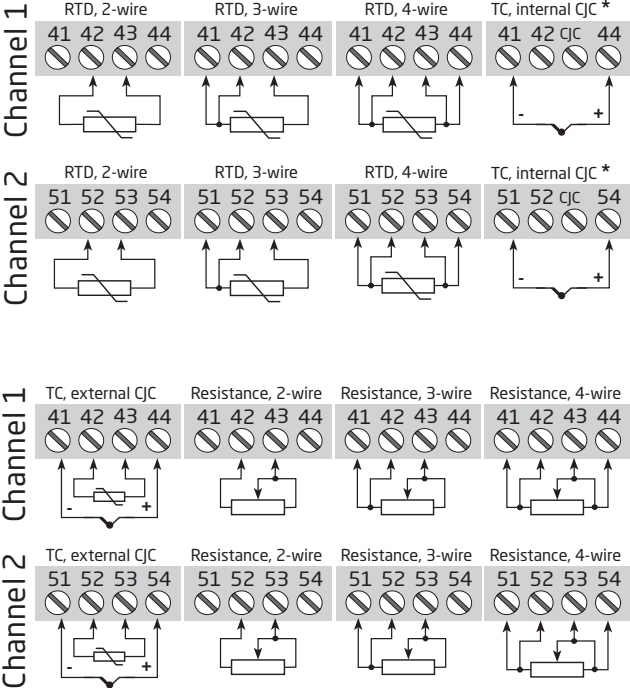
Programmable	3.5...23 mA
Namur NE43 Upscale	23 mA
Namur NE43 Downscale	3.5 mA

Of span = Of the presently selected range

APPROVALS AND CERTIFICATIONS

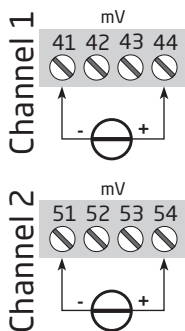
Refer to [Appendix A on page 48](#)

Inputs:

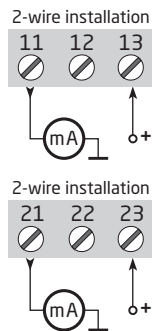


* Terminal Block with built in CJC is supplied as a standard accessory for all the Universal input STT 650 Models

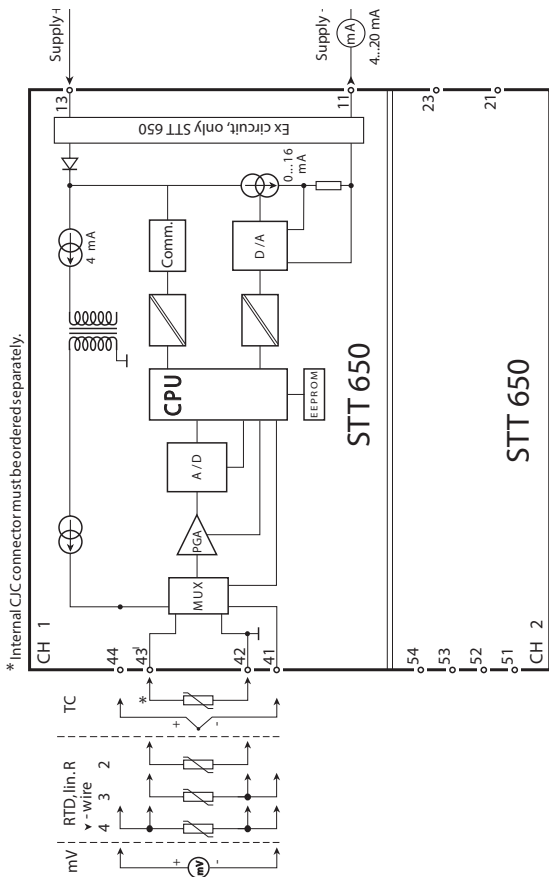
Inputs:



Outputs:

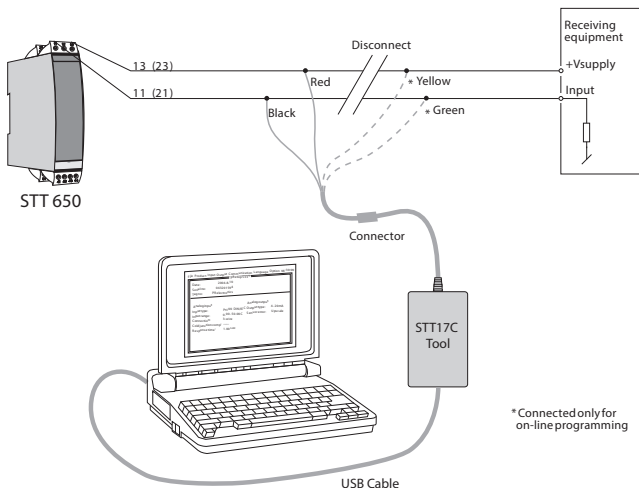


BLOCK DIAGRAM



PROGRAMMING

- STT17C is a communications interface.
- For programming please refer to the drawing below and the help functions in PReset.
- When communicating with non-installed modules, connectors 11, 12, 13 (channel 1) and 21, 22, 23 (channel 2) can be dismantled in the safe area to connect the terminals of the communications interface to the pins.
- STT17C is not approved for communication with modules installed in hazardous (Ex) areas



STT 650 SMARTLINE DIN RAIL 2-WIRE RTD PROGRAMMABLE TEMPERATURE TRANSMITTER

- *RTD or Ohm input*
- *High measurement accuracy*
- *3-wire connection*
- *Programmable sensor error value*
- *1- or 2-channel version*

APPLICATION

- Linearised temperature measurement with Pt100...Pt1000 or Ni100...Ni1000 sensor.
- Conversion of linear resistance variation to a standard analogue current signal, for instance from valves or Ohmic level sensors.

TECHNICAL CHARACTERISTICS

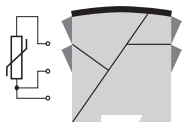
- Within a few seconds the user can program STT 650 RTD PROG to measure temperatures within all RTD ranges defined by the norms.
- The RTD and resistance inputs have cable compensation for 3-wire connection.
- A limit can be programmed on the output signal.

MOUNTING / INSTALLATION

- Mounted vertically or horizontally on a DIN rail. Using the 2-channel version up to 84 channels per metre can be mounted.

APPLICATIONS

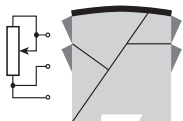
RTD to 4...20 mA



2-wire installation
in control room



Resistance
to 4...20 mA



2-wire installation
in control room



ELECTRICAL SPECIFICATIONS

Specifications range:

-40°C to +85°C

Common specifications:

Supply voltage, DC

Standard..... 8...35 VDC

ATEX Ex 8...30 VDC

Internal consumption..... 0.19...0.8 W

Voltage drop 8 VDC

Isolation voltage, channel 1 / channel 2:

Standard..... 3.75 kVAC

ATEX Ex 1500 VAC

Warm-up time 5 min.

Communications interface STT17C

Signal / noise ratio Min. 60 dB

Response time (programmable)..... 0.33...60 s

Signal dynamics, input..... 19 bit

Signal dynamics, output..... 16 bit

Calibration temperature 20...28°C

Accuracy, the greater of general and basic values:

Sensor Type RTD (2,3,4 wire)	Basic Accuracy*		Rated Range		Minimum Span**	Temperature Effects per 1.0 °C (1.8 °F)*** Change in Ambient Temperature	
	Fixed	% of span	°C	°F		Fixed	% of span
Pt100	0.3°C (32.54°F)	+/- 0.1	-200 to 850	-328 to 1562	25°C (45°F)	0.01°C (0.018°F)	+/- 0.01
Ni 100	0.3°C (32.54°F)	+/- 0.1	-60 to 250	-76 to 482	25°C (45°F)	0.01°C (0.018°F)	+/- 0.01
Ohms	0.2 Ω	+/- 0.1	0 to 10000 Ω		30 Ω	20 mΩ	+/- 0.01

EMC immunity influence < ±0.5% of span
--

Effect of supply voltage variation ≤ 0.005% of span / VDC

Max. wire size..... 1 x 1.5 mm² stranded wire

Humidity..... < 95% RH (non-cond.)

Dimensions (H x W x D)..... 109 x 23.5 x 104 mm

Protection degree IP20

Weight (1 / 2 channels)..... 145 / 185 g

Electrical specifications, inputs:

Max. offset..... 50% of selec. max. value

RTD and linear resistance inputs:

RTD type	Min. value	Max. value	Min. span	Standard
Pt100	-200°C	+850°C	25°C	IEC 60751
Ni100	-60°C	+250°C	25°C	DIN 43760
Lin. R	0 Ω	10000 Ω	30 Ω	-----

Cable resistance per wire (max.)..... 10 Ω

Sensor current > 0.2 mA, < 0.4 mA

Effect of sensor cable resistance

(3-wire) < 0.002 Ω / Ω

Sensor error detection Yes

Outputs:

Current outputs:

Signal range 4...20 mA

Min. signal range..... 16 mA

Updating time 135 ms

Load resistance $\leq (V_{\text{supply}} - 8) / 0.023 [\Omega]$

Load stability..... < $\pm 0.01\%$ of span / 100 Ω

Sensor error detection:

Programmable..... 3.5...23 mA

NAMUR NE43 Upscale..... 23 mA

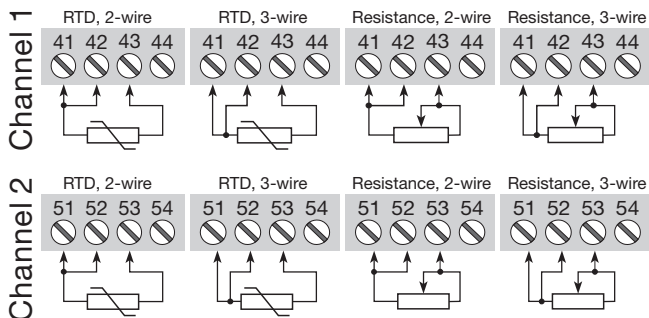
NAMUR NE43 Downscale..... 3.5 mA

Of span = Of the presently selected range

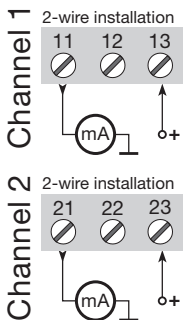
APPROVALS AND CERTIFICATES

Refer to [Appendix A on page 48](#)

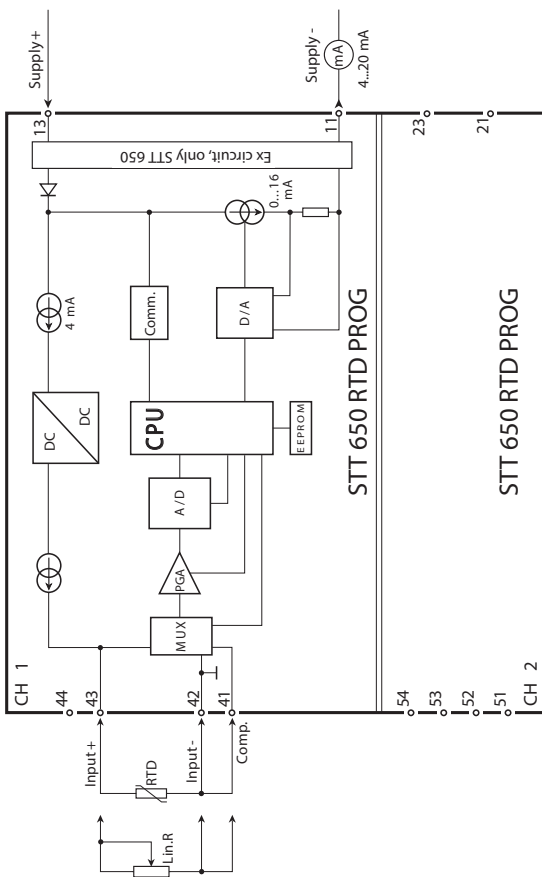
Inputs:



Outputs:

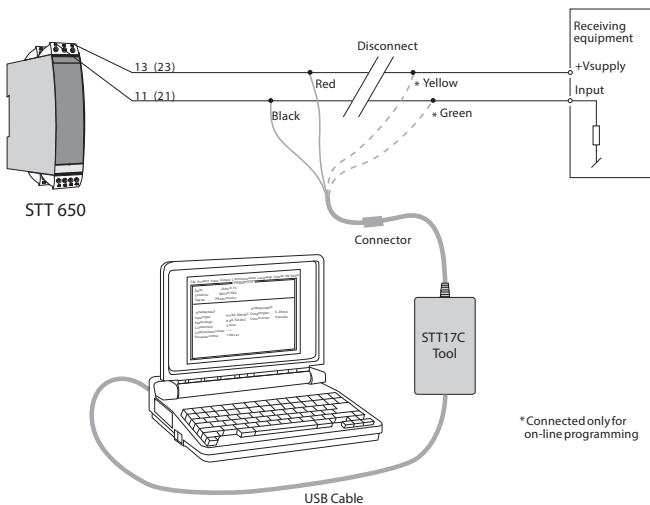


BLOCK DIAGRAM



PROGRAMMING

- STT17C is powered by a USB connection communications interface that is needed for programming STT 650 Programmable and HART devices.
- For programming please refer to the drawing below and the help functions in STT17C.
- When communicating with non-installed modules, connectors 11, 12, 13 (channel 1) and 21, 22, 23 (channel 2) can be dismantled to connect the terminals of the communications interface to the pins.
- STT17C is not approved for communication with modules installed in hazardous (Ex) area.



STT 650 UNIVERSAL INPUT 2-WIRE HART® TRANSMITTER

- *RTD, TC, Ohm, or mV input*
- *2 analogue inputs and 5 device variables with status available*
- *HART 7*
- *Hardware assessed for use in SIL applications*
- *Mounting on a DIN rail in safe area or hazardous gas and dust area*

APPLICATION

- Linearised temperature measurement with TC and RTD sensors e.g Pt100 and Ni100.
- HART® communication and 4...20 mA analogue PV output for individual, difference or average temperature measurement of up to two RTD or TC input sensors.
- Conversion of linear resistance to a standard analogue current signal, e.g from valves or Ohmic level sensors.
- Amplification of bipolar mV signals to standard 4...20 mA current signals.
- Up to 63 transmitters (HART® 7) can be connected in a multidrop communication setup.

TECHNICAL CHARACTERISTICS

- The HART® 7 protocol offers:
 - Long Tag numbers of up to 32 characters.
 - Enhanced Burst Mode and Event notification with time stamping.
 - Device variable and status mapping to any dynamic variable PV, SV, TV or QV.
 - Process signal trend measurement with logs and summary data.
 - Automatic event notification with time stamps.
 - Command aggregation for higher communication efficiency.
- STT 650 HART is designed according to strict safety requirements and is therefore suitable for applications in SIL installations.
- Continuous check of vital stored data.
- Meeting the NAMUR NE 21 recommendations, the STT 650 HART HART transmitter ensures top measurement performance in harsh EMC environments. Additionally, the STT 650 HART meets NAMUR NE43 and NE89 recommendations.

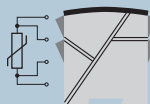
MOUNTING / INSTALLATION / PROGRAMMING

- DIN rail mounting with up to 84 channels per metre.
- Configuration via standard HART® communication interfaces or by STT17C PC Tool.

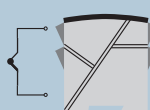
Ex graphic

Applications

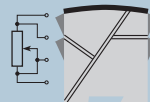
RTD to 4...20 mA



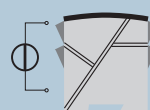
TC to 4...20 mA



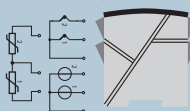
Resistance
to 4...20 mA



mV to 4...20 mA



Difference or average
RTD, TC or mV



2-wire installation
in control room



2-wire installation
in control room



2-wire installation
in control room



2-wire installation
in control room



2-wire installation
in control room



TECHNICAL DATA

Environmental conditions:

Specifications range	-40°C to +85°C
Storage temperature.....	-40°C to +85°C
Calibration temperature	20...28°C
Relative humidity	< 95% RH (non-cond.)
Protection degree	IP20

Mechanical specifications:

Dimensions (HxWxD).....	109 x 23.5 x 104 mm
Weight approx., 1- / 2-ch. version	150 / 200 g
Rail type.....	DIN EN 60715 - 35mm
Wire size.....	0.13...2.08 mm ² / AWG
	26...14 stranded wire
Screw terminal torque.....	0.5 Nm

Common electrical specifications:

Supply voltage, DC:

Standard.....	8.0...35 V
ATEX, CSA, FM & IECEx	8...30 VDC
Voltage drop	8.0 V
Isolation voltage, test / operation.....	1.5 kVAC / 50 VAC

Isolation voltage, channel 1 / channel 2:

Standard.....	3.75 kVAC
ATEX, CSA, FM & IECEx	1.5 kVAC
Signal / noise ratio	> 60 dB
Communications interface	STT17C PC Tool & HART [®]
Response time (programmable).....	1...60 s

Accuracy, the greater of general and basic values:

Sensor Type RTD (2,3,4 wire)	Basic Accuracy*		Rated Range		Minimum Span**	Temperature Effects per 1.0 °C (1.8 °F)*** Change in Ambient Temperature	
	Fixed	% of span	°C	°F		Fixed	% of span
Pt50	0.1°C (1.8°F)	0,05%	-200 to 850	-328 to 1562	25°C (45°F)	0.005°C (0.009°F)	+/- 0.005
Pt100	0.1°C (1.8°F)	0,05%	-200 to 850	-328 to 1562	25°C (45°F)	0.005°C (0.009°F)	+/- 0.005
Pt200	0.1°C (1.8°F)	0,05%	-200 to 850	-328 to 1562	25°C (45°F)	0.005°C (0.009°F)	+/- 0.005

Pt500	0.1°C (1.8°F)	0,05%	-200 to 850	-328 to 1562	25°C (45°F)	0.005°C (0.009°F)	+/- 0.005
Pt1000	0.1°C (1.8°F)	0,05%	-200 to 850	-328 to 1562	25°C (45°F)	0.005°C (0.009°F)	+/- 0.005
Ni 100	0.2°C (0.36°F)	0,05%	-60 to 250	-76 to 482	25°C (45°F)	0.1°C (0.18°F)	+/- 0.005
B ^{1,2,3}	1°C (1.8°F)	0,05%	0 to 1820	+32 to 3308	100°C (180°F)	0.1°C (0.18°F)	+/- 0.005
E	0.5°C (0.9°F)	0,05%	-100 to 1000	-148 to 1832	50°C (90°F)	0.025°C (0.045°F)	+/- 0.005
J	0.5°C (0.9°F)	0,05%	-100 to 1200	-148 to 2192	50°C (90°F)	0.025°C (0.045°F)	+/- 0.005
K	0.5°C (0.9°F)	0,05%	-180 to 1372	-292 to 2501	50°C (90°F)	0.025°C (0.045°F)	+/- 0.005
L	0.5°C (0.9°F)	0,05%	-100 to 900	-148 to 1652	50°C (90°F)	0.025°C (0.045°F)	+/- 0.005
N	0.5°C (0.9°F)	0,05%	-180 to 1300	-292 to 2372	50°C (90°F)	0.025°C (0.045°F)	+/- 0.005
R	1°C (1.8°F)	0,05%	-50 to 1760	-58 to 3200	100°C (180°F)	0.1°C (0.18°F)	+/- 0.005
S	1°C (1.8°F)	0,05%	-50 to 1760	-58 to 3200	100°C (180°F)	0.1°C (0.18°F)	+/- 0.005
T	0.5°C (0.9°F)	0,05%	-200 to 400	-328 to 752	25°C (45°F)	0.025°C (0.045°F)	+/- 0.005
U	0.5°C (0.9°F)	0,05%	-200 to 600	-328 to 1112	50°C (90°F)	0.025°C (0.045°F)	+/- 0.005
W3	1°C (1.8°F)	0,05%	0 to 2300	+32 to 4172	130°C (234°F)	0.1°C (0.18°F)	+/- 0.005
W5	1°C (1.8°F)	0,05%	0 to 2300	+32 to 4172	130°C (234°F)	0.1°C (0.18°F)	+/- 0.005
+Lr	1°C (1.8°F)	0,05%	-200 to 800	-328 to 1472	50°C (90°F)	0.1°C (0.18°F)	+/- 0.005
Ohms	0.1 Ω	0,05%	0 to 7000 Ω		25 Ω	5 mΩ	+/- 0.005
mV	10μ	0,05%	-800 to 800 mV		2.5 mV	0.5μ	+/- 0.005

TC B¹ accuracy specification range..... > 400°C
 TC B² accuracy specification range..... > 160°C < 400°C
 TC B³ accuracy specification range..... > 85°C < 160°C
 TC B⁴ accuracy specification range..... < 85°C

TC cold junction compensation..... < ±1.0°C
 Max. offset on input signal 50% of selec. max. value

EMC immunity influence.....	< ±0.1% of span
Extended EMC immunity:	
NAMUR NE 21, A criterion, burst.....	< ±1% of span

Input specifications:

RTD input types:

Pt50, Pt100, Pt200, Pt500, Pt1000, Ni50, Ni100, Ni120, Ni1000

RTD type	Min. value	Max. values	Min. span	Standard
Pt100	-200°C	+850°C	10°C	IEC 60751
Ni100	-60°C	+250°C	10°C	DIN 43760
Lin. R	0 Ω	7000 Ω	25 Ω	-----

Cable resistance per wire (max.)..... 5 Ω
 (up to 50 Ω per wire is possible with reduced measurement accuracy)

Sensor current..... Nom. 0.2 mA

TC input types:

Type	Min. temperature	Max. temperature	Min. span	Standard
B	0°C	+1820°C	100°C	IEC584
E	-100°C	+1000°C	50°C	IEC584
J	-100°C	+1200°C	50°C	IEC584
K	-180°C	+1372°C	50°C	IEC584
L	-200°C	+900°C	50°C	DIN 43710
Lr	-200°C	+800°C	50°C	GOST 3044-84
N	-180°C	+1300°C	50°C	IEC584
R	-50°C	+1760°C	100°C	IEC584
S	-50°C	+1760°C	100°C	IEC584
T	-200°C	+400°C	50°C	IEC584
U	-200°C	+600°C	50°C	DIN 43710
W3	0°C	+2300°C	100°C	ASTM E988-90
W5	0°C	+2300°C	100°C	ASTM E988-90

Cold junction compensation (CJC):

Constant, internal or external via a Pt100 or Ni100 sensor

mV input:

Voltage input range -800...+800 mV

Min. span 2.5 mV

Input resistance 10 MΩ

Output specifications and HART®:

Signal range 4...20 mA

Min. signal range 16 mA

Updating time 440 ms

Load resistance $\leq (V_{\text{supply}} - 8) / 0.023 \text{ [}\Omega\text{]}$

Sensor error detection, programmable 3.5...23mA

(shorted sensor error detection is ignored at TC and mV input)

NAMUR NE43 Upscale 23 mA

NAMUR NE43 Downscale 3.5 mA

HART® protocol revisions HART® 7

Functional Safety:

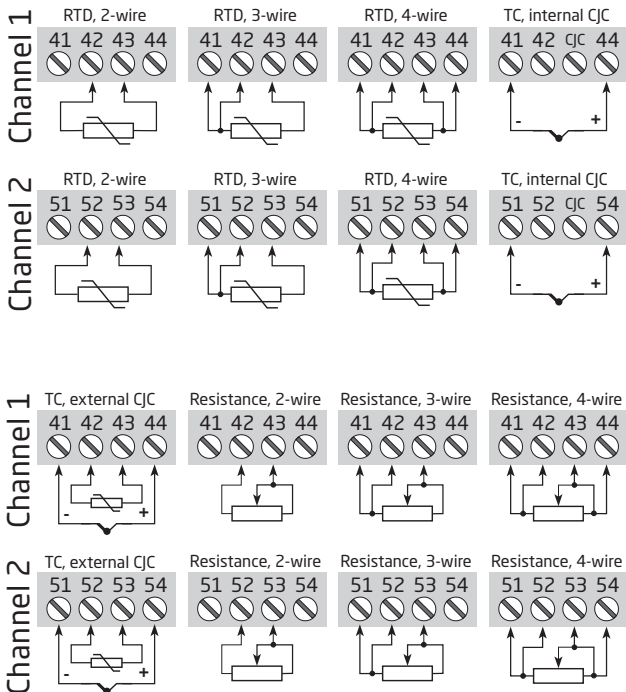
Hardware assessed for use in SIL applications

FMEDA report - www.honeywellprocess.com

APPROVALS AND CERTIFICATES

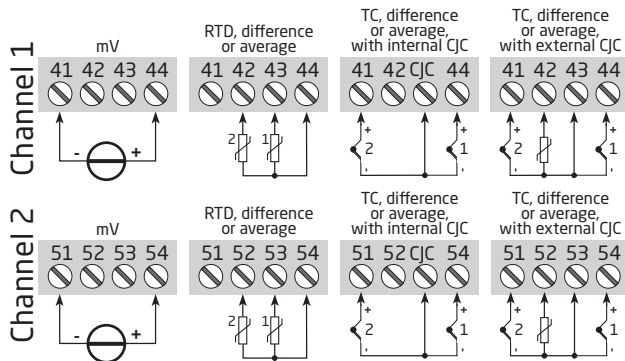
Refer to [Appendix A on page 48](#)

Inputs:

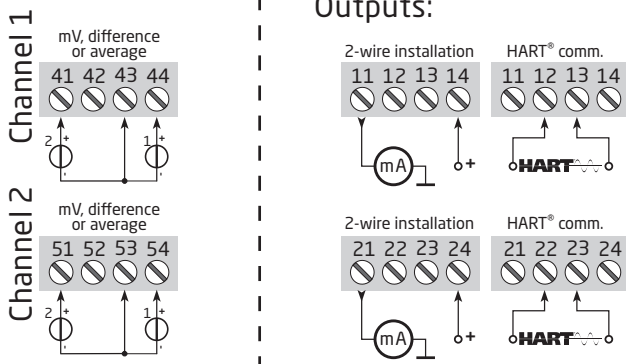


* Terminal Block with built in CJC is supplied as a standard accessory for all the Universal input STT 650 Models

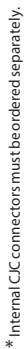
Inputs:



Outputs:



BLOCK DIAGRAM



PROGRAMMING

STT 650 HART Variant can be configured in the following 2 ways:

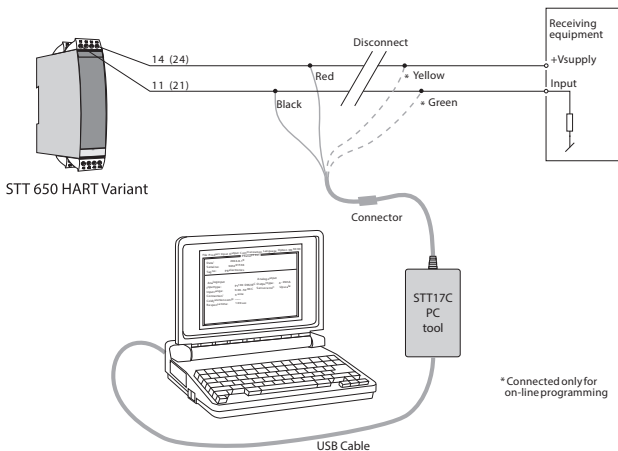
1. With Honeywell' STT17C PC based communication tool
2. With a MCT404 Communicator with Honeywell' DDL driver.

1: STT17C PC Tool

For programming please refer to the drawing below and the help functions in STT17C.

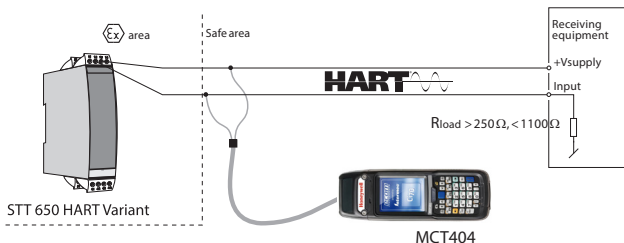
When communicating with non-installed devices, connectors 11, 12, 13, 14 (channel 1) and 21, 22, 23, 24 (channel 2) can be dismantled in the safe area to connect the terminals of the communications interface to the pins.

STT17C PC Tool is not approved for communication with devices installed in hazardous (Ex) area.



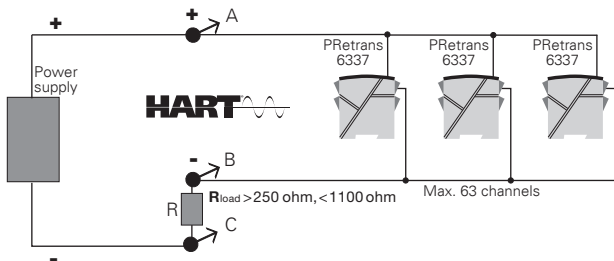
2: HART® communicator

For programming please refer to the drawing below. To get access to product-specific commands, the HART® communicator must be loaded with the Honeywell DDL driver. This can be ordered either at the HART® Communication Foundation or Honeywell.



CONNECTION OF TRANSMITTERS IN MULTIDROP MODE

- The HART® communicator or a PC modem can be connected across AB or BC.
- The outputs of max. 63 transmitters can be connected in parallel for a digital HART® communication on 2-wires.



- Before it is connected, each transmitter must be configured with a unique number from 1 to 63. If 2 transmitters are configured with the same number, both will be excluded. The transmitters must be programmed for multidrop mode (with a fixed output signal of 4 mA). Maximum current in the loop is therefore 252 mA.
- The communication is either by means of a HART® communicator or a HART® modem.
- The STT17C PC configuration software can configure the individual transmitter for multidrop mode and provide it with a unique polling address.

PROFIBUS[®] PA / FOUNDATION[™] FIELDBUS TRANSMITTER

PReTrans STT 650 Fieldbus/Profibus

PROFIBUS[®] AND FOUNDATION[™] FIELDBUS TRANSMITTER

- *PROFIBUS[®] PA ver. 3.0*
- *FOUNDATION[™] Fieldbus ver. ITK 4.6*
- *FISCO-certified*
- *1- or 2-channel version*

** Profibus and Foundation Fieldbus are separate devices

APPLICATION

- Linearised temperature measurement with RTD or TC sensor.
- Converts analogue mA signals into digital values on the bus communication.
- Difference, average or redundancy temperature measurement with RTD or TC sensor.
- Linear resistance, potentiometer and bipolar mV measurement.

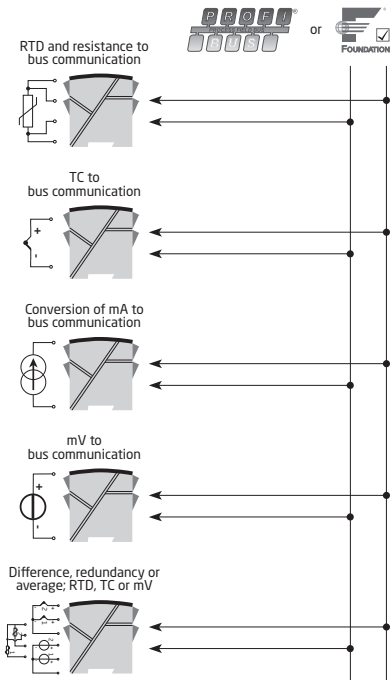
TECHNICAL CHARACTERISTICS - FOUNDATION FIELDBUS

- FOUNDATION[™] Fieldbus via Honeywell Experion software.
- Built-in simulation mode function.
- Polarity-independent bus connection.
- 24 bit A/D converter ensures high resolution.
- FOUNDATION[™] Fieldbus function blocks: 2 analogue and 1 PID.
- FOUNDATION[™] Fieldbus capability: LAS or Basic.

TECHNICAL CHARACTERISTICS - PROFIBUS

- Set-up for PROFIBUS® PA can be done via Honeywell Experion Software
- PROFIBUS® PA function blocks: 2 analogue.

APPLICATIONS



MOUNTING / INSTALLATION

- Mounted vertically or horizontally on a DIN rail. Using the 2-channel version up to 84 channels per metre can be mounted.

ELECTRICAL SPECIFICATIONS

Specifications range:

-40°C to +85°C

Common specifications:

Supply voltage, DC

Standard..... 9.0...32 V

CSA, FM & ATEX 9.0...30 V

Internal consumption per channel..... < 11 mA

Isolation voltage, test..... 1.5 kVAC for 60 s

Isolation voltage, operation..... 50 VRMS / 75 VDC

Warm-up time 30 s

Signal / noise ratio Min. 60 dB

Response time (programmable)..... 1...60 s

Response time (bus communication)..... 100 ms

Signal dynamics, input..... 24 bit

Calibration temperature 20...28°C

Sensor Type RTD (2,3,4 wire)	Basic Accuracy*		Rated Range		Temperature Effects per 1.0 °C (1.8 °F)*** Change in Ambient Temperature	
	Fixed	% of reading	°C	°F	Fixed	% of reading
Pt100	0.1°C (1.8°F)	0,05%	-200 to 850	-328 to 1562	0.002°C (0.0036°F)	+/- 0.002
Pt1000	0.1°C (1.8°F)	0,05%	-200 to 850	-328 to 1562	0.002°C (0.0036°F)	+/- 0.002
Ni 100	0.15°C (0.27°F)	0,05%	-60 to 250	-76 to 482	0.002°C (0.0036°F)	+/- 0.002
Cu10	01.3°C (0.23°F)	0,05%	-200 to 260	-328 to 500	0.02°C (0.0036°F)	+/- 0.002
B	1°C (1.8°F)	0,05%	0 to 1820	+32 to 3308	0.025°C (0.045°F)	+/- 0.002
E	0.5°C (0.9°F)	0,05%	-100 to 1000	-148 to 1832	0.01°C (0.018°F)	+/- 0.002
J	0.5°C (0.9°F)	0,05%	-100 to 1200	-148 to 2192	0.01°C (0.018°F)	+/- 0.002
K	0.5°C (0.9°F)	0,05%	-180 to 1372	-292 to 2501	0.01°C (0.018°F)	+/- 0.002
L	0.5°C (0.9°F)	0,05%	-200 to 900	-328 to 1652	0.01°C (0.018°F)	+/- 0.002
N	0.5°C (0.9°F)	0,05%	-180 to 1300	-292 to 2372	0.01°C (0.018°F)	+/- 0.002

R	1°C (1.8°F)	0,05%	-50 to 1760	-58 to 3200	0.025°C (0.045°F)	+/- 0.002
S	1°C (1.8°F)	0,05%	-50 to 1760	-58 to 3200	0.025°C (0.045°F)	+/- 0.002
T	0.5°C (0.9°F)	0,05%	-200 to 400	-328 to 752	0.01°C (0.018°F)	+/- 0.002
U	0.5°C (0.9°F)	0,05%	-200 to 600	-328 to 1112	0.01°C (0.018°F)	+/- 0.002
W3	1°C (1.8°F)	0,05%	0 to 2300	+32 to 4172	0.025°C (0.045°F)	+/- 0.002
W5	1°C (1.8°F)	0,05%	0 to 2300	+32 to 4172	0.025°C (0.045°F)	+/- 0.002
mA	+/-1μA	0,05%	-100 to 100		0.06μA/°C	+/- 0.003
Ohms	0.05W	0,05%	0 to 7000W		2 mW	+/- 0.002

EMC immunity influence < ±0.1% of reading
 Extended EMC immunity:
 NAMUR NE 21, A criterion, burst < ±1% of reading

mV	10m	0,05%	-800 to 800 mV	0.2m	+/- 0.002
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Effect of supply voltage variation < 0.005% of reading / VDC
 Max. wire size..... 1 x 2.5 mm² stranded wire
 Screw terminal torque..... 0.5 Nm
 Humidity < 95% RH (non cond.)
 Dimensions (H x B x D) 109 x 23.5 x 104 mm
 DIN rail type..... DIN 46277
 Protection degree IP20
 Weight (1 / 2 channels)..... 145 / 185 g

Electrical specifications, input:

RTD and linear resistance input:

RTD type	Min. value	Max. value	Standard
Pt25...Pt1000	-200°C	+850°C	IEC 60751 / JIS C 1604
Ni25...Ni1000	-60°C	+250°C	DIN 43760
Cu10...Cu1000	-50°C	+200°C	α = 0.00427
Lin. resistance	0 Ω	10 kΩ	-
Potentiometer	0 Ω	100 kΩ	-

Cable resistance per wire 50 Ω

Sensor current Nom. 0.2 mA
 Effect of sensor cable resistance (3- / 4-wire) < 0.002 Ω / Ω
 Sensor error detection Yes
 Short circuit detection < 15 Ω
 Bipolar current input:
 Measurement range -100...+100 mA
 Input resistance 10 Ω + PTC < 20 Ω
 Cable breakage detection (4...20 mA) < 0,3 mA
 Bipolar mV input:
 Measurement range -800...+800 mV
 Min. measurement range (span) 2.5 mV
 Input resistance 10 M Ω
 Short circuit detection < 3 mV

TC input:

Type	Min. value	Max. value	Standard
B	+400°C	+1820°C	IEC 60584-1
E	-100°C	+1000°C	IEC 60584-1
J	-100°C	+1200°C	IEC 60584-1
K	-180°C	+1372°C	IEC 60584-1
L	-200°C	+900°C	DIN 43710
N	-180°C	+1300°C	IEC 60584-1
R	-50°C	+1760°C	IEC 60584-1
S	-50°C	+1760°C	IEC 60584-1
T	-200°C	+400°C	IEC 60584-1
U	-200°C	+600°C	DIN 43710
W3	0°C	+2300°C	ASTM E988-90
W5	0°C	+2300°C	ASTM E988-90
Ext. CJC	-40°C	+135°C	IEC60751

Cold junction compensation (CJC) < ± 0.5 °C
 Sensor error detection Yes
 Sensor error current:
 when detecting nom. 2 μ A
 else 0 μ A
 Short circuit detection < 3 mV

Output:

PROFIBUS[®] PA connection:

PROFIBUS[®] PA protocol Profile A&B, ver. 3.0
 PROFIBUS[®] PA protocol standard EN 50170 vol. 2
 PROFIBUS[®] PA address (at delivery) 126
 PROFIBUS[®] PA function blocks 2 analogue

FOUNDATION™ Fieldbus connection:

FOUNDATION™ Fieldbus protocol	FF protocol
FOUNDATION™ Fieldbus protocol standard	FF design specifications
FOUNDATION™ Fieldbus capability.....	LAS or Basic
FOUNDATION™ Fieldbus version.....	ITK 4.6
FOUNDATION™ Fieldbus function blocks	2 analogue and 1 PID

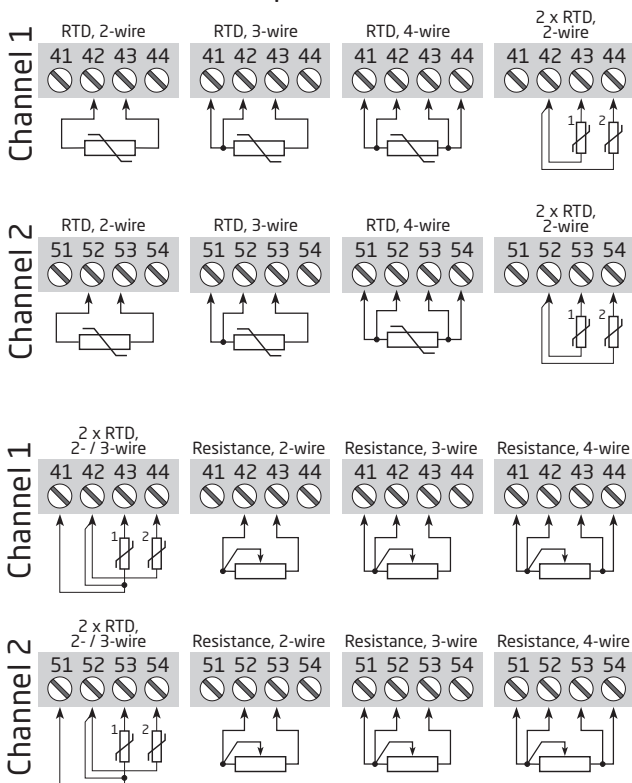
APPROVALS AND CERTIFICATES

Refer to [Appendix A on page 48](#)

CONNECTIONS

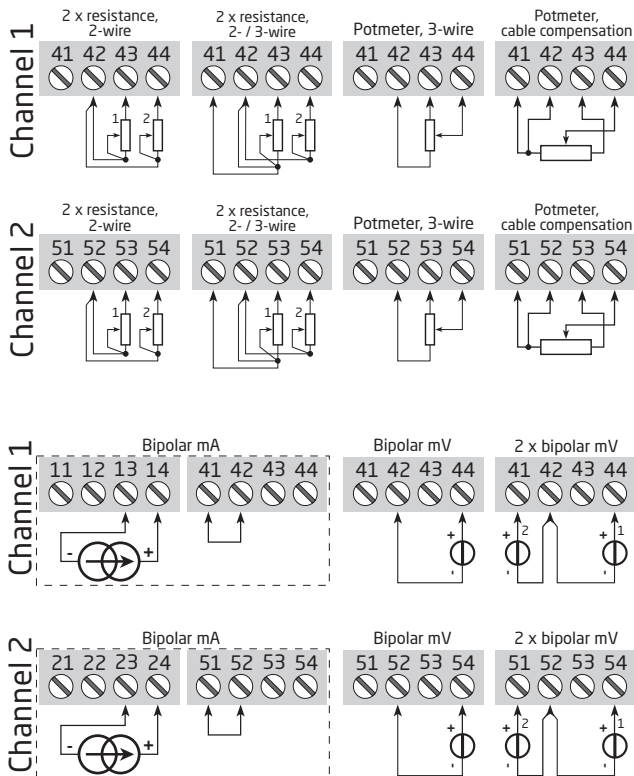
Connections with two sensors can be configured for two measurements, difference, average or redundancy

Inputs:



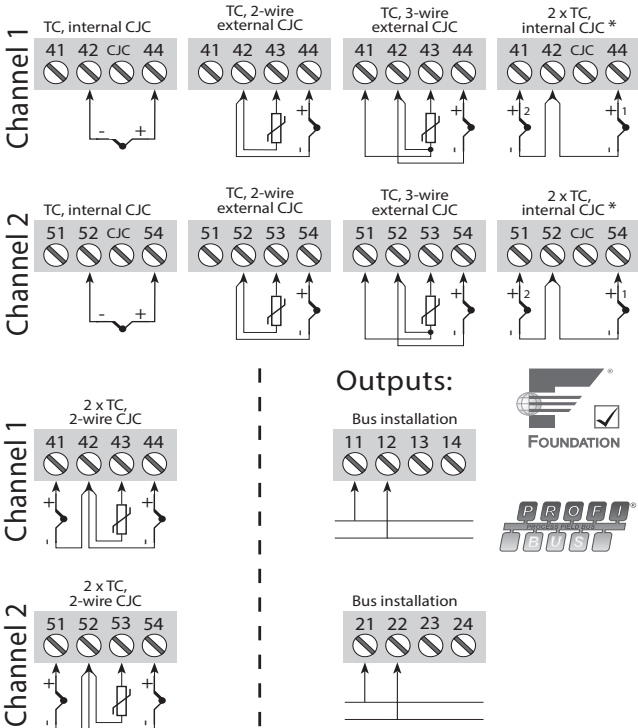
Connections with two sensors can be configured for two measurements, difference, average or redundancy

Inputs:



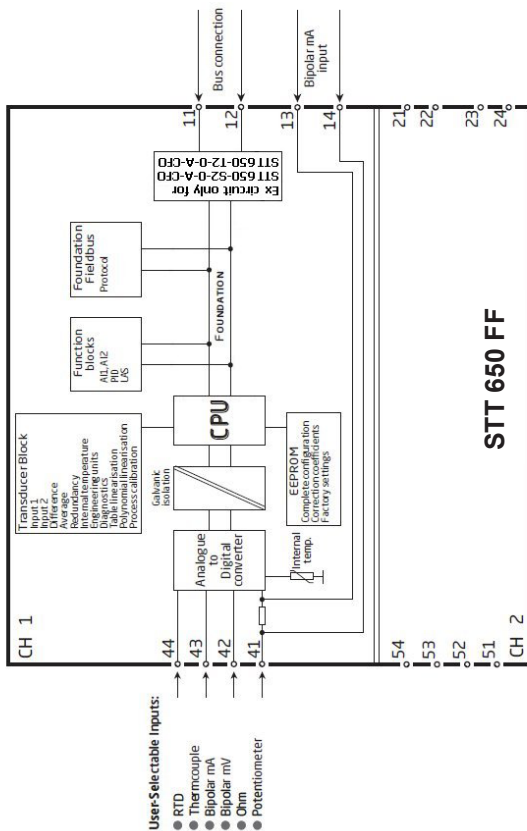
Connections with two sensors can be configured for two measurements, difference, average or redundancy

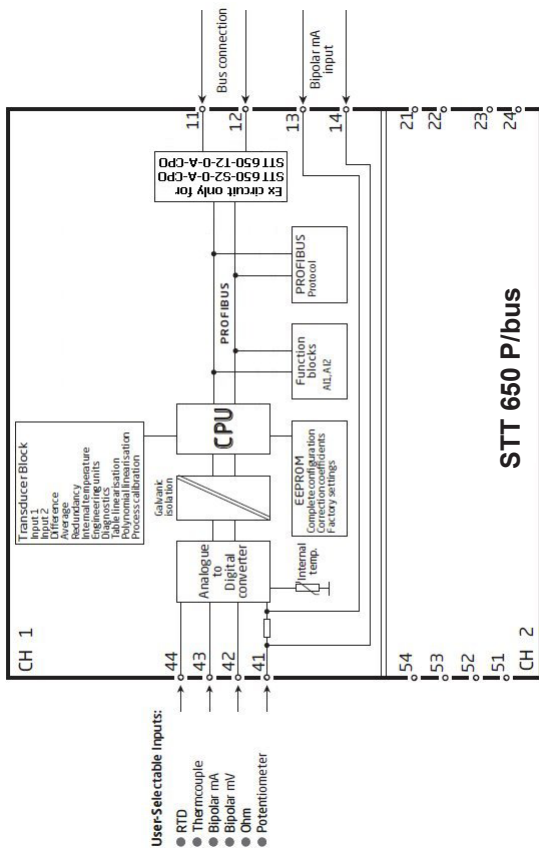
Inputs:



* Terminal Block with built in CJC is supplied as a standard accessory for all the Universal input STT 650 Models

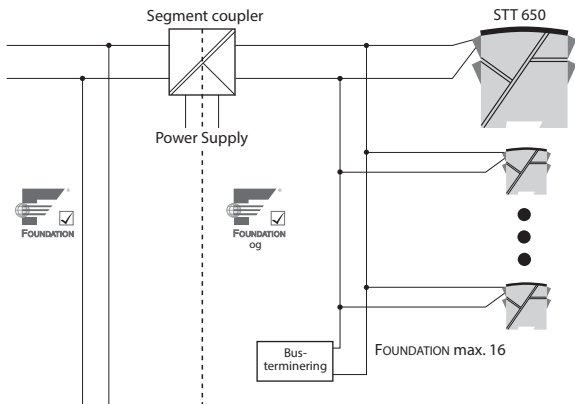
BLOCK DIAGRAM



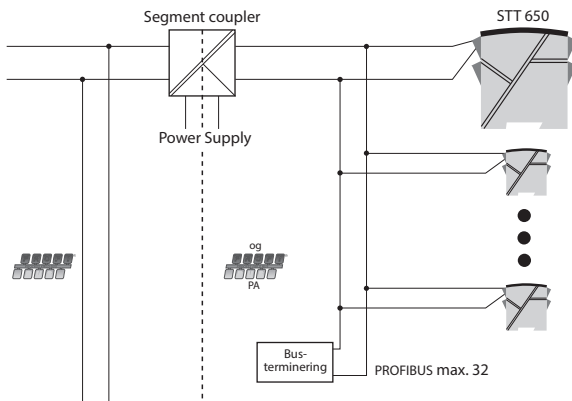


Bus Installation

Foundation Fieldbus



Profibus



APPENDIX A: PRODUCT CERTIFICATIONS

A2. EUROPEAN DIRECTIVE INFORMATION (CE MARK)



Honeywell

EC Declaration of Conformity

32307102 Issue A

PRODUCT:

STT650 Series DIN Rail Temperature Transmitters

MANUFACTURE:

Honeywell International Inc.
Honeywell Process Solutions
512 Virginia Drive
Fort Washington, PA 19034
United States of America

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

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



(Signature)
Owen Murphy
Product Safety and Approvals Engineer

6 February 2015

(Date)

Schedule

32307102 Issue A

EMC Directive (2004/108/EC)

EN 61326-1: 2013

ATEX Directive (94/9/EC)

Models: STT650-S2-0-A-CA0
STT650-T2-0-A-CA0
STT650-S1-0-A-AA0
STT650-T1-0-A-AA0
STT650-S2-0-A-CH0
STT650-T2-0-A-CH0

EC-Type Certificate: DEKRA 146ATEX0134X

Protection: Intrinsically Safe: ia IIC, Dust: ia IIIC and Mining: ia I"

Standard	Year	Title
EN 60079-0	2012	Apparatus for Explosive Gas Atmospheres – General Requirements
EN 60079-11	2012	Electrical Apparatus for Explosive Gas Atmospheres – Intrinsic Safety

Models: STT650-S2-0-A-CF0
STT650-T2-0-A-CP0
STT650-S2-0-A-CF0
STT650-T2-0-A-CP0

EC-Type Certificate: DEKRA 146ATEX0139X

Protection: Intrinsically Safe: ia IIC, Dust: ia IIIC and Mining: ia I"

Standard	Year	Title
EN 60079-0	2012	Apparatus for Explosive Gas Atmospheres – General Requirements
EN 60079-11	2012	Electrical Apparatus for Explosive Gas Atmospheres – Intrinsic Safety

Schedule

32307102 Issue A

ATEX Notified Body for EC Type Certificates

DEKRA Certification Inc. [Notified body Number: 0344]

Meander 1051
6025 MJ Arnhem
The Netherlands

ATEX Notified Body for EC Type Certificates and for Quality Assurance Notification

DEKRA Certification Inc. [Notified body Number: 0344]

Meander 1051
6025 MJ Arnhem
The Netherlands

The RoHS-II Directive 2011/65/EU:

The product has been manufactured according to Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

A3. AGENCY CONTROL DRAWINGS

A3.1: IECEx

ACA0HI01

Honeywell
IECEx Installation

STT650-S1-0-A-AA0
STT650-T1-0-A-AA0

IECEx Certificate IECEx DEK 14.0084X

Marking Ex ia IIC T6...T4 Ga
Ex ia IIIC Da
Ex ia I Ma

Standards: IEC60079-11:2011, IEC60079-0: 2011

Hazardous area
Zone 0, 1, 2, 20, 21, 22

Non Hazardous Area

Terminal:

41,42,43

U₀: 30 VDC

I₀: 8 mA

P₀: 60 mW

L₀: 35 mH

C₀: 60.8 nF

Terminal:

51,52,53

U₀: 30 VDC

I₀: 8 mA

P₀: 60 mW

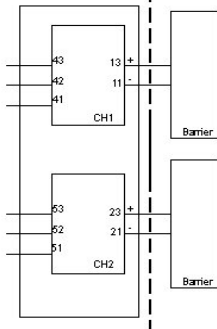
L₀: 35 mH

C₀: 60.8 nF

T4: $-40 \leq T_a \leq 85^\circ\text{C}$

T5: $-40 \leq T_a \leq 60^\circ\text{C}$

T6: $-40 \leq T_a \leq 40^\circ\text{C}$



Terminal:

11,13 and 21,23

U₀: 30 VDC

I₀: 120 mA

P₀: 0.84 W

L₀: 10 μH

C₀: 6.2 nF

Installation Drawing
AAA0HI01

Version Revision
V1R0

Page:
1/2

General installation instructions

For safe installation the following must be observed. The module shall only be installed by qualified personnel who are familiar with the national and international laws, directives and standards that apply to this area.

Year of manufacture can be taken from the first two digits in the serial number.

To avoid risk of ignition during installation and maintenance appropriate safety measures against electrostatic discharge (ESD) are to be considered.

For installation in a potentially explosive gas atmosphere the following instructions apply:

To avoid risk of ignition due to electrostatic discharge (ESD) the transmitter shall be mounted in an enclosure providing a degree of protection of at least IP20 according to EN/IEC 60529.

Ambient temperature range:

T4: $-40 \leq T_a \leq 85^{\circ}\text{C}$

T5: $-40 \leq T_a \leq 60^{\circ}\text{C}$

T6: $-40 \leq T_a \leq 40^{\circ}\text{C}$

For installation in a potentially explosive dust atmosphere, the following instructions apply:

The transmitter shall be mounted in a metal enclosure or equivalent that is providing a degree of protection of at least IP6X according to EN/IEC 60529 that is suitable for the application and correctly installed. Cable entries and blanking elements shall be used that are suitable for the application and correctly installed. The surface temperature of the enclosure is equal to the ambient temperature +20K for a dust layer with a maximum thickness of 5 mm.

Ambient temperature range:

T4: $-40 \leq T_a \leq 85^{\circ}\text{C}$

For installation in a potentially explosive atmosphere in mines, the following instructions apply:

The transmitter shall be mounted in an enclosure providing a degree of protection of at least IP6X according to EN/IEC 60529. Cable entries and blanking elements shall be used that are suitable for the application and correctly installed.

Ambient temperature range:

T4: $-40 \leq T_a \leq 85^{\circ}\text{C}$

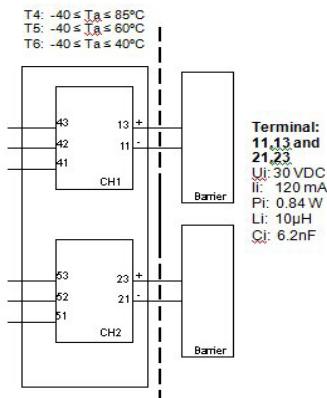
Installation Drawing AAA0HI01	Version Revision V1R0		Page: 2/2
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I

IECEx Certificate IECEx DEK 14.0084X
 Marking Ex ia IIC T6...T4 Ga
 Ex ia IIC Da
 Ex ia I Ma
 Standards: IEC60079-11:2011, IEC60079-0: 2011

Hazardous area
 Zone 0, 1, 2, 20, 21, 22

Non Hazardous Area

Terminal:**41,42,43** U_o : 30 VDC I_g : 8 mA P_o : 60 mW L_o : 35 mH C_o : 60.8 nF**Terminal:****51,52,53** U_o : 30 VDC I_g : 8 mA P_o : 60 mW L_o : 35 mH C_o : 60.8 nF

General installation instructions

For safe installation the following must be observed. The module shall only be installed by qualified personnel who are familiar with the national and international laws, directives and standards that apply to this area.

Year of manufacture can be taken from the first two digits in the serial number.

To avoid risk of ignition during installation and maintenance appropriate safety measures against electrostatic discharge (ESD) are to be considered.

For installation in a potentially explosive gas atmosphere the following instructions apply:

To avoid risk of ignition due to electrostatic discharge (ESD) the transmitters shall be mounted in an enclosure providing a degree of protection of at least IP20 according to EN/IEC 60529.

Ambient temperature range:

T4: $-40 \leq T_a \leq 85^{\circ}\text{C}$

T5: $-40 \leq T_a \leq 60^{\circ}\text{C}$

T6: $-40 \leq T_a \leq 40^{\circ}\text{C}$

For installation in a potentially explosive dust atmosphere, the following instructions apply:

The transmitter shall be mounted in a metal enclosure or equivalent that is providing a degree of protection of at least IP6X according to EN/IEC 60529 that is suitable for the application and correctly installed. Cable entries and blanking elements shall be used that are suitable for the application and correctly installed. The surface temperature of the enclosure is equal to the ambient temperature +20K for a dust layer with a maximum thickness of 5 mm.

Ambient temperature range:

T4: $-40 \leq T_a \leq 85^{\circ}\text{C}$

For installation in a potentially explosive atmosphere in mines, the following instructions apply:

The transmitter shall be mounted in an enclosure providing a degree of protection of at least IP6X according to EN/IEC 60529. Cable entries and blanking elements shall be used that are suitable for the application and correctly installed.

Ambient temperature range:

T4: $-40 \leq T_a \leq 85^{\circ}\text{C}$

Installation Drawing AAA0HI01	Version Revision V1R0	Page: 2/2
----------------------------------	--------------------------	--------------

IECEx Certificate	IECEx DEK.14.0084X
Marking	Ex ia, IIC T6...T4 Ga Ex ia, IIC Da Ex ia I Ma
Standards:	IEC60079-0:2011, IEC60079-11: 2011

Hazardous area
Zone 0, 1, 2, 20, 21, 22

T4: $-40 \leq T_a \leq 85^\circ\text{C}$
T5: $-40 \leq T_a \leq 60^\circ\text{C}$
T6: $-40 \leq T_a \leq 40^\circ\text{C}$

Non Hazardous Area

Terminal:

41,42,43,44

U_0 : 9.6 VDC

I_0 : 28 mA

P_0 : 67.2 mW

L_0 : 35 mH

C_0 : 3.5 μF

Terminal:

51,52,53,54

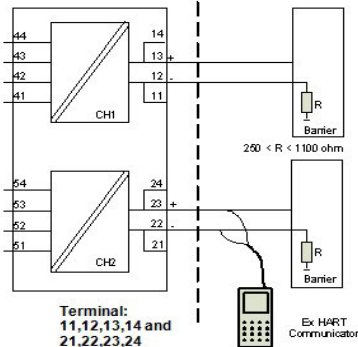
U_0 : 9.6 VDC

I_0 : 28 mA

P_0 : 67.2 mW

L_0 : 35 mH

C_0 : 3.5 μF



Terminal:

11,12,13,14 and

21,22,23,24

U_i : 30 VDC

I_i : 120 mA

P_i : 0.84 W

L_i : 10 μH

C_i : 1.0 nF

Installation Drawing	Version Revision	Page:
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General installation instructions

For safe installation the following must be observed. The module shall only be installed by qualified personnel who are familiar with the national and international laws, directives and standards that apply to this area.

Year of manufacture can be taken from the first two digits in the serial number.

To avoid risk of ignition during installation and maintenance appropriate safety measures against electrostatic discharge (ESD) are to be considered.

The sensor circuit is not infallibly galvanically isolated from the supply output circuit. However, the galvanic isolation between the circuits is capable of withstanding a test voltage of 500V_{ac} during 1 minute.

For installation in a potentially explosive gas atmosphere the following instructions apply:

To avoid risk of ignition due to electrostatic discharge (ESD) the transmitter shall be mounted in an enclosure providing a degree of protection of at least IP20 according to EN/IEC 60529.

Ambient temperature range:

T4: $-40 \leq T_a \leq 85^{\circ}\text{C}$

T5: $-40 \leq T_a \leq 60^{\circ}\text{C}$

T6: $-40 \leq T_a \leq 40^{\circ}\text{C}$

For installation in a potentially explosive dust atmosphere, the following instructions apply:

The transmitter shall be mounted in a metal enclosure or equivalent that is providing a degree of protection of at least IP6X according to EN/IEC 60529 that is suitable for the application and correctly installed. Cable entries and blanking elements shall be used that are suitable for the application and correctly installed. The surface temperature of the enclosure is equal to the ambient temperature +20K for a dust layer with a maximum thickness of 5 mm.

Ambient temperature range:

T4: $-40 \leq T_a \leq 85^{\circ}\text{C}$

For installation in a potentially explosive atmosphere in mines, the following instructions apply:

The transmitter shall be mounted in an enclosure providing a degree of protection of at least IP6X according to EN/IEC 60529. Cable entries and blanking elements shall be used that are suitable for the application and correctly installed.

Ambient temperature range:

T4: $-40 \leq T_a \leq 85^{\circ}\text{C}$

IECEX Certificate	IECEX DEK 14.0092X
Marking	Ex ia IIC T6...T4 Ga Ex ib [ia Ga] IIC T6...T4 Gb Ex ia IIIC Da ; Ex ia I Ma
Standards	IEC60079-11:2011, IEC60079-0: 2011

General installation instructions

Electrostatic charges on the transmitters enclosure shall be avoided.
 Install in pollution degree 2 or better.

Profibus / Foundation Fieldbus Transmitter for rail mounting, with one or two independent channels, converts the measurement signals of temperature sensors, mV signals or mA signals into a Profibus PA fieldbus or to a Foundation Fieldbus.
 STT650-S2- = Single Channel and STT650-T2- = Double Channel.

For marking Ex ia IIC T6...T4 Ga

The transmitter shall be mounted in an enclosure that provides a degree of protection of at least IP20 according to EN/IEC 60529 and that is suitable for the application and correctly installed.
 Ambient temperature range is specified under chapter "Electrical and thermal data".

For marking Ex ia IIIC Da

The transmitter shall be mounted in an enclosure that provides a degree of protection of at least IP6X according to EN/IEC 60529, and that is suitable for the application and correctly installed.
 The surface temperature of the enclosure is equal to the ambient temperature +20 K for a dust layer with a maximum thickness of 5 mm.
 Ambient temperature range: -40 °C to +85 °C

For marking Ex ia I Ma

The transmitter shall be mounted in an enclosure that provides a degree of protection of at least IP6X according to EN/IEC 60529, and that is suitable for the application and correctly installed.
 Ambient temperature range: -40 °C to +85 °C

Sensor Circuit and the Current Measurement

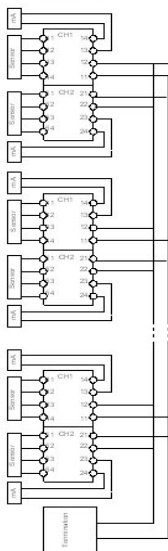
The Sensor Circuit is galvanically connected to the Current Measurement Input Circuit and only one circuit can be connected at a time.

The Input Circuits are not infallibly galvanically isolated from the Fieldbus input circuit. However, the galvanic isolation is capable of withstanding a test voltage of 500Vac during 1 minute.

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Hazardous Location
Zone 0, 1, 2, 20, 21, 22

Non Hazardous Location



Fieldbus circuit

(terminals 11 and 12, respectively 21 and 22):

In type of protection intrinsic safety Ex ia IIC, Ex ia IIIC or Ex ia I, only for connection to a certified intrinsically safe circuit, with the following maximum values (per circuit):

$$U_0 = 30 \text{ V}; I_0 = 120 \text{ mA}; P_0 = 0,84 \text{ W.}$$

$$T_a \leq 85^\circ \text{C: Temperature class T4}$$

$$T_a \leq 70^\circ \text{C: Temperature class T5}$$

$$T_a \leq 60^\circ \text{C: Temperature class T6}$$

or

$$U_0 = 30 \text{ V}; I_0 = 300 \text{ mA}; P_0 = 1,3 \text{ W.}$$

$$T_a \leq 75^\circ \text{C: Temperature class T4}$$

$$T_a \leq 65^\circ \text{C: Temperature class T5}$$

$$T_a \leq 45^\circ \text{C: Temperature class T6}$$

or for connection to a certified intrinsically safe circuit in accordance with FISCO, with following maximum values:

$$U_0 = 17,5 \text{ V}; I_0 = 250 \text{ mA}; P_0 = 2,0 \text{ W.}$$

$$T_a \leq 85^\circ \text{C: Temperature class T4}$$

$$T_a \leq 60^\circ \text{C: Temperature class T5}$$

$$T_a \leq 45^\circ \text{C: Temperature class T6}$$

or

$$U_0 = 15 \text{ V}; I_0 = 900 \text{ mA}; P_0 = 5,32 \text{ W.}$$

$$T_a \leq 85^\circ \text{C: Temperature class T4}$$

$$T_a \leq 60^\circ \text{C: Temperature class T5}$$

$$T_a \leq 45^\circ \text{C: Temperature class T6}$$

The effective internal capacitance and the effective internal inductance of the Fieldbus input circuit are:

$$C_i = 2 \text{ nF}; L_i = 1 \text{ }\mu\text{H.}$$

Sensor Circuit (terminals 41...44, respectively 51...54):

In type of protection intrinsic safety Ex ia IIC, Ex ia IIIC or Ex ia I, with following maximum values:

$$U_0 = 5,7 \text{ V}; I_0 = 8,4 \text{ mA}; P_0 = 12 \text{ mW}; C_0 = 40 \text{ }\mu\text{F}; L_0 = 200 \text{ mH.}$$

Current Measurement Input Circuit (terminals 13 and 14, respectively 23 and 24):

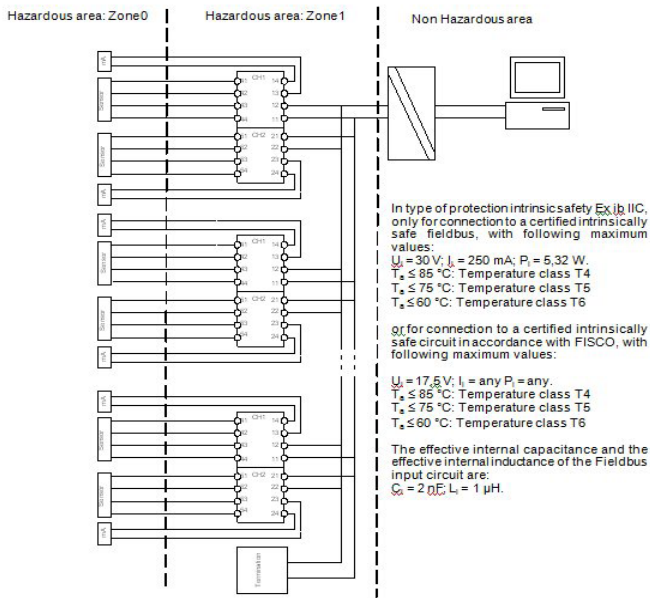
In type of protection intrinsic safety Ex ia IIC, Ex ia IIIC or Ex ia I, only for connection to a certified intrinsically safe circuit, with the following maximum values (per circuit):

$$U_0 = 30 \text{ V}; I_0 = 140 \text{ mA}; P_0 = 1 \text{ W}; C_0 = 0 \text{ nF}; L_0 = 0 \text{ mH.}$$

Installation Drawing
ACFPH01

Version Revision
V2R0

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Sensor Circuit (terminals 41...44, respectively 51...54):

in type of protection intrinsic safety Ex ia IIC, Ex ia IIC or Ex ia I, with following maximum values:
 $U_o = 5,7 \text{ V}$; $I_o = 8,4 \text{ mA}$; $P_o = 12 \text{ mW}$; $C_o = 40 \text{ }\mu\text{F}$; $L_o = 200 \text{ mH}$.

Current Measurement Input Circuit (terminals 13 and 14, respectively 23 and 24):

in type of protection intrinsic safety Ex ia IIC, Ex ia IIC or Ex ia I, only for connection to a certified intrinsically safe circuit, with the following maximum values (per circuit):
 $U_o = 30 \text{ V}$; $I_o = 140 \text{ mA}$; $P_o = 1 \text{ W}$; $C_o = 0 \text{ nF}$; $L_o = 0 \text{ mH}$.

Installation Drawing ACFPHI01	Version Revision V2R0	Page: 3/3
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I

ATEX Certificate DEKRA 14 ATEX 0134X

Marking  II 1, G Ex ia IIC T6...T4 Ga
II 1 D Ex ia IIC Da
I M 1 Ex ia I Ma

Standards EN 60079-0 : 2012, EN 60079-11 : 2012

Hazardous area
Zone 0, 1, 2, 20, 21, 22

T4: $-40 \leq T_a \leq 85^{\circ}\text{C}$

T5: $-40 \leq T_a \leq 60^{\circ}\text{C}$

T6: $-40 \leq T_a \leq 40^{\circ}\text{C}$

Terminal:

41,42,43,44

U₀: 9.6 VDC

I₀: 25 mA

P₀: 60 mW

L₀: 33 mH

C₀: 2.4 μF

Terminal:

51,52,53,54

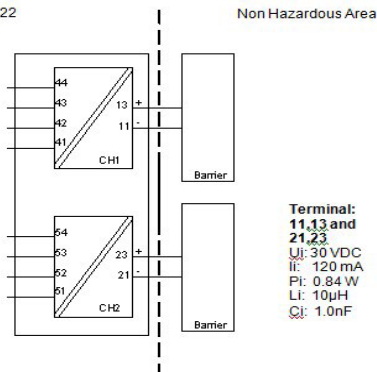
U₀: 9.6 VDC

I₀: 25 mA

P₀: 60 mW

L₀: 33 mH

C₀: 2.4 μF



Terminal:

11,13 and

21,23

U_i: 30 VDC

I_i: 120 mA

P_i: 0.84 W

L_i: 10 μH

C_i: 1.0 nF

General installation instructions

For safe installation the following must be observed. The module shall only be installed by qualified personnel who are familiar with the national and international laws, directives and standards that apply to this area.

Year of manufacture can be taken from the first two digits in the serial number.

To avoid risk of ignition during installation and maintenance appropriate safety measures against electrostatic discharge (ESD) are to be considered.

The sensor circuit is not infallibly galvanic isolated from the supply output circuit. However, the galvanic isolation between the circuits is capable of withstanding a test voltage of 500Vac during 1 minute.

For installation in a potentially explosive gas atmosphere the following instructions apply:

To avoid risk of ignition due to electrostatic discharge (ESD) the transmitter shall be mounted in an enclosure providing a degree of protection of at least IP20 according to EN/IEC 60529.

Ambient temperature range:

T4: $-40 \leq T_a \leq 85^{\circ}\text{C}$

T5: $-40 \leq T_a \leq 60^{\circ}\text{C}$

T6: $-40 \leq T_a \leq 40^{\circ}\text{C}$

For installation in a potentially explosive dust atmosphere, the following instructions apply:

The transmitter shall be mounted in a metal enclosure or equivalent that is providing a degree of protection of at least IP6X according to EN/IEC 60529 that is suitable for the application and correctly installed. Cable entries and blanking elements shall be used that are suitable for the application and correctly installed. The surface temperature of the enclosure is equal to the ambient temperature +20K for a dust layer with a maximum thickness of 5 mm.

Ambient temperature range:

T4: $-40 \leq T_a \leq 85^{\circ}\text{C}$

For installation in a potentially explosive atmosphere in mines, the following instructions apply:

The transmitter shall be mounted in an enclosure providing a degree of protection of at least IP6X according to EN/IEC 60529. Cable entries and blanking elements shall be used that are suitable for the application and correctly installed.

Ambient temperature range:

T4: $-40 \leq T_a \leq 85^{\circ}\text{C}$

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ATEX Certificate DEKRA 14ATEX 0134X

Marking  II 1, G Ex ia IIC T6...T4 Ga
II 1 D Ex ia IIC Da
IM 1 Ex ia I Ma

Standards EN 60079-0 : 2012, EN 60079-11 : 2012

Hazardous area
Zone 0, 1, 2, 20, 21, 22

Non Hazardous Area

T4: $-40 \leq T_a \leq 85^{\circ}\text{C}$
T5: $-40 \leq T_a \leq 60^{\circ}\text{C}$
T6: $-40 \leq T_a \leq 40^{\circ}\text{C}$

Terminal:

41,42,43

U_0 : 30 VDC

I_0 : 8 mA

P_0 : 60 mW

L_0 : 35 mH

C_0 : 60.8 nF

Terminal:

51,52,53

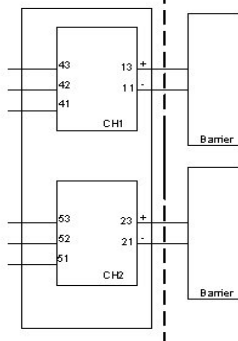
U_0 : 30 VDC

I_0 : 8 mA

P_0 : 60 mW

L_0 : 35 mH

C_0 : 60.8 nF



Terminal:

11,13 and 21,23

U_0 : 30 VDC

I_0 : 120 mA

P_0 : 0.84 W

L_0 : 10 μH

C_0 : 6.2 nF

General installation instructions

For safe installation the following must be observed. The module shall only be installed by qualified personnel who are familiar with the national and international laws, directives and standards that apply to this area.

Year of manufacture can be taken from the first two digits in the serial number.

To avoid risk of ignition during installation and maintenance appropriate safety measures against electrostatic discharge (ESD) are to be considered.

For installation in a potentially explosive gas atmosphere the following instructions apply:

To avoid risk of ignition due to electrostatic discharge (ESD) the transmitter shall be mounted in an enclosure providing a degree of protection of at least IP20 according to EN/IEC 60529.

Ambient temperature range:

T4: $-40 \leq T_a \leq 85^{\circ}\text{C}$

T5: $-40 \leq T_a \leq 60^{\circ}\text{C}$

T6: $-40 \leq T_a \leq 40^{\circ}\text{C}$

For installation in a potentially explosive dust atmosphere, the following instructions apply:

The transmitter shall be mounted in a metal enclosure or equivalent that is providing a degree of protection of at least IP6X according to EN/IEC 60529 that is suitable for the application and correctly installed. Cable entries and blanking elements shall be used that are suitable for the application and correctly installed. The surface temperature of the enclosure is equal to the ambient temperature +20K for a dust layer with a maximum thickness of 5 mm.

Ambient temperature range:

T4: $-40 \leq T_a \leq 85^{\circ}\text{C}$

For installation in a potentially explosive atmosphere in mines, the following instructions apply:

The transmitter shall be mounted in an enclosure providing a degree of protection of at least IP6X according to EN/IEC 60529. Cable entries and blanking elements shall be used that are suitable for the application and correctly installed.

Ambient temperature range:

T4: $-40 \leq T_a \leq 85^{\circ}\text{C}$

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AAA0HA01	V1R0	2/2

ATEX Certificate DEKRA 14 ATEX 0134X

Marking



II 1G Ex ia IIC T6...T4 Ga
II 1D Ex ia IIC Da
IM 1 Ex ia I Ma

Standards EN60079-0:2012, EN60079-11:2012

Hazardous area

Zone 0, 1, 2, 20, 21, 22

T4: $-40 \leq T_a \leq 85^\circ\text{C}$

T5: $-40 \leq T_a \leq 60^\circ\text{C}$

T6: $-40 \leq T_a \leq 40^\circ\text{C}$

Non Hazardous Area

Terminal:
41,42,43,44

U_0 : 9.6 VDC

I_0 : 28 mA

P_0 : 67.2 mW

L_0 : 35 mH

C_0 : 3.5 μF

Terminal:
51,52,53,54

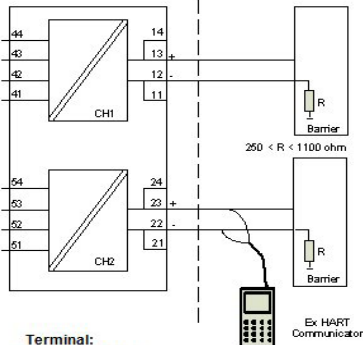
U_0 : 9.6 VDC

I_0 : 28 mA

P_0 : 67.2 mW

L_0 : 35 mH

C_0 : 3.5 μF



Terminal:
**11,12,13,14 and
21,22,23,24**

U_i : 30 VDC

I_i : 120 mA

P_i : 0.84 W

L_i : 10 μH

C_i : 1.0 nF

General installation instructions

For safe installation the following must be observed. The module shall only be installed by qualified personnel who are familiar with the national and international laws, directives and standards that apply to this area.

Year of manufacture can be taken from the first two digits in the serial number.

To avoid risk of ignition during installation and maintenance appropriate safety measures against electrostatic discharge (ESD) are to be considered.

The sensor circuit is not infallibly galvanic isolated from the supply output circuit. However, the galvanic isolation between the circuits is capable of withstanding a test voltage of 500Vac during 1 minute.

For installation in a potentially explosive gas atmosphere the following instructions apply:

To avoid risk of ignition due to electrostatic discharge (ESD) the transmitter shall be mounted in an enclosure providing a degree of protection of at least IP20 according to EN/IEC 60529.

Ambient temperature range:

T4: $-40 \leq T_a \leq 85^{\circ}\text{C}$

T5: $-40 \leq T_a \leq 60^{\circ}\text{C}$

T6: $-40 \leq T_a \leq 40^{\circ}\text{C}$

For installation in a potentially explosive dust atmosphere, the following instructions apply:

The transmitter shall be mounted in a metal enclosure or equivalent that is providing a degree of protection of at least IP6X according to EN/IEC 60529 that is suitable for the application and correctly installed. Cable entries and blanking elements shall be used that are suitable for the application and correctly installed. The surface temperature of the enclosure is equal to the ambient temperature +20K for a dust layer with a maximum thickness of 5 mm.

Ambient temperature range:

T4: $-40 \leq T_a \leq 85^{\circ}\text{C}$

For installation in a potentially explosive atmosphere in mines, the following instructions apply:

The transmitter shall be mounted in an enclosure providing a degree of protection of at least IP6X according to EN/IEC 60529. Cable entries and blanking elements shall be used that are suitable for the application and correctly installed.

Ambient temperature range:

T4: $-40 \leq T_a \leq 85^{\circ}\text{C}$

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ATEX Certificate DEKRA 14ATEX 0139X

Marking


 II 1 G Ex ia IIC T4...T6 Ga
 II 2 (1) G Ex ib IIA Ga IIC T4...T6 Gb
 II 1 D Ex ia IIC Da ; I M 1 Ex ia I Ma

Standards EN 60079-0: 2012, EN 60079-11: 2012

General installation instructions

Electrostatic charges on the transmitter enclosure shall be avoided.
 Install in pollution degree 2 or better.

Profibus / Foundation Fieldbus Transmitter for rail mounting, with one or two independent channels, converts the measurement signals of temperature sensors, mV signals or mA signals into a Profibus PA fieldbus or to a Foundation Fieldbus.
 STT650-S2-... = Single Channel and STT650-T2-... = Double Channel.

For marking Ex ia IIC T6...T4 Ga

The transmitter shall be mounted in an enclosure that provides a degree of protection of at least IP20 according to EN/IEC 60529 and that is suitable for the application and correctly installed.
 Ambient temperature range is specified under chapter "Electrical and thermal data".

For marking Ex ia IIC Da

The transmitter shall be mounted in an enclosure that provides a degree of protection of at least IP6X according to EN/IEC 60529, and that is suitable for the application and correctly installed.
 The surface temperature of the enclosure is equal to the ambient temperature +20 K for a dust layer with a maximum thickness of 5 mm.
 Ambient temperature range: -40 °C to +85 °C

For marking Ex ia I Ma

The transmitter shall be mounted in an enclosure that provides a degree of protection of at least IP6X according to EN/IEC 60529, and that is suitable for the application and correctly installed.
 Ambient temperature range: -40 °C to +85 °C

Sensor Circuit and the Current Measurement

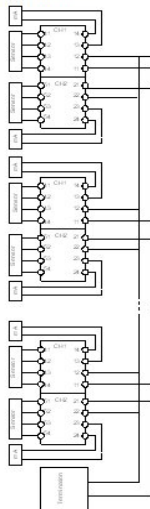
The Sensor Circuit is galvanically connected to the Current Measurement Input Circuit, and only one circuit can be connected at a time.

The Input Circuits are not infallibly galvanically isolated from the Fieldbus input circuit. However, the galvanic isolation is capable of withstanding a test voltage of 500Vac during 1 minute.

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Hazardous Location
Zone 0, 1, 2, 20, 21, 22

Non Hazardous Location



Fieldbus circuit

(terminals 11 and 12, respectively 21 and 22):

In type of protection intrinsic safety Ex ia IIC, Ex ia IIIC or Ex ia I, only for connection to a certified intrinsically safe circuit, with the following maximum values (per circuit):

$U_0 = 30 \text{ V}$; $I_k = 120 \text{ mA}$; $P_i = 0,84 \text{ W}$.
 $T_a \leq 85^\circ \text{C}$: Temperature class T4
 $T_a \leq 70^\circ \text{C}$: Temperature class T5
 $T_a \leq 60^\circ \text{C}$: Temperature class T6 or

$U_0 = 30 \text{ V}$; $I_k = 300 \text{ mA}$; $P_i = 1,3 \text{ W}$.
 $T_a \leq 75^\circ \text{C}$: Temperature class T4
 $T_a \leq 65^\circ \text{C}$: Temperature class T5
 $T_a \leq 45^\circ \text{C}$: Temperature class T6

or for connection to a certified intrinsically safe circuit in accordance with FISCO, with following maximum values:

$U_0 = 17,5 \text{ V}$; $I_k = 250 \text{ mA}$; $P_i = 2,0 \text{ W}$.
 $T_a \leq 85^\circ \text{C}$: Temperature class T4
 $T_a \leq 60^\circ \text{C}$: Temperature class T5
 $T_a \leq 45^\circ \text{C}$: Temperature class T6 or

$U_0 = 15 \text{ V}$; $I_k = 900 \text{ mA}$; $P_i = 5,32 \text{ W}$.
 $T_a \leq 85^\circ \text{C}$: Temperature class T4
 $T_a \leq 60^\circ \text{C}$: Temperature class T5
 $T_a \leq 45^\circ \text{C}$: Temperature class T6

The effective internal capacitance and the effective internal inductance of the Fieldbus input circuit are:

$C_i = 2 \text{ nF}$; $L_i = 1 \text{ }\mu\text{H}$.

Sensor Circuit (terminals 41...44, respectively 51...54):

In type of protection intrinsic safety Ex ia IIC, Ex ia IIIC or Ex ia I, with following maximum values:
 $U_0 = 5,7 \text{ V}$; $I_0 = 8,4 \text{ mA}$; $P_0 = 12 \text{ mW}$; $C_0 = 40 \text{ }\mu\text{F}$; $L_0 = 200 \text{ mH}$.

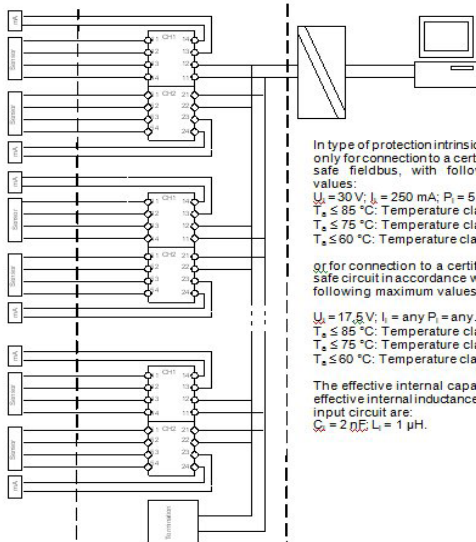
Current Measurement Input Circuit (terminals 13 and 14, respectively 23 and 24):

In type of protection intrinsic safety Ex ia IIC, Ex ia IIIC or Ex ia I, only for connection to a certified intrinsically safe circuit, with the following maximum values (per circuit):
 $U_0 = 30 \text{ V}$; $I_k = 140 \text{ mA}$; $P_i = 1 \text{ W}$; $C_0 = 0 \text{ nF}$; $L_0 = 0 \text{ mH}$.

Hazardous area: Zone0

Hazardous area: Zone1

Non Hazardous area



In type of protection intrinsic safety Ex ib IIC, only for connection to a certified intrinsically safe fieldbus, with following maximum values:

$U_0 = 30 \text{ V}$; $I_b = 250 \text{ mA}$; $P_i = 5,32 \text{ W}$
 $T_a \leq 85^\circ\text{C}$: Temperature class T4
 $T_a \leq 75^\circ\text{C}$: Temperature class T5
 $T_a \leq 60^\circ\text{C}$: Temperature class T6

or for connection to a certified intrinsically safe circuit in accordance with FISCO, with following maximum values:

$U_0 = 17,5 \text{ V}$; $I_i = \text{any}$; $P_i = \text{any}$.
 $T_a \leq 85^\circ\text{C}$: Temperature class T4
 $T_a \leq 75^\circ\text{C}$: Temperature class T5
 $T_a \leq 60^\circ\text{C}$: Temperature class T6

The effective internal capacitance and the effective internal inductance of the Fieldbus input circuit are:

$C_a = 2 \text{ nF}$; $L_i = 1 \text{ }\mu\text{H}$.

Sensor Circuit (terminals 41...44, respectively 51...54):

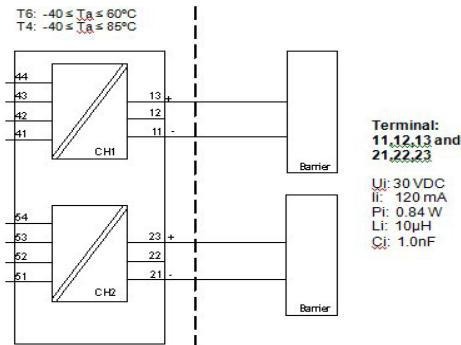
in type of protection intrinsic safety Ex ia IIC, Ex ia IIIC or Ex ia I, with following maximum values:
 $U_0 = 5,7 \text{ V}$; $I_0 = 8,4 \text{ mA}$; $P_0 = 12 \text{ mW}$; $C_0 = 40 \text{ }\mu\text{F}$; $L_0 = 200 \text{ mH}$.

Current Measurement Input Circuit (terminals 13 and 14, respectively 23 and 24):

in type of protection intrinsic safety Ex ia IIC, Ex ia IIIC or Ex ia I, only for connection to a certified intrinsically safe circuit, with the following maximum values (per circuit):
 $U_0 = 30 \text{ V}$; $I_0 = 140 \text{ mA}$; $P_0 = 1 \text{ W}$; $C_0 = 0 \text{ nF}$; $L_0 = 0 \text{ mH}$.

Hazardous (Classified) Location
Class I, Division 1, Group A,B,C,D T4..T6
Class I, Zone 0, AEx ia IIC T4..T6

Non Hazardous Location



Installation notes.

For installation in Class I the Transmitter must be installed in a suitable enclosure to meet installation codes stipulated in The National Electrical Code (ANSI-NFPA 70).

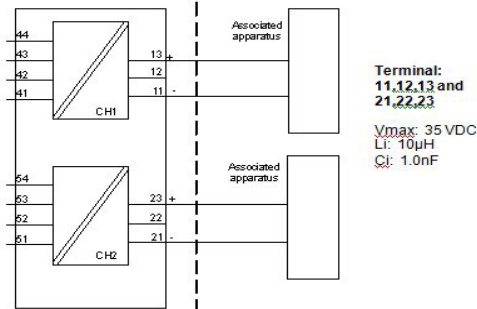
Equipment that is FM-approved for intrinsic safety may be connected to barriers based on the Entity Concept. This concept permits interconnection of approved transmitters, meters and other devices in combinations, which have not been specifically examined by FM, provided that the agency's criteria are met. The combination is then intrinsically safe, if the entity concept is acceptable to the authority having jurisdiction over the installation. The entity concept criteria are as follows: The intrinsically safe devices, other than barriers, must not be a source of power. The maximum voltage $U_i (V_{MAX})$ and current $I_i (I_{MAX})$, and maximum power $P_i (P_{MAX})$, which the device can receive and remain intrinsically safe, must be equal to or greater than the voltage (U_o or V_o or V_s) and current (I_o or I_{sc} or I_s) and the power P_o which can be delivered by the barrier. The sum of the maximum unprotected capacitance (C_i) for each intrinsically device and the interconnecting wiring must be less than the capacitance (C_s) which can be safely connected to the barrier. The sum of the maximum unprotected inductance (L_i) for each intrinsically device and the interconnecting wiring must be less than the inductance (L_s) which can be safely connected to the barrier. The entity parameters U_o , V_o or V_s and I_o , I_{sc} or I_s , and C_s and L_s for barriers are provided by the barrier manufacturer.

Installation Drawing ACA0HF01	Version Revision V1R0	Page: 1/2
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Hazardous (Classified) Location
Class I, Division 2, Group A,B,C,D T4..T6
Class I, Zone 2, IIC T4, T6

Non Hazardous Location

T6: $-40 \leq T_A \leq 60^\circ\text{C}$
T4: $-40 \leq T_A \leq 85^\circ\text{C}$



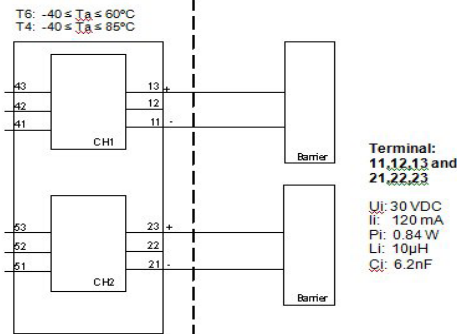
Installation notes.

The Transmitter must be installed in a suitable enclosure to meet installation codes stipulated in The National Electrical Code (ANSI-NFPA 70).

To assure a Non-Incendive system the transmitter and associated apparatus must be wired in accordance with the associated apparatus manufacturers field wiring instructions and the circuit diagram shown above.

Hazardous (Classified) Location
 Class I, Division 1, Group A,B,C,D T4..T6
 Class I, Zone 0, AEx ia IIC T4..T6

Non Hazardous Location



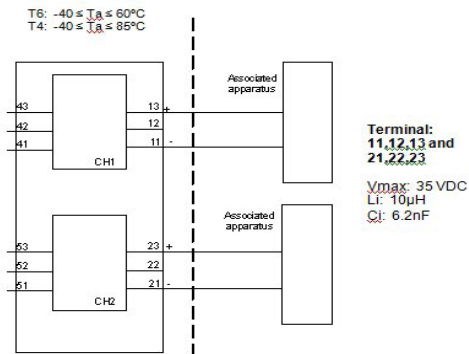
Installation notes.

For installation in Class I the Transmitter must be installed in a suitable enclosure to meet installation codes stipulated in The National Electrical Code (ANSI-NFPA 70). Equipment that is FM-approved for intrinsic safety may be connected to barriers based on the Entity Concept. This concept permits interconnection of approved transmitters, meters and other devices in combinations, which have not been specifically examined by FM, provided that the agency's criteria are met. The combination is then intrinsically safe, if the entity concept is acceptable to the authority having jurisdiction over the installation. The entity concept criteria are as follows: The intrinsically safe devices, other than barriers, must not be a source of power. The maximum voltage $U_i(V_{MAX})$ and current $I_i(I_{MAX})$, and maximum power $P_i(P_{MAX})$, which the device can receive and remain intrinsically safe, must be equal to or greater than the voltage (U_0 or V_0 or V_c) and current (I_0 or I_{sc} or I_c) and the power P_0 which can be delivered by the barrier. The sum of the maximum unprotected capacitance (C_u) for each intrinsically device and the interconnecting wiring must be less than the capacitance (C_s) which can be safely connected to the barrier. The sum of the maximum unprotected inductance (L_u) for each intrinsically device and the interconnecting wiring must be less than the inductance (L_s) which can be safely connected to the barrier. The entity parameters U_0 , V_0 or V_c and I_0 , I_{sc} or I_c , and C_s and L_s for barriers are provided by the barrier manufacturer.

Installation Drawing AAA0HF01	Version Revision V1R0	Page: 1/2
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Hazardous (Classified) Location
Class I, Division 2, Group A,B,C,D T4..T6
Class I, Zone 2, IIC T4..T6

Non Hazardous Location



Installation notes.

The Transmitter must be installed in a suitable enclosure to meet installation codes stipulated in The National Electrical Code (ANSI-NFPA 70).

To assure a Non-Incendive system the transmitter and associated apparatus must be wired in accordance with the associated apparatus manufacturers field wiring instructions and the circuit diagram shown above.

Installation Drawing AAA0HF01	Version Revision V1R0	Page: 2/2
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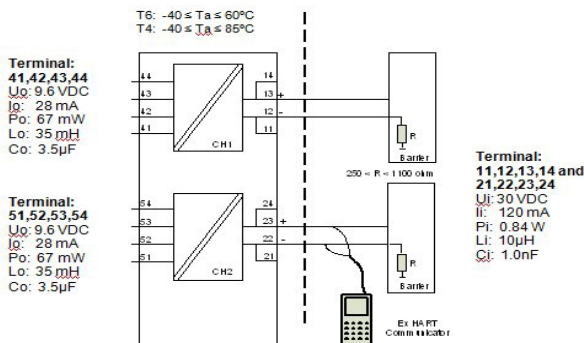
Honeywell

FM Installation

STT650-S2-0-A-CH0
STT650-T2-0-A-CH0

Hazardous (Classified) Location
Class I, Division 1, Group A,B,C,D T4..T6
Class I, Zone 0, ~~AEx ia~~ IIC T4..T6

Non Hazardous Location



Installation notes.

For installation in Class I the Transmitter must be installed in a suitable enclosure to meet installation codes stipulated in The National Electrical Code (ANSI-NFPA 70).

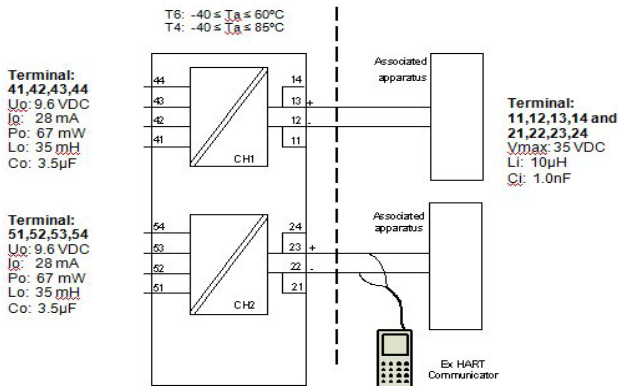
Equipment that is FM-approved for intrinsic safety may be connected to barriers based on the Entity Concept. This concept permits interconnection of approved transmitters, meters and other devices in combinations, which have not been specifically examined by FM, provided that the agency's criteria are met. The combination is then intrinsically safe, if the entity concept is acceptable to the authority having jurisdiction over the installation.

The entity concept criteria are as follows: The intrinsically safe devices, other than barriers, must not be a source of power. The maximum voltage $U_i(V_{MAX})$ and current $I_i(I_{MAX})$, and maximum power $P_i(P_{MAX})$, which the device can receive and remain intrinsically safe, must be equal to or greater than the voltage (U_0 or V_0 or V_{oc}) and current (I_0 or I_{sc} or I_b) and the power P_0 which can be delivered by the barrier. The sum of the maximum unprotected capacitance (C_u) for each intrinsically device and the interconnecting wiring must be less than the capacitance (C_s) which can be safely connected to the barrier. The sum of the maximum unprotected inductance (L_u) for each intrinsically device and the interconnecting wiring must be less than the inductance (L_s) which can be safely connected to the barrier. The entity parameters U_0 , V_{oc} or V_s and I_0 , I_{sc} or I_b , and C_s and L_s for barriers are provided by the barrier manufacturer.

Installation Drawing ACH0HF01	Version Revision V1R0	Page: 1/2
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Hazardous (Classified) Location
Class I, Division 2, Group A,B,C,D T4..T6
Class I, Zone 2, IIC T4..T6

Non Hazardous Location



Installation notes.

The Transmitter must be installed in a suitable enclosure to meet installation codes stipulated in The National Electrical Code (ANSI-NFPA 70).

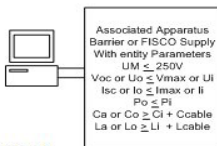
To assure a Non-Incendive system the transmitter and associated apparatus must be wired in accordance with the associated apparatus manufacturers field wiring instructions and the circuit diagram shown above.

Honeywell

FM-CSA Installation

STT650-S2-0-A-CF0/CP0
STT650-T2-0-A-CF0/CP0

Non Hazardous Location



Applicable for
single channel
STT650-S2-0-A-CF0/CP0 and
double channel
STT650-T2-0-A-CF0/CP0
All drawings are shown for
double Channel. For single
Channel installation Channel 2
(CH2) is not mounted
(terminal 51-54 and 21-24)

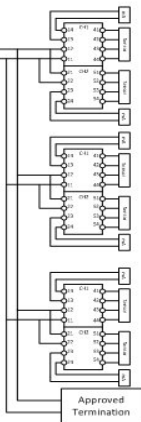
This device must not be
connected to any associated
apparatus that uses or
generates more than 250V

See Installation notes.

terminal 41-44 and 51-54	terminal 13, 14 and 23, 24
$U_i \text{ or } U_o$ 5,71 V	$U_{max} \text{ or } U_i$ 30 V
$I_i \text{ or } I_o$ 8,4 mA	$I_{max} \text{ or } I_i$ 140 mA
$P_i \text{ or } P_o$ 12 mW	$P_{max} \text{ or } P_i$ 1 W
$C_a \text{ or } C_o$ 40 μF	C_i 0
$L_a \text{ or } L_o$ 200 μH	L_i 0

Hazardous (Classified) Location

Class I, Division 1, Group A, B, C, D
Class I, Zone 0 and Zone 1 AEx ia IIC
Class I, Division 2, Groups A, B, C, D



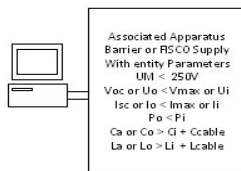
terminal 11-12 21-22	IS, Class I, Division 1, Group A, B, C, D Class I, Zone 0 AEx ia IIC Entity, FISCO				Class I, Division 2, Group A, B, C, D Class I, Zone 1 AEx (b) IIC	
14	Ta S +85°C	Ta S +75°C	Ta S +85°C	Ta S +85°C	Ta S +85°C	Ta S +85°C
16	Ta S +60°C	Ta S +45°C	Ta S +45°C	Ta S +45°C	Ta S +60°C	Ta S +60°C
$U_{max} \text{ or } U_i$	30 V	30V	17,5V	15V	30 V	17,5V
$I_{max} \text{ or } I_i$	120 mA	300mA	250mA	any	250mA	any
$P_{max} \text{ or } P_i$	0,84W	1,3W	2,0W	any	5,32W	any
C_i	2 nF	2 nF	2 nF	2 nF	2 nF	2 nF
L_i	1 μH	1 μH	1 μH	1 μH	1 μH	1 μH

Installation Drawing
ACFPHE01

Version Revision
V2R0

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Non Hazardous Location

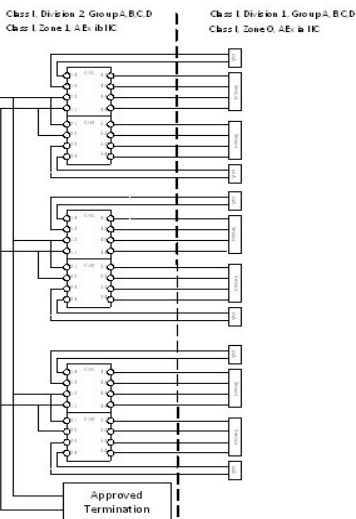


Applicable for
single channel
STT650-S2-0-A-CF0/CP0 and
double channel
STT650-T2-0-A-CF0/CP0
All drawings are shown for double
Channel. For single Channel installation
Channel 2 (CH2) is not mounted
(terminal 51-54 and 21-24)

In each segment only one active device,
normally the associated apparatus is
allowed to provide the necessary energy
for the fieldbus system. All other
equipment connected to the bus are not
allowed to provide energy to the system.
Separately powered equipment needs a
galvanic insulation to assure that the
intrinsic safe fieldbus circuit remains
passive.

See Installation notes

Hazardous (Classified) Location



Terminal 13, 14 and 23, 24		Terminal 11, 12 and 21, 22	
V_{max} (Ui)	30 V	30 V	17.5V
I_{max} (Ii)	140 mA	250mA	any
P_{max} (Pi)	1 W	5,32W	any
C_i	0	2 nF	2 nF
L_i	0	1 μ H	1 μ H

Terminal 41-44 and 51-54	
$V_{or} \text{ or } U_o$	5,71 V
$I_{or} \text{ or } I_o$	8,4 mA
$P_{or} \text{ or } P_o$	12 mW
$C_a \text{ or } C_o$	40 μ F
$L_a \text{ or } L_o$	200 mH

Installation Drawing
ACFPHE01

Version/Revision
V2R0

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Non Hazardous Location

Hazardous (Classified) Location

Class I, Zone 2

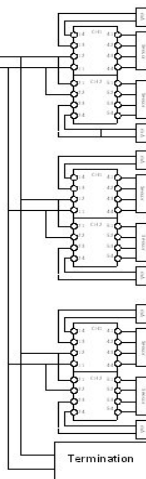
Class I, Division 2, Groups A, B, C, D

32V
Class 2
Power Supply

Applicable for
single channel
STT650-S2-0-A-CF0/CP0 and
double channel
STT650-T2-0-A-CF0/CP0
All drawings are shown for double
Channel. For single Channel
installation Channel 2 (CH2) is not
mounted (terminal 51-54 and 21-24)

This device must not be connected
to any associated apparatus which
uses or generates more than
250VRMS

See Installation notes.



terminal: 11, 12 and 21, 22	Class I, Division 2, Group A, B, C, D Class I, Zone2 IIC Ta ≤ +60°C
Vmax (Ui)	32 V
Cl	2 nF
Li	10 µH

Installation Drawing
ACFPHE01

Version Revision
V2R0

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Installation notes:

FM / CSA:

For installation in the US the module must be installed according to National Electrical Code (ANSI-NFPA 70).

For installation in Canada the transmitter must be installed in a suitable enclosure to meet installation codes stipulated in the Canadian Electrical Code (CEC).

For installation in Canada different intrinsically safe circuits need to be separated as outlined in the Canadian Electrical Code (CEC).

All drawings are shown for double Channel. For single Channel installation Channel 2 (CH2) is not mounted (terminal 51-54 and 21-24)

The entity concept:

Equipment that is FM / CSA - approved for intrinsic safety may be connected to barriers based on the ENTITY CONCEPT. This concept permits interconnection of approved transmitters, meters and other devices in combinations which have not been specifically examined by FM / CSA, provided that the agency's criteria are met. The combination is intrinsically safe, if the entity concept is acceptable to the authority having jurisdiction over the installation.

The entity concept criteria are as follows:

The intrinsically safe devices, other than barriers, must not be a source of power.

The maximum voltage $U_i(V_{max})$ and current $I_i(I_{max})$, and maximum power $P_i(P_{max})$, which the device can receive and remain intrinsically safe, must be equal to or greater than the voltage (U_0 or V_0) and current (I_0 or I_{sc} or I_t) and the power P_0 which can be delivered by the barrier.

The sum of the maximum unprotected capacitance (C_u) for each intrinsically device and the interconnecting wiring must be less than the capacitance (C_b) which can be safely connected to the barrier.

The sum of the maximum unprotected inductance (L_u) for each intrinsically device and the interconnecting wiring must be less than the inductance (L_b) which can be safely connected to the barrier.

The entity parameters U_0 , V_0 , I_0 or I_{sc} or I_t and C_b and L_b for barriers are provided by the barrier manufacturer.

FISCO rules

The FISCO Concept allows the interconnection of intrinsically safe apparatus to associated apparatus not specifically examined in such combination. The criterion for such interconnection is that the voltage (V_{max}), the current (I_{max}) and the power (P_i) which intrinsically safe apparatus can receive and remain intrinsically safe, considering faults, must be equal or greater than the voltage (U_0 , V_0 , V_t), the current (I_0 , I_{sc} , I_t) and the power (P_0) which can be provided by the associated apparatus (supply unit). In addition, the maximum unprotected residual capacitance (C_u) and inductance (L_u) of each apparatus (other than the terminators) connected to the Fieldbus must be less than or equal to 5 nF and 10 µH respectively.

In each I.S. Fieldbus segment only one active source, normally the associated apparatus, is allowed to provide the necessary power for the Fieldbus system. The allowed voltage (U_0 , V_0 , V_t) of the associated apparatus used to supply the bus must be limited to the range of 14V d.c. to 24V d.c. All other equipment connected to the bus cable has to be passive, meaning that the apparatus is not allowed to provide energy to the system, except to a leakage current of 50 µA for each connected device. Separately powered equipment needs a galvanic isolation to insure that the intrinsically safe Fieldbus circuit remains passive.

Installation Drawing	Version Revision	Page:
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The cable used to interconnect the devices needs to comply with the following parameters:

Loop resistance R : 15 ... 150 Ω /KM
Inductance per unit length L : 0.4 ... 1 mH/km
Capacitance per unit length C : 80 ... 200 nF/km
 $C' = C$ line/line + 0.5 C line/screen, if both lines are floating
 q_f
 $C' = C$ line/line + C line/screen, if the screen is connected to one line
Length of spur Cable: max. 30m
Length of trunk cable: max. 1Km
Length of splice: max. 1m

Terminators

At each end of the trunk cable an approved line terminator with the following parameters is suitable:

$R = 90 \dots 100 \Omega$

$C = 0 \dots 2.2 \mu F$.

System evaluation

The number of passive devices like transmitters, actuators, connected to a single bus segment is not limited due to I.S. reasons. Furthermore, if the above rules are respected, the inductance and capacitance of the cable need not to be considered and will not impair the intrinsic safety of the installation.

The sensor circuit is not infallibly galvanic isolated from the Fieldbus input circuit. However, the galvanic isolation between the circuits is capable of withstanding a test voltage of 500Vac during 1 minute.

Installation Notes For FISCO and Entity Concepts:

- The Intrinsic Safety Entity concept allows the interconnection of FM / CSA Approved Intrinsically safe devices (Div 1 or Zone 0 or Zone 1) and non-incendive apparatus (Div 2 or Zone 2), with entity parameters not specifically examined in combination as a system when:
 U_0 or V_0 or $V_i \leq V_{max}$, I_0 or I_{sc} or $I_t \leq I_{max}$, $P_0 \leq P_i$,
 C_a or $C_o \geq \Sigma C_i + \Sigma C_{cable}$, L_a or $L_o \geq \Sigma L_i + \Sigma L_{cable}$, $P_o \leq P_i$.
- The Intrinsic Safety FISCO concept allows the interconnection of FM / CSA Approved Intrinsically safe devices with FISCO parameters not specifically examined in combination as a system when:
 U_0 or V_0 or $V_i \leq V_{max}$, I_0 or I_{sc} or $I_t \leq I_{max}$, $P_0 \leq P_i$.
- Dust-tight conduit seals must be used when installed in Class II and Class III environments.
- Control equipment connected to the Associated Apparatus must not use or generate more than 250 V_{rms} or V_{dc} .
- Installation should be in accordance with ANSI/ISA RP12.6 (except chapter 5 for FISCO Installations) "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations" and the National Electrical Code® (ANSI/NFPA 70) Sections 504 and 505.
- The configuration of associated Apparatus must be Factory Mutual Research or CSA Approved under the associated concept.
- Associated Apparatus manufacturer's installation drawing must be followed when installing this equipment.

Installation Drawing	Version Revision	Page:
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8. These modules are approved for Class I, Zone 0, applications. If connecting AEx(Ib) associated apparatus or AEx(Ib) I.S. apparatus to the modules the I.S. circuit is only suitable for Class I, Zone 1, or Class I, Zone 2, and is not suitable for Class I, Zone 0 or Class I, Division 1, Hazardous (Classified) Locations anymore.
9. No revision to drawing without prior FM / CSA Approval.
10. Simple Apparatus is defined as a device that neither generates nor stores more than 1.2V, 0.1A 20uJ or 25mW.
11. The termination must be NRTL approved, and the resistor must be infallible.
12. **Warning:**
For applications in Div2 or Zone 2 (Classified Locations) Explosion hazard: Except for field circuits, do not disconnect the apparatus unless the area is known to be non hazardous.
13. **Warning:**
Substitution of Components May Impair Safety.

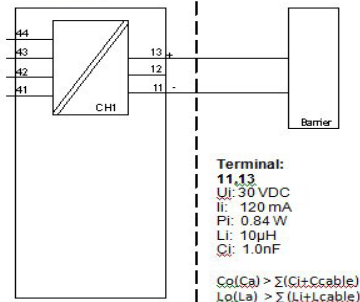
Installation Drawing ACFPHE01	Version Revision V2R0	Page: 6/6
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Hazardous (Classified) Location
IS, Class I, Division 1, Group A, B, C, D T4..T6
Ex ia IIC T4..T6 Ga
Class I, Zone 0, AEx ia IIC T4..T6 Ga

Non Hazardous Location

Terminal: 41,42,43,44
Connect to passive or
non-energy storing
devices such as RTD's
Resistors and
Thermocouples only.

T6: $-40 \leq T_a \leq 60^{\circ}\text{C}$
T4: $-40 \leq T_a \leq 85^{\circ}\text{C}$



Installation notes.

The Transmitter must be installed in a suitable enclosure to meet installation codes stipulated in The Canadian Electrical Code (CEC).

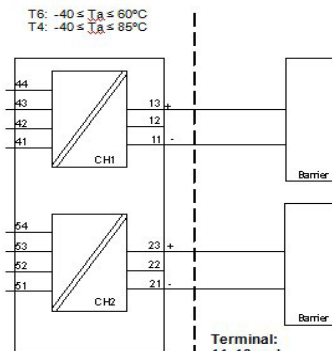
Substitution of components may impair intrinsic safety.

Installation Drawing ACA0HC01	Version Revision V1R0	Page: 1/2
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Hazardous (Classified) Location
Class I, Division 1, Group A, B, C, D T4..T6
Ex ia IIC T4..T6 Ga
Class I, Zone 0, AEx ia IIC T4..T6 Ga

Non Hazardous Location

**Terminal: 41,42,43,44
51,52,53,54**
Connect to passive or
non-energy storing
devices such as RTD's
Resistors and
Thermocouples only.



Terminal: 11, 13 and 21, 23
U_i: 30 VDC
I_i: 120 mA
P_i: 0.84 W
L_i: 10 μH
C_i: 1.0 nF

$C_o(C_a) > \Sigma(C_i + C_{cable})$
 $L_o(L_a) > \Sigma(L_i + L_{cable})$

Installation notes.

The Transmitter must be installed in a suitable enclosure to meet installation codes stipulated in The Canadian Electrical Code (CEC).

Channel 1 and Channel 2 are separate channels and therefore separate shielded cables shall be used for each channel.

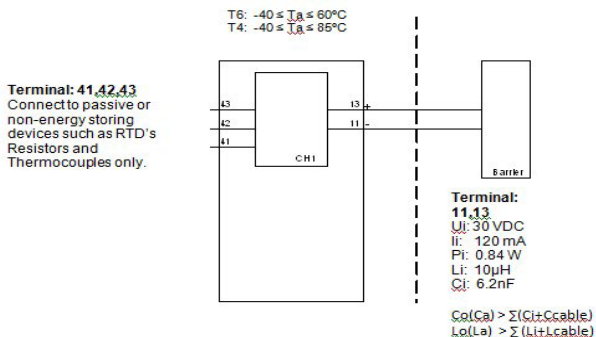
Substitution of components may impair intrinsic safety.

Installation Drawing ACA0HC01	Version Revision V1R0	Page: 2/2
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I

Hazardous (Classified) Location
 IS Class I, Division 1, Group A,B,C,D T4..T6
 Ex ia IIC T4..T6 Ga
 Class I, Zone 0, AEx ia IIC T4..T6 Ga

Non Hazardous Location

**Installation notes.**

The Transmitter must be installed in a suitable enclosure to meet installation codes stipulated in The Canadian Electrical Code (CEC).

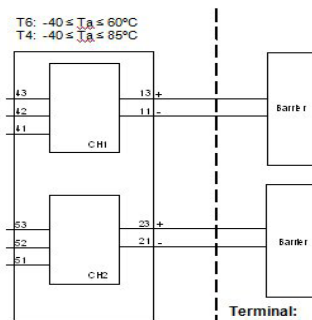
Substitution of components may impair intrinsic safety.

Installation Drawing AAA0HC01	Version/Revision V1R0	Page: 1/2
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Hazardous (Classified) Location
IS Class I, Division 1, Group A,B,C,D T4..T6
Ex ia IIC T4..T6 Ga
Class I, Zone 0, AEx ia IIC T4..T6 Ga

Non Hazardous Location

Terminal: 41, 42, 43
51, 52, 53
Connect to passive or
non-energy storing
devices such as RTD's
Resistors and
Thermocouples only.



Terminal: 11, 13 and 21, 23
Uj: 30 VDC
Ii: 120 mA
Pi: 0.84 W
Li: 10μH
Ci: 6.2nF

$C_o(C_a) > \Sigma(C_i + C_{cable})$
 $L_o(L_a) > \Sigma(L_i + L_{cable})$

Installation notes.

The Transmitter must be installed in a suitable enclosure to meet installation codes stipulated in The Canadian Electrical Code (CEC).

Channel 1 and Channel 2 are separate channels and therefore separate shielded cables shall be used for each channel.

Substitution of components may impair intrinsic safety.

Installation Drawing AAA0HC01	Version Revision V1R0	Page: 2/2
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I

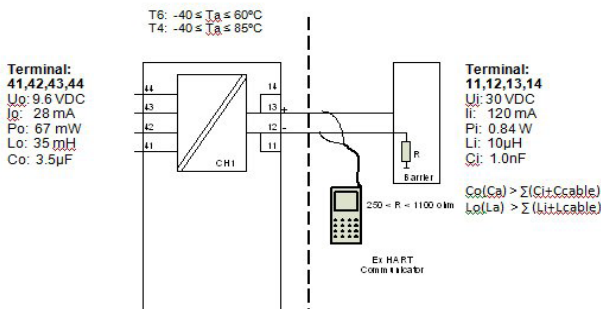
Hazardous (Classified) Location

IS Class I, Division 1, Group A,B,C,D T4..T6

Ex ia IIC T4..T6 Ga

Class I, Zone 0, AEx ia IIC T4..T6 Ga

Non Hazardous Location

**Installation notes.**

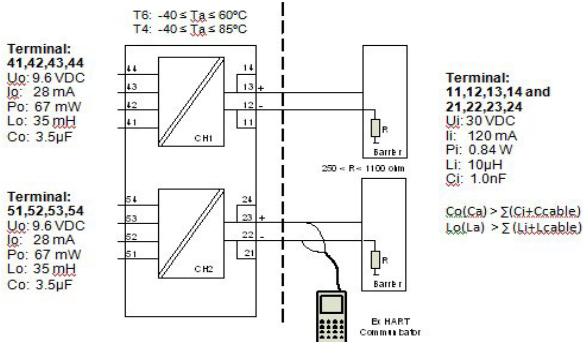
The Transmitter must be installed in a suitable enclosure to meet installation codes stipulated in The Canadian Electrical Code (CEC).

Substitution of components may impair intrinsic safety.

Installation Drawing ACH0HC01	Version Revision V1R0	Page: 1/2
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Hazardous (Classified) Location
IS, Class I, Division 1, Group A, B, C, D T4...T6
Ex ia IIC T4...T6 Ga
Class I, Zone 0, AEx ia IIC T4...T6 Ga

Non Hazardous Location



Installation notes.

The Transmitter must be installed in a suitable enclosure to meet installation codes stipulated in The Canadian Electrical Code (CEC).

Channel 1 and Channel 2 are separate channels and therefore separate shielded cables shall be used for each channel.

Substitution of components may impair intrinsic safety.

Honeywell

FM-CSA Installation

STT650-S2-0-A-CF0/CP0
STT650-T2-0-A-CF0/CP0

Non Hazardous Location



Associated Apparatus
Barrier or FISCO Supply
With entity Parameters
 $U_M \leq 250V$
 V_{oc} or $U_o \leq V_{max}$ or U_i
 I_{sc} or $I_o \leq I_{max}$ or I_i
 $P_o \leq P_i$
 C_a or $C_o \geq C_i + C_{cable}$
 L_a or $L_o \geq L_i + L_{cable}$

Applicable for
single channel
STT650-S2-0-A-CF0/CP0 and
double channel
STT650-T2-0-A-CF0/CP0
All drawings are shown for
double Channel. For single
Channel installation Channel 2
(CH2) is not mounted
(terminal 51-54 and 21-24)

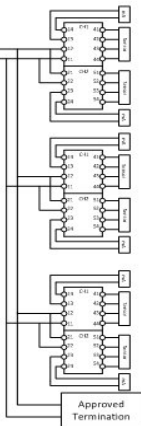
This device must not be
connected to any associated
apparatus that uses or
generates more than 250V

See Installation notes.

Terminal 41-44 and 51-54	Terminal 13,14 and 23,24
U_i or U_o	5, 11 V
I_i or I_o	8, 4 mA
P_i or P_o	12 mW
C_a or C_o	40 μF
L_a or L_o	200 μH

Hazardous (Classified) Location

Class I, Division 1, Group A, B, C, D
Class I, Zone 0 and Zone 1 AEx ia IIC
Class I, Division 2, Groups A, B, C, D



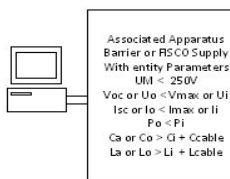
Terminal 11-12 21-22	IS, Class I, Division 1, Group A, B, C, D Class I, Zone 0 AEx ia IIC Entity, FISCO				Class I, Division 2, Group A, B, C, D Class I, Zone 1 AEx ia IIC	
T4	Ta S +85°C	Ta S +75°C	Ta S +85°C	Ta S +85°C	Ta S +85°C	Ta S +85°C
T6	Ta S +60°C	Ta S +45°C	Ta S +45°C	Ta S +45°C	Ta S +60°C	Ta S +60°C
U_i or U_o	30 V	30V	17,5V	15V	30 V	17,5V
I_{max} or I_i	120 mA	300mA	250mA	any	250mA	any
P_{max} or P_i	0,841W	1,3W	2,0W	any	5,32W	any
C_i	2 nF	2 nF	2 nF	2 nF	2 nF	2 nF
L_i	1 μH	1 μH	1 μH	1 μH	1 μH	1 μH

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Non Hazardous Location



Applicable for
single channel
STT650-S2-0-A-CF0/CP0 and
double channel
STT650-T2-0-A-CF0/CP0
All drawings are shown for double
Channel. For single Channel installation
Channel 2 (CH2) is not mounted
(terminal 51-54 and 21-24)

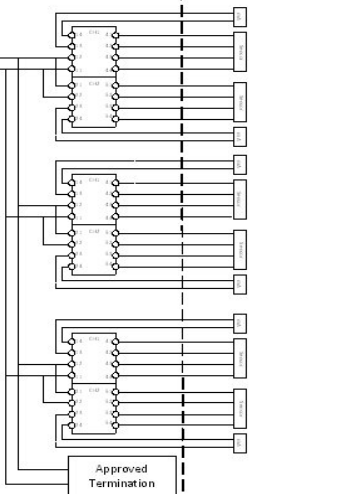
In each segment only one active device,
normally the associated apparatus is
allowed to provide the necessary energy
for the fieldbus system. All other
equipment connected to the bus are not
allowed to provide energy to the system.
Separately powered equipment needs a
galvanic insulation to assure that the
intrinsic safe fieldbus circuit remains
passive.

See Installation notes

Hazardous (Classified) Location

Class I, Division 2, Group A, B, C, D
Class I, Zone 1, A, E, I, IIC

Class I, Division 1, Group A, B, C, D
Class I, Zone 0, A, E, I, IIC



Terminal 13, 14 and 23, 24		Terminal 11, 12 and 21, 22	
V_{max} (U_i)	30 V	30 V	17,5V
I_{max} (I_i)	140 mA	250mA	any
P_{max} (P_i)	1 W	5,32W	any
C_i	0	2 nF	2 nF
L_i	0	1 μH	1 μH

Terminal 41-44 and 51-54	
$V_{tor} U_o$	5,71 V
$I_{tor} I_o$	8,4 mA
$P_{tor} P_o$	12 mW
$C_a \text{ or } C_o$	40 μF
$L_a \text{ or } L_o$	200 μH

Non Hazardous Location

Hazardous (Classified) Location

Class I, Zone 2

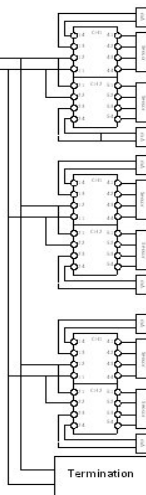
Class I, Division 2, Groups A, B, C, D

32V
Class 2
Power Supply

Applicable for
single channel
STT650-S2-0-A-CF0/CP0 and
double channel
STT650-T2-0-A-CF0/CP0
All drawings are shown for double
Channel. For single Channel
installation Channel 2 (CH2) is not
mounted (terminal 51-54 and 21-24)

This device must not be connected
to any associated apparatus which
uses or generates more than
250VRMS

See Installation notes.



terminal: 11,12 and 21,22	Class I, Division 2, Group A, B, C, D Class I, Zone2 IIC Ta ≤ +80°C
Vmax (UI)	32 V
CI	2 nF
LI	10 µH

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Installation notes:

FM/CSA:

For installation in the US the module must be installed according to National Electrical Code (ANSI-NFPA 70).

For installation in Canada the transmitter must be installed in a suitable enclosure to meet installation codes stipulated in the Canadian Electrical Code (CEC).

For installation in Canada different intrinsically safe circuits need to be separated as outlined in the Canadian Electrical Code (CEC).

All drawings are shown for double Channel. For single Channel installation Channel 2 (CH2) is not mounted (terminal 51-54 and 21-24).

The entity concept:

Equipment that is FM/CSA-approved for intrinsic safety may be connected to barriers based on the ENTITY CONCEPT. This concept permits interconnection of approved transmitters, meters and other devices in combinations which have not been specifically examined by FM/CSA, provided that the agency's criteria are met. The combination is intrinsically safe, if the entity concept is acceptable to the authority having jurisdiction over the installation.

The entity concept criteria are as follows:

The intrinsically safe devices, other than barriers, must not be a source of power.

The maximum voltage $U_i(V_{max})$ and current $I_i(I_{max})$, and maximum power $P_i(P_{max})$, which the device can receive and remain intrinsically safe, must be equal to or greater than the voltage (U_o or V_o) and current (I_o or I_{sc} or I_t) and the power P_o which can be delivered by the barrier.

The sum of the maximum unprotected capacitance (C_o) for each intrinsically device and the interconnecting wiring must be less than the capacitance (C_s) which can be safely connected to the barrier.

The sum of the maximum unprotected inductance (L_i) for each intrinsically device and the interconnecting wiring must be less than the inductance (L_s) which can be safely connected to the barrier.

The entity parameters U_o, V_o or V_t and I_o, I_{sc} or I_t , and C_s and L_s for barriers are provided by the barrier manufacturer.

FISCO rules

The FISCO Concept allows the interconnection of intrinsically safe apparatus to associated apparatus not specifically examined in such combination. The criterion for such interconnection is that the voltage (V_{max}), the current (I_{max}) and the power (P_i) which intrinsically safe apparatus can receive and remain intrinsically safe, considering faults, must be equal or greater than the voltage (U_o, V_o, V_t), the current (I_o, I_{sc}, I_t), and the power (P_o) which can be provided by the associated apparatus (supply unit). In addition, the maximum unprotected residual capacitance (C_i) and inductance (L_i) of each apparatus (other than the terminators) connected to the Fieldbus must be less than or equal to 5 nF and 10 μ H respectively.

In each I.S. Fieldbus segment only one active source, normally the associated apparatus, is allowed to provide the necessary power for the Fieldbus system. The allowed voltage (U_o, V_o, V_t) of the associated apparatus used to supply the bus must be limited to the range of 14V d.c. to 24V d.c. All other equipment connected to the bus cable has to be passive, meaning that the apparatus is not allowed to provide energy to the system, except to a leakage current of 50 μ A for each connected device. Separately powered equipment needs a galvanic isolation to insure that the intrinsically safe Fieldbus circuit remains passive.

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The cable used to interconnect the devices needs to comply with the following parameters:

Loop resistance R' : 15 ... 150 Ω /KM
Inductance per unit length L' : 0.4 ... 1 mH/km
Capacitance per unit length C' : 80 ... 200 nF/km
 $C' = C'_{\text{line/line}} + 0.5 C'_{\text{line/screen}}$, if both lines are floating
or
 $C' = C'_{\text{line/line}} + C'_{\text{line/screen}}$, if the screen is connected to one line
Length of spur cable: max. 30m
Length of trunk cable: max. 1Km
Length of splice: max. 1m

Terminators

At each end of the trunk cable an approved line terminator with the following parameters is suitable:
 $R = 90 \dots 100 \Omega$
 $C = 0 \dots 2.2 \mu\text{F}$.

System evaluation

The number of passive devices like transmitters, actuators, connected to a single bus segment is not limited due to I.S. reasons. Furthermore, if the above rules are respected, the inductance and capacitance of the cable need not to be considered and will not impair the intrinsic safety of the installation.

The sensor circuit is not infallibly galvanic isolated from the Fieldbus input circuit. However, the galvanic isolation between the circuits is capable of withstanding a test voltage of 500Vac during 1 minute.

Installation Notes For FISCO and Entity Concepts:

- The Intrinsic Safety Entity concept allows the interconnection of FM / CSA Approved Intrinsically safe devices (Div 1 or Zone 0 or Zone1) and non-incendive apparatus (Div 2 or Zone 2), with entity parameters not specifically examined in combination as a system when:
 U_0 or V_0 or $V_i \leq V_{\text{max}}$, I_0 or I_{sc} or $I_t \leq I_{\text{max}}$, $P_0 \leq P_i$.
 C_0 or $C_0 \geq \Sigma C_i + \Sigma C_{\text{cable}}$, L_0 or $L_0 \geq \Sigma L_i + \Sigma L_{\text{cable}}$, $P_0 \leq P_i$.
- The Intrinsic Safety FISCO concept allows the interconnection of FM / CSA Approved Intrinsically safe devices with FISCO parameters not specifically examined in combination as a system when:
 U_0 or V_0 or $V_i \leq V_{\text{max}}$, I_0 or I_{sc} or $I_t \leq I_{\text{max}}$, $P_0 \leq P_i$.
- Dust-tight conduit seals must be used when installed in Class II and Class III environments.
- Control equipment connected to the Associated Apparatus must not use or generate more than 250 V_{rms} or V_{dc} .
- Installation should be in accordance with ANSI/ISA RP12.6 (except chapter 5 for FISCO Installations) "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations" and the National Electrical Code® (ANSI/NFPA 70) Sections 504 and 505.
- The configuration of associated Apparatus must be Factory Mutual Research or CSA Approved under the associated concept.
- Associated Apparatus manufacturer's installation drawing must be followed when installing this equipment.

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8. These modules are approved for Class I, Zone 0, applications. If connecting ~~AFEx (ib)~~ associated apparatus or ~~AFEx (ib)~~ I.S. apparatus to the modules the I.S. circuit is only suitable for Class I, Zone 1, or Class I, Zone 2, and is not suitable for Class I, Zone 0 or Class I, Division 1, Hazardous (Classified) Locations anymore.
9. No revision to drawing without prior FM / CSA Approval.
10. Simple Apparatus is defined as a device that neither generates nor stores more than 1.2V, 0.1A 20uJ or 25mW.
11. The termination must be NRTL approved, and the resistor must be infallible.
12. **Warning:**
For applications in Div2 or Zone 2 (Classified Locations) Explosion hazard: Except for field circuits, do not disconnect the apparatus unless the area is known to be non hazardous.
13. **Warning:**
Substitution of Components May Impair Safety.

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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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Specifications are subject to change without notice.

For more information

To learn more about SmartLine Transmitters,
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Or contact your Honeywell Account Manager

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34-TT-25-10 Version: V104

April 2015

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