



Certificate of Compliance

Certificate: 1879968

Master Contract: 190113

Project: 1948777

Date Issued: 2008/04/28

Issued to: **ABB Automation Products GmbH**
Borsigstrasse 2
Alzenau, 63755
Germany
Attention: Mr. Klaus-Juergen Zeiger

The products listed below are eligible to bear the CSA Mark shown



Issued by: Ron Wildish

Authorized by: Patricia Pasemko, Operations Manager

PRODUCTS

CLASS 2258 02 - PROCESS CONTROL EQUIPMENT - For Hazardous Locations

Class I, Div 1, Groups A, B, C and D; Class II, Div 1, Groups E, F and G; Class III, Div. 1; Type 4X; IP66/67:

Model TTF350-R3a6H and TTF350-R3a7H Series Temperature Transmitters; input rated 11-42 Vdc, 4-20 mA; Temp. Code T4 @ Max Ambient 85 Deg C; T-Code T5 @ Max Ambient 71 Deg C; Temp. Code T6 @ Max Ambient 56 Deg C.

Class I, Div 2, Groups A, B, C and D; Class II, Div 1, Groups E, F and G; Class III, Div. 1; Type 4X; IP66/67:

Model TTF350-R5abH Series Temperature Transmitters; input rated 11-42 Vdc, 4-20 mA; Temp. Code T4 @ Max Ambient 85 Deg C; T-Code T5 @ Max Ambient 71 Deg C; Temp. Code T6 @ Max Ambient 56 Deg C.



CSA INTERNATIONAL

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CLASS 2258 03 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe and Non-Incendive Systems - For Hazardous Locations

Class I, Div 2, Groups A, B, C and D; Class II, Div 2, Groups E, F and G; Class III, Div. 2; Type 4X; IP66/67:

Model TTF350-R5abH Series Temperature Transmitters; input rated 11-30 Vdc, 4-20 mA; mounted in Div. 2 location and providing nonincendive circuits for Class I, Div. 2, to thermocouples, RID's and passive-resistive switch devices, when installed per installation Dwg. TTF350-R5.H(1); Temp. Code T4 @ Max Ambient 85 Deg C; T-Code T5 @ Max Ambient 71 Deg C; Temp. Code T6 @ Max Ambient 56 Deg C.

Class I, Div 2, Groups A, B, C and D; Type 4X:

Model TTF350-R5abH Series Temperature Transmitters; input rated 11-30 Vdc, 4-20 mA; non-incendive (terminals "+" and "-") with Entity input parameters of $V_{max} = 30V$, $I_{max} = 130mA$, $P_{max} = 0.8 W$, $C_i = 5 nF$, $L_i = 0.5 mH$; having output terminals (terminals 1-2-3-4-5-6) with entity output parameters of $V_{oc}/U_o = 6.5V$, $I_{sc}/I_o = 25 mA$, $P_o = 38 mW$, $C_a/C_o = 1.55 \mu F$, $L_a/L_o = 5.0 mH$; and having output terminals (terminals JP1) with entity output parameters of $V_{oc}/U_o = 6.2 V$, $I_{sc}/I_o = 65.2 mA$, $P_o = 101 mW$, $C_a/C_o = 1.4 \mu F$, $L_a/L_o = 5.0 mH$; when installed per installation Dwg. TTF350-R5.H(2); T-Code T4 @ Max Ambient 85 Deg C; T-Code T5 @ Max Ambient 71 Deg C; T-Code T6 @ Max Ambient 56 Deg C.

CLASS 2258 04 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe Entity - For Hazardous Locations

Class I, Div. 1 & 2, Groups A, B, C and D; Class II, Div. 1 & 2, Groups E, F and G; Class III, Div. 1 & 2; Type 4X; IP66/67:

Ex ia IIC T4:

Model TTF350-R4abH Series Temperature Transmitters; input rated 11-30 Vdc, 4-20 mA; intrinsically safe (terminals "+" and "-") with Entity input parameters of $V_{max}/U_i = 30V$, $I_{max}/I_i = 130mA$, $P_{max}/P_i = 0.8 W$, $C_i = 5 nF$, $L_i = 0.5 mH$; having output terminals (terminals 1-2-3-4-5-6) with entity output parameters of $V_{oc}/U_o = 6.5V$, $I_{sc}/I_o = 25 mA$, $P_o = 38 mW$, $C_a/C_o = 1.55 \mu F$, $L_a/L_o = 5.0 mH$; and having output terminals (terminals JP1) with entity output parameters of $V_{oc}/U_o = 6.2 V$, $I_{sc}/I_o = 65.2 mA$, $P_o = 101 mW$, $C_a/C_o = 1.4 \mu F$, $L_a/L_o = 5.0 mH$; when installed per installation Dwg. TTF350-R4.H; T-Code T4 @ Max Ambient 85 Deg C; T-Code T5 @ Max Ambient 71 Deg C; T-Code T6 @ Max Ambient 56 Deg C.

Notes:

1. The "a" in the model code may be a letter N or R, which denotes variations in Housing and/or Display.



CSA INTERNATIONAL

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2. The "b" in the model code may be a number 5, 6, 7, 8, which denotes variations in the Cable Entry. Versions with suffix 5 or 8 are not allowed for the Div. 1 or Div. 2 installations under CLASS 2258 02.

APPLICABLE REQUIREMENTS

CAN/CSA-C22.2 No. 0-M91 - General Requirements – Canadian Electrical Code, Part II

C22.2 No. 25-1966 - Enclosures for Use in Class II, Groups E, F and G Hazardous Locations

C22.2 No. 30-M1986 - Explosion-Proof Enclosures for Use in Class I Hazardous Locations

CAN/CSA-C22.2 No. 94-M91 - Special Purpose Enclosures

C22.2 No. 142-M1987 - Process Control Equipment

CAN/CSA-C22.2 No. 157-92 - Intrinsically Safe and Non-Incendive Equipment for Use in Hazardous Locations

C22.2 No. 213-M1987 - Non-Incendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations

CAN/CSA-C22.2 No. 60079-0:07 - Electrical apparatus for explosive gas atmospheres - Part 0: General Requirements

CAN/CSA-E60079-11:02 - Electrical apparatus for explosive gas atmospheres - Part 11: Intrinsic Safety "i"

CAN/CSA-C22.2 No. 60529:05 - Degrees of protection provided by enclosures (IP Code)



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Supplement to Certificate of Compliance

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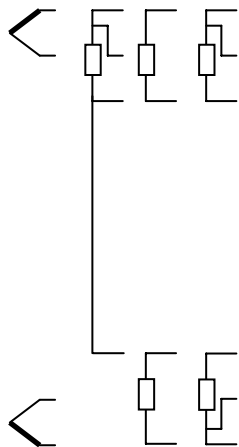
The products listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.

Product Certification History

Project	Date	Description
1948777	2008/04/28	Update to cover addition of Explosion-proof/Dust-Ignition-proof version, Models TTF350-R3a6H and TTF350-R3a7H.
1879968	2007/12/03	Model TTF350 Series Temperature Transmitters for hazardous locations - I.S. and Div. 2.

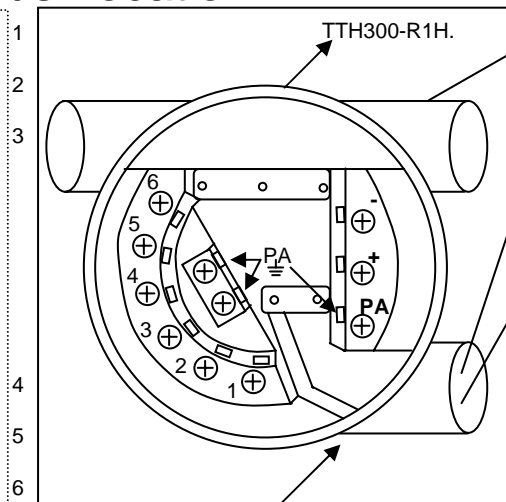
Hazardous Location

Sensors must be CSA approved or be a simple apparatus. Simple apparatus is a device which will neither generate or store more than 1.5 V; 0.1 A; 25 mW or 20 µJ such as switches; RTD's, TC or LED's



Sensor Types Overview
Channel 1 and 2

RTD or TC or Voltage or ...



HMI / Display – Interface

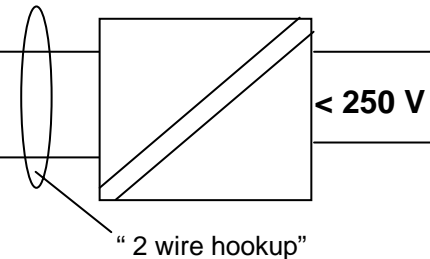
(Protection Window Cover, open with screw before connect !)

Type 2-2 T

Enclosure Type 4X, IP66/67

Non – Hazardous Location

Barrier
Galvanic Isolator



Apparatus input values.

Intrinsic Safe
 $U_i / V_{max} * 30,0V DC;$
 $I_i / I_{max} * 130mA, P_i * 0,8 W,$
 $C_i = 5 nF ; L_i = 0,5mH$

I.S. Sensor Field Circuit Parameters

$V_{oc}/U_o = 6.5 V;$ $I_{sc}/I_o < 25.0 mA;$ $P_o = 38 mW$
 Tem. Ident. T6 at $T_{amb} = 56 °C;$ T5 at $T_{amb} = 71 °C$
 T4 at $T_{amb} = 85 °C;$
 Class I Div 1 and Div 2; ; Groups: A,B,C,D Class II
 Group E,F,G and Class III or Class I Zone 0 Ex ia IIC
 Terminals: 1,2,3,4,5,6
 GP A,B $C_a/C_o = 1.54 \mu F;$ $L_a/L_o = 5.0 mH$
 C,D $C_a/C_o = 8.74 \mu F;$ $L_a/L_o = 5.0 mH$

Temperature Transmitter Model "TTF350" Ordering Code
 "TTF350-R4..H" is an Temperature Transmitter Type TTH300-R1H,
 which is installed in an enclosure Type 2-2 T Dual Chamber
 w / wo CSA Approved display HMI type B .

HMI / Display Interface Circuit

I.S. Output Parameters
 $V_{oc}/U_o = 6.2 V;$ $I_{sc}/I_o < 65.2 mA;$
 $P_o = 101 mW$
 Class I Div 1 and Div 2; ; Groups: A,B,C,D
 or Class I Zone 0 Ex ia IIC
 Terminals: 6 PIN Connector
 GP. A,B $C_a/C_o = 1.4 \mu F;$ $L_a/L_o = 5.0 mH$
 C,D $C_a/C_o = 8.9 \mu F;$ $L_a/L_o = 5.0 mH$

Associated Apparatus

- Barrier or Galvanic Isolator must be CSA approved and must be installed in accordance with manufactures instructions.
 - Barrier or Galvanic Isolator parameters must meet the following Requirements : $V_{oc} / U_o * V_{max};$
 $I_{sc} / I_o * I_{max};$
 $P_o * P_{max} / P_i$
 $C_a/C_o \geq C_i + C_{cable}$
 $L_a/L_o \geq L_i + L_{cable}$
- Maximum non hazardous area voltage must not exceed 250V.
 - Install in accordance with the CEC, Part 1.

A dust tight seal must be used at the conduit entry when the transmitter is used in a Class II & III location.

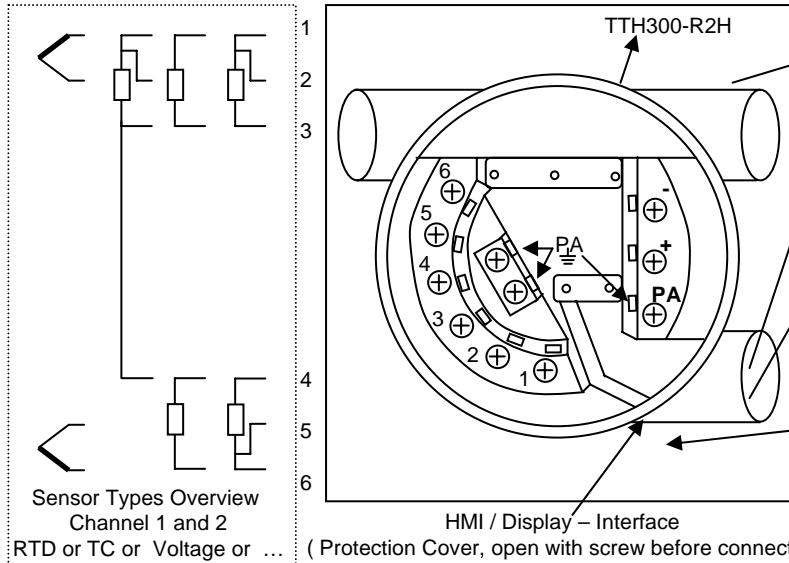
				Approv.	19.11.07 Müller
				Date	Name
1.02	CSA info	19.11.07	Zeiger	ABB Automation Products	
1.01	O-Code	13.07.07	Zeiger		
1.00	Release	04.12.06	Zeiger		
Rev.	Desc.	Date	Name		

Title:	TTF350 HART I.S. Temperature Transmitter Control Drawing	Scale:	-----
Drawing / Part No.:	TTF350-R4..H	Page : of	1 / 1
Replacement of:	-----		

Hazardous Location

Non – Hazardous Location

Sensor must be a simple apparatus
RTD`s, TC, LED`s



Type 2-2 T,
Enclosure Type 4X, IP66/67

Electrical Rating 11 – 30V dc;
IEC 1158-2

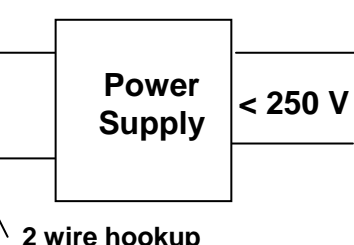
HMI / Display Interface Circuit
Nonincendive output Parameters

Voc/Uo = 6.2 V; Isc/Io < 65.2 mA; Po = 101 mW

Terminals: 6 PIN Connector

GP A,B Ca/Co = 1.4 µF; La/Lo = 5.0 mH

C,D Ca/Co = 8.9 µF; La/Lo = 5.0 mH



Suitable for use in Class I, Div. 2 Groups A, B, C, D, Class II, Div.1 Group E,F,G; Class III without safety barriers(ie. conduit connected), and provides non-incendive circuits for Class I, Div. 2, Group A,B,C,D to RTD`s, Thermocouples for passiv-resistive non-energy-storing switch devices.
Temp. Ident T6 at Tamb = 56°C, T5 at Tamb = 71°C, T4 at Tamb = 85°C

Temperature Transmitter Model "TTF350" Ordering Code "TTF350-R5..H is an Temperature Transmitter type TTH300-R2H which is installed in an enclosure Type 2-2 T Dual Chamber, w/wo CSA approved display HMI-Ex type B.

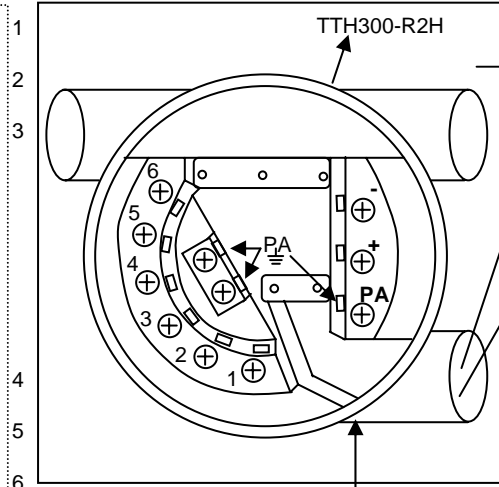
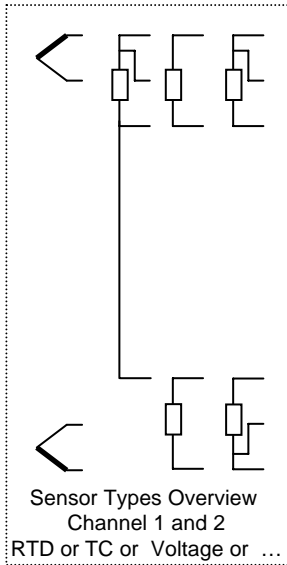
1. Install per Canadian Electrical Code (CEC) using threaded metal conduit.
2. **Warning: Explosion hazard, do not disconnect equipment unless power has been switched off, or the area is known to be non-hazardous.**
Warning: Substitution of components may impair suitability for Class 1 Division 2.
3. A dust tight seal must be used at the conduit entry when the transmitter is used in a Class II & III location.

				Title:		Scale:	
				TTF350 HART N. I. Temperature Transmitter Control Drawing		-----	
				Approv.	19.11.07	Müller	
				Date		Name	
1.02	CSA info	19.11.07	Zeiger	ABB Automation Products			
1.01	O-Code	13.07.07	Zeiger				
1.00	Release	04.12.06	Zeiger				
Rev.	Desc.	Date	Name				
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				TTF350-R5..H (1)		1 / 1	
				Replacement of: -----			

Division 2 Hazardous Location

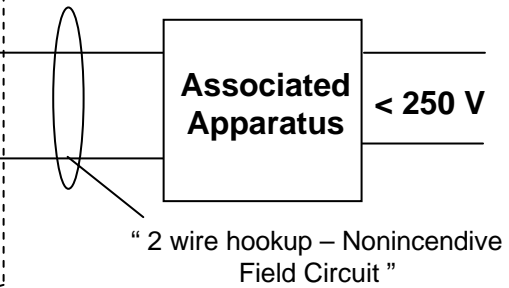
Non – Hazardous Location

Sensors must be a simple apparatus. RTD's, TC or LED's



Type 2-2 T,
Enclosure Type 4X, IP66/67

Apparatus Input Values
N.I. V max ≤ 30.0 V ;
I max ≤ 130 mA ; Pi ≤ 0,8W
Ci = 5 nF; Li = 0,5 mH



HMI / Display – Interface
(Protection Cover, open with screw before connect !)

HMI / Display Interface Non-incendive Output Parameters

Voc = 6.2 V; Isc < 65.2 mA; Po = 101 mW
Terminals: 6 PIN Connector
GP A,B Ca/Co = 1.4 μF; La/Lo = 5.0 mH
C,D Ca/Co = 8.9 μF; La/Lo = 5.0 mH

Associated Apparatus
Nonincendive Parameters must meet the following Requirements :
Voc * Vmax; Ca/Co / Ci + Ccable;
Isc * I max; La/Lo / Li + Lcable

Sensor Field Circuit Nonincendive Parameters

Voc = 6.5 V; Isc < 25.0 mA; Po = 38 mW
Temp. Ident T6 at Tamb = 56 °C; T5 at Tamb = 71 °C
T4 at Tamb = 85 °C; CLASS I DIV 2;
Groups: A, B, C, D or CLASS I Zone 2 Group IIC T6
Terminals: 1, 2, 3, 4, 5, 6 GP A, B Ca/Co = 1.54 μF; La/Lo = 5.0 mH
C, D Ca/Co = 8.74 μF; La/Lo = 5.0 mH

Temperature Transmitter Model "TTF350" Ordering Code "TTF350-R5..H" is an Temp. Transmitter Type TTH300-R2H which is installed in an enclosure Type 2-2, w/wo CSA approved display HMI-Ex type B..

Attention: No Conduit Seal Required.

The Temperature Transmitter is CSA Certified as Non-Incendive for use in Class I, Div. 1 Groups A, B, C, D hazardous locations, with Entity input parameters, and provides Non-Incendive Circuits for Class I, Div. 1 Groups A, B, C, D hazardous locations, with Entity output parameters

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				TTF350 HART		-----	
				N. I. Temperature Transmitter			
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				Title:		Scale:	
				TTF350 HART		-----	
				N. I. Temperature Transmitter			
				Control Drawing			
				Drawing / Part No.:		Page : of	
				TTF350-R5..H (2)		1 / 1	
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				Title:		Scale:	
				TTF350 HART		-----	
				N. I. Temperature Transmitter			
				Control Drawing			
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				Title:		Scale:	
				TTF350 HART		-----	
				N. I. Temperature Transmitter			
				Control Drawing			
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				TTF350 HART		-----	
				N. I. Temperature Transmitter			
				Control Drawing			
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				Title:		Scale:	
				TTF350 HART		-----	
				N. I. Temperature Transmitter			
				Control Drawing			
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				Title:		Scale:	
				TTF350 HART		-----	
				N. I. Temperature Transmitter			
				Control Drawing			
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				Title:		Scale:	
				TTF350 HART		-----	
				N. I. Temperature Transmitter			
				Control Drawing			
				Drawing / Part No.:		Page : of	
				TTF350-R5..H (2)		1 / 1	
				Replacement of: -----			

1.02	CSA info	19.11.07	Zeiger
1.01	O-Code	13.07.07	Zeiger
1.00	Release	04.12.06	Zeiger
Rev.	Desc.	Date	Name

Approv.	13.07.07	Müller
Date		Name
ABB		
Automation Products		

Title:		Scale:	
TTF350 HART		-----	
N. I. Temperature Transmitter			
Control Drawing			
Drawing / Part No.:		Page : of	
TTF350-R5..H (2)		1 / 1	
Replacement of: -----			