



Member of the FM Global Group

FM Approvals  
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# CERTIFICATE OF COMPLIANCE

## HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

### **Model TTH200-ab, Temperature Transmitter**

IS/I,II,III/1/ABCDEFGF/ T\*; - TTH200-L1P/F(IS) or TTH200-R1P/F(IS); Entity;  
I/O/AEx ia IIC; T\*- TTH200-L1P/F(IS) or TTH200-R1P/F(IS);  
NI/II/2/ABCD/ T\*; NI/2/II T\* = Ta = \*- TTH200-L1P/F(NI) or TTH200-R1P/F(NI);  
S/II,III/2/EF G T\*

a = Type of protection; L1, L2, R1 or R2.

b = Communication protocol; P or F.

#### Entity Parameters:

FISCO:  $U_i$  (Vmax) = 17.5V,  $I_i$  (Imax) = 380mA,  $P_i$  (Pmax) = 5.32W,  $C_i$  = 5 nF,  $L_i$  = 10 $\mu$ H  
Entity I.S.:  $U_i$  (Vmax) = 24V,  $I_i$  (Imax) = 250mA,  $P_i$  (Pmax) = 1.2W,  $C_i$  = 5 nF,  $L_i$  = 10 $\mu$ H

#### Output Terminals (1, 2, 3, 4, 5 and 6)

Group AB:  $U_o$  (Voc) = 6.5V,  $I_o$  (Isc) = 25.0mA,  $P_o$  = 38mW,  $C_o$  (Ca) = 1.55 $\mu$ F,  $L_o$  (La) = 5mH  
Group CD:  $U_o$  (Voc) = 6.5V,  $I_o$  (Isc) = 25.0mA,  $P_o$  = 38mW,  $C_o$  (Ca) = 8.75 $\mu$ F,  $L_o$  (La) = 5mH

#### Output Terminals (JP1)

$U_o$  (Voc) = 6.2V,  $I_o$  (Isc) = 65.2mA,  $P_o$  = 101mW,  $C_o$  (Ca) = 1.4 $\mu$ F,  $L_o$  (La) = 5mH

#### NonIncendive Field Wiring parameters

FISCO:  $U_i$  (Vmax) = 17.5V,  $I_i$  (Imax) = 380mA,  $P_i$  (Pmax) = 5.32W  
Entity I.S.:  $U_i$  (Vmax) = 24V,  $I_i$  (Imax) = 250mA,  $P_i$  (Pmax) = 1.2W

#### Special Conditions of Use:

- 1 For Intrinsic Safety and Non Incendive Approvals the Temperature code and Ambient temperatures are as follows:

T\* = Temperature Code T6 for a Maximum Ambient Temperature of 56°C.

T\* = Temperature Code T5 for a Maximum Ambient Temperature of 71°C

T\* = Temperature Code T4 for a Maximum Ambient Temperature of 85°C.

- 2 The product will be required in a enclosure which fulfill the NEMA 4X Standard for Class II and III.

### **Model TTH300-ab, Temperature Transmitter**

IS/I,II,III/1/ABCDEFGF/ T\*; - TTH300-L1P/F(IS) or TTH300-R1P/F(IS); Entity;  
I/O/AEx ia IIC; T\*- TTH300-L1P/F(IS) or TTH300-R1P/F(IS);  
NI/II/2/ABCD/ T\*; NI/2/II T\* = Ta = \*- TTH300-L1P/F(NI) or TTH300-R1P/F(NI);  
S/II,III/2/EF G T\*



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a = Type of protection; L1, L2, R1 or R2.

b = Communication protocol; P or F.

**Entity Parameters:**

FISCO:  $U_i$  (Vmax) = 17.5V,  $I_i$  (Imax) = 380mA,  $P_i$  (Pmax) = 5.32W,  $C_i$  = 5 nF,  $L_i$  = 10 $\mu$ H

Entity I.S.:  $U_i$  (Vmax) = 24V,  $I_i$  (Imax) = 250mA,  $P_i$  (Pmax) = 1.2W,  $C_i$  = 5 nF,  $L_i$  = 10 $\mu$ H

**Output Terminals (1, 2, 3, 4, 5 and 6)**

Group AB:  $U_o$  (Voc) = 6.5V,  $I_o$  (Isc) = 25.0mA,  $P_o$  = 38mW,  $C_o$  (Ca) = 1.55 $\mu$ F,  $L_o$  (La) = 5mH

Group CD:  $U_o$  (Voc) = 6.5V,  $I_o$  (Isc) = 25.0mA,  $P_o$  = 38mW,  $C_o$  (Ca) = 8.75 $\mu$ F,  $L_o$  (La) = 5mH

**Output Terminals (JP1)**

$U_o$  (Voc) = 6.2V,  $I_o$  (Isc) = 65.2mA,  $P_o$  = 101mW,  $C_o$  (Ca) = 1.4 $\mu$ F,  $L_o$  (La) = 5mH

**NonIncendive Field Wiring parameters**

FISCO:  $U_i$  (Vmax) = 17.5V,  $I_i$  (Imax) = 380mA,  $P_i$  (Pmax) = 5.32W

Entity I.S.:  $U_i$  (Vmax) = 24V,  $I_i$  (Imax) = 250mA,  $P_i$  (Pmax) = 1.2W

**Special Conditions of Use:**

1. For Intrinsic Safety and Non Incendive Approvals the Temperature code and Ambient temperatures are as follows:

T\* = Temperature Code T6 for a Maximum Ambient Temperature of 56°C.

T\* = Temperature Code T5 for a Maximum Ambient Temperature of 71°C

T\* = Temperature Code T4 for a Maximum Ambient Temperature of 85°C.

2. The product will be required in a enclosure which fulfill the NEMA 4X Standard for Class II and III.

**Model TTR200-ab, Temperature Transmitter**

IS/I,II,III/1/ABCDEFGH/ T\*; - TTR200\_TTR200-L6H(IS); Entity;

I/O/AEx ia/IIC; T\*- TTR200\_TTR200-L6H(IS);

NI/I/2/ABCD/ T\*; NI/2/II T\* = Ta = \*- TTR200\_TTR200-L6H(NI).

a = Type of protection; L6, R6.

b = Communication protocol; P or F.

**Entity Parameters:**

FISCO:  $U_i$  (Vmax) = 17.5V,  $I_i$  (Imax) = 380mA,  $P_i$  (Pmax) = 5.32W,  $C_i$  = 5 nF,  $L_i$  = 10 $\mu$ H

Entity I.S.:  $U_i$  (Vmax) = 24V,  $I_i$  (Imax) = 250mA,  $P_i$  (Pmax) = 1.2W,  $C_i$  = 5 nF,  $L_i$  = 10 $\mu$ H

**Sensor Terminals (1, 2, 3, 4, 5 and 6)**

Group AB:  $U_o$  (Voc) = 6.5V,  $I_o$  (Isc) = 25.0mA,  $P_o$  = 38mW,  $C_o$  (Ca) = 1.55 $\mu$ F,  $L_o$  (La) = 5mH

Group CD:  $U_o$  (Voc) = 6.5V,  $I_o$  (Isc) = 25.0mA,  $P_o$  = 38mW,  $C_o$  (Ca) = 8.75 $\mu$ F,  $L_o$  (La) = 5mH

**Display Connector**

$U_o$  (Voc) = 6.2V,  $I_o$  (Isc) = 65.2mA,  $P_o$  = 101mW,  $C_o$  (Ca) = 1.4 $\mu$ F,  $L_o$  (La) = 5mH

**NonIncendive Field Wiring parameters**

FISCO:  $U_i$  (Vmax) = 17.5V,  $I_i$  (Imax) = 380mA,  $P_i$  (Pmax) = 5.32W

Entity I.S.:  $U_i$  (Vmax) = 24V,  $I_i$  (Imax) = 250mA,  $P_i$  (Pmax) = 1.2W

**Special Conditions of Use:**

1. For Intrinsic Safety and Non Incendive Approvals the Temperature code and Ambient temperatures are as follows:

T\* = Temperature Code T6 for a Maximum Ambient Temperature of 56°C.

T\* = Temperature Code T5 for a Maximum Ambient Temperature of 71°C

T\* = Temperature Code T4 for a Maximum Ambient Temperature of 85°C.

2. For a Class II,III rating the instrument is required to be mounted into an Class II, Class III rated enclosure that is compliant to ANSI/ISA 61010 standard.

**Model TTR300-ab, Temperature Transmitter**

IS/II,III/1/ABCDEFGF/ T\*; - TTR200\_TTR300-L6H(IS); Entity;  
 I/O/AEx ia/IIC; T\*- TTR200\_TTR300-L6H(IS);  
 NI/II/2/ABCD/ T\*; NI/2/II T\* = Ta = \*- TTR200\_TTR300-L6H(NI).

a = Type of protection; L6, R6.  
 b = Communication protocol; P or F.

**Entity Parameters:**

FISCO:  $U_i$  (Vmax) = 17.5V,  $I_i$  (Imax) = 380mA,  $P_i$  (Pmax) = 5.32W,  $C_i$  = 5 nF,  $L_i$  = 10 $\mu$ H  
 Entity I.S.:  $U_i$  (Vmax) = 24V,  $I_i$  (Imax) = 250mA,  $P_i$  (Pmax) = 1.2W,  $C_i$  = 5 nF,  $L_i$  = 10 $\mu$ H

**Sensor Terminals (1, 2, 3, 4, 5 and 6)**

Group AB:  $U_o$  (Voc) = 6.5V,  $I_o$  (Isc) = 25.0mA,  $P_o$  = 38mW,  $C_o$  (Ca) = 1.55 $\mu$ F,  $L_o$  (La) = 5mH  
 Group CD:  $U_o$  (Voc) = 6.5V,  $I_o$  (Isc) = 25.0mA,  $P_o$  = 38mW,  $C_o$  (Ca) = 8.75 $\mu$ F,  $L_o$  (La) = 5mH

**Display Connector**

$U_o$  (Voc) = 6.2V,  $I_o$  (Isc) = 65.2mA,  $P_o$  = 101mW,  $C_o$  (Ca) = 1.4 $\mu$ F,  $L_o$  (La) = 5mH

**NonIncendive Field Wiring parameters**

FISCO:  $U_i$  (Vmax) = 17.5V,  $I_i$  (Imax) = 380mA,  $P_i$  (Pmax) = 5.32W  
 Entity I.S.:  $U_i$  (Vmax) = 24V,  $I_i$  (Imax) = 250mA,  $P_i$  (Pmax) = 1.2W

**Special Conditions of Use:**

1. For Intrinsic Safety and Non Incendive Approvals the Temperature code and Ambient temperatures are as follows:

T\* = Temperature Code T6 for a Maximum Ambient Temperature of 56°C.  
 T\* = Temperature Code T5 for a Maximum Ambient Temperature of 71°C  
 T\* = Temperature Code T4 for a Maximum Ambient Temperature of 85°C.

2. For a Class II,III rating the instrument is required to be mounted into an Class II, Class III rated enclosure that is compliant to ANSI/ISA 61010 standard.

**Model TTF300-abcd, Temperature Transmitter**

IS/II,III/1/ABCDEFGF/ T\*; - TTF300-L1..P/F(IS) or TTF300-R1..P/F(IS); Entity;  
 I/O/AEx ia IIC; T\*- TTF300-L1..P/F(IS) or TTF300-R1..P/F(IS);  
 NI/II/2/ABCD/ T\*; NI/2/II T\* = Ta = \*- TTF300-L2..P/F(NI) or TTF300-R2..P/F(NI);  
 S/II,III/2/EFG T\*\*,  
 XP/II/ABCD/ T\*;  
 DIP/II,III/EFG/ T\*\*

a = Type of protection; L1, L2, L3,R1, R2 or R3.  
 b = Housing/Display; A or B or C or D.  
 c = Cable Entry; 1 or 2 or 3 or 4  
 d = Communication protocol; P or F.

**Entity Parameters:**

FISCO:  $U_i$  (Vmax) = 17.5V,  $I_i$  (Imax) = 380mA,  $P_i$  (Pmax) = 5.32W,  $C_i$  = 5 nF,  $L_i$  = 10 $\mu$ H  
 Entity I.S.:  $U_i$  (Vmax) = 24V,  $I_i$  (Imax) = 250mA,  $P_i$  (Pmax) = 1.2W,  $C_i$  = 5 nF,  $L_i$  = 10 $\mu$ H

**Output Terminals (1, 2, 3, 4, 5 and 6)**

Group AB:  $U_o$  (Voc) = 6.5V,  $I_o$  (Isc) = 25.0mA,  $P_o$  = 38mW,  $C_o$  (Ca) = 1.55 $\mu$ F,  $L_o$  (La) = 5mH  
 Group CD:  $U_o$  (Voc) = 6.5V,  $I_o$  (Isc) = 25.0mA,  $P_o$  = 38mW,  $C_o$  (Ca) = 8.75 $\mu$ F,  $L_o$  (La) = 5mH

**Output Terminals (JP1)**

$U_o$  (Voc) = 6.2V,  $I_o$  (Isc) = 65.2mA,  $P_o$  = 101mW,  $C_o$  (Ca) = 1.4 $\mu$ F,  $L_o$  (La) = 5mH

**NonIncendive Field Wiring parameters**

FISCO:  $U_i$  (Vmax) = 17.5V,  $I_i$  (Imax) = 380mA,  $P_i$  (Pmax) = 5.32W  
 Entity I.S.:  $U_i$  (Vmax) = 24V,  $I_i$  (Imax) = 250mA,  $P_i$  (Pmax) = 1.2W

**Special Conditions of Use:**

- 1 For Intrinsic Safety and Non Incendive Approvals the Temperature code and Ambient temperatures are as follows:

T\* = Temperature Code T6 for a Maximum Ambient Temperature of 44°C.  
 T\* = Temperature Code T5 for a Maximum Ambient Temperature of 56°C  
 T\* = Temperature Code T4 for a Maximum Ambient Temperature of 84°C.

- 2 For Explosionproof and Dust-Ignitionproof Approvals the Temperature code and Ambient temperatures are as follows:

T\*\* = Temperature Code T6 for a Maximum Ambient Temperature of 56°C.  
 T\*\* = Temperature Code T5 for a Maximum Ambient Temperature of 71°C  
 T\*\* = Temperature Code T4 for a Maximum Ambient Temperature of 85°C.

**Model TTF350-abcd, Temperature Transmitter**

IS/I,II,III/1/ABCDEFG/ T\*; - TTF350-L4..P/F(IS); Entity;  
 I/O/AEx ia IIC; T\*-TTF350-L4..P/F;  
 NI/II/2/ABCD/ T\*; NI/2/II T\* = Ta = \*-TTF350-L5..P/F(NI) or TTF350-L5..P/F(NI);  
 S/II,III/2/EFG T\*\*;  
 XP/II/ABCD/ T\*;  
 DIP/II,III/EFG/ T\*\*; Type 4X; IP66 IP67 TTF350-L3..(FM).

a = Type of protection; L3, L4, L5, R3, R4 or R5.

b = Housing/Display; N, or R.

c = Cable Entry; 5,6 or 8.

d = Communication protocol; P or F.

Entity Parameters:

FISCO:  $U_i (V_{max}) = 17.5V$ ,  $I_i (I_{max}) = 380mA$ ,  $P_i (P_{max}) = 5.32W$ ,  $C_i = 5 nF$ ,  $L_i = 10\mu H$   
 Entity I.S.:  $U_i (V_{max}) = 24V$ ,  $I_i (I_{max}) = 250mA$ ,  $P_i (P_{max}) = 1.2W$ ,  $C_i = 5 nF$ ,  $L_i = 10\mu H$

$V_{max}=30v$ ,  $I_{max}= 130mA$ ,  $P_{max}= 0.8W$   $C_i=5nF$ ,  $L_i=500\mu H$

Output Terminals (1, 2, 3, 4, 5 and 6)

Group AB:  $U_o (Voc) = 6.5V$ ,  $I_o (Isc) = 25.0mA$ ,  $P_o = 38mW$ ,  $C_o (Ca) = 1.55\mu F$ ,  $L_o (La) = 5mH$

Group CD:  $U_o (Voc) = 6.5V$ ,  $I_o (Isc) = 25.0mA$ ,  $P_o = 38mW$ ,  $C_o (Ca) = 8.75\mu F$ ,  $L_o (La) = 5mH$

Output Terminals (JP1)

$U_o (Voc) = 6.2V$ ,  $I_o (Isc) = 65.2mA$ ,  $P_o = 101mW$ ,  $C_o (Ca) = 1.4\mu F$ ,  $L_o (La) = 51mH$

NonIncendive Field Wiring parameters

FISCO:  $U_i (V_{max}) = 17.5V$ ,  $I_i (I_{max}) = 380mA$ ,  $P_i (P_{max}) = 5.32W$ ,  $C_i = 5 nF$ ,  $L_i = 10\mu H$

Entity I.S.:  $U_i (V_{max}) = 24V$ ,  $I_i (I_{max}) = 250mA$ ,  $P_i (P_{max}) = 1.2W$ ,  $C_i = 5 nF$ ,  $L_i = 10\mu H$

Special Conditions of Use:

1. For Intrinsic Safety and Non Incendive Approvals the Temperature code and Ambient temperatures are as follows:

T\* = Temperature Code T6 for a Maximum Ambient Temperature of 44°C.

T\* = Temperature Code T5 for a Maximum Ambient Temperature of 56°C

T\* = Temperature Code T4 for a Maximum Ambient Temperature of 84°C.

2. For Explosionproof and Dust-Ignitionproof Approvals the Temperature code and Ambient temperatures are as follows:

T\*\* = Temperature Code T6 for a Maximum Ambient Temperature of 56°C.

T\*\* = Temperature Code T5 for a Maximum Ambient Temperature of 71°C

T\*\* = Temperature Code T4 for a Maximum Ambient Temperature of 85°C.

T\*\* = Temperature Code T3 for a Maximum Ambient Temperature of 120°C.



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## Equipment Ratings:

The TTH200-.P/F, TTH300-.P/F, TTF300-.P/F, TTF350-.P/F, TTR200-.P/F and TTR300-.P/F Profibus/Fieldbus Series Temperature Transmitters are FM Approved for Intrinsic Safety for Class I, II, III, Division 1, Groups A, B, C, D, E, F and G; Non Incendive for Class I, Division 2, Groups A, B, C, D and Suitable for Class II, III, Division 2, Groups E, and G when connected in conjunction with Control Drawings. In addition, the TTF300-.P/F, TTF350-.P/F Temperature Transmitter is FM Approved for Explosionproof For Class I, Division 1, Groups A, B, C and D and Dust-Ignition Proof for Class II, III, Division 1, Groups E, F and G Hazardous(classified ) Locations Indoors and Outdoors Type 4X, IP66, IP67.

## FM Approved for:

ABB Automation Products GmbH  
Alzenau, Germany



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This certifies that the equipment described has been found to comply with the following Approval Standards and other documents:

Class 3600	1998
Class 3610	1999
Class 3611	2004
Class 3615	2006
Class 3616	1989
ISAS12.00.01	2002
Class 3810	2005
Nema 250	2003
IEC60529	2004


Original Project ID: 3027610

Approval Granted: January 5, 2007

Subsequent Revision Reports / Date Approval Amended

Report Number	Date	Report Number	Date
070801	November 2, 2007		
3028938	December 10, 2007		
3031178	October 9, 2008		
3037064	<i>December 18, 2009</i>		

FM Approvals LLC

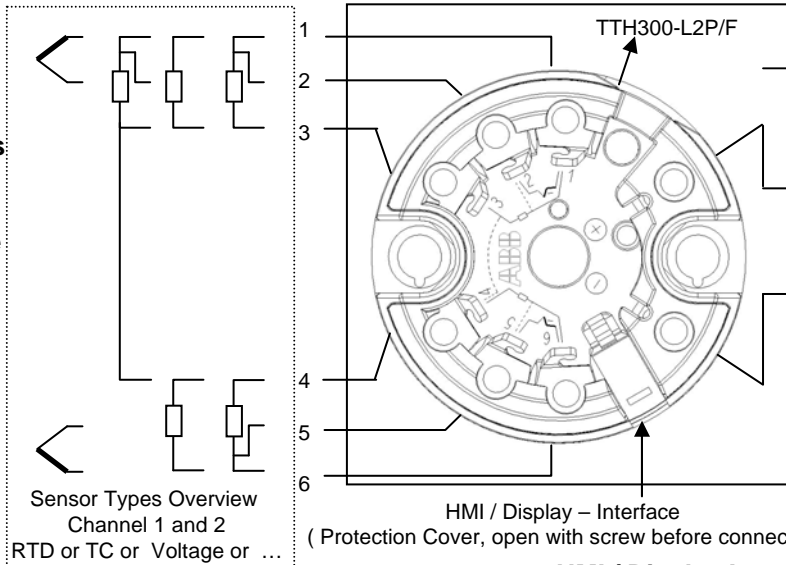
  
 \_\_\_\_\_  
 James E. Marquedant  
 Group Manager, Electrical

*18 December 2009*  
 \_\_\_\_\_  
 Date

# Division 2 Hazardous Location

# Non – Hazardous Location

Sensors must be FM 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



AGLF, AGSF, AGLFD, AGSFD Enclosure Type 4X

**Apparatus input Values**  
 FISO-Model I.S. V max = 17.5 V ;  
 I max = 380 mA ; Pi = 5.32 W  
 Ci = 5 nF Li = 0,5 mH, lo <= 50 µA  
 Entity-Model I.S V max = 24 V ;  
 I max = 250 mA, Pi = 1.2 W  
 Li <= 10 µH, Ci <= 5 nF  
 lo <= 50 µA

**Associated Apparatus** < 250 V

“ 2 wire hookup – Nonincendive Field Circuit ”

Sensor Types Overview  
 Channel 1 and 2  
 RTD or TC or Voltage or ...

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

**HMI / Display Interface**  
**Non-incendive Output Parameters**

**Associated Apparatus**  
 Nonincendive Parameters must meet the following Requirements :

Voc or Vt \* Vmax; Ca / Ci + Ccable;  
 Isc or It \* I max; La / Li + Lcable  
 The temperature transmitter are FM approved for nonincendive field circuits when installed per national electrical code (NEC) article 501-4(B) or 502-4(B) exception with FM nonincendive field circuit output apparatus which meet the parameters shown on this drawings.

Exception: Wiring in nonincendive circuits shall be permitted using any of the methods suitable for wiring in ordinary locations !

**Sensor Field Circuit Nonincendive Parameters**

Voc = 6.5 V; Isc < 25.0 mA; Po = 38 mW  
 Class I Div. 2; Groups:A,B,C,D or Class I Zone 2 Group IIC T6  
 Temp.Ident: T6 at Tamb = 56 °C;  
 T5 at Tamb = 71 °C;  
 T4 at Tamb = 85 °C;  
 Terminals: 1,2,3,4,5,6 GP A,B Ca = 1.55 µF; La = 5.0 mH  
 C,D Ca = 8.75 µF; La = 5.0 mH

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

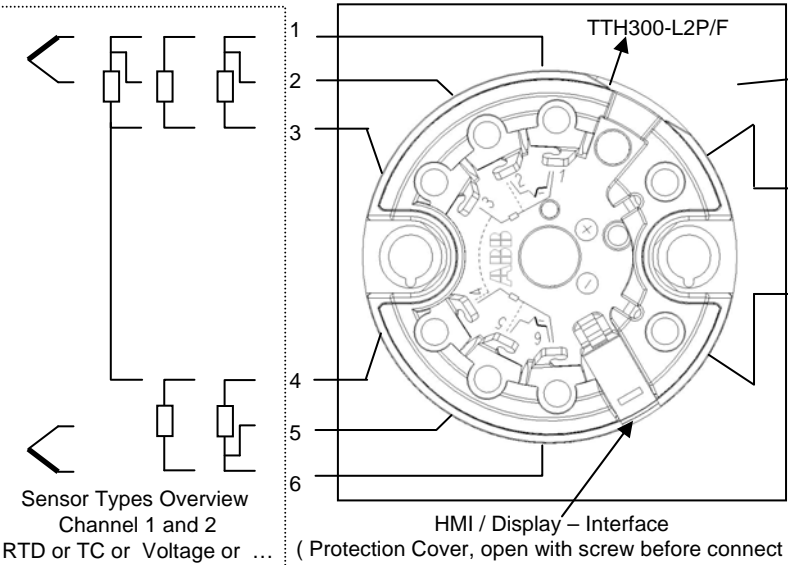
Temperature Transmitter Model “TTF300”  
 Ordering Code “TTF300-L2..P/F” is an Temp. Transmitter Type TTH300-L2P/F which is Installed in an enclosure type AGLF, AGSF or AGLFD, AGSFD w/wo FM approved display HMI-Ex type A, AS, B, BS.

				Title:		Scale:	
				TTF300 Fieldbus		----	
				N. I. Temperature Transmitter			
				Control Drawing			
				Drawing / Part No.:		Page : of	
				TTF300-L2..P (NI_AA)		1 / 1	
				TTF300-L2..F (NI_AA)			
				Replacement of: -----			
1.00	Release	13.02.09	Zeiger	Approv.	13.02.09	Müller	
Rev.	Desc.	Date	Name		Date	Name	

**ABB**  
 Automation Products

# Hazardous Location

Sensors must be FM 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



# Non - Hazardous Location

**Sensor Field Circuit Nonincendive Parameters**  
 Class I Div. 2; Groups: A,B,C,D  
 or Class 1 Zone 2 Group IIC T6  
 Temp.Ident: T6 at Tamb = 56 °C;  
                   T5 at Tamb = 71 °C;  
                   T4 at Tamb = 85 °C;  
  
 Voc = 6.5 V; Isc < 25.0 mA; Po = 38 mW  
 Terminals: 1,2,3,4,5,6  
 GP A,B Ca = 1.55 µF; La = 5.0 mH  
       C,D Ca = 8.75 µF; La = 5.0 mH

**HMI / Display Interface Nonincendive Output Parameters**  
 Voc = 6.2 V;  
 Isc < 65.2 mA;  
 Po = 101 mW  
 Terminals: 6 PIN Connector  
 GP A,B Ca = 1.4 µF; La = 5.0 mH  
       C,D Ca = 8.9 µF; La = 5.0 mH

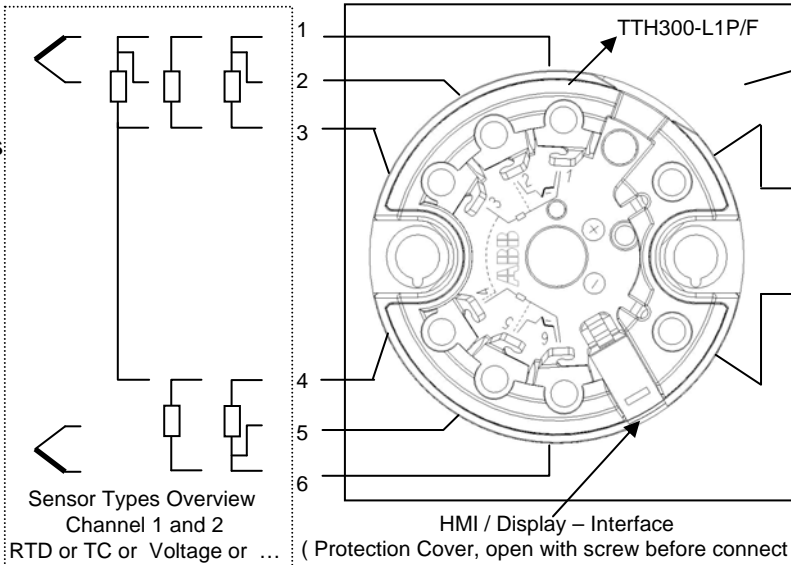
- 1. Install per National Electrical Code (NEC) using Threaded Metal Conduit.
- 2. Warning: Explosion Hazard – Do not disconnect equipment unless power has been switched off, or the area is known to be non-hazardous. Warning: Substitution of components may impair suitability for class I Division 2.
- 3. A dust tight seal must be used at the conduit entry, when the transmitter is used in a class II & III Location.

Temperature Transmitter Model "TTF300" ordering code "TTF300-L2..." is an Temperature Transmitter Type TTH300-L2P/F which is installed in an enclosure type AGLF, AGSF , AGLFD or AGSFD w/wo FM approved display HMI-Ex type A, AS, B, BS.

				Title:		Scale:	
				TTF300 Fieldbus N. I. Temperature Transmitter Control Drawing		-----	
				Approv.	13.02.09	Müller	
				Date		Name	
				<b>ABB</b> Automation Products		Drawing / Part No.:	
						TTF300-L2..P (NI_PS) TTF300-L2..F (NI_PS)	
				Replacement of: -----		Page : of 1 / 1	
1.00	Release	13.02.09	Zeiger				
Rev.	Desc.	Date	Name				

### Hazardous Location

Sensors must be FM 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

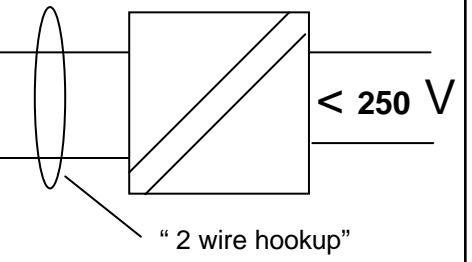


AGLF, AGSF, AGLFD, AGSFD Enclosure Type 4X

**Apparatus input Values**  
 FISO-Model I.S. V max = 17.5 V ;  
 I max = 380 mA ; Pi = 5.32W  
 Ci = 5 nF Li = 0,5 mH, lo <= 50 µA  
 Entity-Model I.S V max = 24 V ;  
 I max = 250 mA, Pi = 1.2 W  
 Li <= 10 µH, Ci <= 5 nF  
 lo <= 50 µA

### Non – Hazardous Location

Barrier Galvanic Isolator



#### Associated Apparatus

- Barrier or Galvanic Isolator must be FM approved and must be installed in accordance with manufactures instructions.
- Barrier or Galvanic Isolator parameters must meet the following Requirements :  
 Voc or Vt \* V max; Ca ] Ci + Ccable;  
 Isc or It \* I max; La ] Li + Lcable  
 Po or Pt \* Pmax
- Maximum non hazardous area voltage must not exceed 250V.
- Install in accordance with the NEC (ANSI/NFPA 70) and ANSI/ISA RP12.6. "Installation of intrinsically safe systems" Do not alter without FM authorization

#### I.S. Sensor Field Circuit Parameters

Voc = 6.5 V; Isc < 25.0 mA; Po = 38 mW  
 Tem. Ident. for Class I Div 1 and Div 2; Groups: A,B,C,D  
 T6 at Tamb = 56 °C; T5 at Tamb = 71 °C; T4 at Tamb = 85 °C;  
 Temp. Ident. for Class I Zone 0 AEx ia IIC  
 T6 at Tamb = 44 °C; T5 at Tamb = 56 °C; T4 at Tamb = 84 °C;  
 Terminals: 1,2,3,4,5,6 GP A,B Ca = 1.55 µF; La = 5.0 mH  
 C,D Ca = 8.75 µF; La = 5.0 mH

#### HMI / Display Interface

**Intrinsically Safe output Parameters**  
 Voc = 6.2 V; Isc < 65.2 mA; Po = 101 mW  
 Class I Div 1 and Div 2; ; Groups: A,B,C,D or  
 Class I Zone 0 AEx ia IIC  
 Terminals: 6 PIN Connector  
 GP A,B Ca = 1.4 µF; La = 5.0 mH  
 C,D Ca = 8.9 µF; La = 5.0 mH

Temperature Transmitter Model "TTF300"  
 Ordering Code "TTF300-L1..P/F" is an Temperature Transmitter Type TTH300-L1P/F, which is installed in an enclosure type AGLF, AGSF or AGLFD, AGSFD w/wo FM Approved display HMI-Ex type A, AS, B, BS.

**Warning: Resistance between barrier ground and earth ground must be less then 1.0 Ohm!**

				Title:		Scale:	
				TTF300 Fieldbus I.S. Temperature Transmitter Control Drawing		-----	
				Approv.	13.02.09	Müller	
				Date		Name	
						Drawing / Part No.:	
						TTF300-L1..P (IS) TTF300-L1..F (IS)	
1.00	Release	13.02.09	Zeiger	Replacement of: -----			
Rev.	Desc.	Date	Name				