

# 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) Entity;  
I/O/AEx ia IIC; T\*- TTH200-L1P/F(IS)  
NI/I/2/ABCD/ T\*; NI/2/II T\* = Ta = \*- TTH200-L2P/F(NI)  
S/II,III/2/EFG T\*

a = Type of protection; L1, L2.

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.
- 3 The enclosure is constructed from plastic. To prevent the risk of electrostatic sparking the plastic surface should only be cleaned only with a damp cloth.

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

IS/I,II,III/1/ABCDEFGF/ T\*; - TTH300-L1P/F(IS); Entity;  
I/O/AEx ia IIC; T\*- TTH300-L1P/F(IS)

NI/II/2/ABCD/ T\*; NI/2/II T\* = Ta = \*- TTH300-L2P/F(NI);  
S/II,III/2/EFG 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 fullfil the NEMA 4X Standard for Class II and III.*
3. *The enclosure is constructed from plastic. To prevent the risk of electrostatic sparking the plastic surface should only be cleaned only with a damp cloth.*

#### **Model TTR200-ab, Temperature Transmitter**

IS/I,II,III/1/ABCDEFGF/ T\*; - TTR200-L6P/F (IS); Entity;  
I/O/AEx ia/IIC; T\*- TTR200-L6P/F (IS);  
NI/II/2/ABCD/ T\*; NI/2/II T\* = Ta = \*- TTR200-L6P/F (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.



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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.
3. The enclosure is constructed from plastic. To prevent the risk of electrostatic sparking the plastic surface should only be cleaned only with a damp cloth.

#### **Model TTR300-ab, Temperature Transmitter**

IS/I,II,III/1/ABCDEFG/ T\*; - TTR300-L6P/F(IS); Entity;  
I/O/AEx ia/IIC; T\*- TTR300-L6P/F(IS);  
NI/II/2/ABCD/ T\*; NI/2/II T\* = Ta = \*- TTR300-L6P/F(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.
3. The enclosure is constructed from plastic. To prevent the risk of electrostatic sparking the plastic surface should only be cleaned only with a damp cloth.

#### **Model TTF300-abcd, Temperature Transmitter**

IS/I,II,III/1/ABCDEFG/ T\*; - TTF300-L1..P/F(IS) Entity;  
I/O/AEx ia IIC; T\*- TTF300-L1..P/F(IS);  
NI/II/2/ABCD/ T\*; NI/2/II T\* = Ta = \*- TTF300-L2..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)



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$U_o$  (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.

3. *The apparatus enclosure contains aluminum and is considered to constitute a potential risk of ignition by impact or friction. Care must be taken into account during installation and use to prevent impact or friction.*

#### **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/1/2/ABCD/ T\*; NI/2/II T\* = Ta = \*-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.

b = Housing/Display; N, or R.

c = Cable Entry; 5,6 or 8.

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) = 51mH

NonIncendive Field Wiring 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

*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.

3. *The apparatus enclosure contains aluminum and is considered to constitute a potential risk of ignition by impact or friction. Care must be taken into account during installation and use to prevent impact or friction.*

## 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

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

Class 3600	1998
Class 3610	2010
Class 3611	2004
Class 3615	2006
Class 3616	1989
ISAS12.00.01	2002
Class 3810	2005
Nema 250	2003
IEC60529	2004

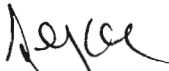
Original Project ID: 3037064

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Subsequent Revision Reports / Date Approval Amended

Report Number	Date	Report Number	Date
3037064	December 18, 2009		
3043465	March 16, 2012		
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FM Approvals LLC



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Timothy J. Adam  
Technical Team Manager

June 13, 2012  
Date