

# CERTIFICATE OF CONFORMITY



## 1. HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS

2. Certificate No: FM23US0067X

3. Equipment:  
(Type Reference and Name) TTD300 and TTD300-N

4. Name of Listing Company: ABB AG

5. Address of Listing Company: Schillerstraße 72, Minden 32425, Germany

6. The examination and test results are recorded in confidential report number:

PR464960 dated 1 April 2024

7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

FM 3600:2022, FM 3610:2021, FM 3611:2021, FM 3615:2022, FM 3616:2022, FM 3810:2021, NEMA 250:2014, ANSI/UL 60079-0:2020, ANSI/UL 60079-1:2020, ANSI/UL 60079-7:2021, ANSI/UL 60079-11:2018, ANSI/UL 60079-31:2015, ANSI/IEC 60529:2020, ANSI/UL 61010-1:2012, ANSI/UL 121201:2018

8. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.

9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.

10. Equipment Ratings:

See Annex

11. The marking of the equipment shall include:

See Annex

12. Description of Equipment:

The TTD300 and TTD300-N transmitter consists of an aluminium alloy or stainless steel housing with an internal partition which separates the enclosure into a terminal compartment and an electronics compartment. RF

Certificate issued by:

J.E. Marquedant  
VP, Manager - Electrical Systems

1 April 2024

Date

To verify the availability of the Approved product, please refer to [www.approvalguide.com](http://www.approvalguide.com)

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feedthroughs are fitted in the partition wall. The terminal compartment is fitted with a flat threaded cover and the electronics compartment is fitted with a window cover having a cemented-in flat glass window.

The TTD300 and TTD300-N are transmitters which in combination with temperature sensors or detecting elements the temperature measuring transducers are used for the detection, amplification and transmission of measurands. The acquisition of measured values is carried out alternatively by means of RTD's, thermo-couples or sensors with defined resistance or direct voltage quantities. The output signal which corresponds to the measured input quantity can be provided as a 4...20mA-signal and as a HART-protocol-signal.

For intrinsically safe installations, the output is galvanically isolated from the input.

### Electrical parameters

The TTD300 has the following electrical ratings:

Intrinsic Safety and non-incendive field wiring;

$U_i \leq 30\text{Vdc}$ ;  $I_i \leq 130\text{mA}$ ;  $P_i \leq 0.8\text{W}$ ;  $C_i = 3.5\text{ nF}$ ;  $L_i = 160\text{ }\mu\text{H}$

$U_o = 6.5\text{ V}$ ;  $I_o = 17.8\text{ mA}$ ;  $P_o = 29\text{ mW}$ ;  $C_i = 55\text{ nF}$ ;  $L_i = \text{negligible (linear output)}$

For passive sensors

IIC		IIB / IIC	
$L_o / \text{mH}$	$C_o / \mu\text{F}$	$L_o / \text{mH}$	$C_o / \mu\text{F}$
5	1.65	5	8.85

For active sensors with the following maximum values

$U_o = 1.2\text{ V}$

$I_o = 50\text{ mA}$

$P_o = 60\text{ mW}$

IIC		IIB / IIC	
$L_o / \text{mH}$	$C_o / \mu\text{F}$	$L_o / \text{mH}$	$C_o / \mu\text{F}$
5	1.15	5	6.35

All other protection techniques, the electronic connection have the following values:

$U \leq 30\text{Vdc}$ ;  $I = 4...20\text{mA}$ ;  $P \leq 0.6\text{W}$

### 13. Specific Conditions of Use:

See Annex

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### **14. Test and Assessment Procedure and Conditions:**

This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

### **15. Schedule Drawings**

A copy of the technical documentation has been kept by FM Approvals.

### **16. Certificate History**

Details of the supplements to this certificate are described below:

Date	Description
1 April 2024	Original Issue.

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# **ANNEX**

## **TTD300aL1cdHfghijklmnopqrstu Temperature Transmitters**

### **Equipment Ratings:**

Intrinsically safe for Class I, II, & III, Division 1, Groups A, B, C, D, E, F & G, T6, T5, T4; Intrinsically safe for Class I, Zone 0, AEx ia IIC T6...T4 Ga; Intrinsically safe for Zone 20, AEx ia IIIC T85°...T100°C Da hazardous locations. When installed using the Entity concept per Control drawing 3KXT065000G0023. Indoor and outdoor Type 4X, IP66 and IP67. Ambient temperature range  $-50^{\circ}\text{C} \leq T_a \leq 85^{\circ}\text{C}$

### **Markings:**

Intrinsically Safe for Class I, II, III; Division 1, Groups A, B, C, D, E, F, G; T6...T4  
Zone 0, AEx ia IIC T6...T4 Ga  
Zone 20, AEx ia IIIC T85°C...T100°C Da  
Entity – 3KXT065000G0023  
 $-50^{\circ}\text{C} \leq T_a \leq 85^{\circ}\text{C}$

### **Description of Equipment:**

#### **TTD300aL1cdHfghijklmnopqrstu**

a = Blank or -N  
c = Housing/Display: M, S, N or R  
d = Cable entry: 1 or 2  
k = Mounting bracket: K3 or K4  
l = Display options: D4 or D6  
n = Surge/Transient Protector: Blank or P1  
o = Extended ambient temperature range: Blank or SE  
q = Identification plate  
s = Customer specific versions

Model codes option variables “f” through “j” and “m”, “p”, “r”, “t” and “u” do not affect product safety

### **Specific Conditions of Use:**

1. For Intrinsic Safety the Temperature code and Ambient temperatures are as follows
  - T\* = Temperature Code T6 or T5 for a Maximum Ambient Temperature of  $56^{\circ}\text{C}$
  - T\* = Temperature Code T4 for a Maximum Ambient Temperature of  $85^{\circ}\text{C}$
2. 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.
3. The service temperature inside the enclosure of the TTD300 and TTD300-N temperature transmitter represents the specified permissible ambient temperature. With the installation it shall be ensured that this service temperature cannot be exceeded.

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4. The temperature of cable entry point and branching point of the TTD300 and TTD300-N temperature transmitter shall not exceed 60°C, see instruction/installation manual

### **TTD300aL2cdHfghijklmnopqrstu Temperature Transmitters**

#### **Equipment Ratings:**

Nonincendive for Class I, II, III Division 2, Groups A, B, C, D, E, F, G; T6, T5, T4 using the nonincendive field wiring concept when installed per 3KXT065000G0023; Class I, Zone 2, AEx ec IIC T6...T4 Gc; Protection by enclosure for Zone 22 AEx tc IIIC T85°C...T100°C Dc; hazardous locations, indoors and outdoors Type 4X with an ambient temperature rating of  $-50^{\circ}\text{C} \leq T_a \leq 85^{\circ}\text{C}$

#### **Markings:**

Zone 2, AEx ec IIC T6...T4 Gc

Zone 22, AEx tc IIIC T85°C...T100°C Dc

Class I Division 2, Groups A, B, C, D T6, T5, T4 - NIFW 3KXT065000G0023

Class II, III, Division 2, Groups E, F, G, T6, T5, T4 - NIFW 3KXT065000G0023

$-50^{\circ}\text{C} \leq T_a \leq 85^{\circ}\text{C}$

Type 4X

#### **Description of Equipment:**

##### **TTD300aL2cdHfghijklmnopqrstu**

a = Blank or -N

c = Housing/Display: M, S, N or R

d = Cable entry: 1 or 2

k = Mounting bracket: K3 or K4

l = Display options: D4 or D6

n = Surge/Transient Protector: Blank or P1

o = Extended ambient temperature range: Blank or SE

q = Identification plate

s = Customer specific versions

Model codes option variables "f" through "j" and "m", "p", "r", "t" and "u" do not affect product safety

#### **Specific Conditions of Use:**

1. The temperature of cable entry point and branching point of the TTD300 and TTD300-N temperature transmitter shall not exceed 60°C, see instruction/installation manual

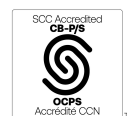
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### **TTD300aL3cdHfghijklmnopqrstu Temperature Transmitters**

#### **Equipment Ratings:**

Flameproof for Zone 1, AEx db IIC T6 Gb; Protection by enclosure for Zone 21 AEx tb IIIC T85°C...T100°C Db; Explosionproof for Class I, Division 1. Groups B, C, D T6 hazardous locations; Dust-ignition proof for Class II, III Division 1, Groups E, F, G T6 hazardous (classified) locations. Indoors and outdoors (Type 4X). Ambient temperature range  $-50^{\circ}\text{C} \leq T_a \leq 75^{\circ}\text{C}$ .

#### **Markings:**

Class I, II, III, Division 1, Groups B, C, D, E, F, G  
Zone 1, AEx db IIC T6 Gb  
Zone 21, Ex tb IIIC T85°C...T100°C Db  
 $-40^{\circ}\text{C} \leq T_a \leq 75^{\circ}\text{C}$   
(Minimum ambient temperature is  $-50^{\circ}\text{C}$  for option o = SE)

#### **Description of Equipment:**

##### **TTD300aL3cdHfghijklmnopqrstu**

a = Blank or -N  
c = Housing/Display: M, S, N or R  
d = Cable entry: 1 or 2  
k = Mounting bracket: K3 or K4  
l = Display options: D4 or D6  
n = Surge/Transient Protector: Blank or P1  
o = Extended ambient temperature range: Blank or SE  
q = Identification plate  
s = Customer specific versions

Model codes option variables "f" through "j" and "m", "p", "r", "t" and "u" do not affect product safety.

#### **Specific Conditions of Use:**

1. Contact the manufacturer for specific flamepath joint details during repair of flameproof AEx db or Explosionproof apparatus.
2. The temperature of cable entry point and branching point of the TTD300 and TTD300-N temperature transmitter shall not exceed  $60^{\circ}\text{C}$ , see instruction/installation manual.
3. When the manufacturer of the equipment has not identified the type of protection on the label, the user shall, on installation, mark the label with the type of protection used. Once the type of protection has been marked it shall not be changed.

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### **TTD300aL7cdHfghijklmnopqrstu Temperature Transmitters**

#### **Equipment Ratings:**

Intrinsically safe for Class I, II, & III, Division 1, Groups A, B, C, D, E, F & G, T6, T5, T4; Intrinsically safe for Class I, Zone 0, AEx ia IIC T6...T4 Ga; hazardous (classified) locations. When installed using the Entity concept per Control drawing 3KXT065000G0023. Indoor and outdoor Type 4X.

Flameproof for Zone 1 with intrinsically safe connections for Zone 0, AEx db IIC T6 Gb; Explosionproof for Class I, Division 1. Groups B, C, D T6; Dust-ignition proof for Class II, III Division 1, Groups E, F, G T6 hazardous (classified) locations. Indoors and outdoors Type 4X.

Ambient temperature range  $-50^{\circ}\text{C} \leq T_a \leq 85^{\circ}\text{C}$ .

#### **Markings:**

Class I, II, III, Division 1, Groups B, C, D, E, F, G

Zone 1, AEx db IIC T6 Gb

Zone 21, Ex tb IIIC T85°C...T100°C Db

$-40^{\circ}\text{C} \leq T_a \leq 75^{\circ}\text{C}$

Intrinsically Safe for Class I, II, III; Division 1, Groups A, B, C, D, E, F, G; T6...T4

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

Zone 20, Ex ia IIIC T85°C...T100°C Da

Entity – 3KXT065000G0023

Type 4X

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

(Minimum ambient temperature is  $-50^{\circ}\text{C}$  for option o = SE)

#### **Description of Equipment:**

##### **TTD300aL7cdHfghijklmnopqrstu**

a = Blank or -N

c = Housing/Display: M, S, N or R

d = Cable entry: 1 or 2

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l = Display options: D4 or D6

n = Surge/Transient Protector: Blank or P1

o = Extended ambient temperature range: Blank or SE

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#### **Specific Conditions of Use:**

1. For Intrinsic Safety the Temperature code and Ambient temperatures are as follows

- T\* = Temperature Code T6 or T5 for a Maximum Ambient Temperature of  $56^{\circ}\text{C}$
- T\* = Temperature Code T4 for a Maximum Ambient Temperature of  $85^{\circ}\text{C}$

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2. 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.
3. Contact the manufacturer for specific flamepath joint details during repair of flameproof AEx db or Explosionproof apparatus.
4. The service temperature inside the enclosure of the TTD300 and TTD300-N temperature transmitter represents the specified permissible ambient temperature. With the installation it shall be ensured that this service temperature cannot be exceeded.
5. The temperature of cable entry point and branching point of the TTD300 and TTD300-N temperature transmitter shall not exceed 60°C, see instruction/installation manual.
6. When the manufacturer of the equipment has not identified the type of protection on the label, the user shall, on installation, mark the label with the type of protection used. Once the type of protection has been marked it shall not be changed.

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