

CERTIFICATE OF CONFORMITY

1. HAZARDOUS LOCATION ELECTRICAL EQUIPMENT PER CANADIAN REQUIREMENTS

2. **Certificate No:** FM21CA0070X
3. **Equipment:** TT*200, TT*300, TT*300-N Temperature Transmitter
(Type Reference and Name) and TSP341-N Temperature Sensor
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:

PR459291 dated 4th September 2022

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

CSA C22.2 No. 0.4:2017 (R2022), CSA C22.2 No. 0.5:2016 (R2020), CSA C22.2 No. 25:2017,
CSA C22.2 No. 30:R2016, CSA C22.2 No. 94:1991 (R2011), CSA C22.2 No. 213:2017,
CSA C22.2 No. 60079-0:2019, CSA C22.2 No. 60079-1:2016, CSA C22.2 No. 60079-7:2018,
CSA C22.2 No. 60079-11:2014, CSA C22.2 No. 60529:R2021, CSA C22.2 No. 61010-1:2012

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:

Certificate issued by:



J.E. Marquedant
VP, Manager - Electrical Systems

8 August 2023

Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

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FM Approvals LLC, 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
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The TT*200 and TT*300 transmitter are designed for process temperature measurements using RTD's, thermocouples or sensors with defined resistance or direct voltage quantities. All signal outputs are available in 4 to 20 mA and HART communications. The TT*200 and TT*300 are available in three variants, a field mount enclosure which is made of aluminum or stainless steel, a rail mount version and a head mount (hockey puck) version. The field mount and head mount versions have an optional HMI.

The TSP341-N is a non-invasive temperature sensor that contains fixed temperature measurement insets connected to a TT*300-N transmitter in either a head mounted or remote configuration (TSP341-N without Transmitter).

See Annex for model codes

Ratings

The ambient operating temperature range of the TT*200 and TT*300 temperature transmitter is -50°C to 85°C. Process measurement is made remotely from the transmitter.

The ambient operating temperature range of the TSP341-N temperature transmitter is -50°C to 85°C or -40°C to 85°C depending on the option chosen.

The TSP341-N enclosures are rated for an ingress protection of Type 4X, IP66 and IP67.

The ambient operating temperature range of the BUZ enclosure is -45°C to 101°C.

The BUZ enclosure has an ingress rating of IP65.

Electrical data:

In Type of Protection intrinsic safety and non-incendive, Energy limitation parameters:

$U_i \leq 30\text{Vdc}$; $I_i \leq 130\text{mA}$; $P_i \leq 0.8\text{W}$; $C_i = 0.57\text{nF}$; $L_i = 160\mu\text{H}$

All other protection types:

$U \leq 30\text{Vdc}$; $I = 4 \dots 20\text{mA}$; $P \leq 0.8\text{W}$

Output parameters

$U_o = 6.5\text{ V}$; $I_o = 17.8\text{ mA}$; $P_o = 29\text{ mW}$; $C_o \leq 1.65\text{ }\mu\text{F}$; $L_o \leq 5.0\text{ mH}$

TSP341-N without Transmitter

$U \leq 6.5\text{V}$ $I \leq 25\text{ mA}$ $P \leq 29\text{mW}$

13. Specific Conditions of Use:

See Annex for Specific Conditions of Use

14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals Canadian Certification Scheme.

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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 |
|------------------|--|
| 4 September 2022 | Original Issue. |
| 10 March 2023 | <u>Supplement 1:</u> Report Reference: RR235567 dated 10 th March 2023. Description of the Change: Correction to Listing. |
| 8 August 2023 | <u>Supplement 3:</u> Report Reference: RR236778 dated 8 August 2023. Description of the Change(s): Addition of TSP341-N sensor. |

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ANNEX

TSP341-N-L1YbNcB1Y6Ud - temperature sensor

Equipment Ratings:

Intrinsically safe for Class I, Division 1, Groups A, B, C, D; T6, T4; Intrinsically safe for Zone 0, Ex ia IIC T6, T4 Ga; Intrinsically safe for Zone 1, Ex ib IIC T6, T4 Gb; hazardous locations, indoors and outdoors (IP65) with an ambient temperature rating of -40°C to 116°C using the entity concept when installed per TSP341-N-L1YB.

Markings:

IS Class I, Division 1, Groups A, B, C, D, T6, T4 Entity TSP341-N-L1YB
Zone 0, Ex ia IIC T6, T4 Ga, Entity TSP341-N-L1YB
Zone 1, Ex ia IIC T6, T4 Gb, Entity TSP341-N-L1YB
-40°C ≤ Ta ≤ 116°C
IP65

Description of Equipment:

b = Process connection; 00, 14, 15, 31, 32, 33, 34, 41, 42, 43, 51, 52 or 53
c = Extension tube length: 1, 2, 3, 4, 5, 6, 7, 8 or 9
d = Cable entry: 1, 2 or 3

Specific Conditions of Use:

1. For Intrinsic Safety 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 T4 for a Maximum Ambient Temperature of 116°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 TSP341-N temperature sensor represents the specified permissible ambient temperature. With the installation it shall be ensured that this service temperature cannot be exceeded.
4. Heat-resistant connection cables shall be used if the temperature at the cable entries or inside the enclosure of the TSP341-N temperature sensor is higher than 60°C.

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TSP341-N-L1YbNcd1Y6Uf - temperature sensor

Equipment Ratings:

Intrinsically safe for Class I, II, III, Division 1, Groups A, B, C, D, E, F, G; T6, T4; Intrinsically safe for Zone 0, Ex ia IIC T6, T4 Ga; Intrinsically safe for Zone 1, Ex ia IIC T6, T4 Gb; hazardous (classified) locations, indoors and outdoors (IP65) with an ambient temperature rating of -40°C to 116°C using the entity concept when installed per TSP341-N-L1Y.

Markings:

IS Class I, Division 1, Groups A, B, C, D, E, F, G T6, T4 Entity TSP341-N-L1Y
Zone 0, Ex ia IIC T6, T4 Ga, Entity TSP341-N-L1Y
Zone 1, Ex ia IIC T6, T4 Gb, Entity TSP341-N-L1Y
-40°C ≤ Ta ≤ 116°C
IP65

Description of Equipment:

b = Process connection; 00, 14, 15, 31, 32, 33, 34, 41, 42, 43, 51, 52 or 53
c = Extension tube length: 1, 2, 3, 4, 5, 6, 7, 8 or 9
d = Housing/Display: L or S
f = Cable entry: 1, 2 or 3

Specific Conditions of Use:

1. For Intrinsic Safety Approvals the Temperature code and Ambient temperatures are as follows
 - T* = Temperature Code T6 or T5 for a Maximum Ambient Temperature of 56°C
 - T* = Temperature Code T4 for a Maximum Ambient Temperature of 116°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 TSP341-N temperature sensor represents the specified permissible ambient temperature. With the installation it shall be ensured that this service temperature cannot be exceeded.
4. Heat-resistant connection cables shall be used if the temperature at the cable entries or inside the enclosure of the TSP341-N temperature sensor is higher than 60°C.

TSP341-N-L1YbNcdH9Ufg - temperature transmitter

Equipment Ratings:

Intrinsically safe for Class I, II, III, Division 1, Groups A, B, C, D, E, F, G; T6, T4; Intrinsically safe for Zone 0, Ex ia IIC T6, T4 Ga; Intrinsically safe for Zone 1, Ex ia IIC T6, T4 Gb; hazardous locations, indoors and outdoors (Type 4X,

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IP66/67) with an ambient temperature rating of -40°C to 81°C using the entity concept when installed per TSP341-N-L1H.

Markings:

IS Class I, II, III, Division 1, Groups A, B, C, D, E, F, G T6, T4 Entity TSP341-N-L1H
Zone 0, Ex ia IIC T6, T4 Ga, Entity TSP341-N-L1H
Zone 1, Ex ia IIC T6, T4 Gb, Entity TSP341-N-L1H
-40°C ≤ Ta ≤ 81°C
Type 4X, IP66/67

Description of Equipment:

b = Process connection; 00, 14, 15, 31, 32, 33, 34, 41, 42, 43, 51, 52 or 53
c = Extension tube length: 1, 2, 3, 4, 5, 6, 7, 8 or 9
d = Housing/Display: L1, L2, S1 or S4
f = Cable entry: 1, 2 or 3
g = Display: Blank, L1, L2, L3 or L4

Specific Conditions of Use:

1. For Intrinsic Safety 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 T4 for a Maximum Ambient Temperature of 81°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 TSP341-N temperature sensor represents the specified permissible ambient temperature. With the installation it shall be ensured that this service temperature cannot be exceeded.
4. Heat-resistant connection cables shall be used if the temperature at the cable entries or inside the enclosure of the TSP341-N temperature sensor is higher than 60°C.

TSP341-N-L2YbNcB1Y6Ud - temperature sensor

Equipment Ratings:

Nonincendive for Class I, Division 2, Groups A, B, C, D; T6, T4; Zone 2, Ex nA IIC T6, T4 Gc; Zone 2, Ex ec IIC T6, T4 Gc; hazardous locations, indoors and outdoors (IP65) with an ambient temperature rating of -40°C to 96°C using the nonincendive field wiring concept when installed per TSP341-N-L2YB

Markings:

Zone 2, Ex nA IIC T6, T4 Gc
Zone 2, Ex ec IIC T6, T4 Gc
Class I, Division 2, Groups A, B, C, D T6, T4; NIFW TSP341-N-L2YB

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-40°C ≤ Ta ≤ 96°C
IP65

Description of Equipment:

b = Process connection; 00, 14, 15, 31, 32, 33, 34, 41, 42, 43, 51, 52 or 53
c = Extension tube length: 1, 2, 3, 4, 5, 6, 7, 8 or 9
d = Cable entry: 1, 2 or 3

Specific Conditions of Use:

1. For Nonincendive 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 T4 for a Maximum Ambient Temperature of 96°C
2. When installed as Ex nA or Ex ec the TSP341-N
 - Transient protection shall be provided that is set at a level not exceeding 140% of the peak rated voltage at the supply terminals to the equipment.
 - The connecting cables shall be installed in a fixed position and secured against tensile loads.
3. The service temperature inside the enclosure of the TSP341-N temperature sensor represents the specified permissible ambient temperature. With the installation it shall be ensured that this service temperature cannot be exceeded.
4. Heat-resistant connection cables shall be used if the temperature at the cable entries or inside the enclosure of the TSP341-N temperature sensor is higher than 60°C.

TSP341-N-L2YbNcd1Y6Uf - temperature sensor

Equipment Ratings:

Nonincendive for Class I, II, III Division 2, Groups A, B, C, D, E, F, G; T6, T4; Zone 2, Ex nA IIC T6, T4 Gc; Zone 2, Ex ec IIC T6, T4 Gc; hazardous locations, indoors and outdoors (Type 4X, IP66/67) with an ambient temperature rating of -40°C to 96°C using the nonincendive field wiring concept when installed per TSP341-N-L2Y

Markings:

Zone 2, Ex nA IIC T6, T4 Gc
Zone 2, Ex ec IIC T6, T4 Gc
Class I, II, III, Division 2, Groups A, B, C, D, E, F, G T6, T4; NIFW TSP341-N-L2Y
-40°C ≤ Ta ≤ 96°C
Type 4X, IP66/67

Description of Equipment:

b = Process connection; 00, 14, 15, 31, 32, 33, 34, 41, 42, 43, 51, 52 or 53

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c = Extension tube length: 1, 2, 3, 4, 5, 6, 7, 8 or 9

d = Housing: L or S

f = Cable entry: 1, 2 or 3

Specific Conditions of Use:

1. For Nonincendive 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 T4 for a Maximum Ambient Temperature of 96°C

2. When installed as Ex nA or Ex ec the TSP341-N

- Transient protection shall be provided that is set at a level not exceeding 140% of the peak rated voltage at the supply terminals to the equipment.
- The connecting cables shall be installed in a fixed position and secured against tensile loads.

3. The service temperature inside the enclosure of the TSP341-N temperature sensor represents the specified permissible ambient temperature. With the installation it shall be ensured that this service temperature cannot be exceeded.

4. Heat-resistant connection cables shall be used if the temperature at the cable entries or inside the enclosure of the TSP341-N temperature sensor is higher than 60°C.

TSP341-N-L2YbNcdH9Ufg - temperature transmitter

Equipment Ratings:

Nonincendive for Class I, II, III Division 2, Groups A, B, C, D, E, F, G; T6, T4; Zone 2, Ex nA IIC T6, T4 Gc; Zone 2, Ex ec IIC T6, T4 Gc; hazardous locations, indoors and outdoors (Type 4X, IP66/67) with an ambient temperature rating of -40°C to 81°C using the nonincendive field wiring concept when installed per TSP341-N-L2H

Markings:

Zone 2, Ex nA IIC T6, T4 Gc

Zone 2, Ex ec IIC T6, T4 Gc

Class I, II, III, Division 2, Groups A, B, C, D, E, F, G T6, T4; NIFW TSP341-N-L2H

-40°C ≤ Ta ≤ 81°C

Type 4X, IP66/67

Description of Equipment:

b = Process connection; 00, 14, 15, 31, 32, 33, 34, 41, 42, 43, 51, 52 or 53

c = Extension tube length: 1, 2, 3, 4, 5, 6, 7, 8 or 9

d = Housing/Display: L1, L2, S1 or S4

f = Cable entry: 1, 2 or 3

g = Display: Blank, L1, L2, L3 or L4

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Specific Conditions of Use:

1. For Nonincendive Approvals the Temperature code and Ambient temperatures are as follows
 - T* = Temperature Code T6 or T5 for a Maximum Ambient Temperature of 56°C
 - T* = Temperature Code T4 for a Maximum Ambient Temperature of 81°C
2. When installed as Ex nA or Ex ec the TSP341-N;
 - Transient protection shall be provided that is set at a level not exceeding 140% of the peak rated voltage at the supply terminals to the equipment.
 - The connecting cables shall be installed in a fixed position and secured against tensile loads.
3. The service temperature inside the enclosure of the TSP341-N temperature sensor represents the specified permissible ambient temperature. With the installation it shall be ensured that this service temperature cannot be exceeded.
4. Heat-resistant connection cables shall be used if the temperature at the cable entries or inside the enclosure of the TSP341-N temperature sensor is higher than 60°C.

TTF200-a1bcHde – field mounted temperature transmitter

Equipment Ratings:

Intrinsically safe for Class I, Division 1, Groups A, B, C, D, E, F, G; T6, T4; Intrinsically safe for Zone 0, Ex ia IIC T6...T4 Ga; Intrinsically safe for Zone 1 with intrinsically safe outputs for Zone 0, Zone 1, Ex ib [ia Ga] IIC T6...T4 Gb; Intrinsically safe for Zone 1 with intrinsically safe outputs for Zone 20, Zone 1, Ex ib IIC T6...T4 Gb / [Ex ia Da] IIIC; hazardous locations, indoors and outdoors (Type 4X, IP66/67) with an ambient temperature rating of -50°C to +85°C using the Entity concept when installed per TTF200-L1H

Markings:

Class I, Division 1, Groups A, B, C, D, E, F, G; T6, T4 ; Entity – TTF200-L1H
Ex ia IIC T6...T4 Ga; Entity – TTF200-L1H
Ex ib [ia Ga] IIC T6...T4 Gb; Entity – TTF200-L1H
Ex ib IIC T6...T4 Gb / [Ex ia Da] IIIC; Entity – TTF200-L1H
-50°C ≤ Ta ≤ 85°C
Type 4X, IP66, IP67

Description of Equipment:

a = L or R
b = Housing/Display: A, B, E, or F
c = Cable entry: 1, 2, or 3
d = Extended ambient, blank or SE
e = manufacturer specific extensions which are not relevant to safety.

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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°C
 - T* = Temperature Code T4 for a Maximum Ambient Temperature of 85°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 TTF200 temperature measuring transducer represents the specified permissible ambient temperature. With the installation it shall be ensured that this service temperature cannot be exceeded.
4. Heat-resistant connection cables shall be used if the temperature at the cable entries or inside the enclosure of the TTF200 temperature measuring transducer is higher than 60°C.

TTF200-a2bcHde – field mounted temperature transmitter

Equipment Ratings:

Nonincendive for Class I, Division 2, Groups A, B, C, D; T6, T4 using the nonincendive field wiring concept when installed per TTF200-L2H; Type of Protection n for Zone 2, Ex nA IIC T6...T4 Ga; Increased safety for Zone 2 Ex ec IIC T6...T4 Gb hazardous locations, indoors and outdoors (Type 4X, IP66/67) with an ambient temperature rating of -50°C to +85°C.

Markings:

Class I, Division 2, Groups A, B, C, D; T6, T4 -50°C ≤ Ta ≤ 85°C; NIFW – TTF200-L2H
Ex nA IIC T6...T4 Gc -50°C ≤ Ta ≤ 85°C
Ex ec IIC T6...T4 Gc -50°C ≤ Ta ≤ 85°C
Type 4X, IP66, IP67

Description of Equipment:

a = L or R
b = Housing/Display: A, B, E, or F
c = Cable entry: 1, 2, or 3
d = Extended ambient, blank or SE
e = manufacturer specific extensions which are not relevant to safety.

Specific Conditions of Use:

1. For Nonincendive the Temperature code and Ambient temperatures are as follows
 - T* = Temperature Code T6 or T5 for a Maximum Ambient Temperature of 56°C
 - T* = Temperature Code T4 for a Maximum Ambient Temperature of 85°C

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2. When installed as Ex nA or Ex ec the TTF200;

- Transient protection shall be provided that is set at a level not exceeding 140% of the peak rated voltage at the supply terminals to the equipment.
- The connecting cables shall be installed in a fixed position and secured against tensile loads.

3. The service temperature inside the enclosure of the TTF200 temperature measuring transducer represents the specified permissible ambient temperature. With the installation it shall be ensured that this service temperature cannot be exceeded.

4. Heat-resistant connection cables shall be used if the temperature at the cable entries or inside the enclosure of the TTF200 temperature measuring transducer is higher than 60°C.

TTF200-a3bcHde – field mounted temperature transmitter

Equipment Ratings:

Explosionproof with Intrinsically safe outputs for Class I, Division 1, Groups A, B, C, D T6, T4 using the Entity concept when installed per TTF200-L3H. Explosionproof for Class I, Division 1 Groups A, B, C, D; T6, T4; Dust-ignitionproof for Class II, III, Division 1, Groups E, F, G; T6, T4; Flameproof for Zone 1 with intrinsically safe outputs for Zone 0, Zone 1 Ex db [ia Ga] IIC T6...T4 using the Entity concept when installed per TTF200-L3H hazardous locations, indoors and outdoors (Type 4X, IP66/67) with an ambient temperature rating of -50°C to +85°C.

Markings:

Class I, Division 1, Groups A, B, C, D; T6, T4; -50°C ≤ Ta ≤ 85°C; Entity – TTF200-L3H

Class I, Division 1, Groups A, B, C, D; T6, T4; -50°C ≤ Ta ≤ 85°C

Class II, III, Groups E, F, G; T6, T4; -50°C ≤ Ta ≤ 85°C

Zone 1, Ex db [ia Ga] IIC T6...T4 Gb -50°C ≤ Ta ≤ 85°C; Entity – TTF200-L3H

Type 4X, IP66, IP67

Description of Equipment:

a = L or R

b = Housing/Display: A, B, E, or F

c = Cable entry: 1, 2, or 3

d = Extended ambient, blank or SE

e = manufacturer specific extensions which are not relevant to safety.

Specific Conditions of Use:

1. 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

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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 Ex db and Explosionproof apparatus.
4. The service temperature inside the enclosure of the TTFx00 temperature measuring transducer represents the specified permissible ambient temperature. With the installation it shall be ensured that this service temperature cannot be exceeded.
5. Heat-resistant connection cables shall be used if the temperature at the cable entries or inside the enclosure of the TTFx00 temperature measuring transducer is higher than 60°C.

TTF200-a7bcHde – field mounted temperature transmitter

Equipment Ratings:

Intrinsically safe for Class I, II, III, Division 1, Groups A, B, C, D, E, F, G T6, T4; Zone 0, Ex ia IIC T6...T1 Ga; Zone 1 with connections to Zone 0, Ex ib [ia Ga] IIC T6...T4 Gb; Zone 1 with connections to Zone 20, Ex ib IIC T6...T1 Gb / [Ex ia Ga] IIIC; Explosionproof with intrinsically safe outputs for Class I, Division 1, Groups A, B, C, D, T6, T4; Explosionproof for Class I, Division 1, Groups A, B, C, D, T6, T4; Dust ignitionproof for Class II, III, Groups E, F, G T6, T4; Flameproof with intrinsically safe outputs Zone 1 with connection to Zone 0, Ex db [ia Ga] IIC T6...T4 Gb hazardous (classified) locations indoor and outdoor (Type 4X, IP66, IP67) ambient temperature range $-50^{\circ}\text{C} \leq T_a \leq 85^{\circ}\text{C}$ using the entity concept when installed per TTF200-L1H.

Markings:

Class I, II, III; Division 1, Groups A, B, C, D, E, F, G; T6, T4; ; Entity – TTF200-L1H
Zone 0, Ex ia IIC T6...T1 Ga Entity – TTF200-L1H
Zone 1, Ex ib [ia Ga] IIC T6...T4 Gb; Entity – TTF200-L1H
Zone 1, Ex ib IIC T6...T1 Gb / [Ex ia Da] IIIC; Entity – TTF200-L1H
Class I, Division 1, Groups A, B, C, D; T6, T4 Entity – TTF200-L3H
Class I, Division 1, Groups A, B, C, D; T6, T4
Class II, III, Division 1, Groups E, F, G; T6, T4
Zone 1, Ex db [ia Ga] IIC T6...T4 Gb Entity – TTF200-L3H
 $-50^{\circ}\text{C} \leq T_a \leq 85^{\circ}\text{C}$
Type 4X, IP66, IP67

Description of Equipment:

a = L or R
b = Housing/Display: A, B, E, or F
c = Cable entry: 1, 2, or 3
d = Extended ambient, blank or SE
e = manufacturer specific extensions which are not relevant to safety.

To verify the availability of the Approved product, please refer to www.approvalguide.com

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Specific Conditions of Use:

1. For Intrinsic Safety and Nonincendive Approvals the Temperature code and Ambient temperatures are as follows
 - T* = Temperature Code T6 or T5 for a Maximum Ambient Temperature of 56°C
 - T* = Temperature Code T4 for a Maximum Ambient Temperature of 85°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.
4. Contact the manufacturer for specific flamepath joint details during repair of flameproof Ex d apparatus.
5. The service temperature inside the enclosure of the TTFx00 temperature measuring transducer represents the specified permissible ambient temperature. With the installation it shall be ensured that this service temperature cannot be exceeded.
6. Heat-resistant connection cables shall be used if the temperature at the cable entries or inside the enclosure of the TTFx00 temperature measuring transducer is higher than 60°C.

TTF300-ab1cdHef – field mounted temperature transmitter

Equipment Ratings:

Intrinsically safe for Class I, Division 1, Groups A, B, C, D; T6, T4; Intrinsically safe for Zone 0, Ex ia IIC T6...T4 Ga; Intrinsically safe for Zone 1 with intrinsically safe outputs for Zone 0, Zone 1, Ex ib [ia Ga] IIC T6...T4 Gb; Intrinsically safe for Zone 1 with intrinsically safe outputs for Zone 20, Zone 1, Ex ib IIC T6...T4 Gb / [Ex ia Da] IIIC; hazardous locations, indoors and outdoors (Type 4X, IP66/67) with an ambient temperature rating of -50°C to +85°C using the Entity concept when installed per TTF200-L1H.

Markings:

Class I, II, III; Division 1, Groups A, B, C, D, E, F, G; T6, T4; -50°C ≤ Ta ≤ 85°C; Entity – TTF300-L1H
Zone 0, Ex ia IIC T6...T4 Ga -50°C ≤ Ta ≤ 85°C; Entity – TTF300-L1H
Zone 1, Ex ib [ia Ga] IIC T6...T4 Gb Ta = 85°C; Entity – TTF300-L1H
Zone 1, Ex ib IIC T6...T4 Gb Ta = 85°C / [Ex ia Da] IIIC; Entity – TTF300-L1H
Type 4X, IP66, IP67

Description of Equipment:

a = Measurement: Blank or N
b = L or R
c = Housing/Display: A, B, C, or D

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d = Cable entry: 1, 2, or 3
e = Extended ambient, blank or SE
f = Manufacturer specific extensions – Not relevant to safety

Specific Conditions of Use:

1. For Intrinsic Safety Approvals the Temperature code and Ambient temperatures are as follows;
 - T* = Temperature Code T6 or T5 for a Maximum Ambient Temperature of 56°C
 - T* = Temperature Code T4 for a Maximum Ambient Temperature of 85°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 TTFx00 temperature measuring transducer represents the specified permissible ambient temperature. With the installation it shall be ensured that this service temperature cannot be exceeded.
4. Heat-resistant connection cables shall be used if the temperature at the cable entries or inside the enclosure of the TTFx00 temperature measuring transducer is higher than 60°C.

TTF300-ab2cdHef – field mounted temperature transmitter

Equipment Ratings:

Nonincendive for Class I, Division 2, Groups A, B, C, D; T6, T4 using the nonincendive field wiring concept when installed per TTF200-L2H; Type of Protection n for Zone 2, Ex nA IIC T6...T4 Ga; Increased safety for Zone 2 Ex ec IIC T6...T4 Gb hazardous locations, indoors and outdoors (Type 4X, IP66/67) with an ambient temperature rating of -50°C to +85°C.

Markings:

Class I, II, III, Division 2, Groups A, B, C, D, E, F, G; T6, T4; NIFW – TTF300-L2H
Zone 2, Ex nA IIC T6...T1 Gc
Zone 2, Ex ec IIC T6...T1 Gc
-50°C ≤ Ta ≤ 85°C
Type 4X, IP66, IP67

Description of Equipment:

a = Measurement: Blank or N
b = L or R
c = Housing/Display: A, B, C, or D
d = Cable entry: 1, 2, or 3
e = Extended ambient, blank or SE
f = Manufacturer specific extensions – Not relevant to safety

Specific Conditions of Use:

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1. For Nonincendive Approvals the Temperature code and Ambient temperatures are as follows

- T* = Temperature Code T6 or T5 for a Maximum Ambient Temperature of 56°C
- T* = Temperature Code T4 for a Maximum Ambient Temperature of 85°C

2. When installed as Ex nA or Ex ec the TTF300;

- Transient protection shall be provided that is set at a level not exceeding 140% of the peak rated voltage at the supply terminals to the equipment.
- The connecting cables shall be installed in a fixed position and secured against tensile loads.

3. The service temperature inside the enclosure of the TTFx00 temperature measuring transducer represents the specified permissible ambient temperature. With the installation it shall be ensured that this service temperature cannot be exceeded.

4. Heat-resistant connection cables shall be used if the temperature at the cable entries or inside the enclosure of the TTFx00 temperature measuring transducer is higher than 60°C.

TTF300-ab3cdHef – field mounted temperature transmitter

Equipment Ratings:

Flameproof for Zone 1 with intrinsically safe connections for Zone 0, Ex db [ia Ga] IIC T6...T1 Gb and Explosionproof with intrinsically safe connections for Class I, Division 1. Groups A, B, C, D T6, T4 hazardous locations when installed per the Entity concept and control drawing TTF300-L3H; Explosionproof for Class I, Division 1. Groups A, B, C, D T6, T4; Dust-ignition proof for Class II, III Division 1, Groups E, F, G T6, T4 hazardous locations. Indoors and outdoors (Type 4X, IP66/67). Ambient temperature range $-50^{\circ}\text{C} \leq T_a \leq 85^{\circ}\text{C}$.

Markings:

Zone 1 Ex db [ia Ga] IIC T6...T4 Gb Entity – TTF300-L3H

Class I, Division 1, Groups A, B, C, D; T6, T4 with connections to intrinsically safe circuits Entity – TTF300-L3H

Class I, Division 1, Groups A, B, C, D: T6...T4

Class II, III, Division 1, Groups E, F, G: T6...T4

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

Type 4X, IP66, IP67

Description of Equipment:

a = Measurement: Blank or N

b = L or R

c = Housing/Display: A, B, C, or D

d = Cable entry: 1, 2, or 3

e = Extended ambient, blank or SE

f = Manufacturer specific extensions – Not relevant to safety

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Specific Conditions of Use:

1. 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
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 Ex d or Explosionproof apparatus.
4. The service temperature inside the enclosure of the TTFx00 temperature measuring transducer represents the specified permissible ambient temperature. With the installation it shall be ensured that this service temperature cannot be exceeded.
5. Heat-resistant connection cables shall be used if the temperature at the cable entries or inside the enclosure of the TTFx00 temperature measuring transducer is higher than 60°C.

TTF300-ab7cdHef – field mounted temperature transmitter

Equipment Ratings:

Intrinsically safe for Class I, II, III, Division 1, Groups A, B, C, D, E, F, G; T6, T4; Intrinsically safe for Zone 0, Ex ia IIC T6...T4 Ga; Intrinsically safe for Zone 1 with intrinsically safe outputs for Zone 0, Zone 1, Ex ib [ia Ga] IIC T6...T4 Gb; Intrinsically safe for Zone 1 with intrinsically safe outputs for Zone 20, Zone 1, Ex ib IIC T6...T4 Gb / [Ex ia Da] IIIC; hazardous locations, indoors and outdoors (Type 4X, IP66/67) with an ambient temperature rating of -50°C to +85°C using the Entity concept when installed per TTF300-L1H.

Markings:

IS for Class I, II, III, Division 1, Groups A,B,C,D,E,F,G; T6...T4; ; Entity – TTF300-L1H
Zone 0 Ex ia IIC T6...T4 Ga; Entity – TTF300-L1H
Zone 1 Ex ib [ia Ga] IIC T6...T4 Gb Entity – TTF300-L1H
Zone 1 Ex ib IIC T6...T4 Gb / [Ex ia Da] IIIC; Entity – TTF300-L1H
Zone 1 Ex db [ia Ga] IIC T6...T4 Gb Entity – TTF300-L3H
Class I, Division 1, Groups A, B, C, D; T6...T4 with connections to intrinsically safe circuits Entity – TTF300-L3H
Class I, Division 1, Groups A, B, C, D; T6...T4
Class II, III, Division 1, Groups E, F, G T6...T4
50°C ≤ Ta ≤ 85°C
Type 4X, IP66, IP67

Description of Equipment:

a = Measurement: Blank or N
b = L or R

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c = Housing/Display: A, B, C, or D

d = Cable entry: 1, 2, or 3

e = Extended ambient, blank or SE

f = Manufacturer specific extensions – Not relevant to safety

Specific Conditions of Use:

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

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

4. Contact the manufacturer for specific flamepath joint details during repair of flameproof Ex d apparatus.

5. The service temperature inside the enclosure of the TTFx00 temperature measuring transducer represents the specified permissible ambient temperature. With the installation it shall be ensured that this service temperature cannot be exceeded.

6. Heat-resistant connection cables shall be used if the temperature at the cable entries or inside the enclosure of the TTFx00 temperature measuring transducer is higher than 60°C.

TTH200-aHbc – head mounted temperature transmitter

Equipment Ratings:

Intrinsically safe for Class I, Division 1, Groups A, B, C, D: T6, T4; Intrinsically safe for Zone 0, Ex ia IIC T6...T4 Ga; Intrinsically safe for Zone 1 with connections to Zone 0, Ex [ia Ga] ib IIC T6...T4; Intrinsically safe for Zone 1 with connections to Zone 20, Ex ib IIC T6...T4 Gb / [Ex ia Da] IIIC hazardous (classified) locations using the entity concept per TTH200-L1H; Nonincendive for Class I, Division 2, Groups A, B, C, D, T6, T4 hazardous (classified) locations using the nonincendive field wiring concept per TTH200-L2H; Type of protection "n" for Zone 2, Ex nA IIC T6...T4 Gc hazardous (classified) locations; Increased safety "ec" for Zone 2, Ex ec IIC T6...T4 Gc hazardous (classified) locations indoor and outdoor locations when using an IP54 NRTL enclosure. Ambient temperature range $-50^{\circ}\text{C} \leq T_a \leq 85^{\circ}\text{C}$

Markings:

Class I, Division 1, Groups A, B, C, D: T6, T4: Entity – TTH200-L1H

Zone 0, Ex ia IIC T6...T4 Ga : Entity – TTH200-L1H

Zone 0, Ex [ia Ga] ib IIC T6...T4; Entity TTH200-L1H

Zone 1 Ex ib IIC T6...T4 Gb / [Ex ia Da] IIIC Entity – TTH200-L1H

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Class I, Division 2, Groups A, B, C, D T6, T4: NIFW – TTH200-L2H
Zone 2, Ex nA IIC T6...T4 Gc
Zone 2 Ex ec IIC T6...T4 Gc
-50°C ≤ Ta ≤ 85°C;

Description of Equipment:

a = L1, L2, R1 or R2
b = Extended ambient, blank or SE
c = manufacturer specific extensions which are not relevant to safety

Specific Conditions of Use:

1. For Intrinsic Safety and Nonincendive Approvals the Temperature code and Ambient temperatures are as follows
 - T* = Temperature Code T6 or T5 for a Maximum Ambient Temperature of 56°C.
 - T* = Temperature Code T4 for a Maximum Ambient Temperature of 85°C.
2. The TTH200 shall always be used with an IP54 NRTL Certified enclosure.
3. When installed as Ex nA or Ex ec the TTH300;
 - shall always be installed in an NRTL Certified enclosure that provides a minimum ingress protection of IP54 in accordance with UL 60079-0 and at least pollution degree 2, as defined in UL 60664-1.
 - Transient protection shall be provided that is set at a level not exceeding 140% of the peak rated voltage at the supply terminals to the equipment.
 - The connecting cables shall be installed in a fixed position and secured against tensile loads.

TTH300-abHcd – head mounted temperature transmitter

Equipment Ratings:

Intrinsically safe for Class I, Division 1, Groups A, B, C, D: T6, T4: Intrinsically safe for Zone 0, Ex ia IIC T6...T4 Ga; Intrinsically safe for Zone 1 with connections to Zone 0, Ex [ia Ga] ib IIC T6...T4; Intrinsically safe for Zone 1 with connections to Zone 20, Ex ib IIC T6...T4 Gb / [Ex ia Da] IIIC hazardous (classified) locations using the entity concept per TTH300-L1H; Nonincendive for Class I, Division 2, Groups A, B, C, D, T6, T4 hazardous (classified) locations using the nonincendive field wiring concept per TTH300-L2H; Type of protection "n" for Zone 2, Ex nA IIC T6...T4 Gc hazardous (classified) locations; Increased safety "ec" for Zone 2, Ex ec IIC T6...T4 Gc hazardous (classified) locations indoor and outdoor locations when using an IP54 NRTL enclosure. Ambient temperature range -50°C ≤ Ta ≤ 85°C

Markings:

Class I, Division 1, Groups A, B, C, D: T6, T4 -50°C ≤ Ta ≤ 85°C: Entity – TTH300-L1H
Zone 0, Ex ia IIC T6...T4 Ga -50°C ≤ Ta ≤ 85°C: Entity – TTH300-L1H
Zone 0, Ex [ia Ga] ib IIC T6...T4; -50°C ≤ Ta ≤ 85°C: Entity – TTH300-L1H
Zone 1 Ex ib IIC T6...T4 Gb / [Ex ia Da] IIIC Entity – TTH300-L1H

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Class I, Division 2, Groups A, B, C, D T6, T4 $-50^{\circ}\text{C} \leq T_a \leq 85^{\circ}\text{C}$: NIFW – TTH300-L2H
Zone 2, Ex nA IIC T6...T4 Gc $-50^{\circ}\text{C} \leq T_a \leq 85^{\circ}\text{C}$;
Zone 2 Ex ec IIC T6...T4 Gc $-50^{\circ}\text{C} \leq T_a \leq 85^{\circ}\text{C}$;

Description of Equipment:

a = Blank or N
b = L1, L2, R1 or R2
c = Extended ambient, blank or SE
d = manufacturer specific extensions which are not relevant to safety.

Specific Conditions of Use:

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

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

2. When installed as Ex nA or Ex ec the TTH300;

- shall always be installed in an NRTL Certified enclosure that provides a minimum ingress protection of IP54 in accordance with UL 60079-0 and at least pollution degree 2, as defined in UL 60664-1.
- Transient protection shall be provided that is set at a level not exceeding 140% of the peak rated voltage at the supply terminals to the equipment.
- The connecting cables shall be installed in a fixed position and secured against tensile loads.

TTR200-a6Hbc – rail mounted temperature transmitter

Equipment Ratings:

Intrinsically safe for Class I, Division 1, Groups A, B, C, D: T6, T4: Intrinsically safe for Zone 0, AEx ia IIC T6...T4 Ga; Intrinsically safe for Zone 1 with connections to Zone 0, Ex [ia Ga] ib IIC T6...T4; Intrinsically safe for Zone 1 with connections to Zone 20, Ex ib IIC T6...T4 Gb / [Ex ia Da] IIIC hazardous (classified) locations using the entity concept per TR200-L6H; Nonincendive for Class I, Division 2, Groups A, B, C, D, T6, T4 hazardous (classified) locations using the nonincendive field wiring concept per TTR200-L6H; Type of protection "n" for Zone 2, Ex nA IIC T6...T4 Gc hazardous (classified) locations; Increased safety "ec" for Zone 2, Ex ec IIC T6...T4 Gc hazardous (classified) locations indoor and outdoor locations when using an IP54 NRTL enclosure. Ambient temperature range $-50^{\circ}\text{C} \leq T_a \leq 85^{\circ}\text{C}$

Markings:

Class I, Division 1, Groups A, B, C, D: T6, T4: Entity – TTR200-L6H
Zone 0, Ex ia IIC T6...T4 Ga: Entity – TTR200-L6H
Zone 0, Ex [ia Ga] ib IIC T6...T4: Entity – TTR200-L6H
Zone 1, Ex ib IIC T6...T4 Gb / [20] [Ex ia Da] IIIC Entity – TTR200-L6H
Class I, Division 2, Groups A, B, C, D T6, T4: NIFW – TTR200-L6H

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Zone 2, Ex nA IIC T6...T4 Gc
Zone 2 Ex ec IIC T6...T4 Gc
 $50^{\circ}\text{C} \leq T_a \leq 85^{\circ}\text{C}$;

Description of Equipment:

a = L or R
b = Extended ambient, blank or SE
c = Manufacturer specific extensions – Not relevant to safety

Specific Conditions of Use:

1. For Intrinsic Safety and Nonincendive Approvals the Temperature code and Ambient temperatures are as follows
 - T* = Temperature Code T6 or T5 for a Maximum Ambient Temperature of 56°C .
 - T* = Temperature Code T4 for a Maximum Ambient Temperature of 85°C .
2. The TTR200 shall be mounted into a Class II, rated enclosure that is complaint with CSA C22.2 61010-1.
3. When installed as Ex nA or Ex ec the TTR200;
 - shall always be installed in an NRTL Certified enclosure that provides a minimum ingress protection of IP54 in accordance with CSA C22.2 No 60079-0 and at least pollution degree 2, as defined in CSA C22.2 No 60664-1.
 - Transient protection shall be provided that is set at a level not exceeding 140% of the peak rated voltage at the supply terminals to the equipment.
 - The connecting cables shall be installed in a fixed position and secured against tensile loads.

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