



1. EU-TYPE EXAMINATION CERTIFICATE

2. Equipment or Protective systems intended for use in Potentially Explosive Atmospheres - Directive 2014/34/EU

3. EU-Type Examination Certificate No: FM23ATEX0031X

4. Equipment or protective system:
(Type Reference and Name) TTD300 and TTD300-N

5. Name of Applicant: ABB AG

6. Address of Applicant Schillerstraße 72, Minden 32425, Germany

7. This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and documents therein referred to.

8. FM Approvals Europe Ltd, notified body number 2809 in accordance with Article 17 of Directive 2014/34/EU of 26 February 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

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

PR464960 dated 01 April 2024

9. Compliance with the Essential Health and Safety Requirements, with the exception of those identified in item 15 of the schedule to this certificate, has been assessed by compliance with the following documents:

EN IEC 60079-0:2018, EN 60079-1:2014, EN 60079-11:2012, EN 60079-31:2014,
EN 60529:1991+A1:2000+A2:2013

10. 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.

11. This EU-Type Examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

12. The marking of the equipment or protective system shall include:



See Annex

Certificate issued by:

Certification Manager, FM Approvals Europe Ltd.

Date 04 April 2024

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

FM Approvals Europe Ltd. One Georges Quay Plaza, Dublin. Ireland. D02 E440
T: +353 (0) 1761 4200 E-mail: atex@fmapprovals.com www.fmapprovals.com

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SCHEDULE

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13. Description of Equipment or Protective System:

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 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 enclosure is rated for IP66 and IP67.

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, thermocouples 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:

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

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

For passive sensors

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

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

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

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14. Specific Conditions of Use:

See Annex

15. Essential Health and Safety Requirements:

The relevant EHSRs that have not been addressed by the standards listed in this certificate have been identified and assessed in the confidential report identified in item 8.

16. Test and Assessment Procedure and Conditions:

This EU-Type Examination Certificate is the result of testing of a sample of the product submitted, in accordance with the provisions of the relevant specific standard(s), and assessment of supporting documentation. It does not imply an assessment of the whole production.

Whilst this certificate may be used in support of a manufacturer's claim for CE Marking, FM Approvals Europe Ltd accepts no responsibility for the compliance of the equipment against all applicable Directives in all applications.

This Certificate has been issued in accordance with FM Approvals Europe Ltd's ATEX Certification Scheme.

17. Schedule Drawings

A list of the significant parts of the technical documentation is annexed to this certificate and a copy has been kept by the Notified Body.

18. Certificate History

Details of the supplements to this certificate are described below:

Date	Description
04 April 2024	Original Issue.

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SCHEDULE

EU-Type Examination Certificate No. FM23ATEX0031X



ANNEX

TTD300aE1cdHfghijklmnopqrstu Temperature Transmitters

Markings:



II 1 G Ex ia IIC T6...T4 Ga
II 1 D Ex ia IIIC T85°C...T100°C Da
II 2(1) G Ex ib [ia Ga] IIC T6...T4 Gb
II 2(1) D Ex ib [ia Da] IIIC T85°C...T100°C Db
II 2 G / (1) D Ex ib IIC T6...T4 Ga / [Ex ia Da] IIIC
II 1 D / (1) G Ex ia IIIC T85°C...T100°C Da / [Ex ia Ga] IIC
-50°C ≤ Ta ≤ 85°C

Description of Equipment:

TTD300aE1cdHfghijklmnopqrstu

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°C
 - T* = Temperature Code T4 for a Maximum Ambient Temperature of 85°C
 - T* = Temperature Code T85°C for a Maximum Ambient Temperature of 70°C
 - T* = Temperature Code T100°C for a Maximum Ambient Temperature of 85°C
2. The apparatus enclosure contains aluminium 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.
4. Refer to the instruction/installation manual for guidance on the selection of cables or conductors when the temperature of cable entry point and branching point of the TTD300 and TTD300-N temperature transmitter exceed 70°C and 80°C respectively.
5. For option n = P1 the TTD300 and TTD300-N do not provide 500 V rms isolation between circuitry and earth. Care shall be taken to ensure that ignition-capable earth currents, resulting from dissimilar earth potentials, do not occur between the intrinsically safe apparatus and the associated apparatus.

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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.

TTD300aE3cdHfghijklmnopqrstu Temperature Transmitters

Markings:



II 2 G Ex db IIC T6 Gb
II 2 D Ex tb IIIC T100°C Db
-40°C ≤ Ta ≤ 75°C
(-50°C for option o = SE)

Description of Equipment:

TTD300aE3cdHfghijklmnopqrstu

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 Ex db apparatus.
2. 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.
3. Refer to the instruction/installation manual for guidance on the selection of cables or conductors when the temperature of cable entry point and branching point of the TTD300 and TTD300-N temperature transmitter exceed 70°C and 80°C respectively.
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(-50°C for option o = SE)
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II 1 D Ex ia IIIC T85°C...T100°C Da
II 2(1) G Ex ib [ia Ga] IIC T6...T4 Gb
II 2(1) D Ex ib [ia Da] IIIC T85°C...T100°C Db
II 2G /(1) D Ex ib IIC T6...T4 Gb / [Ex ia Da] IIIC
II 2D /(1) G Ex ib IIIC T85°C...T100°C Db / [Ex ia Ga] IIC
-50°C ≤ Ta ≤ 85°C

Description of Equipment:

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 - T* = Temperature Code T4 for a Maximum Ambient Temperature of 85°C
 - T* = Temperature Code T85°C for a Maximum Ambient Temperature of 70°C
 - T* = Temperature Code T100°C for a Maximum Ambient Temperature of 85°C
3. The apparatus enclosure contains aluminium 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 db apparatus
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6. Refer to the instruction/installation manual for guidance on the selection of cables or conductors when the temperature of cable entry point and branching point of the TTD300 and TTD300-N temperature transmitter exceed 70°C and 80°C respectively.
7. For option n = P1 the TTD300 and TTD300-N do not provide 500 V rms isolation between circuitry and earth. Care shall be taken to ensure that ignition-capable earth currents, resulting from dissimilar earth potentials, do not occur between the intrinsically safe apparatus and the associated apparatus.
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Blueprint Report

ABB AG (1000007035)

Class No 3610

Original Project I.D. 464960

Certificate I.D. FM23ATEX0031X

<u>Drawing No.</u>	<u>Revision Level</u>	<u>Drawing Title</u>	<u>Last Report</u>
3KQZ207173U0322	VB	Connection Board Schematic	PR464960
3KQZ207173U0722	VB	Terminal Board Schematic	PR464960
3KXT065000G0009	00	TTD300/TTD300-N Temperature Transmitter	PR464960
3KXT065000G0023	00	TTD300/TTD300-N HART I.S. Temperature Transmitter Control Drawing	PR464960
3KXT065002G0009	02	TTD300/TTD300-N Safety Plates	PR464960
3KXT065008U0109	00	TERMINAL PCBA DRAWING FOR CERTIFICATION, 8 TERMINALS, TTD300/TTD300-N	PR464960
3KXT065008U0121	00	BOM of TTD300/TTD300-N Terminal Board With Surge	PR464960
3KXT065008U0122	00	Terminal Board With Surge	PR464960
3KXT065009U0109	00	Terminal Board PCB	PR464960
3KXT065011U0121	00	BOM of TTD300/TTD300-N Terminal Board No Surge	PR464960
3KXT065011U0122	00	Terminal Board no surge	PR464960
3KXT065013U0109	00	COMMUNICATION PCBA DRAWING FOR CERTIFICATION, TTD300/TTD300-N	PR464960
3KXT065013U0121	00	BOM for TTD300/TTD300-N connection board	PR464960
3KXT065013U0122	00	Connection Board Schematic	PR464960
3KXT065014U0109	00	Connection Board PCB	PR464960
IECEX_FME_13.0001U	004	FME certificate for 2-Wire Common Top Works (2WCTW)	PR464960
IECEX_FMG_20.0028U	001	FMG certificate for Smart HMI Type B	PR464960
IECEX_FMG_23.0002U	000	FMG certificate for 2WCTW-APL	PR464960
IECEX_PTB_12_0028X	0	PTB Certificate for LCD-display HMI-Ex , type A, AS, B as well as BS	PR464960
IECEX_PTB_20.0035	000	PTB certificate for temperature measuring transducer	PR464960
PTB05ATEX2079X	2	PTB Certificate for HMI	PR464960
TTD300 - Product Coding	-	Product Coding	PR464960