



Government of India
Ministry of Commerce & Industry
Petroleum & Explosives Safety Organisation (PESO)
5th Floor, A-Block, CGO Complex, Seminary Hills,
Nagpur - 440006

E-mail : explosives@explosives.gov.in
Phone/Fax No : 0712 -2510248, Fax-2510577

Approval No : A/P/HQ/KA/104/6175 (P597448)

Dated : 24/05/2024

To,

M/s. ABB India Limited,
PlotNo,5 & 6,
Plot No 5&6 , 2nd Phase Peenya Industrial Area, Peenya Industrial Area,
,
Taluka: Bangalore,
District: BANGALORE(Urban),
State: Karnataka,
PIN: 560058

Sub : Approval of Intrinsically Safe Type Electrical Equipment. under Petroleum Rules 2002- Regarding.

Sir(s),

Please refer to your letter No. OIN1665819 dated 08/05/2024 on the subject.

The following Ex electrical equipment(s) manufactured by you according to IEC 60079-0 : 2017, IEC 60079-11 : 2011, standards and covered under FM Approvals Ltd. Test reports mentioned below is/are approved for use in Zone 1 of Gas IIC hazardous areas coming under the the Petroleum Rules, 2002 administered by this Organization.

Sr. No	Description	Safety Protection	Equipment reference Number	Test Agency			Drawing no
				Name	Certificate No.	Certificate Date	
1	Temperature Transmitter TTD300 - TTD300abcdHfghijklmnopqrstu	Ex ia IIC T6...T4 Ga	P597448/1	FM Approvals Ltd.	IECEX FMG 23.0015X	01/04/2024	As per Approval
2	Temperature Transmitter TTD300-N - TTD300abcdHfghijklmnopqrstu	Ex ia IIC T6...T4 Ga	P597448/2	FM Approvals Ltd.	IECEX FMG 23.0015X	01/04/2024	As per Approval

This Approval is granted subject to observance of the following conditions:-

- 1)The design and construction of the equipment shall be strictly in accordance with description, condition and drawings as mentioned in the Test Reports referred to above.
- 2)The equipment shall be used only with approved type of accessories and associated apparatus.
- 3) Each equipment shall be marked either by raised lettering cast integrally or by plate attached permanently to the main structure to indicate conspicuously:-
 - (a) Name of the manufacturer
 - (b) Name and number by which the equipment is identified.
 - (c) Number & date of the test report of the FM Approvals Ltd. applicable to the equipment.
 - (d) Equipment reference number of this letter by which use of apparatus is approved.
 - (e) BIS approval number.
 - (f) Protection level.
- 4) A certificate to the effect that the equipment has been manufactured strictly in accordance with the drawing referred to in the Test report and is identical with the one tested and certified at Testing agency shall be furnished with each equipment.
- 5) The customer shall be supplied with a copy of this letter, an extract of the conditions and maintenance schedule, if any, recommended by FM Approvals Ltd. and copy of instructions booklet detailing operation & maintenance of the equipment so as to maintain its safe characteristics.
- 6) The IS/IEC 60079-17 and IS/IEC 60079-19 shall be followed for maintenance and repair of overhaul of the subject equipments.

This approval also covers the permissible variations as approved under the FM Approvals Ltd. test reports referred above. This approval is liable to be cancelled if any of the conditions of the approval is violated or not complied with . The approval may also be amended or withdrawn at any time, if considered necessary in the interest of safety.

The field performance report from actual users/your customers of the subject equipment may please be collected and furnished to this office for verification and record on annual basis.
The Approval is Valid upto 31/12/2028

Yours faithfully,

(Nishanta Mridul)
Dy. Controller of Explosives
For Chief Controller of Explosives
Nagpur

Copy to :

1. Jt. Chief Controller of Explosives, South Circle Office, CHENNAI

for Chief Controller of Explosives
Nagpur

(For more information regarding status,fees and other details please visit our website <http://peso.gov.in>)

This is System Generated document. Signature is not required.



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: **IECEX FMG 23.0015X** Page 1 of 5 [Certificate history:](#)

Status: **Current** Issue No: 0

Date of Issue: 2024-04-01

Applicant: **ABB AG**
Schillerstraße 72
Minden 32425
Germany

Equipment: **TTD300 and TTD300-N temperature transmitter**

Optional accessory:

Type of Protection: **Intrinsic safety 'ia' & 'ib', flameproof 'db', increased safety 'ec' and protection by enclosure 'tb' and 'tc'**

Marking: Ex db IIC T6...T4 Gb
Ex ec IIC T6...T4 Gc
Ex ia IIC T6...T4 Ga
Ex ia IIIC T85°C...T100°C Da
Ex ib [ia Ga] IIC T6...T4 Gb
Ex ib [ia Da] IIIC T85°C...T100°C Db
Ex ib IIC T6...T4 Gb / [Ex ia Da] IIIC
Ex ia IIIC T85°C...T100°C Da / [Ex ia Ga] IIC
Ex tb IIIC T85°C...T100°C Db
Ex tc IIIC T85°C...100°C Dc
-40°C ≤ Ta ≤ 75°C for Ex db and Ex tb
-40°C ≤ Ta ≤ 85°C for other Levels of Protection
(-50°C for option o = SE)

Approved for issue on behalf of the IECEx
Certification Body:

J. E. Marquedant

Position:

VP, Manager - Electrical Systems

Signature:
(for printed version)

Date:
(for printed version)

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.



Certificate issued by:

FM Approvals LLC
One Technology Way
Norwood MA 02062
United States of America





IECEX Certificate of Conformity

Certificate No.: **IECEX FMG 23.0015X**

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Date of issue: 2024-04-01

Issue No: 0

Manufacturer: **ABB AG**
Schillerstraße 72
Minden 32425
Germany

Manufacturing
locations: **ABB AG**
Schillerstraße 72
Minden 32425
Germany

ABB India Limited
Process Automation - Measurement
Products
Plot No. 5 & 6, 2nd Phase, Peenya
Industrial Area
Bangalore - 560058
India
India

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEX Quality system requirements. This certificate is granted subject to the conditions as set out in IECEX Scheme Rules, IECEX 02 and Operational Documents as amended

STANDARDS :

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

[IEC 60079-0:2017](#) Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

[IEC 60079-1:2014](#) Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
Edition:7.0

[IEC 60079-11:2011](#) Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

[IEC 60079-26:2014](#) Explosive atmospheres – Part 26: Equipment with Equipment Protection Level (EPL) Ga
Edition:3.0

[IEC 60079-31:2013](#) Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
Edition:2

[IEC 60079-7:2017](#) Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
Edition:5.1

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

[US/FMG/ExTR23.0017/00](#)

Quality Assessment Reports:

[DE/TUN/QAR06.0012/08](#)

[GB/ITS/QAR16.0002/04](#)



IECEX Certificate of Conformity

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Date of issue: 2024-04-01

Issue No: 0

EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

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 leadthroughs 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, 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.

SPECIFIC CONDITIONS OF USE: YES as shown below:

General

1. 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.
2. 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.
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.

For intrinsically safe "ia" and "ib" equipment

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. When installed as EPL Ga equipment care must be taken into account during installation and use to prevent impact or friction.
3. 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.

For flameproof "db" equipment

1. Contact the manufacturer for specific flamepath joint details during repair of flameproof Ex db apparatus.

For Increased safety "ec" and protection by enclosure "tc"

1. For the operation as category-3 equipment Type of Protection Increased Safety "ec" or Protection by enclosure "tc" a fuse according to IEC 60127 having a rated fuse current of 32 mA shall be connected in series to the TTD300 and TTD300-N. The fuse may be accommodated in the associated supply unit or shall be connected in series separately. The rated fuse voltage shall be equal to or higher than 30 V. The breaking capacity of the fuse link shall be equal to or higher than the maximum short-circuit current to be assumed at the place of installation (usually 1500 A).
2. The specified operating voltage $U_s = 30$ V represents the maximum permissible value of the supplying source according to EN IEC 60079-0:2017, clause 3.93. This voltage shall not be exceeded for the operation as category-3 equipment Type of Protection Increased Safety "ec" and Protection by enclosure "tc".



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Date of issue: 2024-04-01

Issue No: 0

Equipment (continued):

TTD300 and TTD300-N temperature transmitter

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 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:

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

$U_o = 6.5 V$; $I_o = 17.8 mA$; $P_o = 29 mW$; $C_i = 55 nF$; $L_i = negligible$ For passive sensors (Linear output)

IIC		IIB / IIC	
L o / mH	Co / μF	Lo / mH	Co / μF
5	1.65	5	8.85

For active sensors with the following maximum values

$U_o = 1.2 V$

$I_o = 50 mA$

$P_o = 60 mW$

IIC		IIB / IIC	
L o / mH	Co / μF	Lo / mH	Co / μF
5	1.15	5	6.35

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

$U_i \leq 30V_{dc}$; $I = 4...32 mA$; $P \leq 0.6W$

Measuring circuit

$U_o = 6.5 V$; $I_o = 17.8 mA$; $P_o = 29 mW$

TTD300abcdHfghijklmnopqrstu

a = Blank or -N

b = Explosion Protection: H1, H2 or H5

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



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Issue No: 0

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