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 CES 21.0002X**	Page 1 of 5	Certificate history:
Status:	**Current**	Issue No: 2	Issue 1 (2022-01-05) Issue 0 (2021-02-04)
Date of Issue:	2023-03-31		
Applicant:	**Endress+Hauser Wetzer GmbH + Co. KG** Obere Wank 1 87484 Nesselwang **Germany**		
Equipment:	**Multipoint Thermometer iTHERM® type TMS21**		
Optional accessory:			
Type of Protection:	**Intrinsic safety "i"**		
Marking:	**Ex ia IIC T6...T1 Ga/Gb** **Ex ia IIIC T85°C…T450°C Da/Db**		

Approved for issue on behalf of the IECEx Certification Body: **Mirko BALAZ**

Position: **Deputy Head of IECEx CB**

Signature:
(for printed version)

Date:
(for printed version)

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Certificate issued by:

CESI
Centro Elettrotecnico
Sperimentale Italiano S.p.A.
Via Rubattino 54
20134 Milano
Italy

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Manufacturer: **Endress+Hauser Wetzer GmbH + Co. KG**
Obere Wank 1
87484 Nesselwang
Germany

Manufacturing locations:

Endress+Hauser Wetzer GmbH + Co. KG
Obere Wank 1
87484 Nesselwang
Germany

Endress + Hauser Sicestherm S.r.l.
Via Martin Luther King, 7/9
I-20060 Pessano con Bornago (MI)
Italy

Endress+Hauser Wetzer (Suzhou) Co. Ltd.
Jiang-Tian-Li-lu No.31, 215021
Suzhou-SIP (P.R. China)
China

See following pages for more locations

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 Edition:7.0	Explosive atmospheres - Part 0: Equipment - General requirements
IEC 60079-11:2011 Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-26:2014-10 Edition:3.0	Explosive atmospheres – Part 26: Equipment with Equipment Protection Level (EPL) Ga

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 Reports:

IT/CES/ExTR20.0032/00 IT/CES/ExTR20.0032/01 IT/CES/ExTR20.0032/02

Quality Assessment Report:

DE/TUN/QAR06.0009/11

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EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

The Multipoint thermometer **iTHERM®**, type **TMS21**, is a bundle of multipoint sensors with at least two and up to 20 complete thermocouple elements of type K, J, N or E inside a thermowell tube and passing through a main bushing, distributed at different immersion lengths to measure a temperature profile. Each single complete thermo element is made by connecting a thermocouple based on MgO cable with a flexible thermocouple's extension cable. The total length of each complete thermo element can be up to 50 meters.

Flexible conduit is part of **TMS21** enclosure. It is an flexible metallic tube that protects the bundle of extension cables of each thermocouple element. Flexible conduit is connected to the main bushing with a male metrical threaded connection and it has another male metrical threaded connection to make possible the connection to an additional junction box and its accessories. The threaded sizes on the two ends are the same and they depend on the selected bushing dimensions.

TMS21 is available as standalone or associated with an additional enclosure i.e. a junction box that can accommodate additional instruments like temperature transmitters. Nevertheless, the enclosure integration is not in the scope of this certificate that covers only the multipoint sensor.

Multipoint Thermometer iTHERM®, type TMS21 haracteristics are further described in the Annexe of this certificate.

SPECIFIC CONDITIONS OF USE: YES as shown below:

- Install and use the equipment according to the manufacturer's Safety Instructions and any other valid standards and regulations (e.g.: IEC 60079-14, IEC 60079-25).
- The manufacturer, according to the process maximum operating temperature, shall define and state, on the nameplate, the Temperature Class / Maximum Surface Temperature of the product.
- It is installer responsibility to guarantee that the maximum ambient temperature at the installation point of main bushing, flexible conduit and glands is **+100°C** for T1÷T4 (T450°C÷T135°C), **+95°C** for T5 (T100°C) and **+80°C** for T6 (T85°C).
- The connection of the free edges of the extension cables of the multipoint thermometer TMS21 shall be carried out according to the requirements of the standard IEC 60079-14, within a certified enclosure suitable for the installation zone. The connection of the protective conduit shall not invalidate the level of protection of the enclosure.
- The mechanical construction of the thermowell and the reinforcement pipe, complies with a partition wall according to IEC 60079-26 (clause 4.1.3.2). For construction variants where the thickness of this wall is less than 1 mm, the user shall ensure that it will not be subjected to environmental conditions which may adversely affect it.
- If the equipment is installed between areas requiring different EPLs (e.g.: Ga and Gb), the TMS21 shall be installed in such a way to fulfil the requirements of clause 4.3 of the standard IEC 60079-26.
- The equipment shall be put in equipotential connection with the enclosure where the free edges of the thermocouple extension cables are connected.
- All thermocouples sheaths are connected to earth though the main bushing, hence, in accordance with IEC 60079-11, the sensors shall be powered by galvanically isolated Intrinsically safe circuits.
- For ambient temperatures above +70°C, accessories shall be suitable for a service temperature at least +5 K higher than the surrounding environment.

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

Variation 2.1

The only variation concerns the possibility of using new thermocouple extension cables which make use of different insulation material: FEP and PFA. With this issue, the project has not been subjected to any other change.

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Additional manufacturing locations:

Endress+Hauser Wetzer USA INC
2413 Endress Place
Greenwood, IN 46143
United States of America

Endress+Hauser Wetzer (India) Pvt. Ltd.
M-171/173, MIDC, Waluj
Aurangabad – 431 136
India

Annex:

E+H - IECEx CES 21.0002X Issue 2 - ANNEX - iTHERM® type TMS21.pdf

IECEx Certificate of Conformity

Prot: C3004928

Annex to certificate: **IECEx CES 21.0002X Issue No.:2 of 2023-03-31**
Applicant: **Endress+Hauser Wetzer GmbH + Co. KG**
Obere Wank 1 - 87484 Nesselwang, Germany
Apparatus: **Multipoint Thermometer iTHERM®, type TMS21**

Description of the equipment:

The Multipoint thermometer **iTHERM**, type **TMS21**, is a bundle of multipoint sensors with at least two and up to 20 complete thermocouple elements of type K, J, N or E inside a thermowell tube and passing through a main bushing, distributed at different immersion lengths to measure a temperature profile. Each single complete thermo element is made by connecting a thermocouple based on MgO cable with a flexible thermocouple's extension cable. The total length of each complete thermo element can be up to 50 meters.
Flexible conduit is part of **TMS21** enclosure. It is an flexible metallic tube that protects the bundle of extension cables of each thermocouple element. Flexible conduit is connected to the main bushing with a male metrical threaded connection and it has another male metrical threaded connection to make possible the connection to an additional junction box and its accessories. The threaded sizes on the two ends are the same and they depend on the selected bushing dimensions.
TMS21 is available as standalone or associated with an additional enclosure i.e. a junction box that can accommodate additional instruments like temperature transmitters. Nevertheless, the enclosure integration is not in the scope of this certificate that covers only the multipoint sensor.
Application
EPL Ga *(Zone 0)* or EPL Da *(Zone 20)* is applicable for the part of the Multipoint thermometer continuously immersed in process medium and exposed to process operation conditions. Parts in Zone 0 are the thermowell with the bundle of thermocouple inside and part of the reinforced sleeve.
EPL Gb *(Zone 1)* or EPL Db *(Zone 21)* is applicable for the part of the Multipoint thermometer not immersed in process medium and exposed to environment operation conditions. This part consists on the external part of the reinforced sleeve, from the process connection, to the main bushing including each thermocouple connected to its extension cable and threaded to the flexible metal conduit protecting the bundle of extensions cable. The flexible protecting conduit ends with a threaded connection.
The separation between the two EPLs zones is the process connection, the thermowell and the thermowell reinforcement tube.

Electrical characteristics

Intrinsically safe circuits
For **TMS21** the type of protection Ex ia IIC and Ex ia IIIC shall be connected from 2 up to 20 certified intrinsically safe circuits. Electrical parameters of each input circuit are the followings:

Ui :	9 V	Ii :	26 mA	Pi :	0.05 W
Li :	0.5 µH	Ci :	10 nF		

Temperatures

For each part of **TMS21** the temperature class T6…T1 and the maximum surface temperature T85°C…T450°C is depending on the process and ambient temperature in accordance with the table below.

Sensor Element/Type: K, J, N, E	Maximum allowed process temperature Tp *(for thermowell)*	Maximum allowed ambient temperature Ta *(for main bushing)*	Temperature class / Maximum surface temperature
	-50°C …+440 °C	-50°C …+100°C	T1 / T450°C
	-50°C …+290 °C	-50°C…+100°C	T2 / T300°C
	-50°C …+195 °C	-50°C…+100°C	T3 / T200°C
	-50°C …+130 °C	-50°C…+100°C	T4 / T135°C
	-50°C …+95 °C	-50°C…+95°C	T5 / T100°C
	-50°C …+80 °C	-50°C…+80 °C	T6 / T85°C

Dust protection 'ia IIIC'

The Multipoint thermometer **iTHERM**, type **TMS21**, meets the spark ignition energy level requirements for Groups IIC or IIB apparatus

IECEx Certificate of Conformity

Prot: C3004928

Annex to certificate: **IECEx CES 21.0002X Issue No.:2 of 2023-03-31**
Applicant: **Endress+Hauser Wetzer GmbH + Co. KG**
Obere Wank 1 - 87484 Nesselwang, Germany
Apparatus: **Multipoint Thermometer iTHERM®, type TMS21**

Identification code

The product structure is the list of the standard product characteristics and options that can be selected to configure a product as below described *(the full list is on document QUD_F3060)*.

TMS21- **A**-B-**C**-**D**-**E**-F-G-**H**-I-J-K-**L**-M-N-O-**P**-**Q**-**R**-S-T-U-V-W-X-Y-Z-ZA-ZB-ZC-ZD-ZE

A ***(010)*** *Ex Approval (on plate)*:
- AD *IECEx Approval Ex ia*
- AE *ATEX + IECEx Approvals Ex ia*
- AF *ATEX Approval Ex ia*

B *(020) Thermowell Design - Not safety relevant*

C ***(030)*** *Thermowell Material*: A, B, C, D, E *(various type of steel)*

D ***(040)*** *Reinforcement-; Flex-; Thermowell Diam.; Min. Thickness:*
- A *8 mm; N/A; 3.2 mm; (0.2 mm≤Th ≤1 mm)*
- C *12.7 mm; N/A; 8 mm; (Th ≥1 mm)*
- D *15 mm; N/A; 9.5 mm; (Th ≥1 mm)*
- I *½" (12.7 mm); N/A; ¼" (6.35 mm); (Th ≥1 mm)*
- K *8 mm; N/A; 6 mm; (0.2 mm≤Th ≤1 mm)*
- L *12.7 mm; N/A; 6 mm; (Th ≥1 mm)*

E ***(050)*** *Thermowell Length M:*
- X *inch (L+LE ≤ 1968 inch)*
- 8 *mm (L+LE ≤ 50000 mm)*

F *(060) Flexible Length H - Not safety relevant*

G *(070) Process Connection - Not safety relevant*

H ***(080)*** *Process Connection Material:* B, C, D, E *(various type of steel)*

I *(090) Sensor Type; Measuring Range - Not safety relevant*

J *(100) Standard/Class - Not safety relevant*

K *(110) Sensor Execution - Not safety relevant*

L ***(120)*** *Number of Measurement Points:* 8 *(piece 2-20)*

M *(130) Measurement Point Distribution - Not safety relevant*

N *(140) First Point Location LMP1 - Not safety relevant*

O *(150) Last Point Location LMPn - Not safety relevant*

P ***(160)*** *Cable Gland (Flexible Conduit Diameter):*
- A *M32 (DN 29)*
- B *M40 (DN 36)*
- C *M50 (DN 48)*

Q ***(170)*** *Extension Cable Material; Meas. Range:*
- D *MFA sheath; -200...+250°C*
- F *FEP sheath; -200...+200°C*
- G *PFA sheath; -200...+260°C*

R ***(180)*** *Flexible Conduit Cable Length A:*
- X *inch (L+LE ≤ 1968 inch)*
- 8 *mm (L+LE ≤ 50000 mm)*

… *other letters (S, T, U, V, W, X, Y, Z, ZA, ZB, ZC, ZD, ZE) - Not safety relevant*