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CERTIFICATE

[1] SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE

[2] **Equipment or Protective System intended for use in potentially explosive atmospheres Directive 2014/34/EU**

[3] Supplementary EU-Type Examination Certificate number:

CESI 20 ATEX 033 X /01

[4] Product: **Multipoint thermometers iTHERM®, type TMS21**

[5] Manufacturer: **Endress+Hauser Wetzer GmbH + Co. KG**

[6] Address: **Obere Wank 1**
87484 Nesselwang
Germany

[7] This supplementary certificate extends EU–Type Examination Certificate CESI 20 ATEX 033 X, to apply to Product designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

[8] CESI, notified body n. 0722 in accordance with Article 17 of the Directive 2014/34/EU of the Parliament and Council of 26 February 2014, certifies that this Product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment or protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report n. EX-C3003469.

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0:2018 EN 60079-11:2012 EN 60079-26:2015

except in respect of those requirements listed at item 18 of the Schedule.

[10] If the sign "X" is placed after the certificate number, it indicates that the Product is subject to special conditions for safe 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 Product in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

[12] The marking of the Product shall include the following:

II 1/2G Ex ia IIC T6 ... T1 Ga/Gb
II 1/2D Ex ia IIIC T85°C ... 450°C Da/Db

Date 2023/03/08 - Translation issued on 2023/03/08

Prepared	**Verified**	**Approved**
Tiziano COLA	Alessandro FEDATO	Roberto PICCIN

Schema di certificazione CESI-ATEX

[13] **Schedule**

[14] **SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 20 ATEX 033 X /01**

[15] **Description of the variation to the Product**

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

Description of Product

Multipoint thermometers **iTHERM®**, type **TMS21**, are multipoint sensors which measure the temperature in a process at different depths (2 to 20 depths), to obtain the temperature profile.
The basic sensors are single thermocouples (type J, K, N or E), obtained from metal sheathed mineral insulated cables (MgO), closed by welding at the bottom.
A bunch of these sensors (2 to 20 elements) having different length, are then inserted in a protecting thermowell (up to 50m long), closed at the bottom with a welded lid. Such thermowell enters the process and its external edge is welded to a bushing where the wires of each thermocouple are connected to a thermocouple extension cable (cold junction).
The extension cables are then mechanically protected by a flexible conduit to reach a junction box or an enclosure where additional devices, like temperature transmitters, can be installed. ***This certificate only covers the multipoint sensor up to the extension cables.***
Each thermocouple shall be protected by a suitable barrier to guarantee Equipment Protection Levels Ga and Da.

APPLICATION

EPL Ga (Zone 0) and **EPL Da** (Zone 20) are the levels of protection of the part of the thermometer continuously immersed in process medium and exposed to operative conditions of the process itself. The parts in Zone 0 and 20 are the thermowell, with the bundle of thermocouples inside, and part of the metal reinforcing sleeve.

EPL Gb (Zone 1) and **EPL Db** (Zone 21) are the levels of protection of the part of the thermometer not immersed in process medium and exposed to external environmental conditions. This part includes the external stretch of the thermowell with relevant reinforcing sleeve, the sealed bushing up to the extension cables sheltered by the flexible conduit having threaded edge.
The separation between the two zones (and then the two EPLs) is made by the process connection and the thermowell with the reinforcement sleeve.

IDENTIFICATION CODE

The products are completely defined by the code described below. Not all the field are safety relevant, the fields impacting the safety are written in bold characters (thorough details are in the annexed 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*

[13] **Schedule**

[14] **SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 20 ATEX 033 X /01**

IDENTIFICATION CODE (continue)

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)*

... *out of scope of this certificate or not safety relevant*

Electrical characteristics

Each thermocouple circuit (2 to 20) shall be managed as individual intrinsically safe circuit and hence shall be connected to an individual certified barrier ([Ex ia]).
For the selection of the barrier, the electrical parameters of each input circuit are the followings:

Ui = 9 V **Ii** = 26 mA **Pi** = 50 mW
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) depend on the process and ambient temperature in accordance with the following table.

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

Warning labels

None

[16] **Report n. EX-C3003469**

Routine tests

The manufacturer shall carry out the verification tests prescribed by clause 5 of the standard IEC 61515, for each thermocouple element completed with extension cables

[13] **Schedule**

[14] **SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 20 ATEX 033 X /01**

[17] **Special conditions for safe use (X)**

- 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 +5K higher than the surrounding environment.

[18] **Essential Health and Safety Requirements**

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following shall be considered.

Clause	subject
1.2.7	Protection against other hazards
1.2.8	Overloading of equipment
1.4	Hazards arising from external effects

[19] **Descriptive documents (prot. EX-C3003467)**

- * Description ATEX_IECEx	QUD_F3060 rev 2.0	(20 pages)	dated	2023/02/02
- Safety Instructions	10000009516	(3 pages)	dated	2019/05/03
- * TMS21_CPL	10000009517 rev. A	(8 pages)	dated	2023/01/31
- Nameplate ATEX_IECEx	10000009306		dated	2019/05/28
- * Datasheets of new thermocouple extension cables		(8 pages)		

*Note: an * is placed before the title of documents which are new or revised, annexed to this supplement*
One copy of all documents mentioned above is kept in CESI files.

[13] **Schedule**

[14] **SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 20 ATEX 033 X /01**

Certificate history

Issue N.	Issue Date	Summary description of variation
01	Current	Addition of two new types of thermocouple extension cables
00	2021/01/29	First Issue of the Certificate