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 DEK 18.0056X**	Page 1 of 6	Certificate history:
Status:	**Current**	Issue No: 2	Issue 1 (2022-12-01) Issue 0 (2019-05-16)
Date of Issue:	2024-03-07		

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

Equipment: **Temperature assemblies, Type TM111 and Type TM131**

Optional accessory:

Type of Protection: **Ex d and Ex t**

Marking:

Type TM111:
Ex db IIC T6...T1 Gb and
Ex tb IIIC T85 °C...T450 °C Db

Type TM131:
Ex db IIC T6...T1 Ga/Gb and
Ex ta IIIC T_{200} 85 °C…T_{200} 450 °C Da / Ex tb IIIC T85 °C…T450 °C Db

See Annex 1 for details

Approved for issue on behalf of the IECEx Certification Body: **R. Schuller**

Position: **Certification Manager**

Signature: (for printed version)

Date: (for printed version) 2024-03-07

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Certificate issued by:

DEKRA Certification B.V.
Meander 1051
6825 MJ Arnhem
Netherlands

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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, 20060
Pessano con Bornago (MI)
Italy

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

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 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 60079-26:2014 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

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:

NL/DEK/ExTR18.0041/03
NL/DEK/ExTR18.0043/01
NL/DEK/ExTR18.0044/01
NL/DEK/ExTR18.0060/02
NL/DEK/ExTR21.0056/01
NL/DEK/ExTR21.0057/01

Quality Assessment Report:

DE/TUN/QAR06.0009/11

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

The temperature assemblies, type TM111 and TM131 consist of a flameproof and/or dust ignition protected enclosure containing terminals, flying leads or a transmitter and a directly connected temperature sensor.

Type TM111 is optionally provided with a thermowell and connection fittings between the enclosure and the thermowell.
Type TM131 is provided with a thermowell or to be mounted with a thermowell and optionally provided with connection fittings between the enclosure and the thermowell.

At type TM131 the thermowell provides the separation between the areas requiring EPL Ga and Gb and between the areas requiring EPL Da and Db.

The enclosure is a

- flameproof and dust ignition protected connection head type TA30H,
- dust ignition protected connection head type TA30A or TA30D or
- flameproof and dust ignition protected enclosure of Field Transmitter type iTEMP TMT142 or type iTEMP TMT162

and can be provided with a blind or a windowed cover.
The connection heads may be provided with terminals or a head transmitter.
The Field transmitters consist of an enclosure with a transmitter.

The connection heads, Types TA30A, TA30D and TA30H are separately certified by IECEx KEM 08.0042U / KEMA 08ATEX0145U and reported in NL/KEM/ExTR08.0041/03.

The Field Temperature Transmitter, type iTEMP TMT142 and type iTEMP TMT162 are separately certified by IECEx KEM 06.0020X / KEMA 02ATEX2338 X and reported in NL/KEM/ExTR09.0074/04.

The Sensors, Types TS111, TS111N and TS211 are assessed per IEC 60079-0 : 2017 (Ed. 7.0), IEC 60079-1 : 2014 (Ed. 7.0) and IEC 60079-31 : 2013 (Ed. 2.0). See NL/DEK/ExTR18.0041/03.

Connection fittings or the Neck tubes Types N, NU, NUN, L, LU, LC, LUN and LCN are assessed per IEC 60079-0 : 2017 (Ed. 7.0), IEC 60079-1 : 2014 (Ed. 7.0) and IEC 60079-31 : 2013 (Ed. 2.0). See NL/DEK/ExTR18.0043/01.

The optional RB**1NS union is separately certified by IECEx CES 10.0002U and CESI 99 ATEX 034 U based on report IT/CES/ExTR10.0006/01 using standards IEC 60079-0 : 2011 (Ed. 6.0) and IEC 60079-31 : 2008 (Ed. 1.0). No applicable Technical Differences with IEC 60079-0 : 2017 (Ed. 7.0) and IEC 60079-31 : 2013 (Ed. 2.0) are found - for details see NL/DEK/ExTR18.0043/01.

The Thermowells, Type TT131 are assessed per IEC 60079-0 : 2017 (Ed. 7.0), IEC 60079-1 : 2014 (Ed. 7.0), IEC 60079-26 : 2014 (Ed. 3.0) and IEC 60079-31 : 2013 (Ed. 2.0). See NL/DEK/ExTR18.0044/01.

A non-metallic seal is provided between the M20x1.5 or M24x1.5 process connection point of the connection heads and the thermowell or connection fittings.

This certificate concerns the assembly of above listed items.

For details about the type designation, thermal data, electrical data and marking see Annex 1.

SPECIFIC CONDITIONS OF USE: YES as shown below:
see below

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

1. Assessed per IEC 60079-0 : 2017 (Ed. 7.0).
2. Assessment of constructional changes.
3. Introduction of more types the Cortem RB**1NS union.
4. Some thermal data has changed.

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Additional manufacturing locations:

Endress+Hauser Wetzer USA INC
2375 Endress Place
Greenwood IN 46143
United States of America

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

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Additional information:

Specific Conditions of Use

General

- The flameproof joints are not intended to be repaired.
- It shall be verified, taking into account the worst case process and ambient temperatures,
  - that the temperature of the enclosure at the process connection point does not exceed the ambient temperature range of the assembly.
  - that the temperature of the optionally used RB**1NS union does not exceed the service temperature range as listed in Annex 1.
- When provided with special varnishing (type TM111 suffix code i = YY, type TM131 suffix code m = YY) refer to the instructions “Safety notes varnish XA01369T/09/A2/01.16” for guidance to minimize the risk from electrostatic discharge.
- Temperature assemblies with flying leads (type TM111 suffix code h = 0A, type TM131 suffix code l = 0A) shall be provided with a round transmitter of max. 2.2 W with a main diameter not exceeding 45 mm and a sensor signal of max 10 Vdc and 1 mA.

Type TM111

- Sensors with a diameter of 3 mm (suffix code b = A) shall be protected by a thermowell.
- Sensors with other diameters (suffix code b = Y) shall be protected by a thermowell unless excluded by the product information available on the manufacturer’s website (CER viewer or Asset Central Viewer) and the safety instructions for optional thermocouples and RTDs (document 10000013456).
  These safety instructions show, depending on the sensor details, when protection by a thermowell is required. The viewer on the website shows the sensor details for each serial number of the assembly.

Type TM131

- The sensor shall be protected by the thermowell provided with the equipment or by a thermowell as specified in the instructions.

Annex:

224795600-ExTR18.0060.02-Annex 1.pdf

Type designation

Type Suffix code
TM111- abcdefghijklmnopqrstuv

Suffix code	Explanation	Value	Explanation
a	Approval	8F	ATEX IECEx II2D Ex tb IIIC Db
		86	ATEX IECEx II2G Ex db IIC Gb II2D Ex tb IIIC Db
b	Insert Diameter	A	3 mm
		C	6 mm
		Y	Other diameter
c	Process Connection; Material	n.s. *1	Not relevant for Explosion Safety
d	Immersion Length “U”	n.s. *1	Not relevant for Explosion Safety
e	Lagging Length “T”	n.s. *1	Not relevant for Explosion Safety
f	Sensor Type; Measuring Range; Material	A	1xPt100 TF; -50...+400 °C; 316L
		B	1xPt100 WW; -200...+600 °C; 316L
		C	2xPt100 WW; -200...+600 °C; 316L
		D	1xPt100 TF StrongSens; -50...+500 °C;316L
		E	1xPt100 TF QuickSens; -50...+200 °C; 316L
		F	1xPt100 TF QuickSens; -50...+400 °C; 316L
		L	1xTC type J; max. 800 °C; 316L
		M	2xTC type J; max. 800 °C; 316L
		N	1xTC type K; max. 1100 °C; Alloy600
		O	2xTC type K; max. 1100 °C; Alloy600
		Y	Other Thermocouples
g	Sensor Standard; Classification	n.s. *1	Not relevant for Explosion Safety
h	Electrical Connection	0A	Flying leads
		1A	Terminal block (only with terminal head A1, D1, H1 H3)
		2A	4-20mA, 1-channel TMT180 PCP 0.2K, head transmitter DIN B
		2B	4-20mA, 1-channel TMT180 PCP 0.1K, head transmitter DIN B
		2C	4-20mA, 1-channel TMT71, head transmitter DIN B
		2H	4-20 mA, 1-channel TMT31, PCP 0.15 K, head transmitter DIN B
		2I	4-20 mA, 1-channel TMT31, PCP 0.1 K, head transmitter DIN B
		3A	HART, 1-channel TMT72, head transmitter DIN B
		3C	HART, 2-channel TMT82, head transmitter DIN B
		3D	HART, 2-channel TMT82, SIL head transmitter DIN B
		4A	FOUNDATION Fieldbus, 2-channel TMT85, head transmitter DIN B
		5A	PROFIBUS PA, 2-channel TMT84, head transmitter DIN B
		6B	PROFINET w. Ethernet-APL/SPE, TMT86, head transmitter DIN B
		6C	PROFINET w. Ethernet-APL/SPE, TMT86 SIL, conformity + PROFIsafe, head transmitter DIN B

Suffix code	Explanation	Value	Explanation
i	Terminal Head; Material; Protect. Class	A1 *2	TA30A comfort flip cover; Alu; IP66/68
		A2 *2	TA30A + display, comfort flip cover; Alu; IP66/68
		D1 *2	TA30D comfort, high flip cover; Alu; IP66/68
		H1	TA30H Ex d/XP; 316L; IP66/68
		H2	TA30H Ex d/XP + display; 316L; IP66/68
		H3	TA30H Ex d/XP; Alu; IP66/68
		H4	TA30H Ex d/XP + display; Alu; IP66/68
		YY	Special varnishing (Non-conductive) in combination with digit A1 to H4
j	Cable entry Terminal head	A	1x thread M20x1.5
		B	1x thread NPT1/2
		C	1x thread G1/2 (only for Ex tb)
		D	2x thread M20x1.5
		E	2x thread NPT1/2
k	Device Version	n.s. *1	Not relevant for Explosion Safety
l	Second Transmitter (mounted)		Not allowed
m	Service	n.s. *1	Not relevant for Explosion Safety
n	Test, Certificate, Declaration	n.s. *1	Not relevant for Explosion Safety
o	Additional Approval	n.s. *1	Not relevant for Explosion Safety
p	Additional Option	n.s. *1	Not relevant for Explosion Safety
q	Accessory Mounted	n.s. *1	Not relevant for Explosion Safety
r	Calibration Thermometer	n.s. *1	Not relevant for Explosion Safety
s	Calibration Points ≥ 0 °C	n.s. *1	Not relevant for Explosion Safety
t	Calibration-Points ≤ 0 °C	n.s. *1	Not relevant for Explosion Safety
u	Firmware Version	n.s. *1	Not relevant for Explosion Safety
v	Marking	n.s. *1	Not relevant for Explosion Safety

*1 n.s. means the value is neither related to Explosion Safety nor in the scope.
*2 only possible when suffix code a = 8F

Type Suffix code
TM131- abcdefghijklmnopqrstuvwxyz

Suffix code	Explanation	Value	Explanation
a	Approval	8F	ATEX IECEx II1/2D Ex ta/tb IIIC Da/Db
		86	ATEX IECEx II1/2G Ex db IIC Ga/Gb, II1/2D Ex ta/tb IIIC Da/Db
b	Thermowell	A	Thermometer to be assembled into existing thermowell
		B	Thermometer with thermowell, continuous, similar to DIN43772 Form 2, 3 G/F
		C	Thermometer with thermowell, hexagonal, similar to DIN43772 Form 5, 8
		D	Thermometer with thermowell, w/o lagging, similar to DIN43772 Form 2, 3
c	Thermometer Design	A	W/o neck, DIN43772 form 2
		B	Lagging, DIN43772 form 2G, 2F, 3G, 3F
		D	Removable neck D11mm acc. to DIN43772
		E	Removable neck D12mm acc. to DIN43772
		F	Removable neck D12mm M20 connection similar to DIN43772
		L	Nipple connection NPT1/2
		M	Nipple-union connection NPT1/2
		N	Nipple-union-nipple connection NPT1/2
d	Process Connection; Material	n.s. *1	Not relevant for Explosion Safety
e	Thermowell Diameter, Material	A1	W/o, insert D3mm, to be assembled into existing thermowell
		A2	W/o, insert D6mm, to be assembled into existing thermowell
		B1	9x1.25 mm, 316L
		B2	11x2 mm, 316L
		B3	14x2 mm, 316L
		B4	16x3.5 mm, 316L
		C1	9x1.25 mm, 316Ti
		C2	11x2 mm, 316Ti
		C3	14x2 mm, 316Ti
		C4	12x2.5 mm, 316Ti BASF
		D1	9x1.25 mm, AlloyC276
		D2	11x2 mm, AlloyC276
		E1	9x1.25 mm, Alloy600
		E2	11x2 mm, Alloy600
		F1	1/4"sch.80, 316
		F2	1/2"sch.80, 316
		G1	1/2"sch.40, 446
		H1	12x2.5 mm, 321
		I1	11 mm 316Ti + 12mm Tantal
		I2	12x2.5 mm 316Ti + 13mm Tantal
		YY_1	Other diameter (wall thickness ≥ 1 mm) in combination with listed materials above
		YY_2	Diameters as listed above in combination with other materials
		YY_3	Thermowell type TT131 G6D
f	Tip Shape	A	Not needed (without thermowell)
		B	Straight (DIN 43772 form 2/2G/2F)
		C	Reduced, L>=50 mm

Suffix code	Explanation	Value	Explanation
		D	Reduced, L>=70 mm
		E	Tapered, L>=90 mm
		F	Tapered, L>=115 mm (DIN 43772 Form 3G/3F)
		G	Tapered for usage with Tantal-sleeve
g	Immersion Length U	n.s. *1	Not relevant for Explosion Safety
h	Removable Neck Length E	n.s. *1	Not relevant for Explosion Safety
i	Lagging Length T	n.s. *1	Not relevant for Explosion Safety
j	Sensor Type; Measuring Range; Material	A	1xPt100 TF; -50...+400 °C; 316L
		B	1xPt100 WW; -200...+600 °C; 316L
		C	2xPt100 WW; -200...+600 °C; 316L
		D	1xPt100 TF StrongSens; -50...+500 °C;316L
		E	1xPt100 TF QuickSens; -50...+200 °C; 316L
		F	1xPt100 TF QuickSens; -50...+400 °C; 316L
		L	1xTC type J; max. 800 °C; 316L
		M	2xTC type J; max. 800 °C; 316L
		N	1xTC type K; max. 1100 °C; Alloy600
		O	2xTC type K; max. 1100 °C; Alloy600
		P	1xTC type N; max. 1100 °C; Pyrosil
		Q	2xTC type N; max. 1100 °C; Pyrosil
		Y	Other Thermocouples
k	Sensor Standard; Classification	n.s. *1	Not relevant for Explosion Safety
l	Electrical Connection	0A	Flying leads
		1A	Terminal block (only with terminal head A1, D1, H1 H3)
		2A	4-20 mA, 1-channel TMT180 PCP 0.2K, head transmitter DIN B
		2B	4-20 mA, 1-channel TMT180 PCP 0.1K, head transmitter DIN B
		2C	4-20 mA, 1-channel TMT71, head transmitter DIN B
		2D *3	4-20 mA HART, TMT162
		2E *3	4-20mA HART, TMT162 SIL
		2F *3	4-20mA HART, 2-channel TMT162
		2G *3	4-20mA HART, 2-channel TMT162 SIL
		2H	4-20mA, 1-channel TMT31, PCP 0.15 K, head transmitter DIN B
		2I	4-20mA, 1-channel TMT31, PCP 0.1 K, head transmitter DIN B
		3A	HART, 1-channel TMT72, head transmitter DIN B
		3C	HART, 2-channel TMT82, head transmitter DIN B
		3D	HART, 2-channel TMT82, SIL head transmitter DIN B
		3F	HART, 2-channel TMT82 SIL2/3 OIML, head transmitter DIN B
		4A	FOUNDATION Fieldbus, 2-channel TMT85, head transmitter DIN B
		4B *3	FOUNDATION Fieldbus, TMT162
		4C *3	FOUNDATION Fieldbus, 2-channel TMT162
		5A	PROFIBUS PA, 2-channel TMT84, head transmitter DIN B
		5B *3	PROFIBUS PA, TMT162
		5C *3	PROFIBUS PA, 2-channel TMT162
		6B	PROFINET w. Ethernet-APL/SPE, TMT86, head transmitter DIN B

Suffix code	Explanation	Value	Explanation
		6C	PROFINET w. Ethernet-APL/SPE, TMT86 SIL, conformity + PROFIsafe, head transmitter DIN B
		7A *4	HART, 1-channel TMT142
m	Terminal Head; Material; Protect. Class	A1 *2	TA30A comfort flip cover; Alu; IP66/68
		A2 *2	TA30A + display, comfort flip cover; Alu; IP66/68
		D1 *2	TA30D comfort, high flip cover; Alu; IP66/68
		F1 *3	Dual chamber field housing; Alu; IP67 NEMA 4X, backlit display
		F2 *3	Dual chamber field housing; 316L; IP67 NEMA 4X, backlit display
		F3 *4	Single chamber field housing; Alu; IP67 NEMA 4X, backlit display
		F4 *4	Single chamber field housing; 316L; IP67 NEMA 4X, backlit display
		F5 *4	Single chamber field housing; Alu; IP67 NEMA 4X, w/o display
		F6 *4	Single chamber field housing; 316L; IP67 NEMA 4X, w/o display
		F7 *3	Dual chamber field housing; Alu; IP67 NEMA 4X, w/o display
		F8 *3	Dual chamber field housing; 316L; IP67 NEMA 4X, w/o display
		H1	TA30H Ex d/XP; 316L; IP66/68
		H2	TA30H Ex d/XP + display; 316L; IP66/68
		H3	TA30H Ex d/XP; Alu; IP66/68
		H4	TA30H Ex d/XP + display; Alu; IP66/68
		H5	TA30H field housing, display frontal; Alu; IP66/68
		H6	TA30H field housing, display frontal; 316; IP66/68
		YY	Special varnishing (Non-conductive) in combination with digit A1 to H6
n	Cable entry Terminal head	A	1x thread M20x1.5
		B	1x thread NPT1/2
		C	1x thread G1/2 (only for Ex tb)
		D	2x thread M20x1.5
		E	2x thread NPT1/2
o	Device Version:	n.s. *1	Not relevant for Explosion Safety
p	Second Transmitter (mounted)		Not allowed
q	Service	n.s. *1	Not relevant for Explosion Safety
r	Test, Certificate, Declaration	n.s. *1	Not relevant for Explosion Safety
s	Additional Approval	n.s. *1	Not relevant for Explosion Safety
t	Additional Option	n.s. *1	Not relevant for Explosion Safety
u	Accessory Mounted	n.s. *1	Not relevant for Explosion Safety
v	Calibration Thermometer:	n.s. *1	Not relevant for Explosion Safety
w	Calibration Points ≥ 0 °C	n.s. *1	Not relevant for Explosion Safety
x	Calibration-Points ≤ 0 °C	n.s. *1	Not relevant for Explosion Safety
y	Firmware Version	n.s. *1	Not relevant for Explosion Safety
z	Marking	n.s. *1	Not relevant for Explosion Safety

*1 n.s. means the value is neither related to Explosion Safety nor in the scope.
*2 only possible when suffix code a = 8F
*3 part of field temperature transmitter TMT162
*4 part of field temperature transmitter TMT142

Electrical data

Power supply transmitter TMT162: max. 40 Vdc, 3 W
transmitter TMT142: max. 36 Vdc, 1 W
other transmitters: max. 42 Vdc, 23 mA

Sensor: max. 10 Vdc, 1 mA

Thermal data

The relation between the type, electrical connection, temperature class, maximum surface temperature, ambient temperature range and process temperature range is shown in the following tables.

Temperature assemblies with RTD temperature sensors					
Electrical connection[*1]	Tempe-rature class	Maximum surface temperature	Ambient temperature range	Process temperature range	
				Insert diameter	
				3 mm, 6 mm dual	6 mm
Type TM111					
Terminal block[*2]: 1A	T6	T85 °C	-50 °C to +70 °C	-50 °C to +55 °C	-50 °C to +68 °C
	T5	T100 °C	-50 °C to +80 °C	-50 °C to +70 °C	-50 °C to +83 °C
	T4	T135 °C	-50 °C to +120 °C	-50 °C to +105 °C	-50 °C to +118 °C
	T3	T200 °C	-50 °C to +120 °C	-50 °C to +170 °C	-50 °C to +183 °C
	T2	T300 °C	-50 °C to +120 °C	-50 °C to +265 °C	-50 °C to +278 °C
	T1	T450 °C	-50 °C to +120 °C	-50 °C to +415 °C	-50 °C to +428 °C
Type TM111 and Type TM131					
Flying leads: 0A Transmitter TMT31: 2H, 2I TMT71: 2C TMT72: 3A TMT82: 3C, 3D, 3F TMT84: 5A TMT85: 4A TMT86: 6B, 6C TMT180: 2A, 2B	T6	T85 °C	-40 °C to +65 °C	-50 °C to +55 °C	-50 °C to +68 °C
	T5	T100 °C	-40 °C to +80 °C	-50 °C to +70 °C	-50 °C to +83 °C
	T4	T135 °C	-40 °C to +85 °C	-50 °C to +105 °C	-50 °C to +118 °C
	T3	T200 °C	-40 °C to +85 °C	-50 °C to +170 °C	-50 °C to +183 °C
	T2	T300 °C	-40 °C to +85 °C	-50 °C to +265 °C	-50 °C to +278 °C
	T1	T450 °C	-40 °C to +85 °C	-50 °C to +415 °C	-50 °C to +428 °C
Type TM131					
Terminal block[*2]: 1A	T6	T85 °C	-50 °C to +70 °C	-50 °C to +55 °C	-50 °C to +68 °C
	T5	T100 °C	-50 °C to +80 °C	-50 °C to +70 °C	-50 °C to +83 °C
	T4	T135 °C	-50 °C to +90 °C	-50 °C to +105 °C	-50 °C to +118 °C
	T3	T200 °C	-50 °C to +90 °C	-50 °C to +170 °C	-50 °C to +183 °C
	T2	T300 °C	-50 °C to +90 °C	-50 °C to +265 °C	-50 °C to +278 °C
	T1	T450 °C	-50 °C to +90 °C	-50 °C to +415 °C	-50 °C to +428 °C
Transmitter TMT142: 7A TMT162: 2D, 2E, 2F, 2G, 4B, 4C, 5B, 5C	T6	T85 °C	-40 °C to +55 °C	-50 °C to +55 °C	-50 °C to +68 °C
	T5	T100 °C	-40 °C to +70 °C	-50 °C to +70 °C	-50 °C to +83 °C
	T4	T135 °C	-40 °C to +80 °C	-50 °C to +105 °C	-50 °C to +118 °C
	T3	T200 °C	-40 °C to +80 °C	-50 °C to +170 °C	-50 °C to +183 °C
	T2	T300 °C	-40 °C to +80 °C	-50 °C to +265 °C	-50 °C to +278 °C
	T1	T450 °C	-40 °C to +80 °C	-50 °C to +415 °C	-50 °C to +428 °C

Temperature assemblies with thermocouple temperature sensors				
Electrical connection[*1]	Tempe-rature class	Maximum surface temperature	Ambient temperature range	Process temperature range
Type TM111				
Terminal block[*2]: 1A	T6	T85 °C	-50 °C to +70 °C	-50 °C to +85 °C
	T5	T100 °C	-50 °C to +80 °C	-50 °C to +100 °C
	T4	T135 °C	-50 °C to +120 °C	-50 °C to +135 °C
	T3	T200 °C	-50 °C to +120 °C	-50 °C to +200 °C
	T2	T300 °C	-50 °C to +120 °C	-50 °C to +300 °C
	T1	T450 °C	-50 °C to +120 °C	-50 °C to +450 °C
Type TM111 and Type TM131				
Flying leads: 0A Transmitter TMT71: 2C TMT72: 3A TMT82: 3C, 3D, 3F TMT84: 5A TMT85: 4A TMT86: 6B, 6C	T6	T85 °C	-40 °C to +65 °C	-50 °C to +85 °C
	T5	T100 °C	-40 °C to +80 °C	-50 °C to +100 °C
	T4	T135 °C	-40 °C to +85 °C	-50 °C to +135 °C
	T3	T200 °C	-40 °C to +85 °C	-50 °C to +200 °C
	T2	T300 °C	-40 °C to +85 °C	-50 °C to +300 °C
	T1	T450 °C	-40 °C to +85 °C	-50 °C to +450 °C
Type TM131				
Terminal block[*2]: 1A	T6	T85 °C	-50 °C to +70 °C	-50 °C to +85 °C
	T5	T100 °C	-50 °C to +80 °C	-50 °C to +100 °C
	T4	T135 °C	-50 °C to +90 °C	-50 °C to +135 °C
	T3	T200 °C	-50 °C to +90 °C	-50 °C to +200 °C
	T2	T300 °C	-50 °C to +90 °C	-50 °C to +300 °C
	T1	T450 °C	-50 °C to +90 °C	-50 °C to +450 °C
Transmitter TMT142: 7A TMT162: 2D, 2E, 2F, 2G, 4B, 4C, 5B, 5C	T6	T85 °C	-40 °C to +55 °C	-50 °C to +85 °C
	T5	T100 °C	-40 °C to +70 °C	-50 °C to +100 °C
	T4	T135 °C	-40 °C to +80 °C	-50 °C to +135 °C
	T3	T200 °C	-40 °C to +80 °C	-50 °C to +200 °C
	T2	T300 °C	-40 °C to +80 °C	-50 °C to +300 °C
	T1	T450 °C	-40 °C to +80 °C	-50 °C to +450 °C

[*1]: TM111 suffix code h, TM131 suffix code l.
[*2]: In an enclosure with a blind cover: TM111 suffix code i / TM131 suffix code m = A1, D1, H1 or H3.

Cortem RB**1NS union:

material	Service temperature range
Stainless steel	-50 °C to +150 °C

Marking

Type	Suffix code a	ATEX code	IEC code
TM111	8F	Ⓔx II 2 D	Ex tb IIIC T85 °C...T450 °C Db
	86	Ⓔx II 2 G Ⓔx II 2 D	Ex db IIC T6...T1 Gb Ex tb IIIC T85 °C...T450 °C Db
TM131	8F	Ⓔx II 1/2 D	Ex ta IIIC T_{200} 85 °C…T_{200} 450 °C Da / Ex tb IIIC T85 °C…T450 °C Db
	86	Ⓔx II 1/2 G Ⓔx II 1/2 D	Ex db IIC T6...T1 Ga/Gb Ex ta IIIC T_{200} 85 °C…T_{200} 450 °C Da / Ex tb IIIC T85 °C…T450 °C Db