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Safety Instructions
iTHERM TM111
iTHERM TM131

Ex ec IIC T6...T1 Gc

Endress+Hauser
People for Process Automation

iTHERM TM111
iTHERM TM131

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About this document

The document number of these Safety Instructions (XA) must match the information on the nameplate.

Associated documentation

All documentation is available on the Internet:
www.endress.com/Deviceviewer
(enter the serial number from the nameplate).

If not yet available, a translation into EU languages can be ordered.

To commission the device, please observe the Operating Instructions pertaining to the device:
www.endress.com/<product code>, e.g. iTHERM TM131

Supplementary documentation

Explosion protection brochure: CP00021Z

The explosion protection brochure is available on the Internet:
www.endress.com/Downloads

Certificates and declarations

NEPSI certificate

Certificate number: GYJ25.1013X

Affixing the certificate number certifies conformity with the following standards (depending on the device version)

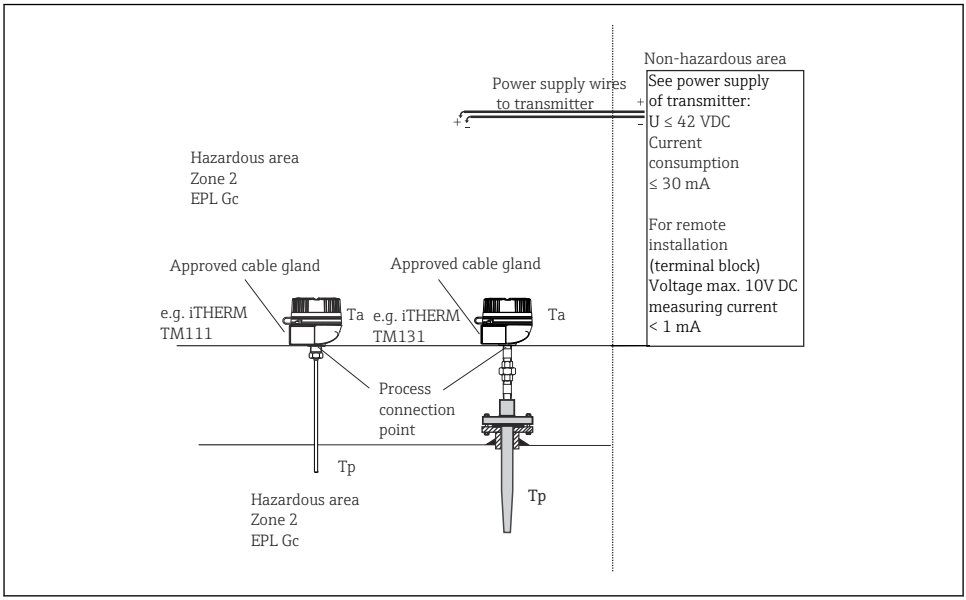
- GB/T 3836.1-2021
- GB/T 3836.3-2021

Please refer to NEPSI/CCC certificates for conditions of safe use.

Manufacturer address

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

Safety instructions



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Safety instructions: Installation of protection increased safety

- Install the device according to the manufacturer's instructions and any other valid standards and regulations (e.g. EN/IEC 60079-14).
- Seal the cable entries with certified cable glands and or blanking elements which have at least type of protection Ex ec suitable for Group IIC (degree of protection IP6X).
- In case of installation and repair apply a torque for process connection of 50 to 70Nm for terminal heads suffix code i = A1, A2, D1 (TA30A, TA30D).
- For assure that the temperature assembly has a degree of protection of IP6X the user shall provide a thermowell or equivalent component at the process side.
- For operating the thermometer housing at an ambient temperature under −20 °C appropriate cables and cable entries permitted for this application must be used.
- For ambient temperatures higher than +65 °C, use suitable heat resisting cables or wires, cable entries and sealing facilities for Ta +5 K above surrounding.
- The housing of the thermometer/sensor must be connected to the local potential equalization or installed in a grounded metallic piping or tank respectively.

Safety instructions: Specific conditions of use

- For assure that the temperature assembly has a degree of protection of IP54 or IP6X depending on the ultimate application the user shall provide a thermowell or equivalent component at the process side.
- Sensors of iTHERM TM111 with a diameter of 3 mm(suffix code b = A) shall be protected by a thermowell.
- Sensors of iTHERM TM131 shall be protected by the thermowell as provided or by a thermowell as specified in the instructions.
- 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 and
  - the temperature of the optionally used RB**1NS union does not exceed the service temperature range of −50 to +150 °C for following option:

iTHERM TM131-abc...

c **Thermometer Design:**

M Nipple-union connection NPT½"

N Nipple-union-nipple connection NPT½"

- Temperature assemblies with flying leads (type iTHERM TM111 suffix code h = 0A, type iTHERM 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 V_{DC} and 1 mA.
- The device must be installed and maintained so, that even in the event of rare incidents, an ignition source due to impact or friction between the enclosure and iron/steel is excluded.
- The suffix “X” placed after the certificate number indicates that this product is subject to special conditions for safe use, that is:
  In an explosive atmosphere, do not open the device when voltage is supplied.

- The user shall not change the configuration in order to maintain/ ensure the explosion protection performance of the equipment. Any change may impair safety.
- For installation, use and maintenance of this product, the end user shall observe the instruction manual and the following standards:
  - GB/T 3836.13-2021 “Explosive atmospheres- Part 13:Equipment repair, overhaul, reclamation and modification”.
  - GB/T 3836.15-2017 “Explosive atmospheres- Part 15:Electrical installations design, selection and erection”.
  - GB/T 3836.16-2022 “Explosive atmospheres- Part 16:Electrical installations inspection and maintenance”.
  - GB/T 3836.18-2024 “Explosive atmospheres- Part 18:Intrinsically safe electrical systems”.
  - GB50257-2014 “Code for construction and acceptance of electric equipment on fire and device for explosion hazard electrical installation engineering”.
- The relationship between ambient temperature and temperature class is shown as follows:

Temperature tables

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

Temperature assemblies with RTD temperature sensors				
Electrical connection [1)]	**Temperature class/ Maximum surface temperature**	**Ambient temperature range**	**Process temperature range Insert diameter 3 mm, 6 mm dual**	**Process temperature range Insert diameter 6 mm**
Type iTHERM TM111				
Terminal block (1A) [2)]	T6/T85 °C	–50 to +70 °C	–50 to +55 °C	–50 to +68 °C
	T5/T100 °C	–50 to +80 °C	–50 to +70 °C	–50 to +83 °C
	T4/T135 °C	–50 to +120 °C	–50 to +105 °C	–50 to +118 °C
	T3/T200 °C	–50 to +120 °C	–50 to +170 °C	–50 to +183 °C
	T2/T300 °C	–50 to +120 °C	–50 to +265 °C	–50 to +278 °C
	T1/T450 °C	–50 to +120 °C	–50 to +415 °C	–50 to +428 °C
Type iTHERM TM111 and Type iTHERM TM131				
Flying leads (0A) or Transmitter iTEMP TMT82 (3C, 3D, 3F, 3I) TMT85 (4A)	T6/T85 °C	–40 to +55 °C	–50 to +55 °C	–50 to +68 °C
	T5/T100 °C	–40 to +70 °C	–50 to +70 °C	–50 to +83 °C
	T4/T135 °C	–40 to +85 °C	–50 to +105 °C	–50 to +118 °C

Temperature assemblies with RTD temperature sensors				
Electrical connection [1]	**Temperature class/ Maximum surface temperature**	**Ambient temperature range**	**Process temperature range Insert diameter 3 mm, 6 mm dual**	**Process temperature range Insert diameter 6 mm**
	T3/T200 °C	−40 to +85 °C	−50 to +170 °C	−50 to +183 °C
	T2/T300 °C	−40 to +85 °C	−50 to +265 °C	−50 to +278 °C
	T1/T450 °C	−40 to +85 °C	−50 to +415 °C	−50 to +428 °C
Type iTHERM TM131				
Terminal block (1A) [2]	T6/T85 °C	−50 to +70 °C	−50 to +55 °C	−50 to +68 °C
	T5/T100 °C	−50 to +80 °C	−50 to +70 °C	−50 to +83 °C
	T4/T135 °C	−50 to +90 °C	−50 to +105 °C	−50 to +118 °C
	T3/T200 °C	−50 to +90 °C	−50 to +170 °C	−50 to +183 °C
	T2/T300 °C	−50 to +90 °C	−50 to +265 °C	−50 to +278 °C
	T1/T450 °C	−50 to +90 °C	−50 to +415 °C	−50 to +428 °C

1) TM111 iTHERM TM111 suffix code h, iTHERM TM131 suffix code l.
2) in an enclosure with a blind cover; iTERM TM111 suffix code i / iTHERM TM131 suffix code m = A1, D1, H1, H3.

Temperature assemblies with thermocouple temperature sensors			
Electrical connection [1]	**Temperature class/ Maximum surface temperature**	**Ambient temperature range**	**Process temperature range**
Type iTHERM TM111			
Terminal block (1A) [2]	T6/T85 °C	−50 to +70 °C	−50 to +85 °C
	T5/T100 °C	−50 to +80 °C	−50 to +100 °C
	T4/T135 °C	−50 to +120 °C	−50 to +135 °C
	T3/T200 °C	−50 to +120 °C	−50 to +200 °C
	T2/T300 °C	−50 to +120 °C	−50 to +300 °C
	T1/T450 °C	−50 to +120 °C	−50 to +450 °C
Type iTHERM TM111 and Type iTHERM TM131			
Flying leads (0A) or Transmitter iTEMP TMT82 (3C, 3D, 3F, 3I) TMT85 (4A)	T6/T85 °C	−40 to +55 °C	−50 to +85 °C
	T5/T100 °C	−40 to +70 °C	−50 to +100 °C
	T4/T135 °C	−40 to +85 °C	−50 to +135 °C
	T3/T200 °C	−40 to +85 °C	−50 to +200 °C
	T2/T300 °C	−40 to +85 °C	−50 to +300 °C
	T1/T450 °C	−40 to +85 °C	−50 to +450 °C

Temperature assemblies with thermocouple temperature sensors			
Electrical connection [1]	**Temperature class/ Maximum surface temperature**	**Ambient temperature range**	**Process temperature range**
Type iTHERM TM131			
Terminal block (1A) [2]	T6/T85 °C	−50 to +70 °C	−50 to +85 °C
	T5/T100 °C	−50 to +80 °C	−50 to +100 °C
	T4/T135 °C	−50 to +90 °C	−50 to +135 °C
	T3/T200 °C	−50 to +90 °C	−50 to +200 °C
	T2/T300 °C	−50 to +90 °C	−50 to +300 °C
	T1/T450 °C	−50 to +90 °C	−50 to +450 °C

1) iTHERM TM111 suffix code h, iTHERM TM131 suffix code l.
2) in an enclosure with a blind cover; iTHERM TM111 suffix code i / iTHERM TM131 suffix code m = A1, D1, H1, H3.

Electrical connection data

Type	Electrical data
iTHERM TM111 iTHERM TM131	Power supply U_b Transmitter iTEMP TMT82: max. 42 V_{DC}, 4 to 20 mA Transmitter iTEMP TMT85: max 32 V_{DC}, 11 mA Terminal block (Sensor): max. 10 V_{DC}, 1 mA

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