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Safety Instructions
iTHERM TMS12
MultiSens Linear

Modular TC and RTD multipoint with primary thermowell (with diagnostic chamber)

ATEX/IECEx: Ex ia IIC T6 Ga/Gb
Ex ia/db T6 Ga/Gb
Ex ia IIIC Txxx °C Da/Db
Ex ia/tb IIIC Txxx °C Da/Db

Endress+Hauser
People for Process Automation

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About this document

This document has been translated into several languages. Legally determined is solely the English source text.

The document translated into EU languages is available:
- In the download area of the Endress+Hauser website: www.endress.com -> Downloads -> Manuals and Datasheets -> Type: Ex Safety Instruction (XA) -> Text Search: ...
- In the Device Viewer: www.endress.com -> Product tools -> Access device specific information -> Check device features

If not yet available, the document can be ordered.

Associated documentation

This document is an integral part of the following Operating Instructions:

Associated documentation for iTHERM TMS12
- Operating instructions: BA01881T
- Technical information: TI01399T

Supplementary documentation

Explosion protection brochure: CP00021Z

The Explosion-protection brochure is available:
- In the download area of the Endress+Hauser website: www.endress.com -> Downloads -> Brochures and Catalogs -> Text Search: CP00021Z
- On the CD for devices with CD-based documentation

Manufacturer´s certificates

IECEx certificate

Certificate number: IECEx CES 13.0026X

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

- IEC 60079-0: 2017
- IEC 60079-1: 2014
- IEC 60079-11: 2011
- IEC 60079-26: 2014
- IEC 60079-31: 2013

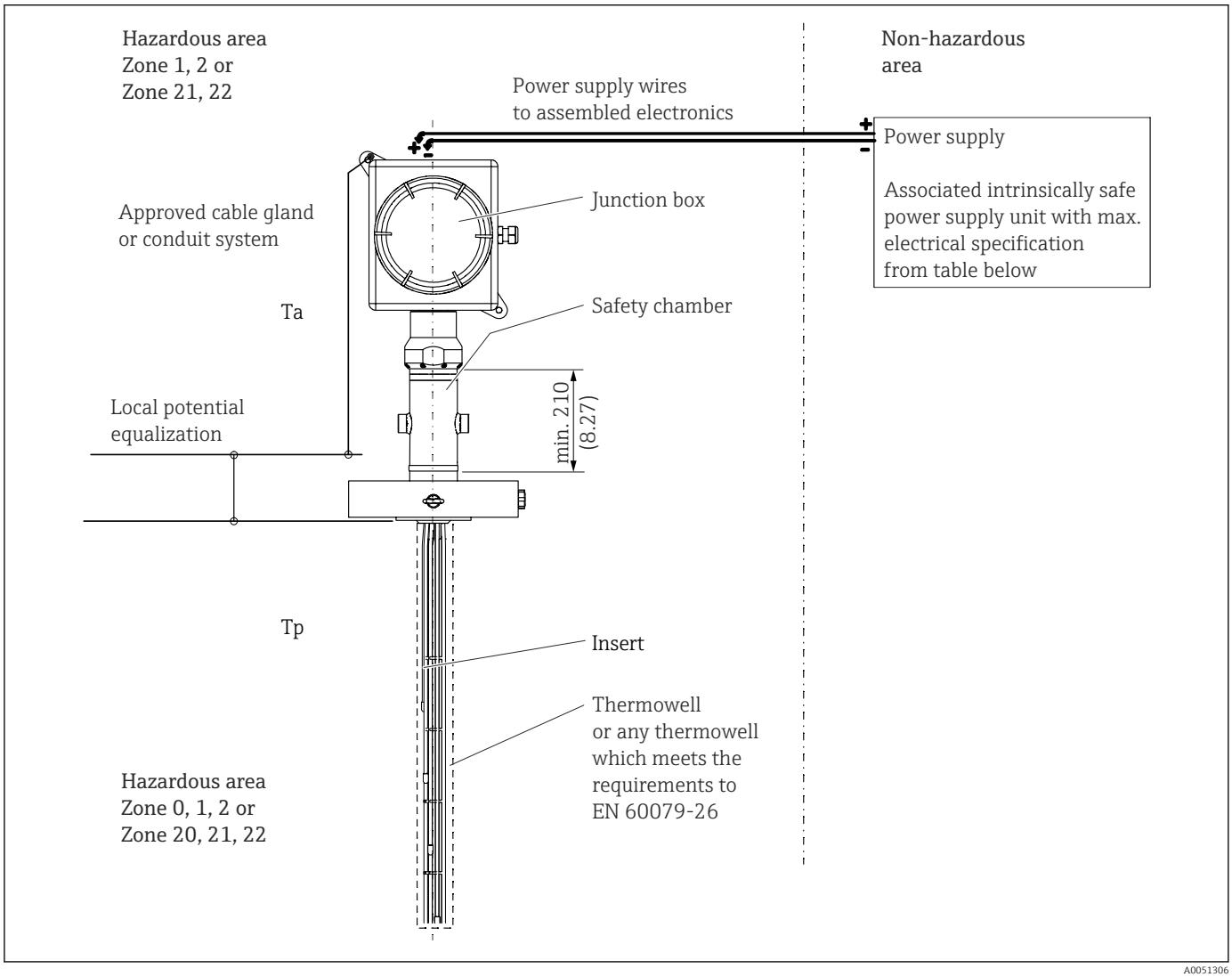
ATEX certificate

Certificate number: CESI 13 ATEX 042X

Manufacturer address

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

Safety instructions



Safety instructions: General

- Staff must meet the following conditions for mounting, electrical installation, commissioning and maintenance of the device:
  - Be suitably qualified for their role and the tasks they perform
  - Be trained in explosion protection
  - Be familiar with national regulations or guidelines (e.g. IEC/EN 60079-14)
- Install the device according to the manufacturer's instructions and national regulations.
- Do not operate the device outside the specified electrical, thermal and mechanical parameters.
- Only use the device in media to which the wetted materials have sufficient durability.
- Refer to the temperature tables for the relationship between the permitted ambient temperature for the electronics enclosure, depending on the range of application and the temperature class.
- Alterations to the device can affect the explosion protection and must be carried out by staff authorized to perform such work by Endress+Hauser.

Safety instructions: Installation in equipment of Group III

- Refer to the enclosed Safety instructions of assembled Transmitters.
- Refer to the marked maximum ratings for assembled temperature transmitter’s supply.

Safety instructions: Installation in equipment of Group III

- Install the sensor in thermometer/enclosure suitable for Group III in compliance with IEC/EN 60079-11 and IEC/EN 60079-0 and its ultimate application.
- For ambient temperatures higher than +70 °C, use suitable heat-resisting cables or wires, cable entries and sealing facilities for Ta +5 K above surrounding.
- The degree of protection shall be at least equal to IP6X throughout the equipment.
- The cable gland (or other accessories) chosen as ingress into junction box shall be certified accordingly to relevant Standards (IEC/EN 60079-0 and IEC/EN 60079-31).
- User must regularly clean enclosure external surface due to avoid formation and deposition of dust layers on the surface itself (the maximum allowed thickness of dust is equal to 5 mm).
- For dust 'Ex t' applications, the compression fittings installed on junction box connection thread must have PTFE or graphite sealing tape applied to maintain the approval stated.
- The thermometer 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.

⚠ WARNING

Explosive atmosphere

- ▶ In an explosive atmosphere, do not open the device when voltage is supplied (ensure that the IP6x housing protection is maintained during operation).

Safety instructions: Partition wall

Install the thermometer in a partition wall which is in compliance with IEC/EN 60079-26 in reference to its ultimate application.

Intrinsic safety

- Comply with the installation and safety instructions in the Operating Instructions.
- Install the device according to the manufacturer's instructions and any other valid standards and regulations (e.g. EN/IEC 60079-14).
- The device must be connected to the local potential equalization.
- Connect the device using suitable cable and wire entries of protection type "Intrinsic safety (Ex i)".
- Associated devices with galvanic isolation between the intrinsically safe and non-intrinsically safe circuits are preferred.
- For sensor elements an intrinsically safe supply with galvanic isolation must be used.
- The type of protection changes as follows when the devices are connected to certified intrinsically safe circuits of Category Ex ib for Equipment Groups IIC and IIB: Ex ib IIC T6 or Ex ib IIB T6.
- Continuous duty temperature of the cable Ta +5 K.
- To maintain the ingress protection of the enclosure IP66: Install the enclosure cover, cable glands and blind plugs correctly.
- Close unused entry glands with sealing plugs.
- The pertinent guidelines must be observed when intrinsically safe circuits are connected together acc. IEC/EN 60079-14 (Proof of Intrinsic Safety).
- The type of protection changes as follows when the devices are connected to certified intrinsically safe circuits of Category ib: Ex ib IIC. When connecting to an intrinsically safe ib circuit, do not operate the sensor at Zone 0 without any thermowell according to IEC/EN 60079-26.
- When connecting multiple sensors make sure that the potential equalizations are at the same local potential equalization.
- The device in the Ex ia configurations shall be supplied by barriers with galvanic insulation, certified according to IEC 60079-0, IEC 60079-11, IEC 60079-26 with the limits of the electrical characteristics.
- Pay attention to the maximum process conditions according to the manufacturer's operating Instructions.
- Install the device to exclude any mechanical damage or friction. The device Connection Head enclosures, when made in Aluminum light alloy, shall be mounted in a way to avoid an ignition hazard due to impact or friction. Pay particular attention to flow conditions and tank fittings.
- Respecting the minimum safety distance between the connection head and the process connection of 210 mm to limit the effect of heat conduction through the thermometer body (as shown in the picture).

Safety instructions: Zone 0

- The aluminum housing must **not** be installed in zone 0, only the thermowell and sensors are allowed to extend through zone 0 as shown in the scheme on page 1
- Associated devices with galvanic isolation between the intrinsically safe and non-intrinsically safe circuits are preferred.

Potential equalization

The device must be connected to the local potential equalization.

Safety instructions: Flameproof

- Only certified cable glands (or other accessories) in accordance to IEC/EN 60079-0 and IEC/EN 60079-1 shall be used. Cable entry system shall be in compliance with clause 10 of IEC/EN 60079-14 and/or other Local Regulations and Laws.
- User's cable entries always assure at least 5 engaged threads.
- The thread of cover must be always sprinkled by silicone grease (LOCTITE_8104 or LOXEAL_GS9) or copper paste or similar.
- The ground terminal board in and out is preview for the conductor which must be placed between the anti-rotation washer and the flat washer. If the connection is made by means of lug, this must be with an anti-rotation pin, or must be provide on fitting to avoid the rotation of the cable.
- Any unused holes in the enclosure must be closed with conical or cylindrical plugs in such way that anti-explosion seal characteristics of the enclosure are preserved. These plugs must only be removed with special tools.
- Degree of protection IP66 is guaranteed **only** if the cover is provided with an appropriate O-ring gasket; after each opening integrity of such gasket shall be verified.
- Any damaged parts may only be replaced or repaired by the manufacturer, unless of express authorization of itself. It is forbidden to machine further the junction box.
- As a general rule, whichever operations and maintenance on the electrical or mechanical parts or on the system, must be preceded from the interruption of the electrical supply system.

Safety instructions: Specific conditions of use

- The thermometer 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.
- When installing and commissioning the device, make sure that an electrostatic charge of the connection cable is avoided.
- As a rule of the thumb, the whole length of each thermoelement installed within the device shall be limited to 75 m for single thermocouple, to 37.5 m for double and to 25 m for triple ones.
- When install the device, all the accessories used (e.g. cable glands, etc.) shall be certified according to IEC/EN 60079-0, IEC/EN 60079-1, IEC/EN 60079-31 and additionally in some cases to IEC/EN 60079-7, providing a degree of protection at least equal to the junction box one. For the correct choice of the cable entry system, please refer to IEC/EN 60079-14 (latest revision) and/or to National Regulations and Laws.
- Associated devices with galvanic isolation between the intrinsically safe and non-intrinsically safe circuits are preferred.
- The separation between Zone 0/20 and Zone 1/21 shall be in compliance with requirements of IEC/EN 60079-26.
- The device shall be connected to the same local potential equalization in at least one point (alternatively through the junction box or at process connection).
- The width of the flameproof joints is superior to those specified in tables of IEC/EN 60079-1 standard.
- No battery is permitted within the device assemblies.

Temperature tables

The dependency of PROCESS temperatures upon the temperature class for device without transmitters (terminal blocks versions only).
For RTD sensors:

Insert Diameter	Temperature class/ Maximum surface temperature	Maximum allowed process temperature (sensor) Tp (process)							
		Pi≤50 mW	Pi≤ 100 mW	Pi≤ 200 mW	Pi≤ 500 mW	Pi≤ 650 mW	Pi≤ 750 mW	Pi≤ 800 mW	Pi≤1 000 mW
1.5 mm 3.0 mm 6.0 mm	T1/T450 °C	426 °C	415 °C	396 °C	343 °C	333 °C	320 °C	312 °C	280 °C
	T2/T300 °C	276 °C	265 °C	246 °C	193 °C	183 °C	170 °C	162 °C	130 °C
	T3/T200 °C	181 °C	170 °C	151 °C	98 °C	88 °C	75 °C	62 °C	30 °C
	T4/T135 °C	116 °C	105 °C	86 °C	33 °C	23 °C	10 °C	2 °C	−30 °C
	T5/T100 °C	81 °C	70 °C	51 °C	−2 °C	−12 °C	−25 °C	−33 °C	-
	T6/T85 °C	66 °C	55 °C	36 °C	−17 °C	−27 °C	−40 °C	-	-

For TC sensors:

Insert Diameter	Temperature class/ Maximum surface temperature	Maximum allowed process temperature (sensor) Tp (process)
0.5 mm 0.8 mm 1 mm 2 mm 3 mm 4.5 mm 6 mm	T1/T450 °C	440 °C
	T2/T300 °C	290 °C
	T3/T200 °C	195 °C
	T4/T135 °C	130 °C
	T5/T100 °C	95 °C
	T6/T85 °C	80 °C

Ambient temperature:

Minimum ambient temperature is Ta ≥ −50 °C (depending on enclosure and equipment used)

Maximum ambient temperature depends on product configuration:
- The type of enclosure selected
- The type and the number of mounted terminal blocks as summarized in the following table:

Assembled transmitter	Manufacturer	ENCLOSURE TYPE	MINIMUM AMBIENT TEMP.	TEMPERATURE CLASS T6/T85 °C Max ambient temperature °C Number of transmitters												TEMPERATURE CLASS T5/T100 °C Max ambient temperature °C Number of transmitters												TEMPERATURE CLASS T5/T135 °C Max ambient temperature °C Number of transmitters											
				1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
TMT111 TMT121 TMT127 TMT128	FEAM / NUOVA ASP	GUE1/GUB00	-50°C	48	47											63	62											83	82										
		GUB0		49	48	47	46									64	63	62	61									84	83	82	81								
		GUB1		49	48	48	47	46	46	45						64	63	63	62	61	61	60						84	83	83	82	81	81	80					
		GUB03		49	49	49	48	48	48	47	47	47	47	46	46	64	64	64	63	63	63	62	62	62	62	61	61	84	84	84	83	83	83	82	82	82	82	81	81
		GUB23		49	49	48	48	48	47	47	47	46	46	46	45	64	64	63	63	63	62	62	62	61	61	61	60	84	84	83	83	83	82	82	82	81	81	81	80
	TECHNOR ITALSMEA	GUB-01	-20°C	49	48	47	46									64	63	62	61									84	83	82	81								
		GUB-02		49	48	47	47									64	63	62	62									84	83	82	82								
		GUB-03		49	48	48	47	47	46	46						64	63	63	62	62	61	61						84	83	83	82	82	81	81					
		GUB-04		49	49	48	48	47	47	47						64	64	63	63	62	62	62						84	84	83	83	82	82	82					
		GUB-05		49	49	48	48	48	47	47	47	46	46	45	45	64	64	63	63	63	62	62	62	61	61	60	60	84	84	83	83	83	82	82	82	81	81	80	80
		GUB-06		49	49	49	48	48	48	48	47	47	47	46	46	64	64	64	63	63	63	63	62	62	62	61	61	84	84	84	83	83	83	83	82	82	82	81	81
	AD VIGANÒ	GUB	-40°C	48	46											63	61											83	81										
		GUB0		48	47	46	44									63	62	61	59									83	82	81	79								
		GUB01		49	48	47	47									64	63	62	62									84	83	82	82								
		GUB02		49	48	48	47									64	63	63	62									84	83	83	82								
		GUB03		49	49	48	48	47	47	46						64	64	63	63	62	62	61						84	84	83	83	82	82	81					
		GUB04		49	49	48	48	47	47	47	46	46	45	45	45	64	64	63	63	62	62	62	61	61	60	60	60	84	84	83	83	82	82	82	81	81	80	80	80
		GUB04A		49	49	48	48	48	47	47	47	46	46	46	45	64	64	63	63	63	62	62	62	61	61	61	60	84	84	83	83	83	82	82	82	81	81	81	80
		GUB05		49	49	49	48	48	48	47	47	47	47	46	46	64	64	64	63	63	63	62	62	62	62	61	61	84	84	84	83	83	83	82	82	82	82	81	81
	CORTEM	CCA-0E	-50°C	46	43											61	58											81	78										
		CCA-01E		47	45											62	60											82	80										
		CCA-02E		48	47	46	45	44	43							63	62	61	60	59	58							83	82	81	80	79	78						
		CCA-03E		49	48	47	47	46	45	44	44					64	63	62	62	61	60	59	59					84	83	82	82	81	80	79	79				
		CCA-04E		49	49	49	48	48	48	48	47	47	47	47	46	64	64	64	63	63	63	63	62	62	62	62	61	84	84	84	83	83	83	83	82	82	82	82	81
		GUB-S		44	39											59	54											79	74										
		GUB-0		47	44											62	59											82	79										
		GUB-01		48	46	44										63	61	59										83	81	79									
		GUB-02		49	48	47	46	45	45							64	63	62	61	60	60							84	83	82	81	80	80						
		GUB-03		49	48	48	47	47	46	46	45	44	44	43	43	64	63	63	62	62	61	61	60	59	59	58	58	84	83	83	82	82	81	81	80	79	79	78	78
		CCAI2020		49	48	47	46	45	44							64	63	62	61	60	59							84	83	82	81	80	79						
		CCAI3020		49	48	48	47	46	46	45	45	44	43	43	42	64	63	63	62	61	61	60	60	59	58	58	57	84	83	83	82	81	81	80	80	79	78	78	77
TMT181 TMT182 TMT112 TMT122 TMT187 TMT188	FEAM / NUOVA ASP	GUE1/GUB00	-50°C	53	52											68	67											83	82										
		GUB0		54	53	52	51									69	68	67	66									84	83	82	81								
		GUB1		54	53	53	52	51	51	50						69	68	68	67	66	66	65						84	83	83	82	81	81	80					
		GUB03		54	54	54	53	53	53	52	52	52	52	51	51	69	69	69	68	68	68	67	67	67	67	66	66	84	84	84	83	83	83	82	82	82	82	81	81
		GUB23		54	54	53	53	53	52	52	52	51	51	51	50	69	69	68	68	68	67	67	67	66	66	66	65	84	84	83	83	83	82	82	82	81	81	81	80
	TECHNOR ITALSMEA	GUB-01	-20°C	54	53	52	51									69	68	67	66									84	83	82	81								
		GUB-02		54	53	52	52									69	68	67	67									84	83	82	82								
		GUB-03		54	53	53	52	52	51	51						69	68	68	67	67	66	66						84	83	83	82	82	81	81					
		GUB-04		54	54	53	53	52	52	52						69	69	68	68	67	67	67						84	84	83	83	82	82	82					
		GUB-05		54	54	53	53	53	52	52	52	51	51	50	50	69	69	68	68	68	67	67	67	66	66	65	65	84	84	83	83	83	82	82	82	81	81	80	80
		GUB-06		54	54	54	53	53	53	53	52	52	52	51	51	69	69	69	68	68	68	68	67	67	67	66	66	84	84	84	83	83	83	83	82	82	82	81	81
	AD VIGANÒ	GUB	-40°C	53	51											68	66											83	81										
		GUB0		53	52	51	49									68	67	66	64									83	82	81	79								
		GUB01		54	53	52	52									69	68	67	67									84	83	82	82								
		GUB02		54	53	53	52									69	68	68	67									84	83	83	82								
		GUB03		54	54	53	53	52	52	51						69	69	68	68	67	67	66						84	84	83	83	82	82	81					
		GUB04		54	54	53	53	53	52	52	51	51	50	50	50	69	69	68	68	67	67	67	66	66	65	65	65	84	84	83	83	82	82	82	81	81	80	80	80
		GUB04A		54	54	53	53	53	52	52	52	51	51	51	50	69	69	68	68	68	67	67	67	66	66	66	65	84	84	83	83	83	82	82	82	81	81	81	80
		GUB05		54	54	54	53	53	53	53	52	52	52	52	51	69	69	69	68	68	68	67	67	67	67	66	66	84	84	84	83	83	83	82	82	82	82	81	81
	CORTEM	CCA-0E	-50°C	51	48											66	63											81	78										
		CCA-01E		52	50											67	65											82	80										
		CCA-02E		53	52	51	50	49	48							68	67	66	65	64	63							83	82	81	80	79	78						
		CCA-03E		54	53	52	52	51	50	49	49					69	68	67	67	66	65	64	64					84	83	82	82	81	80	79	79				
		CCA-04E		54	54	54	53	53	53	53	52	52	52	52	51	69	69	69	68	68	68	68	67	67	67	67	66	84	84	84	83	83	83	83	82	82	82	82	81
		GUB-S		49	44											64	59											79	74										
		GUB-0		52	49											67	64											82	79										
		GUB-01		53	51	49										68	66	64										83	81	79									
		GUB-02		54	53	52	51	50	50							69	68	67	66	65	65							84	83	82	81	80	80						
		GUB-03		54	53	53	52	52	51	51	50	49	49	48	48	69	68	68	67	67	66	66	65	64	64	63	63	84	83	83	82	82	81	81	80	79	79	78	78
		CCAI2020		54	53	52	51	50	49							69	68	67	66	65	64							84	83	82	81	80	79						
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TMT84 TMT85	FEAM / NUOVA ASP	GUE1/GUB00	-50°C	51	47											66	62											81	77										
		GUB0		52	49	47	44									67	64	62	59									82	79	77	74								
		GUB1		53	51	49	47	45	43	42						68	66	64	62	60	58	57						83	81	79	77	75	73	72					
		GUB03		54	53	52	51	50	50	49	48	47	46	45	45	69	68	67	66	65	65	64	63	62	61	60	60	84	83	82	81	80	80	79	78	77	76	75	75
		GUB23		53	52	51	50	49	48	47	46	45	44	43	42	68	67	66	65	64	63	62	61	60	59	58	57	83	82	81	80	79	78	77	76	75	74	73	72
	TECHNOR ITALSMEA	GUB-01	-20°C	52	50	47	45									67	65	62	60									82	80	77	75								
		GUB-02		52	50	48	46									67	65	63	61									82	80	78	76								
		GUB-03		53	51	50	48	46	45	43						68	66	65	63	61	60	58						83	81	80	78	76	75	73					
		GUB-04		53	52	51	50	49	47	46						68	67	66	65	64	62	61						83	82	81	80	79	77	76					
		GUB-05		53	52	51	50	49	48	47	46	45	44	43	42	68	67	66	65	64	63	62	61	60	59	58	57	83	82	81	80	79	78	77	76	75	74	73	72
		GUB-06		54	53	52	51	51	50	49	48	47	47	46	45	69	68	67	66	66	65	64	63	62	62	61	60	84	83	82	81	81	80	79	78	77	77	76	75
	AD VIGANÒ	GUB	-40°C	49	44											64	59											79	74										
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		GUB01		53	51	49	47									68	66	64	62									83	81	79	77								
		GUB02		53	51	50	48									68	66	65	63									83	81	80	78								
		GUB03		53	52	51	49	48	47	45						68	67	66	64	63	62	60						83	82	81	79	78	77	75					
		GUB04		53	52	51	50	49	47	46	45	44	43	42	40	68	67	66	65	64	62	61	60	59	58	57	55	83	82	81	80	79	77	76	75	74	73	72	70
		GUB04A		53	52	51	50	49	48	47	46	45	44	43	42	68	67	66	65	64	63	62	61	60	59	58	57	83	82	81	80	79	78	77	76	75	74	73	72
		GUB05		54	53	52	51	50	49	49	48	47	46	45	44	69	68	67	66	65	64	64	63	62	61	60	59	84	83	82	81	80	79	79	78	77	76	75	74
	CORTEM	CCA-0E	-50°C	45												60	50											75	65										
		CCA-01E		47	40											62	55											77	70										
		CCA-02E		51	48	44	41									66	63	59	56	53	49							81	78	74	71	68	64						
		CCA-03E		52	50	48	46	44	42	40						67	65	63	61	59	57	55	53					82	80	78	76	74	72	70	68				
		CCA-04E		54	53	52	52	51	50	49	49	48	47	46	46	69	68	67	67	66	65	64	64	63	62	61	61	84	83	82	82	81	80	79	79	78	77	76	76
		GUB-S		40												55	40											70	55										
		GUB-0		47	39											62	54											77	69										
		GUB-01		49	44	39										64	59	54										79	74	69									
		GUB-02		52	50	47	45	43	40							67	65	62	60	58	55							82	80	77	75	73	70						
		GUB-03		53	51	50	48	46	45	43	41	40				68	66	65	63	61	60	58	56	55	53	51	50	83	81	80	78	76	75	73	71	70	68	66	65
		CCAI2020		52	49	46	43	40								67	64	61	58	55	52							82	79	76	73	70	67						
		CCAI3020		53	51	49	47	46	44	42	40	39				68	66	64	62	61	59	57	55	54	52	50	48	83	81	79	77	76	74	72	70	69	67	65	63

A0051150

Assembled transmitter	Manufacturer	ENCLOSURE TYPE	MINIMUM AMBIENT TEMP.	TEMPERATURE CLASS T6/T85 °C Max ambient temperature °C Number of transmitters												TEMPERATURE CLASS T5/T100 °C Max ambient temperature °C Number of transmitters												TEMPERATURE CLASS T5/T135 °C Max ambient temperature °C Number of transmitters											
				1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
TMT71 TMT72	FEAM / NUOVA ASP	GUE1/GUB00	-50°C	53	52											68	67											83	82										
		GUB0		54	53	52	51									69	68	67	66									84	83	82	81								
		GUB1		54	53	52	52	51	50	50						69	68	67	67	66	65	65						84	83	82	82	81	80	80					
		GUB03		54	54	54	53	53	53	52	52	52	51	51	51	69	69	69	68	68	68	67	67	67	66	66	66	84	84	84	83	83	83	82	82	82	81	81	81
		GUB23		54	54	53	53	53	52	52	52	51	51	50	50	69	69	68	68	68	67	67	67	66	66	65	65	84	84	83	83	83	82	82	82	81	81	80	80
	TECHNOR ITALSMEA	GUB-01	-20°C	54	53	52	51									69	68	67	66									84	83	82	81								
		GUB-02		54	53	52	51									69	68	67	66									84	83	82	81								
		GUB-03		54	53	53	52	52	51	50						69	68	68	67	67	66	65						84	83	83	82	82	81	80					
		GUB-04		54	54	53	53	52	52	51						69	69	68	68	67	67	66						84	84	83	83	82	82	81					
		GUB-05		54	54	53	53	53	52	52	51	51	51	50	50	69	69	68	68	68	67	67	66	66	66	65	65	84	84	83	83	83	82	82	81	81	81	80	80
		GUB-06		54	54	54	53	53	53	52	52	52	52	51	51	69	69	69	68	68	68	67	67	67	67	66	66	84	84	84	83	83	83	82	82	82	82	81	81
	AD VIGANÒ	GUB	-40°C	53	51											68	66											83	81										
		GUB0		53	52	50	49									68	67	65	64									83	82	80	79								
		GUB01		54	53	52	52									69	68	67	67									84	83	82	82								
		GUB02		54	53	53	52									69	68	68	67									84	83	83	82								
		GUB03		54	54	53	53	52	52	51						69	69	68	68	67	67	66						84	84	83	83	82	82	81					
		GUB04		54	54	53	53	52	52	51	51	51	50	50	49	69	69	68	68	67	67	66	66	66	65	65	64	84	84	83	83	82	82	81	81	81	80	80	79
		GUB04A		54	54	53	53	53	52	52	51	51	51	50	50	69	69	68	68	68	67	67	66	66	66	65	65	84	84	83	83	83	82	82	81	81	81	80	80
		GUB05		54	54	54	53	53	53	52	52	52	51	51	51	69	69	69	68	68	68	67	67	67	66	66	66	84	84	84	83	83	83	82	82	82	81	81	81
	CORTEM	CCA-0E	-50°C	51	47											66	62											81	77										
		CCA-01E		52	49											67	64											82	79										
		CCA-02E		53	52	51	50	48	47							68	67	66	65	63	62							83	82	81	80	78	77						
		CCA-03E		54	53	52	51	51	50	49	48					69	68	67	66	66	65	64	63					84	83	82	81	81	80	79	78				
		CCA-04E		54	54	54	53	53	53	53	52	52	52	52	51	69	69	69	68	68	68	68	67	67	67	67	66	84	84	84	83	83	83	83	82	82	82	82	81
		GUB-S		49	44											64	59											79	74										
		GUB-0		52	49											67	64											82	79										
		GUB-01		53	51	49										68	66	64										83	81	79									
		GUB-02		54	53	52	51	50	49							69	68	67	66	65	64							84	83	82	81	80	79						
		GUB-03		54	53	53	52	52	51	50	50	49	49	48	47	69	68	68	67	67	66	65	65	64	64	63	62	84	83	83	82	82	81	80	80	79	79	78	77
		CCAI2020		53	52	51	50	49	48							68	67	66	65	64	63							83	82	81	80	79	78						
		CCAI3020		54	53	53	52	51	51	50	49	49	48	47	47	69	68	68	67	66	66	65	64	64	63	62	62	84	83	83	82	81	81	80	79	79	78	77	77
TMT142	FEAM / NUOVA ASP	GUE1/GUB00	-50°C	53	51											68	66											83	81										
		GUB0		53	52	51	50									68	67	66	65									83	82	81	80								
		GUB1		54	53	52	51	50	49	49						69	68	67	66	65	64	64						84	83	82	81	80	79	79					
		GUB03		54	54	53	53	53	52	52	51	51	51	50	50	69	69	68	68	68	67	67	66	66	66	65	65	84	84	83	83	83	82	82	81	81	81	80	80
		GUB23		54	54	53	53	52	52	51	51	50	50	49	49	69	69	68	68	67	67	66	66	65	65	64	64	84	84	83	83	82	82	81	81	80	80	79	79
	TECHNOR ITALSMEA	GUB-01	-20°C	53	52	51	50									68	67	66	65									83	82	81	80								
		GUB-02		54	53	52	51									69	68	67	66									84	83	82	81								
		GUB-03		54	53	52	52	51	50	49						69	68	67	67	66	65	64						84	83	82	82	81	80	79					
		GUB-04		54	53	53	52	52	51	51						69	68	68	67	67	66	66						84	83	83	82	82	81	81					
		GUB-05		54	54	53	53	52	52	51	51	50	50	49	49	69	69	68	68	67	67	66	66	65	65	64	64	84	84	83	83	82	82	81	81	80	80	79	79
		GUB-06		54	54	53	53	53	52	52	52	51	51	51	50	69	69	68	68	68	67	67	67	66	66	66	65	84	84	83	83	83	82	82	82	81	81	81	80
	AD VIGANÒ	GUB	-40°C	52	50											67	65											82	80										
		GUB0		53	51	49	48									68	66	64	63									83	81	79	78								
		GUB01		54	53	52	51									69	68	67	66									84	83	82	81								
		GUB02		54	53	52	52									69	68	67	67									84	83	82	82								
		GUB03		54	53	53	52	52	51	50						69	68	68	67	67	66	65						84	83	83	82	82	81	80					
		GUB04		54	53	53	52	52	51	51	50	50	49	49	48	69	68	68	67	67	66	66	65	65	64	64	63	84	83	83	82	82	81	81	80	80	79	79	78
		GUB04A		54	54	53	53	52	52	51	51	50	50	49	49	69	69	68	68	67	67	66	66	65	65	64	64	84	84	83	83	82	82	81	81	80	80	79	79
		GUB05		54	54	53	53	53	52	52	51	51	51	50	50	69	69	68	68	68	67	67	66	66	66	65	65	84	84	83	83	83	82	82	81	81	81	80	80
	CORTEM	CCA-0E	-50°C	50	46											65	61											80	76										
		CCA-01E		51	48											66	63											81	78										
		CCA-02E		53	51	50	48	47	45							68	66	65	63	62	60							83	81	80	78	77	75						
		CCA-03E		54	53	52	51	50	49	48	47					69	68	67	66	65	64	63	62					84	83	82	81	80	79	78	77				
		CCA-04E		54	54	53	53	53	52	52	52	51	51	51	50	69	69	68	68	68	67	67	67	66	66	66	65	84	84	83	83	83	82	82	82	81	81	81	80
		GUB-S		48	41											63	56											78	71										
		GUB-0		51	48											66	63											81	78										
		GUB-01		52	50	48										67	65	63										82	80	78									
		GUB-02		53	52	51	50	49	48							68	67	66	65	64	63							83	82	81	80	79	78						
		GUB-03		54	53	52	52	51	50	49	49	48	47	46	46	69	68	67	67	66	65	64	64	63	62	61	61	84	83	82	82	81	80	79	79	78	77	76	76
		CCAI2020		53	52	51	49	48	47							68	67	66	64	63	62							83	82	81	79	78	77						
		CCAI3020		54	53	52	51	50	50	49	48	47	46	46	45	69	68	67	66	65	65	64	63	62	61	61	60	84	83	82	81	80	80	79	78	77	76	76	75

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Assembled transmitter	Manufacturer	ENCLOSURE TYPE	MINIMUM AMBIENT TEMP.	TEMPERATURE CLASS T6/T85 °C												TEMPERATURE CLASS T5/T100 °C												TEMPERATURE CLASS T5/T135 °C											
				Max ambient temperature °C												Max ambient temperature °C												Max ambient temperature °C											
				Number of transmitters												Number of transmitters												Number of transmitters											
				1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
TMT162	FEAM / NUOVA ASP	GUE1/GUB00	-50°C	46												61	52											76	67										
		GUB0		48	42											63	57	51	45									78	72	66	60								
		GUB1		50	46	41										65	61	56	52	47	43							80	76	71	67	62	58	53					
		GUB03		52	50	48	46	44	42	40						67	65	63	61	59	57	55	53	51	49	47	45	82	80	78	76	74	72	70	68	66	64	62	60
		GUB23		52	50	47	45	42	40							67	65	62	60	57	55	52	50	47	45	43	40	82	80	77	75	72	70	67	65	62	60	58	55
	TECHNOR ITALSMEA	GUB-01	-20°C	48	42											63	57	51	45									78	72	66	60								
		GUB-02		49	44	39										64	59	54	49									79	74	69	64								
		GUB-03		51	47	43	39									66	62	58	54	50	46	42						81	77	73	69	65	61	57					
		GUB-04		52	49	46	43	40								67	64	61	58	55	52	49						82	79	76	73	70	67	64					
		GUB-05		52	49	47	44	42	39							67	64	62	59	57	54	52	49	47	44	41	39	82	79	77	74	72	69	67	64	62	59	56	54
		GUB-06		53	51	49	47	45	43	41	39					68	66	64	62	60	58	56	54	52	50	48	47	83	81	79	77	75	73	71	69	67	65	63	62
	AD VIGANÒ	GUB	-40°C	42												57	45											72	60										
		GUB0		45												60	51	42										75	66	57	47								
		GUB01		50	45	40										65	60	55	50									80	75	70	65								
		GUB02		51	47	43	40									66	62	58	55									81	77	73	70								
		GUB03		51	48	45	42	39								66	63	60	57	54	50	47						81	78	75	72	69	65	62					
		GUB04		52	49	46	43	40								67	64	61	58	55	52	49	47	44	41			82	79	76	73	70	67	64	62	59	56	53	50
		GUB04A		52	49	47	44	42	39							67	64	62	59	57	54	52	49	47	44	42	39	82	79	77	74	72	69	67	64	62	59	57	54
		GUB05		52	50	48	46	44	42	40						67	65	63	61	59	57	55	53	51	49	47	45	82	80	78	76	74	72	70	68	66	64	62	60
	CORTEM	CCA-0E	-50°C													46												61											
		CCA-01E														52												67	50										
		CCA-02E		46												61	53	45										76	68	60	52	44							
		CCA-03E		49	44	39										64	59	54	49	44	39							79	74	69	64	59	54	49	44				
		CCA-04E		53	51	49	47	45	44	42	40					68	66	64	62	60	59	57	55	53	51	50	48	83	81	79	77	75	74	72	70	68	66	65	63
		GUB-S																										49											
		GUB-0														51												66	48										
		GUB-01		42												57	45											72	60	48									
		GUB-02		49	43											64	58	52	47	41								79	73	67	62	56	50						
		GUB-03		51	47	43	39									66	62	58	54	50	46	42						81	77	73	69	65	61	57	53	49	45	41	
		CCAI2020		48	41											63	56	49	42									78	71	64	57	50	43						
		CCAI3020		50	46	42										65	61	57	52	48	44	39						80	76	72	67	63	59	54	50	46	41		
TMT82	FEAM / NUOVA ASP	GUE1/GUB00	-50°C	56	54											73	71											83	81										
		GUB0		56	55	54	53									73	72	71	70									83	82	81	80								
		GUB1		57	56	55	54	53	52	52						74	73	72	71	70	69	69						84	83	82	81	80	79	79					
		GUB03		57	57	56	56	56	55	55	54	54	54	53	53	74	74	73	73	73	72	72	71	71	71	70	70	84	84	83	83	83	82	82	81	81	81	80	80
		GUB23		57	57	56	56	55	55	54	54	53	53	52	52	74	74	73	73	72	72	71	71	70	70	69	69	84	84	83	83	82	82	81	81	80	80	79	79
	TECHNOR ITALSMEA	GUB-01	-20°C	56	55	54	53									73	72	71	70									83	82	81	80								
		GUB-02		57	56	55	54									74	73	72	71									84	83	82	81								
		GUB-03		57	56	55	55	54	53	52						74	73	72	72	71	70	69						84	83	82	82	81	80	79					
		GUB-04		57	56	56	55	55	54	54						74	73	73	72	72	71	71						84	83	83	82	82	81	81					
		GUB-05		57	57	56	56	55	55	54	54	53	53	52	52	74	74	73	73	72	72	71	71	70	70	69	69	84	84	83	83	82	82	81	81	80	80	79	79
		GUB-06		57	57	56	56	56	55	55	55	54	54	54	53	74	74	73	73	73	72	72	72	71	71	71	70	84	84	83	83	83	82	82	82	81	81	81	80
	AD VIGANÒ	GUB	-40°C	55	53											72	70											82	80										
		GUB0		56	54	52	51									73	71	69	68									83	81	79	78								
		GUB01		57	56	55	54									74	73	72	71									84	83	82	81								
		GUB02		57	56	55	55									74	73	72	72									84	83	82	82								
		GUB03		57	56	56	55	55	54	53						74	73	73	72	72	71	70						84	83	83	82	82	81	80					
		GUB04		57	56	56	55	55	54	54	53	53	52	52	51	74	73	73	72	72	71	71	70	70	69	69	68	84	83	83	82	82	81	81	80	80	79	79	78
		GUB04A		57	57	56	56	55	55	54	54	53	53	52	52	74	74	73	73	72	72	71	71	70	70	69	69	84	84	83	83	82	82	81	81	80	80	79	79
		GUB05		57	57	56	56	56	55	55	54	54	54	53	53	74	74	73	73	73	72	72	71	71	71	70	70	84	84	83	83	83	82	82	81	81	81	80	80
	CORTEM	CCA-0E	-50°C	53	49											70	66											80	76										
		CCA-01E		54	51											71	68											81	78										
		CCA-02E		56	54	53	51	50	48							73	71	70	68	67	65							83	81	80	78	77	75						
		CCA-03E		57	56	55	54	53	52	51	50					74	73	72	71	70	69	68	67					84	83	82	81	80	79	78	77				
		CCA-04E		57	57	56	56	56	55	55	55	54	54	54	53	74	74	73	73	73	72	72	72	71	71	71	70	84	84	83	83	83	82	82	82	81	81	81	80
		GUB-S		51	44											68	61											78	71										
		GUB-0		54	51											71	68											81	78										
		GUB-01		55	53	51										72	70	68										82	80	78									
		GUB-02		56	55	54	53	52	51							73	72	71	70	69	68							83	82	81	80	79	78						
		GUB-03		57	56	55	55	54	53	52	52	51	50	49	49	74	73	72	72	71	70	69	69	68	67	66	66	84	83	82	82	81	80	79	79	78	77	76	76
		CCAI2020		56	55	54	52	51	50							73	72	71	69	68	67							83	82	81	79	78	77						
		CCAI3020		57	56	55	54	53	53	52	51	50	49	49	48	74	73	72	71	70	70	69	68	67	66	66	65	84	83	82	81	80	80	79	78	77	76	76	75

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Assembled transmitter	Manufacturer	ENCLOSURE TYPE	MINIMUM AMBIENT TEMP.	TEMPERATURE CLASS T6/T85 °C Max ambient temperature °C Number of transmitters												TEMPERATURE CLASS T5/T100 °C Max ambient temperature °C Number of transmitters												TEMPERATURE CLASS T5/T135 °C Max ambient temperature °C Number of transmitters											
				1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
TMT111 TMT121 TMT127 TMT128	FEAM / NUOVA ASP	ESX013013B	-50°C	48	46											63	61											83	81										
		ESX017017B		48	47											63	62											83	82										
		ESX022016A		49	48	47	46									64	63	62	61									84	83	82	81								
		ESX022022A		49	48	47	46	46	45							64	63	62	61	61	60							84	83	82	81	81	80						
		ESX033022A		49	49	48	48	47	47	46	46					64	64	63	63	62	62	61	61					84	84	83	83	82	82	81	81				
		ESX033033A		49	49	48	48	48	47	47	46	46	46	45	45	64	64	63	63	63	62	62	61	61	61	60	60	84	84	83	83	83	82	82	81	81	81	80	80
		ESX040040D		49	49	49	48	48	48	48	47	47	47	47	46	64	64	64	63	63	63	63	62	62	62	62	61	84	84	84	83	83	83	83	82	82	82	82	81
	TECHNOR ITALSMEA	SB-151510	-50°C	47	44											62	59											82	79										
		SB-202016		48	46	45	43									63	61	60	58									83	81	80	78								
		SB-272716		48	47	46	44	43	42	41	39					63	62	61	59	58	57	56	54	53				83	82	81	79	78	77	76	74	73			
		SB-282816		48	47	46	45	44	43	42	41	40				63	62	61	60	59	58	57	56	55				83	82	81	80	79	78	77	76	75			
		SB-273516		48	47	46	45	44	43	42	41	40				63	62	61	60	59	58	57	56	55	53	52	51	83	82	81	80	79	78	77	76	75	73	72	71
		SB-353516		49	48	47	46	45	44	43	43	42	41	40	39	64	63	62	61	60	59	58	58	57	56	55	54	84	83	82	81	80	79	78	78	77	76	75	74
	AD VIGANÒ	CSX151514	-40°C	47	44											62	59											82	79										
		CSX201514		47	44	41										62	59	56										82	79	76									
		CSX302014		48	46	44	42	40								63	61	59	57	55	53	51	49					83	81	79	77	75	73	71	69				
		CSX303014		48	47	45	44	42	41	39						63	62	60	59	57	56	54	53	51	50	49	47	83	82	80	79	77	76	74	73	71	70	69	67
		CSX453014		48	47	45	44	43	41	40	39					63	62	60	59	58	56	55	54	52	51	50	48	83	82	80	79	78	76	75	74	72	71	70	68
		CSX454514		48	47	46	45	44	43	42	40	39				63	62	61	60	59	58	57	55	54	53	52	51	83	82	81	80	79	78	77	75	74	73	72	71
		CSX594514		49	48	47	46	45	44	43	42	41	40	39	39	64	63	62	61	60	59	58	57	56	55	54	54	84	83	82	81	80	79	78	77	76	75	74	74
		CSX595914		49	48	47	46	45	44	43	42	41	40	39	39	64	63	62	61	60	59	58	57	56	55	54	54	84	83	82	81	80	79	78	77	76	75	74	74
		CSX705014		49	48	48	47	47	46	46	45	45	44	44	43	64	63	63	62	62	61	61	60	60	59	59	58	84	83	83	82	82	81	81	80	80	79	79	78
		CSX807014		49	49	48	48	48	47	47	47	46	46	45	45	64	64	63	63	63	62	62	62	61	61	60	60	84	84	83	83	83	82	82	82	81	81	80	80
		CSX118019		48	47	45	44	43	41	40	39					63	62	60	59	58	56	55	54	52	51	50	48	83	82	80	79	78	76	75	74	72	71	70	68
TMT181 TMT182 TMT112 TMT122 TMT187 TMT188	FEAM / NUOVA ASP	ESX013013B	-50°C	53	51											68	66											83	81										
		ESX017017B		53	52											68	67											83	82										
		ESX022016A		54	53	52	51									69	68	67	66									84	83	82	81								
		ESX022022A		54	53	52	51	51	50							69	68	67	66	66	65							84	83	82	81	81	80						
		ESX033022A		54	54	53	53	52	52	51	51					69	69	68	68	67	67	66	66					84	84	83	83	82	82	81	81				
		ESX033033A		54	54	53	53	53	52	52	51	51	51	50	50	69	69	68	68	68	67	67	66	66	66	65	65	84	84	83	83	83	82	82	81	81	81	80	80
		ESX040040D		54	54	54	53	53	53	53	52	52	52	52	51	69	69	69	68	68	68	68	67	67	67	67	66	84	84	84	83	83	83	83	82	82	82	82	81
	TECHNOR ITALSMEA	SB-151510	-50°C	52	49											67	64											82	79										
		SB-202016		53	51	50	48									68	66	65	63									83	81	80	78								
		SB-272716		53	52	51	49	48	47	46	44	43				68	67	66	64	63	62	61	59	58				83	82	81	79	78	77	76	74	73			
		SB-282816		53	52	51	50	49	48	47	46	45				68	67	66	65	64	63	62	61	60				83	82	81	80	79	78	77	76	75			
		SB-273516		53	52	51	50	49	48	47	46	45	43	42	41	68	67	66	65	64	63	62	61	60	58	57	56	83	82	81	80	79	78	77	76	75	73	72	71
		SB-353516		54	53	52	51	50	49	48	48	47	46	45	44	69	68	67	66	65	64	63	63	62	61	60	59	84	83	82	81	80	79	78	78	77	76	75	74
	AD VIGANÒ	CSX151514	-40°C	52	49											67	64											82	79										
		CSX201514		52	49	46										67	64	61										82	79	76									
		CSX302014		53	51	49	47	45	43	41	39					68	66	64	62	60	58	56	54					83	81	79	77	75	73	71	69				
		CSX303014		53	52	50	49	47	46	44	43	41	40	39		68	67	65	64	62	61	59	58	56	55	54	52	83	82	80	79	77	76	74	73	71	70	69	67
		CSX453014		53	52	50	49	48	46	45	44	42	41	40		68	67	65	64	63	61	60	59	57	56	55	53	83	82	80	79	78	76	75	74	72	71	70	68
		CSX454514		53	52	51	50	49	48	47	45	44	43	42	41	68	67	66	65	64	63	62	60	59	58	57	56	83	82	81	80	79	78	77	76	75	74	73	72
		CSX594514		54	53	52	51	50	49	48	47	46	45	44	44	69	68	67	66	65	64	63	62	61	60	59	59	84	83	82	81	80	79	78	77	76	75	74	74
		CSX595914		54	53	52	51	50	49	48	47	46	45	44	44	69	68	67	66	65	64	63	62	61	60	59	59	84	83	82	81	80	79	78	77	76	75	74	74
		CSX705014		54	53	53	52	52	51	51	50	50	49	49	48	69	68	68	67	67	66	66	65	65	64	64	63	84	84	83	83	83	82	82	82	81	81	80	78
		CSX807014		54	54	53	53	53	52	52	52	51	51	50	50	69	69	68	68	68	67	67	67	66	66	65	65	84	84	83	83	83	82	82	82	81	81	80	80
		CSX302019		53	52	50	49	47	46	44	43					68	67	65	64	62	61	59	58					83	82	80	79	77	76	74	73				
		CSX303019		53	52	50	49	48	46	45	44	42	41	40		68	67	65	64	63	61	60	59	57	56	55	53	83	82	80	79	78	76	75	74	72	71	70	68
		CSX453019		53	52	51	49	48	47	46	44	43	42	41	39	68	67	66	64	63	62	61	59	58	57	56	54	83	82	81	79	78	77	76	74	73	72	71	69
		CSX454519		53	52	51	50	49	48	47	46	45	44	43	44	69	68	67	66	65	64	63	62	61	60	59	59	84	83	82	81	80	79	78	77	76	75	74	74
		CSX594519		54	53	53	52	52	51	50	49	48	48	47	46	69	69	68	68	67	67	66	65	64	63	63	62	84	84	83	83	82	82	81	81	80	80	79	78
		CSX595919		54	54	53	53	53	52	52	51	51	50	50	49	69	69	68	68	68	67	67	66	66	66	65	65	84	84	83	83	83	82	82	81	81	80	80	79
		CSX705019		54	54	53	53	52	52	51	51	50	50	49	49	69	69	68	68	67	67	66	66	65	65	64	64	84	84	83	83	82	82	81	81	80	80	79	79
		CSX807019		54	54	54	53	53	53	52	52	52	51	51	51	69	69	69	68	68	68	67	67	67	66	66	66	84	84	84	83	83	83	82	82	82	81	81	81
		CSX118019		53	52	50	49	48	46	45	44	42	41	40		68	67	65	64	63	61	60	59	57	56	55	53	83	82	80	79	78	76	75	74	72	71	70	68
TMT84 TMT85	FEAM / NUOVA ASP	ESX013013B	-50°C	49	44											64	59											79	74										
		ESX017017B		51	48											66	63											81	78										
		ESX022016A		52	49	47	44									67	64	62	59									82	79	77	74								
		ESX022022A		52	50	48	46	44	41							67	65	63	61	59	56							82	80	78	76	74	71						
		ESX033022A		53	52	50	49	47	46	45	43					68	67	65	64	62	61	60	58					83	82	80	79	77	76	75	73				
		ESX033033A		53	52	51	50	49	48	47	46	45	44	42	41	68	67	66	65	64	63	62	61	60	59	57	56	83	82	81	80	79	78	77	76	75	74	72	71
		ESX040040D		54	53	52	52	51	50	49	49	48	47	46	46	69	68	67	67	66	65	64	64	63	62	61	61	84	83	82	82	81	80	79	79	78	77	76	76
	TECHNOR ITALSMEA	SB-151510	-50°C	47	39											62	54											77	69										
		SB-202016		50	46	41										65	61	56	52									80	76	71	67								
		SB-272716		51	47	43	40									66	62	58	55	51	47	44	40					81	77	73	70	66	62	59	55	51			
		SB-282816		51	48	45	42	39								66	63	60	57	54	50	47	44	41				81	78	75	72	69	65	62	59	56			
		SB-273516		51	48	45	42	39								66	63	60	57	54	50	47	44	41				81	78	75	72	69	65	62	59	56	53	49	46
		SB-353516		52	49	47	44	42	39							67	64	62	59	57	54	52	49	47	44	42	39	82	79	77	74	72	69	67	64	62	59	57	54
	AD VIGANÒ	CSX151514	-40°C	46												61	53											76	68										
		CSX201514		46												61	53	45										76	68	60									
		CSX302014		49	44											64	59	53	48	42								79	74	68	63	57	52	46	41				
		CSX303014		50	46	42										65	61	57	53	49	44	40						80	76	72	68	64	59	55	51	47	43	39	
		CSX453014		51	47	43	39									66	62	58	54	50	46	42	39					81	77	73	69	65	61	57	54	50	46	42	
		CSX454514		51	48	45	41									66	63	60	56	53	50	47	43	40				81	78	75	71	68	65	62	58	55	52	48	45
		CSX594514		52	49	47	44	41	39							67	64	62	59	56	54	51	49	46	43	41		82	79	77	74	71	69	66	64	61	58	56	53
		CSX595914		52	49	47	44	41	39							67	64	62	59	56	54	51	49	46	43	41		82	79	77	74	71	69	66	64	61	58	56	53
		CSX705014		53	51	50	48	47	45	44	42	41	39			68	66	65	63	62	60	59	57	56	54	53	51	83	81	80	78	77	75	74	72	71	69	68	66
		CSX807014		53	52	51	50	49	48	47	46	45	44	43	42	68	67	66	65	64	63	62	61	60	59	58	57	83	82	81	80	79	78	77	76	75	74	73	72
		CSX302019		50	46	42										65	61	57	53	48	44	40						80	76	72	68	63	59	55	51				
		CSX303019		51	47	43	39									66	62	58	54	50	46	42	39					81	77	73	69	65	61	57	54	50	46	42	
		CSX453019		51	47	44	40									66	62	59	55	51	48	44	40					81	77	74	70	66	63	59	55	52	48	44	41
		CSX454519		52	49	47	44	41	39							67	64	62	59	56	54	51	49	46	43	41		82	79	77	74	71	69	66	64	61	58	56	53
		CSX594519		53	51	49	47	45	43	41	39					68	66	64	62	60	58	56	54	52	50	48	46	83	81	79	77	75	73	71	69	67	65	63	61
		CSX595919		53	52	51	49	48	47	45	44	43	41	40	39	68	67	66	64	63	62	60	59	58	56	55	54	83	82	81	79	78	77	75	74	73	71	70	69
		CSX705019		53	52	51	49	48	47	45	44	43	41	40	39	68	67	66	64	63	62	60	59	58	56	55	54	83	82	81	79	78	77	75	74	73	71	70	69
		CSX807019		54	53	52	51	50	49	48	47	46	45	44	43	69	68	67	66	65	64	63	62	61	60	59	58	84	83	82	81	80	79	78	77	76	75	74	73
		CSX118019		51	47	43	39									66	62	58	54	50	46	42	39					81	77	73	69	65	61	57	54	50	46	42	

A0051154

Assembled transmitter	Manufacturer	ENCLOSURE TYPE	MINIMUM AMBIENT TEMP.	TEMPERATURE CLASS T6/T85 °C Max ambient temperature °C Number of transmitters												TEMPERATURE CLASS T6/T100 °C Max ambient temperature °C Number of transmitters												TEMPERATURE CLASS T6/T135 °C Max ambient temperature °C Number of transmitters											
				1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
TMT71 TMT72	FEAM / NUOVA ASP	ESX013013B	-50°C	53	51											68	66											83	81										
		ESX017017B		53	52											68	67											83	82										
		ESX022016A		54	53	52	51									69	68	67	66									84	83	82	81								
		ESX022022A		54	53	52	51	51	50							69	68	67	66	66	65							84	83	82	81	81	80						
		ESX033022A		54	53	53	52	52	51	51	50					69	68	68	67	67	66	66	65					84	83	83	82	82	81	81	80				
		ESX033033A		54	54	53	53	53	52	52	51	51	51	50	50	69	69	68	68	68	67	67	66	66	66	65	65	84	84	83	83	83	82	82	81	81	81	80	80
		ESX040040D		54	54	54	53	53	53	53	52	52	52	52	51	69	69	69	68	68	68	68	67	67	67	67	66	84	84	84	83	83	83	83	82	82	82	82	81
	TECHNOR ITALSMEA	SB-151510	-50°C	52	49											67	64											82	79										
		SB-202016		53	51	50	48									68	66	65	63									83	81	80	78								
		SB-272716		53	52	50	49	48	46	45	44	42				68	67	65	64	63	61	60	59	57				83	82	80	79	78	76	75	74	72			
		SB-282816		53	52	51	50	49	48	46	45	44				68	67	66	65	64	63	61	60	59				83	82	81	80	79	78	76	75	74			
		SB-273516		53	52	51	50	49	47	46	45	44	43	42	40	68	67	66	65	64	62	61	60	59	58	57	55	83	82	81	80	79	77	76	75	74	73	72	70
		SB-353516		54	53	52	51	50	49	48	47	46	45	44	43	69	68	67	66	65	64	63	62	61	60	59	58	84	83	82	81	80	79	78	77	76	75	74	73
	AD VIGANÒ	CSX151514	-40°C	52	49											67	64											82	79										
		CSX201514		52	49	46										67	64	61										82	79	76									
		CSX302014		53	51	49	47	45	43	41	39					68	66	64	62	60	58	56	54					83	81	79	77	75	73	71	69				
		CSX303014		53	51	50	48	47	45	44	42	41	39			68	66	65	63	62	60	59	57	56	54	53	51	83	81	80	78	77	75	74	72	71	69	68	66
		CSX453014		53	52	50	49	47	46	45	43	42	40	39		68	67	65	64	62	61	60	58	57	55	54	53	83	82	80	79	77	76	75	73	72	70	69	68
		CSX454514		53	52	51	50	49	47	46	45	44	43	41	40	68	67	66	65	64	62	61	60	59	58	56	55	83	82	81	80	79	77	76	75	74	73	71	70
		CSX594514		54	53	52	51	50	49	48	47	46	45	44	43	69	68	67	66	65	64	63	62	61	60	59	58	84	83	82	81	80	79	78	77	76	75	74	73
		CSX595914		54	53	52	51	50	49	48	47	46	45	44	43	69	68	67	66	65	64	63	62	61	60	59	58	84	83	82	81	80	79	78	77	76	75	74	73
		CSX705014		54	53	53	52	52	51	51	50	49	49	48	48	69	68	68	67	67	66	66	65	64	64	63	63	84	83	83	82	82	81	81	80	79	79	78	78
		CSX807014		54	54	53	53	53	52	52	51	51	51	50	50	69	69	68	68	68	67	67	66	66	66	65	65	84	84	83	83	83	82	82	81	81	81	80	80
		CSX302019		53	51	50	48	47	45	44	42					68	66	65	63	62	60	59	57					83	81	80	78	77	75	73	72	70	69	68	
		CSX303019		53	52	50	49	47	46	45	43	42	40	39		68	67	65	64	62	61	60	58	57	55	54	53	83	82	80	79	77	76	75	73	72	70	69	68
		CSX453019		53	52	50	49	48	46	45	44	42	41	40		68	67	65	64	63	61	60	59	57	56	55	53	83	82	80	79	78	76	75	74	72	71	70	68
		CSX454519		54	53	52	51	50	49	48	47	46	45	44	43	69	68	67	66	65	64	63	62	61	60	59	58	84	83	82	81	80	79	78	77	76	75	74	73
		CSX594519		54	53	52	52	51	50	49	49	48	47	46	46	69	68	67	67	66	65	64	64	63	62	61	61	84	83	82	82	81	80	79	79	78	77	76	76
		CSX595919		54	54	53	53	52	52	51	51	50	50	49	49	69	69	68	68	67	67	66	66	65	65	64	64	84	84	83	83	82	82	81	81	80	80	79	79
		CSX705019		54	54	53	53	52	52	51	51	50	50	49	49	69	69	68	68	67	67	66	66	65	65	64	64	84	84	83	83	82	82	81	81	80	80	79	79
		CSX807019		54	54	53	53	53	52	52	52	51	51	51	50	69	69	68	68	68	67	67	67	66	66	66	65	84	84	83	83	83	82	82	82	81	81	81	80
		CSX118019		53	52	50	49	47	46	45	43	42	40	39		68	67	65	64	62	61	60	58	57	55	54	53	83	82	80	79	77	76	75	73	72	70	69	68
TMT142	FEAM / NUOVA ASP	ESX013013B	-50°C	52	50											67	65											82	80										
		ESX017017B		53	52											68	67											83	82										
		ESX022016A		53	52	51	50									68	67	66	65									83	82	81	80								
		ESX022022A		54	53	52	51	50	49							69	68	67	66	65	64							84	83	82	81	80	79						
		ESX033022A		54	53	53	52	51	51	50	49					69	68	68	67	66	66	65	64					84	83	83	82	81	81	80	79				
		ESX033033A		54	54	53	53	52	52	51	51	50	50	49	49	69	69	68	68	67	67	66	66	65	65	64	64	84	84	83	83	82	82	81	81	80	80	79	79
		ESX040040D		54	54	53	53	53	52	52	52	51	51	51	50	69	69	68	68	68	67	67	67	66	66	66	65	84	84	83	83	83	82	82	82	81	81	81	80
	TECHNOR ITALSMEA	SB-151510	-50°C	51	48											66	63											81	78										
		SB-202016		52	50	48	46									67	65	63	61									82	80	78	76								
		SB-272716		53	51	49	48	46	44	43	41	39				68	66	64	63	61	59	58	56	54				83	81	79	78	76	74	73	71	69			
		SB-282816		53	52	50	49	47	46	44	43	41				68	67	65	64	62	61	59	58	56				83	82	80	79	77	76	74	73	71			
		SB-273516		53	52	50	49	47	46	44	43	41	40			68	67	65	64	62	61	59	58	56	55	53	52	83	82	80	79	77	76	74	73	71	70	68	67
		SB-353516		53	52	51	50	49	48	46	45	44	43	42	41	68	67	66	65	64	63	61	60	59	58	57	56	83	82	81	80	79	78	76	75	74	73	72	71
	AD VIGANÒ	CSX151514	-40°C	51	47											66	62											81	77										
		CSX201514		51	47	43										66	62	58										81	77	73									
		CSX302014		52	50	47	45	42	40							67	65	62	60	57	55	52	50					82	80	77	75	72	70	67	65				
		CSX303014		53	51	49	47	45	43	41	39					68	66	64	62	60	58	56	54	52	50	48	47	83	81	79	77	75	73	71	69	67	65	63	62
		CSX453014		53	51	49	47	46	44	42	40	39				68	66	64	62	61	59	57	55	54	52	50	48	83	81	79	77	76	74	72	70	69	67	65	63
		CSX454514		53	52	50	49	47	46	44	43	41	40			68	67	65	64	62	61	59	58	56	55	53	52	83	82	80	79	77	76	74	73	71	70	68	67
		CSX594514		53	52	51	50	49	47	46	45	44	43	41	40	68	67	66	65	64	62	61	60	59	58	56	55	83	82	81	80	79	77	76	75	74	73	71	70
		CSX595914		53	52	51	50	49	47	46	45	44	43	41	40	68	67	66	65	64	62	61	60	59	58	56	55	83	82	81	80	79	77	76	75	74	73	71	70
		CSX705014		54	53	52	52	51	50	50	49	48	48	47	46	69	68	67	67	66	65	65	64	63	63	62	61	84	83	82	82	81	80	80	79	78	78	77	76
		CSX807014		54	54	53	53	52	52	51	51	50	50	49	49	69	69	68	68	67	67	66	66	65	65	64	64	84	84	83	83	82	82	81	81	80	80	79	79
		CSX302019		53	51	49	47	45	43	41	39					68	66	64	62	60	58	56	54					83	81	79	77	75	73	71	69				
		CSX303019		53	51	49	47	46	44	42	40	39				68	66	64	62	61	59	57	55	54	52	50	48	83	81	79	77	76	74	72	70	69	67	65	63
		CSX453019		53	51	49	48	46	44	43	41	39				68	66	64	63	61	59	58	56	54	53	51	49	83	81	79	78	76	74	73	71	69	68	66	64
		CSX454519		53	52	51	50	49	47	46	45	44	43	41	40	68	67	66	65	64	62	61	60	59	58	56	55	83	82	81	80	79	77	76	75	74	73	71	70
		CSX594519		54	53	52	51	50	49	48	47	46	45	44	44	69	68	67	66	65	64	63	62	61	60	59	59	84	83	82	81	80	79	78	77	76	75	74	74
		CSX595919		54	53	53	52	52	51	50	50	49	49	48	47	69	68	68	67	67	66	65	65	64	64	63	62	84	83	83	82	82	81	80	80	79	79	78	77
		CSX705019		54	53	53	52	52	51	50	50	49	49	48	47	69	68	68	67	67	66	65	65	64	64	63	62	84	83	83	82	82	81	80	80	79	79	78	77
		CSX807019		54	54	53	53	52	52	51	51	51	50	50	49	69	69	68	68	67	67	66	66	65	65	64	64	84	84	83	83	82	82	81	81	81	80	80	79
		CSX118019		53	51	49	47	46	44	43	42	40	39			68	66	64	62	61	59	57	55	54	52	50	48	83	81	79	77	76	74	72	70	69	67	65	63

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Assembled transmitter	Manufacturer	ENCLOSURE TYPE	MINIMUM AMBIENT TEMP.	TEMPERATURE CLASS T6/T85 °C Max ambient temperature °C Number of transmitters												TEMPERATURE CLASS T6/T100 °C Max ambient temperature °C Number of transmitters												TEMPERATURE CLASS T6/T135 °C Max ambient temperature °C Number of transmitters											
				1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
TMT162	FEAM / NUOVA ASP	ESX013013B	-50°C	42												57	45											72	60										
		ESX017017B		47	40											62	55											77	70										
		ESX022016A		48	42											63	57	51	45									78	72	66	60								
		ESX022022A		49	44	39										64	59	54	48	43								79	74	69	63	58	53						
		ESX033022A		51	48	44	41									66	63	59	56	52	49	45	42					81	78	74	71	67	64	60	57				
		ESX033033A		52	49	47	44	41	39							67	64	62	59	56	54	51	48	46	43	40		82	79	77	74	71	69	66	63	61	58	55	53
		ESX040040D		53	51	49	47	45	44	42	40					68	66	64	62	60	59	57	55	53	51	50	48	83	81	79	77	75	74	72	70	68	66	65	63
	TECHNOR ITALSMEA	SB-151510	-50°C													51												66	47										
		SB-202016		44												59	48											74	63	52	42								
		SB-272716		46												61	52	43										76	67	58	49	40							
		SB-282816		47	39											62	54	46	39									77	69	61	54	46							
		SB-273516		47	39											62	54	46										77	69	61	53	46							
		SB-353516		48	42											63	57	51	45	39								78	72	66	60	54	48	42					
	AD VIGANÒ	CSX151514	-40°C													50												65	45										
		CSX201514														50												65	45										
		CSX302014		41												56	43											71	58	45									
		CSX303014		44												59	49	39										74	64	54	44								
		CSX453014		45												60	51	41										75	66	56	47								
		CSX454514		47	39											62	54	46										77	69	61	53	45							
		CSX594514		48	42											63	57	50	44									78	72	65	59	53	46	40					
		CSX595914		48	42											63	57	50	44									78	72	65	59	53	46	40					
		CSX705014		51	47	43	40									66	62	58	55	51	47	43	40					81	77	73	70	66	62	58	55	51	47	44	40
		CSX807014		52	49	47	44	41	39							67	64	62	59	56	54	51	49	46	43	41		82	79	77	74	71	69	66	64	61	58	56	53
		CSX302019		44												59	49	39										74	64	54	43								
		CSX303019		45												60	51	41										75	66	56	47								
		CSX453019		46												61	52	43										76	67	58	49	40							
		CSX454519		48	42											63	57	50	44									78	72	65	59	53	46	40					
		CSX594519		50	45	40										65	60	55	50	45	40							80	75	70	65	60	55	51	46	41			
		CSX595919		51	48	45	42	39								66	63	60	57	54	50	47	44	41				81	78	75	72	69	65	62	59	56	53	49	46
		CSX705019		51	48	45	42	39								66	63	60	57	54	50	47	44	41				81	78	75	72	69	65	62	59	56	53	49	46
		CSX807019		52	50	48	45	43	41							67	65	63	60	58	56	53	51	49	47	44	42	82	80	78	75	73	71	68	66	64	62	59	57
		CSX118019		45												60	51	41										75	66	56	47								
TMT82	FEAM / NUOVA ASP	ESX013013B	-50°C	55	53											72	70											82	80										
		ESX017017B		56	55											73	72											83	82										
		ESX022016A		56	55	54	53									73	72	71	70									83	82	81	80								
		ESX022022A		57	56	55	54	53	52							74	73	72	71	70	69							84	83	82	81	80	79						
		ESX033022A		57	56	56	55	54	54	53	52					74	73	73	72	71	71	70	69					84	83	83	82	81	81	80	79				
		ESX033033A		57	57	56	56	55	55	54	54	46	46	45	45	74	74	73	73	72	72	71	71	70	70	69	69	84	84	83	83	82	82	81	81	80	80	79	79
		ESX040040D		57	57	56	56	56	55	55	55	54	54	54	53	74	74	73	73	73	72	72	72	71	71	71	70	84	84	83	83	83	82	82	82	81	81	81	80
	TECHNOR ITALSMEA	SB-151510	-50°C	54	51											71	68											81	78										
		SB-202016		55	53	51	49									72	70	68	66									82	80	78	76								
		SB-272716		56	54	52	51	49	47	46	44	42				73	71	69	68	66	64	63	61	59				83	81	79	78	76	74	73	71	69			
		SB-282816		56	55	53	52	50	49	47	46	44				73	72	70	69	67	66	64	63	61				83	82	80	79	77	76	74	73	71			
		SB-273516		56	55	53	52	50	49	47	46	44	43	41	40	73	72	70	69	67	66	64	63	61	60	58	57	83	82	80	79	77	76	74	73	71	70	68	67
		SB-353516		56	55	54	53	52	51	49	48	47	46	45	44	73	72	71	70	69	68	66	65	64	63	62	61	83	82	81	80	79	78	76	75	74	73	72	71
	AD VIGANÒ	CSX151514	-40°C	54	50											71	67											81	77										
		CSX201514		54	50	46										71	67	63										81	77	73									
		CSX302014		55	53	50	48	45	43	40						72	70	67	65	62	60	57	55					82	80	77	75	72	70	67	65				
		CSX303014		56	54	52	50	48	46	44	42	40				73	71	69	67	65	63	61	59	57	55	53	52	83	81	79	77	75	73	71	69	67	65	63	62
		CSX453014		56	54	52	50	49	47	45	43	42	40			73	71	69	67	66	64	62	60	59	57	55	53	83	81	79	77	76	74	72	70	69	67	65	63
		CSX454514		56	55	53	52	50	49	47	46	44	43	41	40	73	72	70	69	67	66	64	63	61	60	58	57	83	82	80	79	77	76	74	73	71	70	68	67
		CSX594514		56	55	54	53	52	50	49	48	47	46	44	43	73	72	71	70	69	67	66	65	64	63	61	60	83	82	81	80	79	77	76	75	74	73	71	70
		CSX595914		56	55	54	53	52	50	49	48	47	46	44	43	73	72	71	70	69	67	66	65	64	63	61	60	83	82	81	80	79	77	76	75	74	73	71	70
		CSX705014		57	56	55	55	54	53	53	52	51	51	50	49	74	73	72	72	71	70	70	69	68	68	67	66	84	83	82	82	81	80	80	79	78	78	77	76
		CSX807014		57	57	56	56	55	55	54	54	53	53	52	52	74	74	73	73	72	72	71	71	70	70	69	69	84	84	83	83	82	82	81	81	80	80	79	79
		CSX302019		56	54	52	50	48	46	44	42					73	71	69	67	65	63	61	59					83	81	79	77	75	73	71	69				
		CSX303019		56	54	52	50	49	47	45	43	42	40			73	71	69	67	66	64	62	60	59	57	55	53	83	81	79	77	76	74	72	70	69	67	65	63
		CSX453019		56	54	52	51	49	47	46	44	42	41	39		73	71	69	68	66	64	63	61	59	58	56	54	83	81	79	78	76	74	73	71	69	68	66	64
		CSX454519		56	55	54	53	52	50	49	48	47	46	44	43	73	72	71	70	69	67	66	65	64	63	61	60	83	82	81	80	79	77	76	75	74	73	71	70
		CSX594519		57	56	55	54	53	52	51	50	49	48	47	47	74	73	72	71	70	69	68	67	66	65	64	64	84	83	82	81	80	79	78	77	76	75	74	74
		CSX595919		57	56	56	55	55	54	53	53	52	52	51	50	74	73	73	72	72	71	70	70	69	69	68	67	84	83	83	82	82	81	80	80	79	79	78	77
		CSX705019		57	56	56	55	55	54	53	53	52	52	51	50	74	73	73	72	72	71	70	70	69	69	68	67	84	83	83	82	82	81	80	80	79	79	78	77
		CSX807019		57	57	56	56	55	55	54	54	54	53	53	52	74	74	73	73	72	72	71	71	71	70	70	69	84	84	83	83	82	82	81	81	81	80	80	79
		CSX118019		56	54	52	50	49	47	45	43	42	40			73	71	69	67	66	64	62	60	59	57	55	53	83	81	79	77	76	74	72	70	69	67	65	63

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Electrical connection data

Associated intrinsically safe power supply unit with maximum electrical specifications below the characteristic values of the assembled transmitter:

Transmitter	Power supply			Sensor circuit			Certificate	
	U_i	I_i	P_i	U_o	I_o	P_o	IECEx	ATEX
	(V)	(mA)	mW)	(V)	(mA)	mW)		
TMT182	30 V	100 mA	750 mW	5 V	5.4 mA	6.6 mW	X	X
TMT71/ TMT72 [1]	30 V	100 mA	800 mW/ 700 mW	4.3 V	4.8 mA	5.2 mW	X	X
TMT82 [1]	30 V	130 mA	800 mW/ 770 mW	7.6 V/9 V	13 mA	24.7 mW/ 29.3 mW	X	X
TMT84/ TMT85 [2]	17.5 V/24 V	380 mA/ 250 mA	2 187 mW	7.2 V	25.9 mA	46.7 mW	X	X
TMT111	30 V	100 mA	750 mW	4.4 V	9.6 mA	10.6 mW		X
TMT112	30 V	100 mA	750 mW	5 V	5.9 mA	7.2 mW		X
TMT121	30 V	100 mA	750 mW	4.4 V	9.6 mA	10.6 mW		X
TMT122	30 V	100 mA	750 mW	5 V	5.9 mA	7.2 mW		X
TMT127	30 V	100 mA	750 mW	4.4 V	9.6 mA	10.6 mW		X
TMT128	30 V	100 mA	750 mW	4.4 V	9.6 mA	10.6 mW		X
TMT142 [3]	30 V	300 mA	1000 mW	7.6 V	29.3 mA	55.6 mW		X
TMT162 [4] [3]	30 V	300 mA	1000 mW	0	0		X	X
TMT181	30 V	100 mA	750 mW	9.6 V	4.5 mA	11 mW		X
TMT187	30 V	100 mA	750 mW	9.6 V	4.5 mA	11 mW		X
TMT188	30 V	100 mA	750 mW	9.6 V	4.5 mA	11 mW		X

1) Values on left: Head transmitter version / Values on right: DIN version
2) Values on left: 17.5 V version / Values on right: 24 V version
3) Not available for RTD applications
4) Values on left: for FISCO / Values on right: LS.circuit

Supply circuit: in type of protection intrinsic saefty Ex ia IIC and Ex ia IIIC, for connection to a certified intrinsically safe circuit with following maximum values for each intrinsic safe circuits:

U_i	9.8 V
I_i	30 mA
P_i	60 mW

Certified Inserts:

Insert	Single/Double	C_{i_n}	L_{i_n}
TS111	Single	15.1 nF	75.3 µH
	Double	15.1 nF	75.3 µH
TS211	Single	15.1 nF	75.3 µH
	Double	15.1 nF	75.3 µH
TPx100	Single	15.0 nF	75.1 µH
	Double	15.0 nF	75.1 µH

Insert	Single/Double	C_{i_n}	L_{i_n}
TSx310 [1]	Single	15.0 nF	75.1 µH
	Double	15.0 nF	75.1 µH

1) An additional length of 20 m for the extension cables have been considered.

Simple apparatus (only for TC´s):

Sensor type	Extension Cable		External Cable		Sensor	
Single	200 pF/m	1 µH/m	200 pF/m	1 µH/m	200 pF/m	1 µH/m
Double	400 pF/m	2 µH/m	400 pF/m	2 µH/m	400 pF/m	2 µH/m
Triple	600 pF/m	3 µH/m	600 pF/m	3 µH/m	600 pF/m	3 µH/m

Determination of total inner capacitances C_i and inductances L_i for sensors:

- $C_i = C_{i\ Sensor\ X\ L\ Sensor} + C_{i\ External\ Cable\ X\ L\ External\ Cable} + C_{i\ Extension\ Cable\ X\ L\ Extension\ Cable}$
- $L_i = L_{i\ Sensor\ X\ L\ Sensor} + C_{i\ External\ Cable\ X\ L\ External\ Cable} + L_{i\ Extension\ Cable\ X\ L\ Extension\ Cable}$

Category	Type of protection (ATEX/ IECEx)	Type	Assembled Transmitters
II 1/2G	Ex ia IIC T6...T1 Ga/Gb Ex ia/db T6...T1 Ga/Gb	TMS12	TMT18x, TMT8x, TMT11x, TMT12x, TMT162, TMT142
II1/2D	Ex ia IIIC T85 °C...T450 °C Da/Db Ex ia/tb IIIC T85 °C...T450 °C Da/Db		

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