CERTIFICATE OF CONFORMITY



- 1. HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS
- 2. Certificate No:

4.

5.

3. Equipment: (Type Reference and Name)

Name of Listing Company:

Address of Listing Company:

FM17US0253X

iTHERM Type TM41x Temperature Sensors

Endress+Hauser Wetzer GmbH+Co.Kg

Obere Wank 1 Nesselwang 87484 Germany

6. The examination and test results are recorded in confidential report number:

3049991 dated 18th November 2014

7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

FM Class 3600:2011, FM Class 3610:2010, FM Class 3611:2004, FM Class 3810:2005, ANSI/ISA 61010-1:2004, ANSI/NEMA 250:1991, ANSI/IEC 60529:2004

- 8. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.
- 9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.
- 10. Equipment Ratings:

Intrinsically Safe for Class I, Division 1, Groups A, B, C and D hazardous (classified) locations in accordance with drawing 10000005818 (XA01150T; Non-Incendive for Class I, Division 2, Groups A, B, C and D hazardous (classified) locations; Dust-Ignitionproof for Class II, Division 1, Groups E, F and G, Division 1, Class III; Type 4X, IP66/67.

Certificate issued by:

Marguerch

J/E. Marquedant VP, Manager, Electrical Systems

To verify the availability of the Approved product, please refer to www.approvalguide.com

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FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: <u>information@fmapprovals.com</u> <u>www.fmapprovals.com</u>

F 347 (Mar 16)

28 August 2017

Date

SCHEDULE



MVAIS

US Certificate Of Conformity No: FM17US0253X

11. The marking of the equipment shall include:

Class I Division 1, Groups A, B, C, D; T* - XA01150T; Entity Class I, Division 2, Groups A, B, C and D- XA01150T; NIFW Class II, III, Division 1; Groups E, F and G; T*- XA01150T; Type 4X, IP66/67

T*- Tcode and Temperature range. See Control Drawing XA01150T (or chart below)

Description of Equipment:

12. **General** - The Thermometer iTHERM, type TM411, TM412 consists of a replaceable sensor , type TS111 or TS112 (RTD) with thermowell and enclosure, type TA30x in which a terminal block or a transmitter TMT18x or TMT8x can be installed or a field transmitter, type TMT162 in T17 enclosure (only for TM412).

Construction - The thermometer type TM41x with connection head, type TA30x, or TMT162 is available in various assemblies with different thermowells. Enclosure (SS, Alu, PA), Insert and thermowells combinations are exemplary included in Assembly Drawing 10000004760 and 10000004808.

Entity and Nonincendive Field Wiring Parameters – See Chart Below

Transmitter		Ui/Vmax Ii/Im		ax Pi		Ci		Li						
TMT180*		30 V					144	nF	0					
TMT181		301	V	100 mA		760 mW	()	0					
TMT182		30	v	100 mA		750 mW	()	0					
TMT82		301	v	130 mA		800 mW	()	0					
TMT84, TMT85		17.5	v	500 mA		5 5 W	51	F	0					
TMT162 HART		301	7	300 mA		1 W	5.3 nF		0					
TMT162 PA/FF		24 V		250 mA		1.2 W	51	F	10 uH					
without		301	v v	140 mA		1000 mW	1nF		1mH					
Tune	Assembled	50	Tom	140 1	Amhior	1000 11100	a housing		11111	1				
TM/11	TMT190*	transmitter	Tem T6	perature class And		Amolent temperature range nousin $-40^{\circ}C \le Ta \le +50^{\circ}C$		diameter	remperatur	Di < 50 mW	Wed process ten	perature (sense	Di < 500 mW	Di < 650 mJ
TM(411	11/11 100		TE		-40 C 2			ameter	Class	PI SO mvv	PI \(_100 mW)	PI \200 mW	PI 2 500 mW	P1 2 000 IIIV
11/1412			15		-+U C 2 1a 2 +05 C			Smm (dual)	11	420 C	4150	2460	102°C	192°C
			14		-40°C ≤ Ia ≤ +85°C			or 6mm dual	1 73	181°C	170°C	151°C	1950	88°C
	TMT181		16		-40°C ≤ Ta ≤ +55°C				T4	116°C	105°C	86°C	33°C	23°C
	TMT182, TMT162 T				-40℃ ≤	C ≤ Ta ≤ +70°C			T5	81°C	70°C	51°C	-2°C	-12°C
	TMT84, TMT85 T4				-40°C ≤	≦Ta ≤ +85°C			T6	66°C	55°C	36°C	-17°C	-27°C
	TMT82 T6 T5 T4				-40°C ≤ Ta ≤ +58°C				T1	433°C	428°C	420°C	398°C	388°C
					-40°C ≤	≤Ta≤+75°C			T2	283°C	278°C	270°C	248°C	238°C
				-40°C ≤ Ta ≤ +85°C					T3	188°C	183°C	175°C	153°C	143°C
	TMT8x with display T6				-40°C ≤ Ta ≤ +55°C				T4	123°C	118°C	110°C	88°C	78°C
		T5		-40°C ≤		≤ Ta ≤ +70°C			T5	88°C	83°C	75°C	53°C	43°C
	T4				-40°C ≤ Ta ≤ +85°C				T6	73°C	68°C	60°C	38°C	28°C
Tumo	Assembled	Incost disc	noton	Townstrue	Duos	eee town out two you	an Tu							
rybe	Assembleu	nisert dial		remperature	riocess temperature range 1p		Insert diameter	Temperatur	Maximum allowed process			Ambient temperature		
734/11	transmitter			T(F0°C (T= < : ((°C (((()) *		class	temperature (temperature (sensor) Tp (process)			(housing), Ta (ambient)	
1M411	1M118x	3mm,		16	-50 C S	Ip≤+66C (64C	<u>)^</u>			Pi ≤ 750 mW	Pi ≤ 800 mW	Pi≤1000 mW		
1M412	IMI8X	smin(duai),		15	-50 C ≤ ID ≤ +81 C (79°C)			3mm, 3mm (dual)	T1	320°C	312°C	280°C	-40°C ≤ Ta	a ≤ +130°C
	TM1162	MT162 6mm dual		14	-50°C ≤	≤1p≤+116°C (114°C)*			T2	170°C	162°C	130°C	-40°C ≤ Ta	a ≤ +130°C
				T3	-50°C ≤	Tp≤+181°C (179°	C)*	or 6mm dua	1 T3	75°C	62*C	30°C	-40°C ≤ Ta	a ≤ +130°C
				T2	-50°C ≤	Tp≤+276°C (279°	C)*	1	14	10°C	2.0	-30°C	-40°C ≤ Ta	a≤+116℃
				T1	-50°C ≤	Tp≤+426°C (427°C)*			15	-25°C	-35°C		-40°C ≤ 1	.a ≤ +81°C
	6mm			T6 -50°C T5 -50°C		$T_p \le +73^{\circ}C$ (71°C)* $T_p \le +88^{\circ}C$ (86°C)*			16	-40 C	27762	D.calo	-40 C ≤ 1	.a ≥ +66 C
									11	381'C	3770	3610	-40°C ≤ 18	1 5 +130°C
				T4	-50°C ≤	Tp≤+123°C (121°	C)*		12	126°C	127°C	111°C	-40 C \ 18	12 *100 C
				T3	-50°C ≤	Tp≤+188°C (186°	C)*		15	71%	670	51%	-40 C ≤ 12	12-1300
				T2	-50°C <	Tp≤+283°C (286°	C)*		T5	36°C	32°C	16°C	-40°C ≤ 12	13.5.123°C
				T1	-50°C <	Tp < +433°C (431°	cí*	6mm	T6	21°C	17°C	100	-40°C < T	a ≤ +73°C
L				1	20.01		-1	Juni	10	210	1/6	10	-40621	AL 1736

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US Certificate Of Conformity No: FM17US0253X

I = Insert Design; Diam. d, Sheath Material not safety relevant.

- m = Accuracy acc. IEC60751 not safety relevant.
- $n = Electronic connections 0A, 1A, 2A_1, 2B_1, 2E, 3A, 3C, 3D, 4A, 5A or 3F.$
- o = Terminal head, material, protection class A, B, C, D², E², F², G², H² or J.
- p = Cable entry terminal head A, B, C, D or E.
- q = Cable gland CA, CB, C1, C2, C4 or C6.
- r = Plug DA, DB, DC, DD, D1, D2 or D3.
- s = Service not safety relevant.
- t = Test, Certificate not safety relevant.
- u = Additional approval not safety relevant.
- v = Additional option not safety relevant.
- w = Second transmitter (Mounted) NA₁, NB₁, NC, ND, NE, NF, NG or NH.
- x = Calibration thermometer not safety relevant.
- $y = Calibration Points \ge 0^{\circ}C$ not safety relevant.
- $z = Calibration Points \le 0^{\circ}C$ not safety relevant.

aa = Marking

only allowed in conjunction with Position a = FN

2 not allowed for Class II, III applications

Specific Conditions of Use:

13. 1. If the mounting head of the Temperature Sensor is made of aluminum, the potential for ignition from impact may be present
2. If the mounting head of the Temperature Sensor is made of aluminum, cleaning of the

2. If the mounting head of the Temperature Sensor is made of aluminum, cleaning of the device should be from a damp cloth

Test and Assessment Procedure and Conditions:

14. This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

Schedule Drawings

15. A copy of the technical documentation has been kept by FM Approvals.

Certificate History

16. Details of the supplements to this certificate are described below:

Date	Description					
18 th November 2014	Original Issue.					
28 th August 2017	Supplement 1: Report Reference: – RR210339 dated 28 th August 2017 Description of the Change: Corrected the model codes. Removed the Zone ratings in accordance with equipment marking.					

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