防爆合格证

证　号：GYJ19.1377X

制造商	恩德斯+豪斯公司 (地址：Obere Wank 1, 87484 Nesselwang, Germany)
产品名称	防爆热电阻（偶）
型号规格	iTHERM TS111, TS211 iTHERM TM111, TM131
防爆标志	Ex ia ⅡC T1~T6 Ga, Ex ia ⅡC T1~T6 Ga/Gb, Ex iaD 20/21 T85~T450
产品标准	/
图样编号	10000003856, 10000009358, 10000010129

经图样及技术文件的审查和样品检验，确认上述产品符合下列标准：
GB 3836.1-2010,GB 3836.4-2010,GB 12476.1-2013,
GB 12476.4-2010,GB 3836.20-2010
特颁发此证。

本证书有效期：2019 年 10 月 29 日 至 2024 年 10 月 28 日

备注
1. 安全使用注意事项见本证书附件。
2. 证书编号后缀“X”表明产品具有安全使用特殊条件，内容见本证书附件。
3. 型号规格说明见本证书附件。
4. 电气安全参数见本证书附件。
5. 本证书同时适用于 Endress+Hauser Sicestherm S. r. L.（地址：Via Martin Luther King 7, 20060 Pessano con Bornago (MI), Italy）和恩德斯豪斯温度仪表（苏州）有限公司（地址：苏州工业园区江田里路 31 号）生产的同型号产品。
6. [更改 1] 增加防爆型式。2022 年 3 月 3 日签发。

批准

上海仪器仪表自控系统检验测试所有限公司
国家级仪器仪表防爆安全监督检验站
颁发日期二〇一九 年 十 月 二十九 日

本证书仅对与认可文件和样品一致的产品有效。

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EXPLOSION PROTECTION
CERTIFICATE OF CONFORMITY

Cert No. GYJ19.1377X

Manufacturer	**Endress + Hauser Wetzer GmbH + Co. KG** **(Address: Obere Wank 1, 87484 Nesselwang, Germany)**
Product	**Temperature sensor**
Model	**iTHERM TS111, TS211** **iTHERM TM111, TM131**
Ex marking	**Ex ia IIC T1~T6 Ga, Ex ia IIC T1~T6 Ga/Gb,** **Ex iaD 20/21 T85~T450**
Product standard	**/**
Drawing number	**10000003856, 10000009358, 10000010129**

The product was found to comply with the following standard(s):

GB 3836.1-2010,GB 3836.4-2010,GB 12476.1-2013,GB 12476.4-2010,GB3836.20-2010

Valid until: 2024.10.28

Remarks

1.Conditions for safe use are specified in the attachment to this certificate.
2.Symbol "X" placed after the certification number denotes specific conditions of use, which are specified in the attachment to this certificate.
3.Model designation is specified in the attachment to this certificate.
4.Safe parameters specified in the attachment to this certificate.
5.This certificate is also applicable for the product with the same type manufactured by Endress+Hauser Sicestherm S.r.L. (address: Via Martin Luther King 7, 20060 Pessano con Bornago (MI), Italy) and Endress+Hauser Wetzer (Suzhou) Co., Ltd. (address: No.31 JiangTianLiLu,Suzhou Industrial Park)
6.[Variation I] an addition of Ex marking. issued on 2022.03.03.

Approval

Shanghai Inspection and Testing Institute of Instruments and Automation Systems Co., Ltd.
National Supervision and Inspection Center for Explosion Protection and Safety of Instrumentation
Date of issue 2019.10.29

This Certificate is valid for products compatible with the documents and samples approved by NEPSI.

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GYJ19.1377X防爆合格证附件Ⅱ

由恩德斯+豪斯公司生产的iTHERM TS111, TS211、iTHERM TM111, TM131型防爆热电阻（偶），经检验符合下列标准：

GB3836.1-2010 爆炸性环境 第1部分：设备 通用要求

GB 3836.4-2010 爆炸性环境 第4部分：由本质安全型“i”保护的设备

GB 3836.20-2010 爆炸性环境 第20部分：设备保护级别（EPL）为Ga级的设备

GB 12476.1-2013 可燃性粉尘环境用电气设备 第1部分：通用要求

GB 12476.4-2010 可燃性粉尘环境用电气设备 第4部分：本质安全型“iD”

产品防爆标志为Ex ia ⅡC T1～T6 Ga、Ex ia ⅡC T1～T6 Ga/Gb、Ex iaD 20/21 T85~T450，防爆合格证号为GYJ19.1377X。

一、产品安全使用特定条件

防爆合格证号后缀“X”表示该产品安全使用特定条件，内容如下：

1、产品TS111、TS211（传感器直径3mm、单支或双支；传感器直径6mm、双支）应接地，具体遵循产品使用说明书。

2、产品TS111、TS211为电子插件，在现场使用时须安装在符合GB/T 4208-2017规定的IP20以上、且满足GB 3836.1-2010和GB 3836.4-2010要求的外壳中。

3、产品使用时，存在静电点燃潜在风险，仅可使用湿布擦拭产品。

4、装置的安装方式应当可以避免因遭受机械冲击产生的机械火花。

二、产品使用注意事项

1、温度参数：

1.1 带变送器模块

产品型号	装配变送器	温度组别	使用环境温度	最高表面温度
TM111 TM131 TS111 TS211	TMT84, TMT85 TMT162 PA/FF	T6	-40℃～+55℃	T85℃
		T5	-40℃～+70℃	T100℃
		T4	-40℃～+85℃	T135℃
	TMT71, TMT72 TMT162 HART TMT142B	T6	-50℃～+55℃	T85℃
		T5	-50℃～+70℃	T100℃
		T4	-50℃～+85℃	T135℃
	TMT82[1]	T6	-50℃～+58℃	T85℃
		T5	-50℃～+75℃	T100℃
		T4	-50℃～+85℃	T135℃
	TMT8x, TMT7x 带显示	T6	-40℃～+55℃	T85℃
		T5	-40℃～+70℃	T100℃
		T4	-40℃～+85℃	T135℃

注：[1]防爆型式为Ex ia ⅡC Ga/Gb的TMT82(不带显示)最低使用环境温度可至-52℃

产品型号	装配变送器	传感器直径	温度组别	介质温度范围	最高表面温度
TM111 TM131 TS111 TS211	TMT8x TMT7x TMT142	3mm, 3mm (双支) 或 6mm (双支)	T6	-50℃～+66℃	T85℃
			T5	-50℃～+81℃	T100℃
			T4	-50℃～+116℃	T135℃
			T3	-50℃～+181℃	T200℃
			T2	-50℃～+276℃	T300℃
			T1	-50℃～+426℃	T450℃
		6mm	T6	-50℃～+73℃	T85℃
			T5	-50℃～+88℃	T100℃
			T4	-50℃～+123℃	T135℃
			T3	-50℃～+188℃	T200℃
			T2	-50℃～+283℃	T300℃
			T1	-50℃～+433℃	T450℃

产品型号	装配变送器	传感器直径	温度组别	介质温度范围	最高表面温度
TM131 TS211	TMT162	3mm, 3mm (双支) 或 6mm (双支)	T6	-50℃～+64℃	T85℃
			T5	-50℃～+79℃	T100℃
			T4	-50℃～+114℃	T135℃
			T3	-50℃～+179℃	T200℃
			T2	-50℃～+279℃	T300℃
			T1	-50℃～+424℃	T450℃
		6mm	T6	-50℃～+71℃	T85℃
			T5	-50℃～+86℃	T100℃
			T4	-50℃～+121℃	T135℃
			T3	-50℃～+186℃	T200℃
			T2	-50℃～+286℃	T300℃
			T1	-50℃～+431℃	T450℃

1.2 不带变送器模块（仅对型号TS111, TS211）

传感器直径	温度组别	最高介质温度				
		Pi≤50mW	Pi≤100mW	Pi≤200mW	Pi≤500mW	Pi≤650mW
3mm, 3mm (双支) 或 6mm (双支)	T1/T450℃	+426℃	+415℃	+396℃	+343℃	+333℃
	T2/T300℃	+276℃	+265℃	+246℃	+193℃	+183℃
	T3/T200℃	+181℃	+170℃	+151℃	+98℃	+88℃
	T4/T135℃	+116℃	+105℃	+86℃	+33℃	+23℃
	T5/T100℃	+81℃	+70℃	+51℃	-2℃	-12℃
	T6/T85℃	+66℃	+55℃	+36℃	-17℃	-27℃
6mm	T1/T450℃	+433℃	+428℃	+420℃	+398℃	+388℃
	T2/T300℃	+283℃	+278℃	+270℃	+248℃	+238℃
	T3/T200℃	+188℃	+183℃	+175℃	+153℃	+143℃
	T4/T135℃	+123℃	+118℃	+110℃	+88℃	+78℃
	T5/T100℃	+88℃	+83℃	+75℃	+53℃	+43℃
	T6/T85℃	+73℃	+68℃	+60℃	+38℃	+28℃

传感器直径	温度组别	最高介质温度			使用环境温度*
		Pi≤750mW	Pi≤800mW	Pi≤1000mW	
3mm, 3mm (双支) 或 6mm (双支)	T1/T450℃	+320℃	+312℃	+280℃	-40℃～+130℃
	T2/T300℃	+170℃	+162℃	+130℃	-40℃～+130℃
	T3/T200℃	+75℃	+62℃	+30℃	-40℃～+130℃
	T4/T135℃	+10℃	+2℃	-30℃	-40℃～+116℃
	T5/T100℃	-25℃	-33℃		-40℃～+81℃
	T6/T85℃	-40℃			-40℃～+66℃
6mm	T1/T450℃	+381℃	+377℃	+361℃	-40℃～+130℃
	T2/T300℃	+231℃	+227℃	+211℃	-40℃～+130℃
	T3/T200℃	+136℃	+127℃	+111℃	-40℃～+130℃
	T4/T135℃	+71℃	+67℃	+51℃	-40℃～+123℃
	T5/T100℃	+36℃	+32℃	+16℃	-40℃～+88℃
	T6/T85℃	+21℃	+17℃	+1℃	-40℃～+73℃

注：表壳为TA30A、TA30D或TA30H时，最低使用环境温度为-50℃。仅防爆型式为Ex ia ⅡC Ga/Gb的型号最低使用环境温度可达-60℃。

2、电气参数：

变送器模块	电气参数
TMT71, TMT72	U_i = 30V I_i = 100mA P_i = 800mW C_i = 0 L_i = 0
TMT82	U_i = 30V I_i = 130mA P_i = 800mW C_i = 0 L_i = 0
TMT142B	Ui = 30V Ii = 300mA Pi = 1000mW Ci = 5nF Li = 0
TMT162 HART	U_i = 30V I_i = 300mA P_i = 1000mW C_i = 0 L_i = 0
TMT162 PA/FF	FISCO总线参数
TMT84, TMT85	FISCO总线参数
仅装端子座	U_i = 30V I_i = 140mA P_i = 1000mW C_i和L_i 见下表
悬空引线	U_i = 30V I_i = 140mA P_i = 1000mW C_i和L_i 见下表

传感器类型	插入深度		悬空引线		端子座	
	Ci/m	Li/m	Ci	Li	Ci	Li
单支	200pF	1μH	56.4pF	282nH	4.6pF	23nH
双支	400pF	2μH	113pF	564nH	9.2pF	46nH

3、产品必须与已通过防爆认证的关联设备配套共同组成本安防爆系统方可使用于爆炸性气体环境。其系统接线必须同时遵守本产品和所配关联设备的使用说明书要求，接线端子不得接错。

4、用户不得自行随意更换该产品的电气零部件，应会同产品制造商共同解决运行中出现的故障，以免影响防爆性能和损坏现象的发生。

5、产品的安装、使用和维护应同时遵守产品使用说明书、GB3836.13-2013“爆炸性环境 第13部分：设备的修理、检修、修复和改造”、GB/T 3836.15-2017“爆炸性环境 第15部分：电气装置的设计、选型和安装”、GB/T 3836.16-2017“爆炸性环境 第16部分：电气装置的检查与维护”、GB/T 3836.18-2017“爆炸性环境 第18部分：本质安全电气系统”及GB50257-2014“电气设备安装工程爆炸和火灾危险环境电气装置施工及验收规范”的有关规定。

三、制造厂责任

1、产品制造厂必须将上述产品安全使用特殊条件和使用注意事项纳入该产品使用说明书。

2、制造厂必须严格按照NEPSI认可的文件资料生产。

上海仪器仪表自控系统检验测试所有限公司

国家级仪器仪表防爆安全监督检验站

二〇二二年三月三日

Attachment Ⅱ to GYJ19.1377X

1. Description

Temperature sensors typed iTHERM TS111, TS211; iTHERM TM111, TM131 manufactured by Endress + Hauser Wetzer GmbH + Co. KG, accords with following standards:

GB 3836.1-2010 Explosive atmospheres-Part 1: Equipment-General requirements

GB 3836.4-2010 Explosive atmospheres-Part 4: Equipment protection by intrinsic safety "i "

GB 3836.20-2010 Explosive atmospheres-Part 20: Equipment with equipment protection level (EPL) Ga

GB 12476.1-2013 Electrical apparatus for use in the presence of combustible dust -Part 1: General requirements

GB 12476.4-2010 Electrical apparatus for use in the presence of combustible dust -Part 4: Protection by intrinsic safety "iD "

The Ex marking is Ex ia Ⅱ C T1~T6 Ga, Ex ia Ⅱ C T1~T6 Ga/Gb, Ex iaD 20/21 T85~T450, its certificate number is GYJ19.1377X.

2. Special conditions for safe use

The suffix "X" placed after the certificate number indicates that this product is subject to special conditions for safe use, that is:

2.1 From the safety point of view, the circuit of versions of the following temperature sensors and inserts shall be considered to connected to ground (for details, the instruction manual, provided with the equipment, shall be observed):

- Type TS111, TS211 with diameter 3mm, single or dual
- Type TS111, TS211 with diameter 6mm dual

2.2 The insert TS111, TS211 shall be provided with a mounting head comply with GB 3836.1-2010 and GB 3836.4-2010 including the cable entry device to ensure a degree of protection of at least IP20 according to GB/T 4208-2017 when in use.

2.3 The product has the potential risk of ignition by static electricity, only use a damp cloth to wipe the product.

2.4 The device should be installed in a way that avoids mechanical sparks from mechanical shocks.

3. Conditions for Safe Use

3.1 Thermal data:

3.1.1 assembly with transmitters

type	transmitter	T class	ambient temperature	Maximum surface temperature
TM111 TM131 TS111 TS211	TMT84, TMT85 TMT162 PA/FF	T6	-40℃～+55℃	T85℃
		T5	-40℃～+70℃	T100℃
		T4	-40℃～+85℃	T135℃
	TMT71, TMT72 TMT162 HART TMT142B	T6	-50℃～+55℃	T85℃
		T5	-50℃～+70℃	T100℃
		T4	-50℃～+85℃	T135℃
	TMT82[1]	T6	-50℃～+58℃	T85℃
		T5	-50℃～+75℃	T100℃
		T4	-50℃～+85℃	T135℃
	TMT8x, TMT7x with display	T6	-40℃～+55℃	T85℃
		T5	-40℃～+70℃	T100℃
		T4	-40℃～+85℃	T135℃

[1]Lower temperature of -52℃ for TMT82 only with gas Ex ia Ⅱ C Ga/Gb and only without display.

type	transmitter	insert diameter	T class	process temperature	Maximum surface temperature
TM111 TM131 TS111 TS211	TMT8x TMT7x TMT142	3mm, 3mm (dual) or 6mm (dual)	T6	-50℃～+66℃	T85℃
			T5	-50℃～+81℃	T100℃
			T4	-50℃～+116℃	T135℃
			T3	-50℃～+181℃	T200℃
			T2	-50℃～+276℃	T300℃
			T1	-50℃～+426℃	T450℃
		6mm	T6	-50℃～+73℃	T85℃
			T5	-50℃～+88℃	T100℃
			T4	-50℃～+123℃	T135℃
			T3	-50℃～+188℃	T200℃
			T2	-50℃～+283℃	T300℃
			T1	-50℃～+433℃	T450℃

type	transmitter	insert diameter	T class	process temperature	Maximum surface temperature
TM131 TS211	TMT162	3mm, 3mm (dual) or 6mm (dual)	T6	-50℃～+64℃	T85℃
			T5	-50℃～+79℃	T100℃
			T4	-50℃～+114℃	T135℃
			T3	-50℃～+179℃	T200℃
			T2	-50℃～+279℃	T300℃
			T1	-50℃～+424℃	T450℃
		6mm	T6	-50℃～+71℃	T85℃
			T5	-50℃～+86℃	T100℃
			T4	-50℃～+121℃	T135℃
			T3	-50℃～+186℃	T200℃
			T2	-50℃～+286℃	T300℃
			T1	-50℃～+431℃	T450℃

3.1.2 assembly without transmitters (TS111, TS211)

insert diameter	temperature class	maximum process temperature				
		Pi≤50mW	Pi≤100mW	Pi≤200mW	Pi≤500mW	Pi≤650mW
3mm, 3mm (dual) or 6mm (dual)	T1/T450℃	+426℃	+415℃	+396℃	+343℃	+333℃
	T2/T300℃	+276℃	+265℃	+246℃	+193℃	+183℃
	T3/T200℃	+181℃	+170℃	+151℃	+98℃	+88℃
	T4/T135℃	+116℃	+105℃	+86℃	+33℃	+23℃
	T5/T100℃	+81℃	+70℃	+51℃	-2℃	-12℃
	T6/T85℃	+66℃	+55℃	+36℃	-17℃	-27℃
6mm	T1/T450℃	+433℃	+428℃	+420℃	+398℃	+388℃
	T2/T300℃	+283℃	+278℃	+270℃	+248℃	+238℃
	T3/T200℃	+188℃	+183℃	+175℃	+153℃	+143℃
	T4/T135℃	+123℃	+118℃	+110℃	+88℃	+78℃
	T5/T100℃	+88℃	+83℃	+75℃	+53℃	+43℃
	T6/T85℃	+73℃	+68℃	+60℃	+38℃	+28℃

insert diameter	temperature class	maximum process temperature			ambient temperature *
		Pi≤750mW	Pi≤800mW	Pi≤1000mW	
3mm, 3mm (dual) or 6mm (dual)	T1/T450℃	+320℃	+312℃	+280℃	-40℃～+130℃
	T2/T300℃	+170℃	+162℃	+130℃	-40℃～+130℃
	T3/T200℃	+75℃	+62℃	+30℃	-40℃～+130℃
	T4/T135℃	+10℃	+2℃	-30℃	-40℃～+116℃
	T5/T100℃	-25℃	-33℃		-40℃～+81℃
	T6/T85℃	-40℃			-40℃～+66℃
6mm	T1/T450℃	+381℃	+377℃	+361℃	-40℃～+130℃
	T2/T300℃	+231℃	+227℃	+211℃	-40℃～+130℃
	T3/T200℃	+136℃	+127℃	+111℃	-40℃～+130℃
	T4/T135℃	+71℃	+67℃	+51℃	-40℃～+123℃
	T5/T100℃	+36℃	+32℃	+16℃	-40℃～+88℃
	T6/T85℃	+21℃	+17℃	+1℃	-40℃～+73℃

* The ambient temperature at the terminal head may be directly influenced by the process temperature, but is restricted to the range -40℃～+130℃, besides for types TA30A, TA30D and TA30H and sensor, type TS111 or TS211, with a restricted range -50℃～+130℃.

The lower temperature of -60℃ is only possible with the marking Ex ia Ⅱ C Ga/Gb.

3.2 Electrical data:

transmitter	electrical data
TMT71, TMT72	U_i = 30V I_i = 100mA P_i = 800mW C_i = 0 L_i = 0
TMT82	U_i = 30V I_i = 130mA P_i = 800mW C_i = 0 L_i = 0
TMT142B	U_i = 30V I_i = 300mA P_i = 1000mW C_i = 5nF L_i = 0
TMT162 HART	U_i = 30V I_i = 300mA P_i = 1000mW C_i = 0 L_i = 0
TMT162 PA/FF	FISCO field devices
TMT84, TMT85	FISCO field devices
Terminal block	U_i = 30V I_i = 140mA P_i = 1000mW C_i & L_i see tables below
Flying leads	U_i = 30V I_i = 140mA P_i = 1000mW C_i & L_i see tables below

Sensor type	Insertion length		Flying leads		Terminal block	
	Ci/m	Li/m	Ci	Li	Ci	Li
Single	200pF	1μH	56.4pF	282nH	4.6pF	23nH
Dual	400pF	2μH	113pF	564nH	9.2pF	46nH

3.3 This product should be used in explosive gas atmospheres together with approved associated apparatus, follow the instruction manual of this product and associated apparatus when connecting the wiring. Connect the wiring terminals correctly.

3.4 The user shall not change the configuration in order to maintain/ensure the explosion protection performance of the equipment. Any change may impair safety.

3.5 For installation, use and maintenance of this product, the end user shall observe the instruction manual and the following standards:

GB 3836.13-2013 "Explosive atmospheres- Part 13:Equipment repair, overhaul and reclamation".

GB/T 3836.15-2017 "Explosive atmospheres- Part 15:Electrical installations design, selection and erection".

GB/T 3836.16-2017 "Explosive atmospheres- Part 16:Electrical installations inspection and maintenance".

GB/T 3836.18-2017 "Explosive atmospheres-Part 18: Intrinsically safe electrical systems".

GB 50257-2014 "Code for construction and acceptance of electric device for explosion atmospheres and fire hazard electrical equipment installation engineering".

4. Manufacturer's Responsibility

4.1 Conditions for safe use and special conditions for safe use, as specified above, should be included in the documentation the user is provided with.

4.2 Manufacturing should be done according to the documentation approved by NEPSI.

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National Supervision and Inspection Center for
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