



SITIiAS
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防爆合格证

证号：GYJ23.1144X

制 造 商 恩德斯+豪斯公司

(地址：Obere Wank 1, 87484 Nesselwang, Germany)

产 品 名 称 温度计/芯子

型 号 规 格 TR..., TST310, TPR100, TC..., TSC310, TPC100, TM411

防 爆 标 志 Ex ia II C T1...T6 Ga, Ex ia III C T₂₀₀85°C...T₂₀₀450°C Da

产 品 标 准 /

图 样 编 号 10000004760, 10000004808

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：

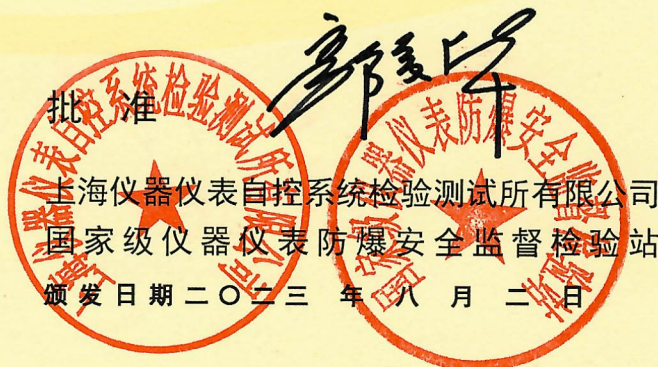
GB/T 3836.1-2021, GB/T 3836.4-2021

特颁发此证。

本证书有效期：2023年08月02日至2028年08月01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. 本安电气参数见本证书附件。
4. 本证书同时适用于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）、Endress+Hauser Sicestherm S.r.l.（地址：Via Martin Luther King 7/91-20060 Pessano con Bornago (MI), Italy）生产的同型号产品。



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. GYJ23.1144X

Manufacturer	Endress + Hauser Wetzer GmbH + Co. KG (Address: Obere Wank 1, 87484 Nesselwang, Germany)
Product	Thermometer/Insert
Model	TR., TST310, TPR100, TC., TSC310, TPC100, TM411
Ex marking	Ex ia II C T1...T6 Ga, Ex ia III C T₂₀₀85°C...T₂₀₀450°C Da
Product standard	/
Drawing number	10000004760, 10000004808

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

GB/T 3836.1-2021,GB/T 3836.4-2021

Valid until: 2028.08.01

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.Intrinsic safety parameters specified in the attachment to this certificate.
- 4.This certificate is also applicable for the product with the same type manufactured by Endress+Hauser Wetzer (Suzhou) Co., Ltd. (address: No.31 JiangTianLiLu,Suzhou Industrial Park), Endress+Hauser Sicestherm S.r.l.(address:Via Martin Luther King 7/9I-20060 Pessano con Bornago (MI),Italy).



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 2023.08.02

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

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(GYJ23.1144X)

(Attachment I)

GYJ23.1144X防爆合格证附件 I

由恩德斯+豪斯公司生产的TR., TST310, TPR100, TC., TSC310, TPC100, TM411型温度计/芯子, 经检验符合下列标准:

GB/T 3836.1-2021 爆炸性环境 第1部分: 设备 通用要求

GB/T 3836.4-2021 爆炸性环境 第4部分: 由本质安全型“i”保护的设

产品防爆标志为Ex ia IIC T1...T6 Ga, Ex ia IIIC T20085°C...T200450°C Da, 防爆合格证号为GYJ23.1144X。

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, 具体内容如下:

1、当产品的安装头为铝制且安装于要求EPL Ga级的场所时, 用户须采取有效措施防止产品外壳由于冲击或摩擦引起的点燃危险。

2、当TST310, TSC310型温度计安装于要求EPL Ga级的场所时, 避免由静电电荷在电缆上聚集引起点燃危险。

3、产品使用环境温度、最高介质温度与传感器直径和温度组别的关系:

传感器直径	温度组别/ 最高表面温度	最高介质温度				
		Pi≤50mW	Pi≤100mW	Pi≤200mW	Pi≤500mW	Pi≤650mW
3mm, 3mm (双支) 或 6mm (双支)	T1/450°C	+426°C	+415°C	+396°C	+343°C	+333°C
	T2/300°C	+276°C	+265°C	+246°C	+193°C	+183°C
	T3/200°C	+181°C	+170°C	+151°C	+98°C	+88°C
	T4/135°C	+116°C	+105°C	+86°C	+33°C	+23°C
	T5/95°C	+81°C	+70°C	+51°C	-2°C	-12°C
	T6/85°C	+66°C	+55°C	+36°C	-17°C	-27°C
6mm	T1/450°C	+433°C	+428°C	+420°C	+398°C	+388°C
	T2/300°C	+283°C	+278°C	+270°C	+248°C	+238°C
	T3/200°C	+188°C	+183°C	+175°C	+153°C	+143°C
	T4/135°C	+123°C	+118°C	+110°C	+88°C	+78°C
	T5/95°C	+88°C	+83°C	+75°C	+53°C	+43°C
	T6/85°C	+73°C	+68°C	+60°C	+38°C	+28°C

传感器直径	温度组别/ 最高表面 温度	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)	T1/450°C	+320°C	+312°C	+280°C	-40°C~+130°C
	T2/300°C	+170°C	+162°C	+130°C	-40°C~+130°C
	T3/200°C	+75°C	+62°C	+30°C	-40°C~+130°C
	T4/135°C	+10°C	+2°C	-30°C	-40°C~+116°C
	T5/95°C	-25°C	-33°C		-40°C~+81°C
	T6/85°C	-40°C			-40°C~+66°C

6mm	T1/450°C	+381°C	+377°C	+361°C	-40°C~+130°C
	T2/300°C	+231°C	+227°C	+211°C	-40°C~+130°C
	T3/200°C	+136°C	+127°C	+111°C	-40°C~+130°C
	T4/135°C	+71°C	+67°C	+51°C	-40°C~+123°C
	T5/95°C	+36°C	+32°C	+16°C	-40°C~+88°C
	T6/85°C	+21°C	+17°C	+1°C	-40°C~+73°C

二、产品使用注意事项

1、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/可燃性粉尘环境。其系统接线必须同时遵守本产品 and 所配关联设备的使用说明书要求，接线端子不得接错。

2、产品本安电气参数：

变送器模块	电气参数				
	U _i	I _i	P _i	C _i	L _i
TMT82	30V	130 mA	800 mW	0	0
TMT71/TMT72	30V	100 mA	800 mW	0	0
TMT84,TMT85	FISCO field device				
TMT86	FISCO field device				
Terminal block	30V	140 mA	1000 mW	用下表计算	
Flying leads	30V	140 mA	1000 mW	用下表计算	

TPx100系列:

传感器类型	芯子长度IL		飞线		陶瓷接线块	
	C _i [F/m]	L[H/m]	C _i [F]	L[H]	C _i [F]	L[H]
单只	2.00E-10	1.00E-06	1.96E-11	9.80E-08	4.60E-12	2.30E-08
双支	4.00E-10	2.00E-06	3.92E-11	1.96E-07	9.20E-12	4.60E-08

$$C_i = C_{iL} \times IL + C_{i \text{ 飞线}}$$

$$L_i = L_{iL} \times IL + L_{i \text{ 飞线}}$$

$$C_i = C_{iL} \times IL + C_{i \text{ 陶瓷接线块}}$$

$$L_i = L_{iL} \times IL + L_{i \text{ 陶瓷接线块}}$$

TSx310系列:

传感器类型	芯子长度NL		连接件		延展长度 L	
	C _i [F/m]	L[H/m]	C _i [F]	L[H]	C _i [F]	L[H]
单只	2.00E-10	1.00E-06	2.50E-11	1.25E-07	2.00E-10	1.00E-06
双支	4.00E-10	2.00E-06	5.00E-11	2.50E-07	4.00E-10	2.00E-06

$$C_i = C_{iNL} \times NL + C_{i \text{ 连接件}} + C_{iL} \times L$$

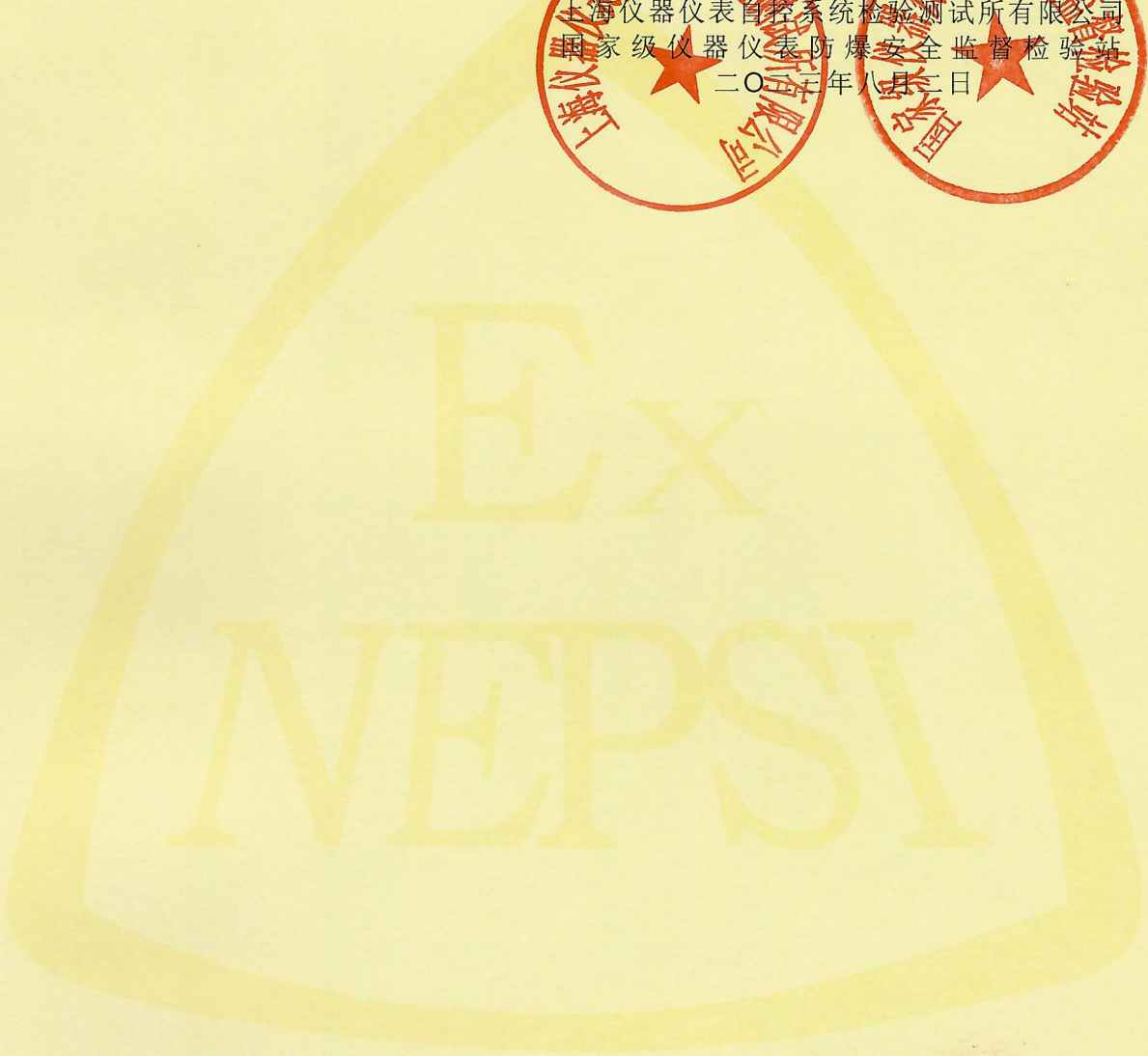
$$L_i = L_{iNL} \times NL + L_{i \text{ 连接件}} + L_{iL} \times L$$

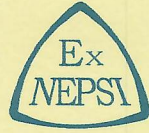
3、用户不得自行随意更换该产品的电气零部件，应会同产品制造商共同解决运行中出现的故障，以免影响防爆性能和损坏现象的发生。

4、产品的安装、使用和维护应同时遵守产品使用说明书、GB/T 3836.13-2021 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 3836.16-2022 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：本质安全电气系统和GB 50257-2014 电气装置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。





(GYJ23.1144X)

(Attachment I)

**Attachment I to GYJ23.1144X
(translation)**

1. Description

Thermometer/Insert type TR., TST310, TPR100, TC., TSC310, TPC100, TM411, manufactured by Endress + Hauser Wetzler GmbH + Co. KG, accords with following standards:

GB/T 3836.1-2021 Explosive atmospheres-Part 1: Equipment-General requirements

GB/T 3836.4-2021 Explosive atmospheres-Part 4: Equipment protection by intrinsic safety“i”

The Ex marking is Ex ia IIC T1...T6 Ga, Ex ia IIIC T200 85°C...T200/450°C Da, its certificate number is GYJ23.1144X.

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 To avoid an ignition hazard due to impact or friction when the product is installed in zone 0 with aluminum housing.

2.2 The ignition hazard caused by electrostatic charge accumulation on the cable is avoided when the thermometer type TST310, TSC310, TM211 is installed in zone 0.

2.3 The relationship between temperature class/ maximum surface temperature, ambient temperature and process temperature is shown as following:

insert diameter	temperature class/ maximum surface temperature	maximum medium temperature				
		Pi≤50mW	Pi≤100mW	Pi≤200mW	Pi≤500mW	Pi≤650mW
3mm, 3mm(dual) or 6mm (dual)	T1/450°C	+426°C	+415°C	+396°C	+343°C	+333°C
	T2/300°C	+276°C	+265°C	+246°C	+193°C	+183°C
	T3/200°C	+181°C	+170°C	+151°C	+98°C	+88°C
	T4/135°C	+116°C	+105°C	+86°C	+33°C	+23°C
	T5/95°C	+81°C	+70°C	+51°C	-2°C	-12°C
	T6/85°C	+66°C	+55°C	+36°C	-17°C	-27°C
6mm	T1/450°C	+433°C	+428°C	+420°C	+398°C	+388°C
	T2/300°C	+283°C	+278°C	+270°C	+248°C	+238°C

(GYJ23.1144X)**(Attachment I)**

	T3/200°C	+188°C	+183°C	+175°C	+153°C	+143°C
	T4/135°C	+123°C	+118°C	+110°C	+88°C	+78°C
	T5/95°C	+88°C	+83°C	+75°C	+53°C	+43°C
	T6/85°C	+73°C	+68°C	+60°C	+38°C	+28°C

insert diameter	temperature class/ maximum surface temperature	maximum medium temperature			ambient temperature
		Pi≤750mW	Pi≤800mW	Pi≤1000mW	
3mm, 3mm (dual) or 6mm (dual)	T1/450°C	+320°C	+312°C	+280°C	-40°C ~ +130°C
	T2/300°C	+170°C	+162°C	+130°C	-40°C ~ +130°C
	T3/200°C	+75°C	+62°C	+30°C	-40°C ~ +130°C
	T4/135°C	+10°C	+2°C	-30°C	-40°C ~ +116°C
	T5/95°C	-25°C	-33°C		-40°C ~ +81°C
	T6/85°C	-40°C			-40°C ~ +66°C
6mm	T1/450°C	+381°C	+377°C	+361°C	-40°C ~ +130°C
	T2/300°C	+231°C	+227°C	+211°C	-40°C ~ +130°C
	T3/200°C	+136°C	+127°C	+111°C	-40°C ~ +130°C
	T4/135°C	+71°C	+67°C	+51°C	-40°C ~ +123°C
	T5/95°C	+36°C	+32°C	+16°C	-40°C ~ +88°C
	T6/85°C	+21°C	+17°C	+1°C	-40°C ~ +73°C

3. Conditions for Safe Use

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

3.2 The intrinsic safety parameters are shown as following:

head transmitter	Entity parameters				
	Ui	Ii	Pi	Ci	Li
TMT82	30V	130 mA	800 mW	0	0
TMT71/TMT72	30V	100 mA	800 mW	0	0
TMT84,TMT85	FISCO field device				
TMT86	FISCO field device				
Terminal block	30V	140 mA	1000 mW	See tables below	
Flying leads	30V	140 mA	1000 mW	See tables below	

Ci and Li for types TPx100:

Sensor Type	Insertion Length IL		Flying leads		Terminal block	
	Ci[F/m]	Li[H/m]	Ci[F]	Li[H]	Ci[F]	Li[H]
Single	2.00E-10	1.00E-06	1.96E-11	9.80E-08	4.60E-12	2.30E-08
Dual	4.00E-10	2.00E-06	3.92E-11	1.96E-07	9.20E-12	4.60E-08

$Ci = Ci_{IL} \times IL + Ci_{Flying\ leads}$

$Li = Li_{IL} \times IL + Li_{Flying\ leads}$

$Ci = Ci_{IL} \times IL + Ci_{Terminal\ block}$

$Li = Li_{IL} \times IL + Li_{Terminal\ block}$

Ci and Li for types TSx310:

Sensor Type	Insertion Length NL		Connection		Length Extension L	
	Ci[F/m]	Li[H/m]	Ci[F]	Li[H]	Ci[F]	Li[H]
Single	2.00E-10	1.00E-06	2.50E-11	1.25E-07	2.00E-10	1.00E-06
Dual	4.00E-10	2.00E-06	5.00E-11	2.50E-07	4.00E-10	2.00E-06

$Ci = Ci_{NL} \times NL + Ci_{Connection} + Ci_L \times L$

$Li = Li_{NL} \times NL + Li_{Connection} + Li_L \times L$

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

3.4 For installation, use and maintenance of this product, the end user should 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 3836.18-2017 "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".

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.

