



防爆合格证

证 号: GYJ24.1170X

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

型 号 规 格 iTHERM TM111, TM131, TM151 系列

防 爆 标 志 见本证书附件

产 品 标 准 /

图 样 编 号 10000007411, 10000007412, 10000007427, 10000011102, 10000013844

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 3836.2-2021, GB/T 3836.31-2021

特颁发此证。

本证书有效期: 2024 年 07 月 05 日至 2029 年 07 月 04 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, 20042 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 I] 型号变更。2025 年 6 月 26 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 二 四 年 七 月 五 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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SitiAs
Worldwide Access

EXPLOSION PROTECTION

CERTIFICATE OF CONFORMITY

Cert No. GYJ24.1170X

Manufacturer	Endress + Hauser Wetzer GmbH + Co. KG (Address: Obere Wank 1, 87484 Nesselwang, Germany)
Product	Thermometer
Model	iTHERM TM111, TM131, TM151 Series
Ex marking	Refer to the attachment for details
Product standard	/
Drawing number	10000007411, 10000007412, 10000007427, 10000011102, 10000013844

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

GB/T 3836.1-2021, GB/T 3836.2-2021, GB/T 3836.31-2021

Valid until: 2029.07.04

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, 20042 Pessano con Bornago (MI), Italy) and Endress+Hauser Wetzer (Suzhou) Co., Ltd. (address: No.31 JiangTianLiLu, Suzhou Industrial Park).
6. [Variation I] Model change. issued on 2025.06.26.

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 2024.07.05

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



(GYJ24.1170X)

(Attachment I)

GYJ24.1170X 防爆合格证附件 I

由恩德斯+豪斯公司生产的iTHERM TM111, TM131, TM151系列温度计, 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 3836.2-2021 爆炸性环境 第2部分: 由隔爆外壳“d”保护的设备

GB/T 3836.31-2021 爆炸性环境 第31部分: 由防粉尘点燃外壳“t”保护的设备

产品防爆标志见下列型号规格描述, 防爆合格证号为GYJ24.1170X。

本证书认可的产品型号规格如下:

TM111-**a b c d e f g h i j k l m n o p q r s t u v**

a表示防爆认证代码, 可为: ND (Ex db IIC T6...T1 Gb, Ex tb IIIC T85 °C...T450 °C Db), NF (Ex tb IIIC T85 °C...T450 °C Db);

b表示传感器直径, 与防爆性能无关, 可为: A=3mm, C=6mm或Y=其他长度;

f表示传感器类型/测量范围/材质, 与防爆性能无关, 可为:

A=1xPt100 TF; -50...+400°C; 316L,

B=1xPt100 WW; -200...+600°C; 316L,

C=2xPt100 WW; -200...+600°C; 316L,

D=1xPt100 TF StrongSens; -50...+500°C; 316L,

E=1xPt100 TF QuickSens; -50...+200°C; 316L,

F=1xPt100 TF QuickSens; -50...+400°C; 316L,

L=1xTC type J; max. 800°C; 316L,

M=2xTC type J; max. 800°C; 316L,

N=1xTC type K; max. 1100°C; Alloy600,

O=2xTC type K; max. 1100°C; Alloy600,

P= 1xTC type N; max. 1100°C; Alloy600,

Q=2xTC type N; max. 1100°C; Alloy600,

Y=其它热电偶;

h表示电气连接, 与防爆性能无关, 可为:

0A=引出线,

1A=陶瓷接线端,

2A=4-20mA, 1 通道 TMT180 PCP0.2K, 模块式变送器 DIN B,

2B=4-20mA, 1 通道 TMT180 PCP0.1K, 模块式变送器 DIN B,

2C=4-20mA, 1 通道 TMT71, 模块式变送器 DIN B,

2H=4-20 mA, 1 通道 TMT31, PCP 0.15 K, 模块式变送器 DIN B,

2I=4-20 mA, 1 通道 TMT31, PCP 0.1 K, 模块式变送器 DIN B,

3A=HART, 1 通道 TMT72, 模块式变送器 DIN B,

3C=HART, 2 通道 TMT82, 模块式变送器 DIN B,

3D=HART, 2 通道 TMT82, SIL 模块式变送器 DIN B,

3F=4-20mA HART, 2 通道 TMT82 SIL2/3 OIIML/MID for gas, temp. range -30...+120oC,

3I=4-20mA HART, 2 通道 TMT82 SIL2/3 OIIML/MID for liquid, temp. range -200...+200oC,

4A=FOUNDATION Fieldbus, 2 通道 TMT85, 模块式变送器 DIN B,

5A=PROFIBUS PA, 2 通道 TMT84, 模块式变送器 DIN B,

6B=PROFINET w. Ethernet-APL/SPE, TMT86, 模块式变送器 DIN B,

6C=PROFINET w. Ethernet-APL/SPE, TMT86 SIL, conformity + PROFIsafe, 模块式变送器 DIN B,

6U=IO-Link, 1 通道 TMT36, 模块式变送器 DIN B;

l表示外壳型号/材质/IP等级, 可为:

A1=TA30A翻盖外壳²⁾,

A2=TA30A翻盖外壳带显示²⁾,

D1=TA30D翻盖外壳²⁾,

H1=TA30H 不锈钢外壳,

H2=TA30H 不锈钢外壳带显示,

H3=TA30H 铝外壳,

H4=TA30H 铝外壳带显示

YY= A1~H4 的特殊喷漆 (非导电漆);

j表示电缆引入口规格, 可为:

A=1x M20x1.5,

B=1x NPT 1/2,

C=1xG1/2(仅粉尘防爆适用),

D=2x M20x1.5

E=2x NPT1/2 ;

其余表示过程连接/材质, 插入深度, 延长颈长度, 感温元件标准/分级, 设备版本, 冗余变送模块 (本产品不带), 服务, 测试/认证/声明, 附加认证, 附加信息, 安装备件, 校准温度计, 校准点 $\geq 0^{\circ}\text{C}$, 校准点 $\leq 0^{\circ}\text{C}$, 固件版本和标识, 与防爆性能无关。

其中, 注²⁾表示仅适用于粉尘防爆(**a**=NF)

TM131-**a b c d e f g h i j k l m n o p q r s t u v w x y z**

a表示防爆认证代码, 可为: ND (Ex db IIC T6...T1 Gb, Ex ta IIIC T₂₀₀ 85°C...T₂₀₀ 450°C Da / Ex tb IIIC T85 °C...T450 °C Db), NF (Ex ta IIIC T₂₀₀ 85°C...T₂₀₀ 450°C Da / Ex tb IIIC T85 °C...T450 °C Db);

b表示套管, 与防爆性能无关, 可为:

A=无温度套管, 温度计安装在已有保护套管上

B=配有温度套管, 整根管材, 符合 DIN43772 标准Form 2 G/F,

C=配有温度套管, 延伸段六边形设计, 符合DIN43772 Form 5, 8,

D=配有温度套管, 无延伸段, 符合 DIN43772 Form 2,3;

c表示温度计设计, 与防爆性能无关, 可为:

A=无延伸段, 符合DIN43772 form2,

B=延长颈, 符合DIN43772 form 2G,2F,3G,3F

D=可拆卸脖子外径D11mm,符合DIN43772

E=可拆卸脖子外径D12mm,符合DIN43772

F=可拆卸脖子外径D12mm M20连接, 符合DIN43772

L=NPT1/2外螺纹连接

M=NPT1/2内螺纹NU连接

N=NPT1/2外螺纹NUN连接;

e表示套管直径/材质, 与防爆性能无关, 可为:

A1=无需选套管, 插入芯子 3mm 安装在已有保护套管上,

A2=无需选套管, 插入芯子 6mm 安装在已有保护套管上,

B1=9x1.25mm; 316L,

B2=11x2mm; 316L,

B3=14x2mm; 316L,

B4=16x3.5mm; 316L,

C1=9x1.25mm; 316Ti,

C2=11x2mm; 316Ti,

C3=14x2mm; 316Ti,

C4=12x2.5mm; 316Ti BASF,

D1=9x1.25mm; Alloy C276,

D2=11x2mm; Alloy C276,

E1=9x1.25mm; Alloy 600,

E2=11x2mm; Alloy 600,

F1=1/4"sch.80; 316,

F2=1/2"sch.80; 316,

G1=1/2"sch.40; 446,

H1=12x2.5mm; 321,

I1=11mm; 316Ti + 13mm 坦,

I2=12x2.5mm; 316Ti + 13mm坦;

YY_1=其它直径 (壁厚 $\geq 1\text{mm}$) 并选用该位所列的材料,

YY_2=其它材料, 并选用该位所列的保护套管直径,

YY_3=保护套管类型 TT131 G6D;

J表示尖端形状, 与防爆性能无关, 可为:

A=不需要 (无温度套管),

B=直管段 (DIN 43772 form 2/2G/2F),

C=外径缩短式, 要求 $U \geq 50\text{mm}$,

D=外径缩短式, 要求 $U \geq 70\text{mm}$,

E=渐缩式, 要求 $U \geq 90\text{mm}$,

F=渐缩式, 要求 $U \geq 115\text{mm}$ (DIN 43772 Form 3G/3F),

G=渐缩式, 用于钽材护套,

H=直管段, 快速响应保护套管,

I=渐缩式, 快速响应保护套管;

J表示传感器类型/测量范围/材质, 与防爆性能无关, 可为:

A=1xPt100 薄膜式; $-50 \dots +400^\circ\text{C}$; 316L,

B=1xPt100 绕线式; $-200 \dots +600^\circ\text{C}$; 316L,

C=2xPt100 绕线式; $-200 \dots +600^\circ\text{C}$; 316L,

D=1xPt100 薄膜式 StrongSens; $-50 \dots +500^\circ\text{C}$; 316,

E=1xPt100 薄膜式 QuickSens; $-50 \dots +200^\circ\text{C}$; 316,

F=1xPt100 薄膜式 QuickSens; $-50 \dots +400^\circ\text{C}$; 316,

L=1xTC 类型 J; 最大 800°C ; 316L,

M=2xTC 类型 J; 最大 800°C ; 316L,

N=1xTC 类型 K; 最大 1100°C ; Alloy 600,

O=2xTC 类型 K; 最大 1100°C; Alloy 600,

P=1xTC 类型 N; 最大 1100°C; Alloy 600,

Q=2xTC 类型 N; 最大 1100°C; Alloy 600;

Y=其它热电偶

表示电气连接, 与防爆性能无关, 可为:

0A=引出导线,

1A=接线陶瓷端子,

2C=4-20 mA, 1通道 TMT71, 模块式变送器 DIN B,

2D*3=4-20 mA HART, TMT162,

2E*3=4-20mA HART, TMT162 SIL,

2F*3=4-20 mA HART, 2通道 TMT162,

2G*3=4-20mA HART, 2通道 TMT162 SIL,

2H=4-20mA, 1通道 TMT31, PCP0.15K, 模块式变送器 DIN B,

2I=4-20mA, 1通道 TMT31, PCP0.1K, 模块式变送器 DIN B,

3A=HART, 1通道 TMT72, 模块式变送器 DIN B,

3C=HART, 2通道 TMT82, 模块式变送器 DIN B,

3D=HART, 2通道 TMT82, SIL 模块式变送器 DIN B,

3F=4-20mA HART, 2通道 TMT82 SIL2/3 OIIML/MID for gas, temp. range -30...+120°C,

3I=4-20mA HART, 2通道 TMT82 SIL2/3 OIIML/MID for liquid, temp. range -200...+200°C,

4A=FOUNDATION Fieldbus, 2通道 TMT85, 模块式变送器 DIN B,

4B*3=FOUNDATION Fieldbus, TMT162,

4C*3=FOUNDATION Fieldbus, 2通道 TMT162,

5A=PROFIBUS PA, 2通道 TMT84, 模块式变送器 DIN B,

5B*3=PROFIBUS PA, TMT162

5C*3=PROFIBUS PA, 2通道 TMT162,

6B=PROFINET w. Ethernet-APL/SPE, TMT86, 模块式变送器 DIN B,

6C=PROFINET w. Ethernet-APL/SPE, TMT86 SIL, conformity + PROFIsafe, 模块式变送器 DIN B,

6U=IO-Link, 1通道 TMT36, 模块式变送器 DIN B,

7A*4=4-20mA HART, 1通道 TMT142B, 现场型变送器

m表示外壳型号/材质/IP等级, 可为:

A1=TA30A 翻盖外壳²⁾,

A2=TA30A翻盖外壳带显示²⁾,

D1=TA30D翻盖外壳²⁾,

F1=双腔现场式带显示外壳, 铝³⁾,

F2=双腔现场式带显示外壳, 不锈钢³⁾,

F3=单腔现场式带显示外壳, 铝⁴⁾,

F4=单腔现场式带显示外壳, 不锈钢⁴⁾,

F5=单腔现场式外壳, 铝⁴⁾,

F6=单腔现场式外壳, 不锈钢⁴⁾,

F7=双腔现场式外壳, 铝³⁾,

F8=双腔现场式外壳, 不锈钢³⁾,

H1=TA30H 不锈钢外壳,

H2=TA30H不锈钢外壳带显示,

H3=TA30H铝外壳,

H4=TA30H铝外壳带显示,

H5=TA30H现场式带显示外壳, 铝,

H6=TA30H现场式带显示外壳, 不锈钢

YY =A1~H6 的特殊喷漆 (非导电漆);

n表示电缆引入口规格, 可为:

A=1x M20x1.5,

B=1x NPT 1/2,

C=1x G1/2(仅粉尘防爆适用),

D=2x M20x1.5,

E=2x NPT1/2;

¹⁾其余表示过程连接/材质, 插入深度U, 可拆卸颈长度E, 延长颈长度T, 感温元件标准/分级, 设备版本, 冗余变送模块(本产品不带), 服务, 测试/认证/声明, 附加认证, 附加信息, 安装备件, 校准温度计, 校准点 $\geq 0^{\circ}\text{C}$, 校准点 $\leq 0^{\circ}\text{C}$, 固件版本和标识, 与防爆性能无关。

²⁾只适用于Ext 的粉尘防爆 (**a**=NF)

³⁾现场型变送器TMT162的外壳

⁴⁾现场型变送器TMT142的外壳

TM151-**a b c d e f g h i j k l m n o p q r s t u v w x y z aa ab ac ad ae af**

a 代表防爆认证代码, 可为 ND(Ex db IIC T6...T1 Ga/Gb, Ex ta IIIC T₂₀₀ 85°C...T₂₀₀ 450°C Da / Ex tb IIIC T85 °C...T450 °C Db),

NF(Ex ta IIIC T₂₀₀ 85°C...T₂₀₀ 450°C Da / Ex tb IIIC T85 °C...T450 °C Db);

b 代表热保护套管, 可为:

1=温度计用于安装在其他套管

A=基于 ASME B40.9 法兰

B=基于 ASME B40.9 螺纹

C=基于 ASME B40.9 焊接

D=基于 ASME B40.9 承插焊

E=基于 DIN 42772 法兰

G=基于 DIN 42772 焊接

M=基于 NAMUR NE170 法兰 ²⁾

T=螺旋套管, 法兰

c 代表温度计结构设计,可为:

A=无延伸段

B=可拆卸脖子外径 D11mm, M14*1.5 符合 DIN43772

C=可拆卸脖子外径 D11mm, M18*1.5 符合 DIN43772

D=可拆卸脖子外径 D11mm, G1/2"符合 DIN43772

E=可拆卸脖子外径 D12mm, M20 连接, 近似 DIN43772

F=配有 Quickneck(上半部分), 用于安装在已有 QuickNeck 下半部分

G=Quickneck

L=NPT1/2 外螺纹连接

M=NPT1/2 内螺纹 NU 连接

N=NPT1/2 外螺纹 NUN 连接

d 代表热保护套管材质,可为:

AA=无, 3mm 芯子, 安装在现存已有的保护套管

AB=无, 6mm 芯子, 安装在已有的保护套管

AC=316

AD=316L

AE=316/316L 双标

AF=316Ti

AG=347

AH=310

AI=316/316L 螺旋套管

BA=Alloy600

BB=AlloyC276

CA=10CrMo9-10

CB=13CrMo4-10

CC=16Mo3

DA=A105

DB=C22.8

DC=P355NH

EA=Duplex S32205

YY=10000013457 中列举的其它材料

g 代表套管形状,可为:

A0=无套管,

A1=直管,

C1=缩径,

G1=台阶式

T1=渐缩型, C1=65mm

T2=渐缩型, C1=73mm

T3=渐缩型, C1=125mm

T4=渐缩型, C1=133mm

T5=减缩型, C1=275mm

X1=...mm, 减缩型

X2=...mm, 台阶式

X3=...mm, 管口长度

YY_1=其它尺寸(壁厚 $\geq 1.35\text{mm}$),可选 **d** 项所列材料

YY_2=以上所列尺寸, 可选其它材料。

i 代表可拆卸脖子长度 E, 可为:

A=0mm, 无脖子

B=基于结构给定长度,

G=155mm,

H=165mm,

I=35mm N² ,

J=93mm NU² ,

K=142mm NUN² ,

L=47mm lamination N,

M=105mm lamination NU,

N=154mm lamination NUN,

X=...mm(>500mm),

8=...mm(<=500mm) ;

代表传感器类型,测量范围, 材质,可为:

A=1xPt100 TF,-50°C...+400 ;316L

B=1xPT100 WW ; -200°C...600°C;316L

C=2xPT100 WW ; -200°C...600°C;316L

D=1xPT100 TF StrongSens;-50...500°C;316L

E=1xPT100 TF QuickSens;-50...200°C;316L

F=1xPT100 TF QuickSens;-50...400°C;316L

L=1xTC J 型 max.800°C; 316L

M=2xTC J 型 max.800°C; 316L

N=1xTC K 型 max.1100°C ; Alloy600

O=2xTC K 型 max.1100°C ; Alloy600

P=1xTC N 型 max.1100°C ; Alloy600

Q=2xTC N 型 max.1100°C ; Alloy600

Y=其它热电偶

代表电气连接, 可为:

0A=引出导线,

1A=陶瓷接线端子,

2C=4-20 mA, 1 通道 TMT71, 模块式变送器 DIN B,
2D=4-20 mA HART, TMT162,³⁾
2E=4-20mA HART, TMT162 SIL,³⁾
2F=4-20 mA HART, 2 通道 TMT162,³⁾
2G=4-20mA HART, 2 通道 TMT162 SIL,³⁾
2H=4-20mA, 1 通道 TMT31, PCP0.15K,模块式变送器 DIN B,
2I=4-20mA, 1 通道 TMT31, PCP0.1K, 模块式变送器 DIN B,
3A=HART, 1 通道 TMT72, 模块式变送器 DIN B,
3C=HART, 2 通道 TMT82, 模块式变送器 DIN B,
3D=HART, 2 通道 TMT82, SIL 模块式变送器 DIN B,
3F=4-20mA HART, 2 通道 TMT82 SIL2/3 OI ML/MID for gas, temp. range -30...+120°C,
3I=4-20mA HART, 2 通道 TMT82 SIL2/3 OI ML/MID 液体测温, 温度范围 -
200...+200°C,
4A=FOUNDATION Fieldbus, 2 通道 TMT85, 模块式变送器 DIN B,
4B=FOUNDATION Fieldbus, TMT162,³⁾
4C=FOUNDATION Fieldbus, 2 通道 TMT162,³⁾
5A=PROFIBUS PA, 2 通道 TMT84, 模块式变送器 DIN B,
5B=PROFIBUS PA, TMT162,³⁾
5C=PROFIBUS PA, 2 通道 TMT162,³⁾
6B=PROFINET w. Ethernet-APL/SPE, TMT86, 模块式变送器 DIN B,
6C=PROFINET w. Ethernet-APL/SPE, TMT86 SIL, conformity + PROFIsafe, 模块式变
送器 DIN B,
6U=IO-Link, 1 通道 TMT36, 模块式变送器 DIN B,
7A=4-20mA HART, 1 通道 TMT142B, 现场型变送器;⁴⁾

 代表表头, 材质, 保护等级, 可为:

A1=TA30A 翻盖外壳²⁾,

A2=TA30A翻盖外壳带显示²⁾,

D1=TA30D翻盖外壳²⁾,

F1=双腔现场式带显示外壳, 铝³⁾,

F2=双腔现场式带显示外壳, 不锈钢³⁾,

F3=单腔现场式带显示外壳, 铝⁴⁾,

F4=单腔现场式带显示外壳, 不锈钢⁴⁾,

F5=单腔现场式外壳, 铝⁴⁾,

F6=单腔现场式外壳, 不锈钢⁴⁾,

F7=双腔现场式外壳, 铝³⁾,

F8=双腔现场式外壳, 不锈钢³⁾,

H1=TA30H 不锈钢外壳,

H2=TA30H不锈钢外壳带显示,

H3=TA30H铝外壳,

H4=TA30H铝外壳带显示,

H5=TA30H现场式带显示外壳, 铝,

H6=TA30H现场式带显示外壳, 不锈钢

YY =A1~H6 的特殊喷漆 (非导电漆);

n 代表电缆引入装置接口,可为:

A=1x M20x1.5 母螺纹;

B=1x NPT1/2 母螺纹;

C=1x G1/2 母螺纹;²⁾

D=2x M20x1.5 母螺纹;

E=2x NPT1/2 母螺纹;

p 代表额外设计选项⁵⁾,可为:

AA=法兰 全熔透, 厚度. 20-30mm,

AB=法兰 全熔透, 厚度. 31-40mm,

AC=法兰 全熔透, 厚度. 41-50mm,

AD=法兰 全熔透, 厚度. 51-60mm,

AE=锻造套管,

AF=六角延长颈,

AG=法兰 类型 B1, EN1092-1,

AH=法兰 类型 B2, EN1092-1,

AI=法兰 类型 C, EN1092-1,

AJ=法兰 类型 E, EN1092-1,

AK=法兰 类型 FF, ANSI B16.5,

AL=法兰 类型 RF, ANSI B16.5,

AM=法兰 类型 RTJ, ANSI B16.5,

AN=法兰 类型 LM, ANSI B16.5,

AO=法兰 类型 LG, ANSI B16.5,

AQ=6.5mm 快速响应套管,

AR=7mm 快速相应套管;

q 代表套管直径 $D1^{5)}$, 可为:

CA=12,7 mm;

CB=16 mm;

CC=17 mm;

CD=18 mm;

CE=19 mm;

CF=22,2 mm (7/8");

CG=24 mm;

CH=25 mm;

CI=25,4 mm (1");

CJ=26 mm;

CK=27 mm (1-1/16");

CL=30 mm;

CM=20mm

CN=22mm

CX=... mm ;

r 代表 tip 直径 D2⁵⁾,可为:

DA=9mm,

DB=12.5mm,

DC=12.7mm (1/2"),

DD=14mm,

DE=15.9mm (5/8"),

DF=17mm,

DG=18mm,

DH=19mm (3/4"),

DI=22mm,

DJ=22.2mm,

DK=15mm,

DX=...mm;

s 代表特殊孔直径, 可为 Di⁵⁾:

EA=3.5mm,

EB=6.5mm,

EC=7mm,

ED=台阶式 6.5>3.5mm (长度 35mm),

EE=台阶式 7>6.1mm (长度 50mm) ,

EX=...mm,

f 代表特殊 Tip 厚度 B 可为⁵⁾:

EQ=4mm,

ER=6.35mm (1/4"),

ES=6mm, 圆 ($r=1/2$ of D2),

ET=6mm, 平 (标准型),

E8=... mm;

u 代表温度计连接 Ge1,⁵⁾ 可为:

FA=M14x1.5 母螺纹,

FB=M18x1.5 母螺纹,

FC=M20x1.5 母螺纹,

FD=NPT1/2 母螺纹,

FE=G1/2 母螺纹,

F9=特殊型 TSP 待定义;

¹⁾其余表示过程连接/材质, 插入深度U, 可拆卸颈长度E, 延长颈长度T, 感温元件标准/分级, 设备版本, 冗余变送模块 (本产品不带), 服务, 测试/认证/声明, 附加认证, 额外选项, 安装备件, 校准温度计, 校准点 $\geq 0^{\circ}\text{C}$, 校准点 $\leq 0^{\circ}\text{C}$, 固件版本和标识, 与防爆性能无关。

²⁾只适用于Ext 的粉尘防爆 (**a**= NF)

³⁾现场型变送器TMT162的外壳

⁴⁾现场型变送器TMT142的外壳

⁵⁾可选项

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、涉及隔爆接合面的维修须联系产品制造商。
- 2、TM111的传感器直径小于3mm时应配备套管保护。
- 3、TM111的代码**b**=Y时应配备套管保护。

4、TM131、TM151应配备套管保护。

二、产品使用注意事项

1、产品外壳设有接地端子，用户在安装使用时应可靠接地。

2、温度参数：

装配RTD传感器时：

产品型号	电气连接 (TM111代码 h TM131代码 l TM151代码 l)	温度组别/ 最高表面温度	使用环境温度	介质温度范围	
				传感器直径	
				3mm, 6mm双支	6mm
TM111	陶瓷接线端 ¹⁾ (1A)	T6/T85°C	-50°C~+70°C	-50°C~+55°C	-50°C~+68°C
		T5/T100°C	-50°C~+80°C	-50°C~+70°C	-50°C~+83°C
		T4/T135°C	-50°C~+120°C	-50°C~+105°C	-50°C~+118°C
		T3/T200°C	-50°C~+120°C	-50°C~+170°C	-50°C~+183°C
		T2/T300°C	-50°C~+120°C	-50°C~+265°C	-50°C~+278°C
		T1/T450°C	-50°C~+120°C	-50°C~+415°C	-50°C~+428°C
TM111	引出线 (0A) 或 变送器模块: TMT31 (2H, 2I) TMT36 (6U) TMT71 (2C) TMT72 (3A) TMT82 (3C, 3D, 3F,3I) TMT84 (5A)	T6/T85°C	-40°C~+65°C	-50°C~+55°C	-50°C~+68°C
TM131		T5/T100°C	-40°C~+80°C	-50°C~+70°C	-50°C~+83°C
TM151		T4/T135°C	-40°C~+85°C	-50°C~+105°C	-50°C~+118°C
		T3/T200°C	-40°C~+85°C	-50°C~+170°C	-50°C~+183°C
		T2/T300°C	-40°C~+85°C	-50°C~+265°C	-50°C~+278°C
		T1/T450°C	-40°C~+85°C	-50°C~+415°C	-50°C~+428°C

	TMT85（4A） TMT86（6B, 6C） TMT180（2A, 2B）				
TM131	陶瓷接线端 ¹⁾ （1A）	T6/T85℃	-50℃～+70℃	-50℃～+55℃	-50℃～+68℃
TM151		T5/T100℃	-50℃～+80℃	-50℃～+70℃	-50℃～+83℃
		T4/T135℃	-50℃～+90℃	-50℃～+105℃	-50℃～+118℃
		T3/T200℃	-50℃～+90℃	-50℃～+170℃	-50℃～+183℃
		T2/T300℃	-50℃～+90℃	-50℃～+265℃	-50℃～+278℃
		T1/T450℃	-50℃～+90℃	-50℃～+415℃	-50℃～+428℃
	变送器模块	T6/T85℃	-40℃～+55℃	-50℃～+55℃	-50℃～+68℃
	TMT142B（7A）	T5/T100℃	-40℃～+70℃	-50℃～+70℃	-50℃～+83℃
	TMT162（2D, 2E,	T4/T135℃	-40℃～+80℃	-50℃～+105℃	-50℃～+118℃
	2F, 2G, 4B, 4C, 5B,	T3/T200℃	-40℃～+80℃	-50℃～+170℃	-50℃～+183℃
	5C）	T2/T300℃	-40℃～+80℃	-50℃～+265℃	-50℃～+278℃
		T1/T450℃	-40℃～+80℃	-50℃～+415℃	-50℃～+428℃

注*: 对于不带显示盖的产品: TM111代码**h**, TM131/TMT151代码**m** = A1, D1, H1或H3

装配热电偶传感器时:

产品型号	电气连接 (TM111代码 h TM131代码 l TM1551代码 l)	温度组别/ 最高表面温度	使用环境温度	介质温度范围
TM111	陶瓷接线端* (1A)	T6/T85°C	-50°C~+70°C	-50°C~+85°C
		T5/T100°C	-50°C~+80°C	-50°C~+100°C
		T4/T135°C	-50°C~+120°C	-50°C~+135°C
		T3/T200°C	-50°C~+120°C	-50°C~+200°C

		T2/T300°C	-50°C~+120°C	-50°C~+300°C
		T1/T450°C	-50°C~+120°C	-50°C~+450°C
TM111	引出线 (0A) 或	T6/T85°C	-40°C~+65°C	-50°C~+85°C
TM131	变送器模块:	T5/T100°C	-40°C~+80°C	-50°C~+100°C
TM151	TMT71 (2C)	T4/T135°C	-40°C~+85°C	-50°C~+135°C
	TMT72 (3A)	T3/T200°C	-40°C~+85°C	-50°C~+200°C
	TMT82 (3C, 3D, 3F,3I)	T2/T300°C	-40°C~+85°C	-50°C~+300°C
	TMT84 (5A)	T1/T450°C	-40°C~+85°C	-50°C~+450°C
	TMT85 (4A)			
	TMT86 (6B, 6C)			
TM131	陶瓷接线端*	T6/T85°C	-50°C~+70°C	-50°C~+85°C
TM151	(1A)	T5/T100°C	-50°C~+80°C	-50°C~+100°C
		T4/T135°C	-50°C~+90°C	-50°C~+135°C
		T3/T200°C	-50°C~+90°C	-50°C~+200°C
		T2/T300°C	-50°C~+90°C	-50°C~+300°C
		T1/T450°C	-50°C~+90°C	-50°C~+450°C
	变送器模块	T6/T85°C	-40°C~+55°C	-50°C~+85°C
	TMT142B (7A)	T5/T100°C	-40°C~+70°C	-50°C~+100°C
	TMT162 (2D, 2E, 2F, 2G, 4B, 4C, 5B, 5C)	T4/T135°C	-40°C~+80°C	-50°C~+135°C
		T3/T200°C	-40°C~+80°C	-50°C~+200°C
		T2/T300°C	-40°C~+80°C	-50°C~+300°C
		T1/T450°C	-40°C~+80°C	-50°C~+450°C

注¹⁾: 对于不带显示盖的产品: TM111代码 $\bar{m}$, TM131/TMT151代码 $\bar{m}$ = A1, D1, H1或H3

Cortem RB**1NS单元(Union XP):

材质	工作温度范围
不锈钢	-50℃~+150℃

带有QuickNeck结构的TS21x传感器:

材料	工作温度范围
带 EPDM 衬垫不锈钢	-50℃ ~ +120℃

连接处密封材料:

类型	工作温度范围
Loctite 270	-50℃ ~ +130℃
PTFE 胶带	

TM151热保护套管类型:

材质	工作温度范围(℃)
10CrMo9-10	-20℃ ~ +625℃
13CrMo4-5	-30℃ ~ +555℃
16Mo3	-10℃ ~ +530℃
A105	-10℃ ~ +480℃
P355NH	-20℃ ~ + 500℃
Duplex S32205	-46℃ ~ +316℃

3、电气参数:

TMT162变送器模块:max. 40 VDC, 3W

TMT142B变送器模块:max. 36 VDC, 1W

其他变送器模块:max. 42 VDC, 23mA

传感器: max. 10 VDC, 1 mA

4、产品为隔爆型时, 电缆引入口须配用经防爆检验认可的, 符合GB/T 3836.1-2021和GB/T 3836.2-2021标准, 防爆等级Ex db IIC Gb的电缆引入装置或封堵件; 产品为粉尘防爆

时，电缆引入口须配用经防爆检验认可的，符合GB/T 3836.31-2021标准，防爆等级Ex tb IIIC Db的电缆引入装置或封堵件，安装后外壳防护等级不得低于GB/T 4208-2017规定的IP66/IP68。选用的电缆引入装置或封堵件应与产品的工作条件相适应。

5、产品在现场维护使用时应遵循“断电源后开盖”的原则。

6、产品在粉尘环境使用维护时，应定期采取清洁措施，以防止表面积聚粉尘。

7、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。

8、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 50257-2014“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”及GB 15577-2018“粉尘防爆安全规程”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

二〇二五年六月二十六日



(GYJ24.1170X)

(Attachment II)

Attachment II to GYJ24.1170X

(translation)

1. Description

Thermometers typed, iTHERM TM111, TM131, TM151 Series manufactured by Endress + Hauser Wetzer GmbH + Co. KG, has been certified by National Supervision and Inspection Center for Explosion Protection and Safety of Instrumentation (NEPSI). This product accords with following standards:

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

GB/T 3836.2-2021 Explosive atmospheres-Part 2: Equipment protection by flameproof enclosure "d"

GB/T 3836.31-2021 Explosive atmospheres-Part 31: Equipment dust ignition protection by enclosure "t"

The Ex marking is shown in the type code designation, its certificate number is GYJ24.1170X.

Type approved in this certificate is shown as below:

TM111-**a b c d e f g h i j k l m n o p q r s t u v**

a indicates approval code, including ND(Ex db IIC T6...T1 Gb, Ex tb IIIC T85°C...T450°C Db),

NF(Ex tb IIIC T85°C...T450°C Db);

b indicates insert diameter, including A=3mm, C=6mm or Y=any other length;

f indicates sensor type/measuring range/material, including

A=1xPt100 TF; -50...+400°C; 316L,

B=1xPt100 WW; -200...+600°C; 316L,

C=2xPt100 WW; -200...+600°C; 316L,

D=1xPt100 TF StrongSens; -50...+500°C; 316L,

E=1xPt100 TF QuickSens; -50...+200°C; 316L,

F=1xPt100 TF QuickSens; -50...+400°C; 316L,

L=1xTC type J; max. 800°C; 316L,

M=2xTC type J; max. 800°C; 316L,

N=1xTC type K; max. 1100°C; Alloy600,

O=2xTC type K; max. 1100°C; Alloy600,

P=1xTC type N; max. 1100°C; Alloy600,

Q=2xTC type N; max. 1100°C; Alloy600,

Y=Other Thermocouples;

h indicates electrical connection, including

0A=Flying leads,

1A=Terminal block (only with terminal head A1, D1, H1 H3),
2A=4-20mA, 1-channel TMT180 PCP0.2K, head transmitter DIN B,
2B=4-20mA, 1-channel TMT180 PCP0.1K, head transmitter DIN B,
2C=4-20mA, 1-channel TMT71, head transmitter DIN B,
2H=4-20 mA, 1-channel TMT31, PCP 0.15 K, head transmitter DIN B,
2I=4-20 mA, 1-channel TMT31, PCP 0.1 K, head transmitter DIN B,
3A=HART, 1-channel TMT72, head transmitter DIN B,
3C=HART, 2-channel TMT82, head transmitter DIN B,
3D=HART, 2-channel TMT82, SIL head transmitter DIN B,
3F=4-20mA HART, 2-channel TMT82 SIL2/3 OI ML/MID for gas, temp. range -30...+120oC,
3I=4-20mA HART, 2-channel TMT82 SIL2/3 OI ML/MID for liquid, temp. range -200...+200oC,
4A=FOUNDATION Fieldbus, 2-channel TMT85, head transmitter DIN B,
5A=PROFIBUS PA, 2-channel TMT84, head transmitter DIN B,
6B=PROFINET w. Ethernet-APL/SPE, TMT86, head transmitter DIN B,
6C=PROFINET w. Ethernet-APL/SPE, TMT86 SIL, conformity + PROFIsafe, head transmitter DIN B,
6U=IO-Link, 1-channel TMT36, head transmitter DIN B;

 indicates terminal head/material/protect. Class, including

A1²=TA30A comfort flip cover; Alu; IP66/68,

A2²=TA30A + display, comfort flip cover; Alu; IP66/68,

D1²=TA30D comfort, high flip cover; Alu; IP66/68,

H1=TA30H Ex d/XP; 316L; IP66/68,

H2=TA30H Ex d/XP + display; 316L; IP66/68,

H3=TA30H Ex d/XP; Alu; IP66/68;

H4=TA30H Ex d/XP + display; Alu; IP66/68;

YY=Special Varnishing (Non-conductive in combination with digit A1 to H4);

 indicates cable entry, including

A=1x M20x1.5,

B=1x NPT 1/2,

C=1xG1/2(only for Ex tb),

D=2x M20x1.5

E=2x NPT1/2 ;

others indicates process connection/material, immersion length "U", lagging length "T", sensor standard/classification, device version, second transmitter (mounted), service, test/certificate/declaration, additional approval, additional option, mounted, calibration thermometer, calibration points $\geq 0^{\circ}\text{C}$, calibration

points $\leq 0^{\circ}\text{C}$, firmware version and marking, not relevant for explosion safety.

*2 only possible when protection type Ex t(**a**=NF) is selected.

TM131-**a b c d e f g h i j k l m n o p q r s t u v w x y z**

a indicates approval code, including

ND(Ex db IIC T6...T1 Ga/Gb, Ex ta IIIC T₂₀₀ 85°C...T₂₀₀ 450°C Da / Ex tb IIIC T85 °C...T450 °C Db),
NF(Ex ta IIIC T₂₀₀ 85°C...T₂₀₀ 450°C Da / Ex tb IIIC T85 °C...T450 °C Db);

b indicates thermowell, including

A=Thermometer to be assembled into existing thermowell,
B=Thermometer with thermowell, continuous, similar to DIN43772 Form 2, 3 G/F,
C=Thermometer with thermowell, hexagonal, similar to DIN43772 Form 5, 8,
D=Thermometer with thermowell, w/o lagging, similar to DIN43772 Form 2, 3;

c indicates thermometer design, including

A=W/o neck, DIN43772 form 2,
B=Lagging, DIN43772 form 2G, 2F, 3G, 3F,
D=Removable neck D11mm acc. to DIN43772,
E=Removable neck D12mm acc. to DIN43772,
F=Removable neck D12mm M20 connection similar to DIN43772,
L=Nipple connection NPT1/2,
M=Nipple-union connection NPT1/2,
N=Nipple-union-nipple connection NPT1/2;

e indicates thermowell diameter/material, including

A1=W/o, insert D3mm, to be assembled into existing thermowell,
A2=W/o, insert D6mm, to be assembled into existing thermowell ,
B1=9x1.25 mm, 316L,
B2=11x2 mm, 316L,
B3=14x2 mm, 316L,
B4=16x3.5 mm, 316L,
C1=9x1.25 mm, 316Ti,
C2=11x2 mm, 316Ti,
C3=14x2 mm, 316Ti,
C4=12x2.5 mm, 316Ti BASF,
D1=9x1.25 mm, AlloyC276,
D2=11x2 mm, AlloyC276,
E1=9x1.25 mm, Alloy600,
E2=11x2 mm, Alloy600,
F1=1/4"sch.80, 316,

F2=1/2"sch.80, 316,

G1=1/2"sch.40, 446,

H1=12x2.5 mm, 321,

I1=11 mm 316Ti + 12mm Tantal,

I2=12x2.5 mm 316Ti + 13mm Tantal,

YY_1=Other diameter (wall thickness ≥ 1 mm) in combination with listed materials above,

YY_2=Diameters as listed above in combination with other materials,

YY_3=Thermowell type TT131 G6D;

 indicates tip shape, including

A=Not needed (without thermowell),

B=Straight (DIN 43772 form 2/2G/2F),

C=Reduced, $L \geq 50$ mm,

D=Reduced, $L \geq 70$ mm,

E=Tapered, $L \geq 90$ mm,

F=Tapered, $L \geq 115$ mm (DIN 43772 Form 3G/3F),

G=Tapered for usage with Tantal-sleeve,

H=Straight, for quick response times,

I=Tapered, for quick response times;

 indicates sensor type/measuring range/material, including

A=1xPt100 TF; -50...+400 °C; 316L,

B=1xPt100 WW; -200...+600 °C; 316L,

C=2xPt100 WW; -200...+600 °C; 316L,

D=1xPt100 TF StrongSens; -50...+500 °C; 316L,

E=1xPt100 TF QuickSens; -50...+200 °C; 316L,

F=1xPt100 TF QuickSens; -50...+400 °C; 316L,

L=1xTC type J; max. 800 °C; 316L,

M=2xTC type J; max. 800 °C; 316L,

N=1xTC type K; max. 1100 °C; Alloy600,

O=2xTC type K; max. 1100 °C; Alloy600,

P=1xTC type N; max. 1100 °C; Alloy600,

Q=2xTC type N; max. 1100 °C; Alloy600,

Y=Other Thermocouples;

 indicates electrical connection, including

0A=Flying leads

1A=Terminal block (only with terminal head A1, D1, H1 H3)

2A=4-20 mA, 1-channel TMT180 PCP0.2K, head transmitter DIN B

2B=4-20 mA, 1-channel TMT180 PCP0.1K, head transmitter DIN B

2C=4-20 mA, 1-channel TMT71, head transmitter DIN B

2D³=4-20 mA HART, TMT162
2E³=4-20mA HART, TMT162 SIL
2F³=4-20mA HART, 2-channel TMT162
2G³=4-20mA HART, 2-channel TMT162 SIL
2H=4-20mA, 1-channel TMT31, PCP0.15K, head transmitter DINB
2I=4-20mA, 1-channel TMT31, PCP0.1 K, head transmitter DINB
3A=HART, 1-channel TMT72, head transmitter DIN B
3C=HART, 2-channel TMT82, head transmitter DIN B
3D=HART, 2-channel TMT82, SIL head transmitter DIN B
3F=4-20mA HART, 2-channel TMT82 SIL2/3 OI ML/MID for gas, temp. range -30...+120oC
3I=4-20mA HART, 2-channel TMT82 SIL2/3 OI ML/MID for liquid, temp. range -200...+200oC
4A=FOUNDATION Fieldbus, 2-channel TMT85, head transmitter DIN B
4B³=FOUNDATION Fieldbus, TMT162
4C³=FOUNDATION Fieldbus, 2-channel TMT162
5A=PROFIBUS PA, 2-channel TMT84, head transmitter DIN B
5B³=PROFIBUS PA, TMT162
5C³=PROFIBUS PA, 2-channel TMT162
6B=PROFINET w. Ethernet-APL/SPE, TMT86, head transmitter DIN B
6C=PROFINET w. Ethernet-APL/SPE, TMT86 SIL, conformity + PROFIsafe, head transmitter DIN B
6U=IO-Link, 1-channel TMT36, head transmitter DIN B
7A⁴=4-20mA HART, 1-channel TMT142B, field transmitter
m indicates terminal head/material/protect. Class, including
A1²=TA30A comfort flip cover; Alu; IP66/68¹⁾,
A2²=TA30A + display, comfort flip cover; Alu;¹⁾,
D1²=TA30D comfort, high flip cover; Alu;¹⁾,
F1³=Dual chamber field housing; Alu,
F2³=Dual chamber field housing; 316L,
F3⁴=Single chamber field housing; Alu,
F4⁴=Single chamber field housing; 316L,display,
F5⁴=Single chamber field housing; Alu; w/o display,
F6⁴=Single chamber field housing; 316L.w/o display,
F7³=Dual chamber field housing; Alu; w/o display,
F8³=Dual chamber field housing; 316L; w/o display,
H1=TA30H Ex d/XP; 316L;
H2=TA30H Ex d/XP + display; 316L;
H3=TA30H Ex d/XP; Alu;
H4=TA30H Ex d/XP + display; Alu;
H5=TA30H field housing, display frontal;Alu,;

H6=TA30H field housing, display frontal 316;

YY=Special varnishing(Non-conductive) in combination with digit A1 to H6

n indicates cable entry, including

A=1x M20x1.5,

B=1x NPT 1/2,

C*=1xG1/2,

D=2x M20x1.5,

E=2x NPT1/2;

*1 Others indicates process connection/material, immersion length "U", removable neck length "E", lagging length "T", sensor standard/classification, device version, second transmitter (mounted), service, test/certificate/declaration, additional approval, additional option, accessory mounted, calibration thermometer, calibration points, 0-, calibration points+0-, firmware version and marking, not relevant for explosion safety

*2 only possible when protection type Ex t (**a** = NF) is selected.

*3 part of field temperature transmitter TMT162

*4 part of field temperature transmitter TMT142

TM151-**a b c d e f g h i j k l m n o p q r s t u v w x y z aa ab ac ad ae af**

a indicates approval code, including

ND(Ex db IIC T6...T1 Ga/Gb, Ex ta IIIC T₂₀₀ 85°C...T₂₀₀ 450°C Da / Ex tb IIIC T85 °C...T450 °C Db),

NF(Ex ta IIIC T₂₀₀ 85°C...T₂₀₀ 450°C Da / Ex tb IIIC T85 °C...T450 °C Db);

b indicates thermowell, including

1=Thermometer to be assembled into existing thermowell,

A=Based on ASME B40.9, flanged,

B=Based on ASME B40.9, threaded,

C=Based on ASME B40.9, weld in,

D=Based on ASME B40.9, socket weld,

E=Based on DIN 43772 Form 4F, flanged,

G=Based on DIN 43772 Form 4, weld in,

M=Based on NAMUR NE170, flanged,

T=iTHERM TwistWell, flanged;

c indicates thermometer design, including

A=W/o neck,

B=Removeable neck D11mm, M14x1.5 acc. to DIN43772,

C=Removeable neck D11mm, M18x1.5 acc. to DIN43772,

D=Removeable neck D11mm, G1/2" acc. to DIN43772,

E=Removeable neck D12mm M20 connection similar to DIN43772,

F=QuickNeck (upper half) to mount in existing thermowell with QuickNeck,

G=QuickNeck,

L=Nipple connection NPT1/2,

M=Nipple-union connection NPT1/2

N=Nipple-union-nipple connection NPT1/2;

d indicates thermometer Material, including

AA=W/o, insert 3mm, to be assembled into existing thermowell,

AB=W/o, insert 6mm, to be assembled into existing thermowell,

AC=316,

AD=316L,

AE=316/316L,

AF=316Ti,

AG=347,

AH=310,

AI=316/316L iTHERM TwistWell,

BA=Alloy600,

BB=AlloyC276,

CA=10CrMo9-10,

CB=13CrMo4-5,

CC=16Mo3,

DA=A105,

DB=C22.8,

DC=P355NH,

EA=Duplex S32205,

YY=Other materials as listed in 10000013457,

g indicates Geometry Wetted Parts, including ,

A0=Not needed (without thermowell),

A1=Straight, (complete length U),

C1=Tapered, (complete length U),

G1=Stepped, Re1=63,5mm (2-1/2"),

T1=Tapered, C1=65mm,

T2=Tapered, C1=73mm,

T3=Tapered, C1=125mm,

T4=Tapered, C1=133mm,

T5=Tapered, C1=275mm,

X1=..... mm, tapered,

X2=..... mm, stepped,

X3=..... mm, unstreamed length/nozzle length (nozzle length $UL < U - 10\text{mm}$),

YY_1=Other diameter (wall thickness $\geq 1,35$ mm) in combination with listed materials above,

YY_2=Diameters as listed above in combination with other materials;

 indicates Removable Neck length E, including

A=0mm, w/o neck,

B=Predefined by design,

G=155 mm,

H=165 mm,

I²=35mm nipple,

J²=93mm nipple-union,

K²= 142mm nipple-union-nipple

L=47mm lamination nipple,

M=105mm lamination nipple-union,

N=154mm lamination nipple-union-nipple,

X=..... mm (>500 mm),

8=..... mm (≤ 500 mm);

 indicates Sensor Type Measuring Range; Material, including

A=1xPt100 TF; -50...+400 °C; 316L,

B=1xPt100 WW; -200...+600 °C; 316L,

C=2xPt100 WW; -200...+600 °C; 316L,

D=1xPt100 TF StrongSens; -50...+500 °C; 316L,

E=1xPt100 TF QuickSens; -50...+200 °C; 316L,

F=1xPt100 TF QuickSens; -50...+400 °C; 316L,

L=1xTC type J; max. 800 °C; 316L,

M=2xTC type J; max. 800 °C; 316L,

N=1xTC type K; max. 1100 °C; Alloy600,

O=2xTC type K; max. 1100 °C; Alloy600,

P=1xTC type N; max. 1100 °C; Alloy600,

Q=2xTC type N; max. 1100 °C; Alloy600,

Y=Other Thermocouples;

 indicates Electrical Connection, including

0A=Flying leads,

1A=Terminal block (only with terminal head A1, D1, H1 H3),

2C=4-20 mA, 1-channel TMT71, head transmitter DIN B,

2D³=4-20 mA HART, TMT162,

2E³=4-20mA HART, TMT162 SIL,

2F³=4-20 mA HART, 2-channel TMT162,

2G³=4-20mA HART, 2-channel TMT162 SIL,

2H=4-20mA, 1-channel TMT31, PCP0.15K,head transmitter DIN B,

2I=4-20mA, 1-channel TMT31, PCP0.1K, head transmitter DIN B,
3A=HART, 1-channel TMT72, head transmitter DIN B,
3C=HART, 2-channel TMT82, head transmitter DIN B,
3D=HART, 2-channel TMT82, SIL head transmitter DIN B,
3F=4-20mA HART, 2-channel TMT82 SIL2/3 OIML/MID for gas, temp. range -30...+120oC,
3I=4-20mA HART, 2-channel TMT82 SIL2/3 OIML/MID for liquid, temp. range -200...+200oC,
4A=FOUNDATION Fieldbus, 2-channel TMT85, head transmitter DIN B,
4B*3=FOUNDATION Fieldbus, TMT162,
4C*3=FOUNDATION Fieldbus, 2-channel TMT162,
5A=PROFIBUS PA, 2-channel TMT84, head transmitter DIN B,
5B*3=PROFIBUS PA, TMT162
5C*3=PROFIBUS PA, 2-channel TMT162,
6B=PROFINET w. Ethernet-APL/SPE, TMT86, head transmitter DIN B,
6C=PROFINET w. Ethernet-APL/SPE, TMT86 SIL, conformity + PROFIsafe, head transmitter DIN B,
6U=IO-Link, 1-channel TMT36, head transmitter DIN B,
7A*4=4-20mA HART, 1-channel TMT142B, field transmitter
m indicates Terminal Head;Material;Protect. Class, including
A1*2= TA30A comfort flip cover; Alu; IP66/68,
A2*2= TA30A + display, comfort flip cover; Alu; IP66/68,
D1*2= TA30D comfort, high flip cover; Alu; IP66/68,
F1*3= Dual chamber field housing; Alu; IP67 NEMA 4X, backlit display,
F2 *3= Dual chamber field housing; 316L; IP67 NEMA 4X, backlit display,
F3*4= Single chamber field housing; Alu; IP67 NEMA 4X, backlit display,
F4*4= Single chamber field housing; 316L; IP67 NEMA 4X, backlit display,
F5*4= Single chamber field housing; Alu; IP67 NEMA 4X, w/o display,
F6*4= Single chamber field housing; 316L; IP67 NEMA 4X, w/o display,
F7*3= Dual chamber field housing; Alu; IP67 NEMA 4X, w/o display,
F8*3= Dual chamber field housing; 316L; IP67 NEMA 4X, w/o display,
H1=TA30H Ex d/XP; 316L; IP66/68,
H2=TA30H Ex d/XP + display; 316L; IP66/68,
H3= TA30H Ex d/XP + display; 316L; IP66/68,
H4= TA30H Ex d/XP + display; Alu; IP66/68,
H5= TA30H field housing, display frontal; Alu; IP66/68,
H6=TA30H field housing, display frontal; 316; IP66/68,
YY= Special varnishing (Non-conductive) in combination with digit A1 to H6;
n indicates Cable entry Terminal head, including
A=1x thread M20x1.5,
B=1x thread NPT1/2,

C²=1x thread G1/2,

D=2x thread M20x1.5,

E=2x thread NPT1/2;

p indicates Additional Design Options :^{*5}, including

AA=Flange full penetration, thickn. 20-30mm,

AB= Flange full penetration, thickn. 31-40mm,

AC=Flange full penetration, thickn. 41-50mm,

AD=Flange full penetration, thickn. 51-60mm,

AE=Forged thermowell,

AF=Hexagonal Lagging,

AG=Flange face B1, EN1092-1,

AH=Flange face B2, EN1092-1,

AI=Flange face C, EN1092-1,

AJ=Flange face E, EN1092-1,

AK=Flange face FF, ANSI B16.5,

AL=Flange face RF, ANSI B16.5,

AM=Flange face RTJ, ANSI B16.5,

AN=Flange face LM, ANSI B16.5,

AO=Flange face LG, ANSI B16.5,

AQ=QuickSleeve for 6.5mm bore,

AR=QuickSleeve for 7mm bore;

q indicates Special Root Diameter D1 :^{*5}, including

CA=12.7mm,

CB=16mm,

CC=17mm,

CD=18mm,

CE=19mm,

CF=22.2mm (7/8"),

CG=24mm,

CH=25mm,

CI=25.4mm (1"),

CJ=26mm,

CK=27mm (1-1/16"),

CL=30mm,

CM=20mm,

CN=22mm,

CX=.....mm;

r indicates Special Tip Diameter D2 :^{*5}, including

DA=9mm,
DB=12.5mm,
DC=12.7mm (1/2"),
DD=14mm,
DE=15.9mm (5/8"),
DF=17mm,
DG=18mm,
DH=19mm (3/4"),
DI=22mm,
DJ=22.2mm,
DK=15mm,
DX=.....mm;

s indicates Special Bore Diameter Di : *⁵, including

EA=3.5mm,
EB=6.5mm,
EC=7mm,
ED=Stepped 6.5>3.5mm (length 35mm),
EE=Stepped 7>6.1mm (length 50mm),
EX=.....mm;

t indicates Special Tip Thickness B : *⁵, including

EQ=4mm,
ER=6.35mm (1/4"),
ES=6mm, rounded (r=1/2 of D2),
ET=6mm, flat (standard),
E8=.....mm;

u indicates Thermometer Connection Ge1 : *⁵, including

FA=M14x1.5 female thread,
FB=M18x1.5 female thread,
FC=M20x1.5 female thread,
FD=NPT1/2 female thread,
FE=G1/2 female thread
F9=Special version, TSP-no. to be spec.;

*¹ Others indicate Process Connection; Material , Immersion Length U, Lagging Length T, Sensor Standard; Classification, Device Version, Service, Test, Certificate, Declaration , Additional Approval, Additional Option , Accessory Mounted, Calibration Thermometer, Calibration Points $\geq 0\text{ }^{\circ}\text{C}$, Calibration-Points $\leq 0\text{ }^{\circ}\text{C}$, Firmware Version , Marking not relevant for explosion safety.

*² only possible when suffix code a = NF

^{*3} part of field temperature transmitter TM162

^{*4} part of field temperature transmitter TMT142

^{*5} optional feature

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 For information on the dimensions of the flameproof joints contact the manufacturer.

2.2 TM111 temperature sensors with a diameter smaller than 3mm shall be protected by a thermowell.

2.3 TM111 temperature sensors with suffix code **b** = Y shall be protected by a thermowell.

2.4 TM131/TM151 temperature sensors shall always be protected by a thermowell.

3. Conditions for Safe Use

3.1 The external earth connection facility should be connected reliably.

3.2 Thermal data:

Temperature assemblies with RTD temperature sensors

Type	Electrical connection (TM111 code h TM131 code l TM151 code l)	T class/ Max. surface temperature	Ambient temperature range	Process temperature range	
				Insert diameter	
				3mm, 6mm dual	6mm
TM111	Terminal block ^{*1} (1A)	T6/T85℃	-50℃ ~ +70℃	-50℃ ~ +55℃	-50℃ ~ +68℃
		T5/T100℃	-50℃ ~ +80℃	-50℃ ~ +70℃	-50℃ ~ +83℃
		T4/T135℃	-50℃ ~ +120℃	-50℃ ~ +105℃	-50℃ ~ +118℃
		T3/T200℃	-50℃ ~ +120℃	-50℃ ~ +170℃	-50℃ ~ +183℃
		T2/T300℃	-50℃ ~ +120℃	-50℃ ~ +265℃	-50℃ ~ +278℃
		T1/T450℃	-50℃ ~ +120℃	-50℃ ~ +415℃	-50℃ ~ +428℃
TM111 TM131 TM151	Flying leads (0A) or Transmitter TMT31 (2H,2I) TMT36 (6U) TMT71 (2C) TMT72 (3A) TMT82 (3C, 3D,3F,3I) TMT84 (5A) TMT85 (4A) TMT86 (6B,6C) TMT180 (2A, 2B)	T6/T85℃	-40℃ ~ +65℃	-50℃ ~ +55℃	-50℃ ~ +68℃
		T5/T100℃	-40℃ ~ +80℃	-50℃ ~ +70℃	-50℃ ~ +83℃
		T4/T135℃	-40℃ ~ +85℃	-50℃ ~ +105℃	-50℃ ~ +118℃
		T3/T200℃	-40℃ ~ +85℃	-50℃ ~ +170℃	-50℃ ~ +183℃
		T2/T300℃	-40℃ ~ +85℃	-50℃ ~ +265℃	-50℃ ~ +278℃
		T1/T450℃	-40℃ ~ +85℃	-50℃ ~ +415℃	-50℃ ~ +428℃
TM131 TM151	Terminal block ^{*1} :1A	T6/T85℃	-50℃ ~ +70℃	-50℃ ~ +55℃	-50℃ ~ +68℃
		T5/T100℃	-50℃ ~ +80℃	-50℃ ~ +70℃	-50℃ ~ +83℃
		T4/T135℃	-50℃ ~ +90℃	-50℃ ~ +105℃	-50℃ ~ +118℃
		T3/T200℃	-50℃ ~ +90℃	-50℃ ~ +170℃	-50℃ ~ +183℃

	Transmitter TMT142B (7A) TMT162 (2D, 2E, 2F, 2G, 4B, 4C, 5B, 5C)	T2/T300℃	-50℃ ~ +90℃	-50℃ ~ +265℃	-50℃ ~ +278℃
		T1/T450℃	-50℃ ~ +90℃	-50℃ ~ +415℃	-50℃ ~ +428℃
		T6/T85℃	-40℃ ~ +55℃	-50℃ ~ +55℃	-50℃ ~ +68℃
		T5/T100℃	-40℃ ~ +70℃	-50℃ ~ +70℃	-50℃ ~ +83℃
		T4/T135℃	-40℃ ~ +80℃	-50℃ ~ +105℃	-50℃ ~ +118℃
		T3/T200℃	-40℃ ~ +80℃	-50℃ ~ +170℃	-50℃ ~ +183℃
		T2/T300℃	-40℃ ~ +80℃	-50℃ ~ +265℃	-50℃ ~ +278℃
		T1/T450℃	-40℃ ~ +80℃	-50℃ ~ +415℃	-50℃ ~ +428℃

*1: In an enclosure with a blind cover: TM111 suffix code **h** / TM131 and TMT151 suffix code **m** = A1, D1, H1 or H3.

Temperature assemblies with thermocouple temperature sensors

Type	Electrical connection (TM111 code h TM131 code l TM151 code l)	T class/ Max. surface temperature	Ambient temperature range	Process temperature range
TM111	Terminal block*1 (1A)	T6/T85℃	-50℃ ~ +70℃	-50℃ ~ +55℃
		T5/T100℃	-50℃ ~ +80℃	-50℃ ~ +70℃
		T4/T135℃	-50℃ ~ +120℃	-50℃ ~ +105℃
		T3/T200℃	-50℃ ~ +120℃	-50℃ ~ +170℃
		T2/T300℃	-50℃ ~ +120℃	-50℃ ~ +265℃
		T1/T450℃	-50℃ ~ +120℃	-50℃ ~ +415℃
TM111 TM131 TM151	Flying leads (0A) or Transmitter TMT71 (2C) TMT72 (3A) TMT82 (3C, 3D, 3F, 3I) TMT84 (5A) TMT85 (4A) TMT86 (6B, 6C)	T6/T85℃	-40℃ ~ +65℃	-50℃ ~ +85℃
		T5/T100℃	-40℃ ~ +80℃	-50℃ ~ +100℃
		T4/T135℃	-40℃ ~ +85℃	-50℃ ~ +135℃
		T3/T200℃	-40℃ ~ +85℃	-50℃ ~ +200℃
		T2/T300℃	-40℃ ~ +85℃	-50℃ ~ +300℃
		T1/T450℃	-40℃ ~ +85℃	-50℃ ~ +450℃
TM131 TM151	Terminal block*1: 1A	T6/T85℃	-50℃ ~ +70℃	-50℃ ~ +85℃
		T5/T100℃	-50℃ ~ +80℃	-50℃ ~ +100℃
		T4/T135℃	-50℃ ~ +90℃	-50℃ ~ +135℃
		T3/T200℃	-50℃ ~ +90℃	-50℃ ~ +200℃
		T2/T300℃	-50℃ ~ +90℃	-50℃ ~ +300℃
		T1/T450℃	-50℃ ~ +90℃	-50℃ ~ +450℃
	Transmitter TMT142B (7A) TMT162 (2D, 2E, 2F, 2G, 4B, 4C, 5B, 5C)	T6/T85℃	-40℃ ~ +55℃	-50℃ ~ +85℃
		T5/T100℃	-40℃ ~ +70℃	-50℃ ~ +100℃
		T4/T135℃	-40℃ ~ +80℃	-50℃ ~ +135℃
		T3/T200℃	-40℃ ~ +80℃	-50℃ ~ +200℃
		T2/T300℃	-40℃ ~ +80℃	-50℃ ~ +300℃
		T1/T450℃	-40℃ ~ +80℃	-50℃ ~ +450℃

*1: In an enclosure with a blind cover: TM111 suffix code **I** /TM131and TMT151 suffix code **m** = A1, D1, H1 or H3.

Cortem RB**1NS union(Union XP):

material	service temperature range
Stainless steel	-50℃ ~ +150℃

TS21x with QuickNeck construction

material	service temperature range
Stainless steel with EPDM gaskets	-50℃ ~ +120℃

Seals at connection points

Type	Service temperature range
Loctite 270	-50℃ ~ +130 ℃
PTFE Tape	

Thermowell for type TM151 :

Material	Service Temperature range (℃)
10CrMo9-10	-20℃ ~ +625℃
13CrMo4-5	-30℃ ~ +555℃
16Mo3	-10℃ ~ +530℃
A105	-10℃ ~ +480℃
P355NH	-20℃ ~ + 500℃
Duplex S32205	-46℃ ~ +316℃

3.3 Electrical data:

Power supply transmitter TMT162: max. 40 Vdc, 3W

transmitter TMT142B: max.36Vdc, 1W

other transmitter: max.42Vdc,23mA

Sensor: max. 10 Vdc, 1 mA

3.4 As the flameproof product, suitable certified cable glands or blanking plugs for unused holes approved by ExTL according to GB/T 3836.1-2021 and GB/T 3836.2-2021 with Ex marking “Ex db II C Gb” shall be used and correctly installed; as the dust product, suitable certified cable glands or blanking plugs for unused holes approved by ExTL according to GB/T 3836.31--2021 with Ex marking “Ex tb IIIC Db” shall be used and correctly installed, after installation, degree of protection of enclosure is at least IP66/IP68 according to GB/T 4208-2017. The cable glands and blanking plugs to be used be suitable for the product working conditions.

- 3.5 Any maintenance shall be performed only when the warning of “Do not open when energized” is observed.
- 3.6 Clean the surface of this product termly when using in combustibile dust atmosphere.
- 3.7 The user shall not change the configuration in order to maintain/ensure the explosion protection performance of this product. Any change may impair safety.
- 3.8 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”.
- GB50257-2014 “Code for construction and acceptance of electric equipment on fire and device for explosion hazard electrical installation engineering”.
- GB15577-2018 “Safety regulations for dust explosion prevention and protection”

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.

Shanghai Inspection and Testing
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National Supervision and Inspection Center
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