天康集团

2024年版

温度传感器选型样本

Temperature Sensor Catalogue

安徽天康(集团)股份有限公司

ANHUI TIANKANG (GROUP) SHARES CO.,LTD.

INNOVATION MAKES EXCELLENT

有 | 跨 | 越 | 才 | 有 | 卓 | 越

安徽天康(集团)股份有限公司
ANHUI TIANKANG (GROUP) SHARES CO.,LTD

关于天康

- 长江宛如一条巨龙奔腾不息，在长江之滨的天长市有这样一颗璀璨的明珠——安徽天康（集团）股份有限公司，在经历了岁月的历练与洗礼后愈发闪耀夺目。

安徽天康（集团）股份有限公司创建于1974年，总部位于“长三角”经济圈核心区域—天长市，是中国民营企业制造业500强企业、中国电子信息百强企业、国家级守合同重信用企业、国家高新技术企业、安徽省依法纳税先进企业、银行资信AAA级企业、中国仪表行业十强企业、中国电线电缆十强企业、安徽省重点骨干企业、“全国五一劳动奖状”获得者等荣誉。

天康集团历经四十年的蓬勃发展，已形成集仪器仪表、光电缆、医疗卫生、锂电池等跨行业、多元化的集团公司，下属子公司达二十余家。旗下产品凭借良好的质量与服务，被广泛应用于石油、电力、化工、通讯、卫生、新能源汽车及储能等行业和领域。

作为皖东经济最具活力与贡献的骨干企业之一，天康集团以“追求卓越，缔造满意”为目标，依托一流的产品、一流的管理、一流的服务，不仅在国内市场中赢得了广泛赞誉；在国际市场中，天康产品远销欧洲、非洲、亚洲等46个国家和地区。

天康集团在发展中逐步形成了独特的品牌文化及着眼全球的经营部局，全力塑造“高科技、高品质、国际化”的品牌形象。始终秉承“有跨越才有卓越”的天康精神，在创建和谐企业的基础上，引进国际先进的构架与模式，组织企业的生产经营管理体系。在积极参与国际化竞争的基础上，不断把握市场发展脉搏，寻求经济战略联盟，与全球伙伴共同发展与进步。如今天康人将全新的投入化为无私的奉献，与世界共同发展，与人类一起进步。

打造百年天康 拉动千亿产业

引领中国民族工业发展，成为技术领先与产品领先型企业，
备受瞩目的国际化经营公司。

目 录

Contents

天康集团

铠装热电偶

Armored Thermocouple

产品应用

Product Application

通常和显示仪表、记录仪表、电子计算机等配套使用。直接测量各种生产过程中的（0~1300）℃范围内液体、蒸汽和气体介质以及固体表面温度。

Usually used in conjunction with display instruments, recording instruments, electronic computers and so on. Direct measurement of various production processes (0~1300)℃ range of liquid, steam and gas media and solid surface temperature.

产品原理

Product Principle

铠装热电偶的电极由两根不同导体材质组成。当测量端与参比端存在温差时，就会产生热电势，工作仪表便显示出热电势所对应的温度值。

The electrodes of the Armored Thermocouple consist of two different conductor materials. When there is a temperature difference between the measuring end and the reference end, a thermoelectric potential is generated and the working instrument displays the temperature value corresponding to the thermoelectric potential.

产品特点

Product Features

- 热响应时间少，减少动态误差；
- 可弯曲安装使用；
- 测量范围大；
- 机械强度高，耐压性能好；
- 接线盒防护等级IP65，IP66。

- Less thermal response time, reducing dynamic errors.
- Bendable mounting for use.
- Large measuring range.
- High mechanical strength, good pressure resistance.
- Junction box protection level IP65, Ip66.

技术参数
Technical Parameters

1、产品执行标准
国际标准IEC60584;
国家标准GB/T18404 、GB/T30429。

1.Executive Standard of the Product
International standard IEC60584.
National standard GB/T18404, GB/T304292.

2、测温范围及允差

2.Temperature measurement range and tolerance

型号 Model	分度号 Graduation	允差等级 Tolerance level			
		I		II	
		允差值 Tolerance value	测温范围（℃） Temperature measurement range	允差值 Tolerance value	测温范围（℃） Temperature measurement range
WRNK	K	-40~+375	±1.5℃	-40~+333	±2.5℃
		375~1000	±0.004ltl	333~1200	±0.0075ltl
WRMK	N	-40~+375	±1.5℃	-40~+333	±2.5℃
		375~1000	±0.004ltl	333~1200	±0.0075ltl
WREK	E	-40~+375	±1.5℃	-40~+333	±2.5℃
		375~800	±0.004ltl	333~900	±0.0075ltl
WRFK	J	-40~+375	±1.5℃	-40~+333	±2.5℃
		375~750	±0.004ltl	333~750	±0.0075ltl
WRCK	T	-40~+125	±0.5℃	-40~+133	±1.0℃
		125~350	±0.004ltl	133~350	±0.0075ltl
WRPK	S	0~+1100	±1.0℃	0~600	±1.5℃
		1100~1600	±[1+0.003(t-1100)]	600~1600	±0.0025ltl
WRQK	R	0~+1100	±1.0℃	0~600	±1.5℃
		1100~1600	±[1+0.003(t-1100)]	600~1600	±0.0025ltl
WRRK	B	/	/	600~1700	±0.0025ltl

3、常温绝缘电阻

铠装热电偶在环境温度为（20±15）℃，相对湿度不大于80%，试验电压为（500±50）V（直流）电极与外套管之间的绝缘电阻≥1000MΩ。即1m长的试样的绝缘电阻为1000MΩ；10m长的试样的绝缘电阻为100MΩ。

3. Room temperature insulation resistance
The insulation resistance of Armored Thermocouple is ≥1000MΩ between the electrode and the outer casing at an ambient temperature of (20±15)°C, a relative humidity of not more than 80%, and a test voltage of (500±50)V (DC). That is, the insulation resistance of a 1m-long specimen is 1000MΩ; and the insulation potential of a 10m-long specimen is 100MΩ.

4、套管材料、外径和最高使用温度

4. Sleeve material, outer diameter and maximum service temperature

分度号 Graduation	套管材料 Sleeve Material	直径（mm） Diameter	推荐最高使用温度（℃） Recommended maximum service temperature
K	0Cr18Ni9Ti	0.25	250
		0.5、1.0	400
		1.5、2.0	600
		3.0、4.0、4.5、5.0、6.0、8.0	800
	GH3030 或 Inconel600	0.25	300
		0.5、1.0	500
		1.5、2.0、3.0	800
		4.0、4.5、5.0	900

K	GH3030 或Inconel600	6.0、8.0	1000
N	0Cr18Ni9Ti	0.25	250
		0.5、1.0	400
		1.5、2.0	600
		3.0、4.0、4.5、5.0、6.0、8.0	800
N	GH3030 或Inconel600	0.25	300
		0.5、1.0	500
		1.5、2.0、3.0	800
		4.0、4.5、5.0	900
		6.0、8.0	1000
E	0Cr18Ni9Ti	0.5、1.0	400
		1.5、2.0	500
		3.0、4.0、4.5	600
		5.0、6.0、8.0	700
J	0Cr18Ni9Ti	0.5、1.0	300
		1.5、2.0	400
		3.0、4.0、4.5	500
		5.0、6.0、8.0	600
T	0Cr18Ni9Ti	0.5、1.0	200
		1.5、2.0、3.0、4.0、4.5	250
		5.0、6.0、8.0	300
S	GH3039	2.0、3.0、4.0、4.5	1000
		5.0、6.0、8.0	1100
R	GH3039	2.0、3.0、4.0、4.5	1000
		5.0、6.0、8.0	1100
B	GH3039	2.0、3.0、4.0、4.5、5.0、6.0、8.0	1200

套管材质可根据客户要求特殊定制

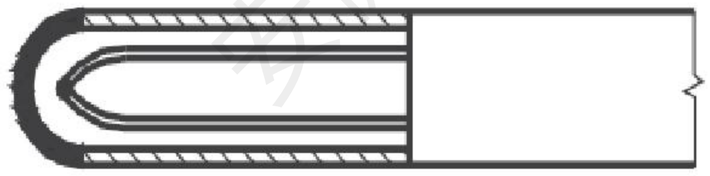
The sleeve material can be specially customized according to customers' requirements.

5、热响应时间

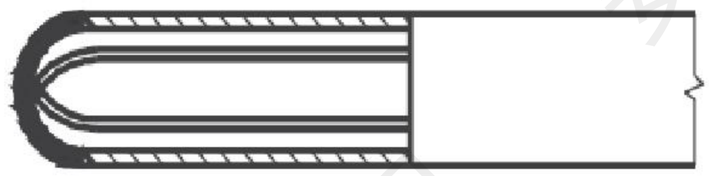
5.Thermal Response Time

热响应时间 t0.5 Thermal Response Time 测量端形式 Measurement end form	铠装热电偶直径 mm Armored thermocouple diameter									
	0.5	1.0	1.5	2.0	3.0	4.0	4.5	5.0	6.0	8.0
露端型 Exposed end type	-	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	1.0
接壳型 Shell type	0.2	0.2	0.3	0.4	0.6	0.8	1.0	1.2	2.0	4.0
绝缘型 Insulation type	0.4	0.6	0.8	1.0	2.0	2.5	3.0	4.0	6.0	8.0

测量端形式 Measurement end form

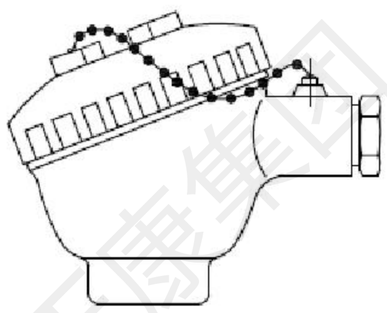


接壳型
Shell type

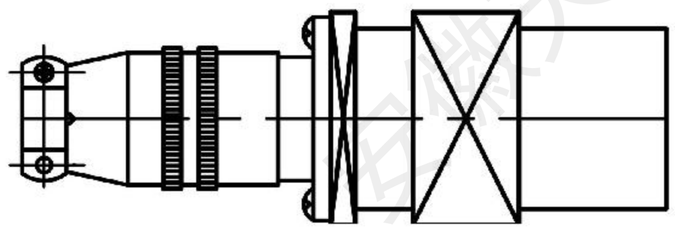


绝缘型
Insulation type

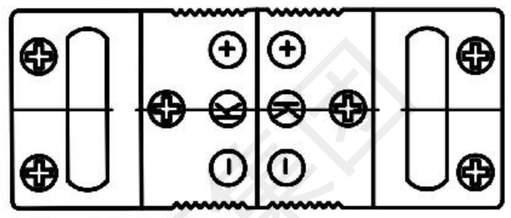
接线盒形式 Terminal box form



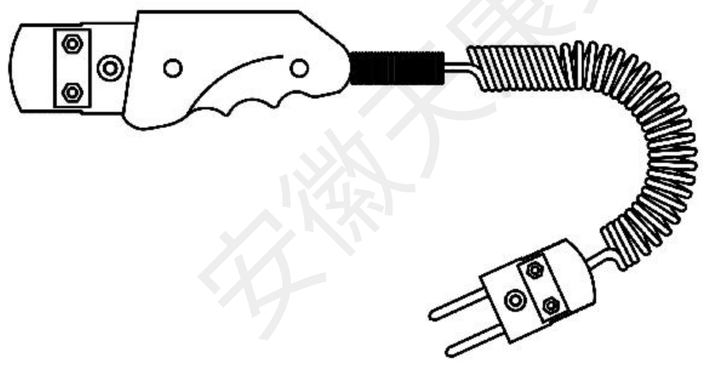
防水式
Waterproof



圆接插式
Round plug-in type



接插式
Plug-in type

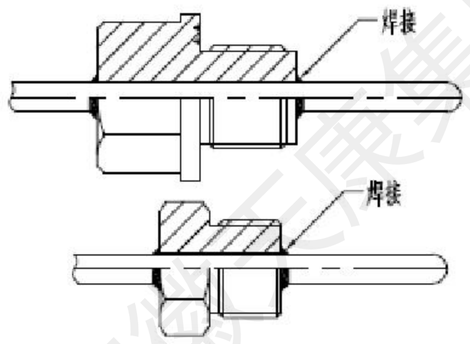
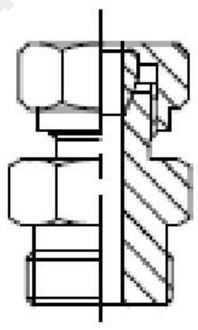
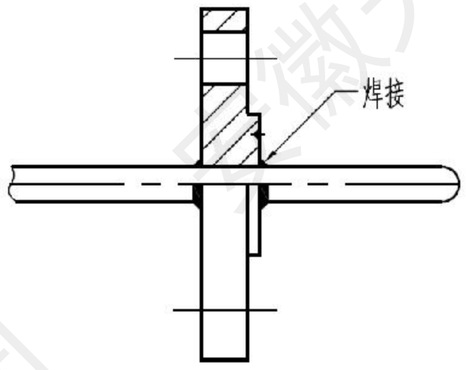
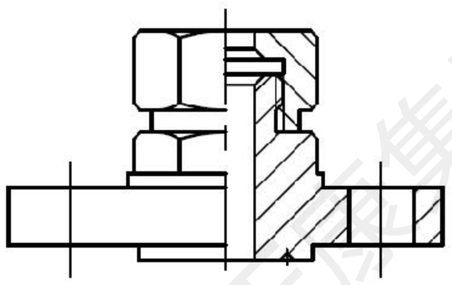


手柄式
Handle type

带补偿导线式
Compensating conductor type

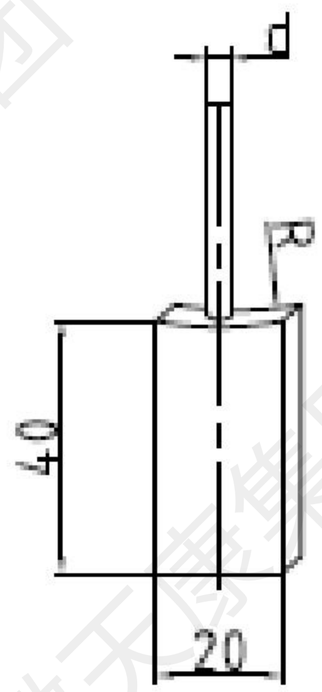
6、安装固定装置

6. Installation of fixed devices

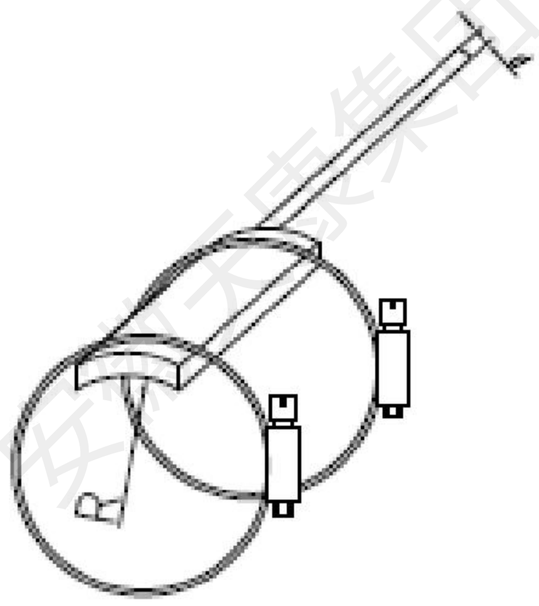
名称 Name	2：固定螺纹 Fixed thread	3：活动卡套螺纹 Adjustable ferrule thread	4：固定法兰 Fixed flange	5：活动卡套法兰 Adjustable ferrule flange
外形 Shape				

7、附加安装形式

7. Additional installation form



注：选型时应注明弧度R值（即管壁或炉壁直径），接触块式（代号M）。
NOTE: Specify radian R-value (i.e., pipe wall or furnace opening diameter) and contact block type (code M) when selecting a model.



抱箍式（代号G）
Hoop type (code G)

型号命名方法
Model Naming Method

W	温度仪表 Temperature Instruments
R	热电偶 Thermocouples

感温元件材料 Temperature sensing element material	
N	K 镍铬-镍硅 Nickel-chromium-nickel-silicon
E	E 镍铬-铜铬 Nickel-chromium-copper-chromium
M	N 镍铬硅-镍硅 Nickel-chromium-silicon-nickel-silicon
F	J 铁-铜镍 Iron-copper-nickel
C	T 铜-铜镍 Copper-copper-nickel
P	S 铂铑10-铂 Platinum-rhodium 10-platinum
Q	R 铂铑13-铂 Platinum-rhodium 13-platinum
R	B 铂铑30-铂铑6 Platinum-rhodium 30-platinum-rhodium 6

K	铠装 Armored

偶丝对数 Coupling wire pairs	
无 None	单支 Single branch
2	双支 Double branch

安装固定形式 Fixed installation	
1	无固定装置 No fixed installation
2	固定螺纹 Fixed thread
3	活动卡套螺纹 Adjustable ferrule thread
4	固定法兰 Fixed flange
5	活动卡套法兰 Adjustable ferrule flange

接线盒形式 Terminal box type	
3	防水式 Waterproof
6	圆接插式 Round plug-in type
7	扁接插式 Flat plug-in type
8	手柄式 Handle type
9	补偿导线式 Compensating conductor type
0	感温元件 Sensing element

保护管直径 Protective tube diameter
2:Φ2，3:Φ3，4:Φ4，5:Φ5，6:Φ6，8:Φ8

附加装置形式 Additional device form	
M	接触块式 Contact block type
G	抱箍式 Hoop Type

W	R	N	K	2	-	2	3	6	M	典型型号示例 Typical Model Example

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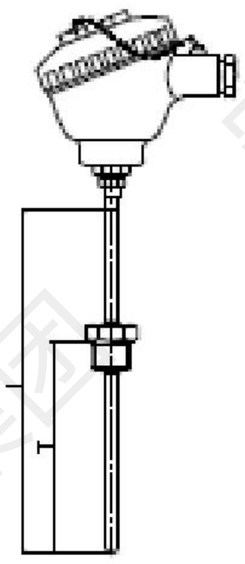
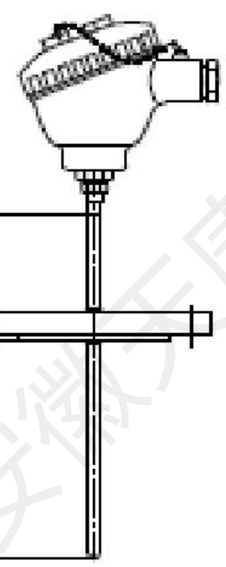
结构示意图

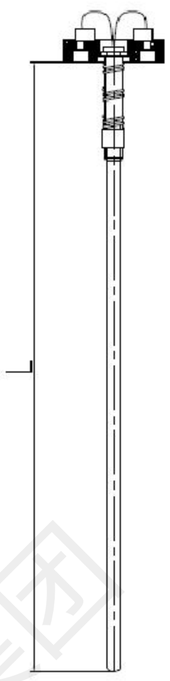
Structure diagram



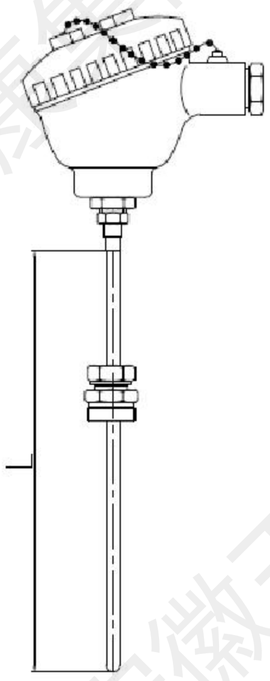
WRNK-235（固定螺纹 Fixed thread）



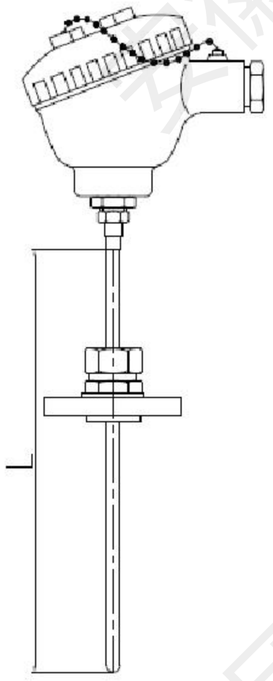
WRNK-435（固定法兰 Fixed flange）



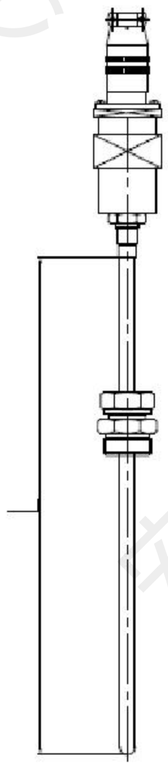
WRNK-010



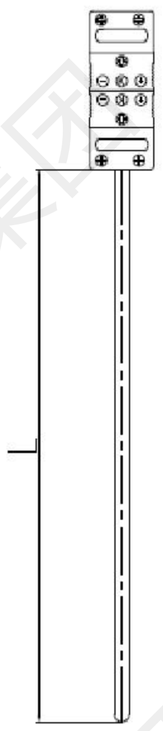
WRNK-335（活动卡套螺纹）
Adjustable ferrule thread



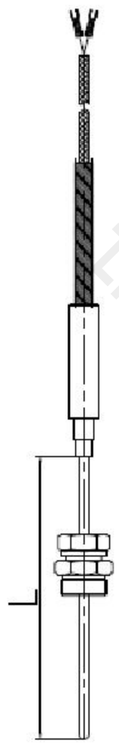
WRNK-535（活动卡套法兰）
Adjustable ferrule flange



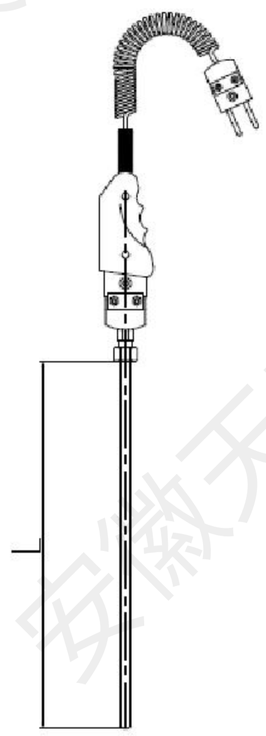
WRNK-365



WRNK-275

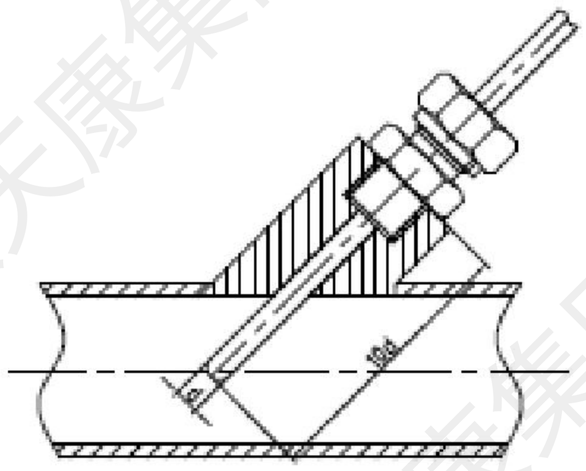


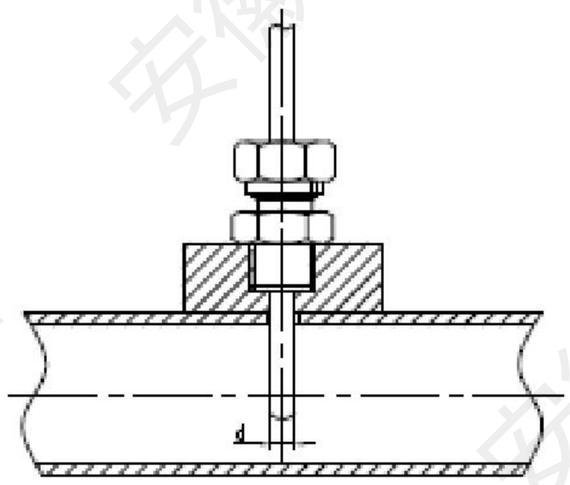
WRNK-295

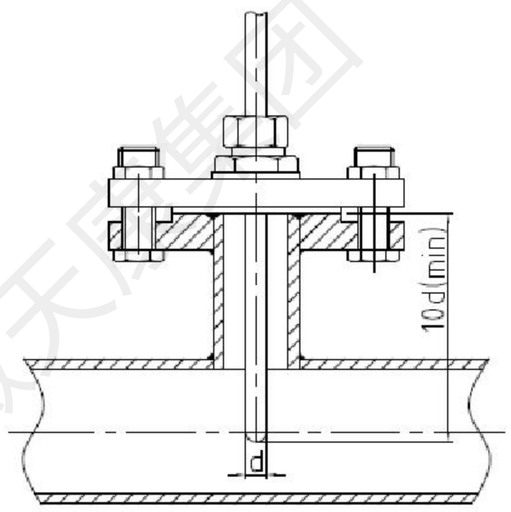


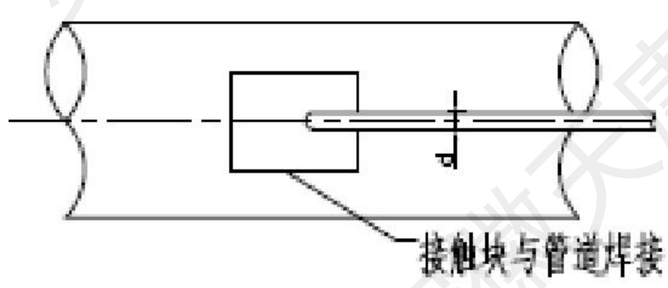
WRNK-185

安装形式
Installation form

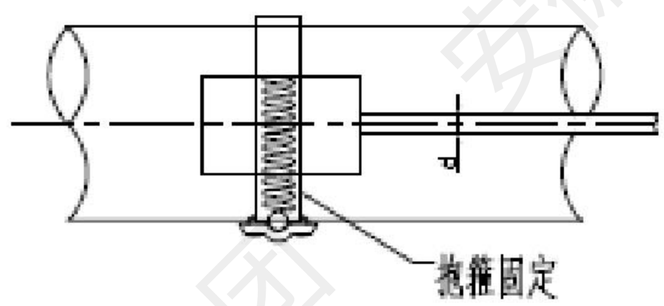








Welding of contact block to pipe



Hoop fixing

选型须知
Selection Instructions

型号；
分度号；
精度等级；
安装固定形式；
保护管材质；
长度或插入深度。

例：铠装热电偶，K型，I级，固定卡套螺纹，保护管GH3030，长度450mm，插入深度300mm，WRNK-236，L*I=450*300，I级，保护管GH3030。

Model.
Graduation number.
Accuracy level.
Installation and fixation form.
Protective tube material.
Length or insertion depth.
Example: Armored thermocouple, K-type, Class I, fixed ferrule thread, protective tube GH3030, length 450mm, insertion depth300mm, WRNK-236, L*|=450*300, Class I, protective tube GH3030.

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装配热电偶

Assembly Thermocouple

产品应用
Product Application

通常和显示仪表、记录仪表、电子计算机等配套使用。直接测量各种生产过程中的（0～1300）℃范围内液体、蒸汽和气体介质以及固体表面温度。

Usually used in conjunction with display instruments, recording instruments, electronic computers and so on. Direct measurement of various production processes (0~1300)℃ range of liquid, steam and gas media and solid surface temperature.

产品原理
Product Principle

热电偶的电极由两根不同导体材质组成。当测量端与参比端存在温差时，就会产生热电势，工作仪表便显示出热电势所对应的温度值。

The electrodes of the Armored Thermocouple consist of two different conductor materials. When there is a temperature difference between the measuring end and the reference end, a thermoelectric potential is generated and the working instrument displays the temperature value corresponding to the thermoelectric potential.

产品特点
Product Features

- 装配简单，更换方便；
- 弹簧压紧式感温元件，抗振性能好；
- 测量范围大；
- 机械强度高，耐压性能好；
- 接线盒防护等级IP65，IP66。
- Less thermal response time, reducing dynamic errors.
- Bendable mounting for use.
- Large measuring range.
- High mechanical strength, good pressure resistance.
- Junction box protection level IP65, IP66.

技术参数
Technical Parameter

1、产品执行标准

国际标准IEC60584；

国家标准GB/T18404、GB/T30429。

2、常温绝缘电阻

热电偶在环境温度为20±15℃，相对湿度不大于80%，试验电压为500±50V（直流）电极与外套管之间的绝缘电阻≥1000MΩ.m即1m长的试样的绝缘电阻为1000MΩ；10m长的试样的绝缘电阻为100MΩ。

1. Executive Standard of the Product
International standard IEC60584; National standard GB/T18404, GB/T304292.
2. Room temperature insulation resistance
The insulation resistance of Thermocouple is ≥1000MΩ between the electrode and the outer casing at an ambient temperature of (20±15)°C, a relative humidity of not more than 80%, and a test voltage of (500±50)V (DC). That is, the insulation resistance of a 1m-long specimen is 1000MΩ; and the insulation potential of a 10m-long specimen is 100MΩ.

3、测温范围及允差

3. Temperature measurement range and tolerance

型号 Model	分度号 Graduation	允差等级 Tolerance level			
		I		II	
		允差值 Tolerance value	测温范围（℃） Temperature measurement range	允差值 Tolerance value	测温范围（℃） Temperature measurement range
WRNK	K	-40~+375	±1.5℃	-40~+333	±2.5℃
		375~1000	±0.004ltl	333~1200	±0.0075ltl

WRMK	N	-40~+375	±1.5℃	-40~+333	±2.5℃
		375~1000	±0.004ltl	333~1200	±0.0075ltl
WREK	E	-40~+375	±1.5℃	-40~+333	±2.5℃
		375~800	±0.004ltl	333~900	±0.0075ltl
WRFK	J	-40~+375	±1.5℃	-40~+333	±2.5℃
		375~750	±0.004ltl	333~750	±0.0075ltl
WRCK	T	-40~+125	±0.5℃	-40~+133	±1.0℃
		125~350	±0.004ltl	133~350	±0.0075ltl
WRPK	S	0~+1100	±1.0℃	0~600	±1.5℃
		1100~1600	±[1+0.003(t-1100)]	600~1600	±0.0025ltl
WRQK	R	0~+1100	±1.0℃	0~600	±1.5℃
		1100~1600	±[1+0.003(t-1100)]	600~1600	±0.0025ltl
WRRK	B	/	/	600~1700	±0.0025ltl

4、热响应时间　　4.Thermal Response Time

保护管直径（mm） Protection tube diameter	保护管材质 Protective tube material	热响应时间t0.5（S） Thermal response time
Φ16	非金属 Non-metallic	≤240
	金属 Metallic	≤180
Φ20	金属 Metallic	≤240
Φ25	非金属 Non-metallic	≤300
锥形保护管 Conical protective tube	金属 Metallic	

型号命名方法
Model Naming Method

W	温度仪表 Temperature Instruments

R	热电偶 Thermocouples

感温元件材料 Temperature sensing element material	
N	K 镍铬-镍硅 Nickel-chromium-nickel-silicon
E	E 镍铬-铜铬 Nickel-chromium-copper-chromium
M	N 镍铬硅-镍硅 Nickel-chromium-silicon-nickel-silicon
F	J 铁-铜镍 Iron-copper-nickel
C	T 铜-铜镍 Copper-copper-nickel
P	S 铂铑10-铂 Platinum-rhodium 10-platinum
Q	R 铂铑13-铂 Platinum-rhodium 13-platinum
R	B 铂铑30-铂铑6 Platinum-rhodium 30-platinum-rhodium 6

偶丝对数 Coupling wire pairs	
无 None	单支 Single branch
2	双支 Double branch

安装固定形式 Fixed installation	
1	无固定装置 No fixed installation
2	固定螺纹 Fixed thread
3	活动法兰 Adjustable flange
4	固定法兰 Fixed flange
5	活络管接头式 Flexible tube joint type
6	固定螺纹锥形式 Fixed thread cone type
7	直行管接头式 Straight tube fitting type
8	固定螺纹管接头式 Fixed thread tube fitting type
9	活动螺纹管接头式 Adjustable thread tube fitting type

接线盒形式 Terminal box type	
3	防水式 Waterproof

保护管直径 Protective tube diameter	
0	Φ16
1	Φ20
2	Φ16高铝质管 High Aluminum Tube
3	Φ20高铝质管 High Aluminum Tube

附加装置形式 Additional device form	
G	变截面 Variable cross-section

W	R	N	2	-	2	3	0	G	典型型号示例 Typical Model Example

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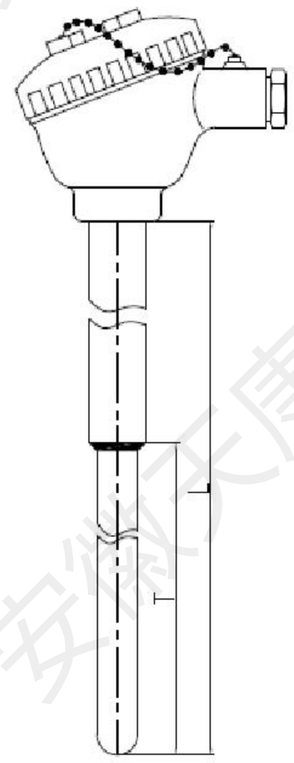
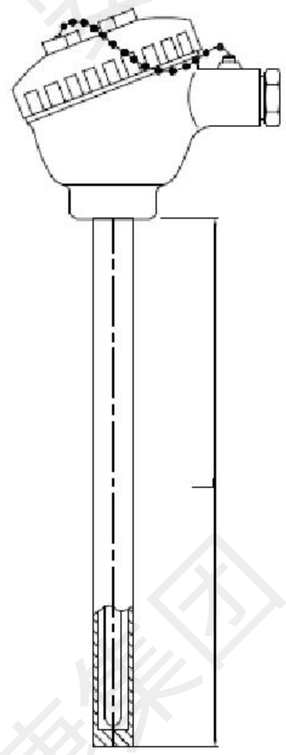
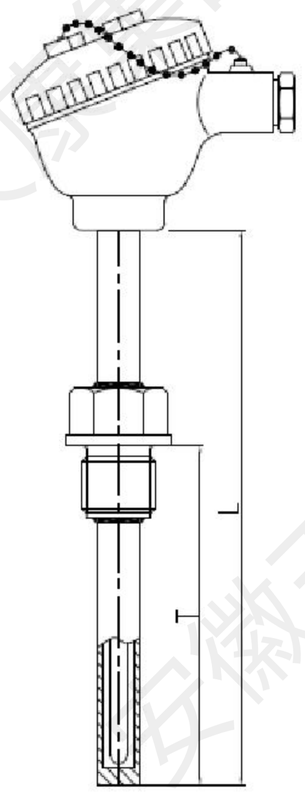
结构示意图
Structure diagram



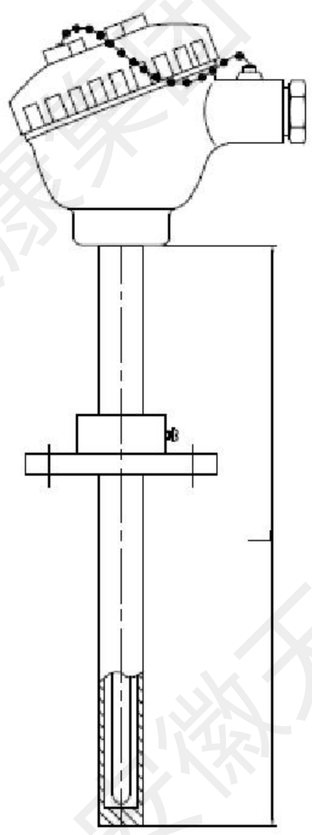
WRN-130（非金属保护管）
Non-metallic protective tube



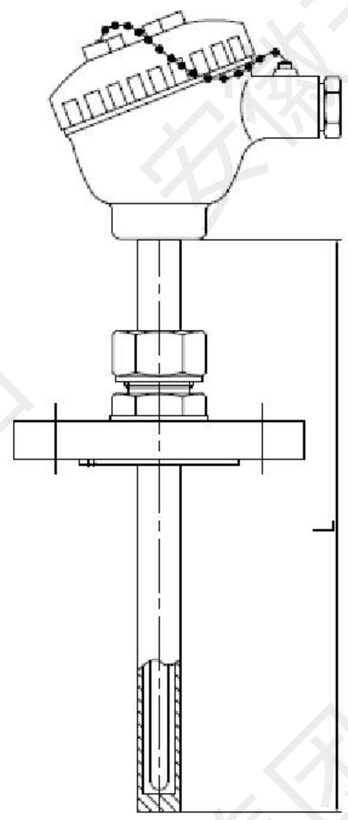
WRN-130



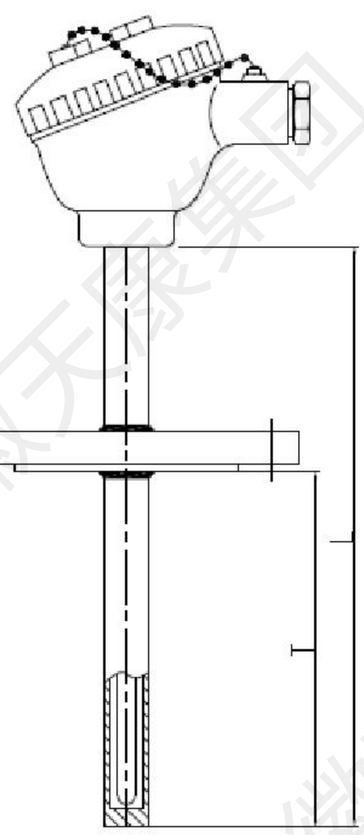
WRN-230



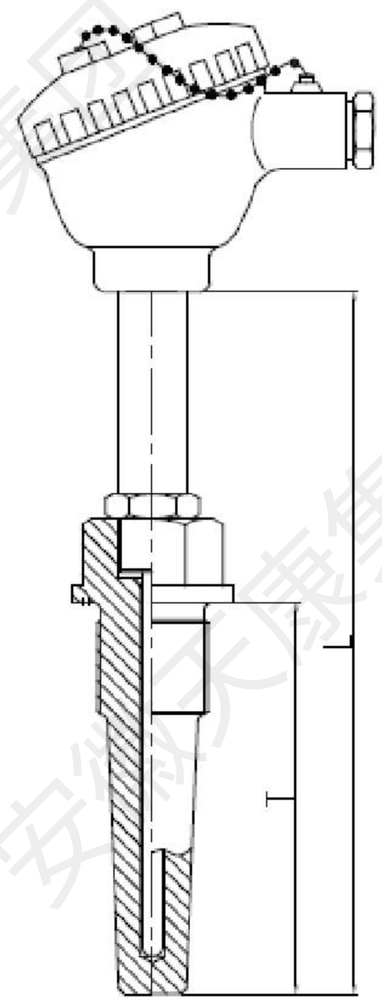
WRN-330



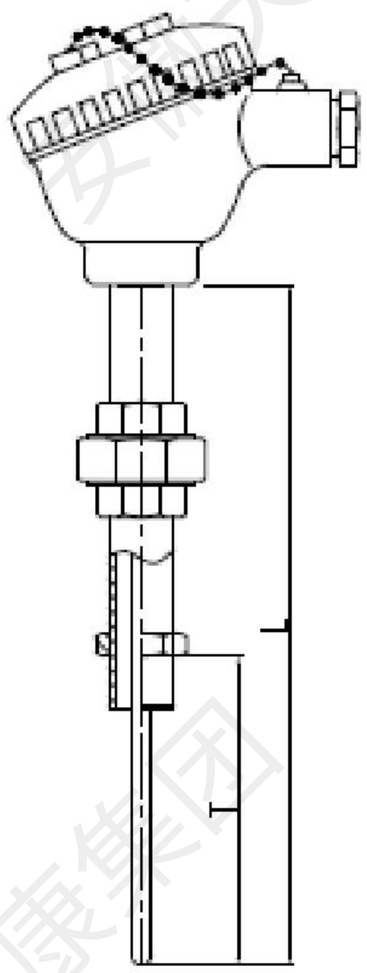
WRN-330（活动卡套法兰）
Adjustable ferrule flange



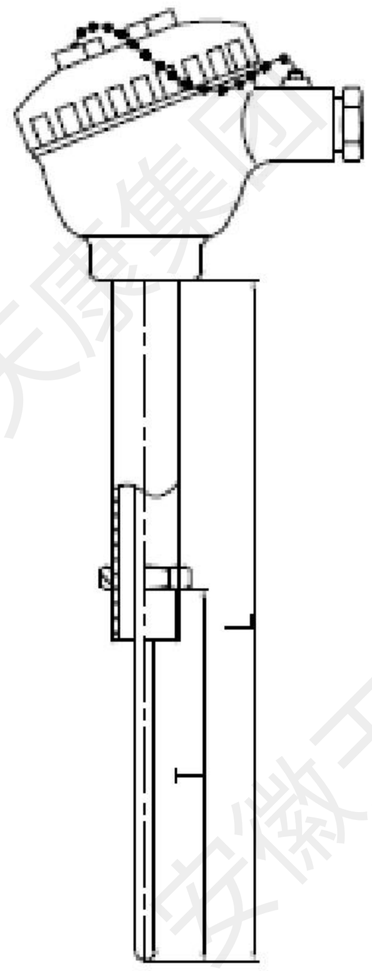
WRN-430



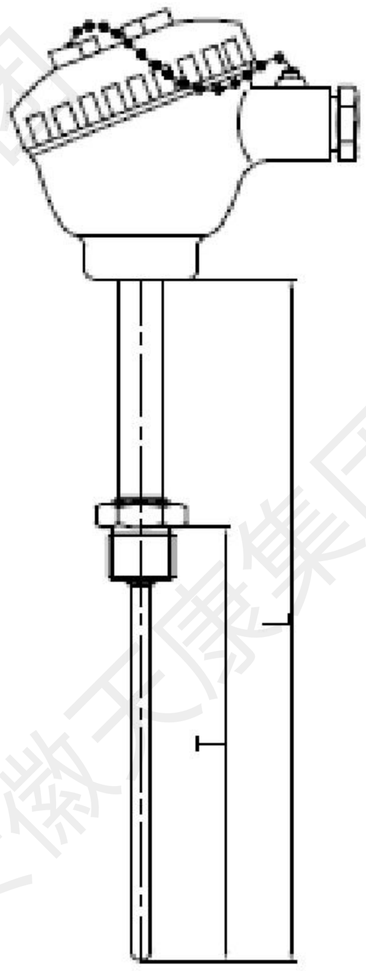
WRN-630



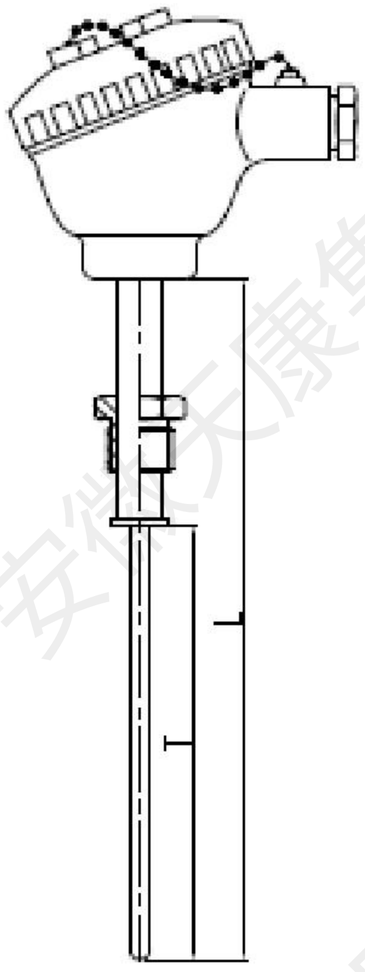
WRN-53



WRN-73



WRN-83



WRN-93（活动螺纹）
Adjustable thread

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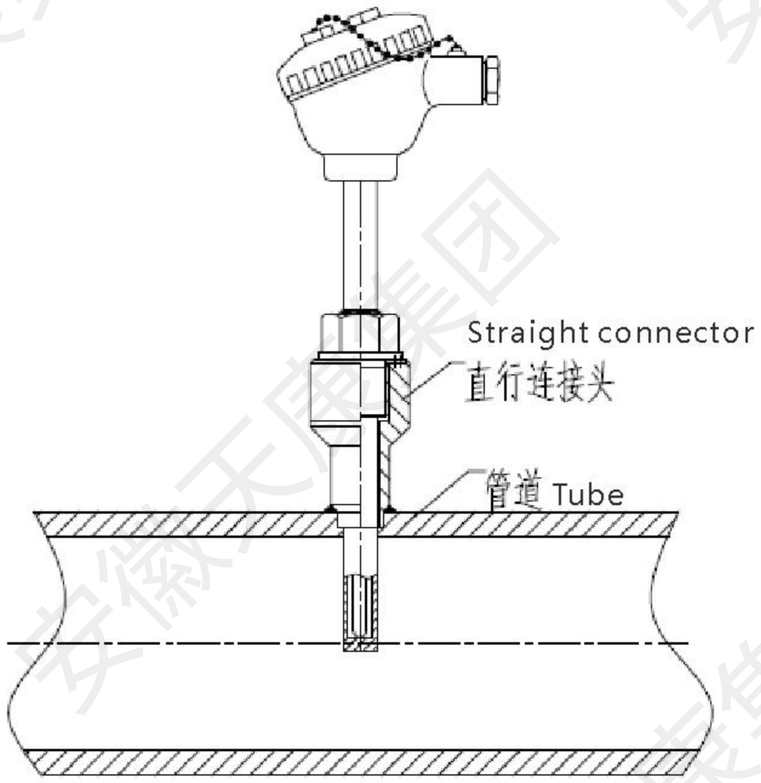
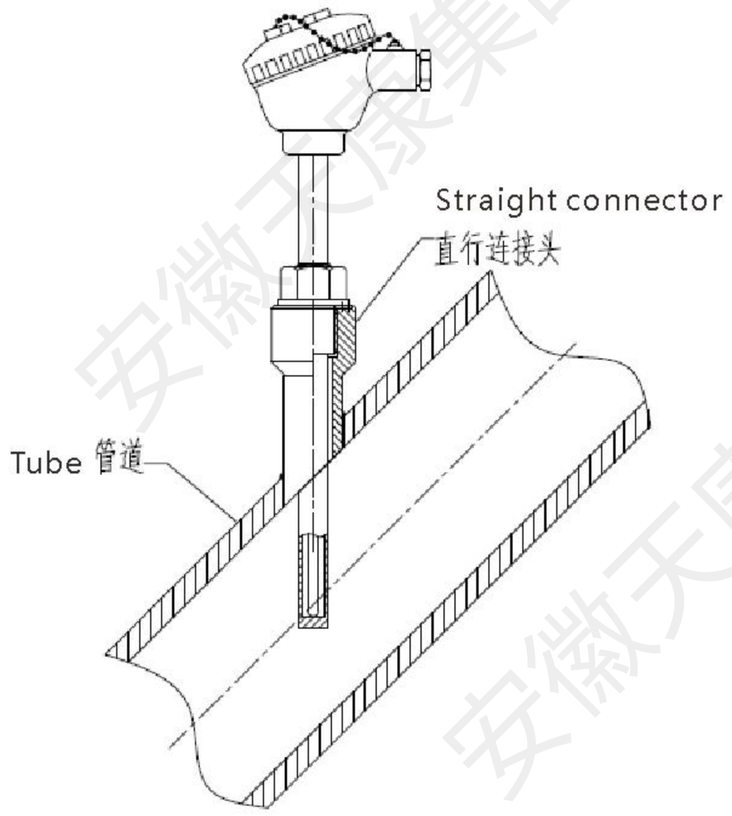
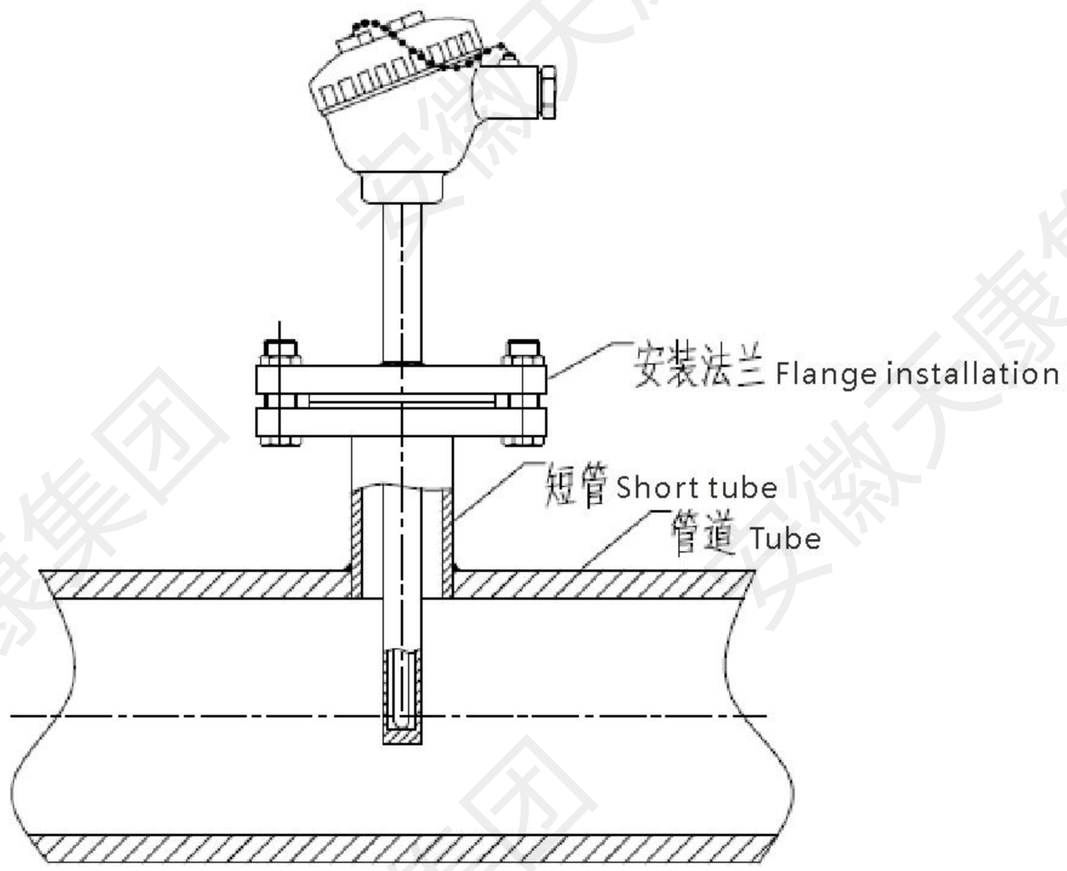
安装形式
Installation form



垂直管道安装
Vertical pipeline installation

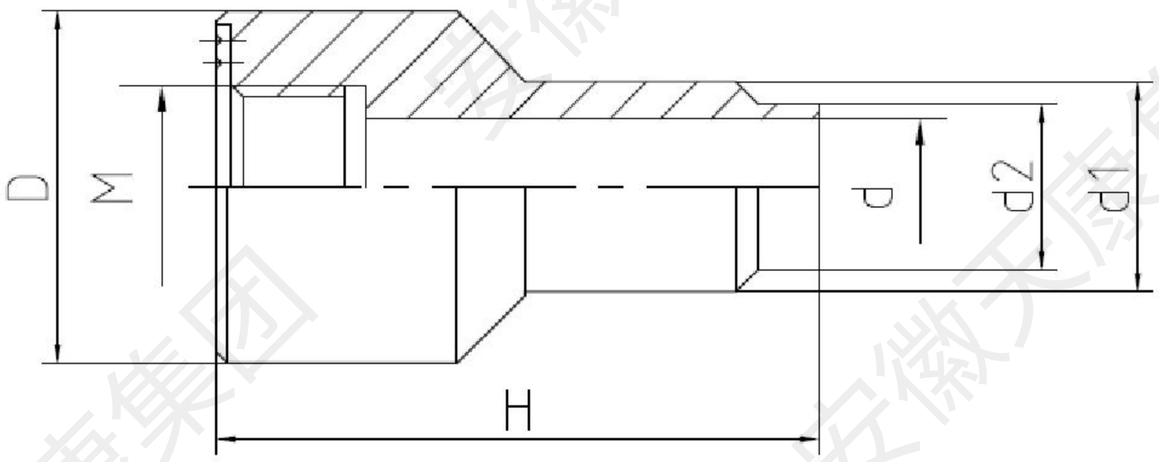


倾斜管道安装
Inclined pipeline installation



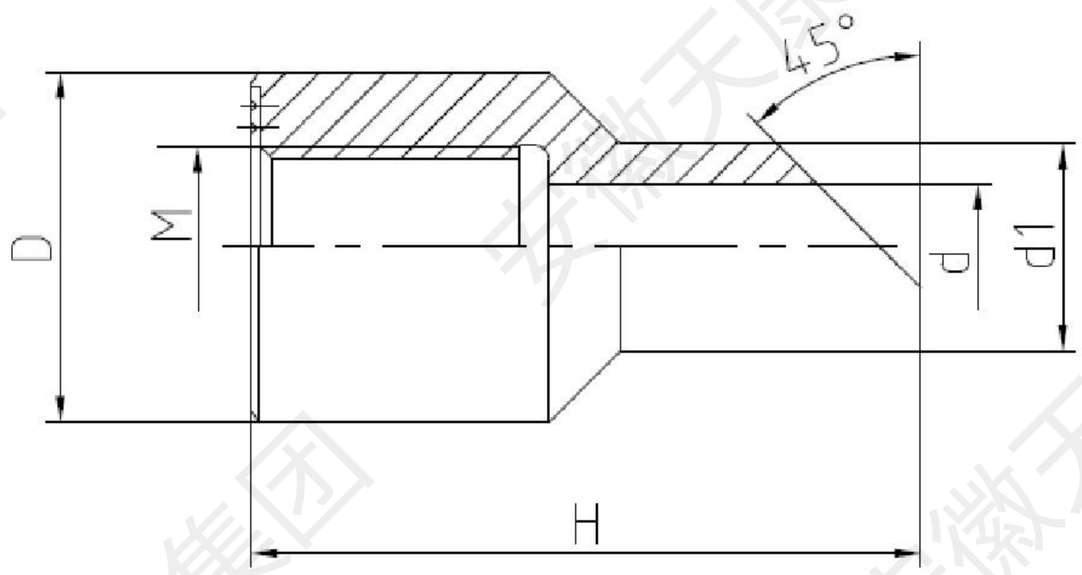
法兰安装
Flange installation

直行连接头
Straight connector



TH48□

代号 Code	M	D	d	d1	d2	H
TH48A	M12x1.5	Φ32	Φ7	Φ18	Φ12	60，120
TH48B	M16x1.5	Φ34	Φ10	Φ24	Φ14	80
TH48C	M20x1.5	Φ39	Φ10	Φ26	Φ14	60
TH48D	M27x2	Φ47	Φ22	Φ32	Φ26	60
TH48E	M33x2	Φ55	Φ22	Φ36	Φ26	120
TH48F	NPT1/2	Φ39	Φ16	Φ27	Φ21	60，120
TH48G	NPT3/4	Φ47	Φ20	Φ31	Φ25	
TH48H	NPT1	Φ47	Φ30	Φ41	Φ35	



TH49□

代号 Code	M	D	d	d1	H
TH49A	M27x2	Φ47	Φ18	Φ28	90
TH49B	M33x2	Φ55	Φ24	Φ36	150
TH49C	NPT1/2	Φ39	Φ16	Φ27	90
TH49D	NPT3/4	Φ47	Φ20	Φ31	90
TH49E	NPT1	Φ47	Φ30	Φ41	150

天康集团

防爆热电偶

Explosion-proof Thermocouple

产品应用

Product Application

通常和显示仪表、记录仪表、电子计算机等配套使用。直接测量生产现场存在爆炸性混合物的（0～1300）℃范围内液体、蒸汽和气体介质以及固体表面温度。

Usually used in conjunction with display instruments, recording instruments, electronic computers and so on. Direct measurement of various production processes (0～1300)℃ range of liquid, steam and gas media and solid surface temperature.

产品原理

Product Principle

防爆热电偶是利用间隙隔爆原理，设计具有足够强度的接线盒等部件，将所有会产生火花、电弧和危险温度的零部件都密封在接线盒腔内，当腔内发生爆炸时，能通过接合面间隙熄火和冷却，使爆炸后的火焰和温度传不到腔外，从而进行隔爆。

According to the gap explosion-proof principle, explosion-proof thermocouples are designed with sufficient strength of the junction box and other components, all the parts that will produce sparks, arcs and dangerous temperatures are sealed in the junction box cavity. When an explosion occurs in the cavity, it can be quenched and cooled through the gap between the joint surfaces, so that the flame and temperature after the explosion can not be transmitted outside the cavity, thus providing explosion-proof.

产品特点

Product Features

- 适用于多种防爆环境；
- 弹簧压紧式感温元件，抗振性能好；
- 测量范围大；
- 机械强度高，耐压性能好。

- Suitable for a wide range of explosion-proof environments.
- Spring compression type temperature sensing element, good vibration resistance.
- Large measuring range.
- High mechanical strength, good pressure resistance.

技术参数
Technical Parameter

1、产品执行标准

GB/T30429、GB/T3836系列标准。

2、常温绝缘电阻

热电偶在环境温度为20±15℃，相对湿度不大于80%，试验电压为500±50V（直流）电极与外套管之间的绝缘电阻≥1000MΩ·m。

1. Executive Standard of the Product

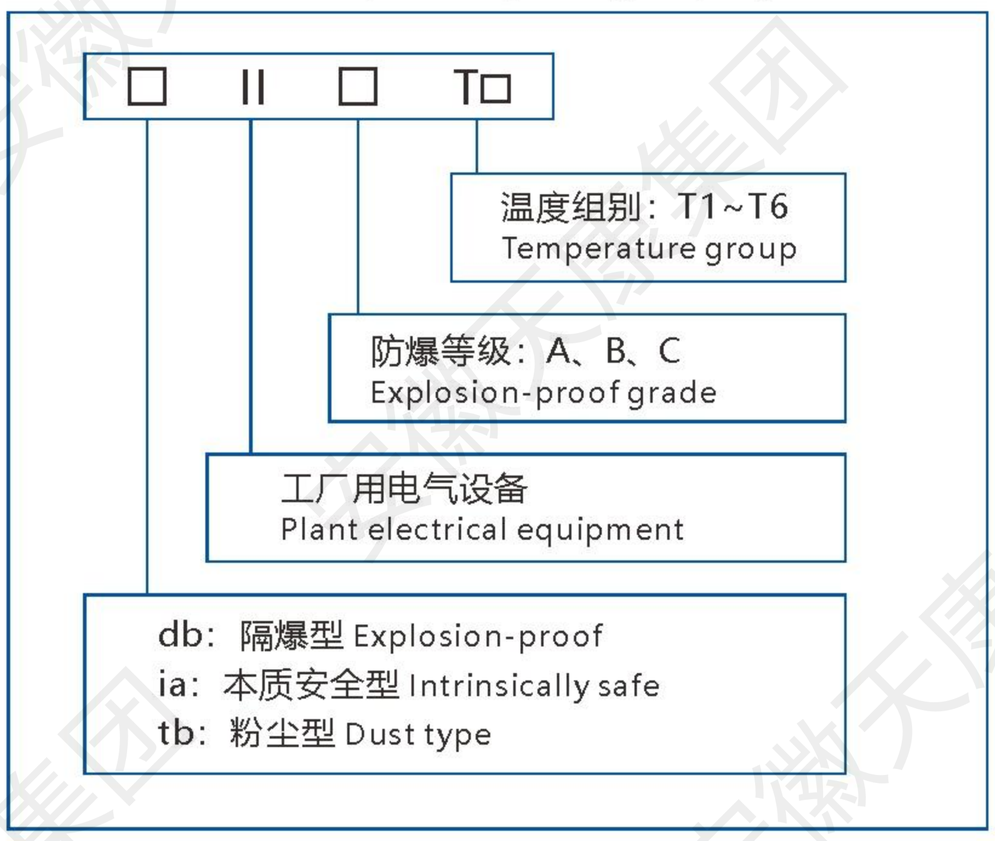
International standard IEC60584; National standard GB/T18404, GB/T304292.

2. Room temperature insulation resistance

The insulation resistance of Thermocouple is ≥1000MΩ between the electrode and the outer casing at an ambient temperature of (20±15)°C, a relative humidity of not more than 80%, and a test voltage of (500±50)V (DC).

型号 Model	分度号 Graduation	允差等级 Tolerance level			
		I		II	
		测温范围 ℃ Temperature measurement range	允差值 Tolerance value	测温范围 ℃ Temperature measurement range	允差值 Tolerance value
WRNK	K	-40~+375	±1.5℃	-40~+333	±2.5℃
		375~1000	±0.004ltl	333~1200	±0.0075ltl
WRMK	N	-40~+375	±1.5℃	-40~+333	±2.5℃
		375~1000	±0.004ltl	333~1200	±0.0075ltl
WREK	E	-40~+375	±1.5℃	-40~+333	±2.5℃
		375~800	±0.004ltl	333~900	±0.0075ltl
WRFK	J	-40~+375	±1.5℃	-40~+333	±2.5℃
		375~750	±0.004ltl	333~750	±0.0075ltl
WRCK	T	-40~+125	±0.5℃	-40~+133	±1.0℃
		125~350	±0.004ltl	133~350	±0.0075ltl
WRPK	S	0~+1100	±1.0℃	0~600	±1.5℃
		1100~1600	±[1+0.003(t-1100)]	600~1600	±0.0025ltl
WRQK	R	0~+1100	±1.0℃	0~600	±1.5℃
		1100~1600	±[1+0.003(t-1100)]	600~1600	±0.0025ltl
WRRK	B	/	/	600~1700	±0.0025ltl

3、防爆分组形式 Explosion proof grouping form



4、防爆级别 Explosion proof level

Exdb II □ T□
EXia II □ T□
EXtb III □ T□

5、Ⅱ类电气设备的最高表面温度分组
Maximum surface temperature grouping of Class II electrical equipment

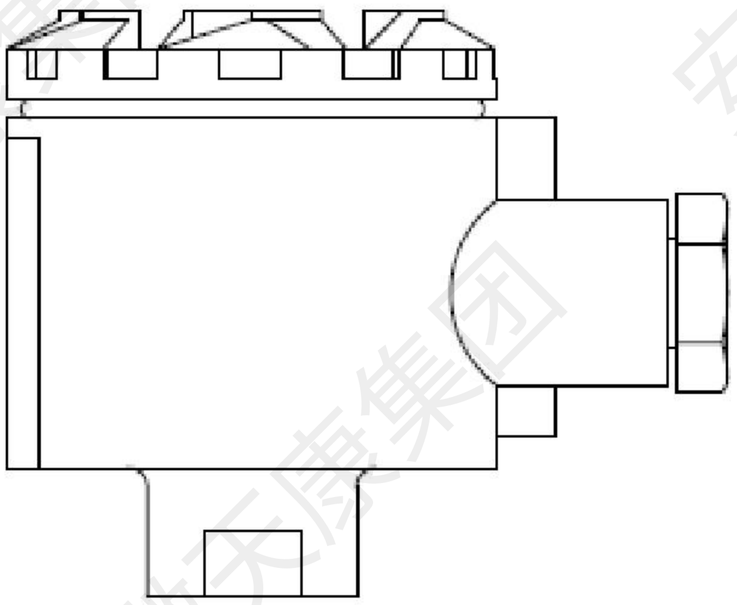
温度组别 Temperature grouping	最高表面温度 ℃ Maximum surface temperature
T1	≤450
T2	≤300
T3	≤200
T4	≤135
T5	≤100
T6	≤85

6、接线盒形式

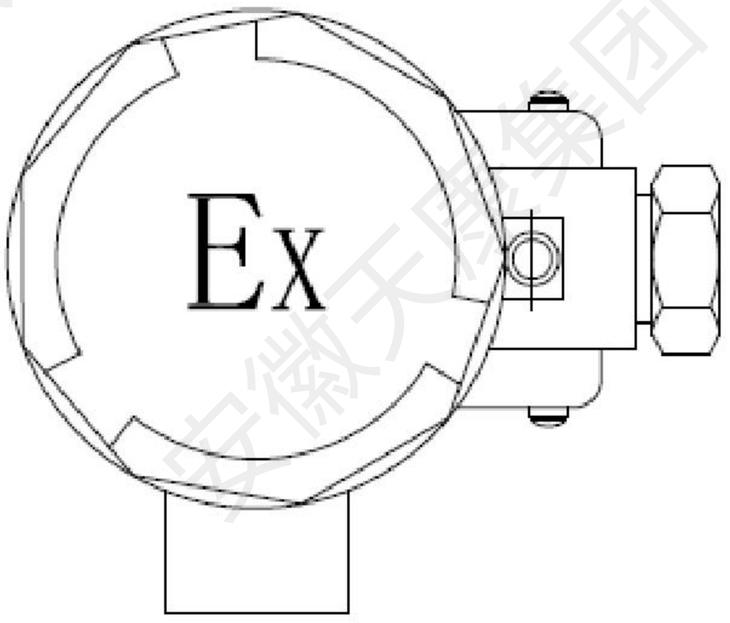
6.Terminal box form

防护等级：IP65、IP66、IP68

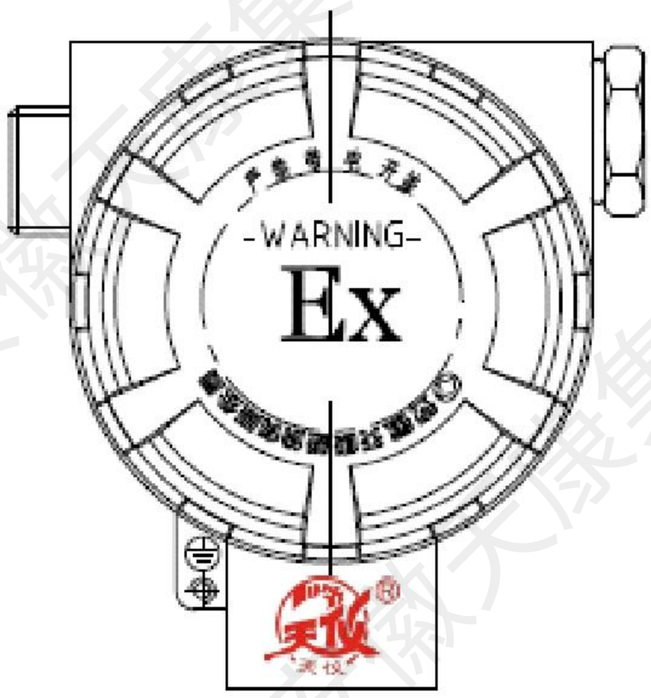
Protection level



A型



B型



C型

7、取证一览表

7. List of certification information

名称 Name	最高表面温度 ℃ Maximum surface temperature	认证机构 Certificate authority
防爆热电偶 Explosion proof thermocouple	Ex db ⅡC T4…T6 Gb / Ex tb ⅢC T80℃…T130℃ Db	NEPSI
	Ex db ⅡB T4…T6 Gb, Ex tb ⅢB T80℃…T130℃ Db	NEPSI
本安热电偶 Intrinsic safety thermocouple	Ex ia ⅡC T4…T6 Ga, Ex ia ⅢC T200135℃ Da	NEPSI

注：NEPSI防爆认证系国家级仪器仪表。

Note: NEPSI Explosion-proof certification is a national instrumentation.

型号命名方法
Model Naming Method

W	温度仪表 Temperature Instruments
R	热电偶 Thermocouples

感温元件材料 Temperature sensing element material	
N	K 镍铬-镍硅 Nickel-chromium-nickel-silicon
E	E 镍铬-铜铬 Nickel-chromium-copper-chromium
M	N 镍铬硅-镍硅 Nickel-chromium-silicon-nickel-silicon
F	J 铁-铜镍 Iron-copper-nickel
C	T 铜-铜镍 Copper-copper-nickel
P	S 铂铑10-铂 Platinum-rhodium 10-platinum
Q	R 铂铑13-铂 Platinum-rhodium 13-platinum
R	B 铂铑30-铂铑6 Platinum-rhodium 30-platinum-rhodium 6

K	铠装式 Armored
空白 None	装配式 Assembly

偶丝对数 Coupling wire pairs	
无 None	单支 Single branch
2	双支 Double branch

安装固定形式 Fixed installation	
1	无固定装置 No fixed installation
2	固定螺纹 Fixed thread
3	活动法兰 Adjustable flange
4	固定法兰 Fixed flange
6	固定螺纹锥形式 Flexible tube joint type
7	直行管接头式 Straight tube fitting type
8	固定螺纹管接头式 Fixed thread tube fitting type
9	活动螺纹管接头式 Adjustable thread tube fitting type

接线盒形式 Terminal box type	
4	防爆式 Explosion-proof

保护管直径 Protective tube diameter
0：Φ16，1：Φ20，2：Φ2，3：Φ3，4：Φ4， 5：Φ5，6：Φ6，8：Φ8，可为空白 May be blank

套管形式：见附件
Sleeve form: See attachment

W	R	N	K	2	-	2	4	6	-		典型型号示例 Typical Model Example

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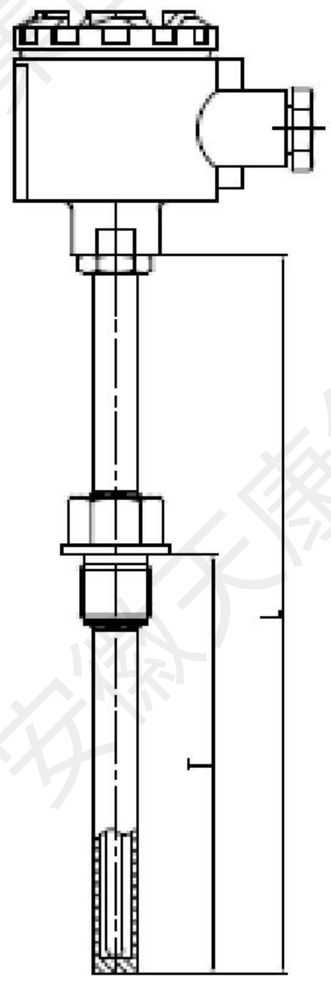
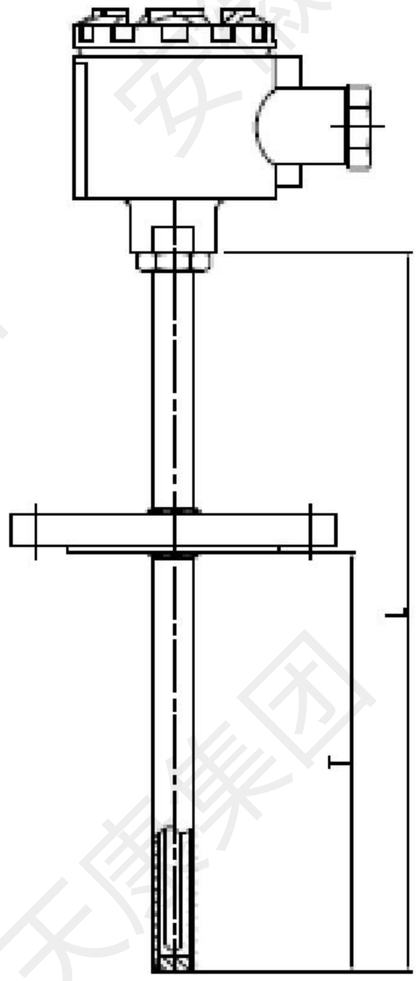
结构示意图

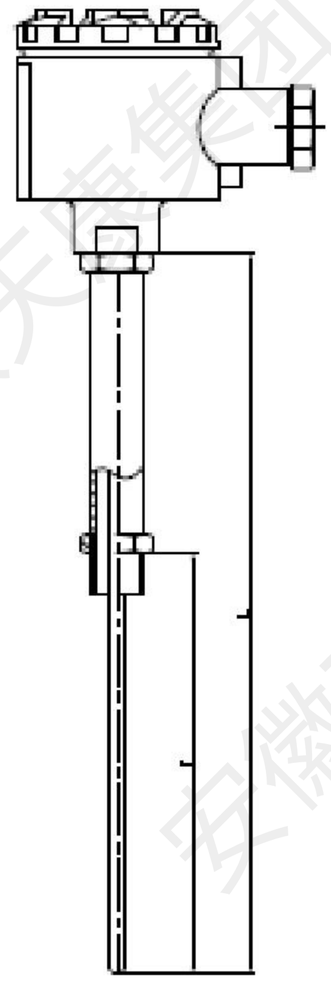
Structure diagram



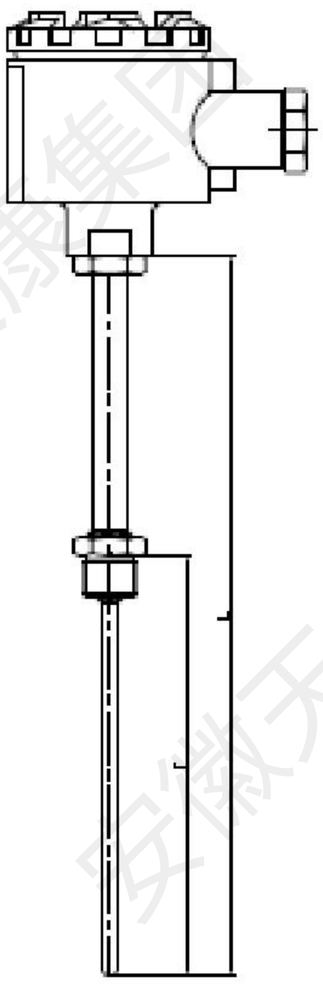
WRN-240/241



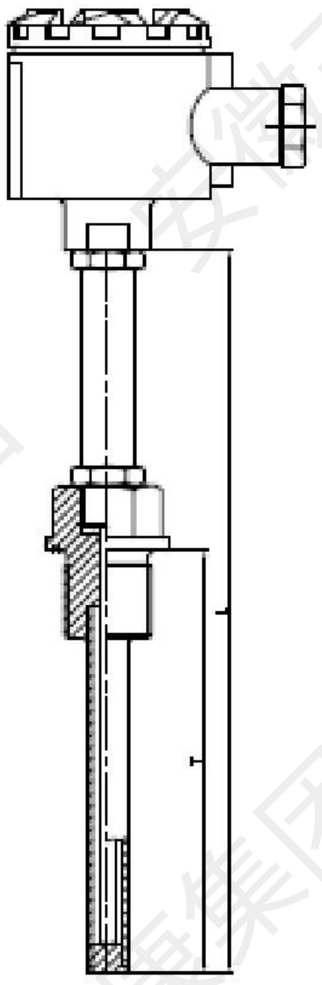
WRN-440/441



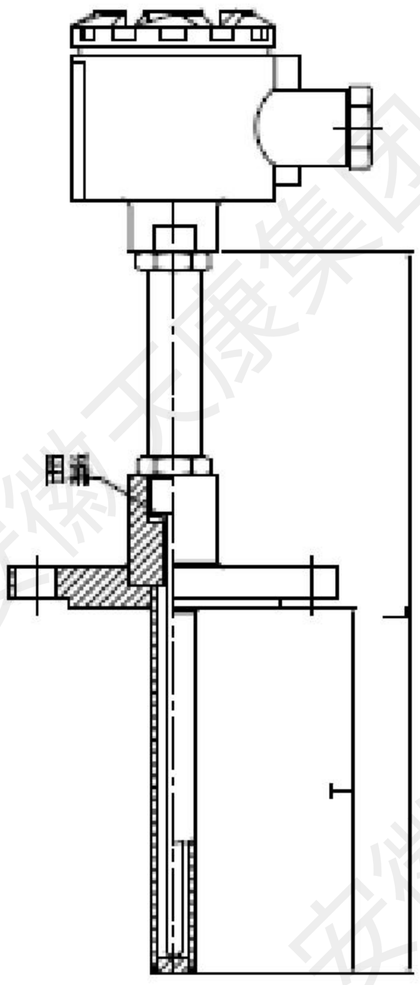
WRN-74



WRN-84

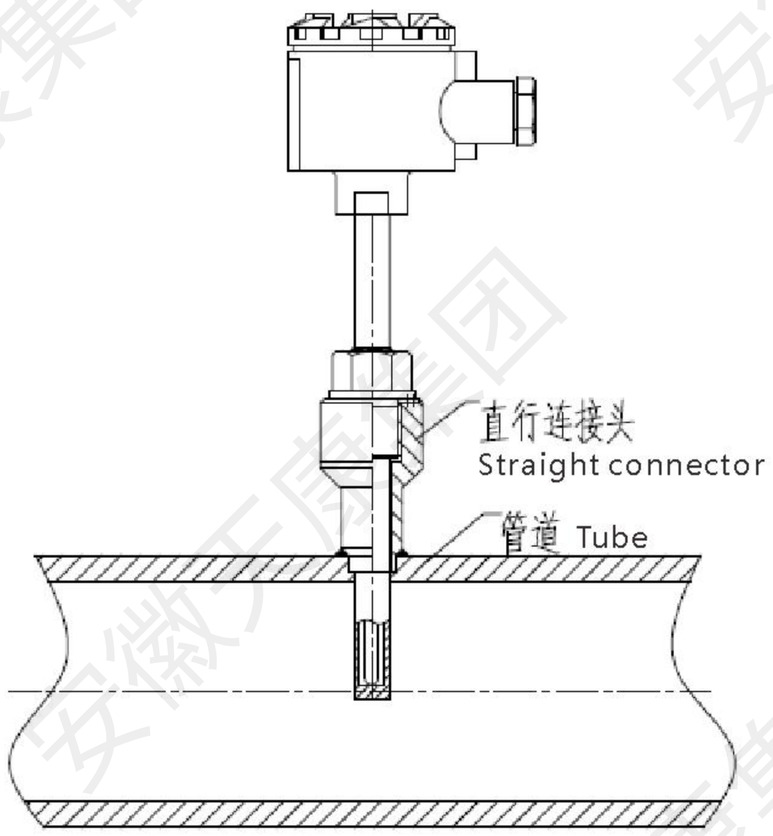


WRN-74-TH03H

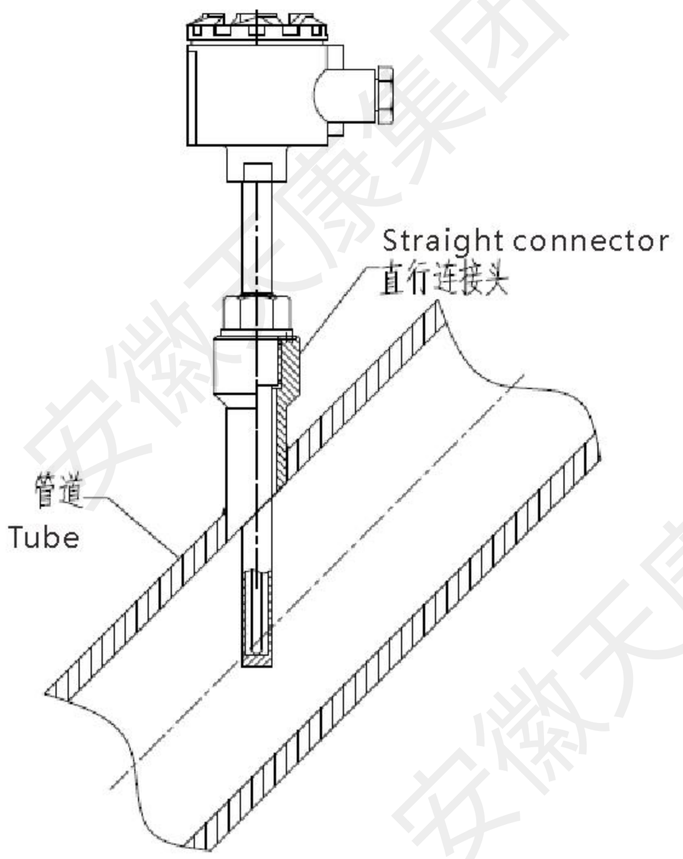


WRN-74-TH02B

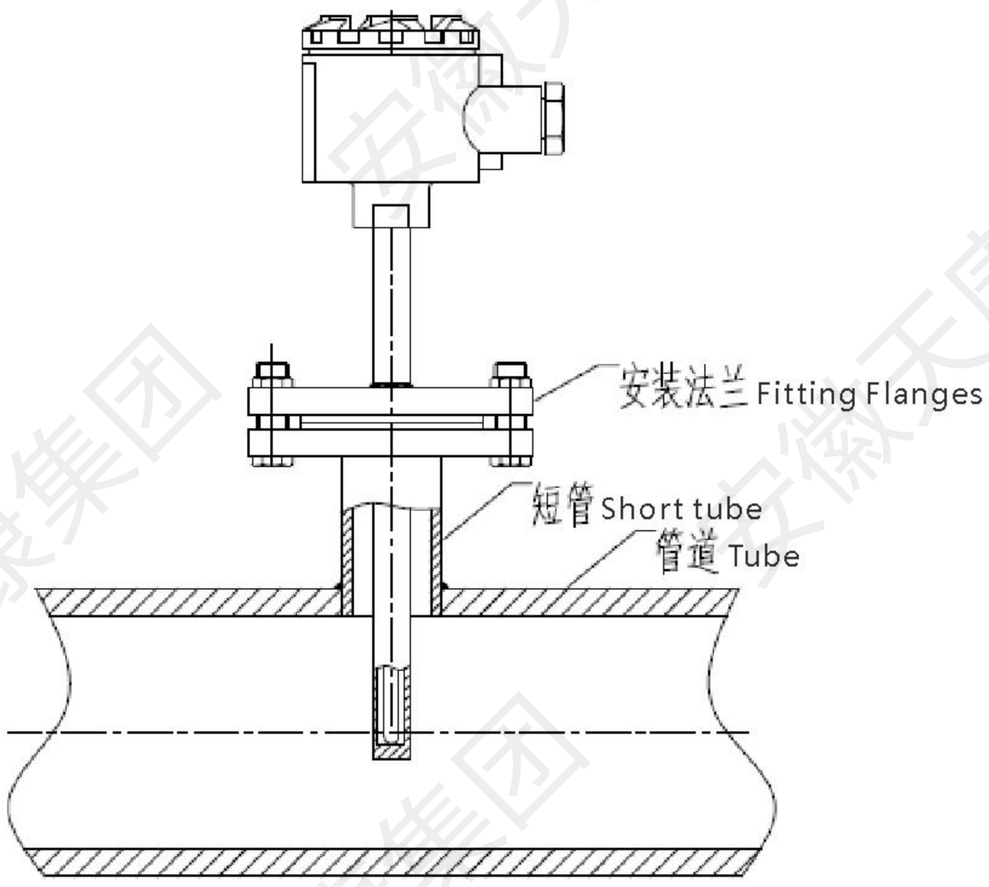
安装形式
Installation form



垂直管道安装
Vertical pipeline installation



倾斜管道安装
Inclined pipeline installation



法兰安装
Flange installation

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铠装热电阻

Armoured Thermal Resistor

产品应用

Product Application

通常和显示仪表、记录仪表、电子计算机等配套使用。直接测量各种生产过程中的（-200～500）℃范围内液体、蒸汽和气体介质以及固体表面温度。

Usually used in conjunction with display instructments, recording instruments, electronic computers and so on. Direct measurement of various production processes (-200~500)℃ range of liquid, steam and gas media and solid surface temperature.

产品原理

Product Principle

铠装热电阻是利用物质在温度变化时，其电阻也随着发生变化的特征来测量温度的。当阻值变化时，工作仪表便显示出阻值所对应的温度值。

Armoured Thermal Resistors measure temperature by utilizing the characteristic that when a substance changes temperature, its resistance changes with it. When the resistance value changes, a working instrument displays the temperature value corresponding to the resistance value.

偶丝直径材料

Thermocouple wire diameter material

偶丝形式 Thermocouple wire form	单支式 Single branch type	双支 Double branch	3支 Three branch
套管直径 Sleeve diameter	Φ3，Φ4，Φ5，Φ6，Φ8	Φ3，Φ4，Φ5，Φ6，Φ8	Φ6，Φ8
套管材质 Sleeve material	06Cr19Ni10、022Cr17Ni12Mo2、06Cr18Ni11Ti		

产品特点
Product Features

- 热响应时间少，减小动态误差；
- 直径小，长度不受限制；
- 测量精确度高；
- 进口薄膜电阻元件，性能可靠稳定；
- 接线盒防护等级：IP65，IP66。

- Less thermal response time, reducing dynamic errors.
- Bendable mounting for use.
- Large measuring range.
- High mechanical strength, good pressure resistance.
- Junction box protection level IP65, IP66.

技术参数
Technical Parameter

产品执行标准：IEC60751、GB/T30121。

Executive Standard of the Product: IEC60751 and GB/T30121.

允差等级
Tolerance level

分度号 Graduation	允差等级 Tolerance level	有效温度范围（℃） Effective temperature range		允差（℃） Tolerance
PT100	AA	-200～500	0～150	±(0.10+0.0017|t|)
	A	-150～450	-30～300	±(0.15+0.002|t|)
	B	-196～600	-50～500	±(0.30+0.005|t|)

热响应时间
Thermal response time

套管直径 Sleeve Diameter	热响应时间（s） Thermal Response Time
Φ3	≤3
Φ4	≤5
Φ5	≤8
Φ6	≤12
Φ8	≤15

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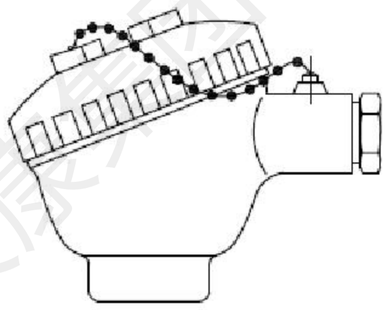
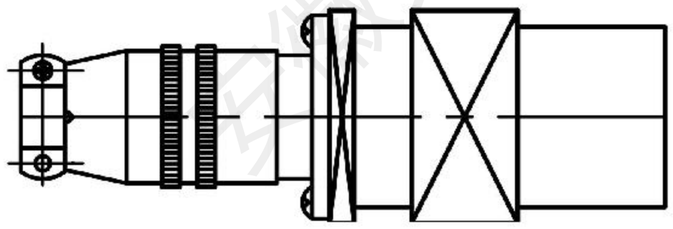
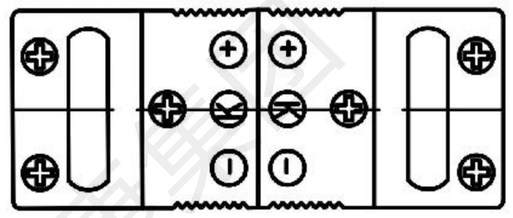
接线盒形式
Terminal box type



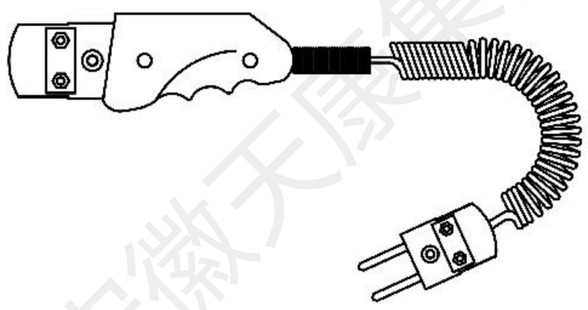
防水式
Waterproof



圆接插式
Round plug-in type



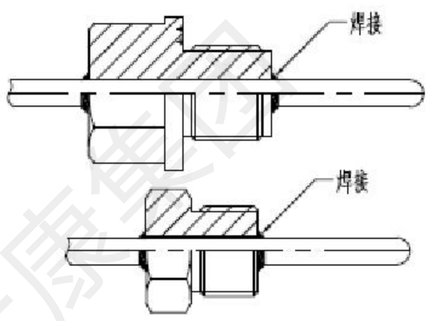
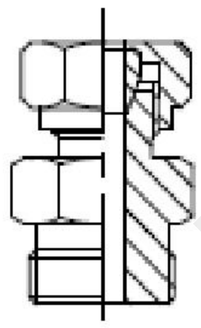
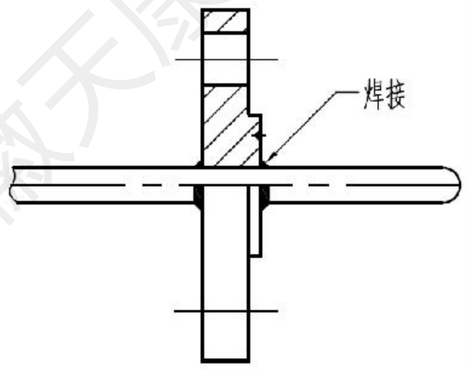
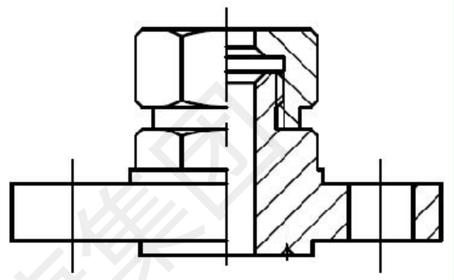
接插式
Plug-in type



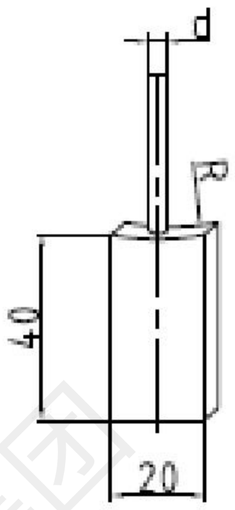
手柄式
Handle type

带补偿导线式
Compensating conductor type

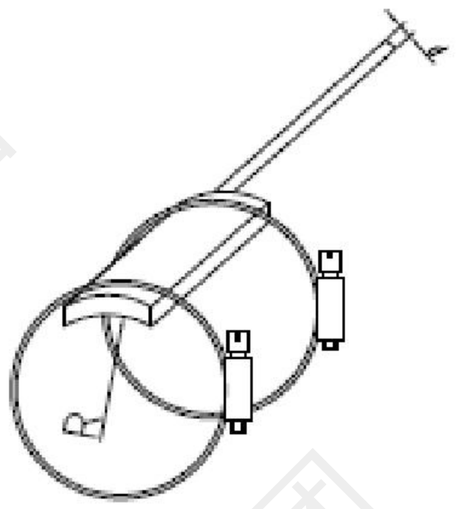
安全固定装置
Safety fixtures

名称 Name	2：固定螺纹 Fixed thread	3：活动卡套螺纹 Adjustable ferrule thread	4：固定法兰 Fixed flange	5：活动卡套法兰 Adjustable ferrule flange
外形 Shape				

附加安装形式
Additional installation form



注：选型时应注明弧度R值（即管壁或炉壁直径），接触块式（代号M）。
NOTE: Specify radian R-value (i.e., pipe wall or furnace opening diameter) and contact block type (code M) when selecting a model.



抱箍式（代号G）
Hoop type (code G)

型号命名方法
Model Naming Method

W	温度仪表 Temperature Instruments
R	热电偶 Thermocouples

感温元件材料 Temperature sensing element material	
P	Pt100 铂 Platinum
C	Cu50/Cu100 铜 Copper

K	铠装式 Armored

偶丝对数 Coupling wire pairs	
无 None	单支 Single branch
2	双支 Double branch

安装固定形式 Fixed installation	
1	无固定装置 No fixed installation
2	固定螺纹 Fixed thread
3	活动卡套螺纹 Adjustable ferrule thread
4	固定法兰 Fixed flange
5	活动卡套法兰 Adjustable ferrule flange

接线盒形式 Terminal box type	
3	防水式 Waterproof
6	圆接插式 Round plug-in type
7	扁接插式 Plug-in type
9	补偿导线式 Compensating conductor type
0	感温元件 Temperature sensing element

保护管直径 Protective tube diameter
3：Φ3，4：Φ4，5：Φ5，6：Φ6，8：Φ8

附加装置形式 Additional installation form	
M	接触块式 Contact block type
G	抱箍式 Hoop type

W	Z	P	K	2	-	2	3	6	M	典型型号示例 Typical Model Example

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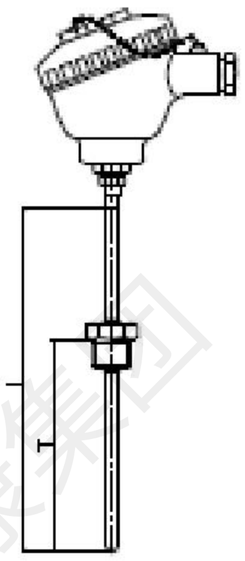
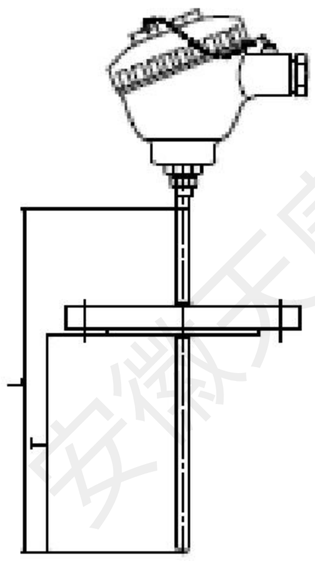
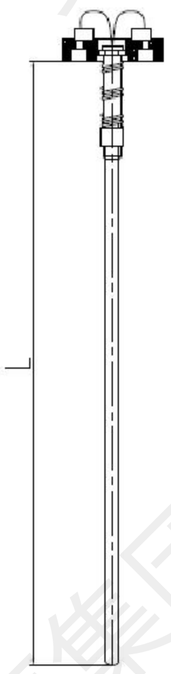
结构示意图
Structure diagram



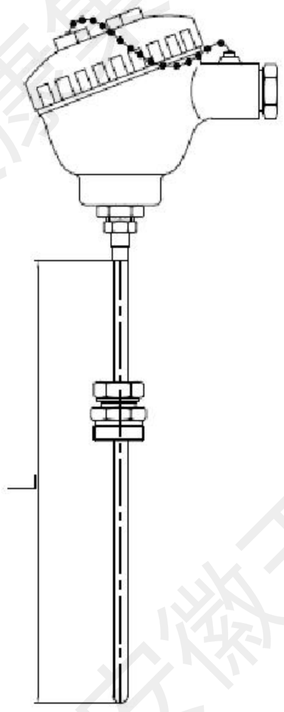
WRNK-235（固定螺纹）
Fixed thread



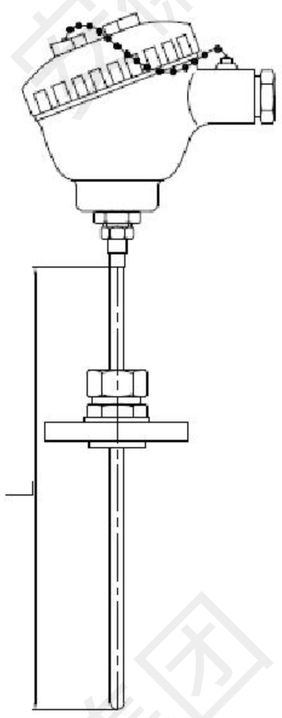
WRNK-435（固定法兰）
Fixed flange



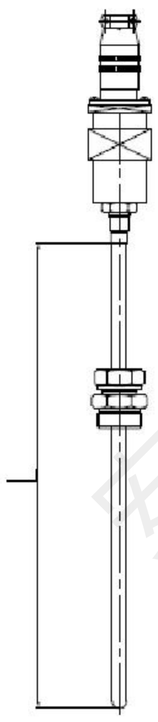
WZPK-010



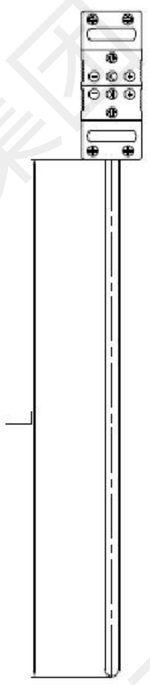
WRNK-335（活动卡套螺纹）
Adjustable ferrule thread



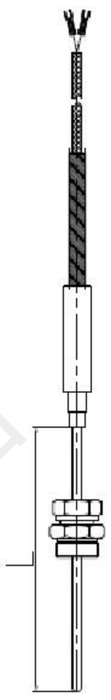
WRNK-535（活动卡套法兰）
Adjustable ferrule flange



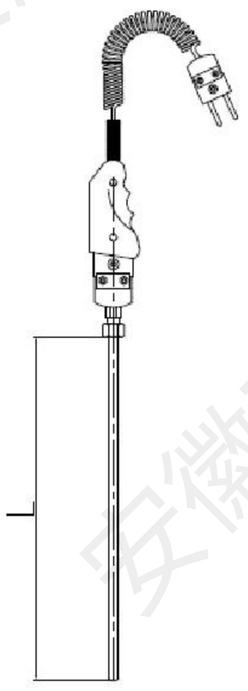
WZPK-365



WZPK-275

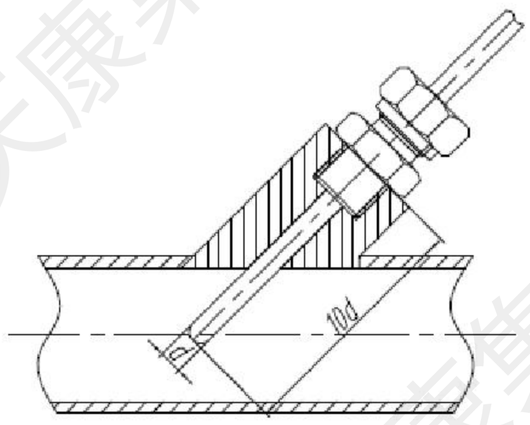


WZPK-295

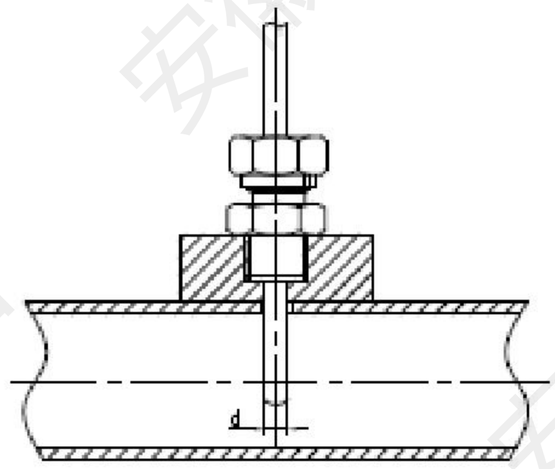


WZPK-185

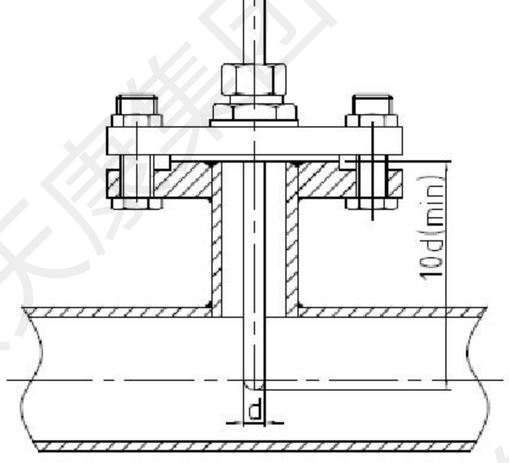
安装形式
Installation form



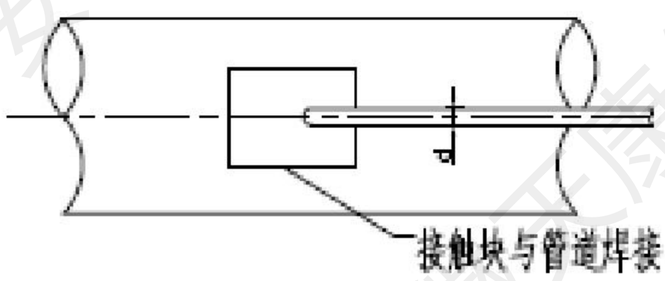
WRNK-235（固定螺纹）
Fixed thread



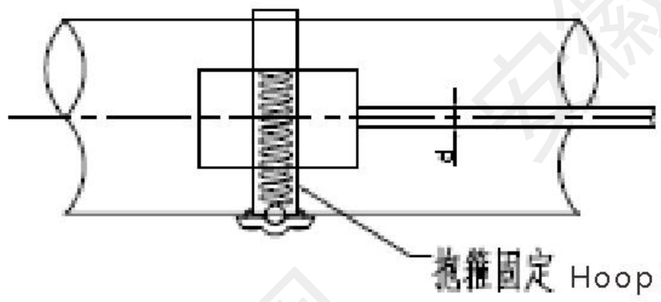
WRNK-235（固定螺纹）
Fixed thread



WRNK-235（固定螺纹）
Fixed thread



Welding of contact block to pipe
WRNK-235（固定螺纹）
Fixed thread



Hoop fixing
WRNK-235（固定螺纹）
Fixed thread

选型须知
Selection Instructions

型号；
分度号；
精度等级；
安装固定形式；
保护管材质；
长度或插入深度。

例：铠装热电阻，PT100，A级，固定卡套螺纹，保护管GH3030，长度450mm，插入深度300mm，WZPK-236，L*I=450*300，A级，保护管GH3030。

Model.
Graduation number.
Accuracy level.
Installation and fixation form.
Protective tube material.
Length or insertion depth.
Example: Armored thermocouple, PT100, Class I, fixed ferrule thread, protective tube GH3030, length 450mm, insertion depth300mm, WZPK-236, L*I=450*300, Class I, protective tube GH3030.

天康集团

装配热电阻

Assembly Thermal Resistor

产品应用
Product Application

通常和显示仪表、记录仪表、电子计算机等配套使用。直接测量各种生产过程中的（-200~500）℃范围内液体、蒸汽和气体介质以及固体表面测温。

Usually used in conjunction with display instruments, recording instruments, electronic computers and so on. Direct measurement of various production processes (-200~500)℃ range of liquid, steam and gas media and solid surface temperature.

产品原理
Product Principle

热电偶是利用物质在温度变化时，其电阻随着发生变化的特征测量温度的，当阻值变化时，工作仪表便显示出阻值所对应的温度值。

Thermal Resistors measure temperature by utilizing the characteristic that when a substance changes temperature, its resistance changes with it. When the resistance value changes, a working instrument displays the temperature value corresponding to the resistance value.

技术参数
Technical Parameter

1、产品执行标准

IEC60751、GB/T30121。

2、常温绝缘电阻

热电阻在环境温度为（15~35）℃，相对湿度不80%，试验电压为10~100V（直流）电极与外套管之间的绝缘电阻≥100MΩ。

1. Executive Standard of the Product: IEC60751 and GB/T30121.

2. Room temperature insulation resistance

The insulation resistance of Thermal Resistor is ≥100MΩ between the electrode and the outer casing at an ambient temperature of (15~35)°C, a relative humidity of not more than 80%, and a test voltage of (10~100)V (DC).

3、测温范围及允差

3. Temperature measurement range and tolerance

分度号 Model	分度号 Graduation	测温范围（℃） Temperature measurement range	精度等级 Accuracy level	允差（℃） Tolerance value
WZP	Pt100	-200~+500	A级	±(0.15+0.002|t|)
			B级	±(0.30+0.005|t|)
WZC	Cu50 Cu100	-50~+100	/	±(0.30+0.006|t|)

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型号命名方法
Model Naming Method

W	温度仪表 Temperature Instruments

Z	热电阻 Thermal Resistor

感温元件材料 Temperature sensing element material	
P	Pt100 铂 Platinum
C	Cu50/Cu100 铜 Copper

偶丝对数 Coupling wire pairs	
无 None	单支 Single branch
2	双支 Double branch

安装固定形式 Fixed installation	
1	无固定装置 No fixed installation
2	固定螺纹 Fixed thread
3	活动法兰 Adjustable flange
4	固定法兰 Fixed flange
5	活络管接头 Flexible tube joint type
6	固定螺纹锥形式 Fixed thread cone type
7	直行管接头式 Straight tube fitting type
8	固定螺纹管接头式 Fixed thread tube fitting type
9	活动螺纹管接头式 Adjustable thread tube fitting type

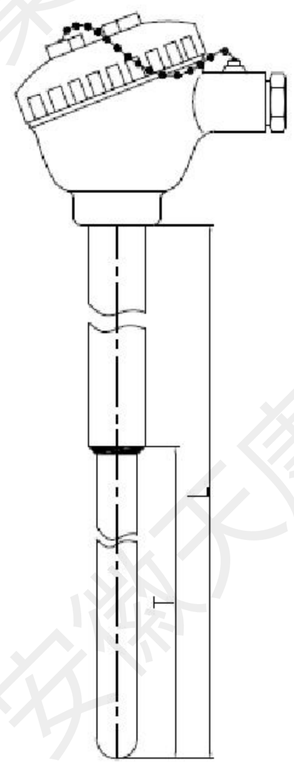
接线盒形式 Terminal box type	
3	防水式 Waterproof

保护管直径 Protective tube diameter
0:Φ16，1:Φ12

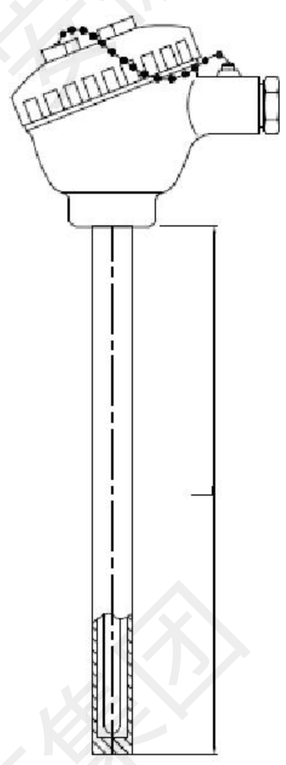
附加装置形式 Additional installation form	
G	抱箍式 Hoop type

W	Z	P	2	-	2	3	0	G	典型型号示例 Typical Model Example

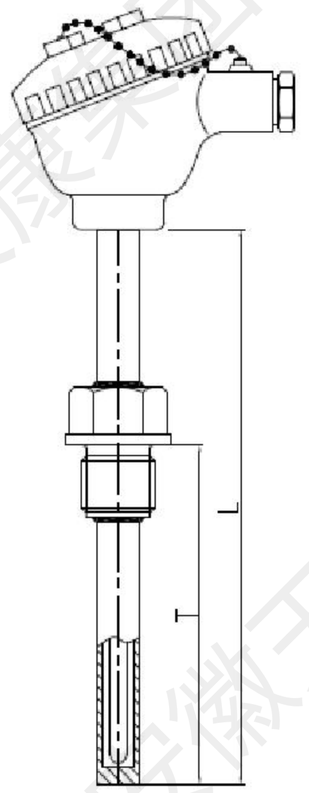
结构示意图
Structure diagram



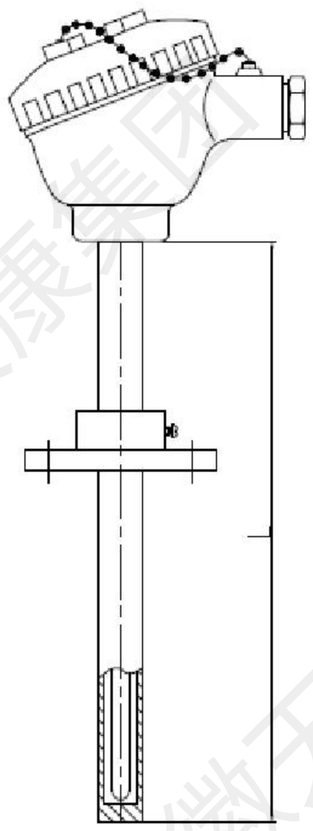
WZP-130(非金属保护管)
Non-metallic protective tube



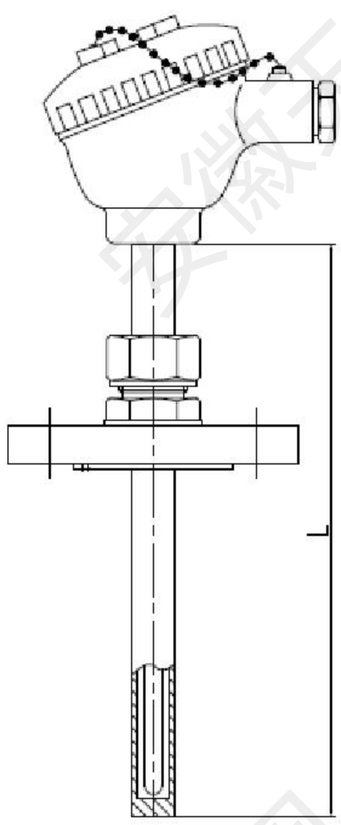
WZP-130



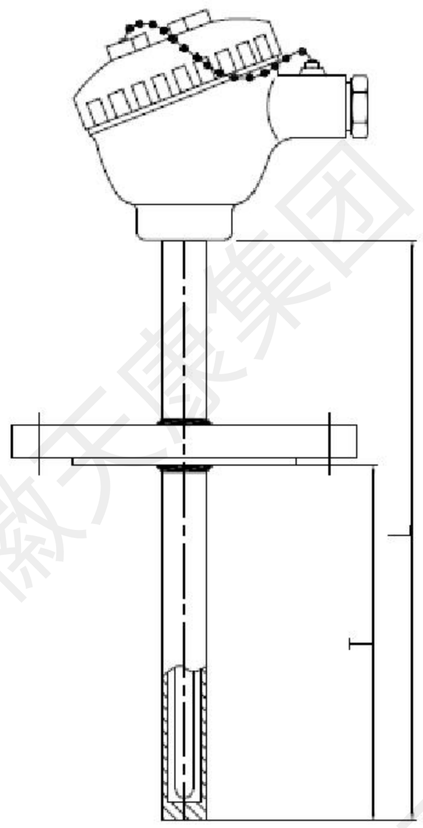
WZP-230



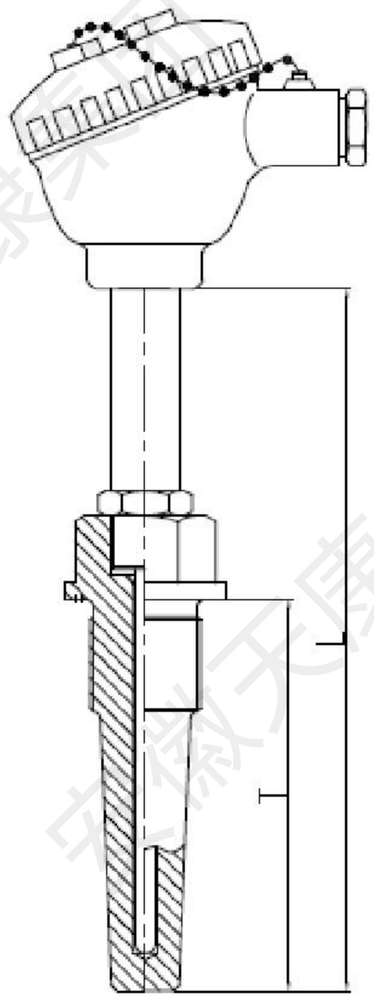
WZP-330



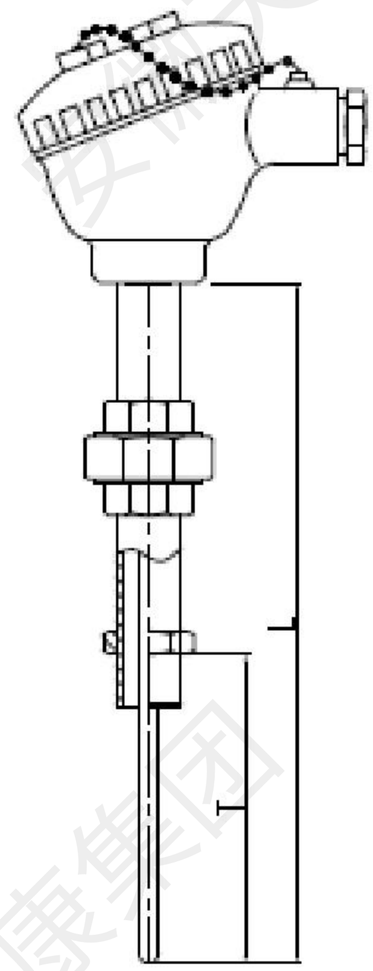
WZP-330（活动卡套法兰)
Adjustable ferrule flange



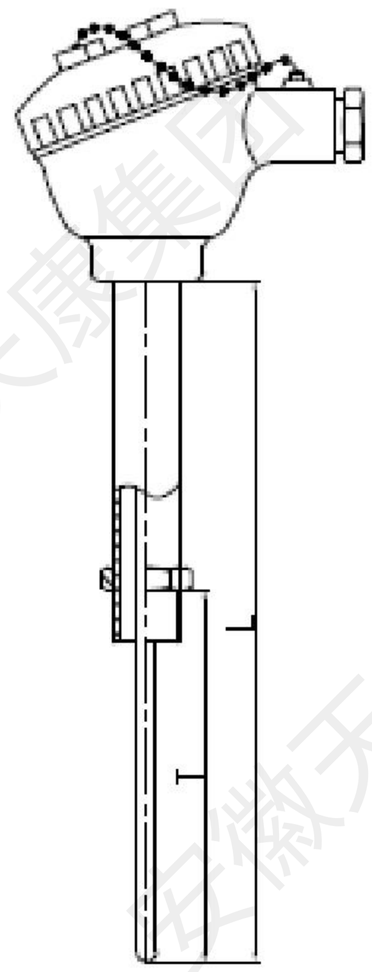
WZP-430



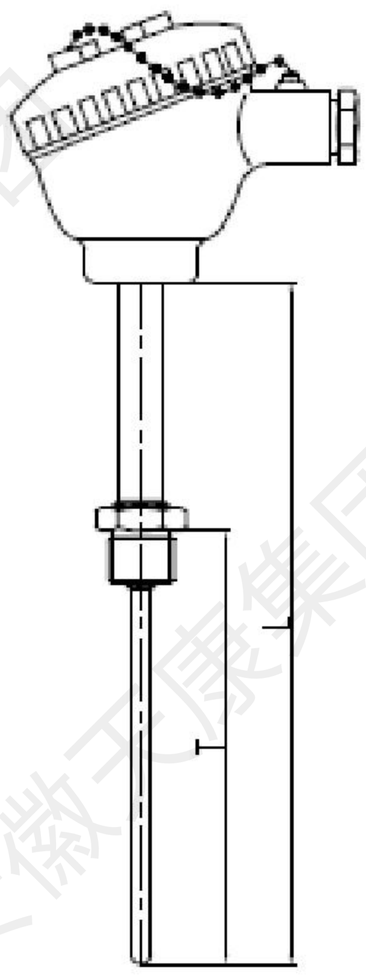
WZP-630



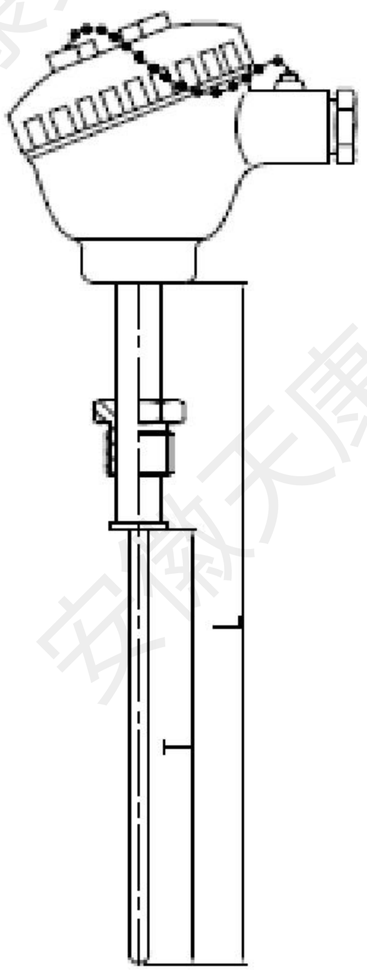
WZP-53



WZP-73

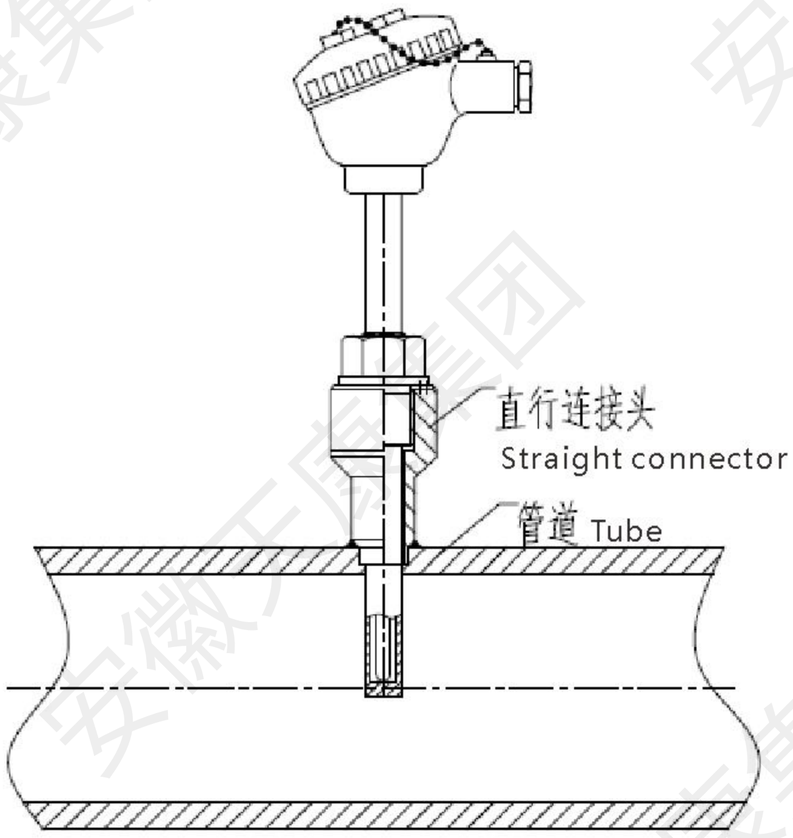


WZP-83

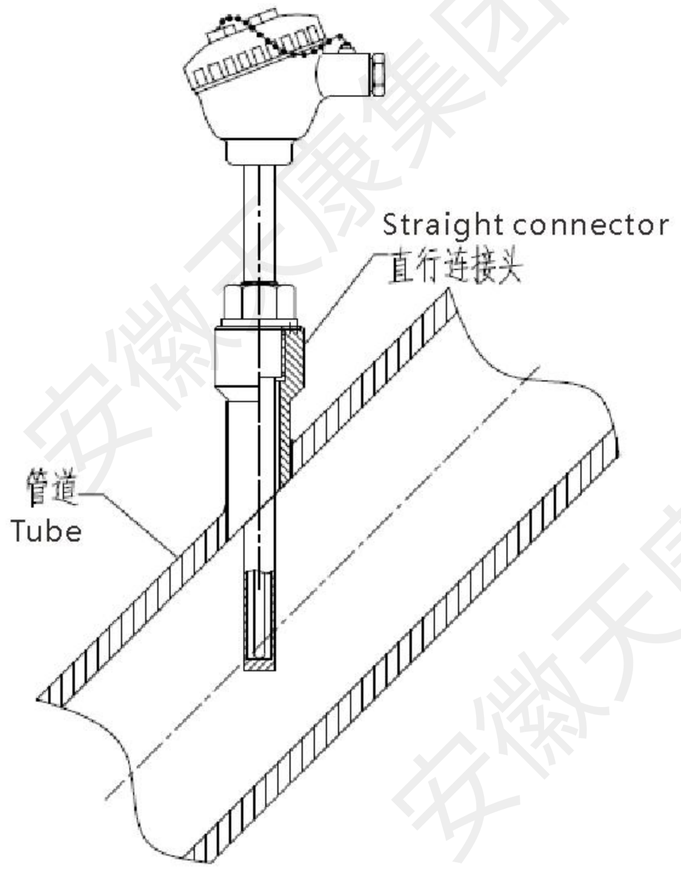


WZP-93（活动螺纹）
Fixed thread

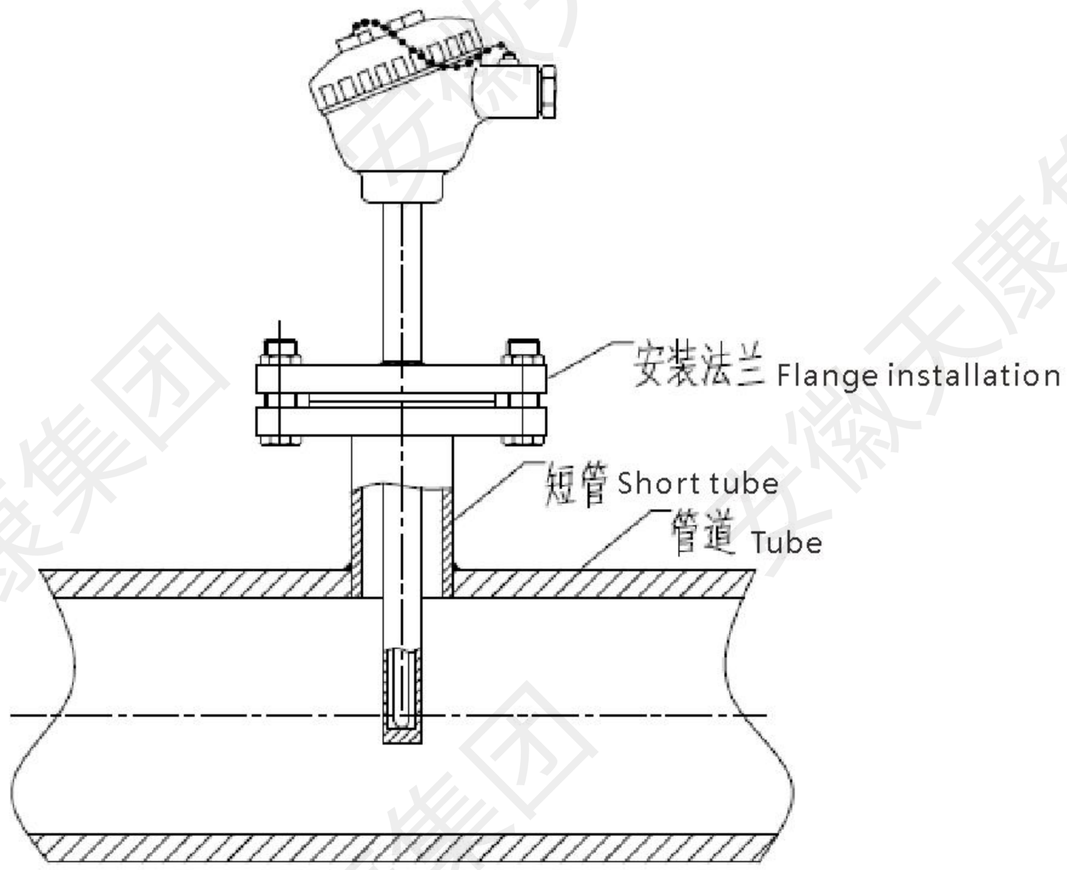
安装形式
Installation form



垂直管道安装
Vertical pipeline installation



倾斜管道安装
Inclined pipeline installation



法兰安装
Flange installation

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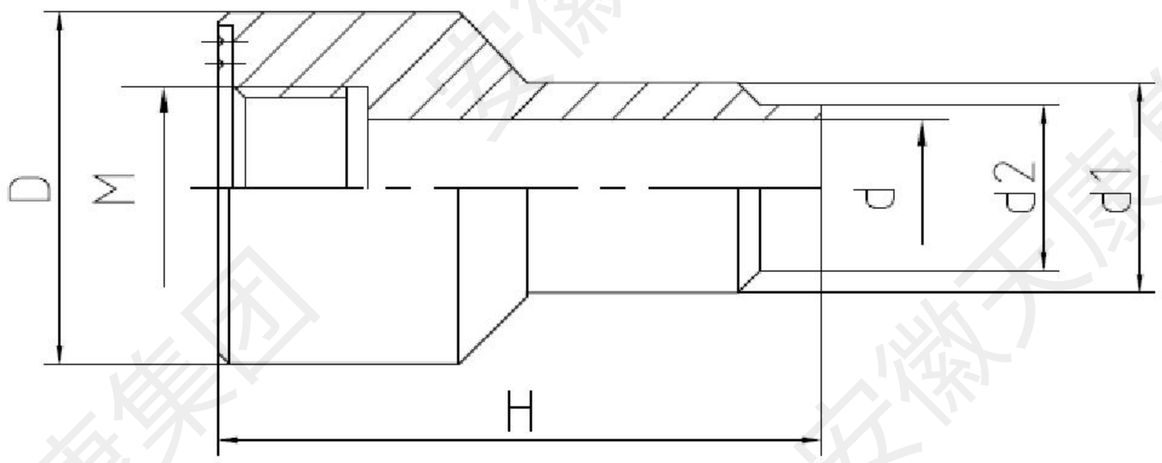
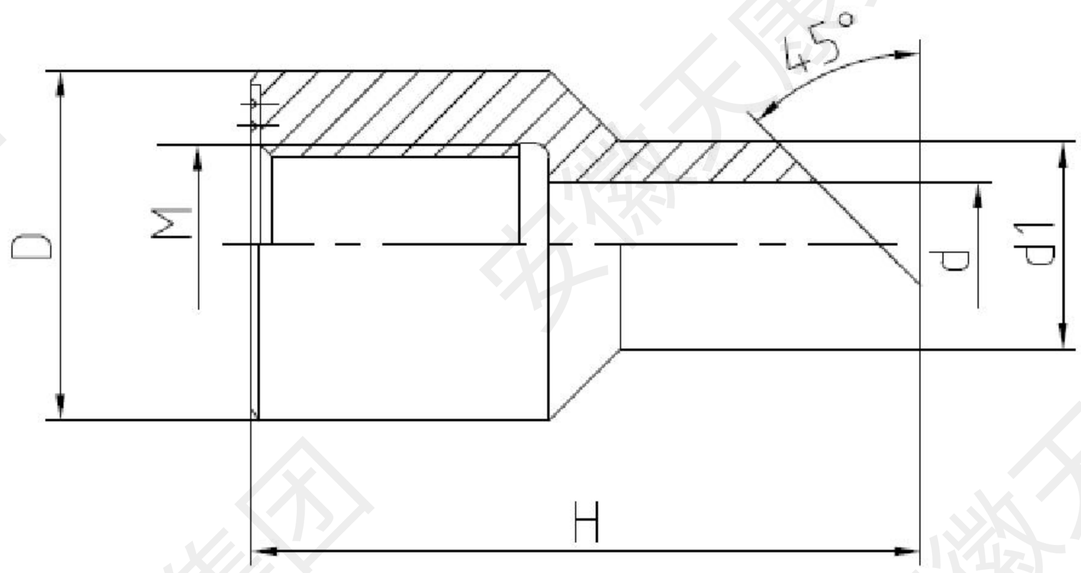
直行连接头

Straight connector



TH48□

代号 Code	M	D	d	d1	d2	H
TH48A	M12x1.5	Φ32	Φ7	Φ18	Φ12	60，120
TH48B	M16x1.5	Φ34	Φ10	Φ24	Φ14	80
TH48C	M20x1.5	Φ39	Φ10	Φ26	Φ14	60
TH48D	M27x2	Φ47	Φ22	Φ32	Φ26	60
TH48E	M33x2	Φ55	Φ22	Φ36	Φ26	120
TH48F	NPT1/2	Φ39	Φ16	Φ27	Φ21	60，120
TH48G	NPT3/4	Φ47	Φ20	Φ31	Φ25	
TH48H	NPT1	Φ47	Φ30	Φ41	Φ35	



TH49□

代号 Code	M	D	d	d1	H
TH49A	M27x2	Φ47	Φ18	Φ28	90
TH49B	M33x2	Φ55	Φ24	Φ36	150
TH49C	NPT1/2	Φ39	Φ16	Φ27	90
TH49D	NPT3/4	Φ47	Φ20	Φ31	90
TH49E	NPT1	Φ47	Φ30	Φ41	150

防爆热电阻

Explosion-proof Thermal Resistor

产品应用

Product Application

通常和显示仪表、记录仪表、电子计算机等配套使用。直接测量各种生现场存在爆炸性混合物的（-200~500）℃范围内液体、蒸汽和气体介质以及固体表面温度。

Usually used in conjunction with display instruments, recording instruments, electronic computers and so on. Direct measurement of various production processes (-200~500)℃ range of liquid, steam and gas media and solid surface temperature.

产品原理

Product Principle

防爆热电阻是利用物间隙隔爆原理，设计具有足够强度的接线盒等部件，将所有会产生火花、电弧和危险温度的零部件都密封在接线盒腔内，当腔内发生爆炸时，能通过接合面间隙熄火和冷却，使爆炸后的火焰和温度传不到腔外，从而进行隔爆。

According to the gap explosion-proof principle, explosion-proof thermocouples are designed with sufficient strength of the junction box and other components, all the parts that will produce sparks, arcs and dangerous temperatures are sealed in the junction box cavity. When an explosion occurs in the cavity, it can be quenched and cooled through the gap between the joint surfaces, so that the flame and temperature after the explosion can not be transmitted outside the cavity, thus providing explosion-proof.

产品特点

Product Features

- 适用于多种防爆环境；
- 弹簧压紧式感温元件，抗振性能好；
- 测量范围大；
- 机械强度高，耐压性能好。

- Suitable for a wide range of explosion-proof environments;
- Spring compression type temperature sensing element, good vibration resistance;
- Large measuring range;
- High mechanical strength, good pressure resistance.

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技术参数
Technical Parameter

1、产品执行标准

IEC60751、GB/T30121、GB/T3836。

2、常温绝缘电阻

防爆热电阻在环境温度为15~35℃，相对湿度不大于80%，试验电压为10~100V（直流）电极与外套管之间的绝缘电阻≥100MΩ。

1. Executive Standard of the Product: IEC60751, GB/T30121 and GB/T3836.

2. Room temperature insulation resistance

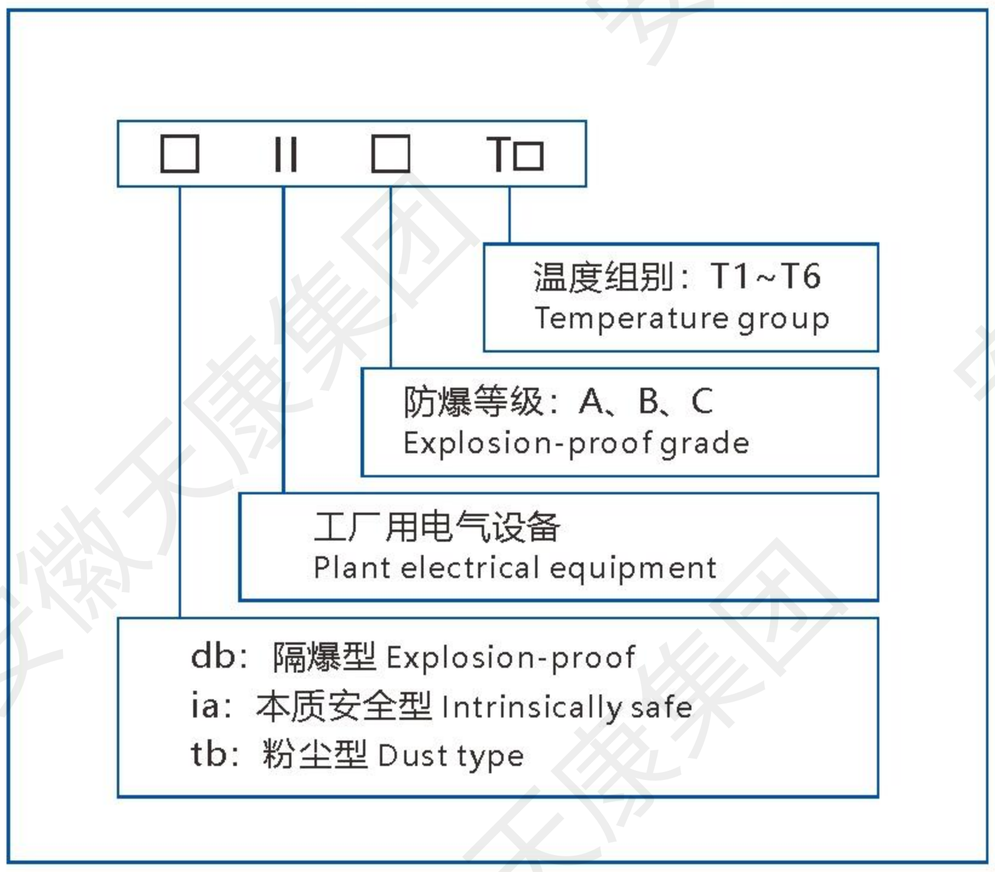
The insulation resistance of Explosion-proof Thermal Resistor is ≥100MΩ between the electrode and the outer casing at an ambient temperature of (15~35)°C, a relative humidity of not more than 80%, and a test voltage of (10~100)V (DC).

3、测温范围及允差

3. Temperature measurement range and tolerance

型号 Model	分度号 Graduation	测温范围（℃） Temperature measurement range	精度等级 Accuracy level	允差（℃） Tolerance value
WZP	Pt100	-200~+500	A级	±(0.15+0.002|t|)
			B级	±(0.30+0.005|t|)
WZC	Cu50 Cu100	-50~+100	/	±(0.30+0.006|t|)

4、防爆分组形式 Explosion proof grouping form



5、防爆级别 Explosion-proof level

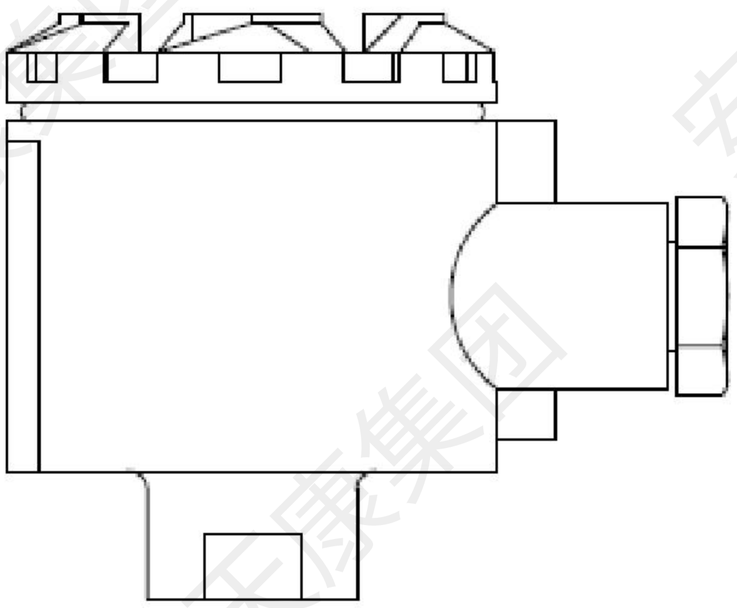
Exdb II □ T□
EXia II □ T□
EXtb III □ T□

6、Ⅱ类电气设备的最高表面温度分组
Maximum surface temperature grouping of Class II electrical equipment

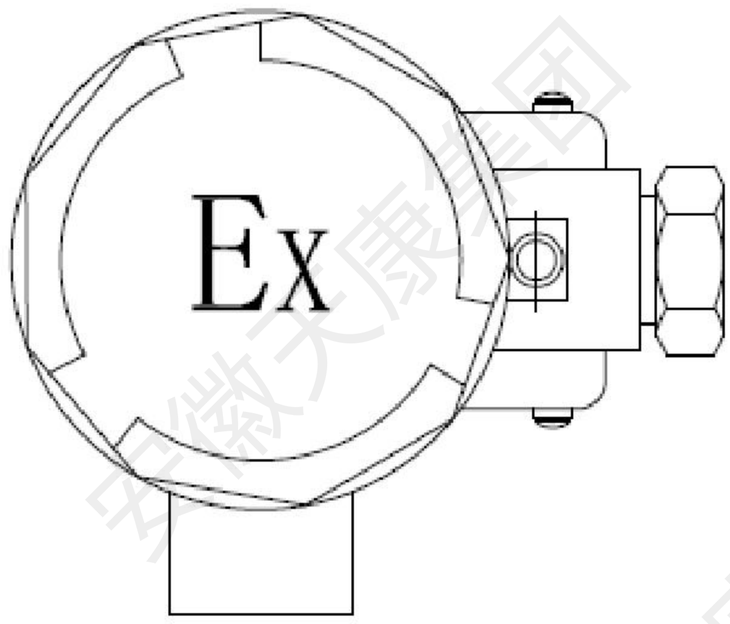
温度组别 Temperature grouping	最高表面温度 ℃ Maximum surface temperature
T1	≤450
T2	≤300
T3	≤200
T4	≤135
T5	≤100
T6	≤85

7、接线盒形式 Terminal box type

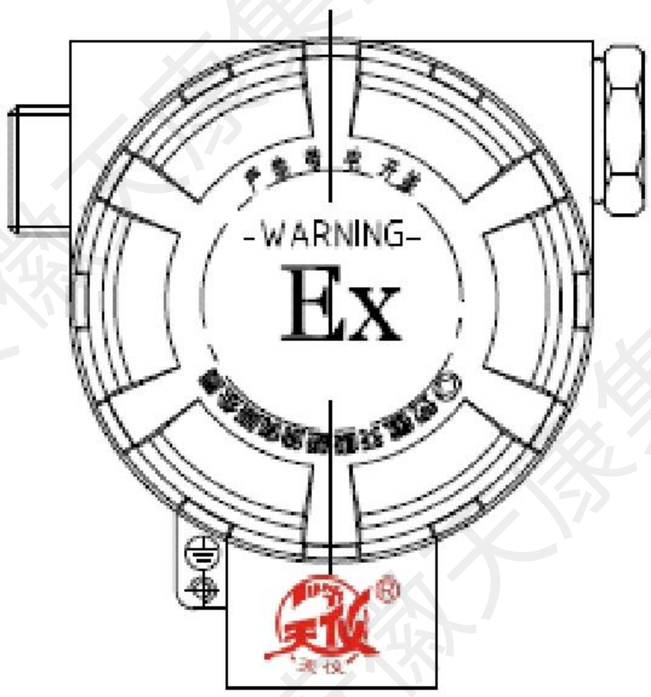
防护等级：IP65，IP66，IP68
Protection level



A型



B型



C型

8、取证一览表 List of certification information

名称 Name	最高表面温度 ℃ Maximum surface temperature	认证机构 Certificate authority
防爆热电偶 Explosion proof thermocouple	Ex db ⅡC T4…T6 Gb / Ex tb ⅢC T80℃…T130℃ Db	NEPSI
	Ex db ⅡB T4…T6 Gb, Ex tb ⅢB T80℃…T130℃ Db	NEPSI
本安热电偶 Intrinsic safety thermocouple	Ex ia ⅡC T4…T6 Ga, Ex ia ⅢC T200135℃ Da	NEPSI

注：NEPSI防爆认证系国家级仪器仪表。
Note: NEPSI Explosion-proof certification is a national instrumentation.

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型号命名方法
Model Naming Method

W	温度仪表 Temperature Instruments

Z	热电阻 Thermal Resistor

感温元件材料 Temperature sensing element material	
P	Pt100 铂 Platinum
C	Cu50/Cu100 铜 Copper

K	铠装式 Armored
空白 Blank	装配式 Assembly

偶丝对数 Coupling wire pairs	
无 None	单支 Single branch
2	双支 Double branch

安装固定形式 Fixed installation	
1	无固定装置 No fixed installation
2	固定螺纹 Fixed thread
3	活动法兰 Adjustable flange
4	固定法兰 Fixed flange
5	活络管接头 Flexible tube joint type
6	固定螺纹锥形式 Fixed thread cone type
7	直行管接头式 Straight tube fitting type
8	固定螺纹管接头式 Fixed thread tube fitting type
9	活动螺纹管接头式 Adjustable thread tube fitting type

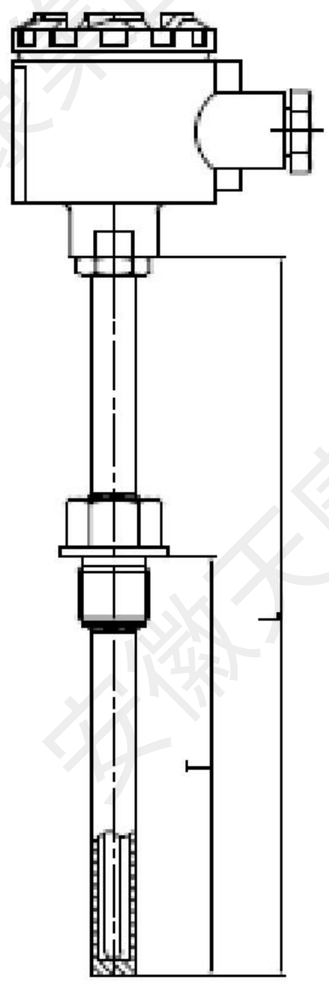
接线盒形式 Terminal box type	
4	防爆式 Explosion-proof

保护管直径 Protective tube diameter
0：Φ16，1：Φ12，2：Φ2，3：Φ3，4：Φ4， 5：Φ5，6：Φ6，8：Φ8，可为空白 May be blank

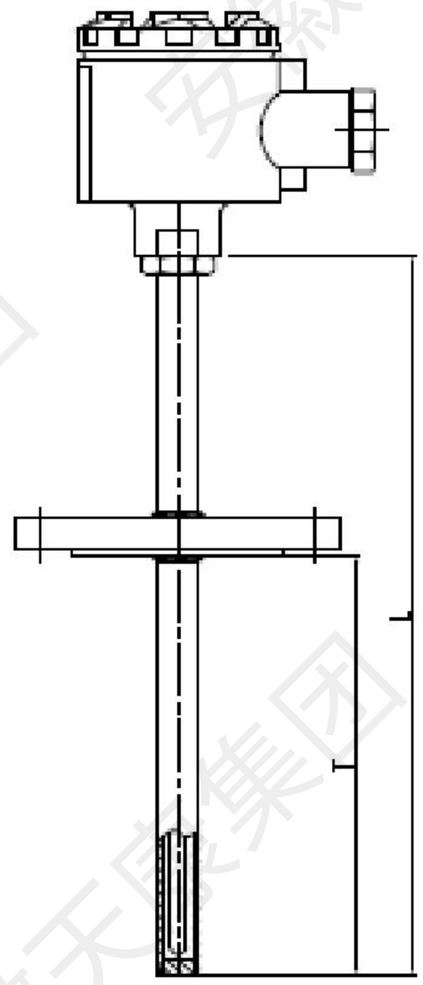
套管形式：见附件 Sleeve form: See attachment

W	Z	P	K	2	-	2	4	6	-		典型型号示例 Typical Model Example

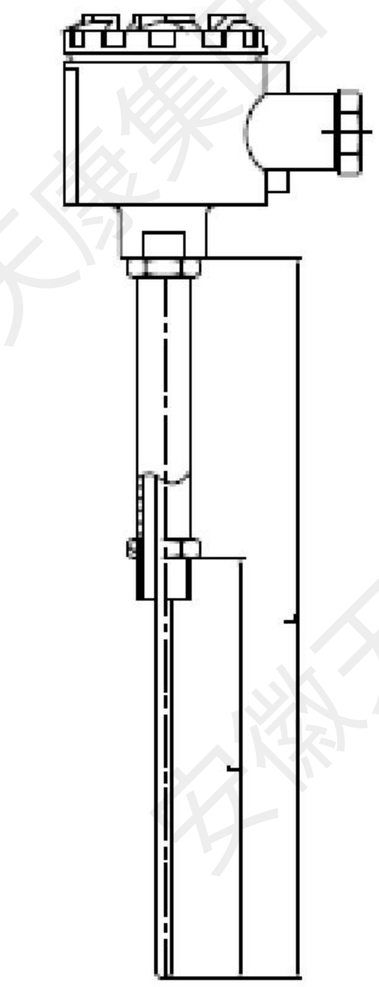
结构示意图
Structure diagram



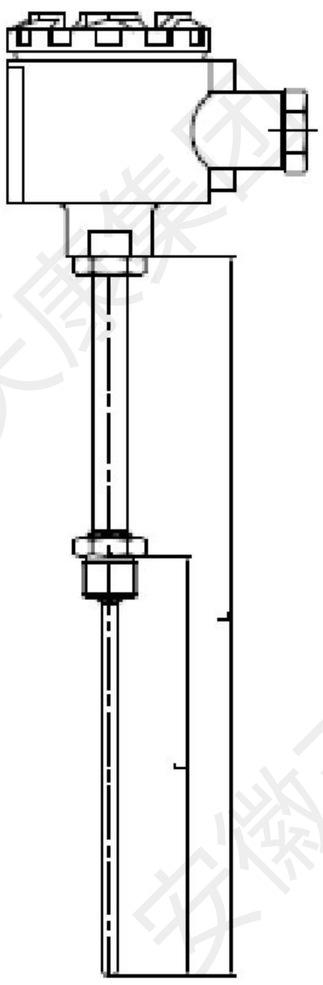
WZP-240/241



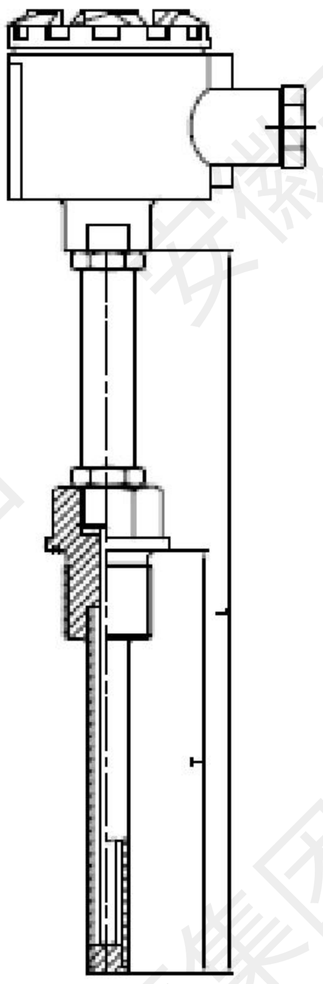
WZP-440/441



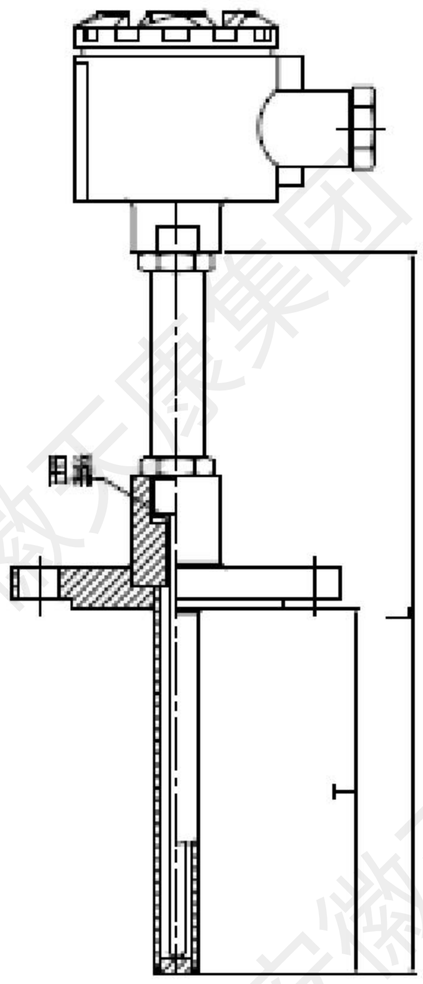
WZP-74



WZP-84



WZP-74-TH03H



WZP-74-TH02B

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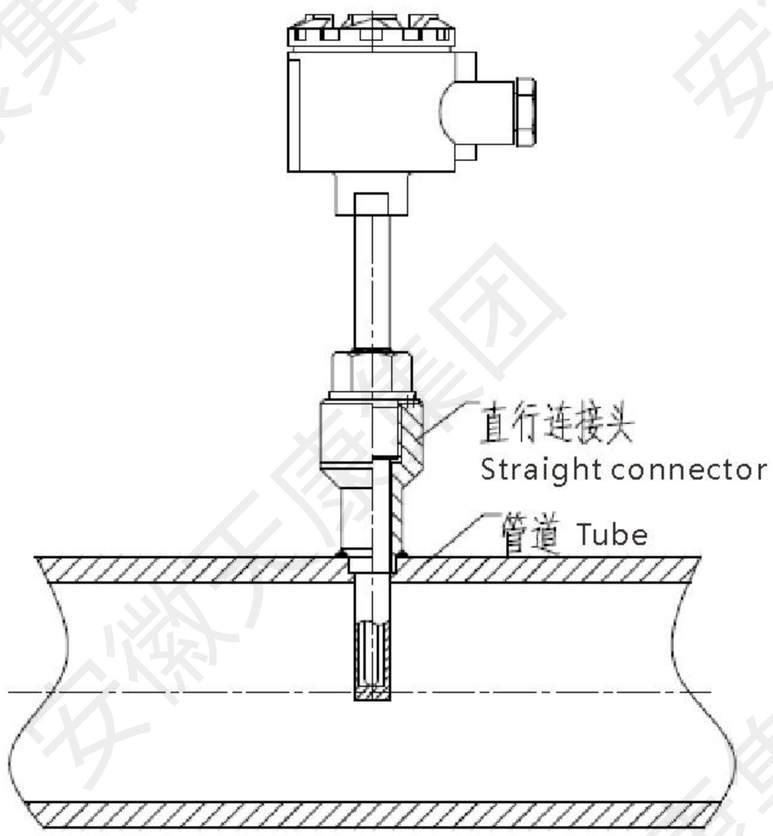
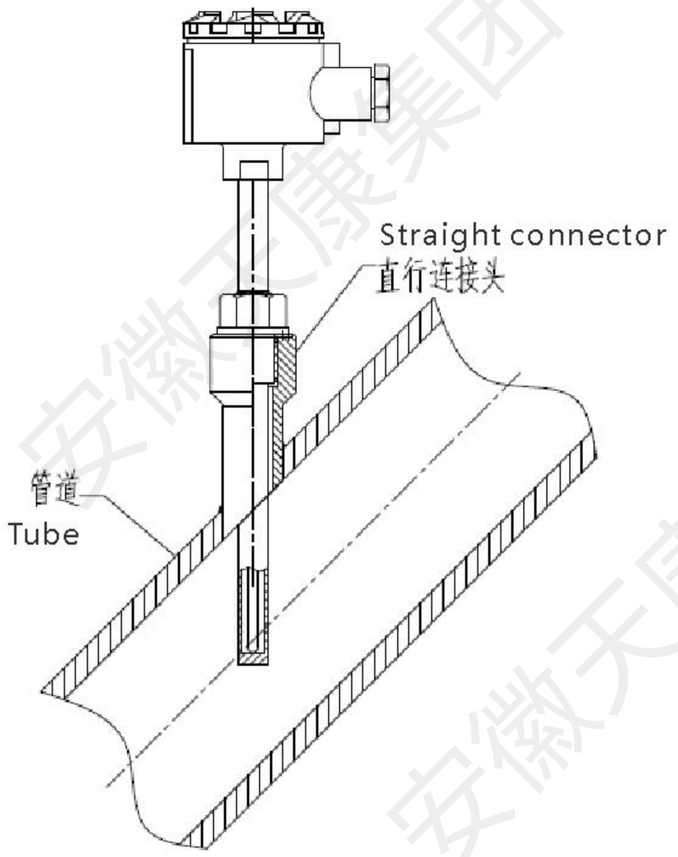
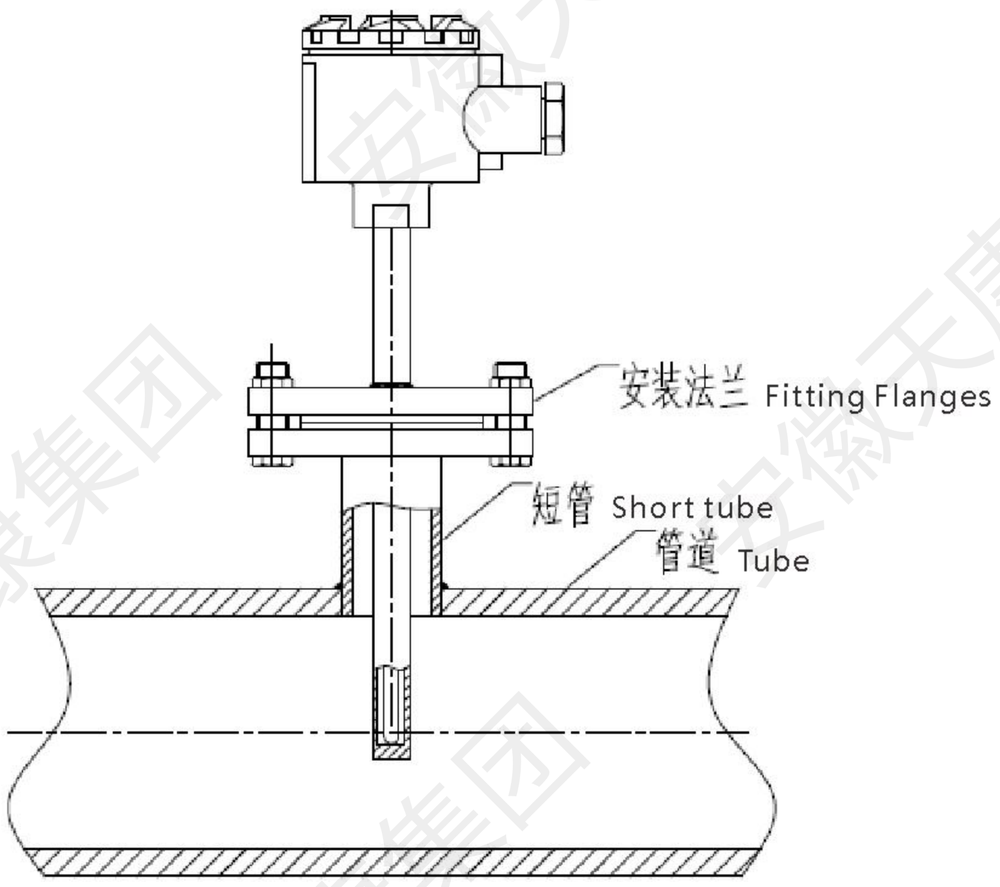
安装形式
Installation form



垂直管道安装
Vertical pipeline installation



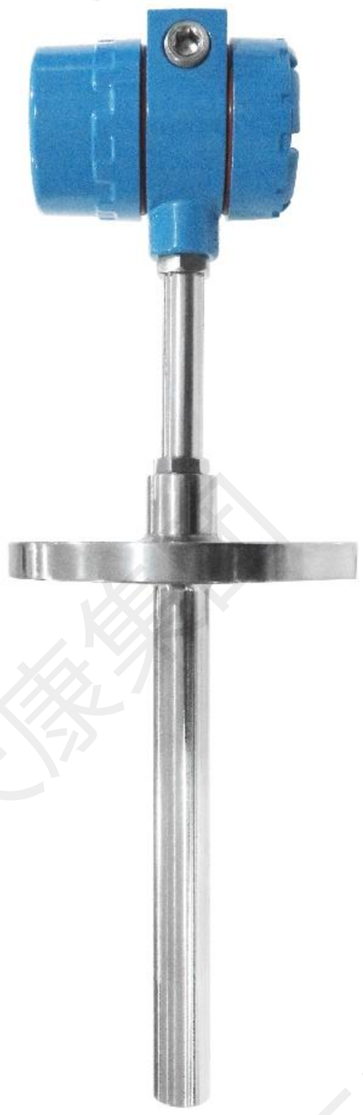
倾斜管道安装
Inclined pipeline installation



法兰安装
Flange installation

一体化温度变送器

Integrated Temperature Transmitter



产品应用

Product Application

通常和显示仪表、记录仪表、电子计算机等配套用，输出4~20mA，直接测量生产现场存在碳氯化合物等爆炸物的-200℃~1300℃范围内液体，蒸汽和气体介质以及固体表面温度。

It is usually used in conjunction with display instruments, recording instruments, electronic computers and so on. Its output is 4~20mA, it can directly measure the temperature of liquid, steam and gas media and solid surface temperature in the range of -200C~1300℃ in the presence of carbon and nitrogen compounds and other explosives in the production site.

产品原理

Product Principle

防爆热电偶利用间隙隔爆原理，当腔内发生爆炸时，能通过接合面间隙熄火和冷却，使爆炸后的火焰全温度传不到腔外，从而进行防爆。

防爆热电阻是利用物间隙隔爆原理，设计具有足够强度的接线盒等部件，将所有会产生火花、电弧和危险温度的零部件都密封在接线盒腔内，当腔内发生爆炸时，能通过接合面间隙熄火和冷却，使爆炸后的火焰和温度传不到腔外，从而进行隔爆。

热电偶（热电阻）产生的热电势（电阻）经过温度变送器的电桥产生不平衡信号，经放大后转换成为4~20mA的直流电信号给工作仪表，工作仪表便显示出所对应的温度值。

When an explosion occurs in the cavity, the explosion-proof thermocouple utilizes the gap explosion isolation principle to extinguish and cool the flame through the joint surface gap, so that the flame temperature after the explosion can not be transmitted to the outside of the cavity, thus providing explosion-proof.
According to the gap explosion-proof principle, explosion-proof thermocouples are designed with sufficient strength of the junction box and other components, all the parts that will produce sparks, arcs and dangerous temperatures are sealed in the junction box cavity. When an explosion occurs in the cavity, it can be quenched and cooled through the gap between the joint surfaces, so that the flame and temperature after the explosion can not be transmitted outside the cavity, thus providing explosion-proof.
Thermocouple (Thermal Resistor) generated by the thermal potential (Thermal Resistor) through the bridge of the temperature transmitter to produce an unbalanced signal, after amplification, converted to 4 ~ 20mA DC signal to the work of the instrument, the work of the instrument will display the corresponding temperature value.

产品特点
Product Features

- 二线制输出4~20mA，抗干扰能力强；
- 节省补偿导线及安装温度变器费用；
- 安全可靠，使用寿命长；
- 冷端温度自动补偿，非线性校正电路。

- 2-wire output 4~20mA, strong anti-interference ability.
- Save the cost of compensation wire and installation of temperature converter.
- Safe and reliable, long service life.
- Cold end temperature automatic compensation, non-linear correction circuit.

技术参数
Technical Parameter

1、产品执行标准
JB/T7391、GB/T30121、GB/T30429。
2、精度等级
±0.2%FS，±0.5%FS。

1. Executive Standard of the Product:
TB/T7391, GB/T30121 and GB/T30429.
2. Accuracy level
±0.2%FS，±0.5%FS.

3、测温范围及允差
热电偶

Temperature measurement range and tolerance
Thermocouple

型号 Model	分度号 Graduation	允差等级 Tolerance level			
		I		II	
		允差值 Tolerance level	测温范围 ℃ Temperature measurement range	允差值 Tolerance level	测温范围 ℃ Temperature measurement range
WRN	K	±1.5℃	-40~+375	±2.5℃	-40~+333
		±0.004|t|	375~1000	±0.0075|t|	333~1200
WRM	N	±1.5℃	-40~+375	±2.5℃	-40~+333
		±0.004|t|	375~1000	±0.0075|t|	333~1200
WRE	E	±1.5℃	-40~+375	±2.5℃	-40~+333
		±0.004|t|	375~800	±0.0075|t|	333~900
WRF	J	±1.5℃	-40~+375	±2.5℃	-40~+333
		±0.004|t|	375~750	±0.0075|t|	333~750
WRC	T	±0.5℃	-40~+125	±1.0℃	-40~+133
		±0.004|t|	125~350	±0.0075|t|	133~350

热电阻 Thermal Resistor

型号 Model	分度号 Graduation	测温范围（℃） Temperature measurement range	精度等级 Accuracy level	允差（℃） Tolerance value
WZP	Pt100	-200~+500	A级	±(0.15+0.002|t|)
			B级	±(0.30+0.005|t|)
WZC	Cu50 Cu100	-50~+100	/	±(0.30+0.006|t|)

输出信号：模拟量4-20mA（两线）/4-20mA（两线）+HART；
输出方法：二线制；
供电电源：18~36V.DC；
防护等级：IP66；
绝缘电阻：仪表输出接线端子与外壳之间的绝缘电阻应不小于50MΩ；
基本误差：仪表的基本误差应不超过热电偶（阻）和温度变送器基本误差的合成误差；
显示方式：液晶或数码管；
环境温度：-40℃~85℃。

Output signal: analog 4~20mA(2-wire)/4~20mA(2-wire)+HART.
Output method: 2-wire.
Power supply: 18~36V.DC.
Protection grade: IP66.
Insulation resistance: the insulation resistance between the output terminals of the meter and the shell should be not less than 50MQ.
Basic error: the basic error of the instrument should not exceed the synthesized error of the basic error of thermocouple (Thermal Resistor) and temperature transmitter.
Display mode: liquid crystal or digital tube.
Ambient temperature: -40°C~85°C.

4、取证一览表 List of certification information

名称 Name	最高表面温度 ℃ Maximum surface temperature	认证机构 Certificate authority
一体化温度变送器（热电偶） Integrated temperature transmitter (thermocouple)	Ex db ⅡC T4…T6 Gb / Ex tb ⅢC T80℃…T130℃ Db	NEPSI
	Ex ia ⅡC T4…T6 Ga / Ex ia ⅢC T200135℃ Da	NEPSI
一体化温度变送器 （热电阻） Integrated temperature transmitter (thermal resistor)	Ex db ⅡC T4…T6 Gb / Ex tb ⅢC T80℃…T130℃ Db	NEPSI
	Ex ia ⅡC T4…T6 Ga / Ex ia ⅢC T200135℃ Da	NEPSI

注：NEPSI防爆认证系国家级仪器仪表。
Note: NEPSI Explosion-proof certification is a national instrumentation.

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型号命名方法
Model Naming Method

W	温度仪表 Temperature Instruments

Z	热电阻 Thermocouple
R	热电偶 Thermal Resistor

感温元件材料 Temperature sensing element material	
P	Pt100 铂 Platinum
C	Cu50/Cu100 铜 Copper
N	K 镍铬-镍硅 Nickel-chromium-nickel-silicon
E	E 镍铬-铜铬 Nickel-chromium-copper-chromium
M	N 镍铬硅-镍硅 Nickel-chromium-silicon-nickel-silicon
F	J 铁-铜镍 Iron-copper-nickel
C	T 铜-铜镍 Copper-copper-nickel
P	S 铂铑10-铂 Platinum-rhodium 10-platinum
Q	R 铂铑13-铂 Platinum-rhodium 13-platinum
R	B 铂铑30-铂铑6 Platinum-rhodium 30-platinum-rhodium 6

K	铠装式 Armored	空白 Blank	装配式 Assembly

B	温度变送器 Temperature Transmitter

偶丝对数 Coupling wire pairs	
无 None	单支 Single branch
2	双支 Double branch

安装固定形式 Fixed installation	
1	无固定装置 No fixed installation
2	固定螺纹 Fixed thread
4	固定法兰 Fixed flange
6	固定螺纹锥形式 Fixed thread cone type
7	直行管接头式 Straight tube fitting type
8	固定螺纹管接头式 Fixed thread tube fitting type
9	活动螺纹管接头式 Adjustable thread tube fitting type

接线盒形式 Terminal box type	
4	防爆式 Explosion-proof

保护管直径 Protective tube diameter

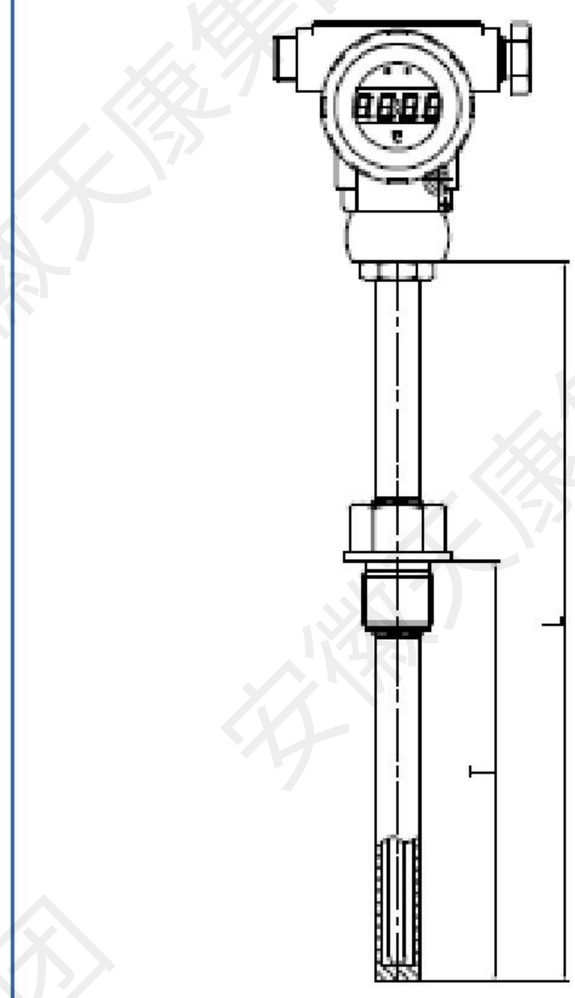
0：Φ16，1：Φ20，2：Φ2，3：Φ3，4：Φ4，5：Φ5
6：Φ6，8：Φ8，可为空白 May be blank

S	显示（可为空白）

套管形式：见附件
Sleeve form: See attachment

W	R	N	K	B	2	-	2	4	6	S	-		典型型号示例 Typical Model Example

结构示意图
Structure diagram



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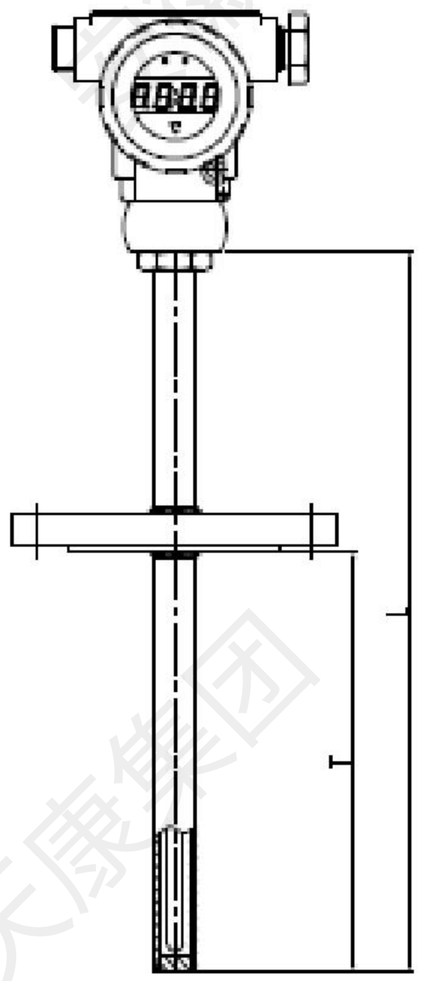

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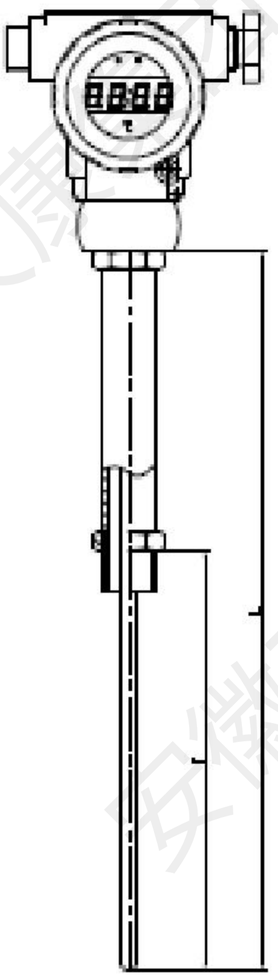

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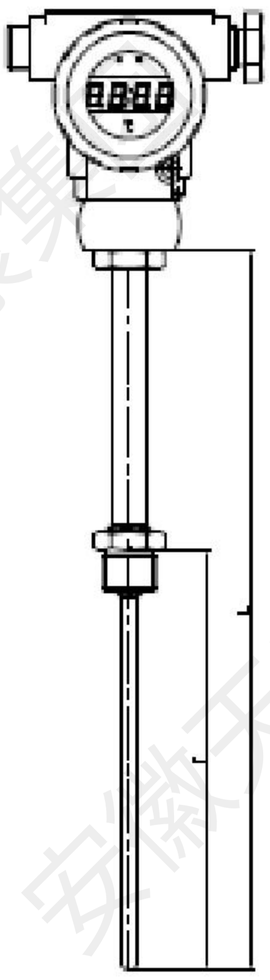

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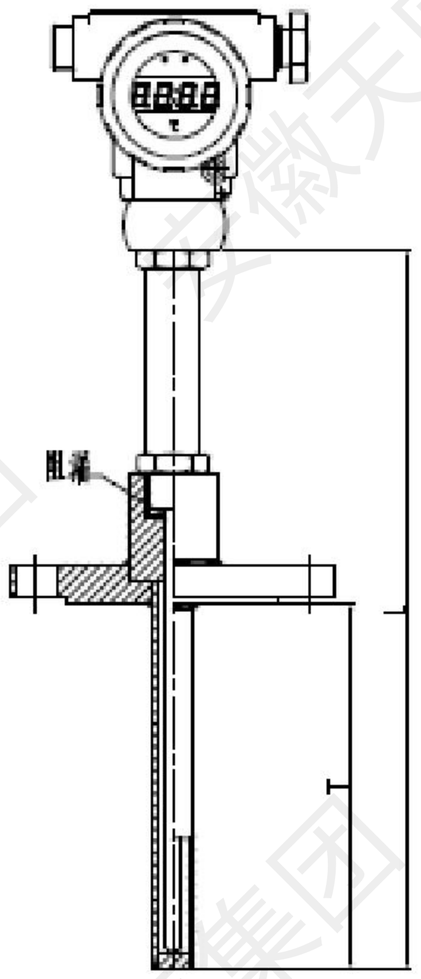

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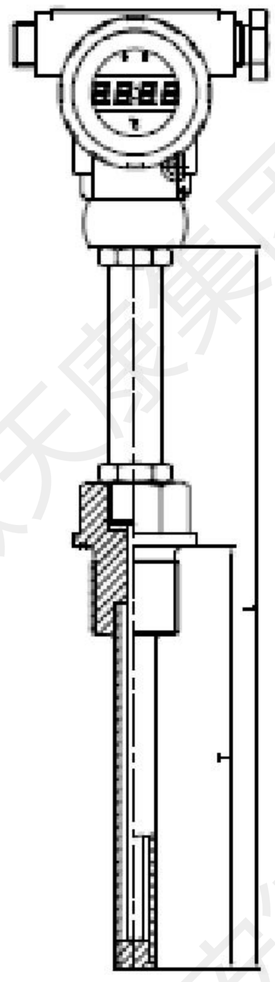

WZPB-74S-TH03H

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SBW系列温度变送器

SBW Series Temperature Transmitter

产品概述

Product Application

SBW系列热电偶、热电阻温度变送器是现场安装式温度变送器单元，与工业热电偶、热电阻配套使用，它采用二线制传输方式（两根导线作为电源输入和信号输出的公用传输线）。将工业热电偶、热电阻信号转换成与输入信号或与温度信号成线性的4-20mA、0-10mA的输出信号。

该变送器可直接安装在热电偶、热电阻的接线盒内与之形成一体化结构。它作为新一代测温仪表可广泛应用于冶金、石油、化工、电力、轻工、纺织、食品、国防以及科研等工业部门。

SBW Series Thermocouple, Thermal Resistor temperature transmitter is a field mounted temperature transmitter unit, which is used in conjunction with industrial thermocouples and RTDs. SBW Series Thermocouple, Thermal Resistor temperature transmitter adopts the two-wire transmission mode (two wires as the power input and signal output of the common transmission line). SBW Series Thermocouple, Thermal Resistor temperature transmitter can be industrial thermocouple, RTD signal into the input signal or with the temperature signal into a linear 4~20mA, 0-10mA output signal.

The transmitter can be directly installed in the junction box of thermocouple and RTD to form an integrated structure. As a new generation of temperature measuring instruments, SBW Series Thermocouple, Thermal Resistor temperature transmitter can be widely used in metallurgy, petroleum, chemical industry, electric power, light industry, textile, food, national defense and scientific research and other industrial sectors.

产品原理

Product Principle

热电偶或热电阻传感器反被测温度转换成电信号，再将该信号送入变送器的输入网络，该网络包含调零和热电偶补偿等相关电路。经调零后的信号输入到运算放大器进行信号放大，放大的信号一路经V/I转换器算处理后以4～20mA直流电流输出；另一路经A/D转换器处理后到表头显示。变送器的线性化电路有两种，均采用反馈方式。对热电阻传感器，用正反馈方式校正，对热电偶传感器，用多段折线逼近法进行校正。一体化数字显示温度变送器有两种显示方式。LCD显示的温度变送器用两线制方式输出，LED显示的温度变送器用三线制方式输出。

The thermocouple or thermal resistance sensor converts the measured temperature into an electrical signal, and then sends the signal to the input network of the transmitter, which includes related circuits such as zero adjustment and thermocouple compensation. The zeroed signal is input to the operational amplifier for signal amplification. One path of the amplified signal is processed by the V/I converter and then output as 4~20mA DC current, and the other path is processed by the A/D converter and then displayed on the meter head. There are two types of linearization circuits for the transmitter, both of which use feedback. For the thermal resistance sensor, the positive feedback method is used for correction, and for the thermocouple sensor, the multi-segment broken line approximation method is used for correction. The integrated digital display temperature transmitter has two display modes. The temperature transmitter with LCD display is output in two-wire mode, and the temperature transmitter with LED display is output in three-wire mode.

技术参数

Technical Parameter

1、 输入信号：热电偶：K、E、J、B、S、T、N。热电阻： Pt100、Cu100、Cu50（三线制、四线制）。智能型温度变送器的输入信号可通过PC机或手持器任意设置；

2、 输出信号：在量程范围内输出4～20mA直流信号，与热电偶、热电阻的输入信号成线性或与温度成线性。智能型温度变送器输出4～20mA直流信号同时叠加符合HART标准协议通信信号；隔离式温度变送器，输入与输出相隔离，隔离电压0.5KV，增加了抗共模干扰能力，更适合于计算机连网使用；

3、基本误差：智能型0.2%FS/0.5%FS、HART型0.1%FS；

4、 接线方式：输入二线制、三线制、四线制；

5、 显示方式：四位LCD显示现场温度，智能型四位LCD可通过PC机或手持器设定使之显示现场温度、传感器值、输出电流和百分比例中的任一种参数；

6、工作电压：智能型8～36（V），HART型12～30（V），额定工作电压为24V；

7、允许负载电阻：600Ω（24VDC供电）；

8、工作环境：

a: 环境温度

（-20～80）℃(智能型）、(-40～85)℃（HART型）、（20～80）-℃（数显型）

b：相对湿度：＜85%RH

c：温度漂移：＜50ppm/℃

d：无腐蚀气体或类似的环境；

9、温度影响系数：δ≤0.05%/℃；

1. Input signal: Thermocouple: K, E, J, B, S, T, N. Thermal resistance: Pt100, Cu100, Cu50 (three-wire system, four-wire system). The input signal of the intelligent temperature transmitter can be set arbitrarily by PC or handheld.

2. Output signal: Output 4~20mA DC signal in the range, linear with the input signal of thermocouple and thermal resistor or linear with temperature. The intelligent temperature transmitter outputs 4~20mA DC signals simultaneously superimposed in line with HART standard protocol communication signals; Isolated temperature transmitter, input and output are isolated, isolation voltage 0.5KV, increase the ability to resist common mode interference, more suitable for computer network use.

3. Basic error: Intelligent 0.2%FS/0.5%FS, HART type 0.1%FS.

4. Wiring method: Two wire system, three wire system, and four wire system.

5. Display mode: Four-digit LCD displays the field temperature, and the intelligent four-digit LCD can be set by PC or handheld to display any of the parameters of the field temperature, sensor value, output current and percentage ratio;

6. Working voltage: Intelligent type 8~36(V), HART type 12~30(V), rated working voltage of 24V.

7. Load resistance: 600Ω(24VDC power supply).

8. Working environment:

a: Ambient temperature

(20 ~ 80) - C (smart), (85) - 40 ~ C (HART), (20 ~ 80) - C (digital display type)

b: Relative humidity: <85%RH

c: Temperature drift :<50ppm/C

d: No corrosive gas or similar environment

9. Temperature influence coefficient :8 <0.05%/C.

产品特点

Product Features

1、采用硅胶或环氧树脂密封结构，因此耐震、耐湿、适合在恶劣的现场境中安装使用；

2、现场安装在热电偶、热电阻的接线盒内使用，直接输出4～20mA、0～10mA、的输出信号。这样既节约了昂贵的补偿导线费用，又提高了信号远距离传输过程中的抗干扰能力；

3、热电偶变送器具有冷端温度自动补偿功能；

4、精度高、功耗低，使用环境温度范围宽，工作稳定可靠；

5、适用范围广、既可以与热电偶、热电阻形成一体化现场安装结构，也可以作为功能模块安装在检测设备中和仪表盘上使用；

6、智能型温度变送器可通过HART调制解调器与上位机通讯或与手持器和PC机对变送器的型号、分度号、量程进行远程信息管理、组态、变量监测、校准和维护等功能；

7、智能型温度变送器可按用户实际需要调整变送器的显示方向，并可显示变送器所测的介质温度、传感器值的变化、输出电流和百分比例。

1. Silicone or epoxy resin seal structure, shock-resistant and moisture-resistant, suitable for installation and use in harsh site environment.

2. On-site installation in the junction box of thermocouple and thermal resistance, direct output of 4~20mA, 0~10mA

output signal, which not only saves the cost of compensation wire, but also improves the anti-interference ability of signal long-distance transmission process.

3. Thermocouple transmitter with cold end temperature automatic compensation function.

4. High precision, low power consumption, wide ambient temperature range, stable and reliable work.

5. Applicable to a wide range of applications, it can form an integrated field installation structure with thermocouples and thermoelectric positives, and can also be installed as a functional module in testing equipment and instrument panel.

6. The intelligent temperature transmitter can communicate with the host computer through HART modem or carry out remote information management, configuration, variable monitoring, calibration and maintenance of the transmitter model, index number and range with handheld and PC.

7. The intelligent temperature transmitter can adjust the display direction of the transmitter according to the actual needs of the user, and can display the medium temperature measured by the transmitter, the change of the sensor value, the output current and the percentage.

测量范围
Measuring Range

类别 Category	材质 Material	分度号 Graduation	测量范围 Measuring range
热电偶 Thermocouple	镍铬-康铜 Nichrome-Constantan	E	(0~800) ℃范围内任选 Optional within the range of (0-800) ℃
	镍铬-镍硅 Nichrome-Nickel-Silicon	K	(0~1300) ℃范围内任选 Optional within the range of (0-1300) ℃
	镍铬硅-镍硅 Nichrome-Silicon-Nickel-Silicon	N	(0~1300) ℃范围内任选 Optional within the range of (0-1300) ℃
	铂铑10-铂铑 Platinum-Rhodium 10 -Platinum-Rhodium	S	(0~1600) ℃范围内任选 Optional within the range of (0-1600) ℃
	铂铑30-铂铑6 Platinum-Rhodium 30 -Platinum-Rhodium 6	B	(600~1800) ℃范围内任选 Optional within the range of (600-1800) ℃
热电偶 Thermocouple	铜-康铜 Copper - Constantan	T	(0~400) ℃范围内任选 Optional within the range of (0-400) ℃
	铁-康铜 Iron-constantan	J	(0~800) ℃范围内任选 Optional within the range of (0-800) ℃
热电阻 Thermal Resistor	铜热电阻 Copper Thermal Resistor	Cu50	(-50~150) ℃范围内任选 Optional within the range of (-50-150) ℃
	铜热电阻 Copper Thermal Resistor	Cu100	(-50~150) ℃范围内任选 Optional within the range of (-50-150) ℃
	铂热电阻 Platinum Thermal Resistor	Pt100	(200~600) ℃范围内任选 Optional within the range of (200-800) ℃

型号代码及说明
Model code and description

型号 Model			说明 Description
SBW			温度变送器 Temperature transmitter
类别 Category	R		热电偶 Thermocouple
	Z		热电阻 Thermal Resistor
传感器 Sensor	1		适配K热电偶/适配Pt100热电阻 Adapted K-thermocouple/Adapted Pt100 thermistor
	2		适配E热电偶/适配Cu100热电阻 Adapted E thermocouple/Adapted Cu100 thermistor
	3		配J热电偶/适配Cu50热电阻 Adapted J thermocouple/Cu50 thermistor
	4		适配B热电偶 Adapted B thermocouple
	5		适配S热电偶 Adapted S-thermocouple
	6		适配T热电偶 Adapted T thermocouple
	7		适配N热电偶 Adapted N thermocouple
	9		用户自定 Custom by user
电路类别 Circuit category	0		隔离型 Isolated type
	1		非隔离型 Non isolated type
安装方式 Installation method	0		常规型 Conventional type
	1		导轨型 Guide rail type
变送器种类 Type of transmitter	0		常规型 Conventional type
	1		隔离型 Isolated type
	2		数显型 Digital display type
	3		带HART协议型 HART Protocol type
	4		自供电 Self-power
	5		其它型式 Other types

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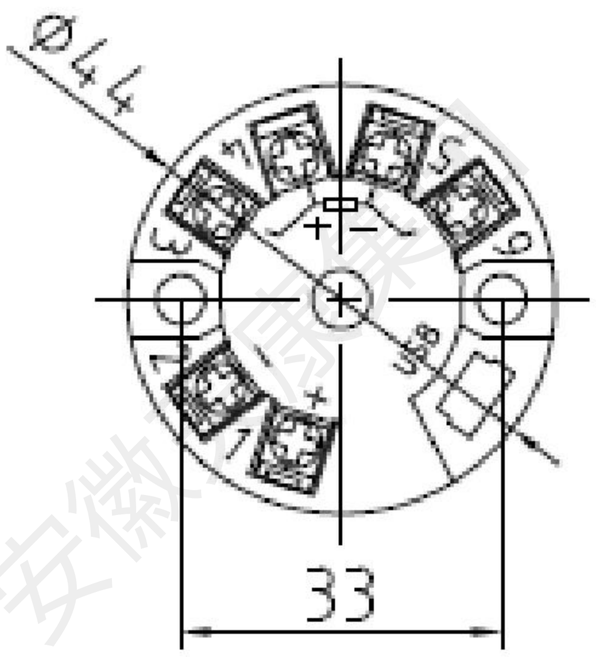
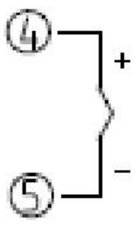
接线说明
Wiring Instructions

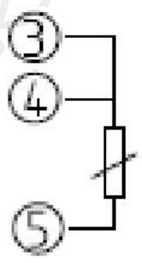
智能型温度模块
Intelligent temperature module



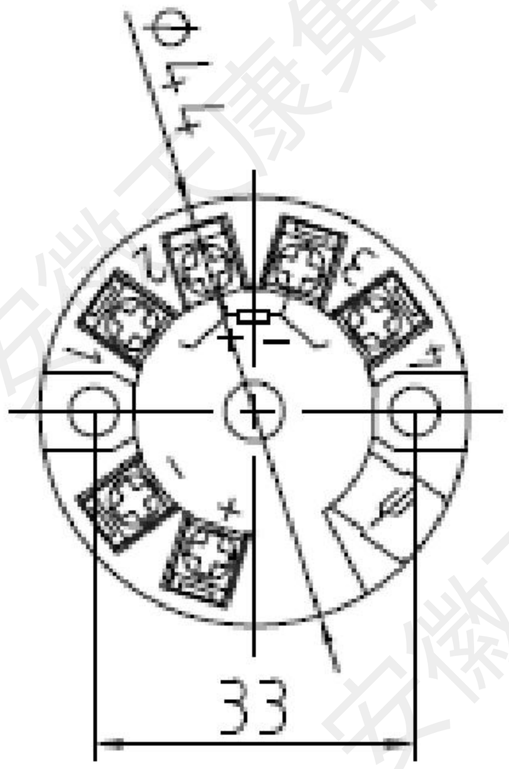
热电偶接线:
Thermocouple wiring



热电阻接线:
Thermal Resistor wiring

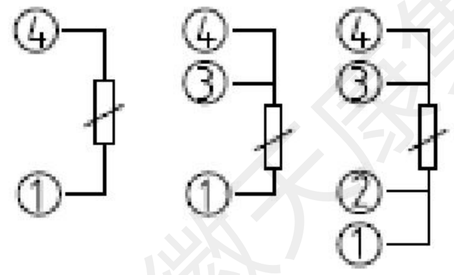


HART温度模块
HART temperature module



热电偶
Thermocouple

热电阻接线:
Thermal Resistor wiring



热套式热电偶（阻）

Shrunk-on Thermocouple (Thermal Resistor)

天康集团

产品应用

Product Application

专业针对电站设计，可以满足300MW、600MW、1000MW等发电机组及辅机测温需要。直接测量生产过程中的 - 200℃~800℃范围内液体、蒸汽和气体介质以及因体表面测温。

It is specially designed for the power station, which can meet the temperature measurement needs of 300 MW, 600 MW, 1000 MW and other generating units and auxiliaries. It can directly measure the temperature of liquid, steam, gas medium and solid surface in the range of -200 ~ 800 ℃ in the production process.

测温范围及允差

Temperature measurement range and tolerance

热电偶 Thermocouple

型号 Model	分度号 Graduation	允差等级 Tolerance level			
		I		II	
		允差值 Tolerance value	测温范围 ℃ Temperature measurement range	允差值 Tolerance value	测温范围 ℃ Temperature measurement range
WRN	K	±1.5℃	-40~+375	±2.5℃	-40~+333
		±0.004|t|	375~1000	±0.0075|t|	333~1200
WRM	N	±1.5℃	-40~+375	±2.5℃	-40~+333
		±0.004|t|	375~800	±0.0075|t|	333~900

热电阻 Thermal resistance

型号 Model	分度号 Graduation	测温范围（℃） Temperature measurement range	精度等级 Accuracy level	允差（℃） Tolerance value
WZP	Pt100	-200~+500	A级	±(0.15+0.002|t|)
			B级	±(0.30+0.005|t|)
WZC	Cu50 Cu100	-50~+100	/	±(0.30+0.006|t|)

常温绝缘电阻

Room temperature insulation resistance

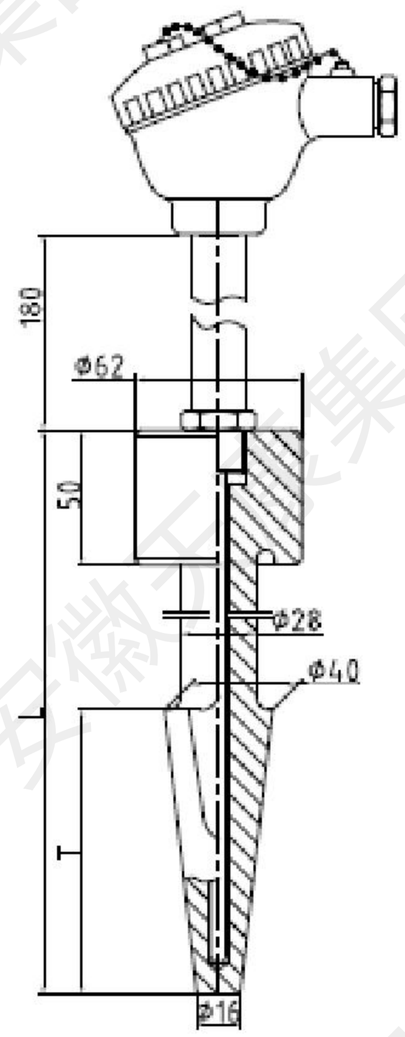
热电偶在环境温度为（20±15）℃，相对湿度不大于80%，试验电压为（500±50）V（直流）电极与外套管之间的绝缘电阻≥1000MΩ.m。

热电阻在环境温度为（15~35）℃，相对湿度不大于80%，试验电压为（10~100）V（直流）电极与外套管之间的绝缘电阻≥100MΩ。

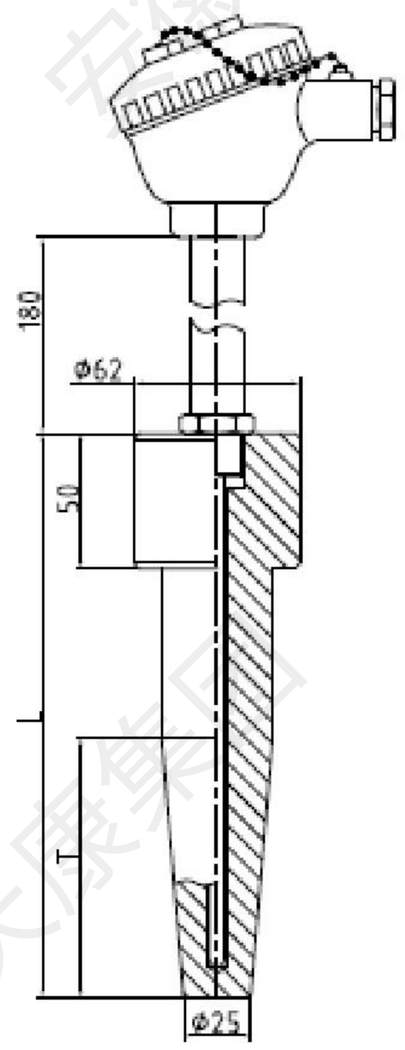
The insulation resistance of Thermocouple is ≥1000MΩ between the electrode and the outer casing at an ambient temperature of (20±15)°C, a relative humidity of not more than 80%, and a test voltage of (500±50)V (DC).

The insulation resistance of Thermal Resistor is ≥100MΩ between the electrode and the outer casing at an ambient temperature of (15~35)°C, a relative humidity of not more than 80%, and a test voltage of (10~100)V (DC).

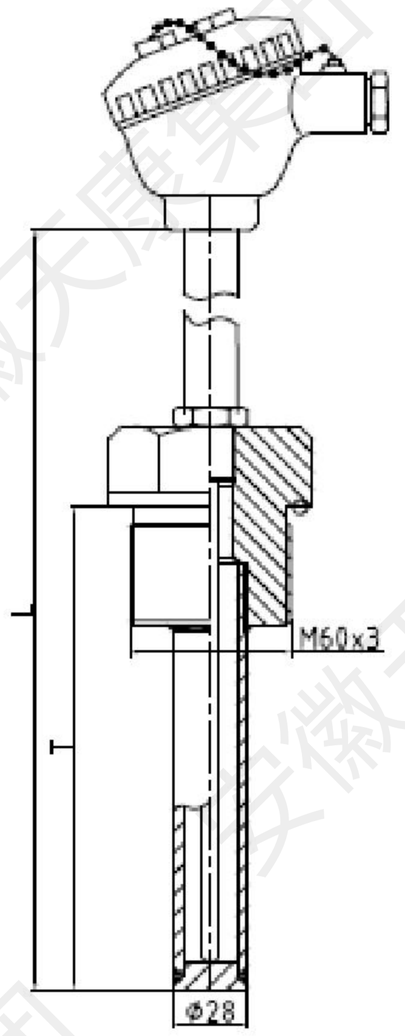
结构示意图
Structure diagram



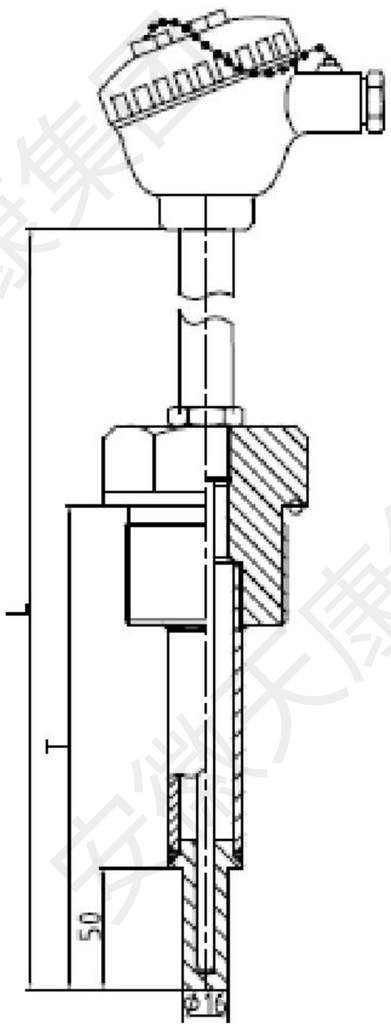
WRN-01A



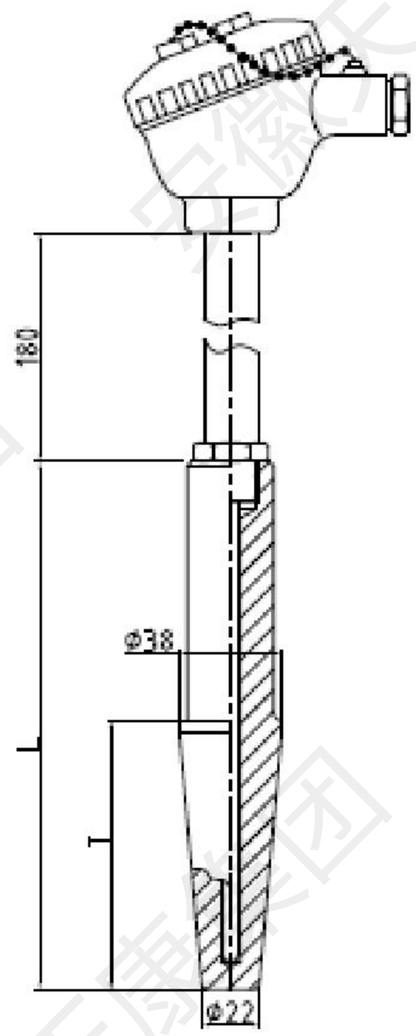
WRN-01B



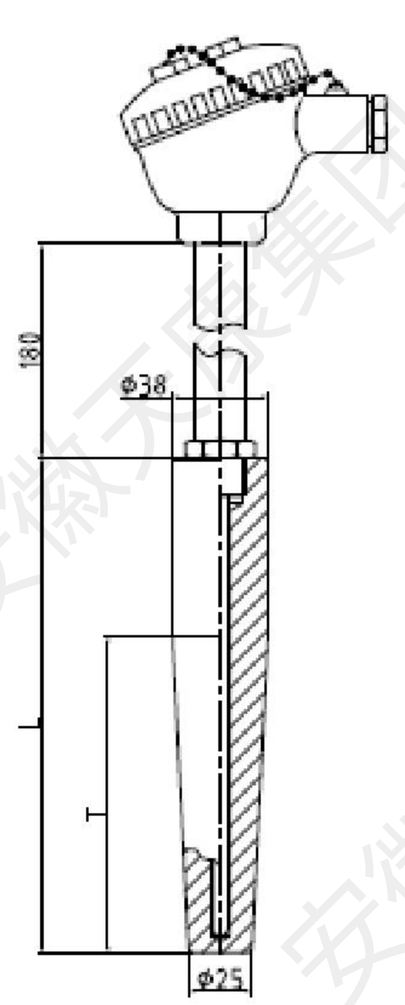
WRN-12



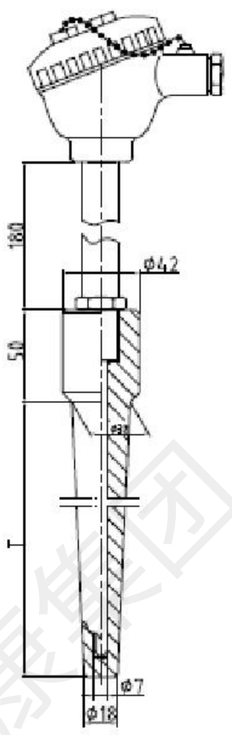
WRN-12G



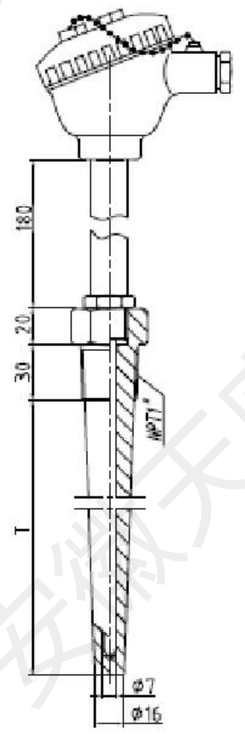
WRN-13A



WRN-13B



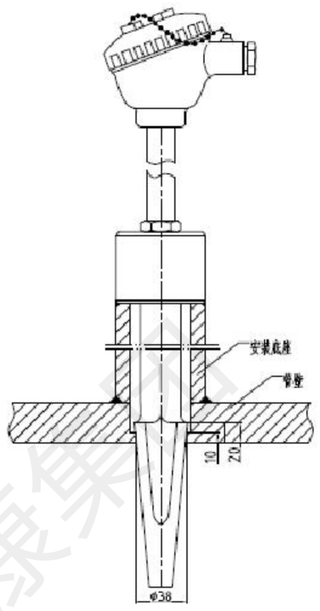
WRN-14



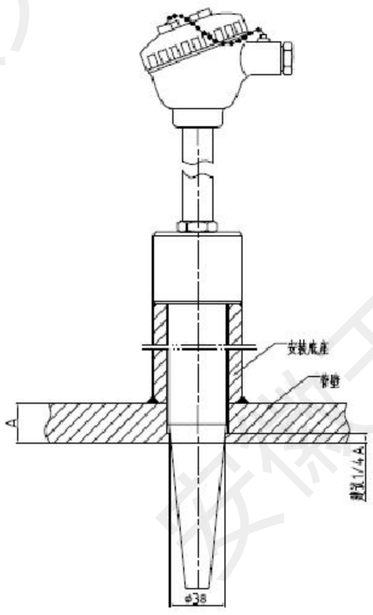
WRN-15

安装示意图

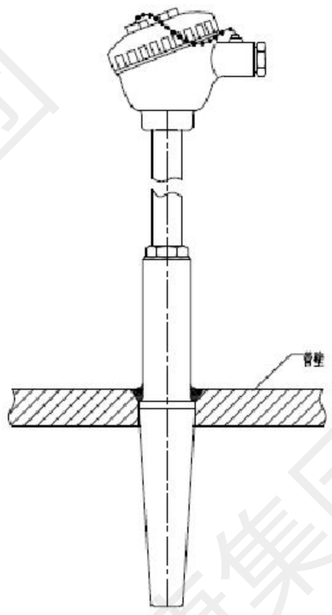
Installation diagram



WRN-01A



WRN-01B



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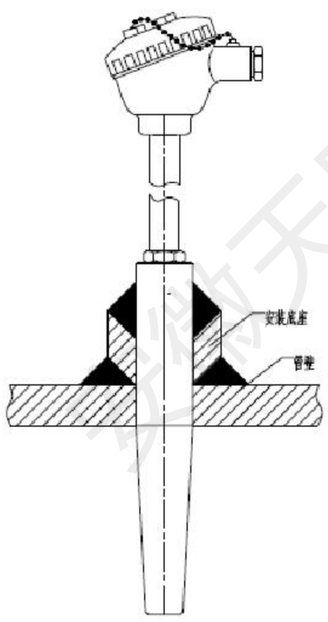
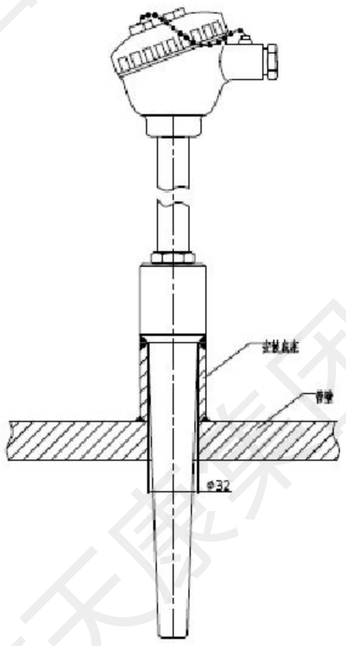
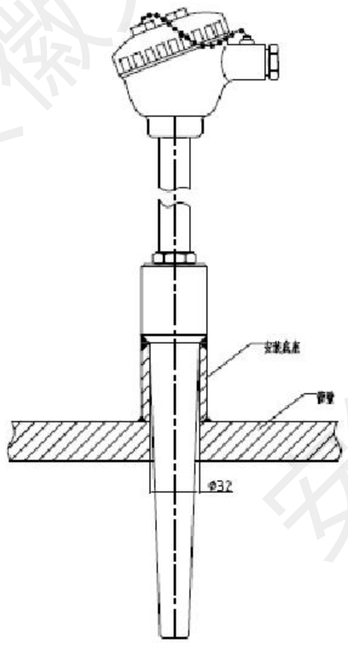


WRN-13B



WRN-14



WRN-15

表面热电偶（阻）

Surface Thermocouple (Thermal Resistor)

产品概述

Product Overview

表面热电偶（阻）主要用于锅炉管壁、炉壁以及其他圆柱体表面测量温度。采用直径（3~6）mm的元件作为测温探头，测量端焊接、螺钉、磁钢、抱箍固定在感温片上组成。将带有与炉壁相吻合的曲面的感温片焊接、箍、吸磁在炉壁（管道）上，便可测量炉壁，管道和圆柱体表面温度。

Surface Thermocouple (Thermal Resistor) is mainly used for boiler walls, furnace and other cylindrical surface temperature measurement, using the diameter (3 ~ 6) mm components as a temperature probe, measuring end welding, screws, magnets, hoops fixed in the sense of the composition of the piece of temperature. With the furnace wall with the surface of the temperature sensing piece of welding, hoop, suction magnet in the furnace wall (pipe), it will be able to measure the temperature of the furnace wall, pipeline and cylindrical surface temperature.

技术参数

Technical Parameter

名称 Name	分度号 Graduation	测温范围 ℃ Temperature measurement range	允差等级 Tolerance level	套管直径 Sleeve diamater	热响应时间 $t_{0.5}$ Thermal response time		安装方式 Installation method
					接壳型 Shell type	绝缘型 Insulation type	
锅炉护壁热电偶 Boiler wall thermocouple	K	0~800	Ⅰ级 Ⅱ级	Φ4 Φ5 Φ6	≤0.85S	≤2.5S	感温片与设备焊接固定或螺栓固定 热电偶与感温片用螺钉固定 The temperature sensing piece is fixed by welding or bolting with the equipment. The thermocouple is fixed by screws with the temperature sensing piece.
	N	0~800					
	E	0~600					
抱箍热电偶 Hoop thermocouple	K	0~800	Ⅰ级 Ⅱ级	Φ4 Φ5 Φ6	≤2S	≤6S	抱箍固定 Hoop fixing
	N	0~800					
	E	0~600					

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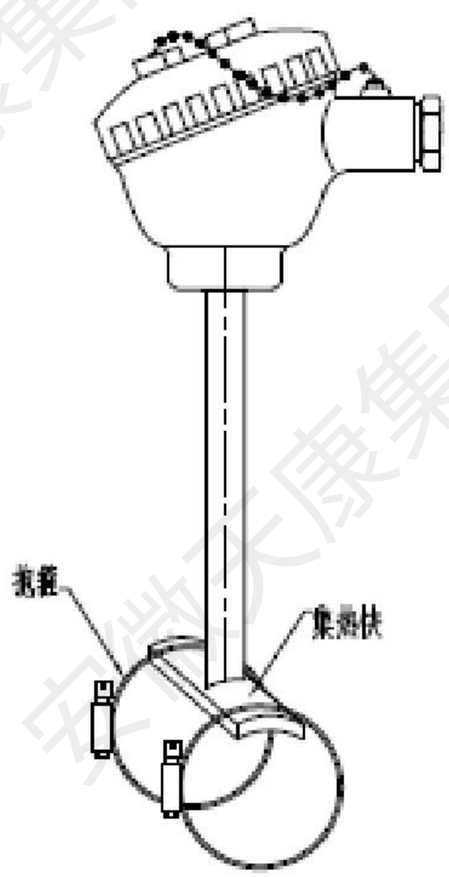
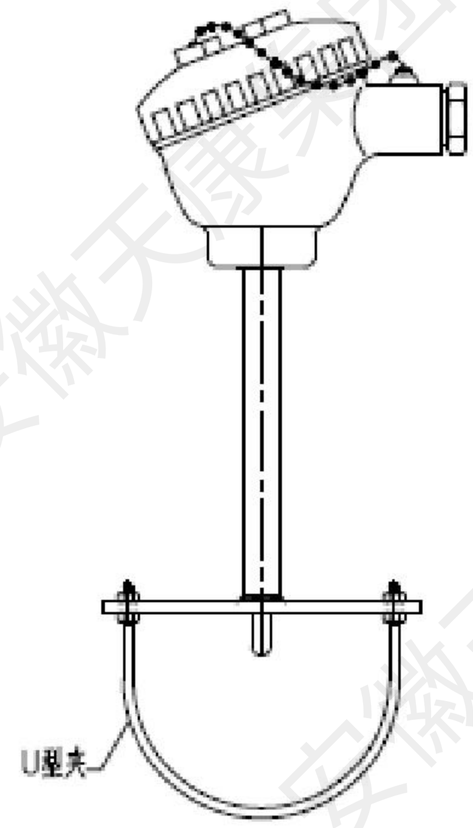
结构示意图

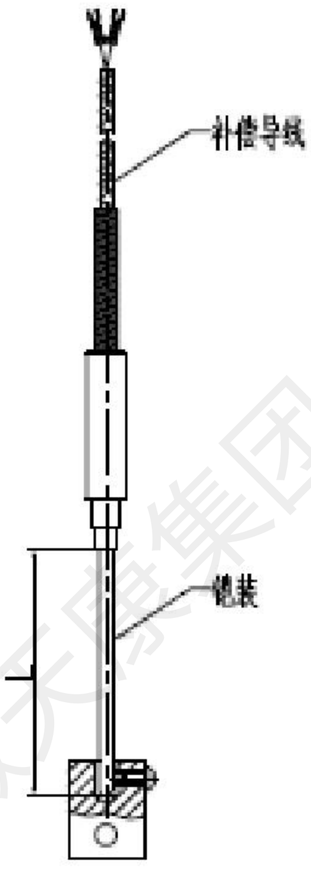
Structure diagram



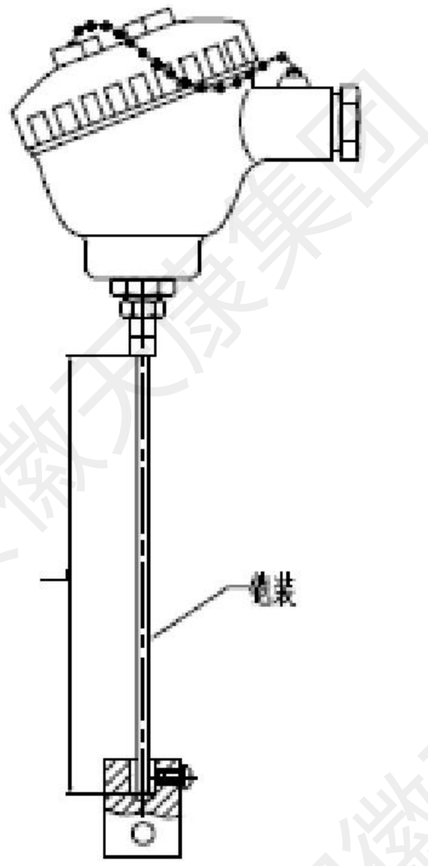
WRN-135MG/WZP-135MG



WRN-135U/WZP-135U



WRNK-195M/WZPK-195M



WRNK-135M/WZPK-135M

端面热电阻（偶）

Face Thermal Resistor (Thermocouple)

产品应用

Product Application

端面热电偶/热电阻适用于测量固定表面的温度，尤其适用于汽轮机推力瓦、双水内冷发电机的水管测温，也可用于大型通用机组和风机、空压机等通用机械的轴承测温。

Face Thermocouple/Thermal Resistor is suitable for measuring the temperature of fixed surface, especially for measuring the temperature of the water pipe of the turbine thrust tile and the double water internal cooling generator, and also for measuring the temperature of the bearing of the large general unit and the general machinery such as fans and air compressors.

产品参数

Product Parameters

- 分度号：Pt100、Cu50，Pt1000、K、E、J；
- 精度：A级、B级/I级、II级；
- 螺纹：M6*1、M8*1、M12*1.5、M10*1.5。

- Graduation: Pt100, Cu50, Pt1000, K, E, J.
- Accuracy: Class A, B / Class I, Class II.
- Thread: M6*1, M8*1, M12*1.5, M10*1.5.

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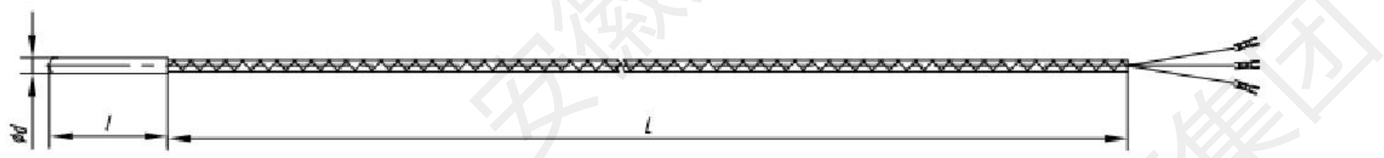
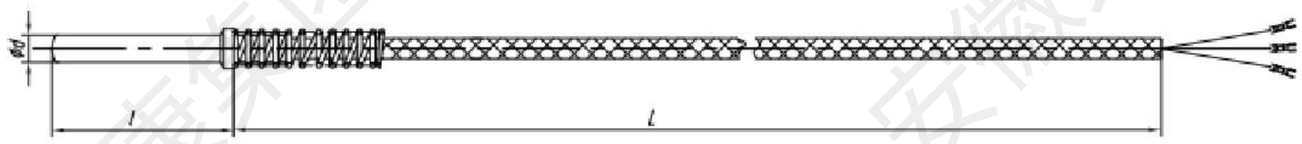
结构示意图

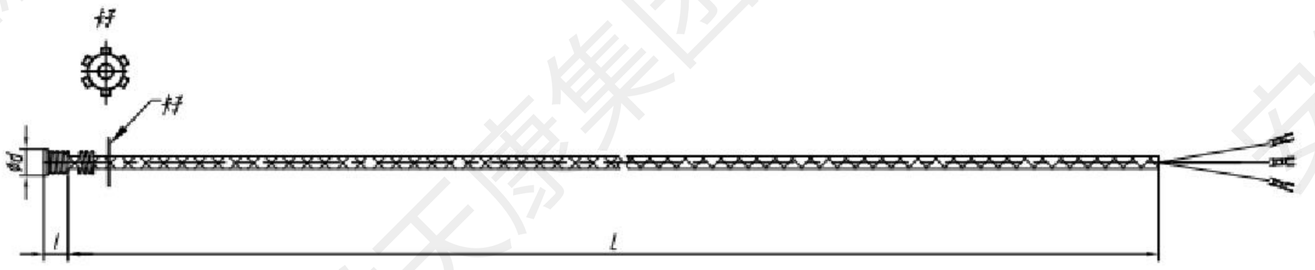
Structure diagram



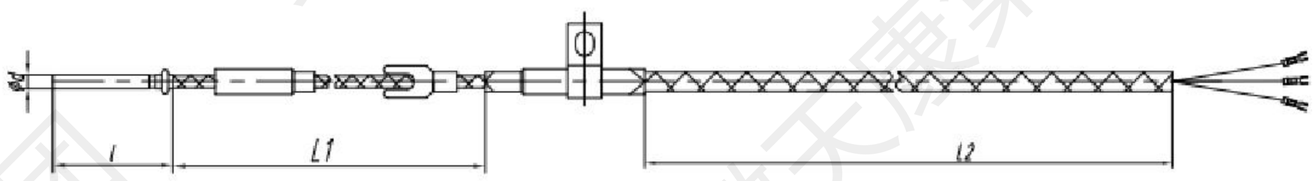
WZPM-020



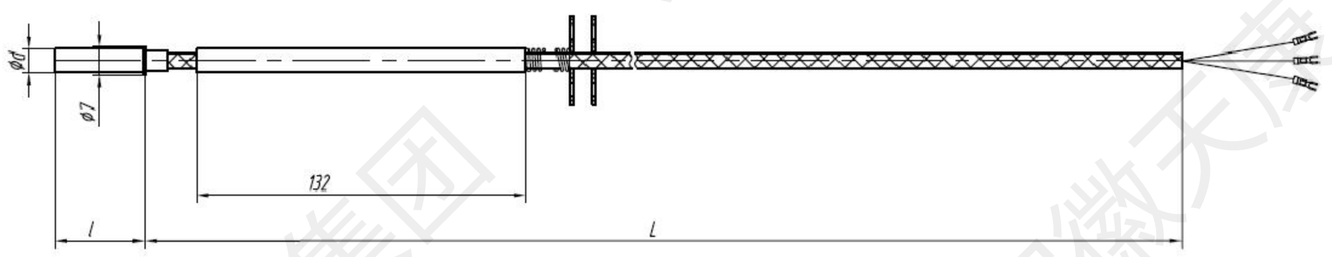
WZPM-020A



WZPM-020B



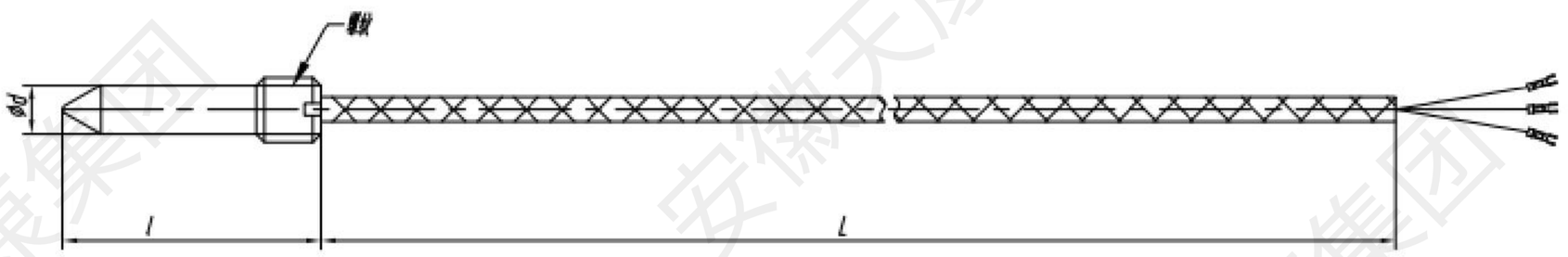
WZPM-020C



WZPM-001

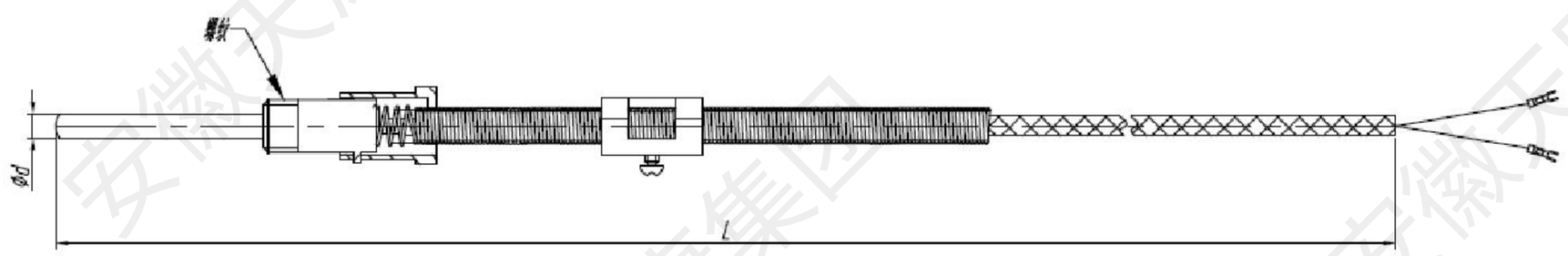
WZPM-020DZ

螺钉式热电偶/电阻 Screw Thermocouple/ Thermal Resistor



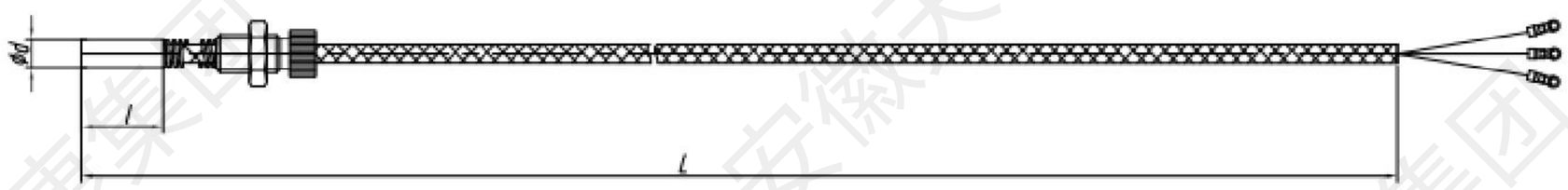
WZPM-020D/WRNM-020D

压簧式铂电阻/电偶 Spring Loaded Platinum Thermal Resistor/ Thermocouple



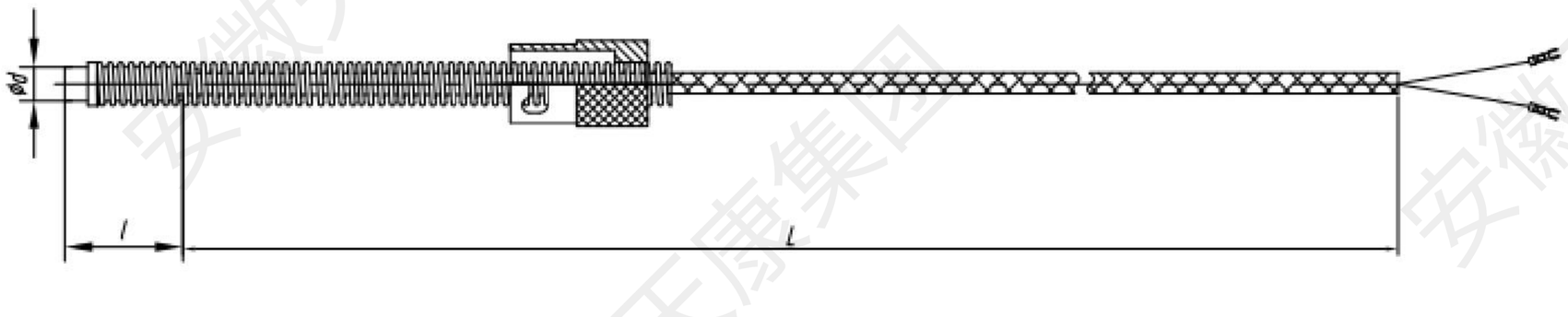
WZPT-01/WRNT-01

端面测温铂电阻 Surface Temperature Measuring Platinum Thermal Resistor



WZPM-201

弹簧压紧固定铂电阻/电偶 Spring Loaded Fixed Platinum Thermal Resistor/ Thermocouple



WRN-01

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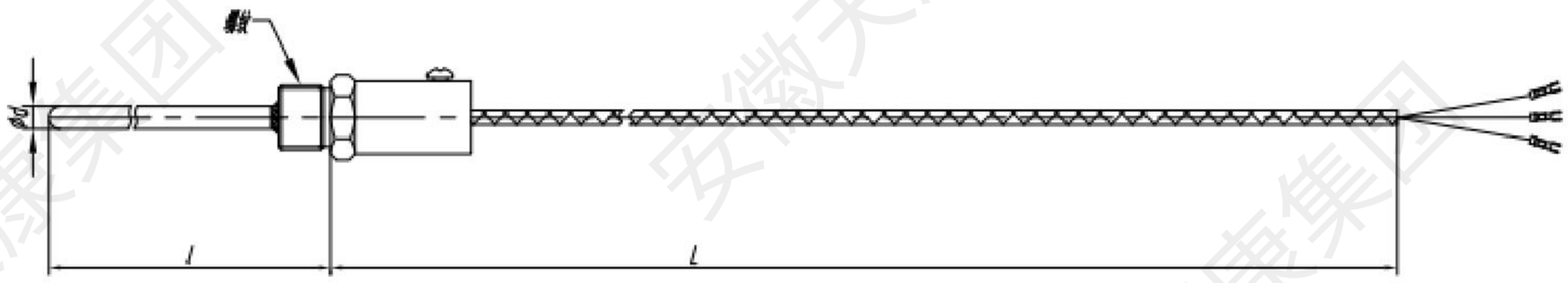
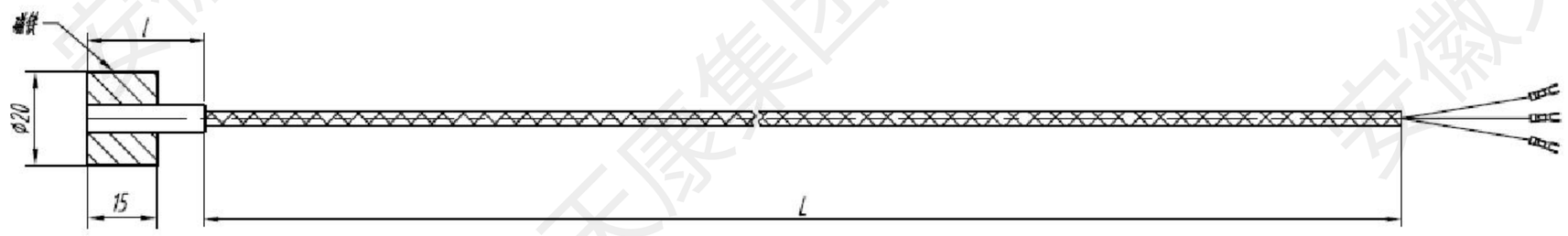
探头式热电偶/电阻　Probe Thermocouple/Thermal Resistor



WRN-018

磁铁式热电阻　Magnetic Thermal Resistor



WZP-020C

高压热电偶（阻）

High Pressure Thermocouple (Thermal Resistor)

产品概述

Product Overview

高压热电偶（阻）由铠装热电偶（阻）元件，耐高压（42Mpa）RJ法兰和整体钻孔保护管整体锻造或全熔焊设计组合而成。适用于石油化工行业中如：乙烯、丙烯、加氢、催化、裂化装置及管道内介质温度测量。

High Pressure Thermocouple (Thermal Resistor) is a combination of armored thermocouple (resistance) elements, high pressure (42Mpa) RJ flange and integral drilling protection pipe integral forging or full fusion welding design. It is suitable for the temperature measurement of the medium in the petroleum and chemical industry such as: ethylene, propylene, additive, catalytic, cracking unit and pipeline.

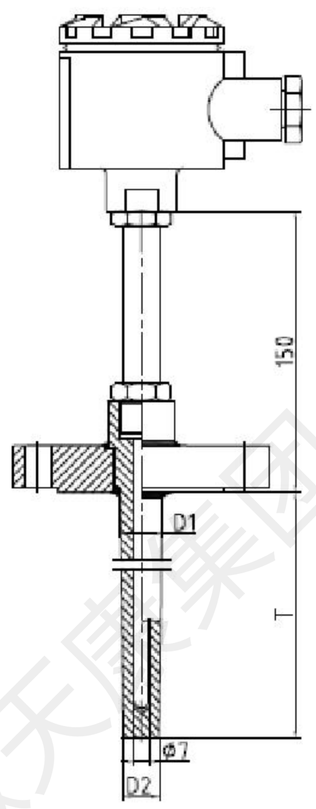
测温范围及允差

Temperature measurement range and tolerance

型号 Model	分度号 Graduation	测温范围 ℃ Temperature measurement range	工程压力 Nominal pressure	允许偏差 Allowable deviation
WRN-74-TH02H WRN2-74-TH02H	K	0~1000	42MPa	I级（±1.5℃或±0.4%ltl） II级（±2.5℃或±0.75%ltl）
WRE-74-TH02H WRE2-74-TH02H	E	0~800		
WZP-74-TH02H WZP2-74-TH02H	Pt100	-200~450		A级：±（0.15+0.2%ltl） B级：±（0.30+0.5%ltl）

结构示意图

Structure diagram



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耐磨热电偶（阻）

Wear-resistant Thermocouple (Thermal Resistor)

产品概述

Product Overview

耐磨热电偶（阻）由耐磨保护管、感温元件、安装装置和接线盒等部件组成。可用于电厂磨煤机、循环循环流化床，化工催化裂化装置，水泥厂窑头窑尾，焚烧炉等流动介质的温度测量。切断式耐磨热电偶，可在保护管使用磨损，出现泄漏时，及时关闭产品上附带的切断阀，防止泄漏继续发生。对于防漏要求特别高的部位测量，可采用卡套式防内漏耐磨热电偶，通过密封性能良好的固定卡套螺纹接头，可以有效防止被测介质泄漏。

Wear-resistant Thermocouple (Thermal Resistor) consists of wear-resistant protection tube, temperature sensing element, mounting device and junction box and other components. It can be used for temperature measurement of flowing medium in coal mills, circulating fluidized beds in power plants, catalytic cracking units in chemical industry, kiln heads and kiln tails in cement factories, incinerators and so on. Cut-off wear-resistant thermocouple, can be used in the protection tube wear, leakage, timely closure of the product comes with a cut-off valve to prevent leakage continue to occur. For leakage prevention requirements are particularly high parts of the measurement can be used ferrule type anti-internal temperature wear-resistant thermocouple, through the good sealing performance of the fixed ferrule want to pattern joints, can effectively prevent the measured medium leakage.

产品种类

Product Category

喷涂耐磨：采用激光喷涂工艺，将高硬质合金喷涂在保护管上，最高耐温800℃，适用于锅炉烟风道、建筑沥青、重油、粉煤混浇过程等。

堆焊耐磨：采用激光堆焊工艺，在金属套管基体上堆焊钴基合金或镍基合金堆焊层，适用于化工行业催化裂化装置、煤液化反应器、加氢反应器等。

钴基合金耐磨：整体浇铸耐磨，适用于水泥窑和循环流化床高温气流及颗粒的冲刷磨损、腐蚀场合，具有良好的热稳定性和高温强度。

Spraying wear-resistant: Adopting laser spraying process, high hard alloy is sprayed on the protection tube, with the highest temperature resistance of 800C, applicable to boiler flue ducts, construction asphalt, heavy oil, pulverized coal mixing and pouring process.

Surfacing wear-resistant: Adopting laser surfacing art, surfacing drill base alloy or nickel base alloy surfacing layer on the

metal casing base, suitable for catalytic cracking device, coal liquefaction reactor, hydrogenation reactor in chemical industry. Drill base alloy wear-resistant: Integral casting wear-resistant, suitable for cement density and circulating fluidized bed high temperature gas flow and particles of the scouring abrasion, corrosion occasions, with good thermal stability and high temperature strength.

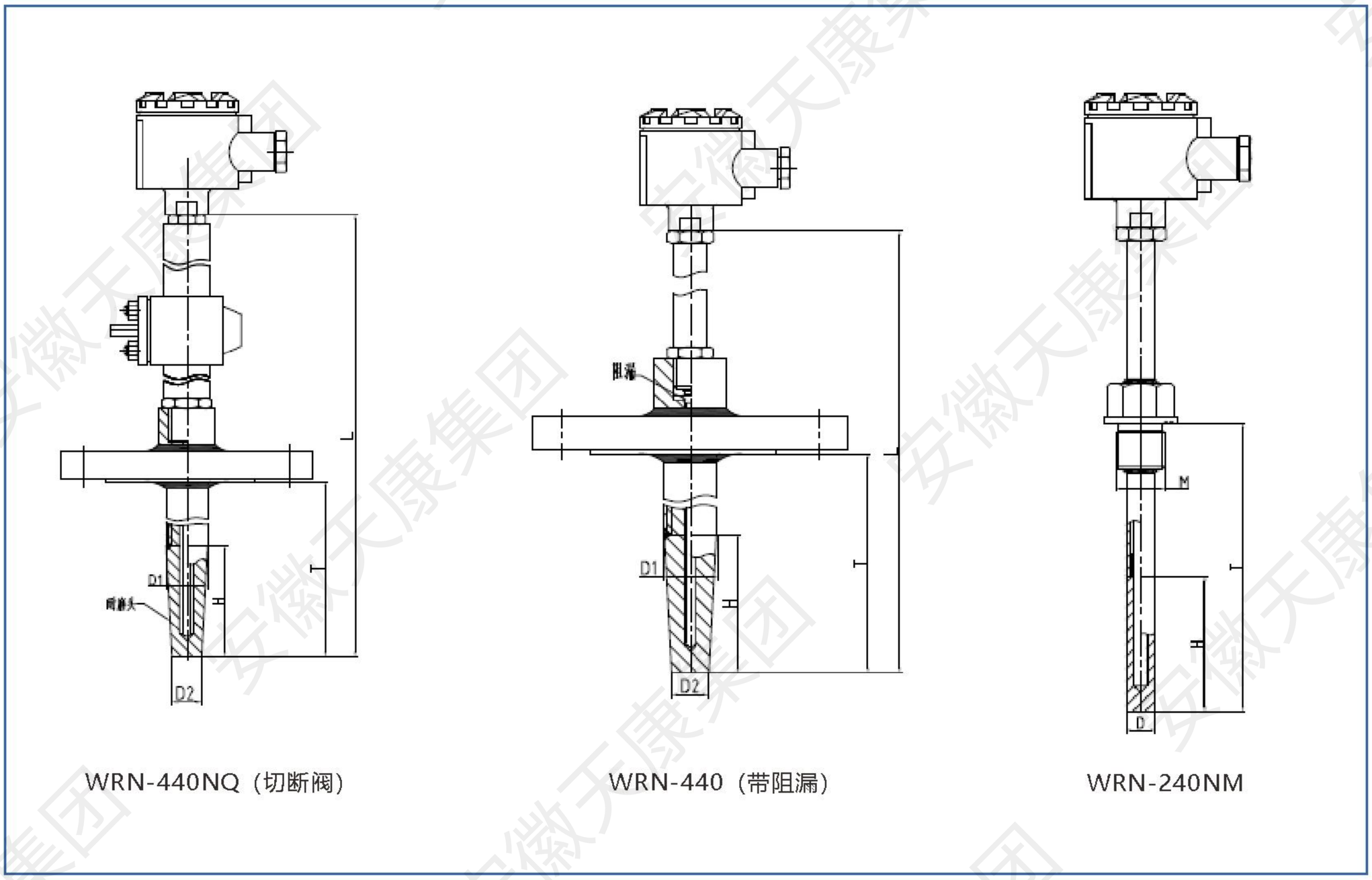
各种耐磨材料适用场合及推荐一览表

Applicable occasions and recommended list of various wear-resistant materials

名称 Name	材质 Material	使用温度 Operating temperature	使用场所 Service place
喷涂耐磨 Spray wear-resistant	Ni60喷涂层 Ni60 coating	800℃	电厂烟气、煤灰、锅炉，造纸厂等 Power plant flue gas, coal ash, boilers, paper mills, etc.
	Wc喷涂层 WC coating		
整体浇铸耐磨 Integral casting wear-resistant	铁基合金耐磨 Iron-based alloy	1200℃	电厂循环流化床锅炉、沸腾炉、磨煤机 水泥厂窑头、窑尾等 Power plant circulating fluidized bed boiler, boiling furnace, coal mill, cement plant kiln head, kiln tail, etc.
	镍基合金耐磨 Nickel-based alloy		
	钴基合金耐磨 Cobalt-based alloy		
堆焊耐磨 Surfacing wear-resistant	司太立合金耐磨 Stearic alloy	1100℃	化工行业催化裂化装置、煤液化反应器、加氢反应器等 Chemical industry catalytic cracking device, coal liquefaction reactor, hydrogenation reactor, etc.

结构示意图

Structure diagram



WRN-440NQ（切断阀） WRN-440（带阻漏） WRN-240NM

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防腐热电阻

Anti-corrosion Thermal Resistance

产品概述

Product Overview

防腐热电阻主要适用于腐蚀性强及低温的场所，其套管外包裹PTFE、PFA、P46等四氟材料，其防腐工艺适用于大部分酸碱及有机物的腐蚀，使用温度＜200℃，可代替高镍合金、钛、钽等材料，性价比高。耐腐蚀包覆工艺可分为衬套工艺和烧结工艺，氟塑料厚度1.5mm。

Anti-corrosion Thermal Resistance is mainly applied to corrosive and low-temperature places, and its casing is wrapped with PTFE, PFA, P46 and other PTFE materials. Its anti-corrosion process is used for most of the acid, alkali and organic corrosion, the use of temperature <200 ℃, instead of high nickel alloy, bowl, tensile and other materials, cost-effective. The corrosion-resistant coating process includes two kinds of bushing process and sintering process, and the thickness of fluorine plastic is 1.5mm.

测温范围及允差

Temperature measurement range and tolerance

型号 Model	分度号 Graduation	测温范围 ℃ Temperature measurement range	四氟厚度 mm Tetrafluoro thickness	允许偏差 Allowable deviation
WZP-73F-TH02F	PT100	-200~200	≥1.5	A级：±（0.15+0.2%|t|） B级：±（0.30+0.5%|t|）

裂解炉专用热电偶

Special Thermocouple for Cracking Furnace

产品概述

Product Overview

裂解炉专用热电偶主要用于测量乙烯裂解炉出口温度。采用特殊结构，使之紧贴于裂解炉管内侧，同时又不影响物料流动。代替进口产品广泛用于乙烯装置。

Special Thermocouple for Cracking Furnace The special thermocouple for cracking furnace is mainly used to measure the outlet temperature of ethylene cracking furnace. A special structure is used to make it close to the inside of the cracking furnace tube without affecting the material flow. It mainly replaces imported products and is widely used in ethylene plants.

产品特点

Product Features

测量端采用V型设计不影响物料流动，使用激光熔覆堆焊ZK825H钨钴合金材料，增强使用寿命；带隔热设计，确保测量温度稳定。

The V-shaped design of the measuring end does not affect the material flow, and the laser cladding surfacing ZK825H tungsten drill alloy material is used to enhance the service life. In addition, the thermal insulation design ensures a stable measurement temperature.

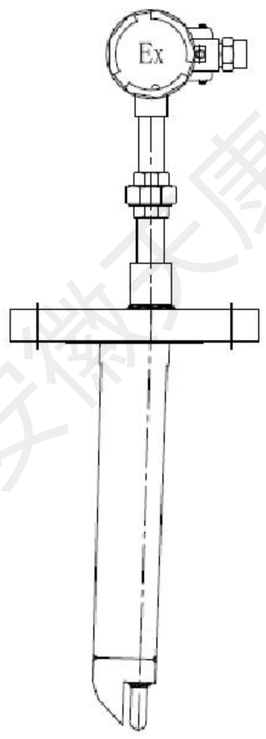
测温范围及允差

Temperature measurement range and tolerance

型号 Model	分度号 Graduation	测温范围 ℃ Temperature measurement range	允许偏差 Allowable deviation
WRN-440	K	-200~200	Ⅰ级（±1.5℃或±0.4%ltl） Ⅱ级（±2.5℃或±0.75%ltl）

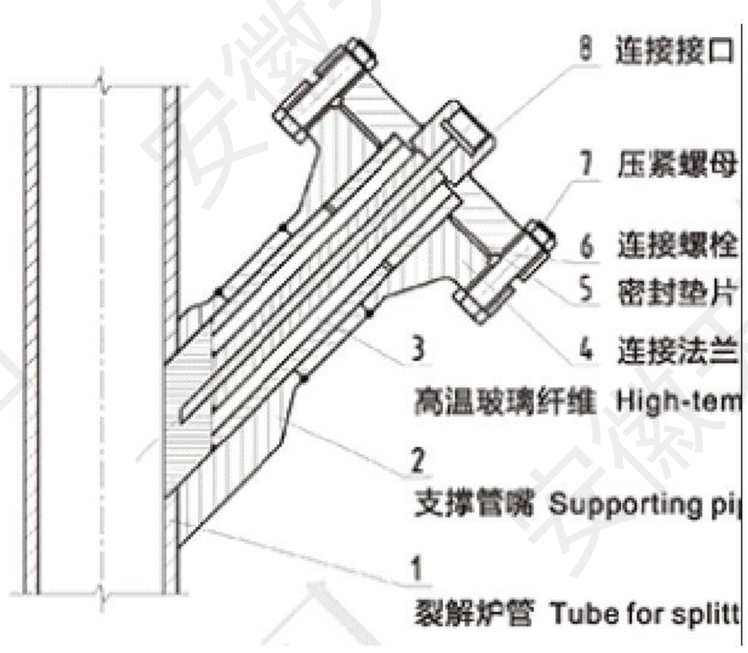
结构示意图

Structure diagram



安装示意图

Installation diagram



天康集团

裂解炉表面热电偶

Surface Thermocouple for Cracking Furnace

产品概述

Product Overview

适用于乙烯裂解炉COT表面测温，保护管折弯成夹角与管道焊接，另外验收段保护管同热电偶一起连接保护管上并成一定的夹角，延伸段保护管长度加长，能保护接线盒内不被现场高温烧坏。

Suitable for temperature measurement of COT surface in ethylene cracking furnace. The protection pipe is bent at an Angle and welded to the pipe. In addition, the protection tube in the acceptance section is connected with the thermocouple on the protection tube and forms a certain Angle, and the length of the protection tube in the extension section is lengthened, which can protect the junction box from being burned by high temperature on site.

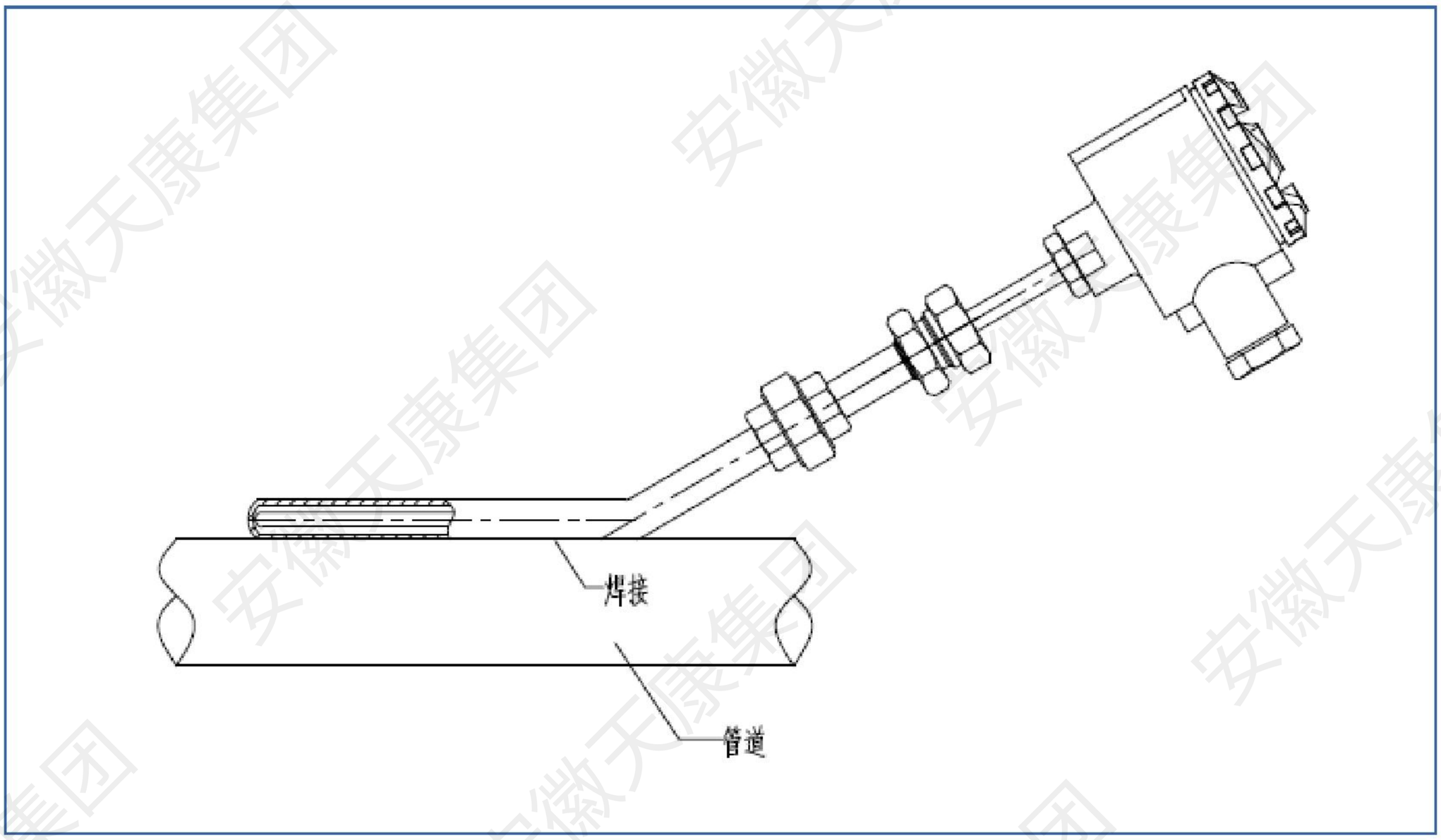
测温范围及允差

Temperature measurement range and tolerance

型号 Model	分度号 Graduation	测温范围 ℃ Temperature measurement range	允许偏差 Allowable deviation
WRN-140 WRN2-140	K	-200~200	I级（±1.5℃或±0.4%ltl） II级（±2.5℃或±0.75%ltl）

安装示意图

Installation diagram



吹气热电偶

Blowing Thermocouple

产品概述

Product Overview

通过吹进氮气或其它气体，将有害气体送出保护管外，从而提高热电偶寿命。是30万吨合成氨装置中不可缺少的测温装置。

By blowing in nitrogen or other gases, the harmful gases are sent out of the protection tube, thus improving the life of thermocouple. It is an indispensable temperature measuring device in 300,000 tons ammonia plant.

产品参数

Product Parameters

- 电气接口：M20*1.5,NPT1/2；
- 精度等级：I级，II级；
- 防护等级：IP65；
- 公称压力：常温。

- Electrical interface: M20*1.5,NPT1/2.
- Accuracy level: I, II.
- Protection level: IP65.
- Nominal pressure: Room temperature.

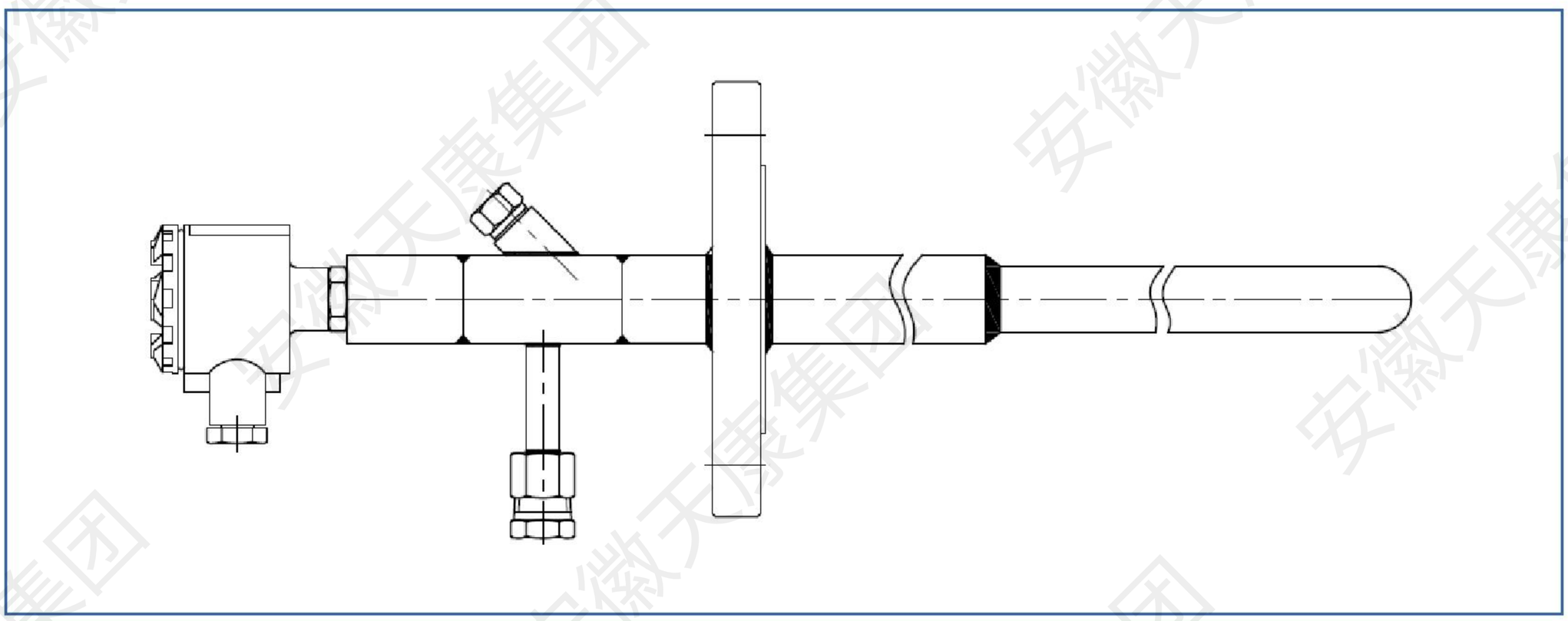
测温范围

Temperature measurement range

型号 Model	分度号 Graduation	测温范围 ℃ Temperature measurement range	流速 Velocity of flow	d
WRP-440 WRP2-440	S	0~1300	高铝质 GH3039	Φ16

结构示意图

Structure diagram



天康集团

柔性多点热电偶

Flexible Multi-point Thermocouple

产品应用

Product Application

适用于生产现场存在温度梯度不显著，须同时测量多个位置或位置的多处测量。广泛应用于大化肥合成塔、存储罐等装置中。

Applicable to the production site there is a temperature gradient is not significant, must be measured at the same time or the location of a number of positions of multiple measurements. Widely used in large fertilizer synthesis towers and storage tanks and other installations.

产品参数

Product Parameters

- 电气接口：M20*1.5，NPT1/2；
- 热响应时间：≤8s；
- 元件直径：Φ1、Φ2、Φ3、Φ4、Φ5、Φ6、Φ8；
- 防护等级：IP65。

- Electrical interface: M20*1.5, NPT1/2.
- Thermal response time: ≤8s.
- Element diameter: Φ1, Φ2, Φ3, Φ4, Φ5, Φ6, Φ8.
- Protection grade: IP65.

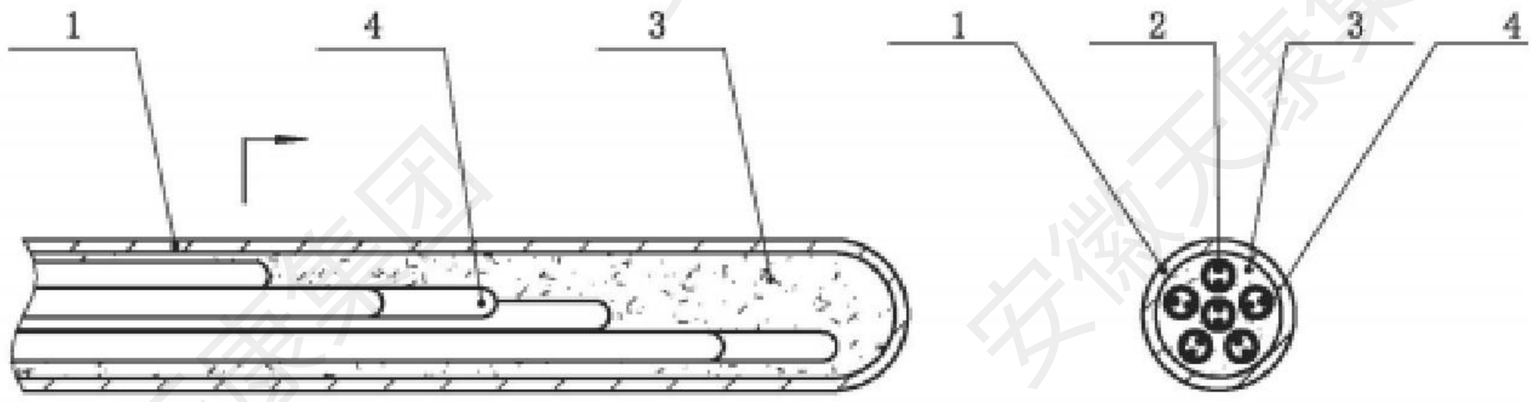
测温范围

Temperature measurement range

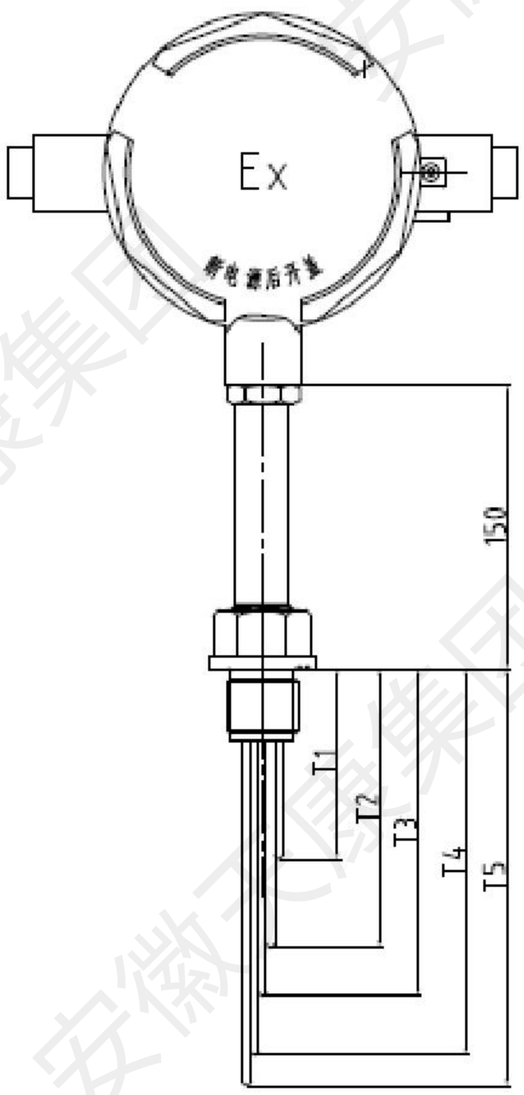
型号 Model	分度号 Graduation	测温范围 ℃ Temperature measurement range	安装固定形式 Installation and fixation form
WRNK-240D	K	0~1000	固定螺纹 Fixed thread
		0~800	
WRE-240D	E	0~800	
WRN-240D	K	0~1000	固定法兰 Fixed flange
		0~800	
WRE-440D	E	0~800	

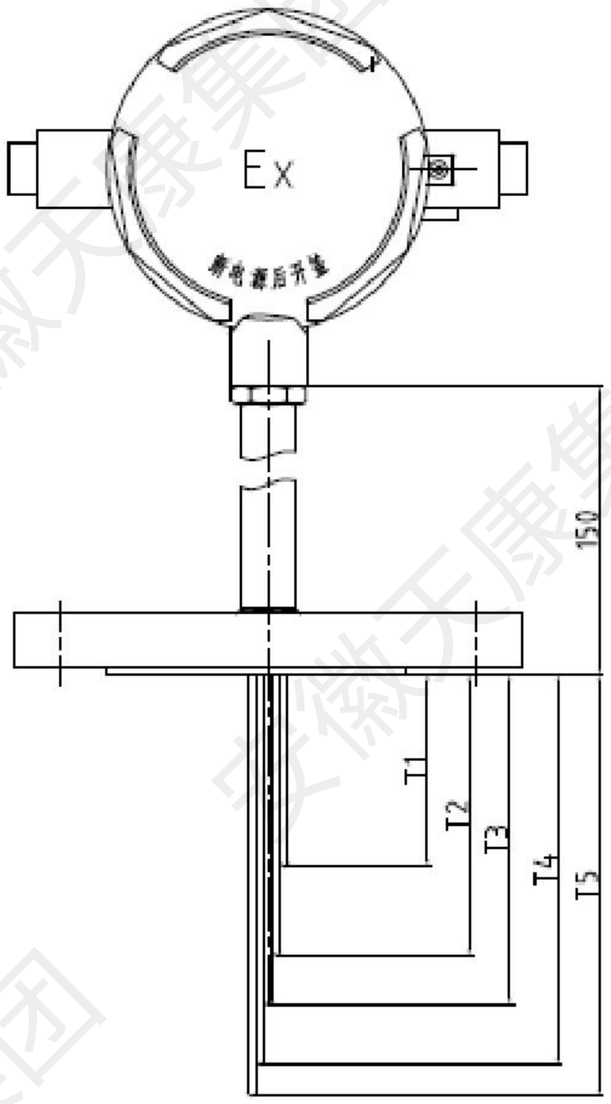
结构示意图
Structure diagram

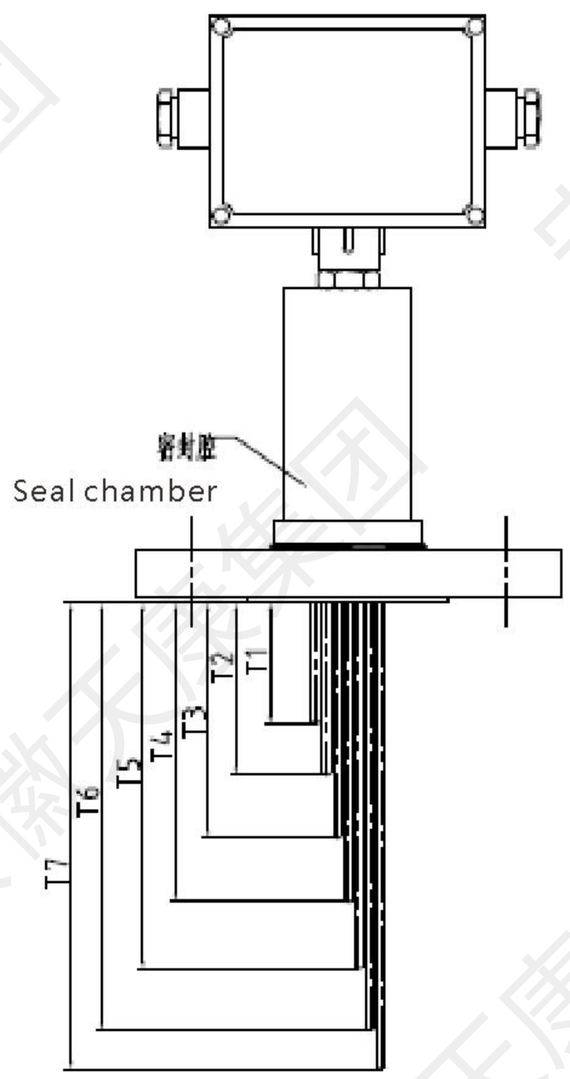
双层铠装多点电偶
Multi-layer Armored Multi-point Thermocouple



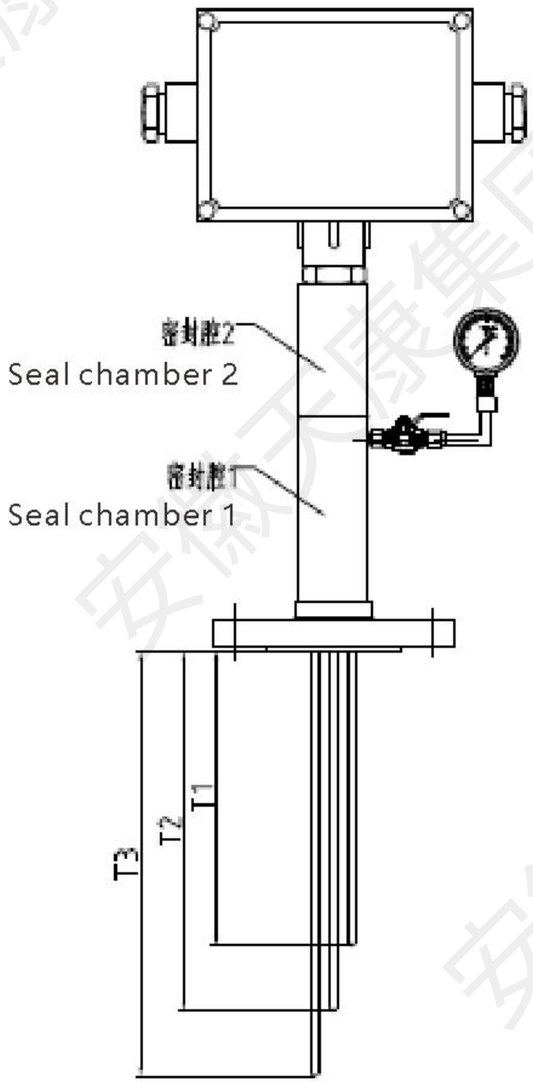
1-外套管 2-热电偶丝 3-绝缘材料 4-铠装热电偶
1. Outer sleeve 2. Thermocouple wire 3. Insulation material 4. Armored thermocouple







单点隔漏
Single point leakage isolation



带报警压力表
Pressure gauge with alarm

多点热电阻

Multi-point Thermal Resistor

产品应用

Product Application

适用于生产现场存在温度梯度不显著，须同时测量多个位置或位置的多处测量。广泛应用于大化肥合成塔、存储罐等装置中。

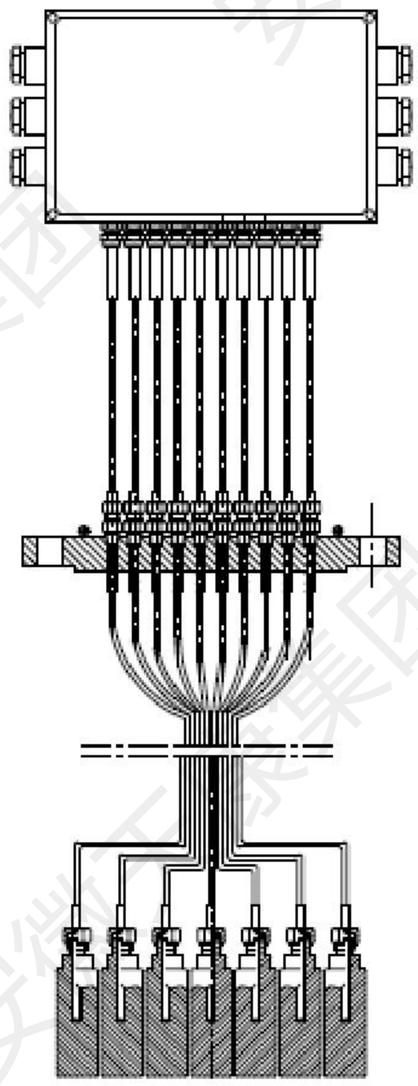
Applicable to the production site there is a temperature gradient is not significant, must be measured at the same time or the location of a number of positions of multiple measurements. Widely used in large fertilizer synthesis towers and storage tanks and other installations.

产品参数

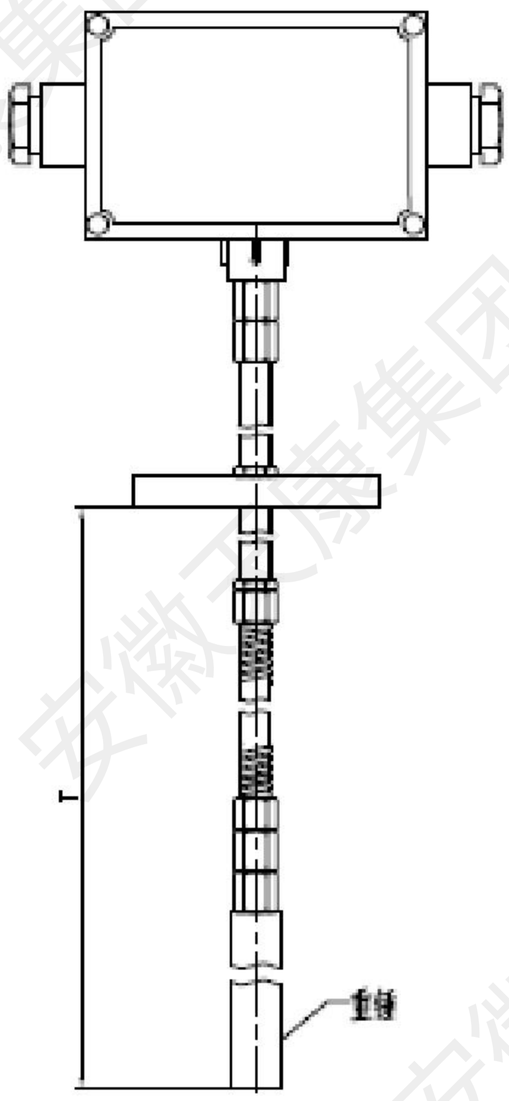
Product Parameters

- 电气接口：M20*1.5，NPT1/2；
- 热响应时间：≤8s；
- 元件直径：Φ3、Φ4、Φ5、Φ6、Φ8；
- 防护等级：IP65。

- Electrical interface: M20*1.5, NPT1/2.
- Thermal response time: ≤8s.
- Element diameter: Φ1, Φ2, Φ3, Φ4, Φ5, Φ6, Φ8.
- Protection level: IP65.



储罐多点热电阻
Multipoint thermal resistance of storage tanks



多点平均温度计
Multipoint average thermometer

天康集团

刀刃式热电偶

Knife Edge Thermocouple

产品应用

Product Application

采用刀刃式接头直接焊接于炉管表面，适用于石油工业炉管、塔壁表面温度测量，是炼油厂分馏塔必备测温装置。

The blade joint is welded directly to the surface of the furnace tube, which is suitable for measuring the surface temperature of the furnace tube and tower wall in petroleum industry, and is an essential temperature measuring device for fractionating tower in refinery.

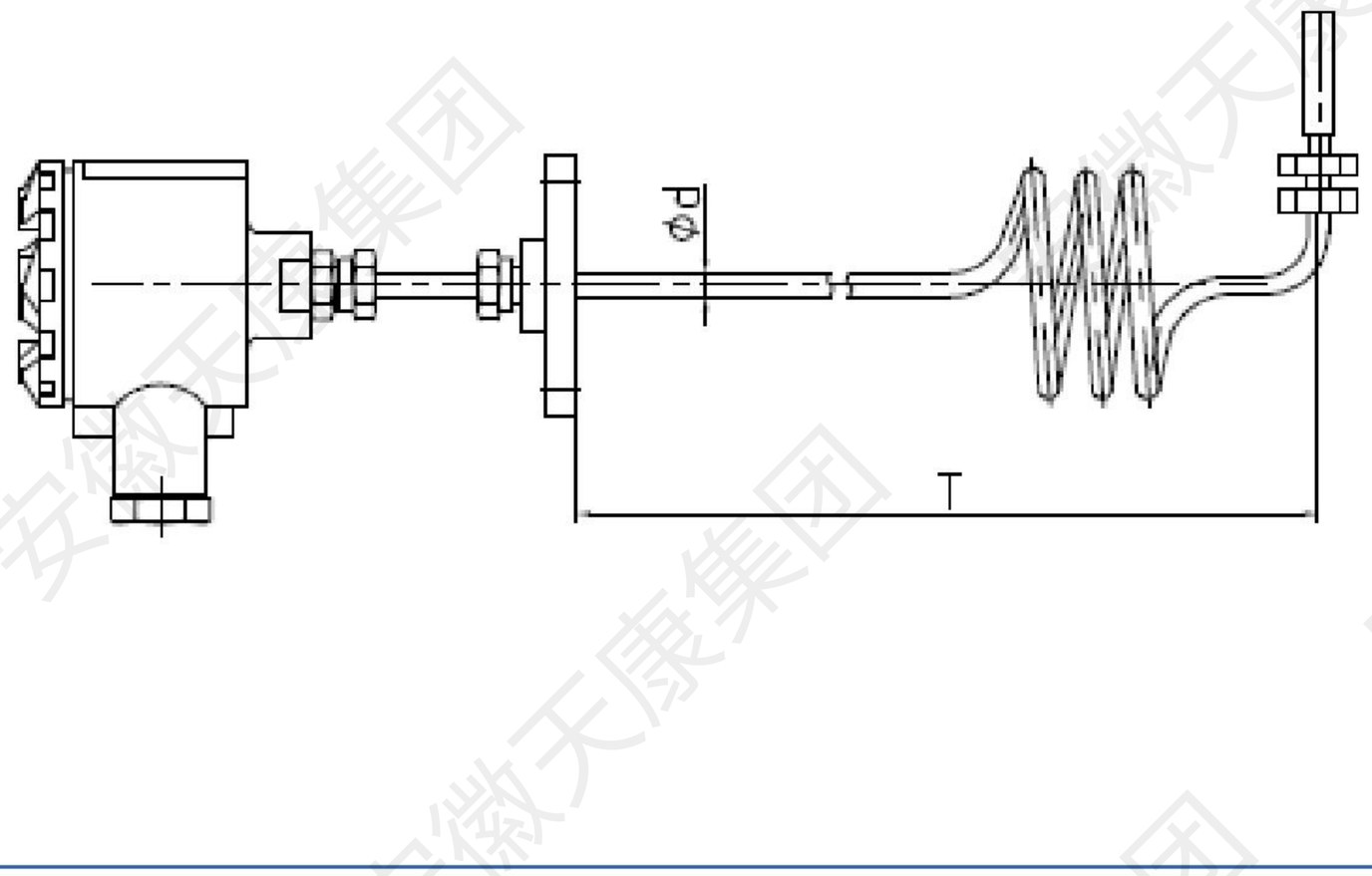
型号规格

Model and specifications

型号 Model	分度号 Graduation	测温范围 ℃ Temperature measurement range	保护管材料 Protective tube material	规格 specifications
				d
WRNK-441D	K	0~1100	310S、GH3030、GH3039	Φ8
		0~800		Φ12.7

结构示意图

Structure diagram



汽化炉高温热电偶

Vaporizer Furnace High Temperature Thermocouple

产品应用

Product Application

适用于煤气化工行业-汽化炉炉膛，煤化工行业炉膛测温专用，其优点为当炉砖及衬里壁厚发生改变时，热电偶可调节自身伸缩量，达到最佳测温位置。通过方向转球，限位导管，减震弹簧等及采用进口无压烧结碳化硅外保护管，内层缓热型内保护管，热电偶具有耐高温、高压、耐磨、良好气密性、二级阻漏结构等诸多优点，是GE-TEXACO炉膛测温的专用高温热电偶。

Suitable for gas chemical industry - vaporization furnace hearth, coal chemical industry furnace jaw temperature measurement special. Its advantage is that when the furnace brick and lining wall thickness changes, the thermocouple can adjust its own expansion and contraction to achieve the best temperature measurement position. Through the direction of the rotating ball, limit conduit, vibration damping basket, etc. and the use of imported pressure-free sintered silicon carbide outer protection tube, the inner layer of slow-heating type inner protection tube, thermocouple has a high temperature, high pressure, wear-resistant, good airtightness, the second level of the leakage structure, and many other advantages. Vaporizer Furnace High Temperature Thermocouple is the special high temperature thermocouple for GE-TEXACO furnace temperature measurement.

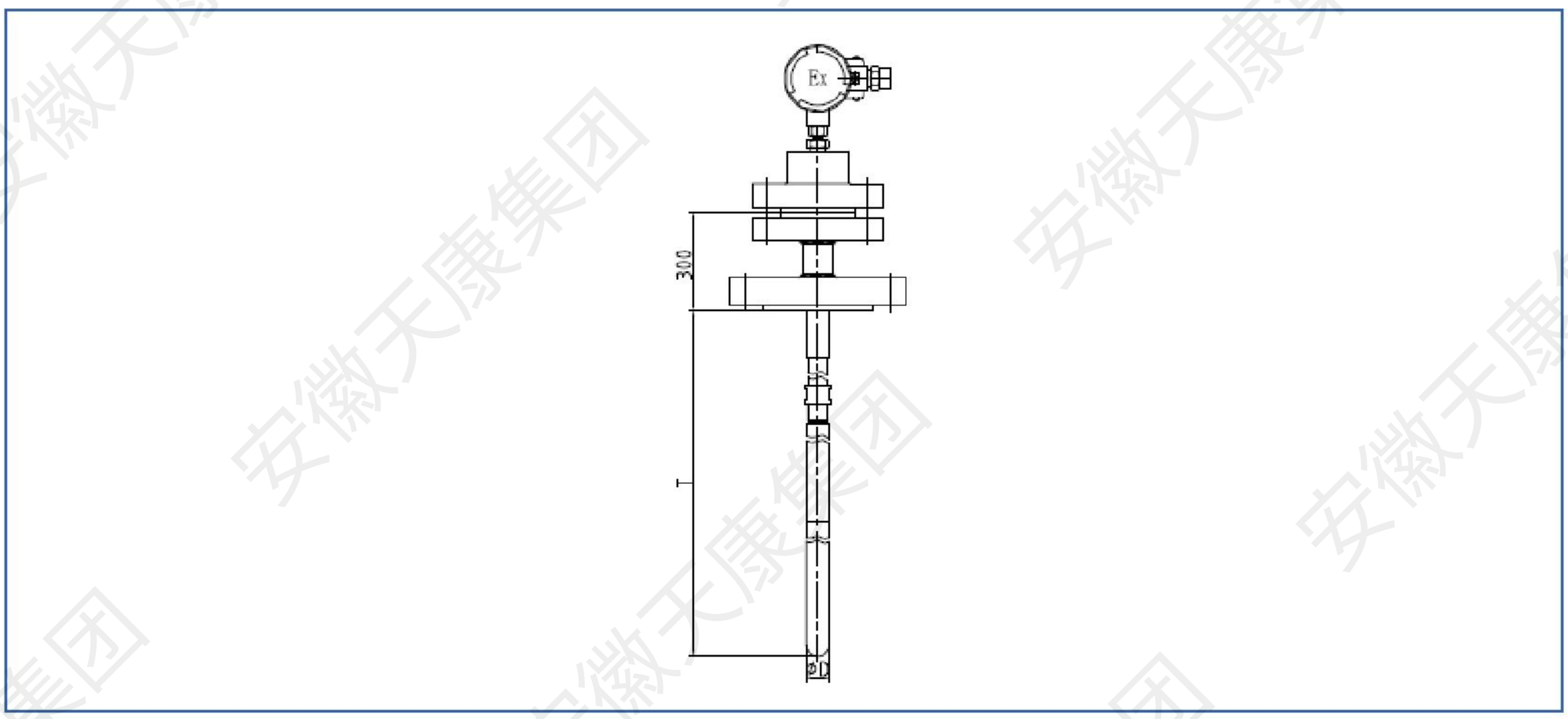
型号规格

Model and specifications

型号 Model	分度号 Graduation	测温范围 ℃ Temperature measurement range	公称压力 Nominal pressure	保护管材料 Protective tube material
WRR-440QH	S，B	0~1600	≤10MPa	无压烧结碳化硅 ssic

结构示意图

Structure diagram



天康集团

热风炉热电偶

Thermocouple for Blast Stove

产品应用

Product Application

适用于钢铁行业高炉热风炉送风管和炉顶等部位的温度测量，它具有耐高温、抗氧化和还原性气体的双重腐蚀，耐气流冲刷，使用温度（600-1600）℃，外套管采用进口无压烧结碳化硅管，内衬双层优质刚玉管，多层保护。

It is suitable for temperature measurement of blast furnace hot blast stove air supply pipe and furnace roof and other parts of the iron and steel industry. It has high temperature resistance, anti-oxidation and reducing gas double corrosion, resistant to gas flow scouring, using temperature (600-1600)℃, the outer sleeve is made of imported pressure-free sintered silicon carbide tube, lined with double-layer high-quality corundum tube, with multi-layer protection.

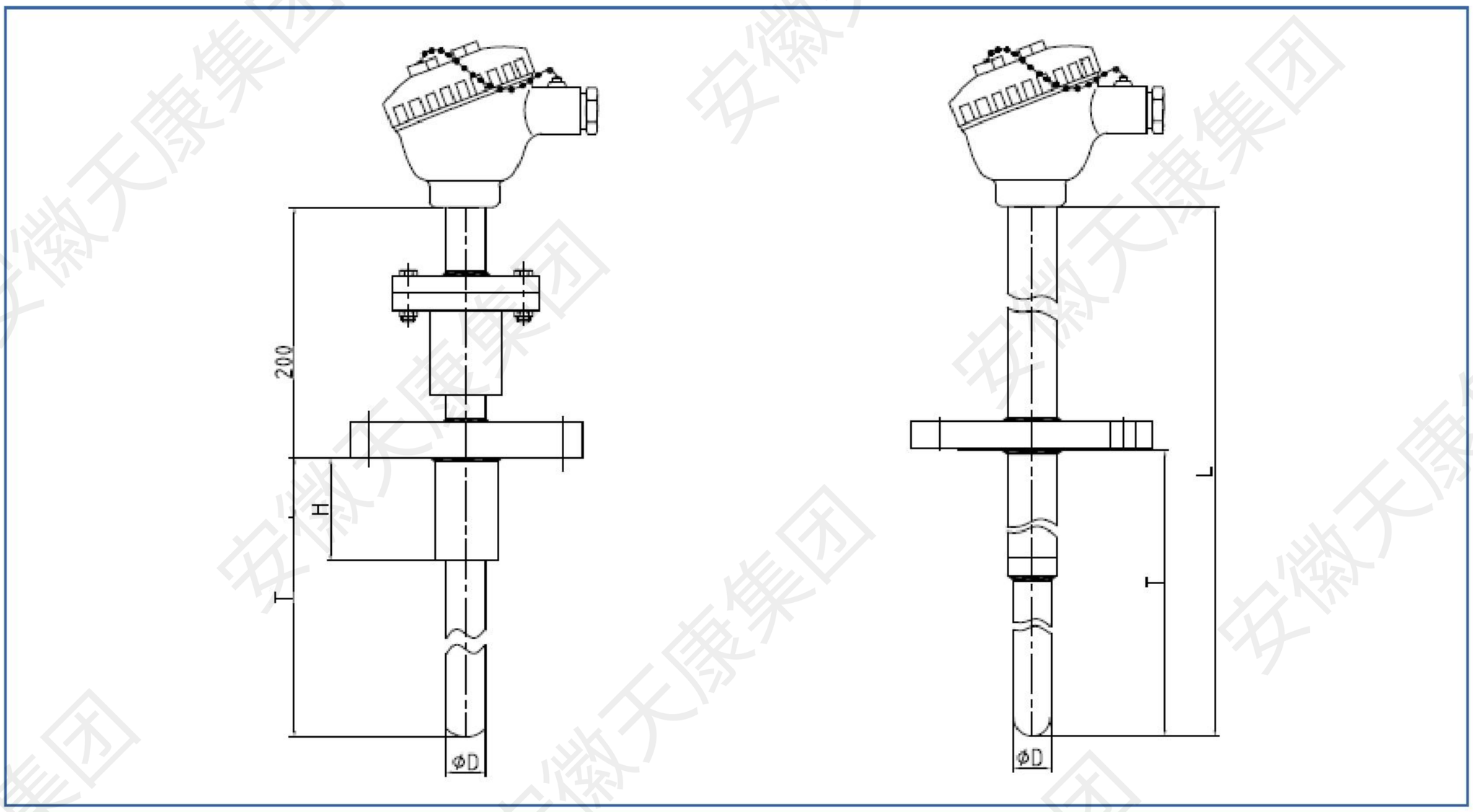
型号规格

Model and specifications

型号 Model	分度号 Graduation	测温范围 ℃ Temperature measurement range	公称压力 Nominal pressure	保护管材料 Protective tube material
WRP-430RF	S，B	0~1600	≤10MPa	碳化硅 Silicon carbide

结构示意图

Structure diagram



高温贵金属热电偶

High Temperature Noble Metal Thermocouple

产品应用

Product Application

适用于各种生产过程中高温场合，广泛应用于玻璃及陶瓷、工业盐浴炉等测温。

Suitable for a variety of production processes in high temperature occasions, widely used in glass and ceramics, industrial salt bath furnace temperature measurement.

产品参数

Product Parameters

- 电气接口：M20*1.5、NPT1/2；
- 防护等级：IP65；
- 偶丝直径：0.5mm；
- 公称压力：常压。

- Electrical interface: M20*1.5, NPT1/2.
- Protection level: IP65.
- Coupling wire diameter: 0.5mm.
- Nominal pressure: atmospheric pressure.

天康集团

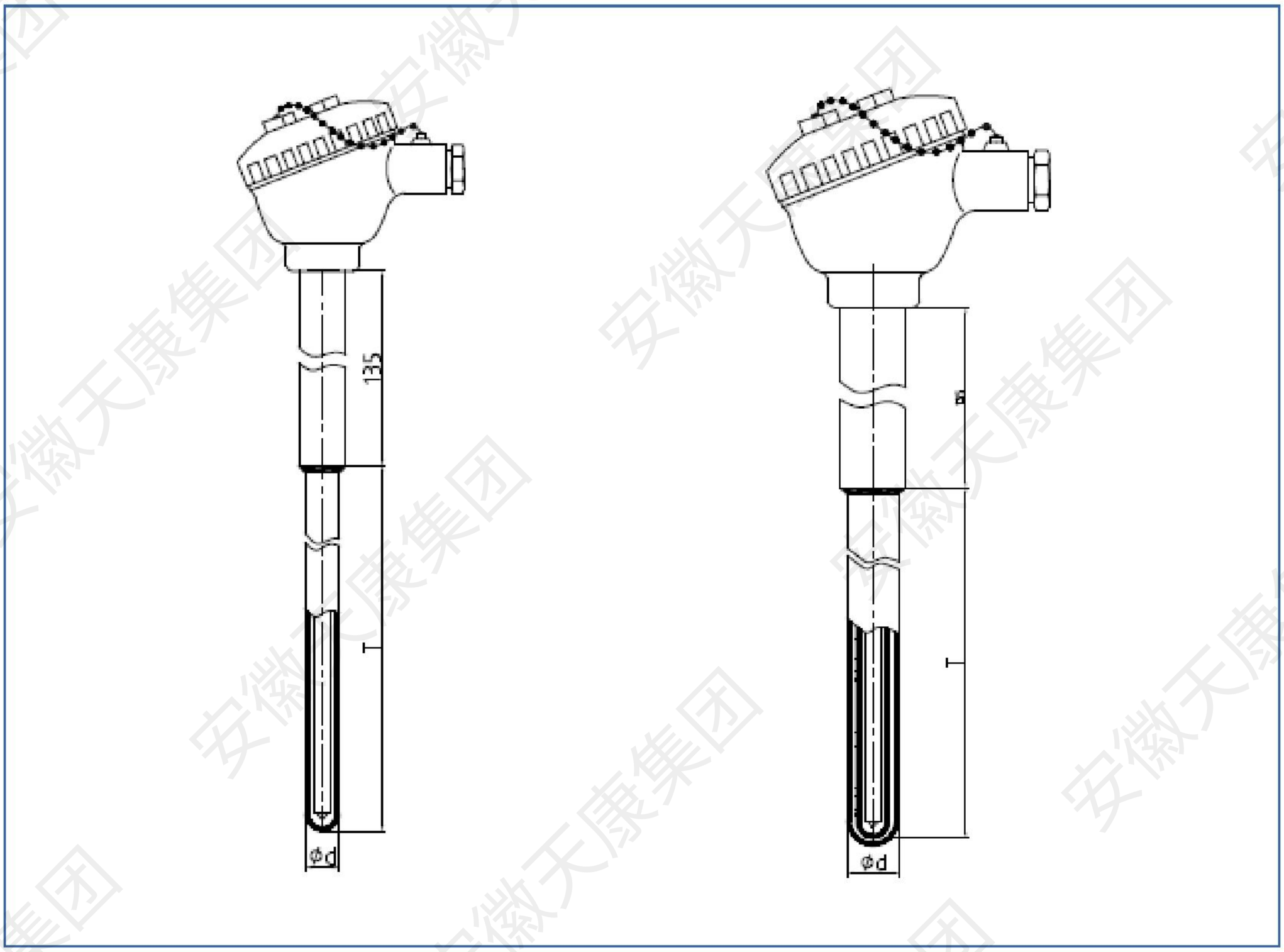
型号规格

Model and specifications

型号 Model	分度号 Graduation	测温范围 ℃ Temperature measurement range	热响应时间 Thermal response time	材质 Material	d
WRP-130 WRP2-130	S	0~1300	< 150S	高铝刚玉 High-alumina corundum	Φ16
WRP-131 WRP2-131			< 360S		Φ25
WRQ-130 WRQ2-130	R	0~1300	< 150S		Φ16
WRQ-131 WRQ2-131			< 360S		Φ25
WRR-130 WRR2-130	B	0~1600	< 150S		Φ16
WRR-131 WRR2-131			< 360S		Φ25

结构示意图

Structure diagram



双金属温度计

Bimetal Thermometer

产品应用

Product Application

双金属温度计是一种测量中低温度的现场检测仪表。可以直接测量各种生产过程中的-80℃~+500℃范围内液体、蒸汽和气体介质温度。

Bimetal thermometer is a kind of on-site detection instrument for measuring low and medium temperatures, which can directly measure the temperature of liquid, steam and gas media in the range of -80℃~+500℃ in various production processes.

产品原理

Product Principles

双金属温度计是基于绕制成环性弯曲状的双金属片组成。一端受热膨胀时，带动指针旋转，工作仪表便显示出热电势所应的温度值。

Bimetal thermometers are based on a bimetal sheet wound into a circular bend. When one end is expanded by heat, the pointer rotates and the working instrument displays the temperature value corresponding to the thermopotential.

天康集团

产品参数
Product Parameters

- 现场显示温度，直观方便；
- 具有自动切断电源和报警功能；
- 安全可靠，使用寿命长；
- 多种结构形式，可满足不同要求。

- On-site display of temperature, intuitive and convenient;
- With automatic power cut off and alarm function;
- Safe and reliable, long service life.
- A variety of structural forms, can meet different requirements.

产品种类
Product Category

- 双金属温度计-普通型，表盘指针现场指示温度；
- 电接点双金属温度计：除现场指示温度外，通过上下给定触点，当温度达到给定值时，触点闭合或断开，使控制电路中的继电器动作，从而自动控制及报警；
- 带热电偶（阻）一体化双金属温度计，将铠装热电偶（阻）安装在双金属温度计的保护管内，既满足现场测温要求，也满足远距离传输的要求；
- 隔爆双金属温度计：用于生产现场存在碳氢化合物等爆炸性气体时的电接点型双金属温度计，测量其各种过程中（-80～+500）℃范围内液体、气体介质或固体表面的温度。除实现电接点型本身特性外，还瞒着隔爆要求。

- Bimetal thermometer-ordinary type, dial pointer indicates the temperature on the spot;
- Electric contact bimetal thermometer: in addition to field indication of temperature, through the upper and lower given contacts, when the temperature reaches the given value, contact closure or disconnection to make the control circuit in the relay action, so as to automatically control and alarm;
- With thermocouple (resistance) integrated bimetallic thermometer, armored thermocouple (resistance) installed in the bimetallic thermometer protection tube, not only to meet the requirements of field Temperature measurement requirements, but also to meet the requirements of long-distance transmission;
- Explosion-proof bimetal thermometer: Used in the production site there are hydrocarbons and other explosive gases when the electric contact type bimetal thermometer, measuring its various processes (-80 ~ +500) range of liquid, gas medium or solid surface temperature. In addition to realizing the characteristics of the electric contact type itself, it also meets the requirements of explosion-proof.

产品参数
Product Parameters

1、产品执行标准：JB/T8803。

2、标度盘公称直径：60，100，150。

3、精度等级

双金属温度计：1.0级、1.5级；

铠装热电阻（Pt100）：A级±（0.15±0.002|t|），B级±（0.30±0.005|t|）。

4、热响应时间

1. Executive Standard of the Product: JB/T8803.
2. Nominal diameter of standard disk: 60, 100, 150.
3. Accuracy level

Bimetal Thermometer: Level 1.0, Level 1.5;

Armored Thermocouple (Pt100): Level A, Level B

4. Thermal response time

保护管直径（mm）Protection tube diameter	Φ6*0.5	Φ8*1	Φ10*1	Φ12*1.5	Φ14*1.5
热响应时间（s）Thermal response time	≤40	≤40	≤40	≤60	≤90

5、防护等级：IP55、IP65、IP66。

6、角度调整误差：角度调整误差应不超过其量程的1.0%。

7、回差：温度计回差应不大于基本误差限的绝对值。

8、重复性：温度计重复性极限范围切应不大于基本误差限绝对值的1/2。

9、测温范围

5. Protection level: IP55, IP65, Ip66.
6. Angle adjustment error: the angle adjustment error should not exceed 1.0% of its range.
7. Return error: the return error of the thermometer should not be greater than the absolute value of the basic error limit.
8. Repeatability: thermometer repeatability limit range cut should not be greater than 1/2 of the absolute value of the basic error limit.
9. Temperature measurement range.

测温范围 ℃ Temperature measurement range	精度 Accuracy
-80~40，-50~300，-50~200，-50~150，-50~100， -50~50，-40~80，-40~60，-30~150，-20~200， -20~150，-20~100，-20~80，-20~60，0~50， 0~60，0~80，0~100，0~120，0~150，0~200， 0~250,0~300，0~350，0~400，0~500，0~600	1.0，1.5，2.0

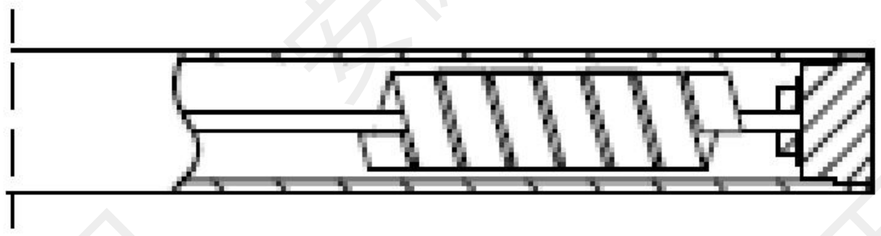
10、正常工作大气条件

Normal atmospheric operating conditions

工作场所 Workplace	保护管直径（mm） Protection tube diameter	保护管直径（mm） Protection tube diameter
掩蔽场所 Shelter	-25~+25	5~100
户外场所 Outdoor places	-40~+85	5~100

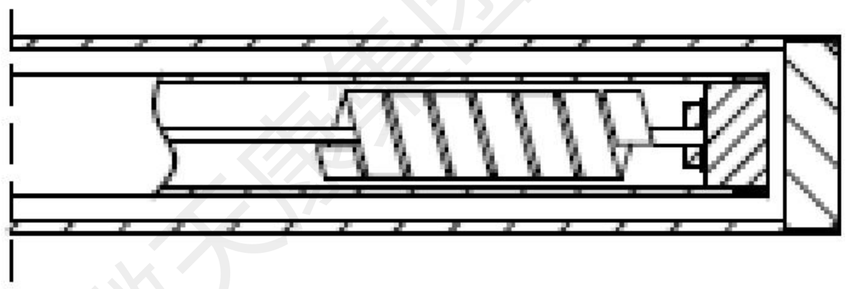
11、测量端形式

Form of measuring end



一体式

Integrated



抽芯式

Core pulling type

12、电接点型电气参数及接线方式

● 电气参数

额定功率：10VA；

工作电压：220/380V.A.C；

最大允许电流：0.7A。

● 接线方式

12. Electrical parameters and wiring of the electrical contact type

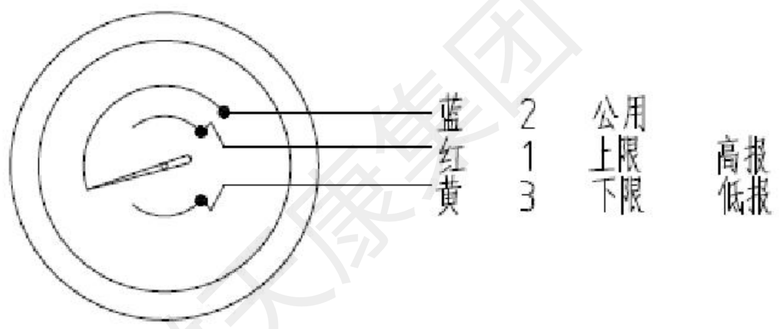
●Electrical parameters

Rated power: 10VA

Working voltage: 220/380VA.C;.

Maximum allowable current: 0.7A.

●Wiring method



型号命名方法
Model naming method

W	温度仪表 Temperature Instruments
S	金属膨胀式 Metal expansion type
S	感温元件双金属片 Temperature sensing element bimetal
X	电接点结构（可为空白） Electrical contact structure (can be blank)
P	远传结构（可为空白） Remote structure (can be blank)

表壳公称直径 Nominal diameter of case	
3	60
4	100
5	150

位置特征 Location characteristics	
0	轴向 Axial
1	径向 Radial
2	135°向 135° orientation
8	万向 Universal

安装固定装置 Fixed installation	
0	无固定装置 No fixed installation
1	可动外螺纹 Movable external thread
2	可动内螺纹 Movable internal thread
3	固定螺纹 Fixed thread
4	固定法兰 Fixed flange
5	卡套螺纹 Ferrule thread
6	卡套法兰 Ferrule flange

套管形式（见附件） Sleeve form (see attachment)

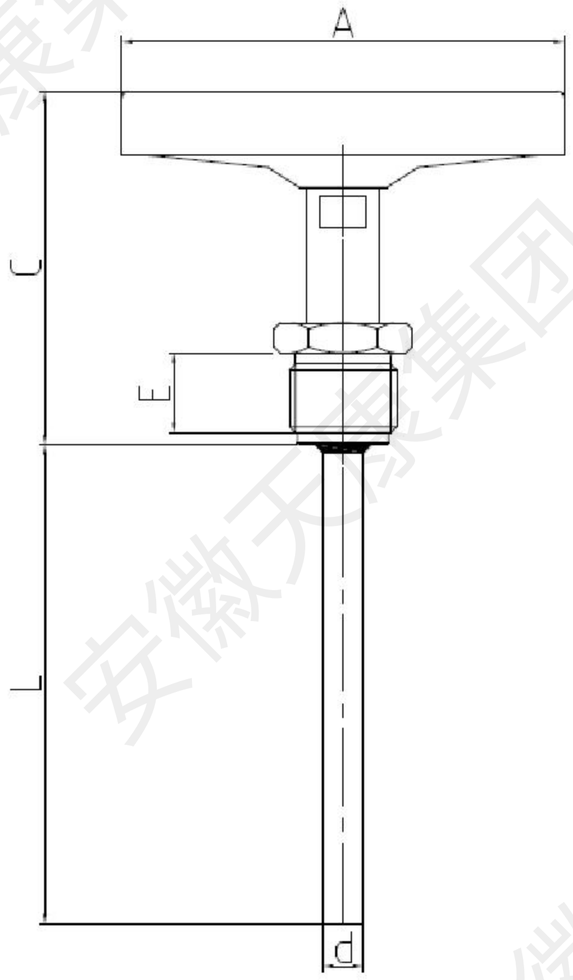
W	S	S	X		-	4	8	1	-		典型型号示例 Typical Model Example

天康集团

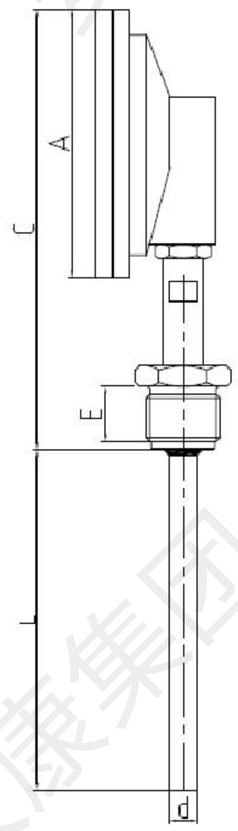
标准尺寸
Standard size

形式 Form	A	C	E	L	d
轴向型 Axial type	Φ65	73	优先选用 Prior selection M20*1.5，E=15 M27*2，E=20	75 100 150 200 300 400 500 750 1000	Φ6 Φ8 Φ10
	Φ105	73			
	Φ155	73			
径向型 Radial type	Φ65	110			
	Φ105	110			
	Φ155	110			
135°向型 135 ° orientation	Φ105	85			
	Φ155	85			
万向型 Universal type	Φ105	178			
	Φ155	178			
远传型 Remote transmission type	Φ105	200			
电接点型 Electric contact type	Φ105	200			

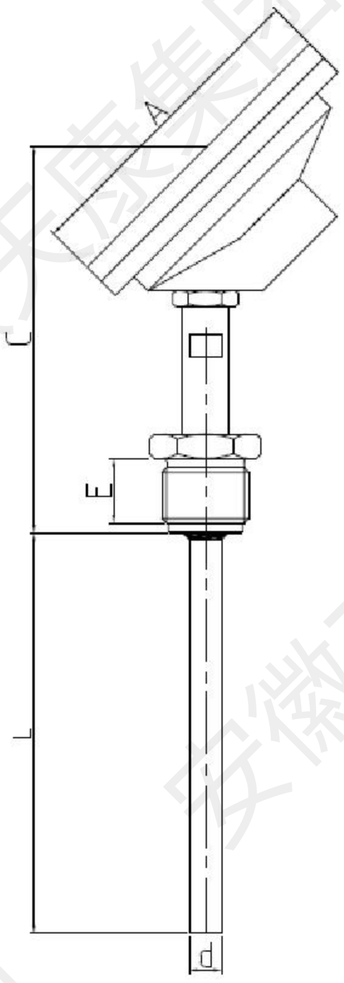
结构示意图
Structure diagram



WSS-401



WSS-411



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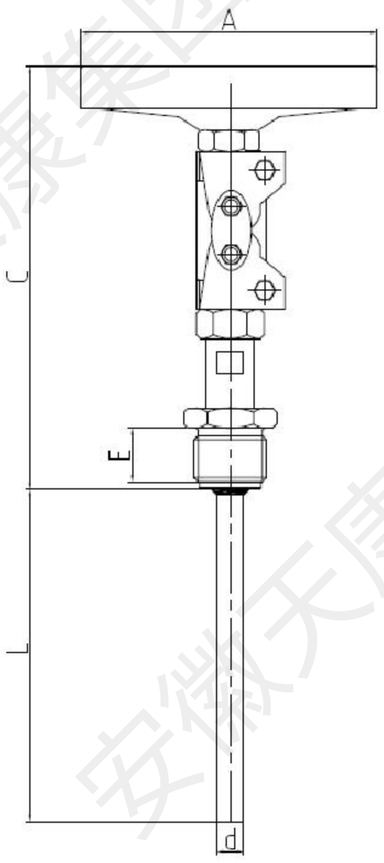
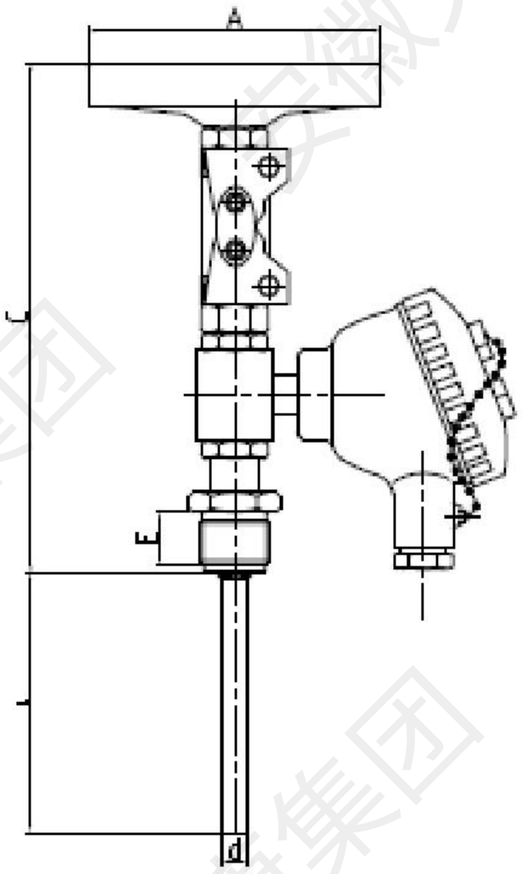
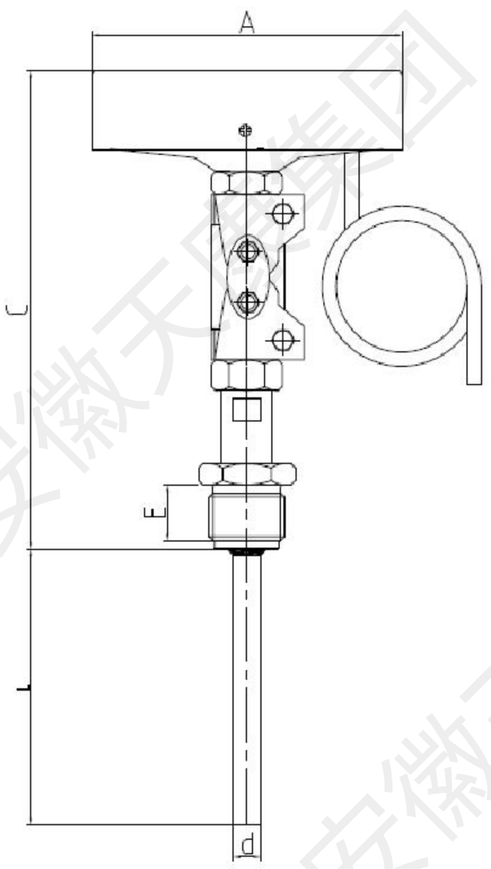


WSS-481



WSSP-481（远传）
Remote transmission

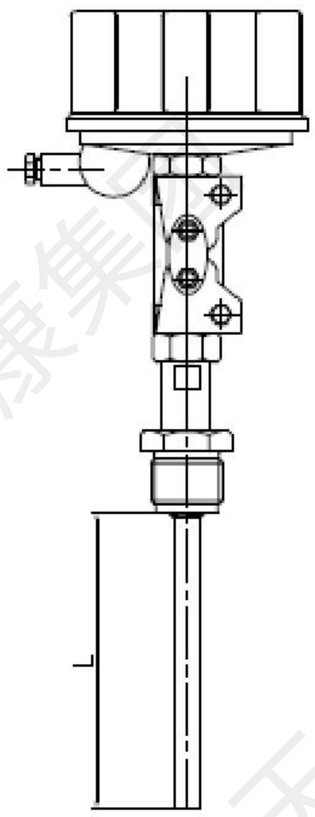


WSSX-481

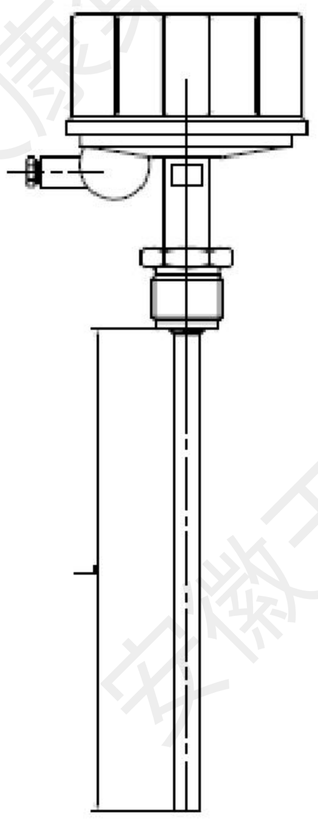
天康集团

防爆双金属温度计

Explosion-proof Bimetal Thermometer



WSSX-481B



WSSX-401B

产品应用

Product Application

电接点双金属温度计应用于生产现场对温度需自动控制和报警。直接测量各种生产过程中的-80℃~+500℃范围内体、蒸汽和气体介质温度。

Bimetal thermometer is a kind of on-site detection instrument for measuring low and medium temperatures, which can directly measure the temperature of liquid, steam and gas media in the range of -80℃~+500℃ in various production processes.

产品原理

Product Principles

电接点双金属温度计是利用温度变化时带动触点变化当其与上下限触点接触或断开的同时，使电路中的继电器动作，从而自动控制及报警。

Electric contact bimetal thermometer is the use of temperature change to drive the contact change when it is in contact with the upper and lower limits of contact or disconnect at the same time, so that the relay in the circuit action, so as to automatically control and alarm.

产品参数

Product Parameters

- 现场显示温度，直观方便；
- 具有自动切断电源和报警功能；
- 安全可靠，使用寿命长；
- 多种结构形式，可满足不同要求。

- On-site display of temperature, intuitive and convenient.
- With automatic power cut off and alarm function.
- Safe and reliable, long service life.
- A variety of structural forms, can meet different requirements.

产品参数

Product Parameters

1、产品执行标准：JB/T8803、GB/T3836。

2、标度盘公称直径：

60mm，100mm，150mm。

3、精度等级：1.0级，1.5级。

4、热响应时间：≤40s。

5、防护等级：IP55，IP65，IP66。

6、防爆等级：Ex db IIC T4...T6Gb。

7、电气参数

1. Executive Standard of the Product: JB/T8803, GB/T3836

2. Nominal diameter of standard disk: 60, 100, 150.

3. Accuracy level: Level 1.0, Level 1.5;

4. Thermal response time: ≤40s;

5. Protection level: IP55, IP65, Ip66.

6. Explosion-proof grade: Ex db IIC T4.... T6 Bb.

7. Electrical parameters:

额定功率 VA Rated power	最高工作电压 V Maximum working voltage	最大允许电流 Maximum allowable current
10	220	0.7A
	24	

8、绝缘电阻 Insulation resistance

额定电压 V Rated voltage	直流试验电压 DC test voltage	绝缘电阻 insulation resistance
7	24d.c	100
20	220a.c	500

9、正常工作大气条件：温度-25~+55℃相对湿度≤85%。

10、设定点误差：设定点误差应不超过基本误差限的1.5倍切换差；切换差应不超过基本误差限的1.5倍。

11、切换重复性：切换重复性极限范围不大于基本误差限绝对值1/2。

9. Normal atmospheric operating conditions: temperature -25℃~+55℃, relative humidity ≤85%.

10. Set-point error: the set-point error shall not exceed 1.5 times the switching difference of the basic error limit; the switching difference shall not exceed 1.5 times the basic error limit.

11. Switching repeatability: switching repeatability limit range is not greater than the absolute value of the basic error limit 1/2.

天康集团

热安装套管

Thermal Installation Sleeve

产品应用

Product Application

与两节式热电偶（阻）和双金属温度计配套使用，保护热电偶（阻）和双金属温度计正常工作。且可用于高压高流速场合。

With two-section thermocouple (resistance) and bimetal thermometer supporting the use of protection thermocouple (resistance) and bimetal thermometer normal work. And can be used for high pressure and high flow rate occasions.

产品参数

Product Parameters

一般是指在常温下，保护管所能承受的静态外压而不破裂。允许工作压力不仅与保护管材料、直径、壁厚有关，且与其结构形式、安装方法及被测介质的流速、种类有关。

Generally refers to at room temperature, the protection tube can withstand the static external pressure without rupture. Allowable working pressure is not only related to the protective tube material, diameter, wall thickness, and its structural form, installation methods and the measured medium flow rate, type of related.

产品特点

Product Parameters

- 参照 IEC国际标准设计；
- 盲孔加工；
- 与设备同期制造和安装；
- 不同压力等级，可满足不同需要；

水压试验：对保护管的耐压和泄漏检查有要求时，须对保护管进行试验。试验压力为保护管耐压等级的1.5倍。

X射线探伤试验：对保护管的壁厚、偏心距等项目检查有要求时，须按用户要求进行检查。

- Designed with reference to IEC international standards;
- Blind hole machining;
- Manufactured and installed at the same time as the equipment;
- Different pressure levels to meet different needs;

Hydrostatic test:When the pressure resistance and leakage check of the protection pipe are required, the protection pipe shall be tested. The test pressure is 1.5 times of the pressure resistance level of the protection pipe.

X-ray flaw detection test: when there are requirements for wall thickness, eccentricity and other items of the protection pipe, the test shall be carried out according to the requirements of the user.

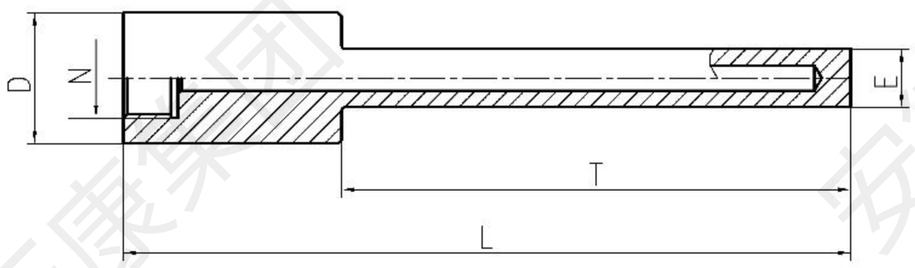
型号命名方法
Model naming method

TH	热安装套管 Thermal Installation Sleeve

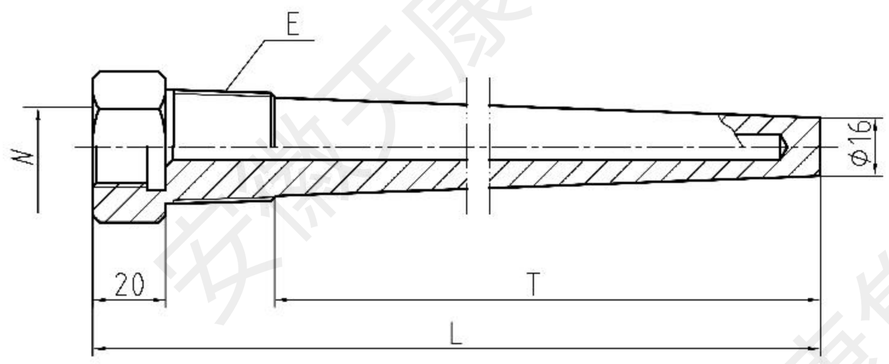
连接形式 Connection form	
01	螺纹连接式 Threaded
02	法兰连接式 Flanged
03	焊接式 Welded

套管形式 Sleeve form
见下表 See attachment

			典型型号示例 Typical Model Example
TH	02	H	

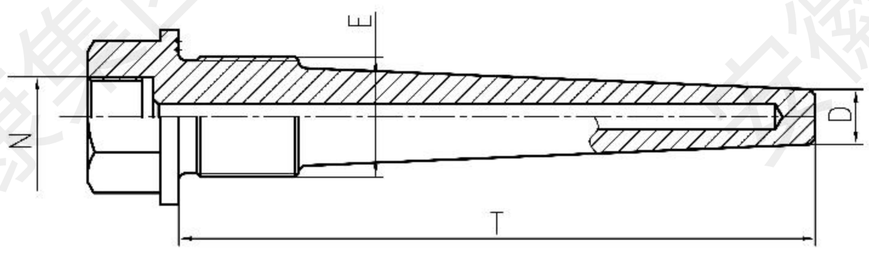
外型及尺寸 Appearance and dimensions	型号 Model	N	E	D
	TH03C	M20*1.5 (NPT1/2)	Φ28	Φ36

T(mm)	公称压力（P600）MPa Nominal pressure
≤260	≤38

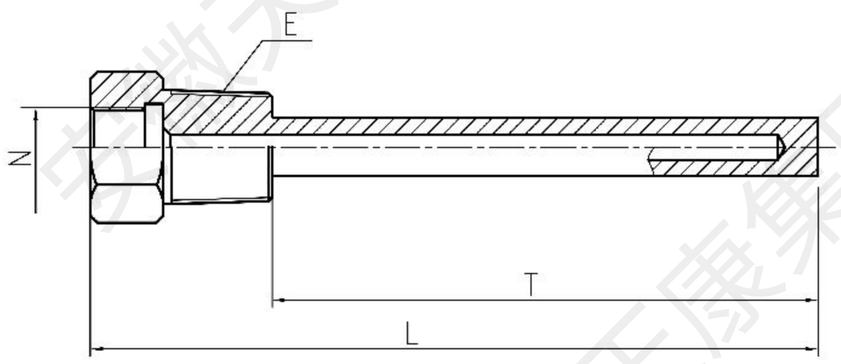
外型及尺寸 Appearance and dimensions	型号 Model	N	E	D
	TH01E	M20*1.5 (NPT1/2)	NPT1 (NPT3/4)	/

T(mm)	公称压力（P600）MPa Nominal pressure
≤260	≤5

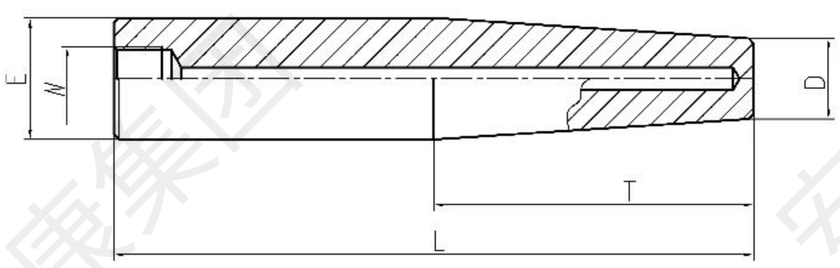
天康集团

外型及尺寸 Appearance and dimensions	型号 Model	N	E	D
	TH01F	M20*1.5 (NPT1/2)	M27*2 (M33*2)	Φ16

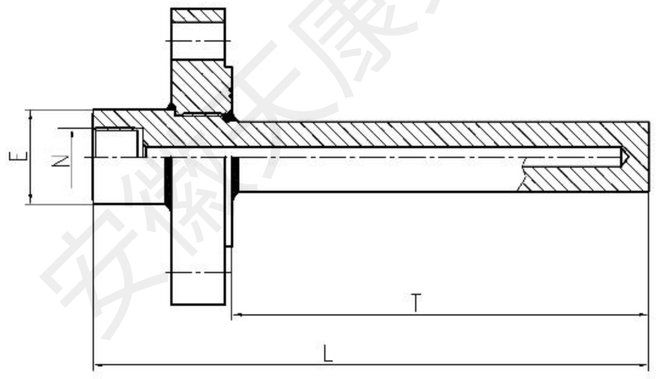
T(mm)	公称压力（P600）MPa Nominal pressure
≤260	≤5

外型及尺寸 Appearance and dimensions	型号 Model	N	E	D
	TH01K	M20*1.5 (NPT1/2)	NPT1 (NPT3/4)	/

T(mm)	公称压力（P600）MPa Nominal pressure
≤260	≤5

外型及尺寸 Appearance and dimensions	型号 Model	N	E	D
	TH03E	M20*1.5 (NPT1/2)	Φ38	Φ25

T(mm)	公称压力（P600）MPa Nominal pressure
≤260	≤38

外型及尺寸 Appearance and dimensions	型号 Model	N	E	D
	TH02F	M20*1.5 (NPT1/2)	Φ34	/
		M27*2	Φ39	

T(mm)	公称压力（P600）MPa Nominal pressure
≤260	≤38

<table>
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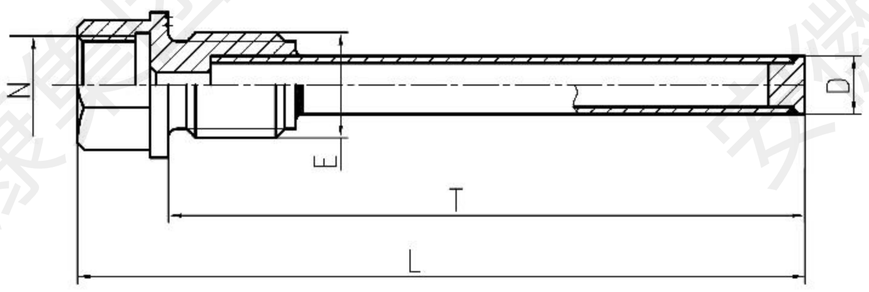
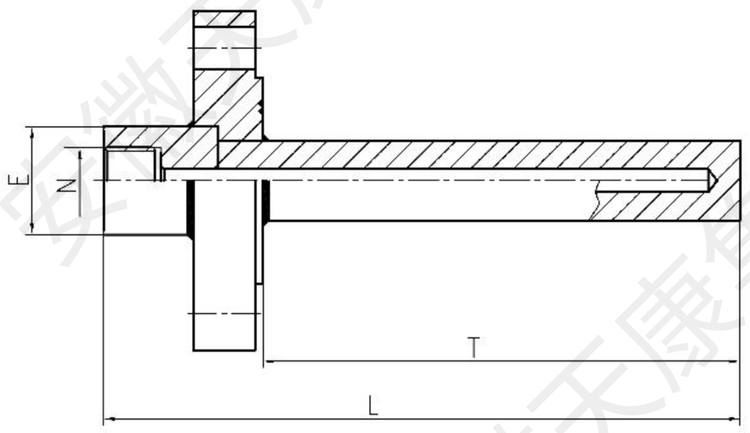
Appearance and dimensions</th><th>型号
Model</th><th>N</th><th>E</th><th>D</th></tr>
<tr><td rowspan="2"> 
</td><td rowspan="4">TH03H</td><td rowspan="4">M20*1.5
(NPT1/2)</td><td>M27*2</td><td>Φ16</td></tr>
<tr><td>M33*2</td><td>Φ20</td></tr>
<tr><td>T(mm)</td><td colspan="2">公称压力（P600）MPa
Nominal pressure</td></tr>
<tr><td>≤260</td><td colspan="2">≤5</td></tr>
<tr><td rowspan="2"> 
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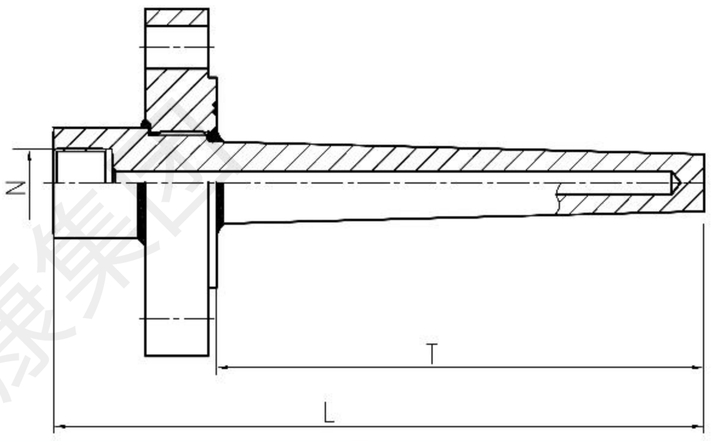
<tr><td rowspan="2"> 
</td><td rowspan="4">TH02H</td><td>M20*1.5
(NPT1/2)</td><td>Φ34</td><td rowspan="4">/</td></tr>
<tr><td>M27*2</td><td>Φ39</td></tr>
<tr><td>T(mm)</td><td colspan="2">公称压力（P600）MPa
Nominal pressure</td></tr>
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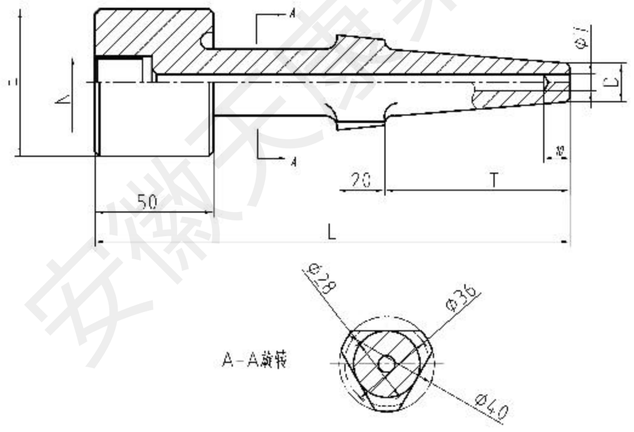
<tr><td rowspan="2"> 
</td><td rowspan="4">TH02C</td><td rowspan="4">M20*1.5
(NPT1/2)</td><td rowspan="4">Φ62</td><td rowspan="4">Φ16</td></tr>
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<tr><td>T(mm)</td><td>公称压力（P600）MPa
Nominal pressure</td></tr>
<tr><td>≤260</td><td>≤38</td></tr>
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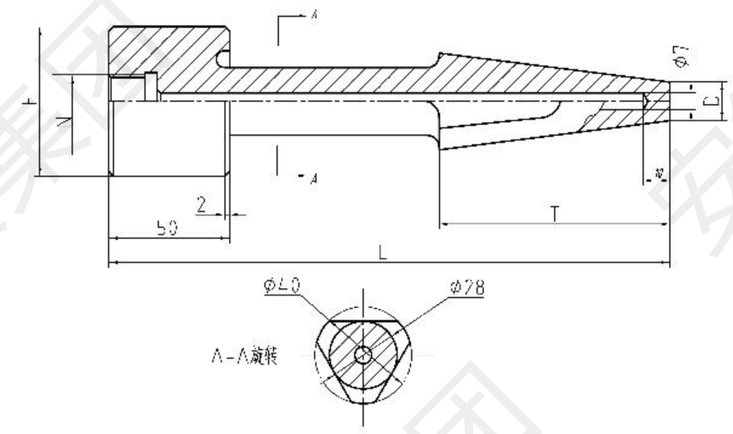
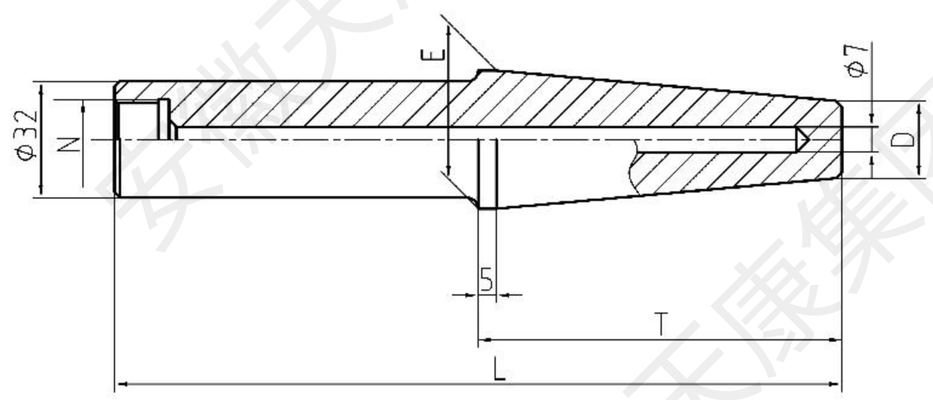
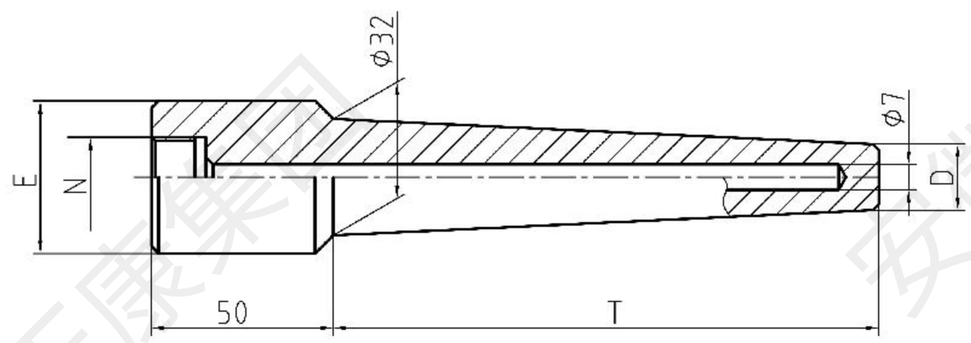
外型及尺寸 Appearance and dimensions	型号 Model	N	E	D
	TH01T	M20*1.5 (NPT1/2)	Φ62	Φ16
T(mm)	公称压力（P600）MPa Nominal pressure			
≤260	≤38			
	TH03J	M20*1.5 (NPT1/2)	Φ38	Φ22
T(mm)	公称压力（P600）MPa Nominal pressure			
≤260	≤38			
	TH03K	M20*1.5 (NPT1/2)	Φ42	Φ18
T(mm)	公称压力（P600）MPa Nominal pressure			
≤260	≤38			

保护管材质及选用
Material and selection of protective tube

材质 Material	使用温度（℃） Operating temperature	特点及用途 Characteristics and Usage
1Cr18Ni9Ti	-200~800	具有高温耐蚀性，通常作为一般耐热钢使用 High-temperature corrosion resistance, usually used as a general heat-resistant steel.

304	-200~800	低碳含量，具有良好耐晶间腐蚀性，通常作为一般耐热钢使用 Low carbon content, good intergranular corrosion resistance, usually used as a general heat-resistant steel
316	-200~750	低碳含量，具有良好耐晶间腐蚀性，作为耐腐蚀钢使用 Low carbon content, good intergranular corrosion resistance, used as a corrosion resistant steel
316L	-200~750	超低碳含量，具有良好耐晶间腐蚀性，作为耐腐蚀钢使用 Ultra-low carbon content, good intergranular corrosion resistance, used as a corrosion-resistant steel
蒙乃尔 Monel	-100~700	镍合金，具有良好耐晶间腐蚀性，适用于强硫酸等耐腐蚀性场合使用 Nickel alloy, with good resistance to intergranular corrosion, suitable for strong sulfuric acid and other corrosion-resistant applications
哈氏合金C-276 Hastelloy C-276	-100~700	镍铬铁合金，具有优良高温抗氧化性，通常作为耐热钢使用 Nickel-chromium-iron alloy, with excellent high-temperature oxidation resistance, usually used as heat-resistant steel
Inconel600	-100~1000	具有高温抗氧化性，耐腐蚀型，通常作为耐热钢使用 High-temperature oxidation resistance, corrosion-resistant, usually used as heat-resistant steel
310S	-200~1000	镍基高温合金钢，具有优良抗氧化性，耐腐蚀型，通常作为耐热钢使用 Nickel-based high-temperature alloy steel, with excellent oxidation resistance, corrosion-resistant type, usually used as heat-resistant steel
GH3030	0~1100	镍基高温合金钢，具有优良抗氧化性，耐腐蚀型，通常作为耐热钢使用 Nickel-based high-temperature alloy steel, with excellent oxidation resistance, corrosion-resistant type, usually used as heat-resistant steel
GH3039	0~1300	镍基高温合金钢，具有优良抗氧化性，耐腐蚀型，通常作为耐热钢使用 Nickel-based high-temperature alloy steel, with excellent oxidation resistance, corrosion-resistant type, usually used as heat-resistant steel
高铝质 High Aluminum	0~1300	工业陶瓷管，具有优良抗氧化性，耐腐蚀型 Industrial ceramic tubes with excellent oxidation resistance and corrosion resistance.
刚玉质 Corundum	0~1600	工业陶瓷管，具有优良抗氧化性，耐腐蚀型 Industrial ceramic tubes with excellent oxidation resistance and corrosion resistance.
3YC52	0~1300	高温合金，具有优良抗氧化性，耐腐蚀型，机械性能能，适用于高温场所 High-temperature alloy with excellent oxidation resistance, corrosion resistance, mechanical properties, suitable for high-temperature applications.
二硅化钼 Molybdenum disilicide	0~1600	具有优良抗氧化性，耐腐蚀型，机械性能好，适用于高温场所 Excellent oxidation resistance, corrosion resistance, good mechanical properties, suitable for high temperature places

天康集团

选型须知

Selection Instructions

1、型号；
2、套管代号；
3、插入深度；
4、套管材料。

1. Model
2. Sleeve code
3. Insert depth
4. Sleeve material

2024年版

安徽天康(集团)股份有限公司
ANHUI TIANKANG (GROUP) SHARES CO.,LTD.

地址：安徽省天长市仁和南路20号
ADD:No.20south Renhe road,Tianchang,Anhui
邮编(ZIP)：239300
电话(TEL)：0550-7777777 7038698 7308802
传真(FAX)：0550-7028077 7038699
网址(Http)：www.tiankang.com
E-mail：xsc@tiankang.com