



温度传感器选型样本

TEMPERATURE SENSOR
PRODUCT SELECTION CATALOGUE



中化天康科技（南京）有限公司
中国化学 ZHONGHUA TIANKANG TECHNOLOGY(NANJING)CO.,LTD



企业文化

企业精神 团结、奉献、求实、创新

企业价值观 我比别人更努力、企业因我而发展

经营理念 创造价值、服务顾客、富裕员工、回报社会





企业简介

ENTERPRISE INTRODUCTION

为了深入贯彻习近平总书记关于混合所有制改革的重要论述，全面落实党中央国务院国企改革三年行动方案要求，2020年10月，经中国化学工程集团有限公司批准，由中国化学工程第十四建设有限公司与安徽天康（集团）股份有限公司共同出资成立所属子公司——**中化天康科技（南京）有限公司**。公司注册资本5000万元，位于国家级南京江北新区大厂街道新华路148号。

公司主要从事：压力芯片及智能仪表的研发和制造；智慧工地的设计和建设、仪器仪表及电线电缆、环保治理等产品的销售；国内外各类建设工程的联合承接等。

“十四五”期间，中化天康科技（南京）有限公司将紧紧抓住发展机遇，坚持走专业化、多元化、国际化的发展道路。通过不断优化经营布局、狠抓精细管理、推动技术创新，实现企业高质量超常规跨越式发展，努力将公司建设成为现代一流企业。

我们也诚挚邀请国内外各界朋友携手合作，通过大家的共同努力，让“世界更炫彩，生活更美好”。



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铠装热电偶 Sheath thermocouple

应用

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。

工作原理

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。

特点

热响应时间少，减小动态误差；
可弯曲安装使用；
测量范围大；
机械强度高，耐压性能好。

主要技术参数

产品执行标准:IEC584, GB/T18404-2001。

测温范围及允差

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

注: t为检验温度点绝对值, 单位为°C

Application

It is usually used along with display instruments, recording instruments, electronic computers and so on. It is able to directly measure the temperature of liquid, steam and gas and solid surface in a variety of production processes within the range of 0~1300°C.

Working principle

The electrode of sheath thermocouple are consisted by two different materials of conductor. When there is a temperature difference between the measuring end and the reference end, it will generate the thermal electric potential. The working instrument will show the corresponding temperature value of the thermal electric potential.

Characteristics

Less thermal response time, which can reduce the dynamic error.
Flexible mounting for use.
Wide measuring scope.
High mechanical strength and good pressure resistance.

Main technical parameters

Product implementation standard: IEC584, GB/T18404-2001.

Range for temperature measurement and error-tolerance

Note: t is the absolute value of the temperature point, the unit is °C

常温绝缘电阻

铠装偶在环境温度为20±15°C, 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。
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。

Insulation resistance for normal temperature

In terms of the sheath thermocouple, the environment temperature is 20 ± 15°C, the relative humidity is not more than 80%, the test voltage is 500 ± 50V(DC), the insulation resistance between electrode and outer sleeve ≥ 1000MΩ.m.
That is to say, the insulation resistance for sample of 1m is 1000MΩ; the insulation resistance for sample of 10m is 100MΩ.

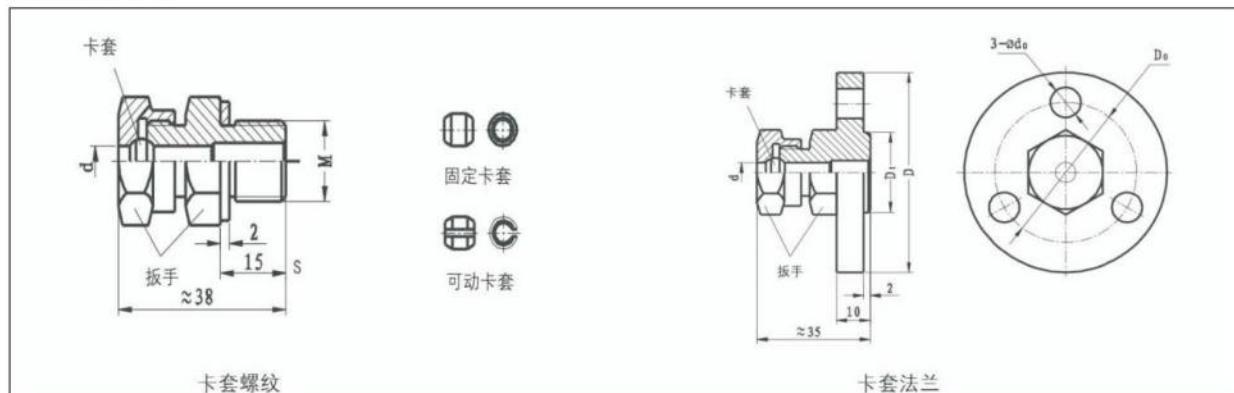
偶丝直径及材料

Diameter and material for the thermocouple wire

偶丝形式 Graduation	单支式 Graduation	双支式 Graduation	
套管直径 Graduation	Φ2, Φ3, Φ4, Φ5, Φ6, Φ8	Φ3, Φ4, Φ5, Φ6, Φ8	
分度号 Graduation	E、J、T	1Cr18Ni9Ti	1Cr18Ni9Ti
	K、N	1Cr18Ni9Ti GH3030	1Cr18Ni9Ti GH3030
	S、R、B	GH3030	GH3039

安装固定形式

Installation and fixation form



代号和尺寸 Code and size	铠装偶外径 The outer diameter of sheathed thermocouple	
	Φ8,Φ6,Φ5	Φ4,Φ3,Φ2
M	M16×1.5	M12×1.5
S	22	19
D	Φ60	Φ50
D ₀	Φ42	Φ36
D ₁	Φ24	Φ20
S	Φ22	Φ19
d ₀	Φ9	Φ7

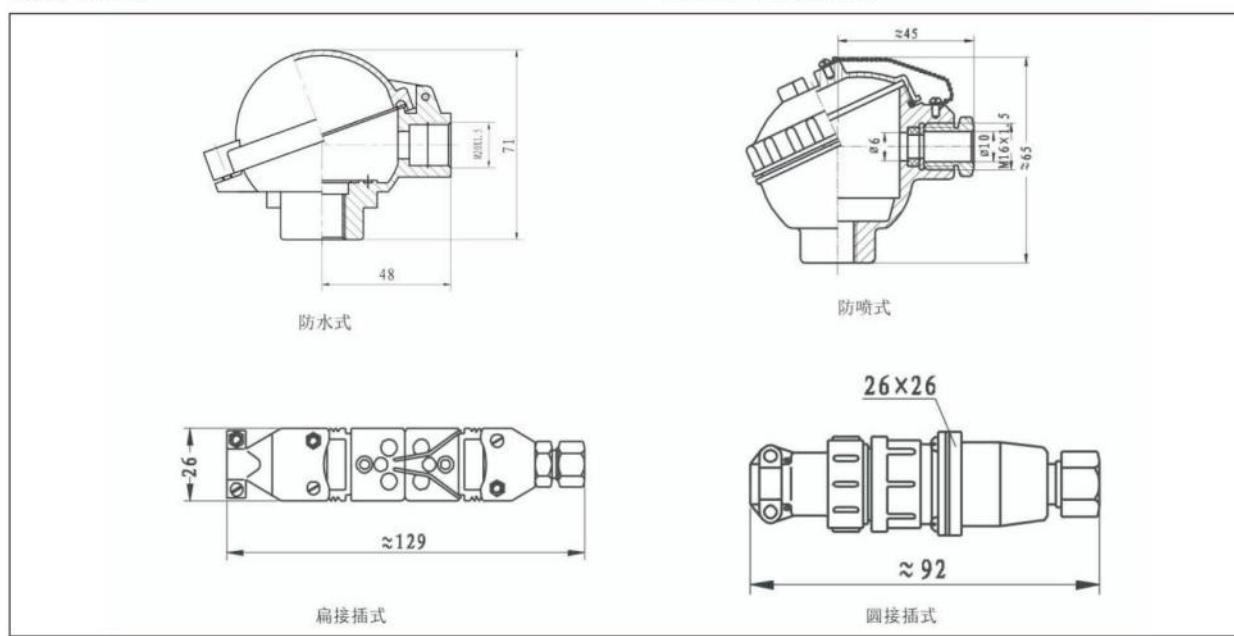
测量端结构形式

Structure form in the measuring terminal



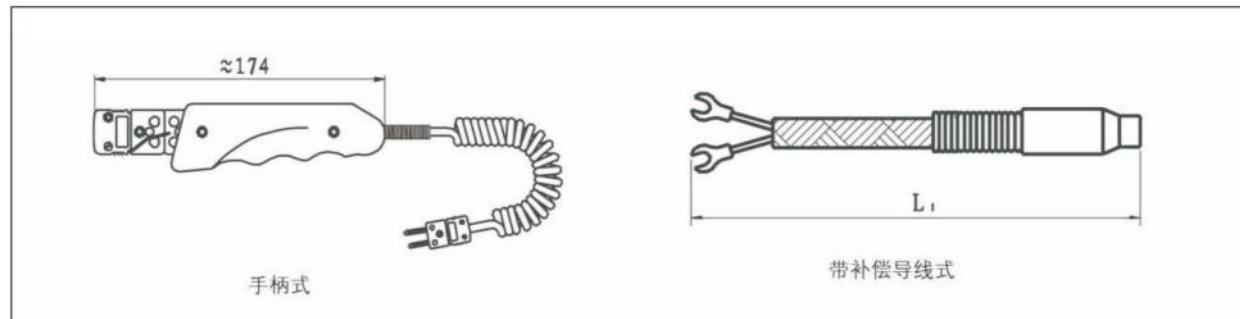
接线盒形式

Junction box form





中化天康



铠装热电偶推荐使用温度

Recommend temperature for use of sheathed thermocouple

品种 Category	套管材料 Casing material	外径(mm) Outer diameter(mm)	使用温度(°C) Temperature for usage (°C)	
			长期使用 Long-term use	短期使用 Short-term use
镍铬-镍硅 Nickel chromium -nickel silicon	1Cr18Ni9Ti	2.0	600	700
		3.0,4.0,5.0,6.0,8.0	800	900
	GH3030	2.0,3.0	800	900
		4.0,5.0	900	1000
	GH3030	6.0,8.0	1000	1100
		2.0	600	700
镍铬硅-镍 Nichrome -nickel silicon	1Cr18Ni9Ti	3.0,4.0,5.0,6.0,8.0	800	900
		2.0,3.0	900	1000
	GH3030	4.0,5.0	1000	1100
		6.0,8.0	1100	1200
	GH3030	2.0,3.0,4.0,	1000	1100
		5.0,6.0,8.0	1100	1200
镍铬-铜镍 Nickel chromium -nickel copper	1Cr18Ni9Ti	2.0,	500	600
		3.0,4.0,5.0	600	700
		6.0,8.0	700	800
铁-铜镍 Iron-copper nickel	1Cr18Ni9Ti	2.0	400	500
		3.0,4.0,5.0,	500	600
		6.0,8.0	600	750
铜-铜镍 Copper-copper Nickel	1Cr18Ni9Ti	2.0,3.0,4.0,5.0	250	300
		6.0,8.0	300	350
铂铑10-铂 Platinum10-rhodium	GH3030	2.0,3.0,4.0	1000	1100
		5.0,6.0,8.0	1100	1200
铂铑13-铂 Platinum10-rhodium	1Cr18Ni9Ti	2.0,3.0,4.0,5.0	250	300
		6.0,8.0	300	350
铂铑30-铂 Platinum10-rhodium	Gh3039	2.0,3.0,4.0	1000	1100
		5.0,6.0,8.0	1100	1200

附加装置形式

Form of additional device



型号命名方法 Naming method for model

W 温度仪表 Temperature instrument

R 热电偶 Thermocouple

感温元件材料 Material for temperature-sensing element

- P 铂铑10-铂 Platinum10- rhodium
- Q 铂铑13-铂 Platinum10- rhodium
- M 镍铬硅-镍硅 Nichrome-nickel silicon
- N 镍铬-镍硅 Nickel chromium-nickel silicon
- E 镍铬-铜镍 Nickel chromium-copper nickel
- C 铜-铜镍 Copper-copper nickel
- F 铁-铜镍 Iron-copper nickel

K 铠装式 Sheathed type

偶丝对数 Number of thermal wire couple

- 无 单支 Non, single support
- 2 双支 2 double support

安装固定装置 Installation and fixation mode

- 1 无固定装置 Non-fixing device
- 2 固定卡套螺纹 Fixed-sleeve screw thread
- 3 活动卡套螺纹 Active-sleeve screw thread
- 4 固定卡套法兰 Fixed-sleeve flange
- 5 活动卡套法兰 Active-sleeve flange

接线盒形式 Junction box form

- 2 防喷式 Anti-spray type
- 3 防水式 Water-proof type
- 6 圆接插式 Circular interpolation type
- 7 扁接插式 Flat socket type
- 8 手柄式 Handle type
- 9 补偿导线式 Compensating wire type
- 0 感温元件 Temperature-sensing element

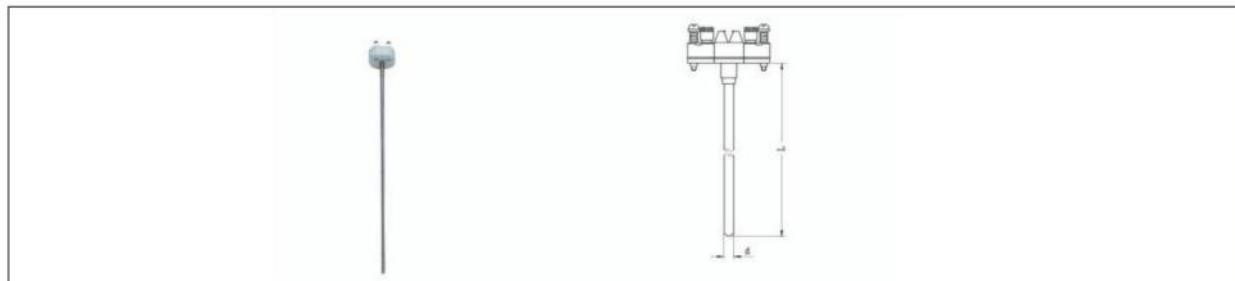
工作端形式 Form in the working terminal

- 1 绝缘式 Upper and lower limitation
- 2 接壳式 Double upper limitations
附加装置形式 Double lower limitations

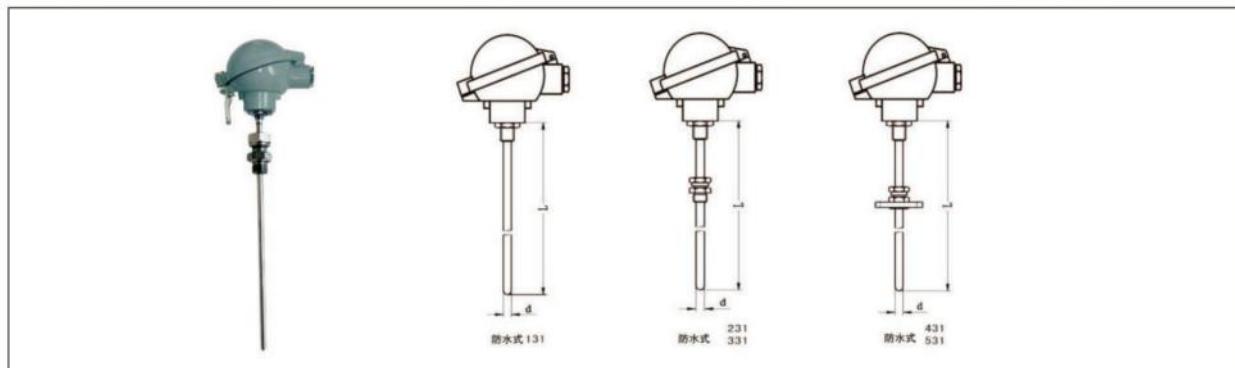
附加装置形式 Additional device form

- M 接触块式 Upper and lower limitation
- G 包箍式 Double upper limitations

W R N K - 2 3 1 M 典型型号示例 Examples of typical model

感温元件
Temperature-sensing element


名称 Name	型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	规格 Specification	
				d	L
镍铬硅-镍硅 Nichrome-nickel silicon	WRM-101 WRM2-101	N	0~1000		310 360 410 460 510 560 660 910 1160
镍铬-镍硅 Nickel chromium nickel silicon	WRN-101 WRN2-101	K		Φ3	
镍铬-铜镍 Nickel chromium-nickel copper	WRE-101 WRE2-101	E	0~800	Φ4	
铜-铜镍 Copper-copper Nickel	WRC-101 WRC2-101	T	0~350	Φ5	
铁-铜镍 Iron-copper nickel	WRF-101 WRF2-101	J	0~600	Φ6	

防水式铠装热电偶 Sheath thermocouple of waterproof type


型号 Model	分度号 Graduation	测温范围°C Range of temperature measurement °C	保护管材质 Material for protective tube	安装固定装置 Installation and fixation device
WRPK-131	S	0~1300	GH3039	
WRMK-131	N	0~1100	GH3030	无固定装置 No fixation device
		0~800	Cr18Ni9Ti	
WRNK-131	K	0~1100	GH3030	无固定装置 No fixation device
		0~800	Cr18Ni9Ti	
WREK-131	E	0~800		
WRCK-131	T	0~350		
WRFK-131	J	0~600	1Cr18Ni9Ti	

型号 Model	分度号 Graduation	测温范围℃ Range of temperature measurement ℃	保护管材质 Material for protective tube	安装固定装置 Installation and fixation device	
WRPK-231	S	0~1300	GH3039	固定卡套螺纹 Fixed-sleeve screw thread	
WRMK-231	N	0~1100	GH3030		
		0~800	1Cr18Ni9Ti		
WRNK-231	K	0~1100	GH3030		
		0~800	1Cr18Ni9Ti		
WREK-231	E	0~800	1Cr18Ni9Ti		
WRCK-231	T	0~350			
WRFK-231	J	0~600			
WRPK-331	S	0~1300	GH3039	可动卡套螺纹 Movable-sleeve screw thread	
WRMK-331	N	0~1100	GH3030		
		0~800	1Cr18Ni9Ti		
WRNK-331	K	0~1100	GH3030		
		0~800	1Cr18Ni9Ti		
WREK-331	E	0~800	1Cr18Ni9Ti		
WRCK-331	T	0~350			
WRFK-331	J	0~600			
WRPK-431	S	0~1300	GH3039	固定卡套法兰 Fixed-sleeve screw flange	
WRMK-431	N	0~1100	GH3030		
		0~800	1Cr18Ni9Ti		
WRNK-431	K	0~1100	GH3030		
		0~800	1Cr18Ni9Ti		
WREK-431	E	0~800	1Cr18Ni9Ti		
WRCK-431	T	0~350			
WRFK-431	J	0~600			
WRPK-531	S	0~1300	GH3039	可动卡套法兰 Movable-sleeve screw flange	
WRMK-531	N	0~1100	GH3030		
		0~800	1Cr18Ni9Ti		
WRNK-531	K	0~1100	GH3030		
		0~800	1Cr18Ni9Ti		
WREK-531	E	0~600	1Cr18Ni9Ti		
WRCK-531	T	0~350			
WRFK-531	J	0~600			

1)型号121、221、321防护等级IP65，其他参数同131、231、331；

2)热电偶I级按协议订货；

3)未注明测温范围及保护管材质，保护管材质一律视为1Cr18Ni9Ti。

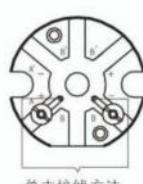
1) The protective grade of model 121、221、321 is IP65 and other parameter is the same as 131、231、331.

2) Thermocouple I is ordered according to the agreement.

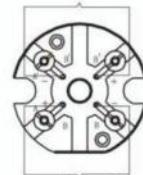
3) The material of protective tube is 1Cr18Ni9Ti is the temperature scope and material are noted.

接线方式

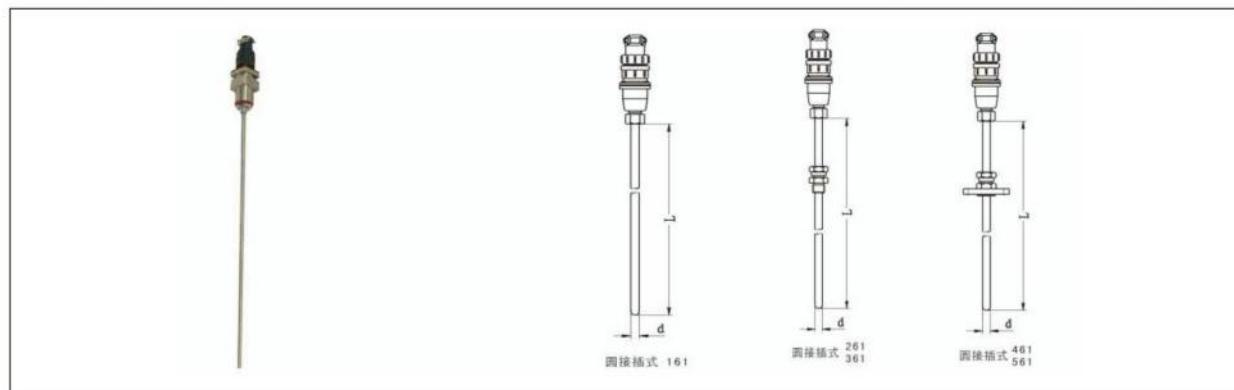
Wire-connecting mode



单支接线方法



双支接线方法

圆接插式铠装热电偶 Sheath thermocouple of circular interpolation


名称 Name	型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	安装固定装置 Installation and fixation device
铂铑10-铂 platinum10-rhodium	WRPK-161 WRPK2-161	S	0~1300	无固定装置 No fixation device
镍铬硅-镍硅 Nichrome-nickel silicon	WRMK-161 WRMK2-161	N	0~1100	
镍铬-镍硅 Nickel chromium nickel silicon	WRNK-161 WRNK2-161	K	0~1100	
镍铬-铜镍 Nickel chromium -nickel copper	WREK-161 WREK2-161	E	0~800	
铜-铜镍 Copper-copper Nickel	WRCK-161 WRCK2-161	T	0~350	
铁-铜镍 Iron-copper nickel	WRFK-161 WRFK2-161	J	0~600	固定卡套螺纹 Fixed-sleeve screw thread
铂铑10-铂 platinum10-rhodium	WRPK-261 WRPK2-261	S	0~1300	
镍铬硅-镍硅 Nichrome -nickel silicon	WRMK-261 WRMK2-261	N	0~1100	
镍铬-镍硅 Nickel chromium -nickel silicon	WRNK-261 WRNK2-261	K	0~1100	
镍铬-铜镍 Nickel chromium -nickel copper	WREK-261 WREK2-261	E	0~800	
铜-铜镍 Copper-copper Nickel	WRCK-261 WRCK2-261	T	0~350	可动卡套螺纹 Movable-sleeve screw thread
铁-铜镍 Iron-copper nickel	WRFK-261 WRFK2-261	J	0~500	
铂铑10-铂 platinum10-rhodium	WRPK-361 WRPK2-361	S	0~1300	
镍铬硅-镍硅 Nichrome -nickel silicon	WRMK-361 WRMK2-361	N	0~1100	
镍铬-镍硅 Nickel chromium -nickel silicon	WRNK-361 WRNK2-361	K	0~1100	
镍铬-铜镍 Nickel chromium -nickel copper	WREK-361 WREK2-361	E	0~800	可动卡套螺纹 Movable-sleeve screw thread
铜-铜镍 Copper-copper Nickel	WRCK-361 WRCK2-361	T	0~350	
铁-铜镍 Iron-copper nickel	WRFK-361 WRFK2-361	J	0~600	

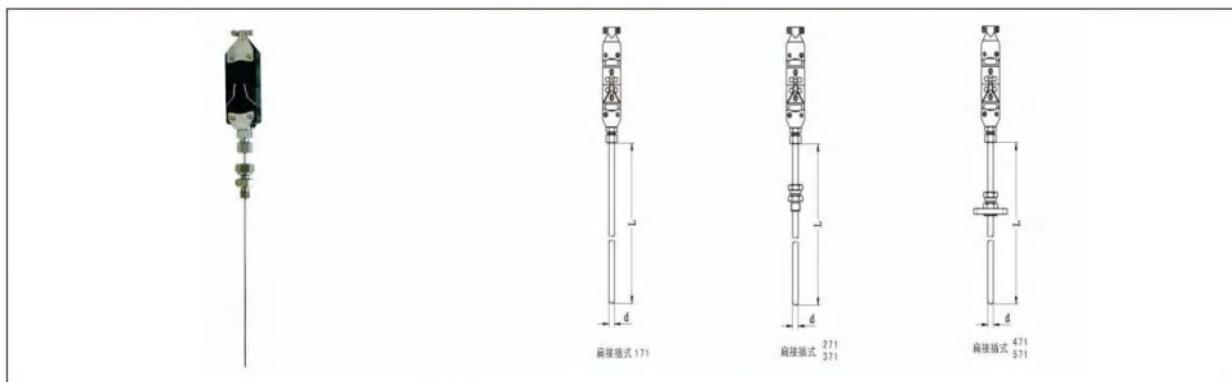
名称 Name	型号 Model	分度号 Graduation	测温范围℃ Range of temperature measurement ℃	安装固定装置 Installation and fixation device
铂铑10-铂 platinum10-rhodium	WRPK-461 WRPK2-461	S	0~1300	
镍铬硅-镍硅 Nichrome -nickel silicon	WRMK-461 WRMK2-461	N	0~1100	
镍铬-镍硅 Nickel chromium nickel silicon	WRNK-461 WRNK2-461	K		固定卡套法兰 Fixed-sleeve screw flange
镍铬-铜镍 Nickel chromium - nickel copper	WREK-461 WREK2-461	E	0~800	
铜-铜镍 Copper - copper Nickel	WRCK-461 WRCK2-461	T	0~350	
铁-铜镍 Iron-copper nickel	WRFK-461 WRFK2-461	J	0~600	
铂铑10-铂 platinum10-rhodium	WRPK-561 WRPK2-561	S	0~1300	
镍铬硅-镍硅 Nichrome -nickel silicon	WRMK-561 WRMK2-561	N	0~1100	
镍铬-镍硅 Nickel chromium nickel silicon	WRNK-561 WRNK2-561	K		可动卡套法兰 Movable-sleeve screw flange
镍铬-铜镍 Nickel chromium - nickel copper	WREK-561 WREK2-561	E	0~800	
铜-铜镍 Copper - copper Nickel	WRCK-561 WRCK2-561	T	0~350	
铁-铜镍 Iron-copper nickel	WRFK-561 WRFK2-561	J	0~600	

1)热电偶I级按协议订货;

2)未注明测温范围及保护管材质, 保护管材质一律视为1Cr18Ni9Ti。

1) Thermocouple I is ordered according to the agreement.

2) The material of protective tube is 1Cr18Ni9Ti is the temperature scope and material are noted.

扁接插式铠装热电偶 Sheath thermocouple of flat socket type


名称 Name	型号 Model	分度号 Graduation	测温范围°C Range of temperature measurement°C	安装固定装置 Installation and fixation device
铂铑10-铂 Platinum10-rhodium	WRPK-171	S	0~1300	无固定装置 No fixation device
镍铬硅-镍硅 Nichrome-nickel silicon	WRMK-171	N	0~1100	
镍铬-镍硅 Nickel chromium nickel silicon	WRNK-171	K		
镍铬-铜镍 Nickel chromium-nickel copper	WREK-171	E	0~800	
铜-铜镍 Copper-copper Nickel	WRCK-171	T	0~350	
铁-铜镍 Iron-copper nickel	WRFK-171	J	0~600	
铂铑10-铂 Platinum10-rhodium	WRPK-271	S	0~1300	固定卡套螺纹 Fixed-sleeve screw thread
镍铬硅-镍硅 Nichrome-nickel silicon	WRMK-271	N	0~1100	
镍铬-镍硅 Nickel chromium nickel silicon	WRNK-271	K		
镍铬-铜镍 Nickel chromium-nickel copper	WREK-271	E	0~800	
铜-铜镍 Copper-copper Nickel	WRCK-271	T	0~350	
铁-铜镍 Iron-copper nickel	WRFK-271	J	0~600	
铂铑10-铂 Platinum10-rhodium	WRPK-371	S	0~1300	可动卡套螺纹 Movable-sleeve screw thread
镍铬硅-镍硅 Nichrome-nickel silicon	WRMK-371	N	0~1100	
镍铬-镍硅 Nickel chromium nickel silicon	WRNK-371	K		
镍铬-铜镍 Nickel chromium-nickel copper	WREK-371	E	0~800	
铜-铜镍 Copper-copper Nickel	WRCK-371	T	0~350	
铁-铜镍 Iron-copper nickel	WRFK-371	J	0~600	
铂铑10-铂 Platinum10-rhodium	WRPK-471	S	0~1300	固定卡套法兰 Fixed-sleeve screw flange
镍铬硅-镍硅 Nichrome-nickel silicon	WRMK-471	N	0~1100	
镍铬-镍硅 Nickel chromium nickel silicon	WRNK-471	K		
镍铬-铜镍 Nickel chromium-nickel copper	WREK-471	E	0~800	
铜-铜镍 Copper-copper Nickel	WRCK-471	T	0~350	
铁-铜镍 Iron-copper nickel	WRFK-471	J	0~600	
铂铑10-铂 Platinum10-rhodium	WRPK-571	S	0~1300	可动卡套法兰 Movable-sleeve screw flange
镍铬硅-镍硅 Nichrome-nickel silicon	WRMK-571	N	0~1100	
镍铬-镍硅 Nickel chromium nickel silicon	WRNK-571	K		
镍铬-铜镍 Nickel chromium-nickel copper	WREK-571	E	0~800	
铜-铜镍 Copper-copper Nickel	WRCK-571	T	0~350	
铁-铜镍 Iron-copper nickel	WRFK-571	J	0~600	

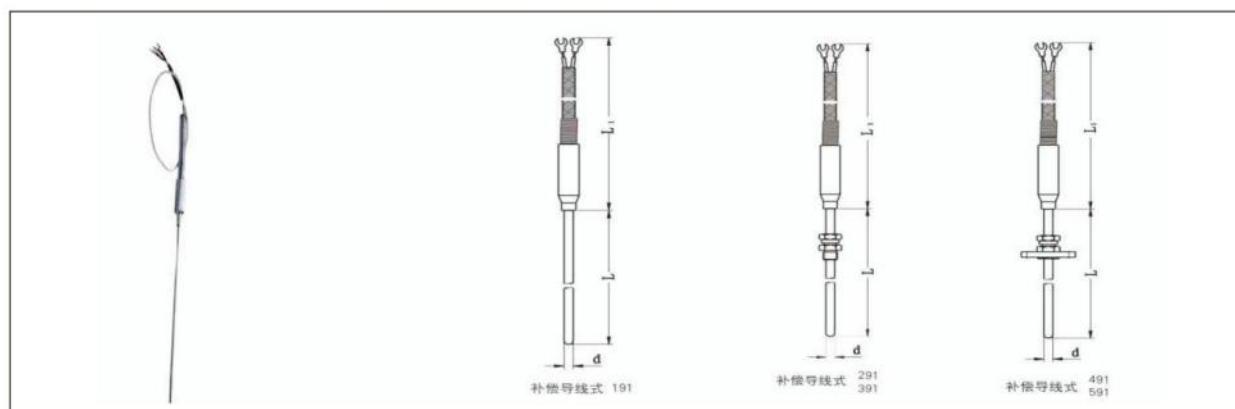
1) 热电偶I级按协议订货;

2) 未注明测温范围及保护管材质, 保护管材质一律视为1Cr18Ni9Ti;

1) Thermocouple I is ordered according to the agreement

2) The material of protective tube is 1Cr18Ni9Ti is the temperature scope and material are noted;

补偿导线式铠装热电偶 Armored thermocouple with compensation wire

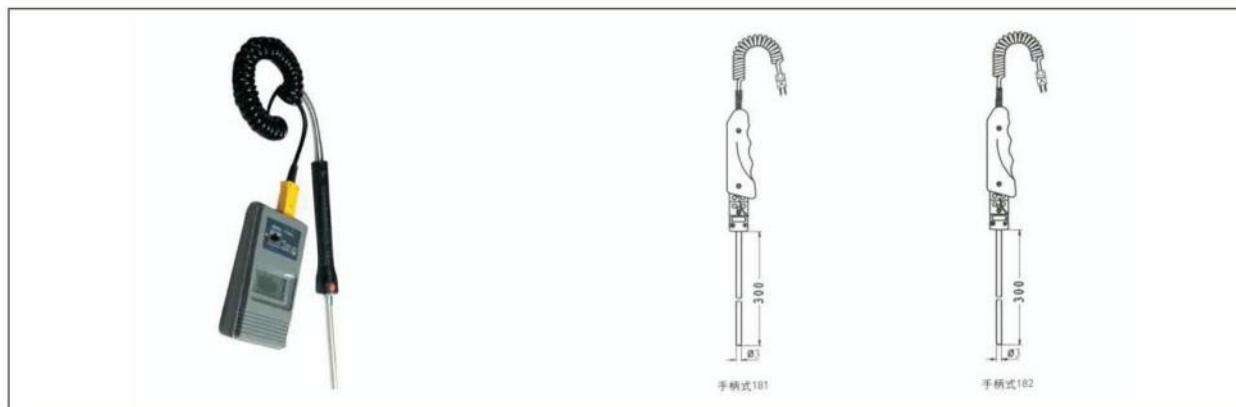


型号 Model	分度号 Graduation	测温范围°C Range of temperature measurement°C	长度Length		安装固定装置 Installation and fixation device
			L	L1	
WRPK-191 WRPK ₂ -191	S	0~1300	100 200 300 400 500 750 1000 1500 2000 3000 4000 5000 7500 10000 15000 25000	500 750 1000 1500 2000 3000 4000 5000 7500 10000 15000 25000	无固定装置 No fixation device
WRMK-191 WRMK ₂ -191	N	0~1100			
WRNK-191 WRNK ₂ -191	K				
WREK-191 WREK ₂ -191	E	0~800			
WRCK-191 WRCK ₂ -191	T	0~350			
WRFK-191 WRFK ₂ -191	J	0~600			
WRPK-291 WRPK ₂ -291	S	0~1300			
WRMK-291 WRMK ₂ -291	N	0~1100			固定卡套螺纹 Fixed-sleeve screw thread
WRNK-291 WRNK ₂ -291	K				
WREK-291 WREK ₂ -291	E	0~800			
WRCK-291 WRCK ₂ -291	T	0~350			
WRFK-291 WRFK ₂ -291	J	0~500			
WRPK-391 WRPK ₂ -391	S	0~1300	10 20 30 40 50	10 20 30 40 50	可动卡套法兰 Movable-sleeve screw flange
WRMK-391 WRMK ₂ -391	N	0~1100			
WRNK-391 WRNK ₂ -391	K				
WREK-391 WREK ₂ -391	E	0~800			
WRCK-391 WRCK ₂ -391	T	0~350			
WRFK-391 WRFK ₂ -391	J	0~600	60 70 80 90 100	60 70 80 90 100	

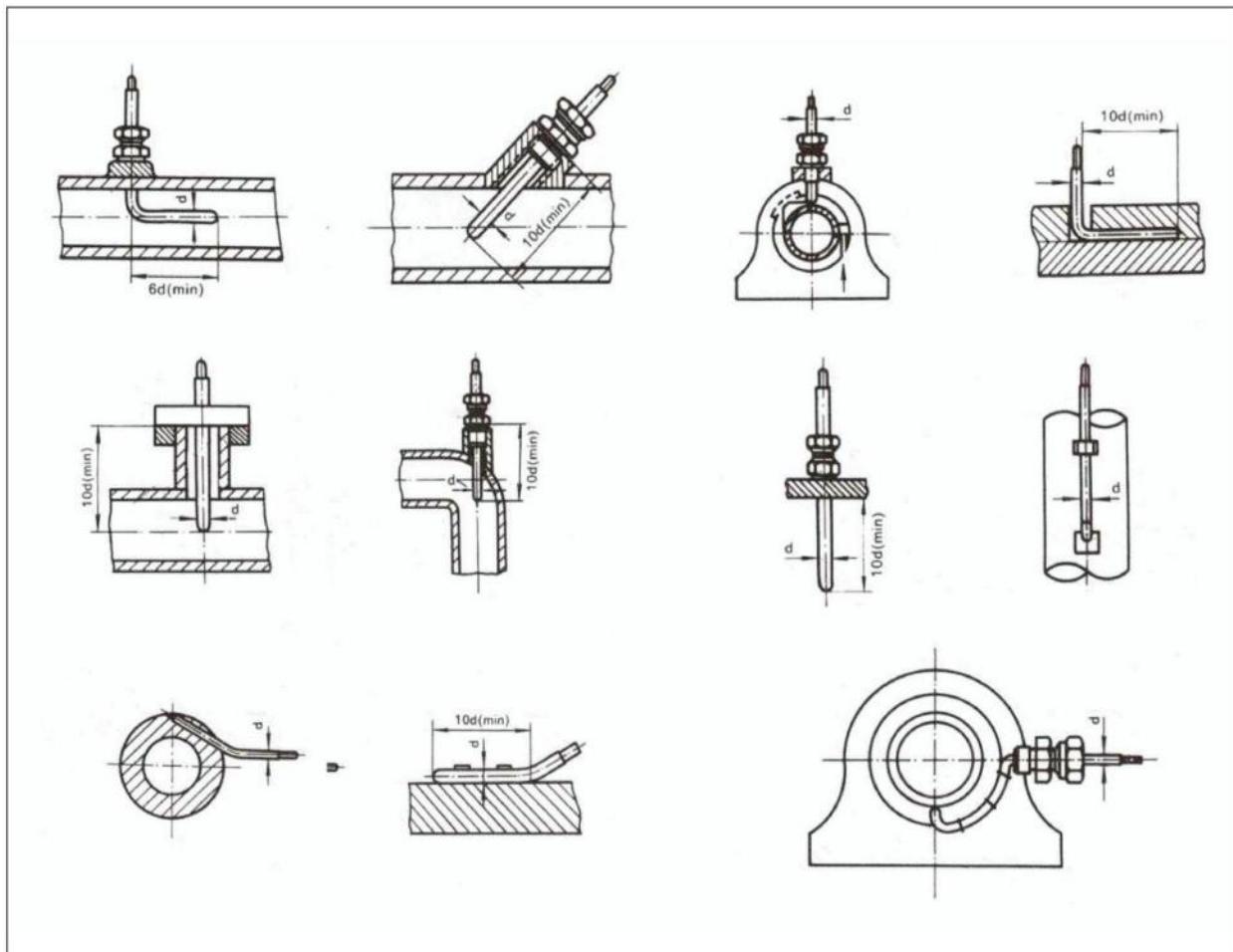
型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	长度 Length		安装固定装置 Installation and fixation device			
			L	L1				
WRPK-491 WRPK ₂ -491	S	0~1300	100 200 300 400 500 750 1000 1500 2000 3000	500 750 1000 1500 2000 3000 4000 5000 7500 10000	固定卡套法兰 Fixed-sleeve screw flange			
WRMK-491 WRMK ₂ -491	N	0~1100						
WRNK-491 WRNK ₂ -491	K							
WREK-491 WREK ₂ -491	E	0~800						
WRCK-491 WRCK ₂ -491	T	0~350						
WRFK-491 WRFK ₂ -491	J	0~600						
WRPK-591 WRPK ₂ -591	S	0~1300						
WRMK-591 WRMK ₂ -591	N	0~1100						
WRNK-591 WRNK ₂ -591	K							
WREK-591 WREK ₂ -591	E	0~800						
WRCK-591 WRCK ₂ -591	T	0~350						
WRFK-591 WRFK ₂ -591	J	0~600						

手柄式铠装热电偶

Handle type armoured thermocouple



名称 Name	型号 Model	分度号 Graduation	外径 Outer diameter	长度 Length	工作端形式 Form in the working terminal
镍铬硅-镍硅 Nichrome-nickel silicon	WRMK-181	N	Ø 3~Ø 8	300~3000	绝缘式 Insulating type
镍铬-镍硅 Nickel chromium -nickel silicon	WRNK-181	K	Ø 3~Ø 8	300~3000	
镍铬-铜镍 Nickel chromium -nickel copper	WREK-181	E	Ø 3~Ø 8	300~3000	
铜-铜镍 Copper-copper Nickel	WRCK-181	T	Ø 3~Ø 8	300~3000	
铁-铜镍 Iron-copper nickel	WRFK-181	J	Ø 3~Ø 8	300~3000	接壳式 Shell type
镍铬硅-镍硅 Nichrome -nickel silicon	WRMK-182	N	Ø 3~Ø 8	300~3000	
镍铬-镍硅 Nickel chromium -nickel silicon	WRNK-182	K	Ø 3~Ø 8	300~3000	
镍铬-铜镍 Nickel chromium -nickel copper	WREK-182	E	Ø 3~Ø 8	300~3000	
铜-铜镍 Copper-copper Nickel	WRCK-182	T	Ø 3~Ø 8	300~3000	
铁-铜镍 Iron-copper nickel	WRFK-182	J	Ø 3~Ø 8	300~3000	

安装形式 Installation form

选型须知 Notice for model selection

型号
分度号
精度等级
安装固定形式
保护管材质
长度或插入长度

例：铠装热电偶，K型，I级，固定卡套螺纹，保护管GH3030，长度450mm，插入长度300mm，WRNK-231，Lx l=450x 300，I级保护管GH3030。

Model
Graduation
Precision grade
Installation and fixation form
Material for the protective tube
Length or insertion length

For example: in terms of the sheathed thermocouple, K model, I grade, fixed-sleeve screw, protective tube GH3030, length 450mm, insertion length: 300mm, WRNK-231, Lx l=450x 300, the protective tube of I grade GH3030.

装配热电偶

Assembled sheathed thermocouple

应用

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。

工作原理

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。

特点

1. 装配简单，更换方便；
2. 压簧式感温元件，抗振性能好；
3. 测量范围大；
4. 机械强度高，耐压性能好。

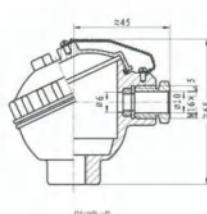
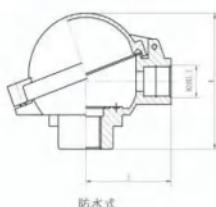
主要技术参数

1. 产品执行标准：IEC584, GB/T30429-2013。
2. 常温绝缘电阻
热电偶在环境温度为15~35℃，相对湿度45%~75%，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。

测温范围及允差

型号 Model	分度号 Graduation	允差等级 Tolerance level			
		I		II	
		允差值 Tolerance value	测温范围 °C Range of temperature measurement °C	允差值 Tolerance value	测温范围 °C Range of temperature measurement °C
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

接线盒形式 Junction box form





典型型号示例 Wire-connection mode

W 温度仪表 Temperature instrument

R 热电偶 Thermocouple

感温元件材料 Material for temperature-sensing element

N 镍铬-镍硅 Nickel chromium-nickel silicon

M 镍铬硅-镍硅 Nichrome-nickel silicon

E 镍铬-铜镍 Nickel chromium-copper nickel

C 铜-铜镍 Copper-copper nickel

F 铁-铜镍 Iron-copper nickel

偶丝对数 Number of thermal wire couple

无 单支 Non, single support

2 双支 2 double support

安装固定装置 Installation and fixation mode

1 无固定装置 Non-fixing device

2 固定螺纹 Fixed screw thread

3 活动法兰 Active flange

4 固定法兰 Fixed flange

5 活络管接头式 Adjustable pipe joint type

6 固定螺纹锥形式 Fixed thread cone form

7 直形管接头式 Straight pipe joint type

8 固定螺纹管接头式 Joint type of fixed threaded pipe

接线盒形式 Junction box form

2 防喷式 Anti-spray type

3 防水式 Water-proof type

保护管直径 Diameter of protective tube

0 Φ16

1 Φ20

2 Φ16 高铝质管 High-aluminum tube

3 Φ20 高铝质管 High-aluminum tube

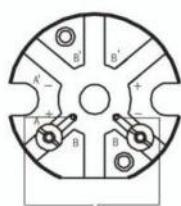
附加形式 Additional form

G 变截面 Variable cross-section

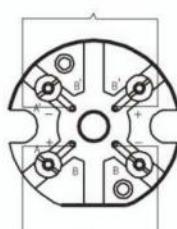
B 带温度变送器 With temperature transmitter

W R N 2 - 2 3 1 G 典型型号示例 Examples of typical model

接线盒形式 Junction box form



单支接线方法



双支接线方法

无固定装置热电偶 Non-fixed assembly thermocouple



型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	热响应时间 Thermal response time	保护管材质 Material for protective tube	规格 Specification	
					d	L
WRM-122 WRM ₂ -122	N	0~1200	<240s	高铝质 High-aluminum	Φ16	300×150 350×200 400×250 450×300 500×350 550×400 650×500 900×750 1150×1000 1650×1500 2150×2000
WRN-122 WRN ₂ -122	K					
WRM-123 WRM ₂ -123	N				Φ20	
WRN123 WRN ₂ -123	K				Φ20	
WRM-132 WRM ₂ -132	N				Φ16	
WRN-132 WRN ₂ -132	K				Φ16	
WRM-133 WRM ₂ -133	N				Φ20	
WRN-133 WRN ₂ -133	K				Φ20	

1)型号122、123为防喷式，防护等级IP65；型号132、133为防水式，防护等级IP55；

2)保护管其余材质根据协议订货。

1) Model 122 and 123 are anti-spraying type with the protective grade being IP65; Model 122 and 123 are waterproof type with the waterproof grade being IP55;

2) The material for the rest protective tube is ordered according to the agreement.

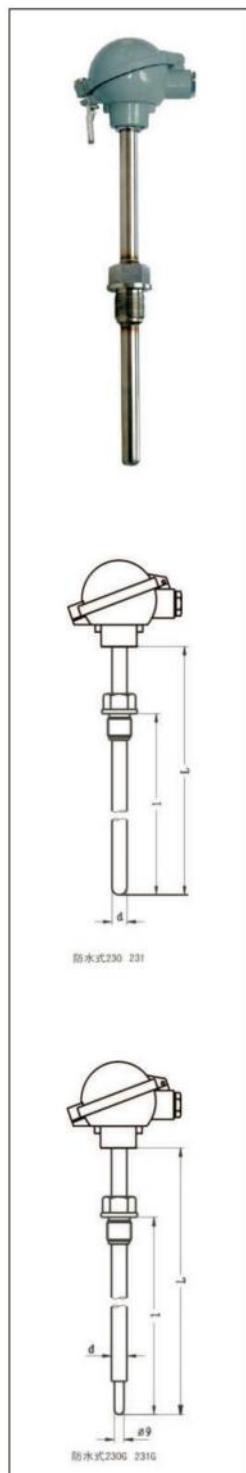
型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	热响应时间 Thermal response time	保护管材质 Material for protective tube	规格 Specification			
					d	L		
WRM-130 WRM ₂ -130	N	0~800	<90s	1Cr18Ni9Ti	Φ16	150 200 250 300 350 400		
		0~1100		0Cr25Ni20				
WRM-130G WRM ₂ -130G	K	0~800	<24s	1Cr18Ni9Ti				
		0~1100		0Cr25Ni20				
WRN-130 WRN ₂ -130	K	0~800	<90s	1Cr18Ni9Ti				
		0~1100		0Cr25Ni20				
WRN-130G WRN ₂ -130G	E	0~800	<24s	1Cr18Ni9Ti				
		0~1100		0Cr25Ni20				
WRE-130 WRE ₂ -130	T	0~350	<90s	1Cr18Ni9Ti	Φ20	500 750 1000 1500 2000 2150		
			<24s					
WRC-130 WRC ₂ -130	J	0~600	<90s	1Cr18Ni9Ti				
			<24s					
WRF-130 WRF ₂ -130	N	0~800	<90s	0Cr25Ni20	Φ20	150 200 250 300 350 400		
			<24s					
WRF-130G WRF ₂ -130G	K	0~1100	<90s	1Cr18Ni9Ti				
			<24s					
WRM-131 WRM ₂ -131	N	0~800	<90s	0Cr25Ni20				
WRM-131G WRM ₂ -131G	K	0~800	<24s	0Cr25Ni20				
WRN-131 WRN ₂ -131	J	0~800	<120s	0Cr25Ni20	Φ20	150 200 250 300 350 400		
WRN-131G WRN ₂ -131G	E	0~1100	<24s	1Cr18Ni9Ti				
WRE-131G WRE ₂ -131G	T	0~350	<120s	0Cr25Ni20				
WRE-131 WRE ₂ -131	J	0~800	<24s	1Cr18Ni9Ti				
WRC-131 WRC ₂ -131	N	0~1100	<24s	0Cr25Ni20				
WRC-131G WRC ₂ -131G	K	0~800	<120s	0Cr25Ni20				
WRF-131 WRF ₂ -131	J	0~1100	<24s	0Cr25Ni20				
WRF-131G WRF ₂ -131G	E	0~600	<120s	1Cr18Ni9Ti				

1) 型号130、131为防水式，防护等级IP55；
 2) 型号120、121为防喷式，防护等级IP65，其它参数同130、131；
 3) 保护管其余材质根据协议订货。

1) Model 130 and 131 are water proof type with the protective grade being IP55.
 2) Model 120 and 121 are anti-spraying type with the waterproof grade being IP65; the other parameters are the same as model 130 and 131.

3) The material for the rest protective tube is ordered according to the agreement.

固定螺纹式热电偶 Fixed screw type thermocouple



型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	热响应时间 Thermal response time	保护管材质 Material for protective tube	规格 Specification			
					d	L		
WRM-230 WRM ₂ -230	N	0~800	<90s	1Cr18Ni9Ti	Φ16	300×150 350×200 400×250 450×300 500×350 550×400 650×500 900×750 1150×1000 1650×1500 2150×2000		
0~1100		0~1100		0Cr25Ni20				
WRM-230G WRM ₂ -230G		0~800	<24s	1Cr18Ni9Ti				
0~1100		0~1100		0Cr25Ni20				
WRN-230 WRN ₂ -230	K	0~800	<90s	1Cr18Ni9Ti	Φ20	300×150 350×200 400×250 450×300 500×350 550×400 650×500 900×750 1150×1000 1650×1500 2150×2000		
0~1100		0~1100		0Cr25Ni20				
WRN-230G WRN ₂ -230G		0~800	<24s	1Cr18Ni9Ti				
0~1100		0~1100		0Cr25Ni20				
WRE-230 WRE ₂ -230	E	0~800	<90s	1Cr18Ni9Ti	Φ20	300×150 350×200 400×250 450×300 500×350 550×400 650×500 900×750 1150×1000 1650×1500 2150×2000		
WRE-230G WRE ₂ -230G			<24s					
WRC-230 WRC ₂ -230	T	0~350	<90s	1Cr18Ni9Ti				
WRC-230G WRC ₂ -230G			<24s					
WRF-230 WRF ₂ -230	J	0~600	<90s	1Cr18Ni9Ti	Φ20	300×150 350×200 400×250 450×300 500×350 550×400 650×500 900×750 1150×1000 1650×1500 2150×2000		
WRF-230G WRF ₂ -230G			<24s					
WRM-231 WRM ₂ -231	N	0~800	<90s	1Cr18Ni9Ti				
0~1100		0~1100		0Cr25Ni20				
WRM-231G WRM ₂ -231G		0~800	<24s	1Cr18Ni9Ti				
0~1100		0~1100		0Cr25Ni20				
WRN-231 WRN ₂ -231	K	0~800	<120s	1Cr18Ni9Ti	Φ20	300×150 350×200 400×250 450×300 500×350 550×400 650×500 900×750 1150×1000 1650×1500 2150×2000		
0~1100		0~1100		0Cr25Ni20				
WRN-231G WRN ₂ -231G		0~800	<24s	1Cr18Ni9Ti				
0~1100		0~1100		0Cr25Ni20				
WRE-231 WRE ₂ -231	E	0~800	<120s	1Cr18Ni9Ti	Φ20	300×150 350×200 400×250 450×300 500×350 550×400 650×500 900×750 1150×1000 1650×1500 2150×2000		
WRE-231G WRE ₂ -231G			<24s					
WRC-231 WRC ₂ -231	T	0~350	<120s	1Cr18Ni9Ti				
WRC-231G WRC ₂ -231G			<24s					
WRF-231 WRF ₂ -231	J	0~600	<120s	1Cr18Ni9Ti				
WRF-231G WRF ₂ -231G			<24s					

1) 型号230、231为防水式，防护等级IP55；型号220、221为防喷式，防护等级IP65，其它参数同230、231；

2) 保护管其余材质根据协议订货；

3) 公称压力为4MPa。

1) Model 230 and 231 are waterproof type with the protective grade being IP55; Model 120 and 121 are anti-spraying type with the waterproof grade being IP65.the other parameters are the same as model 130 and 131.

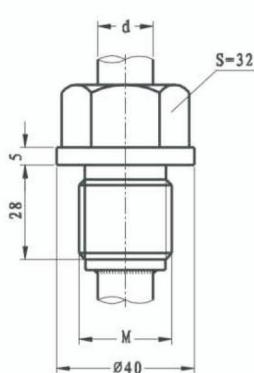
2)The material for the rest protective tube is ordered according to the agreement.

3) Nominal pressure is 4MPa.



中化天康

型号示例 No. of example	螺纹规格 Graduation		d
	代号 Code	M	
WRN-230	-	M27×2	Φ16
WRN-230A	A	G3/4	
WRN-231G	-	M27×2	Φ20
WRN-231GA	A	G3/4	



活动法兰式热电偶 Movable flange type thermocouple

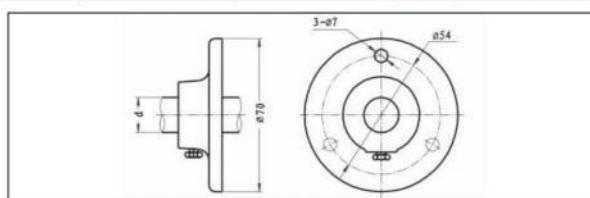
型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	热响应时间 Thermal response time	保护管材质 Material for protective tube	规格 Specification			
					d	L		
WRM-330 WRM ₂ -330	N	0~800	<90s	1Cr18Ni9Ti	Φ16	150 200 250 300 350 400 500 750 1000 1500 2000 2150		
		0~1100		0Cr25Ni20				
WRM-330G WRM ₂ -330G		0~800	<24s	1Cr18Ni9Ti				
		0~1100		0Cr25Ni20				
WRN-330 WRN ₂ -330	K	0~800	<90s	1Cr18Ni9Ti	Φ16	150 200 250 300 350 400 500 750 1000 1500 2000 2150		
		0~1100		0Cr25Ni20				
WRN-330G WRN ₂ -330G		0~800	<24s	1Cr18Ni9Ti				
		0~1100		0Cr25Ni20				
WRE-330 WRE ₂ -330	E	0~800	<90s	1Cr18Ni9Ti	Φ20	150 200 250 300 350 400 500 750 1000 1500 2000 2150		
			<24s					
WRC-330 WRC ₂ -330	T	0~350	<90s	1Cr18Ni9Ti				
			<24s					
WRF-330 WRF ₂ -330	J	0~600	<90s	1Cr18Ni9Ti				
			<24s					
WRM-331 WRM ₂ -331	N	0~800	<90s	1Cr18Ni9Ti	Φ20	150 200 250 300 350 400 500 750 1000 1500 2000 2150		
		0~1100		0Cr25Ni20				
WRM-331G WRM ₂ -331G		0~800	<24s	1Cr18Ni9Ti				
		0~1100		0Cr25Ni20				
WRN-331 WRN ₂ -331	K	0~800	<120s	1Cr18Ni9Ti				
		0~1100		0Cr25Ni20				
WRN-331G WRN ₂ -331G	K	0~800	<24s	1Cr18Ni9Ti				
		0~1100		0Cr25Ni20				
WRE-331 WRE ₂ -331	E	0~800	<120s	1Cr18Ni9Ti	Φ20	150 200 250 300 350 400 500 750 1000 1500 2000 2150		
			<24s					
WRC-331 WRC ₂ -331	T	0~350	<120s	1Cr18Ni9Ti				
			<24s					
WRF-331 WRF ₂ -331	J	0~600	<120s	1Cr18Ni9Ti				
			<24s					

- 1) 型号330、331为防水式，防护等级IP55；
 2) 型号320、321为防喷式，防护等级IP65，其它参数同330、331；
 3) 保护管其余材质根据协议订货。

1) Model 330 and 331 are waterproof type with the protective grade being IP55.

2) Model 320 and 321 are anti-spraying type with the waterproof grade being IP65. the other parameters are the same as model 130 and 131.

3) The other material for protective tubes are ordered according to the agreement.



固定法兰式热电偶 Fixed flange type thermocouple

型 号 Model	分 度 号 Graduation	测温范围 °C Range of temperature measurement °C	热响应时间 Thermal response time	保护管材质 Material for protective tube	规 格 Specification			
					d	L		
WRM-430 WRM ₂ -430	N	0~800	<90s	1Cr18Ni9Ti	Φ16	300×150 350×200 400×250 450×300 500×350 550×400 650×500 900×750 1150×1000 1650×1500 2150×2000		
0~1100		<90s	0Cr25Ni20					
WRM-430G WRM ₂ -430G		0~800	<24s	1Cr18Ni9Ti				
0~1100		<24s	0Cr25Ni20					
WRN-430 WRN ₂ -430	K	0~800	<90s	1Cr18Ni9Ti				
0~1100		<90s	0Cr25Ni20					
WRN-430G WRN ₂ -430G		0~800	<24s	1Cr18Ni9Ti				
0~1100		<24s	0Cr25Ni20					
WRE-430 WRE ₂ -430	E	0~800	<90s	1Cr18Ni9Ti	Φ20	350×200 400×250 450×300 500×350 550×400 650×500 900×750 1150×1000 1650×1500 2150×2000		
WRE-430G WRE ₂ -430G		<800	<24s					
WRC-430 WRC ₂ -430	T	0~350	<90s	1Cr18Ni9Ti				
WRC-430G WRC ₂ -430G		<350	<24s					
WRF-430 WRF ₂ -430	J	0~600	<90s	1Cr18Ni9Ti				
WRF-430G WRF ₂ -430G		<600	<24s					
WRM-431 WRM ₂ -431	N	0~800	<120s	1Cr18Ni9Ti	Φ20	350×200 400×250 450×300 500×350 550×400 650×500 900×750 1150×1000 1650×1500 2150×2000		
0~1100		<120s	0Cr25Ni20					
WRM-431G WRM ₂ -431G		0~800	<24s	1Cr18Ni9Ti				
0~1100		<800	<24s	0Cr25Ni20				
WRN-431 WRN ₂ -431	K	0~800	<120s	1Cr18Ni9Ti				
0~1100		<800	<120s	0Cr25Ni20				
WRN-431G WRN ₂ -431G		0~800	<24s	1Cr18Ni9Ti				
0~1100		<800	<24s	0Cr25Ni20				
WRE-431 WRE ₂ -431	E	0~800	<120s	1Cr18Ni9Ti	Φ20	350×200 400×250 450×300 500×350 550×400 650×500 900×750 1150×1000 1650×1500 2150×2000		
WRE-431G WRE ₂ -431G		<800	<24s					
WRC-431 WRC ₂ -431	T	0~350	<120s	1Cr18Ni9Ti				
WRC-431G WRC ₂ -431G		<350	<24s					
WRF-431 WRF ₂ -431	J	0~600	<120s	1Cr18Ni9Ti				
WRF-431G WRF ₂ -431G		<600	<24s					

1) 型号430、431为防水式，防护等级IP55；

2) 型号420、421为防喷式，防护等级IP65，其它参数同430、431；

3) 公称压力为4.0MPa。

1) Model 430 and 431 are waterproof type type with the protective grade being IP55;

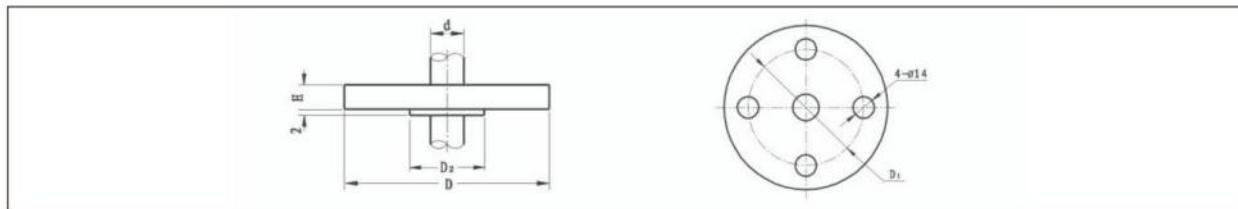
2) Model 420 and 421 are anti-spraying type with the waterproof grade being IP65; the other parameters are the same as model 430 and 431. The material for the rest protective tube is ordered according to the agreement.

3) Nominal pressure is 4.0MPa.

型号示例 No. of example	法兰规格(mm) Flange specification(mm)				
	D	D ₁	D ₂	H	d
WRN-430	Φ95	Φ65	Φ46	14	Φ16
WRN-430G					
WRN-431	Φ95(Φ105)	Φ65(Φ75)	Φ46(Φ55)	14(16)	Φ20
WRN-431G					

可按用户约定要求提供法兰：详见P86

The flange can be provided according to the requirements of users:
for the specific information, please refer to P86.



固定螺纹锥式热电偶 Fixed thread cone thermocouple

型 号 Model	分 度 号 Graduation	测温范围 °C Range of temperature measurement °C	热响应时间 Thermal response time	保护管材质 Material for protective tube	规 格 Specification	
					d	L
WRM-620 WRM ₂ -620	N	0~800	<90s	1Cr18Ni9Ti	Φ15	300×150 350×200 400×250 450×300 500×350 550×400 650×500
WRM-620G WRM ₂ -620G		0~1100		0Cr25Ni20		
WRN-620 WRN ₂ -620		0~800		1Cr18Ni9Ti		
WRN-620G WRN ₂ -620G		0~1100		0Cr25Ni20		
WRE-620 WRE ₂ -620	K	0~800		1Cr18Ni9Ti		
WRE-620G WRE ₂ -620G		0~1100		0Cr25Ni20		
WRC-620 WRC ₂ -620	E	0~800		1Cr18Ni9Ti		
WRC-620G WRC ₂ -620G		0~350		1Cr18Ni9Ti		
WRF-620 WRF ₂ -620	T	0~600		1Cr18Ni9Ti		
WRF-620G WRF ₂ -620G		0~350		1Cr18Ni9Ti		
WRM-630 WRM ₂ -630	N	0~800	<90s	1Cr18Ni9Ti	Φ15	300×150 350×200 400×250 450×300 500×350 550×400 650×500
WRM-630G WRM ₂ -630G		0~1100		0Cr25Ni20		
WRN-630 WRN ₂ -630		0~800		1Cr18Ni9Ti		
WRN-630G WRN ₂ -630G		0~1100		0Cr25Ni20		
WRE-630 WRE ₂ -630	K	0~800		1Cr18Ni9Ti		
WRE-630G WRE ₂ -630G		0~1100		0Cr25Ni20		
WRC-630 WRC ₂ -630	E	0~800		1Cr18Ni9Ti		
WRC-630G WRC ₂ -630G		0~350		1Cr18Ni9Ti		
WRF-630 WRF ₂ -630	T	0~600		1Cr18Ni9Ti		
WRF-630G WRF ₂ -630G		0~350		1Cr18Ni9Ti		

1) 型号620、620G为防喷式，防护等级IP65；型号630、630G为防水式，防护等级IP55；

2) 保护管其余材质根据协议订货；

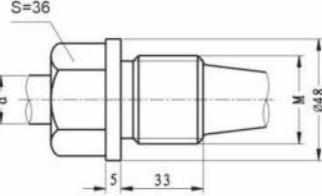
3) 公称压力为≤15MPa。

1) Model 620 and 620G are anti-spraying type with the protective grade grade being IP65; Model 630 and 630G are waterproof type type with the protective grade being IP55;

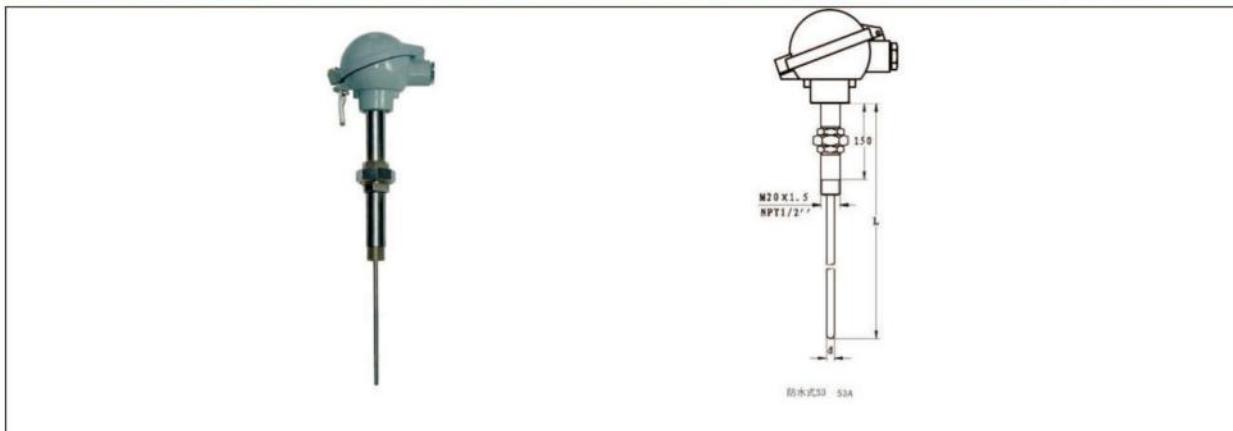
2) The material for the rest protective tube is ordered according to the agreement.

3) Nominal pressure is: ≤15MPa.

型号示例 Examples of models	螺纹规格 Thread specification	
	代号 Code	M
WRN-620	-	M33×2
WRN-620	A	NPT1
WRN-630	-	M33×2
WRN-630	A	NPT1



活络管接头式热电偶 Thermocouple of joint type of adjustable pipe



型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	连接尺寸 Connection size	保护管材质 Material for protective tube	规格 Specification			
					d	L		
WRM-53 WRM ₂ -53	N	0~1100	M20×1.5	0Cr25Ni20	Φ3	245 270 295 345 395 445 545 645		
WRM-53A WRM ₂ -53A			NPT1/2					
WRN-53 WRN ₂ -53	K	0~1100	M20×1.5	1Cr18Ni9Ti				
WRN-53A WRN ₂ -53A			NPT1/2					
WRE-53 WRE ₂ -53	E	0~700	M20×1.5					
WRE-53A WRE ₂ -53A			NPT1/2					
WRC-53 WRC ₂ -53	T	0~350	M20×1.5					
WRC-53A WRC ₂ -53A			NPT1/2					
WRF-53 WRF ₂ -53	J	0~600	M20×1.5					
WRF-53A WRF ₂ -53A			NPT1/2					

- 1) 型号53、53A为防水式，防护等级IP55；
- 2) 型号52、52A为防喷式，防护等级IP65，其它参数同53、53A；
- 3) 如无特殊之约定，L 仅为参考尺寸，热电偶插入深度应为热安装套管U尺寸；
- 4) 热安装套管形式详见P119。

- 1) Model 53 and 53A are waterproof type with the protective grade grade being IP55.
- 2) Model 52 and 52A are anti-spring type with the protective grade being IP65. The other parameters are the same as 53 and 53A.
- 3) If there is no special agreement, L is only the reference size. The insertion depth of thermocouple should be the size of thermal installation sleeve U.
- 4) The form of thermal mounting sleeve is shown in P119.

直形管接头式热电偶 Joint type thermocouple of straight pipe


型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	连接尺寸 Connection size	保护管材质 Material for protective tube	规格 Specification			
					d	L		
WRM-73 WRM ₂ -73	N	0~1100	M20×1.5	0Cr25Ni20	Φ3	245 270 295 345 395 445 545 645		
WRM-73A WRM ₂ -73A			NPT1/2					
WRN-73 WRN ₂ -73	K	0~1100	M20×1.5	1Cr18Ni9Ti				
WRN-73A WRN ₂ -73A			NPT1/2					
WRE-73 WRE ₂ -73	E	0~700	M20×1.5					
WRE-73A WRE ₂ -53A			NPT1/2					
WRC-73 WRC ₂ -73	T	0~350	M20×1.5					
WRC-73A WRC ₂ -73A			NPT1/2					
WRF-73 WRF ₂ -73	J	0~600	M20×1.5					
WRF-73A WRF ₂ -73A			NPT1/2					

- 1) 型号73、73A为防水式，防护等级IP55；
- 2) 型号72、72A为防喷式，防护等级IP65，其它参数同73、73A；
- 3) 如无特殊之约定，L仅为参考尺寸，热电偶插入深度应为热安装套管U尺寸；
- 4) 热安装套管形式详见P119。

- 1) Model 73 and 73A are waterproof type with the protective grade grade being IP55.
- 2) Model 72 and 72A are anti-spring type with the protective grade being IP65.
- 3) If there is no special agreement, L is only the reference size. The insertion depth of thermocouple should be the size of thermal installation sleeve U.
- 4) The form of thermal mounting sleeve is shown in P119.

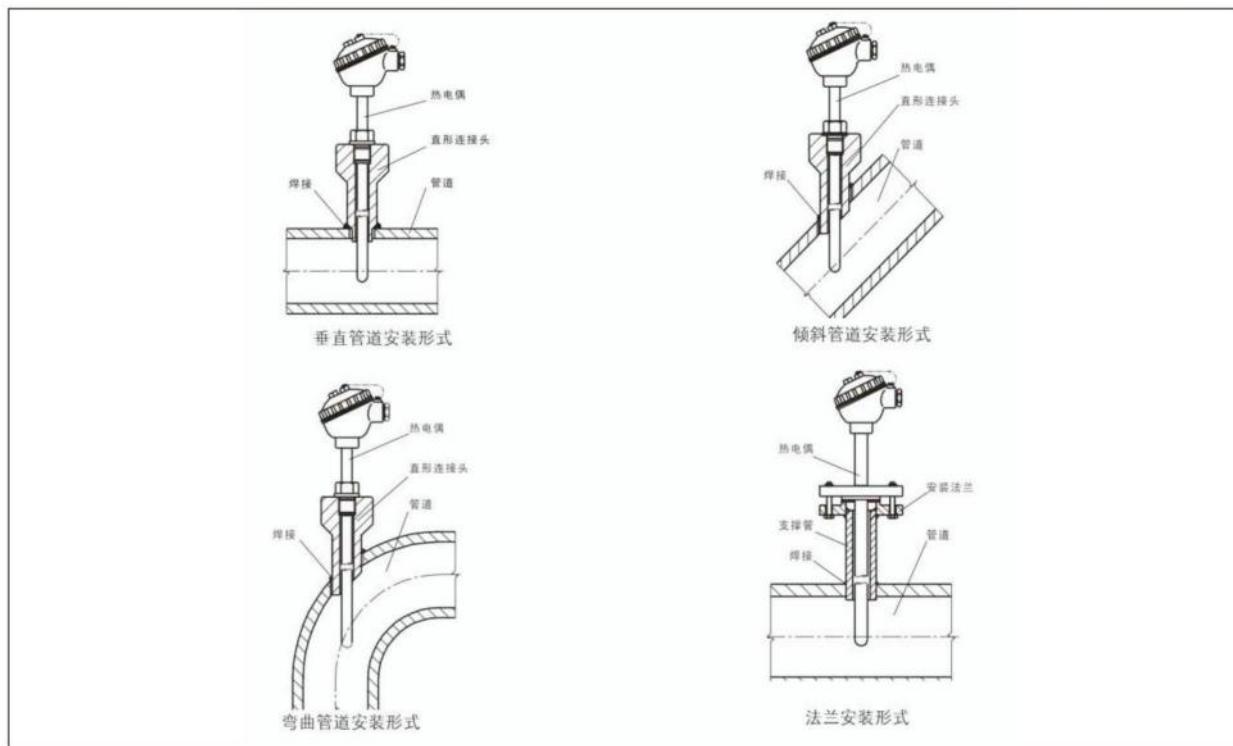
固定螺纹管接头式热电偶 Joint type thermocouple of fixed thread pipe



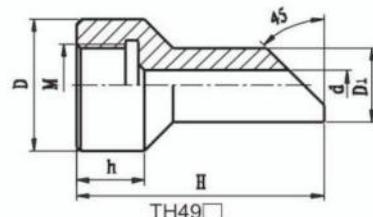
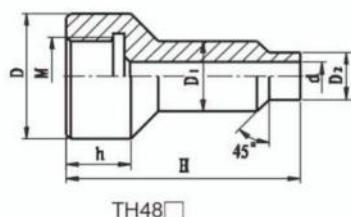
型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	连接尺寸 Connection size	保护管材质 Material for protective tube	规格 Specification			
					d	L		
WRM-82 WRM ₂ -82	N	0~1100	M20×1.5	0Cr25Ni20	Φ3	245 270 295 345 395 445 545 645		
WRM-82A WRM ₂ -82A			NPT1/2					
WRN-82 WRN ₂ -82	K	0~700	M20×1.5	1Cr18Ni9Ti				
WRN-82A WRN ₂ -82A			NPT1/2					
WRE-82 WRE ₂ -82	E	0~700	M20×1.5					
WRE-82A WRE ₂ -82A			NPT1/2					
WRC-82 WRC ₂ -82	T	0~350	M20×1.5					
WRC-82A WRC ₂ -82A			NPT1/2					
WRF-82 WRF ₂ -82	J	0~600	M20×1.5					
WRF-82A WRF ₂ -82A			NPT1/2					

- 1) 型号82、82A为防喷式，防护等级IP65；
- 2) 型号83、83A为防水式，防护等级IP55，其它参数同82、82A；
- 3) 如无特殊之约定，L仅为参考尺寸，热电偶插入深度应为热安装套管U尺寸；
- 4) 热安装套管形式详见P119。

- 1) Model 82 and 82A are anti-spring type with the protective grade being IP65.
- 2) Model 83 and 83A are waterproof type with the protective grade grade being IP55. Other parameters are the same as model 82 and 82A.
- 3) If there is no special agreement, L is only the reference size. The insertion depth of thermocouple should be the size of thermal installation sleeve U.
- 4) The form of thermal mounting sleeve is shown in P119.

安装形式 Installation type

直形连接头 Straight joint

代号 Code	M	D	D ₁	D ₂	d	h	H
TH48A	M12×1.5	Φ32	Φ18	Φ12	Φ7	27	60, 120
TH48B	M16×1.5	Φ36	Φ18	Φ14	Φ7	27	80
TH48C	M20×1.5	Φ40	Φ18	Φ14	Φ7	27	60
TH48D	M27×2	Φ47	Φ28	Φ22	Φ17	32	60
TH48E	M33×2	Φ55	Φ36	Φ30	Φ21	34	120
TH48F	NPT1/2	Φ39	Φ27	Φ21	Φ16	35	60
TH48G	NPT3/4	Φ47	Φ31	Φ25	Φ20	40	
TH48H	NPT1	Φ47	Φ41	Φ35	Φ30	45	120



代号 Code	M	D	D ₁	d	h	H
TH49A	M27×2	Φ47	Φ28	Φ18	30	90
TH49B	M33×2	Φ55	Φ36	Φ24	30	150
TH49C	NPT1/2	Φ39	Φ27	Φ16	30	90
TH49D	NPT3/4	Φ47	Φ31	Φ20	35	90
TH49E	NPT1	Φ47	Φ41	Φ30	40	150

防爆热电偶

Explosion proof thermocouple

应用

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碳氢化合物等爆炸物的0℃~1300℃范围内液体、蒸汽和气体介质以及固体表面温度。

工作原理

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。

特点

多种防爆形式,防爆性能好;
压簧式感温元件,抗振性能好;
测量范围大;
机械强度高,耐压性能好。

主要技术参数

- 1.产品执行标准
EC584, GB/T16839-1997, GB26786-2011, Gb3836.
- 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;

取证一览表

防爆级别 Explosion-proof grade	防爆证号 Number of explosion-proof	认证机构 Certification body
d II BT4	GYB997151	NEPSI
d II CT5	GYB02475	NEPSI
ia II CT6	GYB05363X	NEPSI

注：NEPSI防爆认证系国家级仪器仪表

Application

It is usually used along with display instruments, recording instruments, electronic computers and so on. It is able to directly measure the temperature of liquid, steam and gas and solid surface in a variety of production field where there are explosives such as hydrocarbons and the temperature is within the range of 0~1300℃.

Working principle

Explosion-proof thermocouple uses the principle of interval explosion-proof with the junction box and other parts with enough strength where the dangerous parts which will generate spark, electric arc and dangerous temperature are sealed, so when the explosion occurs inside the cavity, the flame of the explosion can be cooled and distinguished in the gap between the joint surface so that the flame and the temperature will not be passed to the cavity. Finally, the explosion-proof is realized.

Characteristics

A variety of explosion-proof forms with good explosion-proof performance;
Temperature sensing element of pressure-spring type, so it is of good anti-vibration performance;
Large range for measurement;
High mechanical strength and good pressure resistance;

Main technical parameters

1. Product implementation standard
IEC584, GB/T16839-1997, GB26786-2011, Gb3836.
2. Insulation resistance in normal temperature
For thermocouple, the environment temperature is 20+15℃, the relative humidity is not more than 80%, the test voltage is 500+50V(DC), the insulation resistance between electrode and outer sleeve≥1000MΩ.m.
That is to say, the insulation resistance for sample of 1m is 1000MΩ; the insulation resistance for sample of 10m is 100MΩ.

Evidence list

Note: NEPSI explosion-proof certification department certified the national instruments and meters

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

防爆分组形式 Grouping for explosion-proof

I II III T



温度组别:T1~T6

防爆等级:A、B、C

工厂用电气设备

d:隔爆型

ia:本质安全型

ib:本质安全型

电气设备类别

- I类——煤矿井下用电气设备
- II类——工厂用电气设备

Types of electrical equipment

- I —— Electrical equipment for underground coal mine
- II —— Electrical equipment used in factory

防爆等级

防爆热电偶的防爆等级按其使用于爆炸性气体混合物最大试验安全间隙分为A、B、C三级。

Explosion-proof grade

Explosion proof grade of explosion-proof thermocouple according to maximum test safety clearance of mixture of explosive gas is divided into A, B, C.

类别 Explosion-proof grade	级别 Number of explosion-proof	最大试验安全间隙 (MESG) mm Maximum test safety clearance (MESG) mm
	A	0.9≤MESG
II	B	0.5<MESG<0.9
	C	MESG≤0.5

温度组别

防爆热电偶的温度组别按其外露部分允许最高面温度分为T1~T6。

Temperature group

Temperature groups of explosion-proof thermocouple is divided into T1~T6 according to maximum surface temperature of the exposed part.

温度组别 Temperature group	允许最高表面温度 °C Maximum surface temperature of the exposed part °C
T1	450
T2	300
T3	200
T4	135
T5	100
T6	85

防爆级别 Explosion-proof grade

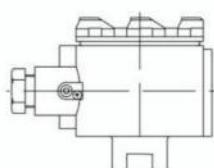
Exd II T
Exia II T
Exib II T

防护等级 Protection level

Ip65

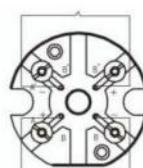
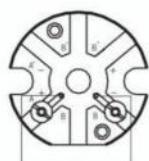
接线盒形式

Junction box form



安装端子形式

Type of mounting terminal



型号命名方法 Naming method for model

W 温度仪表 Temperature instrument

R 热电偶 Thermocouple

感温元件材料 Material for temperature-sensing element

- M 镍铬硅-镍硅 Nichrome-nickel silicon
- N 镍铬-镍硅 Nickel chromium-nickel silicon
- E 镍铬-铜镍 Nickel chromium-copper nickel
- C 铜-铜镍 Copper-copper nickel
- F 铁-铜镍 Iron-copper nickel

偶丝对数 Number of thermal wire couple

- 无 单支 Non, single support
- 2 双支 2 double support

安装固定形式 Installation and fixation form

- 2 固定螺纹 Fixed screw thread
- 4 固定法兰 Fixed flange
- 5 活络管接头式 Adjustable pipe joint type
- 6 固定螺纹锥形式 Fixed thread cone form
- 7 直形管接头式 Straight pipe joint type
- 8 固定螺纹管接头式 Joint type of fixed threaded pipe

接线盒形式 Junction box form

- 4 防爆式 Junction box form

保护管直径 Diameter of protective tube

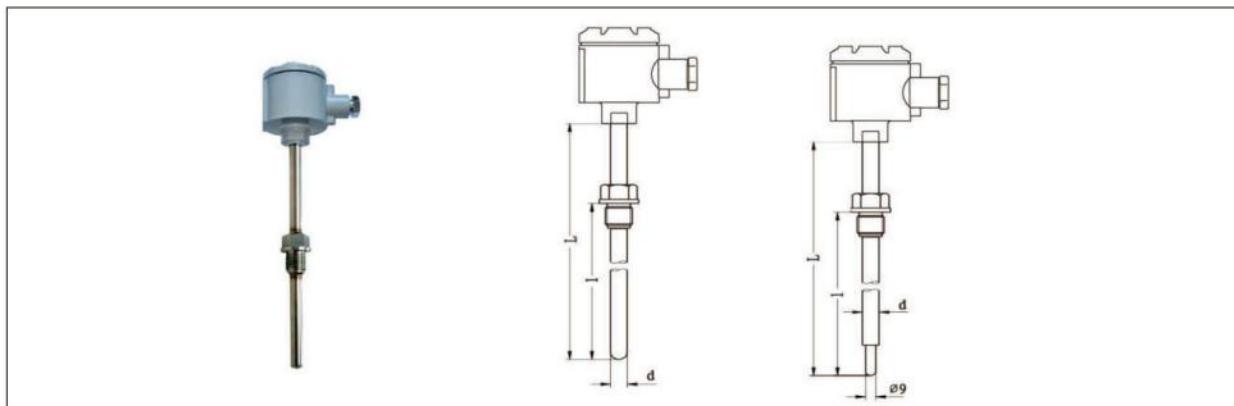
- 0 Φ16
- 1 Φ 20

附加形式 Additional form

- G 变截面 Variable cross-section
- B 带温度变送器 With temperature transmitter

W R N 2 - 2 4 1 G

典型型号示例 Examples of typical model

固定螺纹式热电偶 Thermocouple of fixed screw type


型 号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	热响应时间 Thermal response time	保护管材质 Material for protective tube	规 格 Specification			
					d	L		
WRM-240 WRM ₂ -240	N	0~800	<90s	1Cr18Ni9Ti	Φ 16	300×150 350×200 400×250 450×300 500×350 550×400 650×500 900×750 1150×1000 1650×1500 2150×2000		
0~1100		0~1100		0Cr25Ni20				
WRM-240G WRM ₂ -240G	K	0~800	<24s	1Cr18Ni9Ti				
0~1100		0~1100		0Cr25Ni20				
WRN-240 WRN ₂ -240	K	0~800	<90s	1Cr18Ni9Ti				
0~1000		0~1000		0Cr25Ni20				
WRN-240G WRN ₂ -240G	E	0~800	<24s	1Cr18Ni9Ti				
0~1000		0~800		0Cr25Ni20				
WRE-240 WRE ₂ -240	E	0~800	<90s	1Cr18Ni9Ti				
WRE-240G WRE ₂ -240G			<24s					
WRC-240 WRC ₂ -240	T	0~350	<90s	1Cr18Ni9Ti				
WRC-240G WRC ₂ -240G			<24s					
WRF-240 WRF ₂ -240	J	0~600	<90s	1Cr18Ni9Ti				
WRF-240G WRF ₂ -240G			<24s					

1)热电偶 I 级按协议订货;

2)保护管其余材质根据协议订货;

3)公称压力≤4MPa。

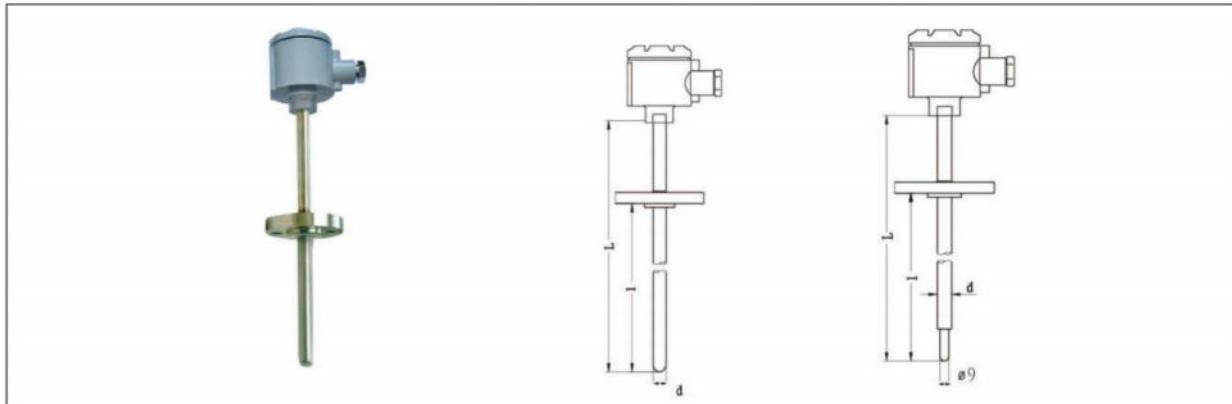
1) Thermocouple I is ordered according to the agreement.

2) The material for the rest protective tube is ordered according to the agreement.

3) Nominal pressure is: ≤4MPa.

型号示例 Examples of models	螺纹规格 Thread specification	
	代 号 Code	M
WRN- 240		M27×2
WRN- 240A	A	G 3/4
WRN- 240G		M27×2
WRN- 241A	A	G 3/4

固定法兰式热电偶 Fixed flange type thermocouple



型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	热响应时间 Thermal response time	保护管材质 Material for protective tube	规格 Specification			
					d	L		
WRM-440 WRM ₂ -440	N	0~800	<90s	1Cr18Ni9Ti	Φ 16	300×150 350×200 400×250 450×300 500×350 550×400 650×500 900×750 1150×1000 1650×1500 2150×2000		
0~1100		0~1100		0Cr25Ni20				
WRM-440G WRM ₂ -440G	K	0~800	<24s	1Cr18Ni9Ti				
0~1100		0~1100		0Cr25Ni20				
WRN-440 WRN ₂ -440	K	0~800	<90s	1Cr18Ni9Ti				
0~1000		0~1000		0Cr25Ni20				
WRN-440G WRN ₂ -440G	E	0~800	<24s	1Cr18Ni9Ti				
0~1000		0~1000		0Cr25Ni20				
WRE-440 WRE ₂ -440	E	0~800	<90s	1Cr18Ni9Ti				
WRE-440G WRE ₂ -440G			<24s					
WRC-440 WRC ₂ -440	T	0~350	<90s	1Cr18Ni9Ti				
WRC-440G WRC ₂ -440G			<24s					
WRF-440 WRF ₂ -440	J	0~600	<90s	1Cr18Ni9Ti				
WRF-440G WRF ₂ -440G			<24s					

1)热电偶 I 级按协议订货；

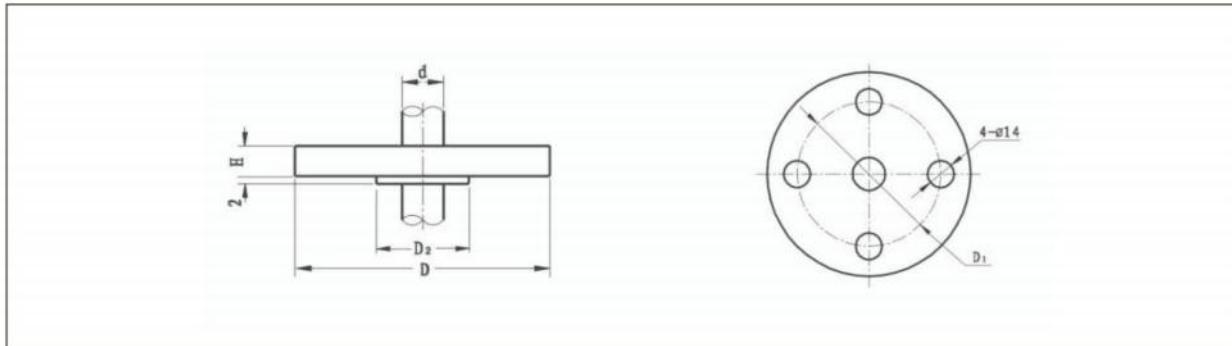
2)保护管其余材质根据协议订货；

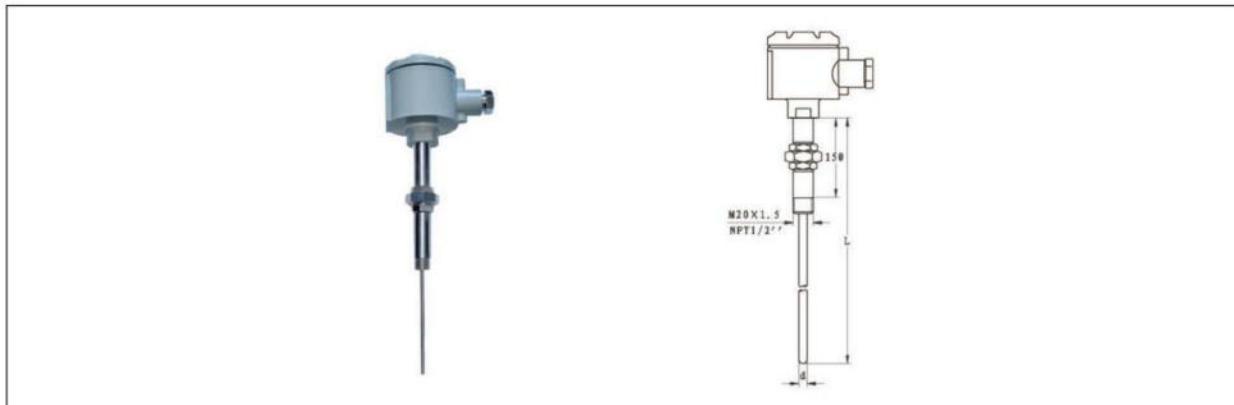
3)公称压力≤4MPa。

1) Thermocouple I is ordered according to the agreement.

2) The material for the rest protective tube is ordered according to the agreement.

3) Nominal pressure is: ≤4MPa.



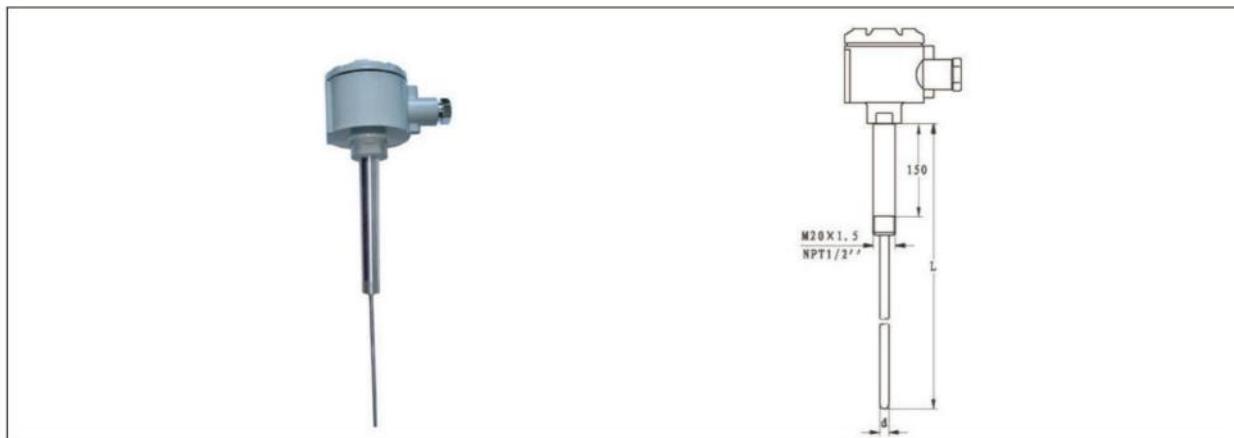
活络管接头式热电偶 Thermocouple of joint type of adjustable pipe


型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	连接尺寸 Connection size	规格 Specification			
				d	L		
WRM-54 WRM ₂ -54	N	0~1100	M20×1.5	Φ3	250 275 300 350 400 450 550 650		
		0~800					
WRM-54A WRM ₂ -54A	N	0~1000	NPT1/2				
		0~800					
WRN-54 WRN ₂ -54	K	0~1000	M20×1.5				
		0~800					
WRN-54A WRN ₂ -54A	K	0~1000	NPT1/2				
		0~800					
WRE-54 WRE ₂ -54	E	0~600	M20×1.5	Φ4	400 450 550 650		
WRE-54A WRE ₂ -54A	E	0~600	NPT1/2				
WRC-54 WRC ₂ -54	T	0~350	M20×1.5	Φ5	550 650		
WRC-54A WRC ₂ -54A	T	0~350	NPT1/2	Φ6	750 900		
WRF-54 WRF ₂ -54	J	0~500	M20×1.5	Φ8	1150		
WRF-54A WRF ₂ -54A							

1)热电偶 I 级按协议订货;
 2)如无特殊之约定, L仅为参考尺寸, 热电偶插入深度应为热安装套管U尺寸;
 3)热安装套管形式详见P119。

1) Thermocouple I is ordered according to the agreement.
 2) If there is no special agreement, L is only the reference size.
 The insertion depth of thermocouple should be the size of thermal installation sleeve U.
 3) The form of thermal mounting sleeve is shown in P119.

直型管接头式热电偶 Straight pipe joint type thermocouple



型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	连接尺寸 Connection size	规格 Specification	
				d	L
WRM-74 WRM ₂ -74	N	0~1100	M20×1.5	Φ3	250
		0~800			
WRM-74A WRM ₂ -74A		0~1000	NPT1/2		
		0~800			
WRN-74 WRN ₂ -74	K	0~1000	M20×1.5	Φ4	275
		0~800			
WRN-74A WRN ₂ -74A		0~1000	NPT1/2		
		0~800			
WRE-74 WRE ₂ -74	E	0~600	M20×1.5	Φ5	300
WRE-74A WRE ₂ -74A			NPT1/2		
WRC-74 WRC ₂ -74	T	0~350	M20×1.5	Φ6	350
WRC-74A WRC ₂ -74A			NPT1/2		
WRF-74 WRF ₂ -74	J	0~500	M20×1.5	Φ8	400
WRF-74A WRF ₂ -74A			NPT1/2		

1)热电偶 I 级按协议订货；

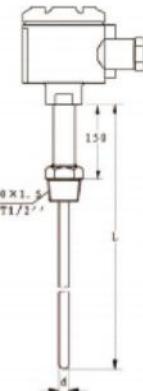
2)如无特殊之约定，L仅为参考尺寸，热电偶插入深度应为热安装套管U尺寸；

3)热安装套管形式详见P119。

1) Thermocouple I is ordered according to the agreement.

2) If there is no special agreement, L is only the reference size. The insertion depth of thermocouple should be the size of thermal installation sleeve U.

3) The form of thermal mounting sleeve is shown in P119.

固定螺纹管接头式热电偶 Joint type thermocouple of fixed thread pipe


型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	连接尺寸 Connection size	规格 Specification	
				d	L
WRM-84 WRM ₂ -84	N	0~1100	M20×1.5	Φ3	250
		0~800			
WRM-84A WRM ₂ -84A		0~1000	NPT1/2		
		0~800			
WRN-84 WRN ₂ -84	K	0~1000	M20×1.5	Φ4	275
		0~800			
WRN-84A WRN ₂ -84A		0~1000	NPT1/2		
		0~800			
WRE-84 WRE ₂ -84	E	0~600	M20×1.5	Φ5	300
WRE-84A WRE ₂ -84A			NPT1/2		
WRC-84 WRC ₂ -84	T	0~350	M20×1.5	Φ6	350
WRC-84A WRC ₂ -84A			NPT1/2		
WRF-84 WRF ₂ -84	J	0~500	M20×1.5	Φ8	400
WRF-84A WRF ₂ -84A			NPT1/2		

1)热电偶 I 级按协议订货；

2)如无特殊之约定，L仅为参考尺寸，热电偶插入深度应为热安装套管U尺寸；

3)热安装套管形式详见P119。

1) Thermocouple I is ordered according to the agreement.

2) If there is no special agreement, L is only the reference size.
The insertion depth of thermocouple should be the size of thermal installation sleeve U.

3) The form of thermal mounting sleeve is shown in P119.

铠装热电阻 Sheathed thermal resistance

应用

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。

工作原理

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。

特点

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。

主要技术参数

产品执行标准: IEC60751, GB/T30121-2013。

偶丝直径材料

偶丝形式 Thermocouple wire type	单支式 Single support	双支式 Double support
套管直径 Casing diameter	Φ3, Φ4, Φ5, Φ6, Φ8 Φ4, Φ5, Φ6, Φ8	Φ4, Φ5, Φ6, Φ8
套管材质 Casing material	1Cr18Ni9Ti	1Cr18Ni9Ti

允差等级

分度号 Graduation	允差等级 Tolerance level	有效温度范围/°C Effective temperaturerange		允差°C Range of temperature measurement °C
		线绕元件 Wire wound element	膜式元件 Membrane element	
Pt100	AA	-50~250	0~150	±(0.1+0.0017 t)
	A	-100~450	-30~300	±(0.15+0.002 t)
	B	-196~600	-50~500	±(0.3+0.005 t)
	C	-196~600	-50~600	±(0.6+0.01 t)

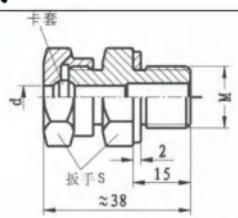
|t|=温度绝对值，单位为°C
t=temperature Absolute value, units for C

热响应时间 Thermal response time

套管直径 Casing diameter	热响应时间 s Thermal response time s
Φ3	≤3
Φ4	≤5
Φ5	≤8
Φ6	≤12
Φ8	≤15

安装方式

代号和尺寸 Code and size	铠装阻外径 The outer diameter of sheathed resistance	
	Φ8, Φ6, Φ5	Φ4, Φ3
M	M16×1.5	M12×1.5
S	22	19



卡套螺纹接头

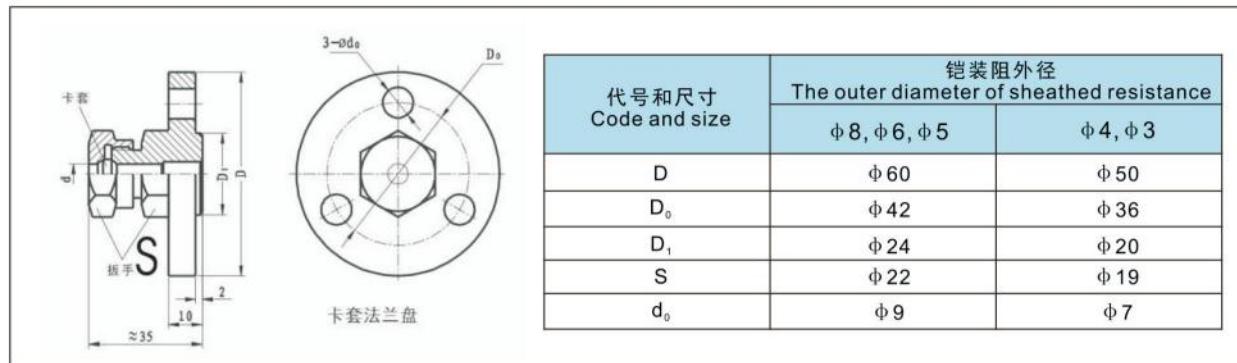


安装方法

代号和尺寸 Code and size	铠装阻外径 The outer diameter of sheathed resistance	
	Φ8, Φ6, Φ5	Φ4, Φ3
M	M16×1.5	M12×1.5
S	22	19



中化天康



型号命名方法 Naming method for model

W 温度仪表 Temperature instrument

Z 热电阻 Thermal resistance

P 感温元件材料 Material for temperature-sensing element

K 铠装式 Number of thermal wire couple

偶丝对数 Number of thermal wire couple

- 无 单支 Non, single support
- 2 双支 2 double support

安装固定装置 Installation and fixation mode

- 1 无固定装置 Non-fixing device
- 2 固定卡套螺纹 Fixed-sleeve screw thread
- 3 活动卡套螺纹 Active-sleeve screw thread
- 4 固定卡套法兰 Fixed-sleeve flange
- 5 活动卡套法兰 Active-sleeve flange

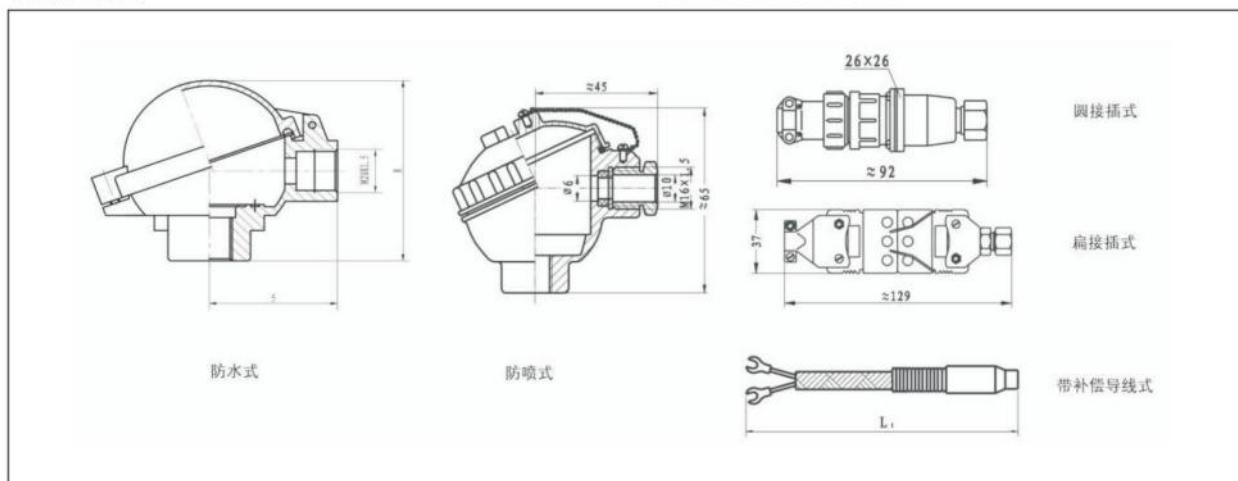
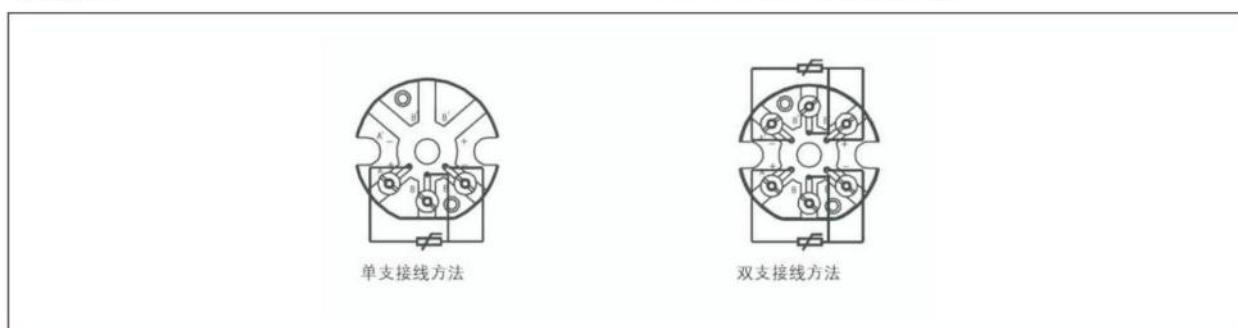
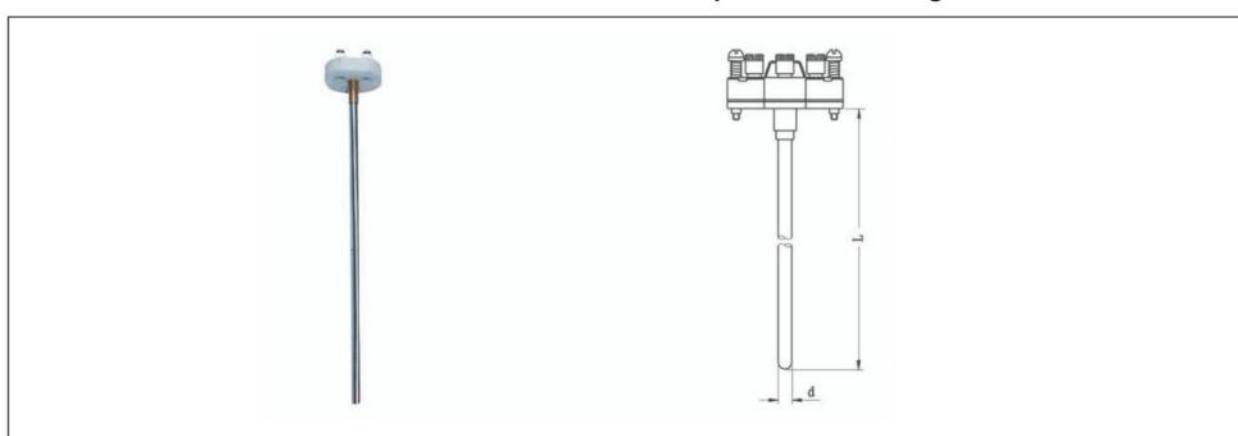
接线盒形式 Junction box form

- 3 防水式 Water-proof type
- 6 圆接插式 Circular interpolation
- 7 扁接插式 Flat socket
- 9 补偿导线式 Compensating wire type
- 0 感温元件 Temperature-sensing element

直径 Diameter of protective tube

- 3 $\phi 3$
- 4 $\phi 4$
- 5 $\phi 5$
- 6 $\phi 6$
- 8 $\phi 8$

W	Z	P	K	₂	-	2	3	6	典型型号示例 Examples of typical model
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接线盒形式**Junction box form****接线方式****Wire-connection mode****感温元件****Temperature-sensing element**

名称 Model	型号 Graduation	分度号 Graduation	测温范围 °C Range of temperature measurement °C	规格 Specification	
				d	L
单支铂热电阻 Single platinum thermal resistance	WZP-101	Pt100	A级 -30-300	Φ3	310
双支铂热电阻 Single platinum thermal resistance	WZP ₂ -101		B级 -50-500	Φ4	360
				Φ5	410
				Φ6	460
					510
					560



防水式铠装热电阻 Waterproof type sheathed thermal resistance

型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	等 级 Grade	安装固定装置 Installation and fixation device
WZPK-133	Pt100	A级 -30-300 B级 -50-500	A级或B级 A or B	无固定装置 No fixation device
WZPK-134				固定卡套螺纹 Fixed-sleeve screw thread
WZPK-135				可动卡套螺纹 Movable-sleeve screw thread
WZPK-136				固定卡套法兰 Fixed-sleeve screw flange
WZPK-138				可动卡套法兰 Active-sleeve flange
WZPK ₂ -134				
WZPK ₂ -135				
WZPK ₂ -136				
WZPK ₂ -138				
WZPK-233				
WZPK-234				
WZPK-235				
WZPK-236				
WZPK-238				
WZPK ₂ -234				
WZPK ₂ -235				
WZPK ₂ -236				
WZPK ₂ -238				
WZPK-333				
WZPK-334				
WZPK-335				
WZPK-336				
WZPK-338				
WZPK ₂ -334				
WZPK ₂ -335				
WZPK ₂ -336				
WZPK ₂ -338				
WZPK-433				
WZPK-434				
WZPK-435				
WZPK-436				
WZPK ₂ -438				
WZPK-434				
WZPK-435				
WZPK-436				
WZPK ₂ -438				
WZPK-533				
WZPK-534				
WZPK-535				
WZPK-536				
WZPK ₂ -534				
WZPK ₂ -535				
WZPK ₂ -536				
WZPK ₂ -538				

1)铠装阻防护等级IP55;

2)热电阻A级按协议订货;

3)未注明测温范围及保护管材质,保护管材质一律视为1Cr18Ni9Ti。

1) Protection grade of sheathed resistance IP55.

2) Thermocouple I is ordered according to the agreement.

3) The material of protective tube is 1Cr18Ni9Ti if the temperature scope and material are noted.

圆接插式铠装热电阻 Sheath thermal resistance of circular interpolation type

型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	等 级 Grade	安装固定装置 Installation and fixation device
WZPK-163	Pt100	A级 -30-300 B级 -50-500	A级或B级 A or B	无固定装置 No fixation device
WZPK-164				固定卡套螺纹 Fixed-sleeve screw thread
WZPK-165				可动卡套螺纹 Movable-sleeve screw thread
WZPK-166				固定卡套法兰 Fixed-sleeve screw flange
WZPK-168				可动卡套法兰 Active-sleeve flange
WZPK ₂ -164				
WZPK ₂ -165				
WZPK ₂ -166				
WZPK ₂ -168				
WZPK-263				
WZPK-264				
WZPK-265				
WZPK-266				
WZPK-268				
WZPK ₂ -264				
WZPK ₂ -265				
WZPK ₂ -266				
WZPK ₂ -268				
WZPK-363				
WZPK-364				
WZPK-365				
WZPK-366				
WZPK-368				
WZPK-364		A级或B级 A or B		
WZPK-365				
WZPK-366				
WZPK-368				
WZPK ₂ -463				
WZPK ₂ -464				
WZPK ₂ -465				
WZPK ₂ -466				
WZPK-468				
WZPK-464				
WZPK-465				
WZPK-466				
WZPK-468				

1)铠装阻防护等级IP55;

2)热电阻A级按协议订货;

3)未注明测温范围及保护管材质,保护管材质一律视为1Cr18Ni9Ti。

1) Protection grade of sheathed resistance IP55.

2) Thermocouple I is ordered according to the agreement.

3) The material of protective tube is 1Cr18Ni9Ti if the temperature



扁接插式铠装热电阻 Sheath thermal resistance of flat socket type

型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	等级 Grade	安装固定装置 Installation and fixation device
WZPK-173				
WZPK-174				无固定装置 No fixation device
WZPK-175				
WZPK-176				
WZPK-178				
WZPK-273				
WZPK-274				
WZPK-275				
WZPK-276				
WZPK-278				
WZPK-373	Pt100	A级 -30-300 B级 -50-500	A级或B级 A or B	
WZPK-374				
WZPK-375				
WZPK-376				
WZPK ₂ -378				
WZPK ₂ -473				
WZPK ₂ -474				
WZPK ₂ -475				
WZPK-476				
WZPK-478				
WZPK-573				
WZPK-574				
WZPK-575				
WZPK-576				
WZPK-578				

1)铠装阻防护等级IP55;

2)热电阻A级按协议订货;

3)未注明测温范围及保护管材质,保护管材质一律视为1Cr18Ni9Ti。

1) Protection grade of sheathed resistance IP55.

2) Thermocouple I is ordered according to the agreement.

3) The material of protective tube is 1Cr18Ni9Ti if the temperature scope and material are noted.

补偿导线式铠装热电阻 The compensation wire sheathed thermal resistance

型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	等 级 Grade	安装固定装置 Installation and fixation device
WZPK-193	Pt100	A级 -30-300 B级 -50-500	A级或B级 A or B	无固定装置 No fixation device
WZPK-194				固定卡套螺纹 Fixed-sleeve screw thread
WZPK-195				可动卡套螺纹 Movable-sleeve screw thread
WZPK-196				固定卡套法兰 Fixed-sleeve screw flange
WZPK-198				可动卡套法兰 Active-sleeve flange
WZPK ₂ -194				
WZPK ₂ -195				
WZPK ₂ -196				
WZPK ₂ -198				
WZPK-293				
WZPK-294				
WZPK-295				
WZPK-296				
WZPK-298				
WZPK ₂ -294				
WZPK ₂ -295				
WZPK ₂ -296				
WZPK ₂ -298				
WZPK-393				
WZPK-394				
WZPK-395				
WZPK-396				
WZPK-398				
WZPK-394				
WZPK-395				
WZPK-396				
WZPK-398				
WZPK ₂ -493				
WZPK ₂ -494				
WZPK ₂ -495				
WZPK ₂ -496				
WZPK-498				
WZPK-494				
WZPK-495				
WZPK-496				
WZPK ₂ -498				
WZPK-593				
WZPK-594				
WZPK-595				
WZPK ₂ -596				
WZPK-598				
WZPK-574				
WZPK-595				
WZPK-596				
WZPK-598				

1)铠装阻防护等级IP55;

2)热电阻A级按协议订货;

3)未注明测温范围及保护管材质,保护管材质一律视为1Cr18Ni9Ti。

1) Protection grade of sheathed resistance IP55.

2) Thermocouple I is ordered according to the agreement.

3) The material of protective tube is 1Cr18Ni9Ti if the temperature scope and material are noted.

装配热电阻 Assembling thermal resistance

应用

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。

工作原理

热电阻是利用物质在温度变化时，其电阻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。

特点

- 1.压簧式感温元件，抗振性能好；
- 2.毋须补偿导线，节省费用；
- 3.测量精度高；
- 4.机械强度高，耐压性能好；
- 5.进口薄膜电阻元件，性能可靠稳定；

主要技术参数

产品执行标准：IEC60751, GB/T30121-2013, JB/T8623-1997。

测温范围及允差等级

分度号 Graduation	允差等级 Tolerance level	有效温度范围/°C Effective temperature range		允差°C Range of temperature measurement °C
		线绕元件 Wire wound element	膜式元件 Membrane element	
Pt100	AA	-50~250	0~150	±(0.1+0.0017 t)
	A	-100~450	-30~300	±(0.15+0.002 t)
	B	-196~600	-50~500	±(0.3+0.005 t)
	C	-196~600	-50~600	±(0.6+0.01 t)
	—	-50~150	—	±(0.3+0.006 t)

|t|=温度绝对值，单位为°C

t=temperature Absolute value, units for C

Application

It is usually used along with display instruments, recording instruments, electronic computers and so on. It is able to directly measure the temperature of liquid, steam and gas and solid surface within the range of -200℃ ~500℃.

Working principle

Thermal resistance uses the feature that when the temperature of the material changes, its resistance will change too. When the resistance changes, the instrument will display relevant temperature corresponding to the resistance.

Characteristics

1. With temperature-sensing element of pressure spring type, so it has good anti-vibration performance;
2. With no compensation wire, which is cost-saving
3. High measurement accuracy;
4. High mechanical strength, good pressure resistance;
5. Imported thin-film resistor with reliable and stable performance;

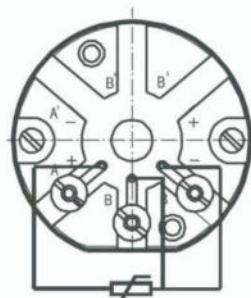
Main technical parameters

Product implementation standard: IEC60751, GB/T30121-2013, JB/T8623-1997.

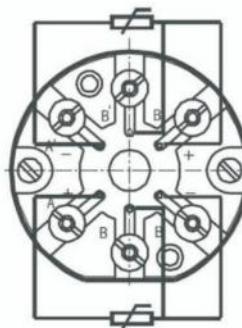
Temperature range and tolerance level

接线方式

Wire-connection mode



单支接线方法



双支接线方法

型号命名方法 Naming method of model

W 温度仪表 Temperature instrument

Z 热电阻 Thermal resistance

感温元件材料 Material for temperature-sensing element

P 铂 platinum

C 铜 copper

偶丝对数

无 单支 Non, single support

2 双支 2 double support

安装固定装置 Installation and fixation mode

1 无固定装置 Non-fixing device

2 固定螺纹 Fixed-sleeve screw thread

3 活动法兰 Active-sleeve screw thread

4 固定法兰 Fixed-sleeve flange

5 活络管接头式 Adjustable pipe joint type

6 固定螺纹锥形式 Fixed thread cone type

7 直形管接头式 Joint type of straight pipe

8 固定螺纹管接头式 Fixed joint type of threaded pipe

接线盒形式 Junction box form

2 防喷式

3 防水式

保护管直径 Diameter of protective tube

0 Φ16

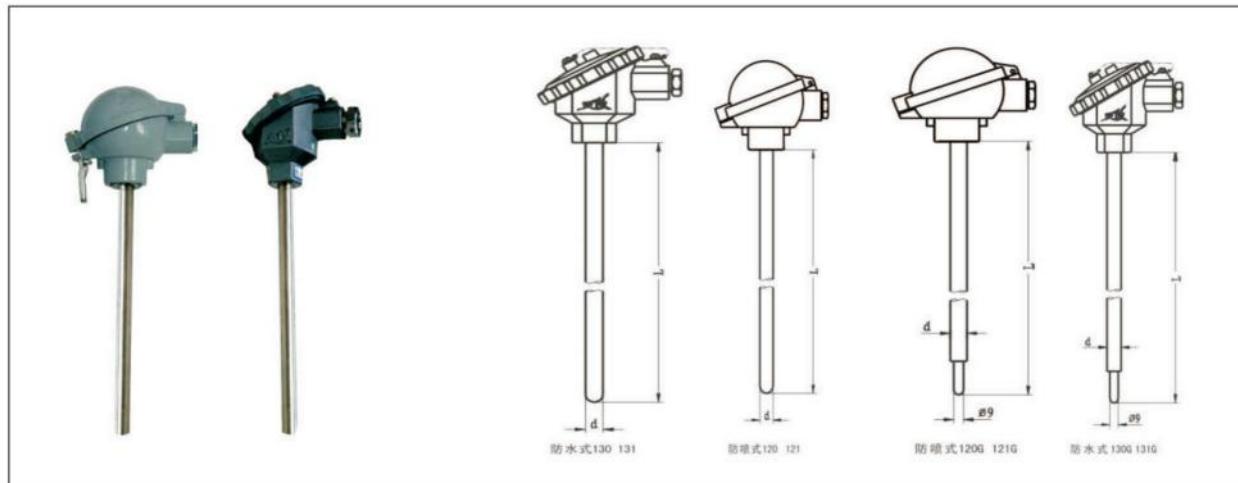
1 Φ12

附加装置形式 Additional device form

G 变截面 Variable cross-section

B 带温度变送器 With temperature transmitter

W Z P - 2 3 1 G 典型型号示例 Examples of typical model

无固定装置热电阻 Thermal resistance with no-fixed device


型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	热响应时间 Thermal response time	规格 Specification		
				d	L	
WZP-120 WZP ₂ -120	Pt100	A级 -30-300 B级 -50-500	<90s	Φ 16	300 350 400 450 500 550 650 900 1150 1650 2150	
WZP-120G WZP ₂ -120G			<24s			
WZP-121 WZP ₂ -121			<90s	Φ 12		
WZP-121G WZP ₂ -121G			<24s			
WZP-130 WZP ₂ -130			<90s	Φ 16		
WZP-130G WZP ₂ -130G			<24s			
WZP-131 WZP ₂ -131			<90s	Φ 12		
WZP-131G WZP ₂ -131G			<24s			
WZC-120G WZC-120 WZC-130 WZC-130G WZC-121 WZC-121G WZC-131 WZC-131G	Cu50 Cu100	-50~100	<120s	Φ 16	300 350 400 450 500 550 650 900 1150 1650 2150	
			<40s			
			<120s			
			<40s			
			<120s	Φ 12		
			<40s			
			<120s			
			<40s			

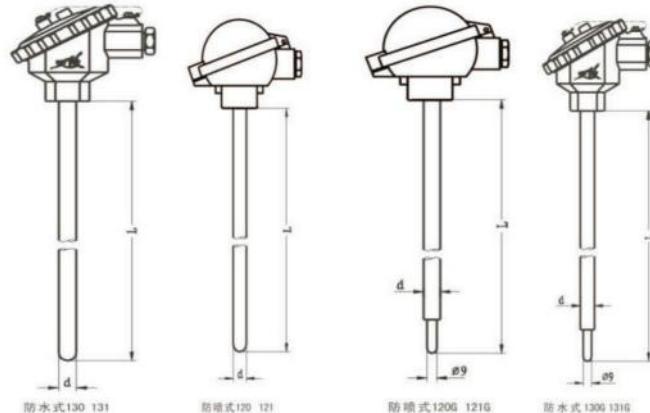
1) 型号120、121为防喷式，防护等级IP65;型号130、131为防水式，防护等级IP55;

2) 保护管材质为1Cr18Ni9Ti,其余材质根据协议订货。

1) Model 120 and 121 are anti-spring type with the protective grade being IP65; Model 130 and 131 are waterproof type with the protective grade being IP55.

2) Protective tube material is 1Cr18Ni9Ti and the rest of the material is ordered according to the agreement.

固定螺纹式热电阻 Fixed screw type thermal resistance



型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	热响应时间 Thermal response time	规格 Specification		
				d	L	
WZP-220 WZP ₂ -220	Pt100	A级 -30-300 B级 -50-500	<90s	Φ 16	300 350 400 450 500 550 650 900 1150 1650 2150	
WZP-220G WZP ₂ -220G			<24s			
WZP-221 WZP ₂ -221			<90s	Φ 12		
WZP- 221G WZP ₂ -221G			<24s			
WZP- 230 WZP ₂ -230			<90s	Φ 16		
WZP- 230G WZP ₂ -230G			<24s			
WZP- 231 WZP ₂ -231			<90s	Φ 12		
WZP- 231G WZP ₂ -231G			<24s			
WZC-220	Cu50 Cu100	-50~100	<120s	Φ 16	300 350 400 450 500 550 650 900 1150 1650 2150	
WZC-220G			<40s			
WZC-230			<120s			
WZC-230G			<40s			
WZC-221			<120s	Φ 12		
WZC-221G			<40s			
WZC-231			<120s			
WZC-231G			<40s			

1) 型号220、221为防喷式，防护等级IP65;型号230、231为防水式，防护等级IP55;

2) 保护管材质为1Cr18Ni9Ti,其余材质根据协议订货;

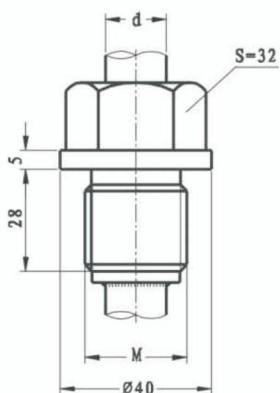
3) 公称压力≤4.0MPa。

1) Model 220 and 221 are anti-spraying type with the waterproof grade being IP65. model 230 and 231 are waterproof type with the protective grade being IP55.

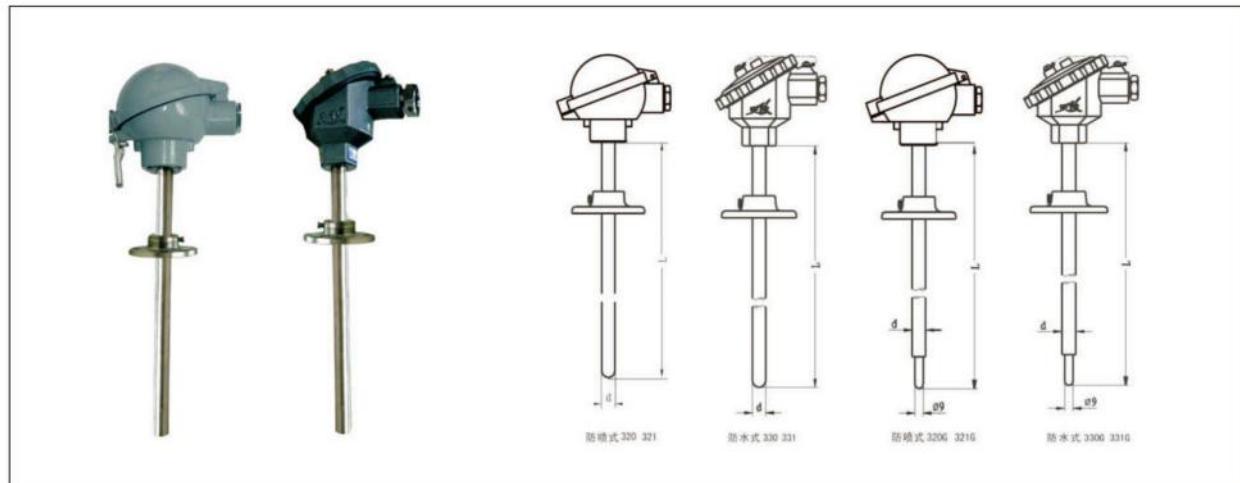
2) Protective tube material is 1Cr18Ni9Ti and the rest of the material is ordered according to the agreement.

3) Nominal pressure is ≤4.0MPa.

型号示例 Model examples	螺纹规格 Thread specification		d
	代号 Code	M	
WZP-220		M27×2	$\Phi 16$
WZP-220A	A	G3/4	
WZP-221G		M27×2	$\Phi 12$
WZP-221GA	A	G3/4	



活动法兰式热电阻 Active-flange type thermal resistance



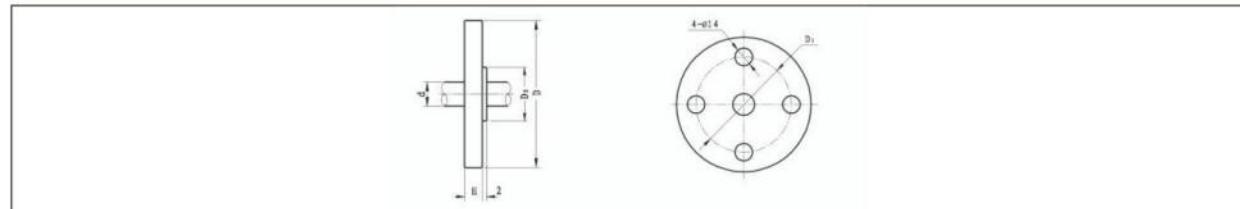
型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	热响应时间 Thermal response time	规格 Specification		
				d	L	
WZP-320 WZP ₂ -320	Pt100	A级 -30-300 B级 -50-500	<90s	Φ 16	300 350 400 450 500 550 650 900 1150 1650 2150	
WZP-320G WZP ₂ -320G			<24s			
WZP-321 WZP ₂ -321			<90s	Φ 12		
WZP-321G WZP ₂ -321G			<24s			
WZP-330 WZP ₂ -330			<90s	Φ 16		
WZP-330G WZP ₂ -330G			<24s			
WZP-331 WZP ₂ -331			<90s	Φ 12		
WZP-331G WZP ₂ -331G			<24s			
WZC-320 WZC-320G	Cu50 Cu100	-50~100	<120s	Φ 16	300 350 400 450 500 550 650 900 1150 1650 2150	
WZC-320 WZC-320G			<40s			
WZC-320 WZC-320G			<120s			
WZC-330G WZC-321			<40s			
WZC-321G WZC-331			<120s	Φ 12		
WZC-331G WZC-331G			<40s			
WZC-331G WZC-331G			<120s			
WZC-331G WZC-331G			<40s			

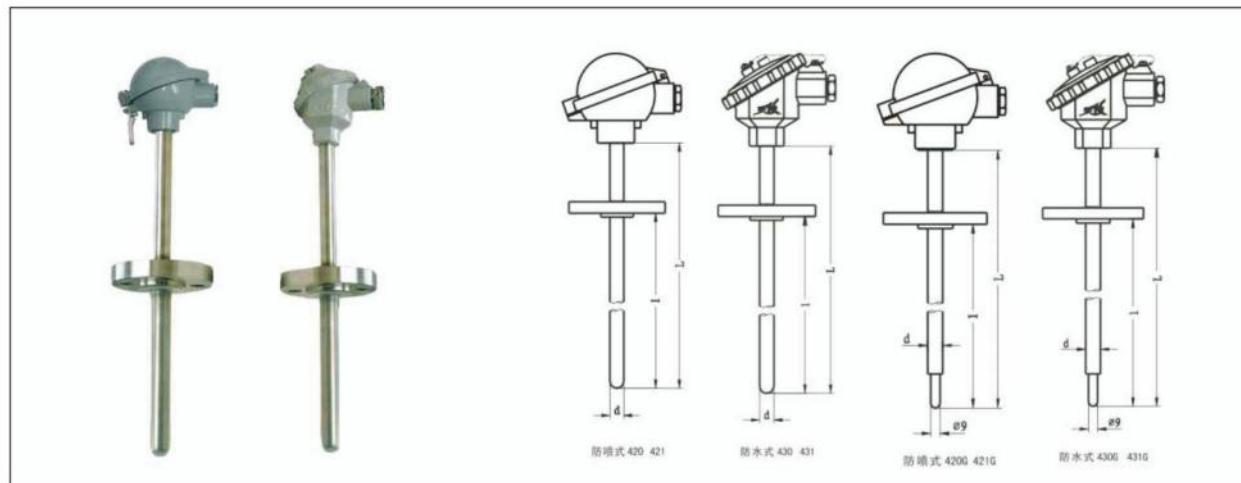
1) 型号320、321为防喷式，防护等级IP65;型号330、331为防水式，防护等级IP55；

2) 保护管材质为1Cr18Ni9Ti,其余材质根据协议订货。

1) Model 320 and 321 are anti-spraying type with the waterproof grade being IP65; model 330 and 331 are waterproof type with the protective grade being IP55.

2) Protective tube material is 1Cr18Ni9Ti and the rest of the material is ordered according to the agreement.



固定法兰式热电阻 Fixed-flange type thermal resistance


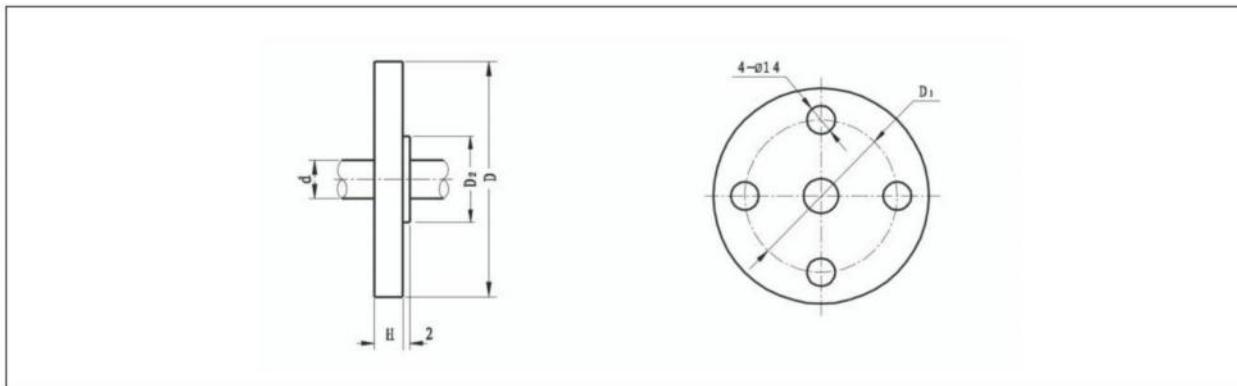
型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	热响应时间 Thermal response time	规格 Specification		
				d	L	
WZP-420 WZP ₂ -420	Pt100	A级 -30-300 B级 -50-500	<90s	Φ 16	300×150 350×200 400×250 450×300 500×350 550×400 650×500 900×750 1150×1000 1650×1500 2150×2000	
WZP-420G WZP ₂ -420G			<24s			
WZP-421 WZP ₂ -421			<90s	Φ 12		
WZP-421G WZP ₂ -421G			<24s			
WZP-430 WZP ₂ -430			<90s	Φ 16		
WZP-430G WZP ₂ -430G			<24s			
WZP-431 WZP ₂ -431			<90s	Φ 12		
WZP-431G WZP ₂ -431G			<24s			
WZC-420G WZC-420 WZC-430 WZC-430G WZC-421 WZC-421G WZC-431 WZC-431G	Cu50 Cu100	-50~100	<120s	Φ 16	300×150 350×200 400×250 450×300 500×350 550×400 650×500 900×750 1150×1000 1650×1500 2150×2000	
			<40s			
			<120s			
			<40s			
			<120s	Φ 12		
			<40s			
			<120s			
			<40s			

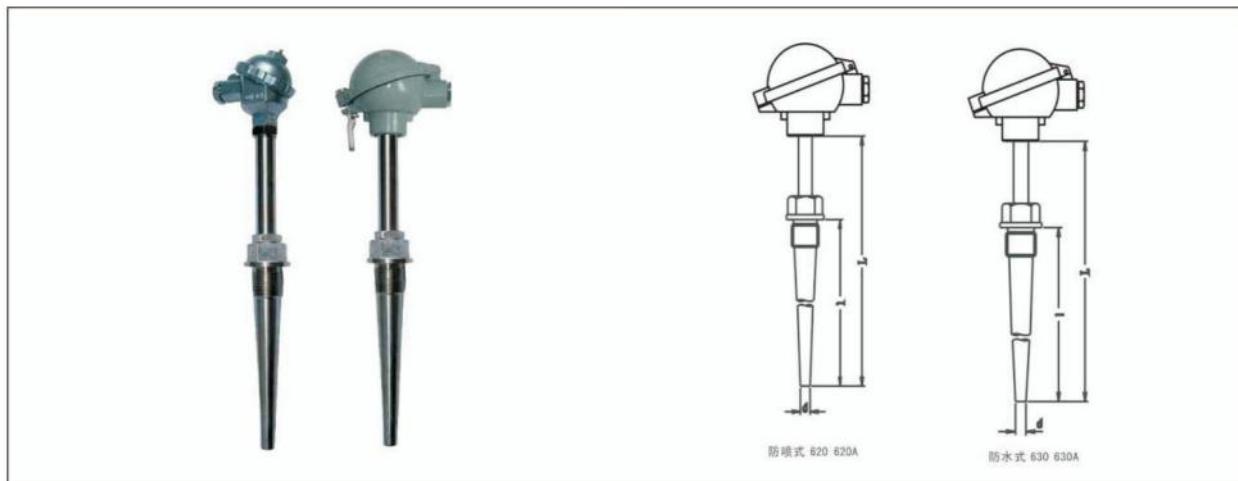
- 1) 型号420、421为防喷式，防护等级IP65;型号430、431为防水式，防护等级IP55；
 2) 保护管材质为1Cr18Ni9Ti,其余材质根据协议订货；
 3) 公称压力≤4.0MPa。

1) Model 420 and 421 are anti-spraying type with the waterproof grade being IP65. model 430 and 431 are waterproof type with the protective grade being IP55;
 2) Protective tube material is 1Cr18Ni9Ti and the rest of the material is ordered according to the agreement.
 3) Nominal pressure is ≤4.0MPa.

型号示例 Examples of model	法兰规格 Flange specification				
	D	D ₁	D ₂	H	d
WZP-420	Φ95	Φ65	Φ46	14	12、Φ16
WZP-420G	Φ95	Φ65	Φ46		
WZP-421	Φ95	Φ65	Φ46	14	12、Φ16
WZP-421G	Φ95	Φ65	Φ46		

可按用户约定要求提供法兰:详见 P 86

The flange can be provided according to the requirements of users:
for the specific information, please refer to P86.

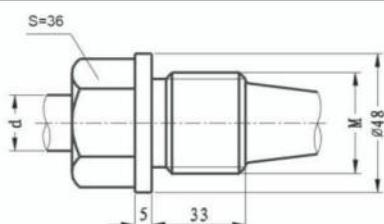
固定螺纹锥形热电阻 Taper heat resistance of fixed-thread type


型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	热响应时间 Thermal response time	规格 Specification	
				d	L
WZP-620 WZP _z -620					
WZP-620A WZP _z -620A	Pt100	A级 -30-300 B级 -50-500	<90s	Φ15	300×150 350×200 400×250 450×300 500×350 550×400 650×500
WZP-630 WZP _z -630					
WZP-630A WZP _z -630A	Cu50 Cu100	-50~100			
WZC-620 WZC-620A					
WZC-630 WZC-630A					

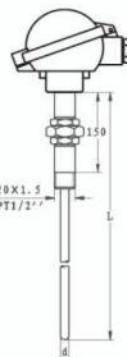
- 1) 型号620、621为防喷式，防护等级IP65；型号630、631为防水式，防护等级IP55；
 2) 保护管材质为1Cr18Ni9Ti，其余材质根据协议订货；
 3) 公称压力≤15MPa。

1) Model 620 and 621 are anti-spraying type with the waterproof grade being IP65, model 630 and 631 are waterproof type with the protective grade being IP55.
 2) Protective tube material is 1Cr18Ni9Ti and the rest of the material is ordered according to the agreement.
 3) Nominal pressure is ≤15MPa.

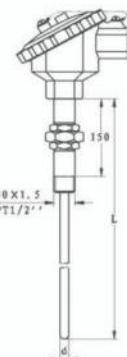
型号示例 Model examples	螺纹规格 Thread specification	
	代号 Code	M
WZP-620	-	M33×2
WZP-620A	A	NPT1
WZP-630	-	M33×2
WZP-630A	A	NPT1



活络管接头式热电阻 Joint type thermal resistance of adjustable pipe



防喷式 52-52A



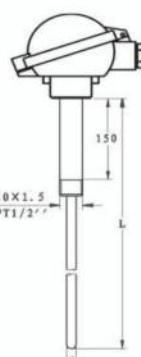
防水式 53-53A

型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	热响应时间 Thermal response time	规格 Specification	
				d	L
WZP-52 WZP ₂ -52	Pt100	A级 -30-300 B级 -50-500	M20×1.5	Φ3 Φ4 Φ5 Φ6 Φ8	250 300 350 400 450
WZP-52A WZP ₂ -52A			NPT1/2		
WZP-53 WZP ₂ -53			M20×1.5		
WZP-53A WZP ₂ -53A			NPT1/2		
WZP-52A WZP-52A	Cu50 Cu100	-50~100	M20×1.5	Φ5 Φ6 Φ8	750 900 1150
WZP-53 WZP-53A			NPT1/2		
			M20×1.5		
			NPT1/2		

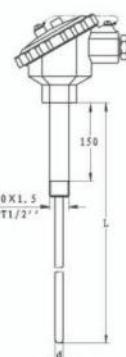
- 1) 型号53、53A为防水式，防护等级IP55；型号52、52A为防喷式，防护等级IP65；
 2) 如无特殊之约定，L仅为参考尺寸，热电阻插入深度应为热安装套管U尺寸；
 3) 热安装套管形式详见P119。

1) Model 53 and 53A are waterproof type with the protective grade being IP55, model 52 and 52A are anti-spraying type with the waterproof grade being IP65.
 2) If there is no special agreement, L is only the reference size. The insertion depth of thermocouple should be the size of thermal installation sleeve U.
 3) The form of casing for thermal installation is shown in P119.

直形管接头式热电阻 Joint type thermal resistance of straight pipe



防喷式 72-72A



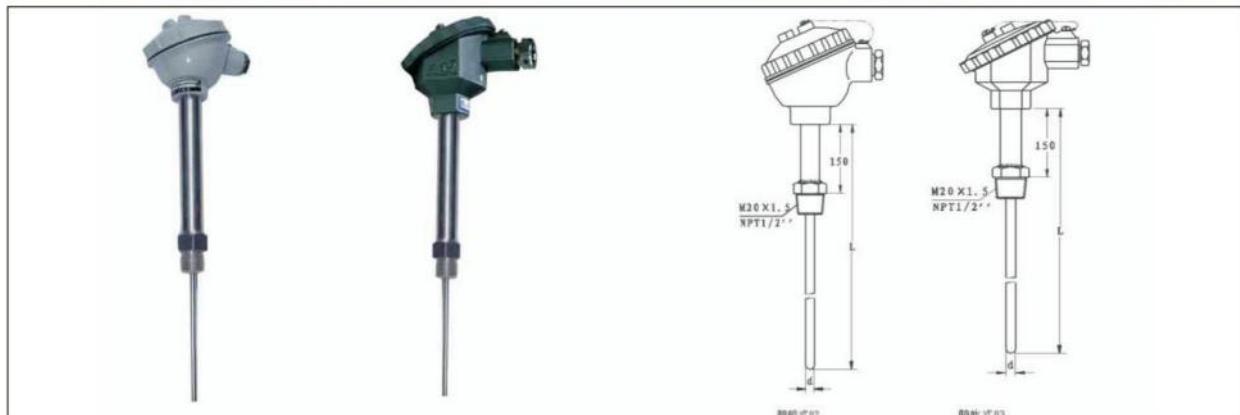
防水式 73-73A

型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	热响应时间 Thermal response time	规格 Specification	
				d	L
WZP-72 WZP ₂ -72	Pt100	A级 -30-300 B级 -50-500	M20×1.5	Φ3 Φ4 Φ5 Φ6 Φ8	250 300 350 400 450 550 650
WZP-72A WZP ₂ -72A			NPT1/2		
WZP-73 WZP ₂ -73			M20×1.5		
WZP-73A WZP ₂ -73A			NPT1/2		
WZP-72A WZP-72A	Cu50 Cu100	-50~100	M20×1.5	Φ5 Φ6 Φ8	750 900 1150
WZP-73 WZP-73A			NPT1/2		
WZP-73 WZP-73A			M20×1.5		
WZP-73 WZP-73A			NPT1/2		

- 1) 型号73、73A为防水式，防护等级IP55；型号72、72A为防喷式，防护等级IP65；
 2) 如无特殊之约定，L仅为参考尺寸，热电阻插入深度应为热安装套管U尺寸；
 3) 热安装套管形式详见P119。

- 1) Model 73 and 73A are waterproof type with the protective grade being IP55, model 72 and 72A are anti-spraying type with the waterproof grade being IP65.
 2) If there is no special agreement, L is only the reference size. The insertion depth of thermocouple should be the size of thermal installation sleeve U.
 3) The form of casing for thermal installation is shown in P119.

固定螺纹管接头式热电阻 Joint type thermal resistance of fixed screw pipe



型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	热响应时间 Thermal response time	规格 Specification	
				d	L
WZP-82 WZP ₂ -82	Pt100	A级 -30-300 B级 -50-500	M20×1.5	Φ3 Φ4 Φ5 Φ6 Φ8	250 300 350 400 450 550 650
WZP-82A WZP ₂ -82A			NPT1/2		
WZP-83 WZP ₂ -83			M20×1.5		
WZP-83A WZP ₂ -83A			NPT1/2		
WZP-82A WZP-82A	Cu50 Cu100	-50~100	M20×1.5	Φ5 Φ6 Φ8	750 900 1150
WZP-83 WZP-83A			NPT1/2		
WZP-83 WZP-83A			M20×1.5		
WZP-83 WZP-83A			NPT1/2		

- 1) 型号83、83A为防水式，防护等级IP55；型号82、82A为防喷式，防护等级IP65；
 2) 如无特殊之约定，L仅为参考尺寸，热电阻插入深度应为热安装套管U尺寸；
 3) 热安装套管形式详见P119。

- 1) Model 83 and 83A are waterproof type with the protective grade being IP55, model 82 and 82A are anti-spraying type with the waterproof grade being IP65.
 2) If there is no special agreement, L is only the reference size. The insertion depth of thermocouple should be the size of thermal installation sleeve U.
 3) The form of casing for thermal installation is shown in P119.

防爆热电阻 Explosion-proof thermal resistance

应用

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碳氢化合物等爆炸物的-200℃~500℃范围内液体、蒸汽和气体介质以及固体表面温度。

工作原理

隔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。

特点

- 1.压簧式感温元件，抗振性能好；
- 2.测量精确度高；
- 3.毋须补偿导线，节省费用；
- 4.进口薄膜电阻元件，性能可靠稳定。

主要技术参数

- 1.产品执行标准：IEC60751，GB/T30121-2013，JB/T8623-1997，GB26789-2011。
- 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。

测温范围及允差

Application

It is usually used along with display instruments, recording instruments, electronic computers and so on. It is able to directly measure the temperature of liquid, steam and gas and solid surface within the range of -200℃ ~500℃.

Working principle

Explosion-proof thermocouple uses the principle of interval explosion-proof with the junction box and other parts with enough strength where the dangerous parts which will generate spark, electric arc and dangerous temperature are sealed, so when the explosion occurs inside the cavity, the flame of the explosion can be cooled and distinguished in the gap between the joint surface so that the flame and the temperature will not be passed to the cavity. Finally, the explosion-proof is realized.

Characteristics

1. With temperature-sensing element of pressure spring type, so it has good anti-vibration performance.
2. High measurement accuracy.
3. With no compensation wire, which is cost-saving.
4. Imported thin-film resistor with reliable and stable performance.

Main technical parameters

1. Product implementation standard IEC60751, GB/T30121-2013, JB/T8623-1997, GB26789-2011.
2. Insulation resistance in normal temperature For thermocouple, the environment temperature is 15~35℃, the relative humidity is not more than 80%, the test voltage is 10~100V(DC), the insulation resistance between electrode and outer sleeve≥100MΩ.

Range of temperature measurement and the error tolerance

型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	精度等级 Precision grade	允许偏差 Allowable deviation
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)

注：t为感温元件实测温度绝对值

Note: t is the absolute value of the measured temperature of the temperature sensing element.

取证一览表

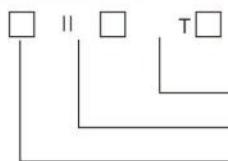
Evidence list

防爆级别 Explosion-proof grade	认证机构 Certification body	防爆证号 Number of explosion-proof
d II BT4	GYB97152	NEPSI
d II CT5	GYB02476	NEPSI
ia II CT6	GYB05364X	NEPSI

注：NEPSI防爆认证系国家级仪器仪表防爆安全监督检验站

Note: NEPSI explosion-proof certification department certified the national instruments and meters.

防爆分组形式 Grouping for explosion-proof



温度组别: T1~T6 Temperature group: T1~T6

防爆等级: A、B、C Explosion-proof grade

工厂用电气设备 Electrical equipment used in factory

d:隔爆型

ia:本质安全型

ib:本质安全型

d:Explosion-proof type

ia:Essentially-safe type

ib:Essentially-safe type

电气设备类别

I类——煤矿井下用电气设备
II类——工厂用电气设备

Types of electrical equipment

I ——Electrical equipment for underground coal mine
II ——Electrical equipment used in factory

防爆等级

防爆热电阻的防爆等级按其使用于爆炸性气体混合物最大试验安全间隙分为A、B、C三级

Explosion-proof grade

Explosion proof grade of explosion-proof thermocouple according to maximum test safety clearance of mixture of explosive gas is divided into A, B, C.

类别 Types	级别 Grade	最大试验安全间隙 (MESG) mm Maximum test safety clearance (MESG) mm
II	A	0.9≤MESG
	B	B0.5<MESG<0.9
	C	CMESG≤0.5

固定螺纹管接头式热电阻 Joint type thermal resistance of fixed screw pipe

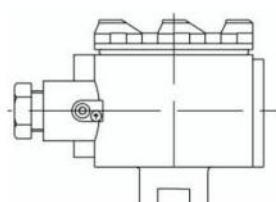
防爆热电阻的温度组别按其外露部分允许最高面温度分为T1~T6

Temperature groups of explosion-proof thermocouple is divided into T1~T6 according to maximum surface temperature of the exposed part.

温度组别 Temperature group	允许最高表面温度°C Maximum surface temperature of the exposed part°C
T1	450
T2	300
T3	200
T4	135
T5	100
T6	85

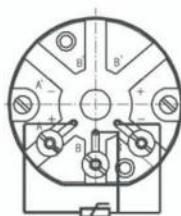
接线盒形式

Junction box form

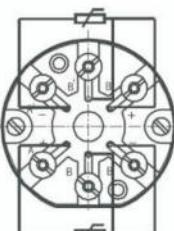


电气设备类别

Types of electrical equipment



单支接线方式
Single-support connection method



双支接线方式
Double-support connection method

W 温度仪表 Temperature instrument

Z 热电阻 Thermal resistance

感温元件材料 Material for temperature-sensing element

P 铂 platinum

C 铜 copper

偶丝对数 Number of thermal wire couple

无 单支 Non, single support

2 双支 2 double support

安装固定形式 Installation and fixation form

- 1 无固定装置 Non-fixing device
- 2 固定螺纹 Fixed-sleeve screw thread
- 3 活动法兰 Active-sleeve screw thread
- 4 固定法兰 Fixed-sleeve flange
- 5 活络管接头式 Adjustable pipe joint type
- 6 固定螺纹锥形式 Fixed thread cone type
- 7 直形管接头式 Joint type of straight pipe
- 8 固定螺纹管接头式 Fixed joint type of threaded pipe

接线盒形式 Junction box form

4 防爆式 explosion proof type

保护管直径 Diameter of protective tube

0 Φ16

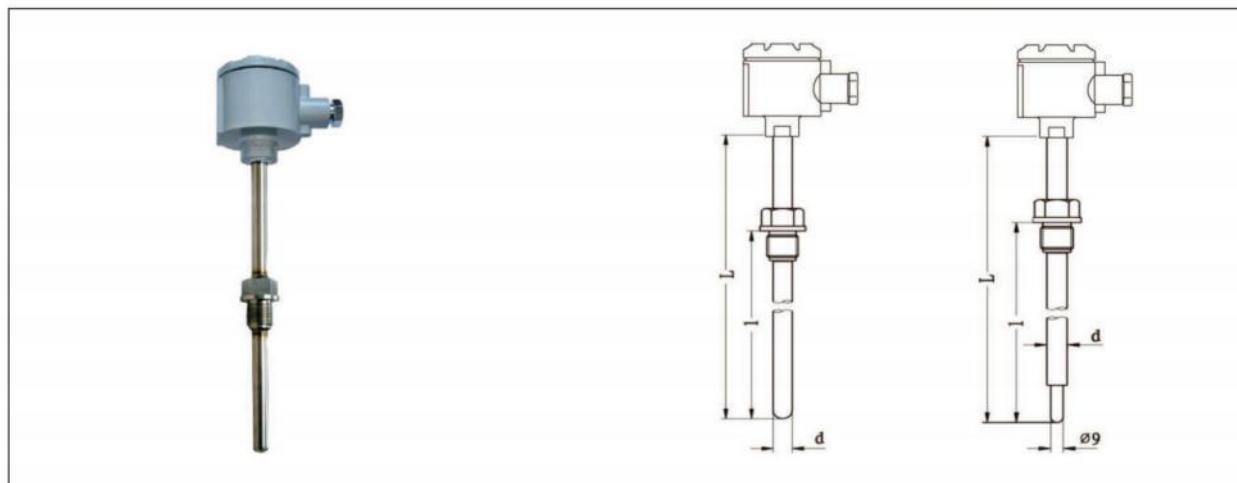
1 Φ12

附加装置形式 Additional device form

G 变截面 Variable cross-section

B 带温度变送器 With temperature transmitter

W Z P ₂ -2 4 1 G 典型型号示例 Examples of typical model

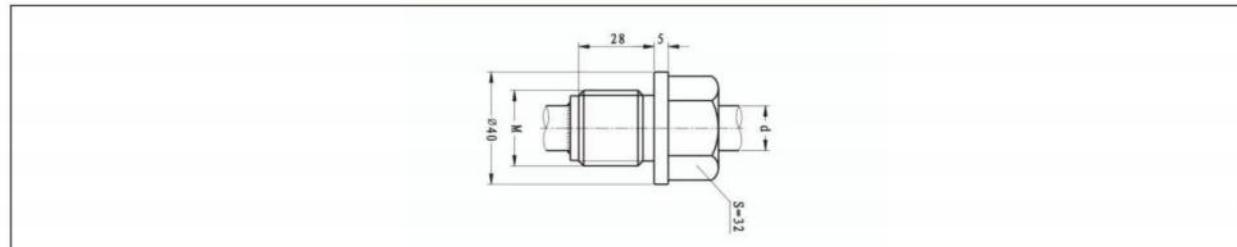
固定螺纹热电阻 Fixed thread thermal resistance


型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	热响应时间 Thermal response time	防爆级别 Explosion-proof grade	规格 Specification	
					d	L
WZP-240 WZP ₂ -240	Pt100	A级 -30~300 B级 -50~500	<90s	dIIB T4	Φ16	300×50 350×00 400×50 450×00 500×50 550×00 650×00 600×50 1150×000 1650×500 2150×000
WZP-240G WZP ₂ -240G			<24s			
WZP-241 WZP ₂ -241			<45s	dIICT5		
WZP-241G WZP ₂ -241G			<24s	dIICT6	Φ12	
WZP-240 WZP ₂ -240G	Cu50 Cu100	-50~100	<120s	iaIICT6	Φ16	
WZP-241 WZP ₂ -241G			<40s			
WZP-240 WZP ₂ -240G			<120s			
WZP-241 WZP ₂ -241G			<40s		Φ12	

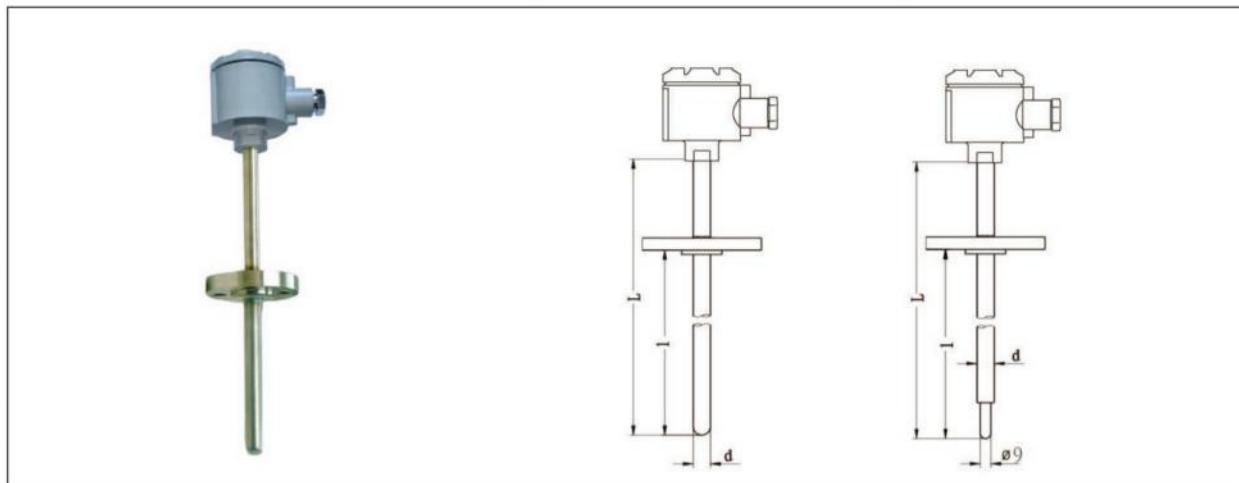
- 1) 热电阻A级按协议订货；
 2) 保护管1Cr18Ni9Ti,其余材质根据协议订货；
 3) 公称压力≤4.0MPa。

1) Thermal resistance A is ordered according to the agreement.
 2) Protective tube material is 1Cr18Ni9Ti and the rest of the material is ordered according to the agreement.
 3) Nominal pressure is ≤4.0MPa.

号示例 No. of example	螺纹规格 Thread specification	
	代号 Code	M
WZP-240	-	M27×2
WZP-240A	A	G 3/4
WZP-240C	C	NPT3/4
WZP-240G	-	M27×2
WZP-241A	A	G 3/4
WZP-240C	C	NPT3/4



固定法兰式热电阻 Fixed flange-type thermal resistance

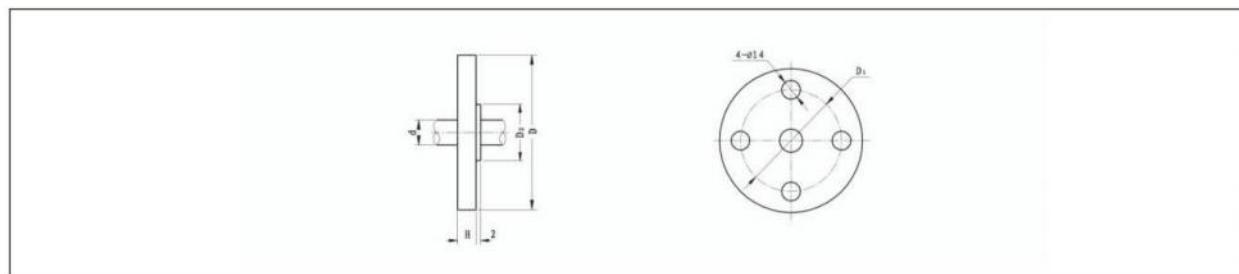


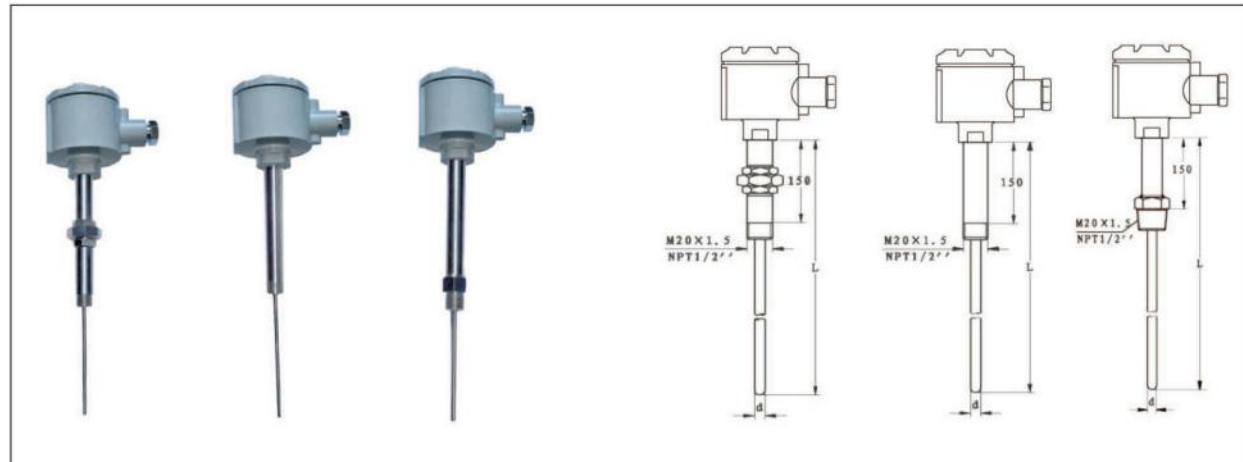
型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	热响应时间 Thermal response time	防爆级别 Explosion-proof grade	规格 Specification	
					d	L
WZP-440 WZP ₂ -440	Pt100	A级 -30~300 B级 -50~500	<90s	dIIB T4	Φ16	300
WZP-440G WZP ₂ -440G			<24s			350
WZP-441 WZP ₂ -441			<45s			400
WZP-441G WZP ₂ -441G			<24s	dIICT6	Φ12	450
WZC-440	Cu50 Cu100	-50~100	<120s	iaIICT6	Φ16	500
WZC-441			<40s		Φ12	550
			<120s			600
			<40s			1150 1650

- 1) 热电阻A级按协议订货;
2) 保管1Cr18Ni9Ti,其余材质根据协议订货;
3) 公称压力≤4.0MPa。

1) Thermal resistance A is ordered according to the agreement.
2) Protective tube material is 1Cr18Ni9Ti and the rest of the material is ordered according to the agreement.
3) Nominal pressure is ≤4.0MPa.

型号示例 Model of example	法兰规格(mm) Flange specification(mm)				
	D	D ₁	D ₂	H	d
WZP-240	Φ95	Φ65	Φ46	16	Φ16
WZP-240A					
WZP-240C	Φ95	Φ65	Φ46	16	Φ12
WZP-240G					





活络管接头式热电阻 Joint type thermal resistance of adjustable pipe

型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	连接尺寸 Thermal response time	保护管材料 Material for protective tube	规格 Specification	
					d	L
WZP- 54 WZP ₂ -54	Pt100	A级 -30-300 B级 -50-500	M20×1.5	1Cr18Ni9TiΦ4	Φ4 Φ5 Φ6 Φ8	250
WZP- 54A WZP ₂ -54A			NPT1/2			300
WZC- 54	Cu50 Cu100	-50~100	M20×1.5			350
WZC-54A			NPT1/2			400
						450
						550
						650
						750

直形管接头式热电阻 Joint type thermal resistance of straight pipe

型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	连接尺寸 Thermal response time	保护管材料 Material for protective tube	规格 Specification	
					d	L
WZP- 74 WZP ₂ -74	Pt100	A级 -30-300 B级 -50-500	M20×1.5	1Cr18Ni9TiΦ4	Φ4 Φ5 Φ6 Φ8	250
WZP- 74A WZP ₂ -74A			NPT1/2			300
WZC- 74	Cu50 Cu100	-50~100	M20×1.5			350
WZC-74A			NPT1/2			400
						450
						550
						650
						750

固定螺纹管接头式热电阻 Joint type thermal resistance of fixed screw pipe

型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	连接尺寸 Thermal response time	保护管材料 Material for protective tube	规格 Specification	
					d	L
WZP- 84 WZP ₂ -84	Pt100	A级 -30-300 B级 -50-500	M20×1.5	1Cr18Ni9TiΦ4	Φ4 Φ5 Φ6 Φ8	250
WZP- 84A WZP ₂ -84A			NPT1/2			300
WZC- 84	Cu50 Cu100	-50~100	M20×1.5			350
WZC-84A			NPT1/2			400
						450
						550
						650
						750

带温度变送器防爆热电偶(阻)

Explosion-proof thermocouple with temperature transmitter (resistance)

应用

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。

工作原理

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。

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。

特点

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

主要技术参数

产品执行标准: IEC584, IEC60751, GB/T26786-2011, JB/T7391-1994。

热电偶

型号 Model	分度号 Graduation	分差等级 Tolerance level			
		I		II	
		允差值 Tolerance value	测温范围 °C Range of temperature measurement °C	允差值 Tolerance value	测温范围 °C Range of temperature measurement °C
WRN	K	±1.5°C	-40~+375	±2.5°C	-40~+333
		±0.004Itl	375~1000	±0.0075Itl	333~1200
WRM	N	±1.5°C	-40~+375	±2.5°C	-40~+333
		±0.004Itl	375~1000	±0.0075Itl	333~1200
WRE	E	±1.5°C	-40~+375	±2.5°C	-40~+333
		±0.004Itl	375~800	±0.0075Itl	333~900
WRF	J	±1.5°C	-40~+375	±2.5°C	-40~+333
		±0.004Itl	375~750	±0.0075Itl	333~750
WRC	T	±0.5°C	-40~+125	±1.0°C	-40~+133
		±0.004Itl	125~350	±0.0075Itl	133~350

热电阻

Application

It is usually used along with display instruments, recording instruments, electronic computers and so on, outputting 4~20mA electricity. It is able to directly measure the temperature of liquid, steam and gas and solid surface within the range of -200℃~1300℃ in the production field where there are explosives, such as carbon and chlorine compounds.

Working principle

Explosion-proof thermocouple uses the principle of interval explosion-proof. When the explosion occurs inside the cavity, the flame of the explosion can be cooled and distinguished in the gap between the joint surface so that the flame and the temperature will not be passed to the cavity. Finally, the explosion-proof is realized. The electric potential produced by thermocouple (thermal resistance) will generate the unbalanced signal through the bridge of temperature transmitter. After being amplified, it will be converted into 4~20mA DC electrical signal and sent to the working instrument which will display the corresponding temperature value.

Characteristics

- 1.Output 4~20mA by second-tier system with strong anti-interference ability;
- 2.It saves the costs of compensation wire and the installation of temperature transformer;
- 3.It is safety and reliable with long service life;
- 4.Temperature automatic compensation in the cold end with nonlinear correction circuit;

Main technical parameters

Product implementation standard:IEC584, IEC60751, GB/T26786-2011, JB/T7391-1994.

Thermocouple

Thermal resistance

型号 Model	分度号 Graduation	测温范围 °C Range of temperature measurement °C	精度等级 Precision grade	允许偏差 Allowable deviation
WZPB	Pt100	-200~+500	A级	±(0.15+0.002Itl)
			B级	±(0.30+0.005Itl)
WZCB	Cu50 Cu100	-50~+100	--	±(0.30+0.006Itl)

输出信号 Output signal	4~20mA, 负载电阻250Ω；传输导线电阻100Ω。 4~20mA, load resistance 250, resistance of the transmission conductor is 100Ω.		
输出方法 Output method	二线制 Second-tier system		
精度等级 Precision grade	温度变送器精度等级: 0.1, 0.2, 0.5 显示器精度等级: 模拟指示式2.5级, 数字显示式1.0级 Precision level of temperature transmitter : 0.2; 0.1; 0.5 Display precision grade: Analog indicator 2.5 Digital display type 1		
供电电源 Power supply	24V.DC±10%	防护等级 Protection level	IP65
防爆等级 Explosion-proof grade	隔爆型:d II BT4,d II CT5,d II CT6 本质安全型:ia II CT6 Explosion-proof type:d II BT4,d II CT5,d II CT6 Essentially safe type:ia II CT6		
绝缘电阻 Insulation resistance	仪表输出接线端子与外壳之间的绝缘电阻应不小于50MΩ Thermal response timeThe insulation resistance between the instrument output terminal and the enclosure shall be not less than 50MΩ;		
热响应时间 Thermal response time	当温度变送器的阶跃响应稳定时间不超过热电偶(阻)热响应稳定时间 $\tau_{0.5}$ 的五分之一时，则用热电偶(阻)热响应时间作为仪表的热响应时间。 当温度变送器的阶跃响应稳定时间不超过热电偶(阻)热响应稳定时间 $\tau_{0.5}$ 的二分之一时，则用温度变送器热响应时间作为仪表的热响应时间。 When the change of phase step appears, the current output signal of the meter changes to the time which is equivalent to 50% of the step change. Generally, $\tau_{0.5}$ is used to show that the stability time of phase step of the temperature transmitter is not more than one fifth of the stability time of thermal response $\tau_{0.5}$, the thermal response time of a thermocouple (resistance) is used as the thermal response time of the instrument. When the stability time of phase step of the temperature transmitter is not more than half of the stability time of thermal response $\tau_{0.5}$, the thermal response time of temperature transmitter is used as the thermal response time of the instrument.		
基本误差 Basic error	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。 The basic error of the instrument should not exceed the synthetic error of the basic error of thermocouple (resistance) and temperature transmitter.		

工作环境
Working environment

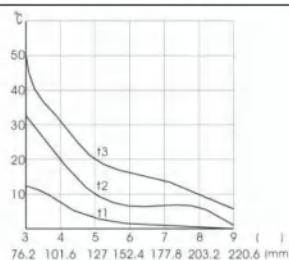
安装场所等级 Level of installation site	温度 °C Temperature °C	相对湿度 % Relative humidity %	大气压力 kPa Atmospheric pressure kPa
Cx1	-25~+55		
Cx2	-25~+70		
Cx3	-40~+80	5~95	86~106

支撑管长确定

温度变送器的工作温度由支撑管所造成的壳体升温同环境温度之和。支撑管所造成的壳体升温见下图:

To determine the length of support

The working temperature of the temperature transmitter is the sum of the shell temperature of supporting tube and the temperature of the environment. The shell temperature caused by the supporting tube is shown in the following figure:



注: t1=260°C t2=540°C t3=850°C

Note: t1=260°C t2=540°C t3=850°C

取证一览表
Evidence list

防爆级别 Explosion-proof grade	防爆证号 Number of explosion-proof	认证机构 Certification body
dIIBT4	GYB97151	NEPSI
dIIBT4	GYB97152	NEPSI
dIICt5	GYB02475	NEPSI
dIICt5	DYB02476	NEPSI
iaIICt6	GYB05363X	NEPSI
iaIICt6	GYB05364X	NEPSI

注: NEPSI防爆认证系国家级仪器仪表防爆安全监督检验站

Note: NEPSI explosion-proof certification department certified the national instruments and meters.

型号命名方法 Naming method of model

W 温度仪表 Temperature instrument

类别 Category

- R 热电偶 Thermocouple
Z 热电阻 Thermal resistance

感温元件材料 Material for temperature-sensing element

- M 镍铬硅-镍硅 Nichrome-nickel silicon
N 镍铬-镍硅 Nickel chromium-nickel silicon
E 镍铬-铜镍 Nickel chromium-copper nickel
F 铁-铜镍 Iron-copper nickel
C 铜-铜镍 Copper-copper nickel
P 铂 platinum
C 铜 copper

B 温度变送器 Temperature transmitter

J 机电一体化 Mechanotronics

偶丝对数 Number of thermal wire couple

- 无 单支 Non, single support
2 双支 2 double support

安装固定装置 Installation and fixation mode

- 2 固定螺纹 Fixed crew thread
3 活动法兰 Active flange
4 固定法兰 Fixed flange
5 活络管接头式 Adjustable pipe joint type
6 固定螺纹锥形式 Fixed thread cone type
7 直形管接头式 Joint type of straight pipe

接线盒形式 Junction box form

- 4 防爆式 Explosion-proof type

保护管直径 Diameter of protective tube

- 0 Φ16
1 Φ12

显示形式 Display form

- M 模拟显示 Simulation show
S 数字显示 Digital show

附加安装形式 Additional form

- 无 正常安装 Normal installation
Z 分离安装 Separation installation

W R N B J 2 - 2 4 1 S Z 典型型号示例 Examples of typical model