徽宁集团
HUINING GROUP

仪器仪表选型样本
INSTRUMENT METER CATALOGUE

安徽徽宁电器仪表集团有限公司
ANHUI HUINING ELECTRIC METER & APPLIANCE GROUP CO.,LTD

企 业 简 介

安徽徽宁电器仪表集团有限公司座落于风景秀丽，素有“渔米之乡”、“皖东明珠”之称的安徽省滁州市天长市，地处安徽东大门，南接历史文化名城南京，东连扬州瘦西湖畔，长深高速公路贯穿境内，并紧靠京沪高铁和南京禄口机场，地处中国经济最具活力的“长三角”地区。企业成立于1989年，发展至今已有三十多年历史，800多名员工，属国家中型企业，具有良好的发展前景。

公司是从事电线电缆、汇线桥架、仪器仪表设计开发、生产和服务于一体的高新技术企业，技术力量雄厚，生产、检测设备先进，拥有完善的生产制造规程和检验手段。目前生产的电线电缆主要产品：35KV及以下电力电缆、控制电缆、计算机屏蔽信号电缆、本安电缆、补偿电缆、耐高温电缆、变频电缆、阻燃耐火电缆、环保型低烟无卤电缆、橡套软电缆、光伏电缆和矿用电缆、船用电缆、特种电缆、油田专用承荷探测电缆、潜油电泵电缆；仪表产品：温度仪表、压力变送器、磁翻板夜位计、电磁流量计、涡街流量计．金属转子流量计．仪表管阀件气体报警仪等；桥架及电器开关产品；铝合金桥架、钢制桥架．母线槽．高低压开关柜等产品。

公司在发展过程中得到地方各部门的关心和认可，连续多年被评为国家“守合同、重信用”企业、国家“专精特新”重点小巨人企业、国家绿色工厂、国家高新技术企业、国家知识产权优势企业、全国质量和服务诚信优秀企业、安徽省专精特新50强企业、安徽省制造业百强企业、省级认定技术中心、博士后科研工作站、省级技术创新示范企业、省民营科技型企业、省创新型企业试点、省制造业高端品牌培育企业、安徽著名商标、银行AAA级信用企业、A级纳税信用等级企业、省诚信 企业、省工人先锋号、滁州市市长质量奖、滁州市“ 十优企业”．滁州市“营业收入50强企业”，滁州市“纳税50强企业”，滁州市安全生产标准化企业．滁州市工程技术研究中心、滁州市工业设计中心、滁州市数字化车间、滁州市文明单 位、市“十强企业”．市优秀高新技术企业、 市“平安企业”、市科技进步奖等多项荣誉称号。

质量和服务是企业不断发展状大的基础，公司先后通过了ISO 9001质量管理体系、ISO 14001环境管理体系、ISO45001职业健康安全管理体系、API美国石油协会Q1质量体系、测量管理体系(AAA)、售后服务管理体系、知识产权管理体 系等各类体系认证;拥有国家认可委员会颁发的CNAS实验室认可证书，产品取得了国家强制性产品(CCC)、TS. CB、 CE、TUV. EAC. GOST-R. SIL CQC、PCCC、 ROHS. ECM、船用产品、矿用产品、防爆产品等相关认证证书。阻燃电缆、耐火电缆通过国家权威部门的检测，部分产品被评为安徽省名牌产品、安徽省工业精品、安徽省新产品和高新技术产品，高压硅橡胶扁电缆、纳米陶瓷封装耐震铂热电阻等100多项获得国家专利。

公司产品销往全国各地石油、化工、电力、机械、建材、冶金、造纸、新能源、基础设备、医药等行业，并出口过英 国、俄罗斯、 越南、刚果、孟加拉．伊朗、印尼．土耳其．尼日尔．文莱、伊拉克等国家。 是中石油、中石化、中海油三桶油的甲级供应商，是中国化学、中化集团、也是大唐、华电、华能、中电投、国家能源五大电力公司和国家电网、华润公司供应商。中煤能源集团、中粮集团、恒逸集团、浙江石化、盛虹集团、海螺集团、兵器工业集团等著名企业的供应商。产品使用情况良好，得到了用户的一致好评。在北京．上海．广东、河北．福建．浙江、甘肃．新疆．江西、江苏、山东等多个省市大中城市设立了服务网点办事机构。

徽宁将以卓越的品质、良好的服务、诚信的经营回报社会。企业本着诚信发展、稳步发展、滚动发展的经营理念，使企 业在发展过程中，始终保持着低负债率的良好状况，无论是在企业内部、合作伙伴、 社群客户，徽宁始终与他们保持真诚的合作、良好的沟通，并分享着价值与事业的空间。面对新形势，徽宁人奉守“诚信互惠，高效卓越”的经营理念，决心立足电线电缆产业，依靠自己的勤劳和智慧，竭诚与各界朋友合作，共求发展，共创辉煌未来。

开拓 创新 敬业 诚信

Introduction

Anhui Huining Electrical Instrument Group Co., Ltd. is located in Tianchang City of Chuzhou, Anhui Province, known as the "town of fish and rice" and the "pearl of East Anhui", which is located in the east gate of Anhui Province, south of the historical and cultural city of Nanjing, east of the slender West Lake of Yangzhou, Changshen Expressway runs through the territory, and close to the Beijing-Shanghai high-speed railway and Nanjing Lukou Airport. It is located in the Yangtze River Delta, the most dynamic economic area in China. The company was founded in 1989, the development has been more than 30 years of history, more than 800 employees, is a national medium-sized enterprise, with good prospects for development.

The company is engaged in wire and cable, wire bridge, instrumentation design and development, production and service in one of the high-tech enterprises, strong technical force, advanced production and testing equipment, with perfect production and manufacturing procedures and inspection means. The main products of wire and cable currently produced: 35KV and below power cables, control cables, computer shielding signal cables, intrinsic safety cables, compensation cables, high temperature resistant cables, frequency conversion cables, flame retardant and fire-resistant cables, environmental protection low-smoke halogen-free cables, rubber sheathing flexible cables, photovoltaic cables and mining cables, Marine cables, special cables, oil field special load detection cables, submersible oil pump cables; Instrument products: temperature instrument, pressure transmitter, magnetic flap night level meter, electromagnetic flowmeter, vortex flowmeter, metal rotor flowmeter, gas alarm instrument of instrument pipe and valve, etc. Bridge and electrical switch products; Aluminum alloy bridge, steel bridge, busbar trough, high and low voltage switchgear and other products.

In the process of development, the company has been concerned and recognized by local departments. For many consecutive years, it has been rated as the national "contract keeping, credit heavy" enterprise, the national "specialized and special new" key small giant enterprise, the national green factory, the national high-tech enterprise, the national intellectual property advantage enterprise, the national quality and service integrity excellent enterprise, the Anhui Province specialized and special new 50 enterprises, the Anhui Province manufacturing 100 enterprises, the provincial recognized technology center, postdoctoral research workstation, Provincial technology innovation Demonstration Enterprise, provincial private science and technology enterprise, provincial innovative enterprise pilot, Provincial manufacturing high-end brand cultivation enterprise, Anhui famous trademark, bank AAA credit enterprise, A-level tax credit enterprise, provincial integrity enterprise, Provincial Worker Pioneer, Chuzhou Mayor Quality Award, Chuzhou "Top Ten Enterprises", Chuzhou "Top 50 Enterprises with Business Income", Chuzhou "Top 50 tax enterprises", Chuzhou safety production standardization Enterprise, Chuzhou Engineering Technology Research Center, Chuzhou Industrial Design Center, Chuzhou Digital Workshop, Chuzhou civilized unit, the city "Top Ten enterprises", the city excellent high-tech enterprises, the city "Safe Enterprise", the city Science and Technology Progress Award and many other honorary titles.

Quality and service are the basis for the continuous development of enterprises. The company has passed ISO 9001 quality management system, ISO 14001 environmental management system, IS045001 Occupational health and safety management system, API Q1 quality system, measurement management system (AAA), after-sales service management system, intellectual property management system and other system certifications; With the CNAS laboratory accreditation certificate issued by the National Accreditation Committee, the products have obtained the national mandatory products (CCC), TS.CB, CE, TUV.EAC.GOST-R.SIL.CQC, PCCC, ROHS.EC.M, Marine products, mining products, explosion-proof products and other related certification certificates. Flame-retardant cables and fire-resistant cables have passed the testing of national authorities, and some products have been rated as famous brand products in Anhui Province, industrial fine products in Anhui Province, new products and high-tech products in Anhui Province, and more than 100 national patents have been obtained, such as high-voltage silicone rubber flat cables and nano-ceramic packaging shock-resistant platinum thermal resistors.

The company's products are sold all over the country in petroleum, chemical, electric power, machinery, building materials, metallurgy, paper, new energy, infrastructure equipment, medicine and other industries, and exported to the United Kingdom, Russia, Vietnam, Congo, Bangladesh, Iran, Indonesia, Turkey, Niger, Brunei, Iraq and other countries. It is a Grade A supplier of petrochina, Sinopec and CNOOC three barrels of oil, as well as a supplier of China Chemical, Sinochem Group, Datang, Huadian, Huaneng, China Power Investment Corporation, National Energy, State Grid and China Resources. China Coal Energy Group, COFCO, Hengyi Group, Zhejiang Petrochemical, Shenghong Group, Conch Group, North Industries Group and other famous enterprise suppliers. The product is in good use and has been praised by users. In Beijing, Shanghai, Guangdong, Hebei, Fujian, Zhejiang, Gansu, Xinjiang, Jiangxi, Jiangsu, Shandong and many other provinces and cities set up service network offices.

Huining will return to society with excellent quality, good service and honest management. Enterprises in good faith development, steady development, rolling development of the business philosophy, so that enterprises in the development process, always maintain a low debt ratio of the good condition, whether in the enterprise, partners, community customers, Huining always maintain sincere cooperation with them, good communication, and share the value and business space. Facing the new situation, Huining people adhere to the "integrity, mutual benefit, efficient and excellent" business philosophy, determined to base on the wire and cable industry, relying on their own diligence and wisdom, and wholeheartedly cooperate with friends from all walks of life, common development, create a brilliant future.

让用户满意是我们永恒的追求！

徽宁集团
HUINING GROUP

企业资质 Enterprise qualification

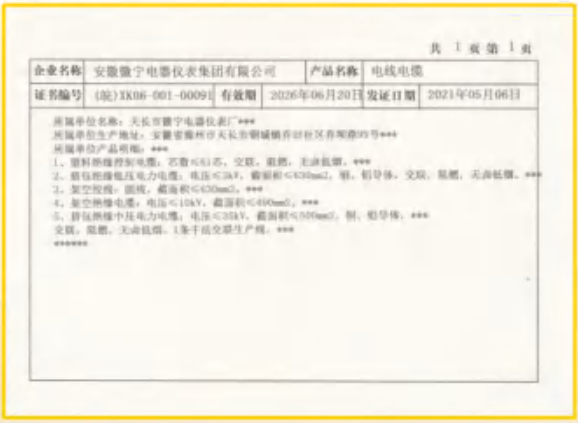

营业执照
（副本）


高新技术企业
证书

企业名称：安徽徽宁电器仪表集团有限公司
证书编号：GR202134000579
发证日期：2021年9月18日
有效期：三年
批准机关：


全国工业产品生产许可证
（副本）

安徽徽宁电器仪表集团有限公司（所属单位附后）
经审查，你单位生产的下列产品符合取得生产许可证条件，特发此证。
产品名称：电线电缆（附加附后）
住　所：安徽省天长市钢城镇乔田社区乔坝路99号
生产地址：（附后）
证书编号：（皖）XK06-001-00091
有效期至：2026年06月20日　　2021年06月06日


共 1 页 第 1 页

企业名称	安徽徽宁电器仪表集团有限公司	产品名称	电线电缆
证书编号	（皖）XK06-001-00091	有效期	2026年06月20日
		发证日期	2021年05月06日

所属单位名称：天长市徽宁电器仪表厂***
所属单位生产地址：安徽省滁州市天长市钢城镇乔田社区乔坝路99号***
所属单位产品明细：***
1、塑料绝缘控制电缆：芯数≤61芯，交联，阻燃，无卤低烟。***
2、额定电压≤3kV，额定截面≤630mm2，铜、铝导体，交联，阻燃，无卤低烟。***
3、架空绞线：圆线，截面积≤630mm2。***
4、架空绝缘电缆：电压≤10kV，截面积≤400mm2。***
5、额定电压≤35kV，截面积≤500mm2，铜、铝导体。***
交联，阻燃，无卤低烟。1条千伐交联生产线。***
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专精特新重点“小巨人”企业

安徽徽宁电器仪表集团有限公司

安徽省专精特新中小企业

安徽省经济和信息化委员会
二〇一六年十月

徽宁集团
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Enterprise qualification | 企业资质

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企业资质 Enterprise qualification

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Enterprise qualification 企业资质


质量管理体系认证证书
QUALITY MANAGEMENT SYSTEM CERTIFICATE


环境管理体系认证证书
ENVIRONMENTAL MANAGEMENT SYSTEM CERTIFICATE


职业健康安全管理体系认证证书


防 爆 合 格 证


防 爆 合 格 证


实用新型专利证书


发 明 专 利 证 书


发 明 专 利 证 书


发 明 专 利 证 书

徽宁集团
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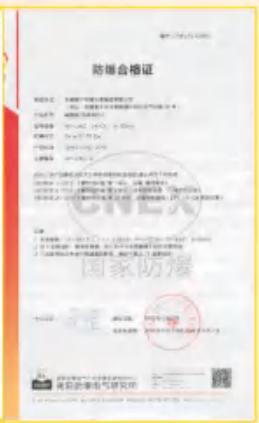
企业资质 Enterprise qualification



目 录 CONTENTS

WR□K系列 WR□K Series

铠装热电偶
Sheathed Thermocouple

□ 应用 Application

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

It is usually cooperated with display meter, recording meter and computer etc. to measure the surface temperature of the mediums as liquid, steam and gas ranging from 0 to 1300℃ during various production processes directly.

□ 特点 Features

- 热响应时间短，减小动态误差；

With short thermal response time, reducing dynamic error

- 可弯曲安装使用；

Bending installation

- 测量范围大；

Wide measuring range

- 有良好的机械性能，耐压、耐震、耐冲击。

Good mechanical performance, pressure-resistant, shock-resistant, impact-resistant.

□ 工作原理 Working Principle

铠装热电偶的两根电极由不同导体材质组成，当测量端与参比端存在温差时，就会产生热电动势，工作仪表便显示出热电动势所对应的温度值。

铠装热电偶的热电动势将随着测量端温度的升高而增长，热电动势的大小只与铠装偶导体的材质以及两端温差有关，和热电极的长度、直径无关。

The two electrodes of sheathed thermocouple are made of different conductor materials. Where there is temperature difference between measuring end and reference end, there will be hydroelectric potential, then the meter shows the corresponding temperature of the hydroelectric potential. The hydroelectric potential of sheathed thermocouple will raise according tothe temperature of measuring end . The size of hydroelectric potential has relationship with the materials of sheathed thermocouple conductor and temperature difference of two ends only while non-relevant to length, diameter of thermal electrode.

□ 结构原理 Structure Principle

铠装热电偶的结构原理是，由导体、高温绝缘氧化镁外套1Cr18Ni9Ti不锈钢保护管，经多次一体拉制而成。铠装热电偶主要由接线盒、接线端子和铠装偶组成基本结构，并配以各种安装固定装置组成。

The structure sheathed thermocouple is made up of conductor, high temperature insulation oxidizedmagnesium tube and 1Cr 18Ni9Ti stainless steel protection tube, through many integral pullings.The basic structure of sheathed thermocouple is mainly made up of connection box, connection and sheathed thermocouple, connected with various installation fixing devices.

□ 主要技术参数 Main Technical Parameters

- 产品执行标准 Standard:

IEC584

IEC1515

GB/T 30429-2013

JB/T 5582-2014

● 测温范围及允差
Measuring Range & Tolerance

型号 Type	分度号 Graduation	允差等级 Tolerance Class			
		I		II	
		允差值 Tolerance Value	测温范围℃ Measuring Range℃	允差值 Tolerance Value	测温范围℃ Measuring Range℃
WRNK	K	±1.5℃	-40~+375	±2.5℃	-40~+333
		±0.004|t|	375~1000	±0.0075|t|	333~1200
WRMK	N	±1.5℃	-40~+375	±2.5℃	-40~+333
		±0.004|t|	375~1000	±0.0075|t|	333~1200
WREK	E	±1.5℃	-40~+375	±2.5℃	-40~+333
		±0.004|t|	375~800	±0.0075|t|	333~900
WRFK	J	±1.5℃	-40~+375	±2.5℃	-40~+333
		±0.004|t|	375~750	±0.0075|t|	333~750
WRCK	T	±0.5℃	-40~+125	±1℃	-40~+133
		±0.004|t|	125~350	±0.0075|t|	133~1000
WRPK	S	±1℃	0~+1100	±1.5℃	0~600
		±[1+0.003 (t-1100)]	1100~1600	±0.0025|t|	600~1600

注：t为被测电偶的实测温度。
Notice: t is the exact measured temperature for thermocouple

● 常温绝缘电阻
Insulation Resistance at Normal Temperature

铠装偶在环境温度为15～35℃，相对湿度不大于80%，电极与电极之间、电极与外套管之间的绝缘电阻应不小于1000MΩ·m。

即1m长的铠装偶绝缘电阻为1000MΩ；

10m长的铠装偶绝缘电阻为100MΩ。

The insulation resistance between the two electrodes and the electrode and the outer protection tube of sheathed thermocouple is no less than 1000M Ω.m under condition that environment temper ature is 15~35℃, relative humidity is no more than 80%. That is to say, the insulation resistanceof 1 m long sheathed thermocouple is 1000MΩ, and that of 10 m long sheathed thermocouple is 100MΩ.

● 升高温度下的绝缘电阻
Insulation Resistance at Raised Temperature

分度号 Graduation	置于试验温场中的长度mm Length in Tested Temperature	试验温度℃ Testing Temperature	升高温度下的绝缘电阻MΩ Insulation Resistance at Raised Temperature
K、N、E、J	300	500±15	≥5
T	300	300±10	≥500

常温绝缘电阻试验电压表
Test VItage of Insulation Resistance at Normal Temperature

套管直径mm Thermowell Diameter mm	试验电压V—DC Testing Voltage V-DC	绝缘电阻MΩ·m Insulation Resistance Ω.m
φ0.5~1.5	50±5	≥1000
＞φ1.5	500±50	≥1000

● 热响应时间 τ0.5
Thermal Response Time t 0.5

在温度出现阶跃变化时，热电偶的输出变化至相当于该跃变化时的50%所需的时间称为热响应时间，用τ0.5表示。

When the temperature has step-jumping change, the needed time for output of thermocouple changes to 50% of the step-jumping change, this time is called thermal response time, indicating with τ0.5.

热响应时间τ0.5参考表
Parameter List of τ0.5

套管直径(mm) Thermowell Diameter \ 工作端形式 Operation End Form	露端式 End-exposing Type	接壳式 Shell-connecting Type	绝缘式 Insulation-Type
φ2	0.3	0.4	1
φ3	0.4	0.6	2
φ4	0.5	0.8	2.5
φ5	0.7	1.2	4
φ6	0.8	2	6
φ8	1.0	4	8

● 可挠度 Flexibility:

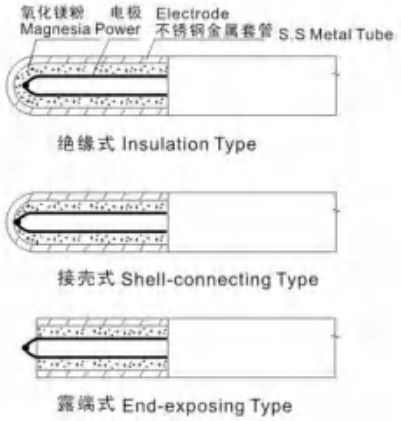
铠装热电偶的可挠曲率半径不小于其外径的5倍。

The radius of flexible curving ratio of sheathed thermocouple is no less than 5 times of its outer diameter.

● 偶丝直径及材料
Wire Diameter & Material:

偶丝形式 Wris Type	套管直径 Bushing Diameter	套管材质 Tube Material		
		E、J、T	K、N	S
单支式 Simplex	φ2	1Cr18Ni9Ti	GH3030 1Cr18Ni9Ti	GH3039
	φ3			
	φ4			
	φ5			
	φ6			
	φ8			
双支式 Duplex	φ3			
	φ4			
	φ5			
	φ6			
	φ8			

测量端结构形式
Measuring End Structure:



绝缘式 Insulation Type

接壳式 Shell-connecting Type

露端式 End-exposing Type

露端式特点
End-exposing Type Features:

- 反应速度快；
  Quick Response
- 适用于测量发动机的排气等气体的温度；
  Applicable for measuring motor gas etc.
- 与其它测量结构相比，机械强度差。
  Low mechanism strength comparing with other measurement structures

接壳式特点
Shell-connecting Type Features:

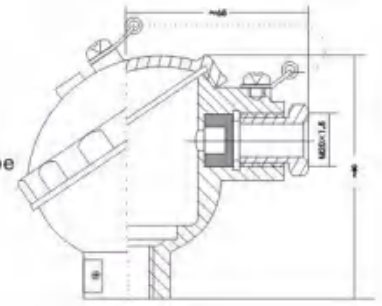
- 反应速度较快；
  Quick response
- 耐压可达3500Kg/cm²
  Pressure-resistance can reach to 3500kg/㎡；
- 不适合用于有电磁干扰的场合。
  Not suitable for fields with electric-magnetic interference

绝缘式特点
Insulation Type Features:

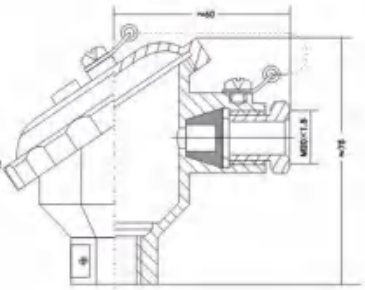
- 反应速度比接壳式慢，对于无特别要求快速反应的场合，一般都大量采用；
  Response is slower than shell-connecting, it is widely used in fields without special demands for quick response
- 防电磁干扰；
  Eclectic-magnetic interference-proof
- 使用寿命长。
  Long life

接线盒形式
Connection Box Types:

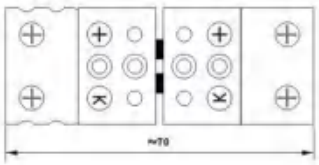
防喷式
Anti-spray Type



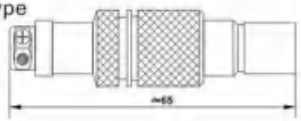
防水式
Water-proof Type

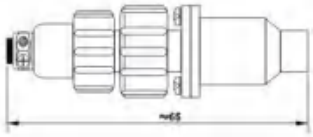


扁接插式
Flat Plug Type

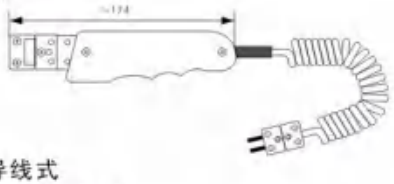


圆接插式
Round Plug Type

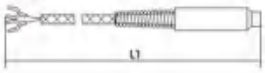




手柄式
Handle Type

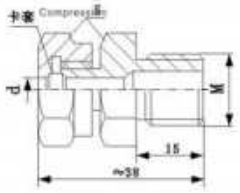


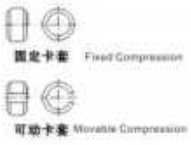
补偿导线式
Compensation Wire Type



●安装固定形式
Installation & Fixing Form

●卡套螺纹式
Compression Thread

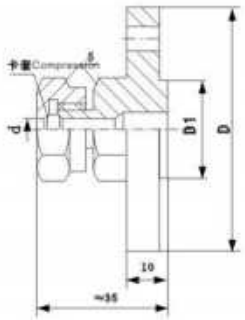


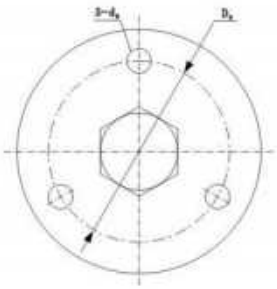


代号和尺寸 Code & Size	铠装偶外径 Outer Diameter of Sheathed Thermocouple					
	Φ8	Φ6	Φ5	Φ4	Φ3	Φ2
M	M16×1.5			M12×1.5		
S	22			19		

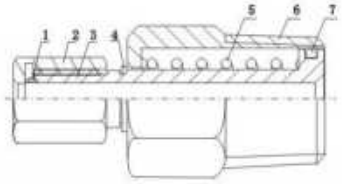
代号和尺寸 Code & Size	铠装偶外径 Outer Diameter of Sheathed Thermocouple					
	Φ8	Φ6	Φ5	Φ4	Φ3	Φ2
D	Φ60			Φ50		
D_0	Φ42			Φ36		
D_1	Φ24			Φ20		
S	22			19		
d_0	Φ9			Φ7		

●卡套法兰式 Compression Flange





●防震阻漏卡套螺纹
Shock-resistant & Anti-leakage Compression Thread



1 卡套　2 锁紧螺母　3 防震芯
4 卡簧　5 弹簧　6 固定螺纹　7 阻漏圈

1.Compression 2.Locking Nut 3.Shock-resistance Core
4.Compression Spring 5.Spring 6.Fixing Thread 7.Aanti-leakage Ring

型号命名方法 Naming

W 温度仪表 Temperature Instrument

R 热电偶 Thermocouple

感温元件材料 Materials		分度号 Graduation
P 铂铑$_{10}$-铂	$PtRh_{10}$-Pt	S
M 镍铬硅-镍硅	NiCrSi-NiSi	N
N 镍铬-镍硅	NiCr- NiSi	K
E 镍铬-铜镍	NiCr- CuNi	E
F 铁-铜镍	Fe-CuNi	J
C 铜-铜镍	Cu-CuNi	T

K 铠装式 Sheathed

偶丝对数 Wire Pairs

无 单支 Blank Simplex
2 双支 2 Duplex

安装固定形式 Mounting & Fixing

1 无固定装置 W/o Fixing Device
2 固定卡套螺纹 Fixed Compression Thread
3 活动卡套螺纹 Movable Compression Thread
4 固定卡套法兰 Fixed Compression Flange
5 活动卡套法兰 Movable Compression Flange
6 防震阻漏卡套螺纹 Shaking Proof & Leakage Resisting Compression Thread

接线装置形式Connection Device Form

0 接线座式 Connection Seat Type
2 防喷式 Anti-spray Type
3 防水式 Water-proof Type
6 圆接插式 Round Plug Type
7 扁接插式 Flat Plug Type
8 手柄式 Handle Type
9 补偿导线式 W/ Compensation Wire

工作端形式 Operation End

1 绝缘式 Insulation Type
2 接壳式 Shell-connecting Type

附加装置形式 Additional Device

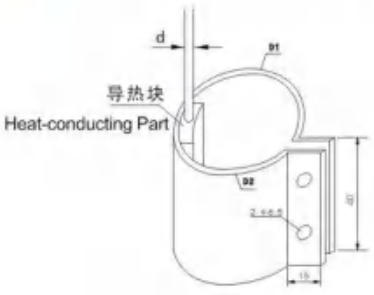
M 导热块式 Heat-conducting Part Type
G 包箍式 Hoop Type

W R N K $_2$ — 2 3 1 M 典型型号示例 Classical Example

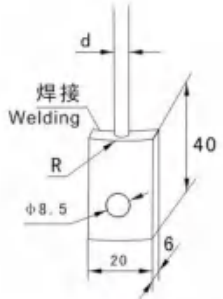
铠装热电偶推荐使用温度
Operation Temperature Recommended of Sheathed Thermocouple

品 种 Category	套管材料 Tube Material	外径（mm） Outer Diameter	使用温度（℃） Operation Temperature	
			长期使用温度 Long Time	短期使用温度 Short Time
铠装镍铬-镍硅 Sheathed NiCr-NiSi	1Cr18Ni9Ti	Φ2	550	600
		Φ3 Φ4	600	700
		Φ5 Φ6	700	800
		Φ8	800	850
	GH3030	Φ2 Φ3	800	900
		Φ4 Φ5	900	1000
		Φ6 Φ8	1000	1100
铠装镍铬硅-镍硅 Sheathed NiCrSi-NiSi	1Cr18Ni9Ti	Φ2	600	700
		Φ3	800	900
		Φ4 Φ5 Φ6	900	1000
		Φ8	1000	1100
	GH3030	Φ2 Φ3	900	1000
		Φ4 Φ5	1000	1100
		Φ6 Φ8	1100	1200
	GH3039	Φ2 Φ3 Φ4	1000	1100
		Φ5 Φ6 Φ8	1100	1200
铠装镍铬-铜镍 Sheathed NiCr-CuNi	1Cr18Ni9Ti	Φ2 Φ3	350	450
		Φ4 Φ5 Φ 6 Φ 8	450	550
铠装铁-铜镍 Sheathed Fe-CuNi	1Cr18Ni9Ti	Φ2 Φ3	300	400
		Φ4 Φ5 Φ 6 Φ 8	400	500
铠装铜-铜镍 Sheathed Cu-CuNi	1Cr18Ni9Ti	Φ2	150	200
		Φ3 Φ4 Φ5	200	250
		Φ6 Φ8	250	300
铠装铂铑$_{10}$-铂 Sheathed PtRh$_{10}$-Pt	GH3039	Φ4	1000	1100
		Φ5 Φ 6 Φ 8	1100	1200

附加装置形式 Additional Device Form



包箍式（G）
Hoop Type

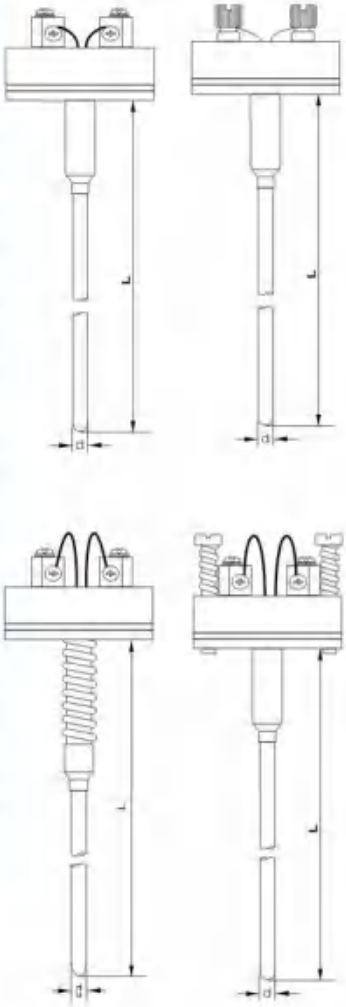


导热块式（M）
Type W/ Heat-conducting Part

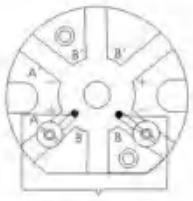
型号及规格 Type & Specification

● 感温元件 Thermal Elements

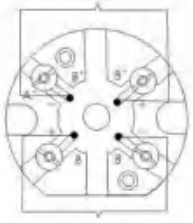
名 称 Description	型 号 TYPE	分度号 Graduation	规 格 Spec. d	规 格 Spec. L_1	工作端形式 Measuring End
单支铂铑$_{10}$--铂 $PtRh_{10}$-Pt(simplex)	WRPK-101	S	φ5 φ6 φ8	75 100 150 200 250 300 400 500 750 1000 2000 3000 4000 5000 7500 10000 15000 20000 25000	绝缘式 Insulation Type
	WRPK-102				接壳式 Shell-connecting Type
双支铂铑$_{10}$--铂 $PtRh_{10}$-Pt(duplex)	WRPK$_2$-101				绝缘式 Insulation Type
	WRPK$_2$-102				接壳式 Shell-connecting Type
单支镍铬硅--镍硅 NiCrSi-NiSi (simplex)	WRMK-101	N			绝缘式 Insulation Type
	WRMK-102				接壳式 Shell-connecting Type
双支镍铬硅--镍硅 NiCrSi-NiSi(duplex)	WRMK$_2$-101				绝缘式 Insulation Type
	WRMK$_2$-102				接壳式 Shell-connecting Type
单支镍铬--镍硅 NiCr-NiSi(simplex)	WRNK-101	K	φ2 φ3 φ4 φ5 φ6 φ8		绝缘式 Insulation Type
	WRNK-102				接壳式 Shell-connecting Type
双支镍铬--镍硅 NiCr-NiSi (duplex)	WRNK$_2$-101				绝缘式 Insulation Type
	WRNK$_2$-102				接壳式 Shell-connecting Type
单支镍铬--铜镍 NiCr-CuNi(simplex)	WREK-101	E			绝缘式 Insulation Type
	WREK-102				接壳式 Shell-connecting Type
双支镍铬--铜镍 NiCr-CuNi (duplex)	WREK$_2$-101				绝缘式 Insulation Type
	WREK$_2$-102				接壳式 Shell-connecting Type
单支铜--铜镍 Cu-CuNi(simplex)	WRCK-101	T			绝缘式 Insulation Type
	WRCK-102				接壳式 Shell-connecting Type
双支铜--铜镍 Cu-CuNi(duplex)	WRCK$_2$-101				绝缘式 Insulation Type
	WRCK$_2$-102				接壳式 Shell-connecting Type
单支铁--铜镍 Fe-CuNi(simplex)	WRFK-101	J			绝缘式 Insulation Type
	WRFK-102				接壳式 Shell-connecting Type
双支铁--铜镍 Fe-CuNi(duplex)	WRFK$_2$-101				绝缘式 Insulation Type
	WRFK$_2$-102				接壳式 Shell-connecting Type



● 接线方式 Connection Method



单支接线方法
Simplex Connection



双支接线方法
Duplex Connection

选型须知

1）型号
2）分度号
3）精度等级
4）安装固定形式
5）保护管材质
6）长度或插入长度

例A：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，K，L×1=450×300，Ⅰ级，保护管GH3030。

Selection notice

1.Type
2.Graduation
3.Accuracy Class
4.Installation & Fixing Form
5.Protection Tube Materials
6.Length or Inserting Length

Eg. Sheathed thermocouple, type-K, class I, fixed compression thread, protection tubeGH3030, length 450mm, inserting length 300mm,WRNK-231,k,L×1=450×300,class I, protection tube GH 3030.

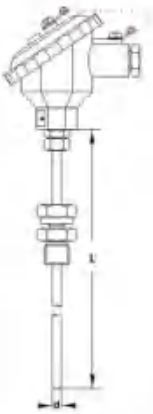
●防水式铠装热电偶（绝缘式和接壳式）

Water-proof Type Sheathed Thermocouple (Insulation Type & Shell-connecting Type)

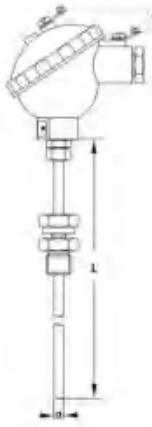
名 称 Description	型 号 Type	分度号 Graduation	测温范围℃ Measuring Range	保护管材质 Thermowell Material	安装固定装置 Mounting & Fixing Device
铠装铂铑$_{30}$-铂 Sheathed $PtRh_{30}$-Pt	WRPK-131	S	0-1300	GH3039	无固定装置 W/o Fixing Device
铠装镍铬硅-镍硅 Sheathed NiCrSi-NiSi	WRMK-131 WRMK$_2$-131	N	0-1100	GH3030	
			0-800	1Cr18Ni9Ti	
铠装镍铬-镍硅 Sheathed NiCr-NiSi	WRNK-131 WRNK$_2$-131	K	0-1100	GH3030	
			0-800	1Cr18Ni9Ti	
铠装镍铬-铜镍 Sheathed NiCr-CuNi	WREK-131 WREK$_2$-131	E	0-600	1Cr18Ni9Ti	
铠装铜-铜镍 Sheathed Cu-CuNi	WRCK-131 WRCK$_2$-131	T	0-350		
铠装铁-铜镍 Sheathed Fe-CuNi	WRFK-131 WRFK$_2$-131	J	0-500		
铠装镍铬硅-镍硅 Sheathed NiCrsi-NiSi	WRMK-231 WRMK$_2$-231	N	0-1100	GH3030	固定卡套螺纹 Fixed Compression Thread
			0-800	1Cr18Ni9Ti	
铠装镍铬-镍硅 Sheathed NiCr-NiSi	WRNK-231 WRNK$_2$-231	K	0-1100	GH3030	
			0-800	1Cr18Ni9Ti	
铠装镍铬-铜镍 Sheathed NiCr-CuNi	WREK-231 WREK$_2$-231	E	0-600	1Cr18Ni9Ti	
铠装铜-铜镍 Sheathed Cu-CuNi	WRCK-231 WRCK$_2$-231	T	0-350		
铠装铁-铜镍 Sheathed Fe-CuNi	WRFK-231 WRFK$_2$-231	J	0-500		
铠装镍铬硅-镍硅 Sheathed NiCrsi-NiSi	WRMK-331 WRMK$_2$-331	N	0-1100	GH3030	可动卡套螺纹 Movable Compression Thread
			0-800	1Cr18Ni9Ti	
铠装镍铬-镍硅 Sheathed NiCr-NiSi	WRNK-331 WRNK$_2$-331	K	0-1100	GH3030	
			0-800	1Cr18Ni9Ti	
铠装镍铬-铜镍 Sheathed NiCr-CuNi	WREK-331 WREK$_2$-331	E	0-600	1Cr18Ni9Ti	
铠装铜-铜镍 Sheathed Cu-CuNi	WRCK-331 WRCK$_2$-331	T	0-350		
铠装铁-铜镍 Sheathed Fe-CuNi	WRFK-331 WRFK$_2$-331	J	0-500		
铠装镍铬硅-镍硅 Sheathed NiCrsi-NiSi	WRMK-431 WRMK$_2$-431	N	0-1100	GH3030	固定卡套法兰 Fixed Compression Flange
			0-800	1Cr18Ni9Ti	
铠装镍铬-镍硅 Sheathed NiCr-NiSi	WRNK-431 WRNK$_2$-431	K	0-1100	GH3030	
			0-800	1Cr18Ni9Ti	
铠装镍铬-铜镍 Sheathed NiCr-CuNi	WREK-431 WREK$_2$-431	E	0-600	1Cr18Ni9Ti	
铠装铜-铜镍 Sheathed Cu-CuNi	WRCK-431 WRCK$_2$-431	T	0-350		
铠装铁-铜镍 Sheathed Fe-CuNi	WRFK-431 WRFK$_2$-431	J	0-500		
铠装镍铬硅-镍硅 Sheathed NiCrsi-NiSi	WRMK-531 WRMK$_2$-531	N	0-1100	GH3030	可动卡套法兰 Movable Compression Flange
			0-800	1Cr18Ni9Ti	
铠装镍铬-镍硅 Sheathed NiCr-NiSi	WRNK-531 WRNK$_2$-531	K	0-1100	GH3030	
			0-800	1Cr18Ni9Ti	
铠装镍铬-铜镍 Sheathed NiCr-CuNi	WREK-531 WREK$_2$-531	E	0-600		
铠装铜-铜镍 Sheathed Cu-CuNi	WRCK-531 WRCK$_2$-531	T	0-350	1Cr18Ni9Ti	
铠装铁-铜镍 Sheathed Fe-CuNi	WRFK-531 WRFK$_2$-531	J	0-500		

131（132）型

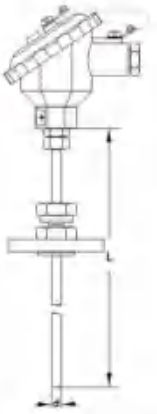
121（122）型



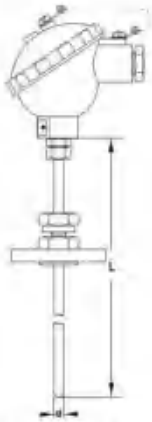
231（232）型
331（332）型



221（222）型
321（321）型



431（432）型
531（532）型



421（422）型
521（522）型

★：1）防水接线盒防护等级IP55；防喷接线盒防护等级IP65；

The proof class of water-proof connection box is IP65 , anti-spray is IP 65

2）热电偶Ⅰ级按协议订货；未注明一律以Ⅱ提供；

Class-I thermocouple is ordered according to agreement, it shall be considered as class-II if no indication

3）未注明测量温范围及保护管材质，保护管材质一律以 1Cr18Ni9Ti提供；

Protection tube materials shall be considered as 1Cr18Ni9Ti if no indication of measuring range and materials

4）接壳式同绝缘式产品型号相差末位数字，如：接壳式为WRNK-132。

The last digit is different between shell-connection type and insulation-type models. For example: shell-connection is WRNK-132

●圆接插式铠装热电偶（绝缘式和接壳式）

Round Plug Type Sheathed Thermocouple (Insulation Type, Shell-connecting Type)

名 称 Name/description	型 号Type	分度号 Graduation	测温范围℃ Measuring Range	安装固定装置 Mounting& Fixing Device
铠装铂铑$_{10}$-铂 Sheathed PtRh$_{10}$-Pt	WRPK-161	S	0-1200	无固定装置 Without Fixing Device
铠装镍铬硅-镍硅 Sheathed NiCrSi-NiSi	WRMK-161 WRMK$_2$-161	N	0-800	
铠装镍铬-镍硅 Sheathed NiCr-NiSi	WRNK-161 WRNK$_2$-161	K		
铠装镍铬-铜镍 Sheathed NiCr-CuNi	WREK-161 WREK$_2$-161	E	0-600	
铠装铜-铜镍 Sheathed Cu-CuNi	WRCK-161 WRCK$_2$-161	T	0-350	
铠装铁-铜镍 Sheathed Fe-CuNi	WRFK-161 WRFK$_2$-161	J	0-500	
铠装镍铬硅-镍硅 Sheathed NiCrsi-NiSi	WRMK-261 WRMK$_2$-261	N	0-800	固定卡套螺纹 Fixed Compression Thread
铠装镍铬-镍硅 Sheathed NiCr-NiSi	WRNK-261 WRNK$_2$-261	K		
铠装镍铬-铜镍 Sheathed NiCr-CuNi	WREK-261 WREK$_2$-261	E	0-600	
铠装铜-铜镍 Sheathed Cu-CuNi	WRCK-261 WRCK$_2$-261	T	0-350	
铠装铁-铜镍 Sheathed Fe-CuNi	WRFK-261 WRFK$_2$-261	J	0-500	
铠装镍铬硅-镍硅 Sheathed NiCrsi-NiSi	WRMK-361 WRMK$_2$-361	N	0-800	可动卡套螺纹 Movable Compression Thread
铠装镍铬-镍硅 Sheathed NiCr-NiSi	WRNK-361 WRNK$_2$-361	K		
铠装镍铬-铜镍 Sheathed NiCr-CuNi	WREK-361 WREK$_2$-361	E	0-600	
铠装铜-铜镍 Sheathed Cu-CuNi	WRCK-361 WRCK$_2$-361	T	0-350	
铠装铁-铜镍 Sheathed Fe-CuNi	WRFK-361 WRFK$_2$-361	J	0-500	
铠装镍铬硅-镍硅 Sheathed NiCrsi-NiSi	WRMK-461 WRMK$_2$-461	N	0-800	固定卡套法兰 Fixed Compression Flange
铠装镍铬-镍硅 Sheathed NiCr-NiSi	WRNK-461 WRNK$_2$-461	K		
铠装镍铬-铜镍 Sheathed NiCr-CuNi	WREK-461 WREK$_2$-461	E	0-600	
铠装铜-铜镍 Sheathed Cu-CuNi	WRCK-461 WRCK$_2$-461	T	0-350	
铠装铁-铜镍 Sheathed Fe-CuNi	WRFK-461 WRFK$_2$-461	J	0-500	
铠装镍铬硅-镍硅 Sheathed NiCrsi-NiSi	WRMK-561 WRMK$_2$-561	N	0-800	可动卡套法兰 Movable Compression Flange
铠装镍铬-镍硅 Sheathed NiCr-NiSi	WRNK-561 WRNK$_2$-561	K		
铠装镍铬-铜镍 Sheathed NiCr-CuNi	WREK-561 WREK$_2$-561	E	0-600	
铠装铜-铜镍 Sheathed Cu-CuNi	WRCK-561 WRCK$_2$-561	T	0-350	
铠装铁-铜镍 Sheathed Fe-CuNi	WRFK-561 WRFK$_2$-561	J	0-500	

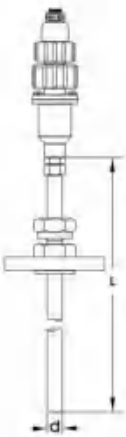
161（162）型

161（162）型

261（262）型
361（362）型

261（262）型
361（362）型

461（462）型
561（562）型



461（462）型
561（562）型

★：1）热电偶Ⅰ级按协议订货；未注明一律以Ⅱ提供；

Class-I thermocouple ordered according to agreement, it shall be considered as class-II if no indication

2）未注明测量温范围及保护管材质，保护管材质一律以`1Cr18Ni9Ti提供；

Thermowell materials shall be considered as 1Cr18Ni9Ti if no indication of measuring range and materials

3）接壳式同绝缘式产品型号相差末位数字，如：接壳式为WRNK-162。

The last digit is different between shell-connection type and insulation-type product. E.g.: shell-connection type is WRNK-162

● 扁接插式铠装热电偶（绝缘式和接壳式）

Flat Plug Sheathed Thermocouple (Insulation Type & Shell-connecting Type)

名 称 Description	型 号 Type	分度号 Graduation	测温范围℃ Measuring Range	安装固定装置 Mounting& Fixing Device
铠装铂铑$_{30}$-铂 Sheathed PtRh$_{30}$-Pt	WRPK-171	S	0-1200	无固定装置 W/O Fixing Device
铠装镍铬硅-镍硅 Sheathed NiCrSi-NiSi	WRMK-171 WRMK$_2$-171	N	0-800	
铠装镍铬-镍硅 Sheathed NiCr-NiSi	WRNK-171 WRNK$_2$-171	K		
铠装镍铬-铜镍 Sheathed NiCr-CuNi	WREK-171 WREK$_2$-171	E	0-600	
铠装铜-铜镍 Sheathed Cu-CuNi	WRCK-171 WRCK$_2$-171	T	0-350	
铠装铁-铜镍 Sheathed Fe-CuNi	WRFK-171 WRFK$_2$-171	J	0-500	
铠装镍铬硅-镍硅 Sheathed NiCrsi-NiSi	WRMK-271 WRMK$_2$-271	N	0-800	固定卡套螺纹 Fixed Compression Thread
铠装镍铬-镍硅 Sheathed NiCr-NiSi	WRNK-271 WRNK$_2$-271	K		
铠装镍铬-铜镍 Sheathed NiCr-CuNi	WREK-271 WREK$_2$-271	E	0-600	
铠装铜-铜镍 Sheathed Cu-CuNi	WRCK-271 WRCK$_2$-271	T	0-350	
铠装铁-铜镍 Sheathed Fe-CuNi	WRFK-271 WRFK$_2$-271	J	0-500	
铠装镍铬硅-镍硅 Sheathed NiCrsi-NiSi	WRMK-371 WRMK$_2$-371	N	0-800	可动卡套螺纹 Movable Compression Thread
铠装镍铬-镍硅 Sheathed NiCr-NiSi	WRNK-371 WRNK$_2$-371	K		
铠装镍铬-铜镍 Sheathed NiCr-CuNi	WREK-371 WREK$_2$-371	E	0-600	
铠装铜-铜镍 Sheathed Cu-CuNi	WRCK-371 WRCK$_2$-371	T	0-350	
铠装铁-铜镍 Sheathed Fe-CuNi	WRFK-371 WRFK$_2$-371	J	0-500	
铠装镍铬硅-镍硅 Sheathed NiCrsi-NiSi	WRMK-471 WRMK$_2$-471	N	0-800	固定卡套法兰 Fixed Compression Flange
铠装镍铬-镍硅 Sheathed NiCr-NiSi	WRNK-471 WRNK$_2$-471	K		
铠装镍铬-铜镍 Sheathed NiCr-CuNi	WREK-471 WREK$_2$-471	E	0-600	
铠装铜-铜镍 Sheathed Cu-CuNi	WRCK-471 WRCK$_2$-471	T	0-350	
铠装铁-铜镍 Sheathed Fe-CuNi	WRFK-471 WRFK$_2$-471	J	0-500	
铠装镍铬硅-镍硅 Sheathed NiCrsi-NiSi	WRMK-571 WRMK$_2$-571	N	0-800	可动卡套法兰 Movable Compression Flange
铠装镍铬-镍硅 Sheathed NiCr-NiSi	WRNK-571 WRNK$_2$-571	K		
铠装镍铬-铜镍 Sheathed NiCr-CuNi	WREK-571 WREK$_2$-571	E	0-600	
铠装铜-铜镍 Sheathed Cu-CuNi	WRCK-571 WRCK$_2$-571	T	0-350	
铠装铁-铜镍 Sheathed Fe-CuNi	WRFK-571 WRFK$_2$-571	J	0-500	

171型

271型
371型

471型
571型

★：1）热电偶Ⅰ级按协议订货；未注明一律以Ⅱ提供；

Class-I thermocouple is ordered according to agreement, it shall be considered as class-II if no indication

2）未注明测量温范围及保护管材质，保护管材质一律以`1Cr18Ni9Ti提供；

Thermowell materials shall be considered as 1Cr18Ni9Ti if no indication of measuring range and materials

3）接壳式同绝缘式产品型号相差末位数字，如：接壳式为WRNK-172。

The last digit is different between shell-connection type and insulation-type product. E.g.: shell-connection type is WRNK-172

●补偿导线式铠装热电偶（绝缘式和接壳式）

Sheathed Thermocouple w/ Compensation Wire (Insulation Type & Shell-connecting Type)

名　称 Description	型　号 Type	分度号 Graduation	测温范围℃ Measuring Range	长　度 Length L	长　度 Length L_1	安装固定装置 Mounting& Fixing Device
铠装镍铬硅—镍硅 Sheathed NiCrSi-NiSi	WRMK-191	N	0-800	50	500	无固定装置 W/O Fixing Device
铠装镍硅—镍硅 Sheathed NiCr-NiSi	WRNK-191	K		75	750	
铠装镍硅—铜镍 Sheathed NiCr-CuNi	WREK-191	E	0-600	100	1000	
铠装铜—铜镍 Sheathed Cu-CuNi	WRCK-191	T	0-350	150	1500	
铠装铁—铜镍 Sheathed Fe-CuNi	WRFK-191	J	0-500	200	2000	
铠装镍铬硅—镍硅 Sheathed NiCrsi-NiSi	WRMK-291	N	0-800	250	2500	固定卡套螺纹 Fixed Compression Thread
铠装镍硅—镍硅 Sheathed NiCr-NiSi	WRNK-291	K		300	3000	
铠装镍硅—铜镍 Sheathed NiCr-CuNi	WREK-291	E	0-600	400	3500	
铠装铜—铜镍 Sheathed Cu-CuNi	WRCK-291	T	0-350	500	4000	
铠装铁—铜镍 Sheathed Fe-CuNi	WRFK-291	J	0-500	750	4500	
铠装镍铬硅—镍硅 Sheathed NiCrsi-NiSi	WRMK-391	N	0-800	1000	5000	可动卡套螺纹 Movable Compression Thread
铠装镍硅—镍硅 Sheathed NiCr-NiSi	WRNK-391	K		1500	6000	
铠装镍硅—铜镍 Sheathed NiCr-CuNi	WREK-391	E	0-600	2000	7000	
铠装铜—铜镍 Sheathed Cu-CuNi	WRCK-391	T	0-350	3000	8000	
铠装铁—铜镍 Sheathed Fe-CuNi	WRFK-391	J	0-500	4000	9000	
铠装镍铬硅—镍硅 Sheathed NiCrsi-NiSi	WRMK-491	N	0-800	5000	10000	固定卡套法兰 Fixed Compression Flange
铠装镍硅—镍硅 Sheathed NiCr-NiSi	WRNK-491	K	0-600	7500	15000	
铠装镍硅—铜镍 Sheathed NiCr-CuNi	WREK-491	E		10000	20000	
铠装铜—铜镍 Sheathed Cu-CuNi	WRCK-491	T	0-350	15000	25000	
铠装铁—铜镍 Sheathed Fe-CuNi	WRFK-491	J	0-500	25000		
铠装镍铬硅—镍硅 Sheathed NiCrsi-NiSi	WRMK-591	N	0-800			可动卡套法兰 Movable Compression Flange
铠装镍硅—镍硅 Sheathed NiCr-NiSi	WRNK-591	K				
铠装镍硅—铜镍 Sheathed NiCr-CuNi	WREK-591	E	0-600			
铠装铜—铜镍 Sheathed Cu-CuNi	WRCK-591	T	0-350			
铠装铁—铜镍 Sheathed Fe-CuNi	WRFK-591	J	0-500			

191（192）型

291（292）型
391（392）型

491（492）型
591（592）型

★：1）热电偶Ⅰ级按协议订货；未注明一律以Ⅱ提供；

Class-I thermocouple is ordered according to agreement, it shall be considered as class-II if no indication

2）未注明测量温范围及保护管材质，保护管材质一律以`1Cr18Ni9Ti提供；

Thermowell materials shall be considered as 1Cr18Ni9Ti if no indication of measuring range and materials

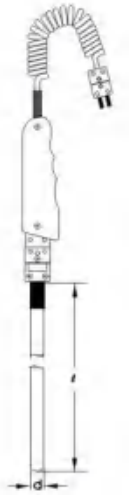
3）接壳式同绝缘式产品型号相差末位数字，如：接壳式为WRNK-182。

The last digit is different between shell-connection type and insulation-type product. E.g.:shell-connection type is WRNK-182

● 手柄式铠装热电偶（绝缘式和接壳式）

Handle Type Sheathed Thermocouple (Insulation-type & Shell-connecting Type)

名　称 Description	型　号 Type	分度号 Graduation	测温范围℃ Temperature Range	工作端形式 Operation End Type
铠装镍铬硅—镍硅 Sheathed NiCrSi-NiSi	WRMK-181	N	0-900	绝缘式
铠装镍铬—镍硅 Sheathed NiCr-NiSi	WRNK-181	K	0-800	
铠装镍铬—铜镍 Sheathed NiCr-CuNi	WREK-181	E	0-600	
铠装铜—铜镍 Sheathed Cu-CuNi	WRCK-181	T	0-350	
铠装铁—铜镍 Sheathed Fe-CuNi	WRFK-181	J	0-500	
铠装镍铬硅—镍硅 Sheathed NiCrSi-NiSi	WRMK-182	N	0-900	接壳式
铠装镍铬—镍硅 Sheathed NiCr-NiSi	WRNK-182	K	0-800	
铠装镍铬—铜镍 Sheathed NiCr-CuNi	WREK-182	E	0-600	
铠装铜—铜镍 Sheathed Cu-CuNi	WRCK-182	T	0-350	
铠装铁—铜镍 Sheathed Fe-CuNi	WRFK-182	J	0-500	



★：1）热电偶Ⅰ级按协议订货；未注明一律以Ⅱ提供；

Class-I thermocouple is ordered according to agreement, it shall be considered as class-II if no indication

2）未注明测量温范围及保护管材质，保护管材质一律以`1Cr18Ni9Ti提供；

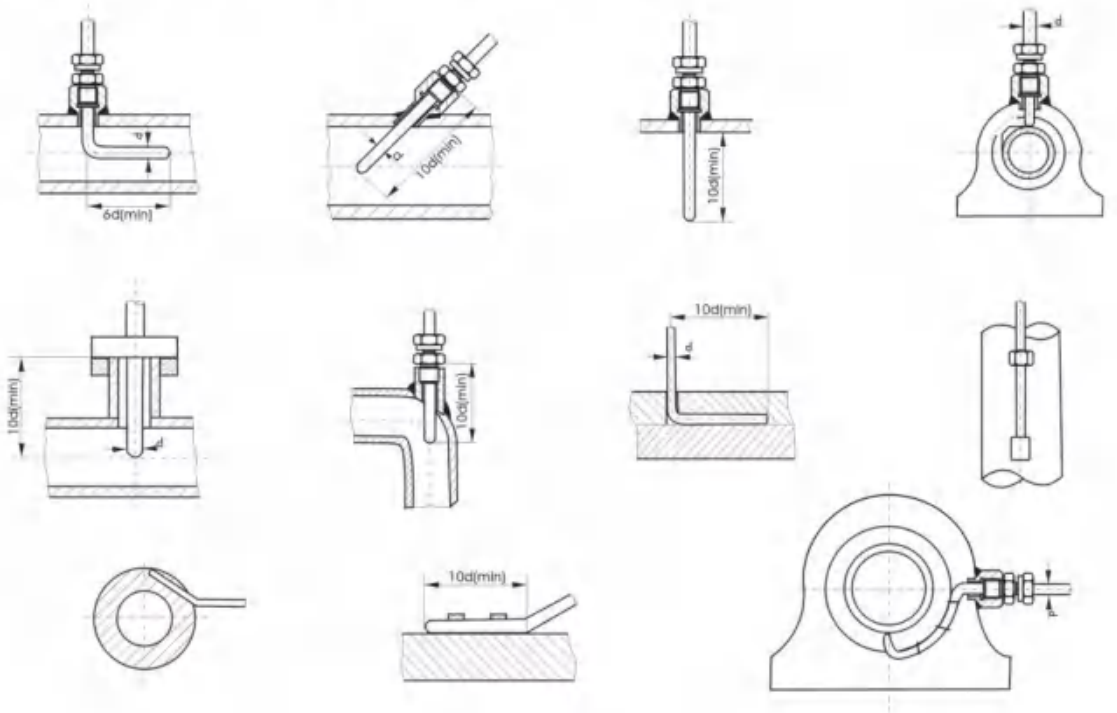
Thermowell materials shall be considered as 1Cr18Ni9Ti if no indication of measuring range and materials

3）接壳式同绝缘式产品型号相差末位数字，如：接壳式为WRNK-182。

The last digit is different between shell-connection type and insulation-type product. E.g.: shell-connection type is WRNK-182

● 铠装热电偶安装示意图

Installation Sketch Map of Sheathed Thermocouple



WR□系列 WR□系列

装配热电偶
Assembly Thermocouple

应用 Application

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

It is usually cooperated with display meter, recording meter and computer etc. to measure the surface temperature of the mediums as liquid, steam and gas ranging from 0 to 1300℃ during various production processes directly.

特点 Features

●装配简单，更换方便；

Easy assembly and convenient for replacement

●压簧式感温元件，抗振性能好；

Spring thermal element with good shock-proof performance

●测量范围大；

Wide measuring range

●机械强度高，耐压性能好；

High mechanical strength and good pressure-resistant performance

工作原理 Working principle

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

热电偶的热电动势将随着测量端温度的升高而增长，热电动势的大小只与铠装偶导体的材质以及两端温差有关，和热电极的长度、直径无关。

The two electrodes of sheathed thermocouple are made of different conductor materials. Where there is temperature difference between measuring end and reference end, there will be hydroelectric potential, then the meter shows the corresponding temperature of the hydroelectric potential. The hydroelectric potential of sheathed thermocouple will raise according tothe temperature of measuring end . The size of hydroelectric potential has relationship with the materials of sheathed thermocouple conductor and temperature difference of two ends only while non-relevant to length, diameter of thermal electrode.

结构原理 Structure Principle

装配热电偶主要由接线盒、接线端子、保护管、绝缘套管、热电极组成基本结构，并配以各种安装固定装置组成。

The basic structure of sheathed thermocouple is mainly made up of connection box, connection and sheathed thermocouple, connected with various installation fixing devices.

主要技术参数 Main technical parameters:

产品执行标准 Standard

IEC584
IEC1515
GB/T 30429-2013
JB/T 5582-2014

测温范围及允差
Measuring Range & Tolerance

型号 Type	分度号 Graduation	允差等级 Tolerance Class I		允差等级 Tolerance Class II	
		允差值 Tolerance	测温范围℃ Temperature Range	允差值 Tolerance	测温范围℃ Temperature Range
WRN	K	±1.5℃	-40-+375	±2.5℃	-40-+333
		±0.004|t|	375-1000	±0.0075|t|	333-1200
WRM	N	±1.5℃	-40-+375	±2.5℃	-40-+333
		±0.004|t|	375-1000	±0.0075|t|	333-1200
WRE	E	±1.5℃	-40-+375	±2.5℃	-40-+333
		±0.004|t|	375-800	±0.0075|t|	333-900
WRF	J	±1.5℃	-40-+375	±2.5℃	-40-+333
		±0.004|t|	375-750	±0.0075|t|	333-750
WRC	T	±0.5℃	-40-+125	±1℃	-40-+333
		±0.004|t|	125-350	±0.0075|t|	133-350

注：t为被测电偶的实测温度。

Notice: t is the exact measured temperature for thermocouple.

● 常温绝缘电阻

Insulation Resistance at Normal Temperature

热电偶在环境温度为15~35℃，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≥100MΩ·m；对于长度等于或不足1米的热电偶，其绝缘电阻应不小于100MΩ。

The insulation resistance between the electrode and the outer protection tube of is no less than 100MΩ.m under condition that environment temper ature is 15~35℃, relative humidity is no more than 80%,test voltage is 500±50V (D.C.)The insulation resistance should be no less than 100MΩ for the thermocouple which is not longer than 1m.

注：当测量元件为铠装式元件时，其常温绝缘电阻参数则按铠装热电偶计算。

Note: When the measuring element is sheathed element, the parameter of insulation resistance at normal temperature should be calculated according to sheathed thermocouple.

上限温度绝缘电阻
Insulation Resistance at Upper Limit

热电偶上限温度绝缘电阻应不小于下表的规定：
The insulation thermal resistance at upper limit should be no less than the regulation below.

上限温度t_m（℃） Upper Limit	试验温度（℃） TestingTemperature	电阻值（MΩ） Resistance
$100 \leqslant t_m < 300$	$t=t_m$	10
$300 \leqslant t_m < 500$	$t=t_m$	2
$500 \leqslant t_m < 850$	$t=t_m$	0.5
$850 \leqslant t_m < 1000$	$t=t_m$	0.08
$1000 \leqslant t_m < 1300$	$t=t_m$	0.02
$t_m > 1300$	t=1300	0.02

注：如果是铠装元件，其上限温度绝缘电阻值则按铠装热电偶计算。
Note: When the measuring element is sheathed element, the parameter of insulation resistance at normal temperature should be calculated according to sheathed thermocouple.

热响应时间 $\tau 0.5$ Thermal Response Time $t_{0.5}$

在温度出现阶跃变化时，热电偶的输出变化至相当于该跃变化时的50%所需的时间称为热响应时间，用 $\tau 0.5$表示。
When the temperature has step-jumping change, the needed time for output of thermocouple changes to 50% of the step-jumping change, this time is called thermal response time,indicating with $\tau 0.5$.

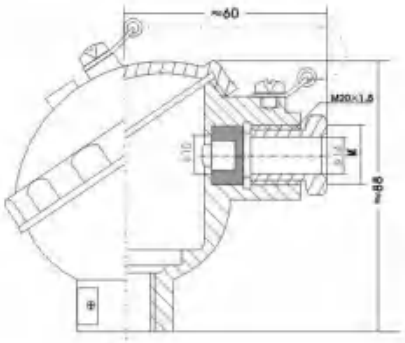
公称压力 Nominal Pressure

一般是指在工作温度下保护管所能承受的静态外压而不破裂。实际上，工作压力不仅与保护管材料、直径、壁厚有关，还与热电偶结构形式、安装方法、置入深度以及被介质的流速和种类等有关。
It is usually means the static outer pressure which the protection tube can offer and will not be broken under the working temperature. In fact, working pressure not only has relationship with with protection tube material, diameter and thickness of wall, but also the structure form, installation method, inserting depth and the flow speed and type of the medium etc.

接线盒形式
Connection Type

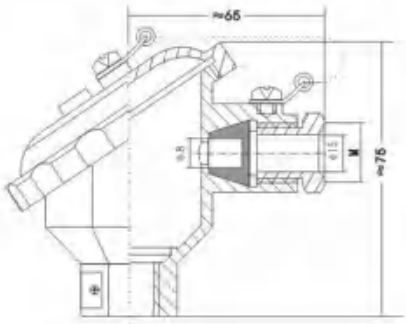
防喷式
Anti-spray Type

防护等级:IP65
Protection Class: IP 65



防水式
Water-proof Type

防护等级:IP55
Protection Class: IP 55



注：电气出口M未特殊指明，一律视为M20×1.5
Notice:
The electric exit shall be considered as 20×1.5 if no indication

型号命名方法 Naming

W 温度仪表 Temperature Instrument

R 热电偶 Thermocouple

感温元件材料 Thermal Element Materials Graduation

R	铂铑$_{30}$-铂$_{6}$	$PtRh_{30}$-Pt_{6}	B
Q	铂铑$_{13}$-铂	$PtRh_{13}$-Pt	R
P	铂铑$_{10}$-铂	$PtRh_{10}$-Pt	S
M	镍铬硅-镍硅	NiCrSi-NiSi	N
N	镍铬-镍硅	NiCr- NiSi	K
E	镍铬-铜镍	NiCr- CuNi	E
F	铁-铜镍	Fe-CuNi	J
C	铜-铜镍	Cu-CuNi	T

偶丝对数 Wire Pairs

无	单支	Blank	Simplex
2	双支	2	Duplex

安装固定形式 Mounting & Fixing

1	无固定装置	W/o Fixing Device
2	固定螺纹	Fixed Thread
3	活动法兰	Movable Flange
4	固定法兰	Fixed Flange
5	直角活动法兰	Right-angle Movable Flange
6	固定螺纹锥形保护管	Fixed Thread in Wimble Protection Tube

接线盒形式 Connection Box

2	防喷式	Anti-spray
3	防水式	Water-proof

保护管直径 Diameter of Protection Tube

0	Φ16	
1	Φ20	
2	Φ16高铝质	High Al
3	Φ20高铝质	High Al

工作端形式 Measuring End

G	变截面	Variable Section
K	铠装元件	Sheathed Elements
T	弹性铠装元件T	Flexible Sheathed Elements

W R N$_{2}$ — 2 3 1 G 典型型号示例 Example of Classical Name

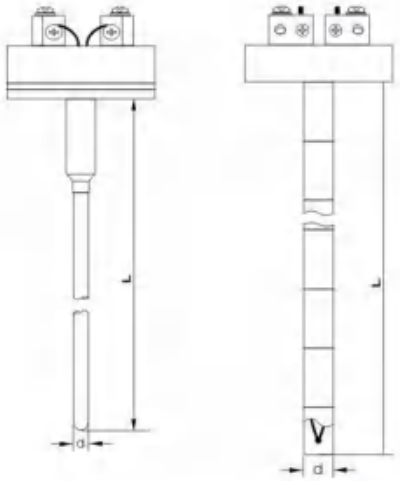
型号及规格Type & Specification

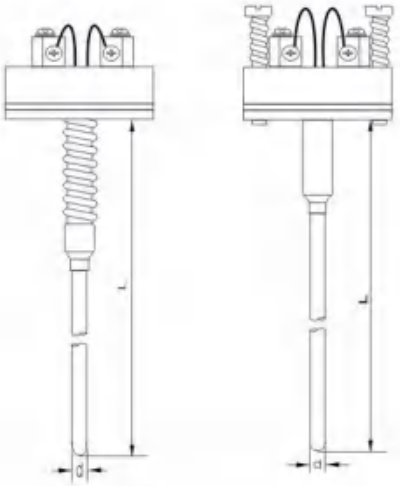
● 感温元件 Thermal Element

型号 Type	分度号 Graduation	测温范围℃ Measuring Range	规格 Specification d	规格 Specification L
WRR-010 WRR$_2$-010	B	0-1600		
WRQ-010 WRQ$_2$-010	R	0-1300	Φ8	300
WRP-010 WRP$_2$-010	S	0-1300		350
WRN-010 WRN$_2$-010 WRN-101 WRN$_2$-101	K	0-1000	Φ11	450
			Φ5 Φ6 Φ8	550
WRE-010 WRE$_2$-010 WRE-101 WRE$_2$-101	E	0-800	Φ11	650
			Φ4 Φ6 Φ5 Φ8	950 1150
WRF-010 WRF$_2$-010 WRF-101 WRF$_2$-101	J	0-600	Φ11	1650
			Φ4 Φ6 Φ5 Φ8	2150
WRC-010 WRC$_2$-010 WRC-101 WRC$_2$-101	T	0-350	Φ11	
			Φ4 Φ6 Φ5 Φ8	

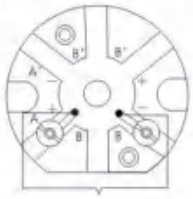
注：“L”可协议订货；“B”分度不推荐使用铠装式

Note: L can be ordered by negotiation, and sheathed type is not recommended for Graduation B

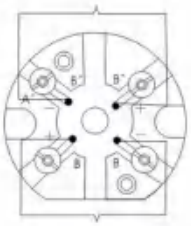




● 接线方式 Wiring Method



单支接线方法
Wiring Method(simplex)

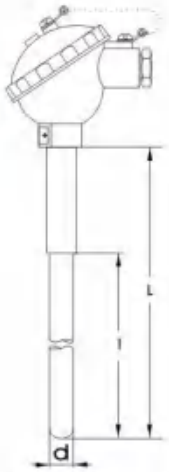


双支接线方法
Wiring Method(duplex)

● 无固定装置热电偶

Thermocouple w/o Fixing Device

型号 Type	分度号 Graduation	测温范围℃ Measuring Range	保护管Thermowell d	保护管Thermowell 材料Material	热响应时间$\tau_{0.5}$S TRT
WRR-130 WRR$_2$-130	B	0-1600	Φ16	刚玉管 Corundum Pipe	<150
WRR-131 WRR$_2$-131			Φ25		<360
WRP-130 WRP$_2$-130	S	0-1300	Φ16	高铝质 High AL content	<150
WRP-131 WRP$_2$-131			Φ25		<360
WRN-132 WRN$_2$-132	K	0-1000	Φ16	高铝质 High AL content	<240
WRN-133 WRN$_2$-133			Φ20		<240



防喷式122 123型
Anti-spray Type

防水式132 133型
Water-proof Type

★:1）结构特征：非置入部分为碳钢20#；

Structure features: non- inserting part is 20 # carbonic-steel

2）Φ25mm为双层套管。

Φ25 mm is protection tube with double film

无固定装置热电偶
Thermocouple w/o Fixing Device

型号 Type	分度号 Graduation	测温范围℃ Measuring Range	热响应时间 Thermal Response Time	保护管材料 Thermowell Material	规格 Specification D	规格 Specification L×I
WRM-130 WRM$_2$-130	N	0-800	<60S	1Cr18Ni9Ti	φ16	300×150 350×200 400×250 450×300 500×350 650×500 1150×1000 1650×1500 2150×2000
		0-1000		0Cr25Ni20		
WRM-130G WRM$_2$-130G		0-800	<24S	1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRN-130 WRN$_2$-130	K	0-800	<60S	1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRN-130G WRN$_2$-130G		0-800	<24S	1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRE-130 WRE$_2$-130	E	0-700	<60S	1Cr18Ni9Ti		
WRE-130G WRE$_2$-130G			<24S			
WRC-130 WRC$_2$-130	T	0-350	<60S	1Cr18Ni9Ti		
WRC-130G WRC$_2$-130G			<24S			
WRF-130 WRF$_2$-130	J	0-600	<60S	1Cr18Ni9Ti		
WRF-130G WRF$_2$-130G			<24S			
WRM-131 WRM$_2$-131	N	0-800	<90S	1Cr18Ni9Ti	φ20	
		0-1000		0Cr25Ni20		
WRM-131G WRM$_2$-131G		0-800	<24S	1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRN-131 WRN$_2$-131	K	0-800	<90S	1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRN-131G WRN$_2$-131G		0-800	<24S	1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRE-131 WRE$_2$-131	E	0-700	<90S	1Cr18Ni9Ti		
WRE-131G WRE$_2$-131G			<24S			
WRC-131 WRC$_2$-131	T	0-350	<90S	1Cr18Ni9Ti		
WRC-131G WRC$_2$-131G			<24S			
WRF-131 WRF$_2$-131	J	0-600	<90S	1Cr18Ni9Ti		
WRF-131G WRF$_2$-131G			<24S			

防水式130 131型
Water-proof Type

防喷式120 121型
Anti-spray Type

防水式130G 131G型
Water-proof Type

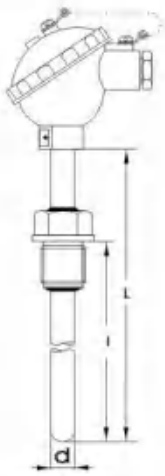
防喷式120G 121G型
Anti-spray Type

注：1、如需其余材质的保护管可协议订货。
It can be ordered due to agreement for other materials.
2、变截面型式的热电偶内配铠装元件。
The thermocouples with variable section should be cooperated with sheathed element.

●固定螺纹式热电偶 Fixed Thread Thermocouple

型号 Type	分度号 Graduation	测温范围℃ Measuring Range	热响应时间 Thermal Response Time	保护管材料 Thermowell Material	规格 Specification d	规格 Specification L×I
WRM-230	N	0-800	<60S	1Cr18Ni9Ti	Φ16	300×150 350×200 400×250 450×300 500×350 650×500 1150×1000 1650×1500 2150×2000
WRM$_2$-230		0-1000		0Cr25Ni20		
WRM-230G		0-800	<24S	1Cr18Ni9Ti		
WRM$_2$-230G		0-1000		0Cr25Ni20		
WRN-230	K	0-800	<60S	1Cr18Ni9Ti		
WRN$_2$-230		0-1000		0Cr25Ni20		
WRN-230G		0-800	<24S	1Cr18Ni9Ti		
WRN$_2$-230G		0-1000		0Cr25Ni20		
WRE-230	E	0-700	<60S	1Cr18Ni9Ti		
WRE$_2$-230						
WRE-230G			<24S			
WRE$_2$-230G						
WRC-230	T	0-350	<60S	1Cr18Ni9Ti		
WRC$_2$-230						
WRC-230G			<24S			
WRC$_2$-230G						
WRF-230	J	0-600	<60S	1Cr18Ni9Ti		
WRF$_2$-230						
WRF-230G			<24S			
WRF$_2$-230G						
WRM-231	N	0-800	<90S	1Cr18Ni9Ti	Φ20	
WRM$_2$-231		0-1000		0Cr25Ni20		
WRM-231G		0-800	<24S	1Cr18Ni9Ti		
WRM$_2$-231G		0-1000		0Cr25Ni20		
WRN-231	K	0-800	<90S	1Cr18Ni9Ti		
WRN$_2$-231		0-1000		0Cr25Ni20		
WRN-231G		0-800	<24S	1Cr18Ni9Ti		
WRN$_2$-231G		0-1000		0Cr25Ni20		
WRE-231	E	0-700	<90S	1Cr18Ni9Ti		
WRE$_2$-231						
WRE-231G			<24S			
WRE$_2$-231G						
WRC-231	T	0-350	<90S	1Cr18Ni9Ti		
WRC$_2$-231						
WRC-231G			<24S			
WRC$_2$-231G						
WRF-231	J	0-600	<90S	1Cr18Ni9Ti		
WRF$_2$-231						
WRF-231G			<24S			
WRF$_2$-231G						

防水式230 231型
Water-proof Type



防喷式220 221型
Anti-spray Type

防水式230G 231G型
Water-proof Type

防喷式220G 221G型
Anti-spray Type

注：1、如需其余材质的保护管可协议订货。
It can be ordered due to agreement for other materials.
2、变截面型式的热电偶内配铠装元件。
The thermocouples with variable section should be cooperated with sheathed element.

安装固定形式：固定螺纹
Installation: Fixed Thread

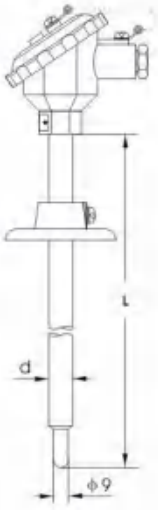
型号示例 Model Type	螺纹规格 Thread Specification 代号 Code	M	D	公称压力 NP Mpa
WRN-230		M27×2	Φ16	10
WRN-230A	A	G3/4		
WRN-230C	C	NPT3/4		
WRN-231G		M27×2	Φ20	
WRN-231GA	A	G3/4		
WRN-231GC	C	NPT3/4		

活动法兰式热电偶
Thermocouple w/ Moveable Flange

型号 Type	分度号 Graduation	测温范围℃ Measuring Range	热响应时间 Thermal Response Time	保护管材料 Thermowell Material	规格 Specification d	规格 Specification L
WRM-330 WRM$_2$-330	N	0-800	<60S	1Cr18Ni9Ti	Φ16	300 350 400 450 500 650 1150 1650 2150
		0-1000		0Cr25Ni20		
WRM-330G WRM$_2$-330G		0-800	<24S	1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRN-330 WRN$_2$-330	K	0-800	<60S	1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRN-330G WRN$_2$-330G		0-800	<24S	1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRE-330 WRE$_2$-330	E	0-700	<60S	1Cr18Ni9Ti		
WRE-330G WRE$_2$-330G			<24S			
WRC-330 WRC$_2$-330	T	0-350	<60S	1Cr18Ni9Ti		
WRC-330G WRC$_2$-330G			<24S			
WRF-330 WRF$_2$-330	J	0-600	<60S	1Cr18Ni9Ti		
WRF-330G WRF$_2$-330G			<24S			
WRM-331 WRM$_2$-331	N	0-800	<60S	1Cr18Ni9Ti	Φ20	
		0-1000		0Cr25Ni20		
WRM-331G WRM$_2$-331G		0-800	<24S	1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRN-331 WRN$_2$-331	K	0-800	<60S	1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRN-331G WRN$_2$-331G		0-800	<24S	1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRE-331 WRE$_2$-331	E	0-700	<90S	1Cr18Ni9Ti		
WRE-331G WRE$_2$-331G			<24S			
WRC-331 WRC$_2$-331	T	0-350	<90S	1Cr18Ni9Ti		
WRC-331G WRC$_2$-331G			<24S			
WRF-331 WRF$_2$-331	J	0-600	<90S	1Cr18Ni9Ti		
WRF-331G WRF$_2$-331G			<24S			

防水式330 331型
Water-proof Type

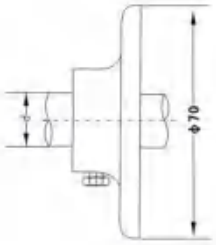
防喷式320 321型
Anti-spray Type



防水式330G 331G型
Water-proof Type

防喷式320G 321G型
Anti-spray Type

注：1、如需其余材质的保护管可协议订货。
It can be ordered due to agreement for other materials.
2、变截面型式的热电偶内配铠装元件。
The thermocouples with variable section should be cooperated with sheathed element.



安装固定形式：活动法兰
Installation: Movable Flange

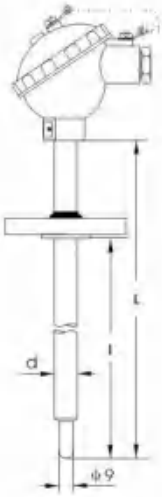
固定法兰式热电偶 Thermocouple w/ Fixed Flange

型号 Type	分度号 Graduation	测温范围℃ Measuring Range	热响应时间 Thermal Response Time	保护管材料 Thermowell Material	规格 Specification d	规格 Specification L×l
WRM-430 WRM$_2$-430	N	0-800	<60S	1Cr18Ni9Ti	Φ16	300×150 350×200 400×250 450×300 500×350 650×500 1150×1000 1650×1500 2150×2000
		0-1000		0Cr25Ni20		
WRM-430G WRM$_2$-430G		0-800	<24S	1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRN-430 WRN$_2$-430	K	0-800	<60S	1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRN-430G WRN$_2$-430G		0-800	<24S	1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRE-430 WRE$_2$-430	E	0-700	<60S	1Cr18Ni9Ti		
WRE-430G WRE$_2$-430G			<24S			
WRC-430 WRC$_2$-430	T	0-350	<60S	1Cr18Ni9Ti		
WRC-430G WRC$_2$-430G			<24S			
WRF-430 WRF$_2$-430	J	0-600	<60S	1Cr18Ni9Ti		
WRF-430G WRF$_2$-430G			<24S			
WRM-431 WRM$_2$-431	N	0-800	<90S	1Cr18Ni9Ti	Φ20	
		0-1000		0Cr25Ni20		
WRM-431G WRM$_2$-431G		0-800	<24S	1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRN-431 WRN$_2$-431	K	0-800	<90S	1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRN-431G WRN$_2$-431G		0-800	<24S	1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRE-431 WRE$_2$-431	E	0-700	<90S	1Cr18Ni9Ti		
WRE-431G WRE$_2$-431G			<24S			
WRC-431 WRC$_2$-431	T	0-350	<90S	1Cr18Ni9Ti		
WRC-431G WRC$_2$-431G			<24S			
WRF-431 WRF$_2$-431	J	0-600	<90S	1Cr18Ni9Ti		
WRF-431G WRF$_2$-431G			<24S			

防水式430 431型
Water-proof Type

防喷式420 421型
Anti-spray Type

防水式430G 431G型
Water-proof Type

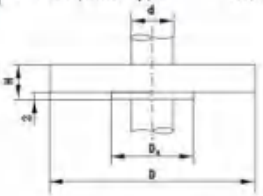


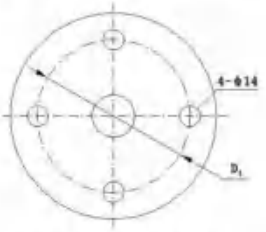
防喷式420G 421G型
Anti-spray Type

注：1、如需其余材质的保护管可协议订货。
It can be ordered due to agreement for other materials.
2、变截面型式的热电偶内配铠装元件。
The thermocouples with variable section should be cooperated with sheathed element.

型号示例 Model Examples	法兰规格 Flange Specification D	D$_1$	D$_2$	H	d
WRN-430	Φ95	Φ65	Φ46	14	Φ16
WRN-430G	Φ105	Φ75	Φ56	16	
WRN-431	Φ115	Φ85	Φ65	16	Φ20
WRN-431G	Φ115	Φ85	Φ65		

注：其余规格的法兰，可参见“热安装套管”或协议约定。
Note: For other specifications of flange, please refer to Thermowell or agreement

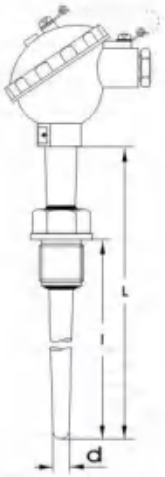




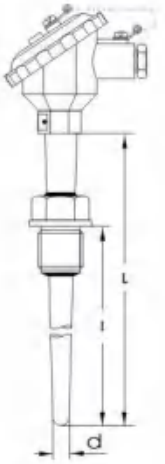
安装固定形式：固定法兰
Installation: Fixed Flange

固定螺纹锥形保护管热电偶
Thermocouple with Fixed Thread Wimble Protection Tube

型号 Type	分度号 Graduation	测温范围℃ Measuring Range	热响应时间 Thermal Response Time	保护管材料 Protection Tube Material	规格 Specification d	规格 Specification L×l
WRM-620 WRM_2-620	N	0-800	<90S	1Cr18Ni9Ti	Φ16	300×150 350×200 400×250 450×300 500×350
		0-1000		0Cr25Ni20		
WRM-620A WRM_2-620A		0-800		1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRN-620 WRN_2-620	K	0-800		1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRN-620A WRN_2-620A		0-800		1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRE-620 WRE_2-620	E	0-700		1Cr18Ni9Ti		
WRE-620A WRE_2-620A						
WRC-620 WRC_2-620	T	0-350		1Cr18Ni9Ti		
WRC-620A WRC_2-620A						
WRF-620 WRF_2-620	J	0-600		1Cr18Ni9Ti		
WRF-620A WRF_2-620A						
WRM-630 WRM_2-630	N	0-800	<90S	1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRM-630A WRM_2-630A		0-800		1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRN-630 WRN_2-630	K	0-800		1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRN-630A WRN_2-630A		0-800		1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRE-630 WRE_2-630	E	0-700		1Cr18Ni9Ti		
WRE-630A WRE_2-630A						
WRC-630 WRC_2-630	T	0-350		1Cr18Ni9Ti		
WRC-630A WRC_2-630A						
WRF-630 WRF_2-630	J	0-600		1Cr18Ni9Ti		
WRF-630A WRF_2-630A						



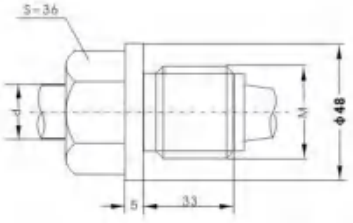
防喷式620 620A型
Anti-sray Type



防水式630 630A型
Water-proof Type

如需其它材质的保护管可协议订货。
If need other materials of protection tube, can due to agreement.

型号 Type	螺纹规格 Thread Specification 代号 Code	螺纹规格 Thread Specification M	公称压力 NP Mpa
WRN-620		M33×2	30
WRN-620A	A	NPT1	
WRN-630		M33×2	
WRN-630A	A	NPT1	



安装固定形式：固定螺纹锥形保护管
Installation: Fixed Thread Wimble Protection Tube

可拆卸式热电偶 Knock-down Thermocpuple

W 温度仪表 Temperature Instrument

R 热电偶 Thermocouple

感温元件材料(铠装式)) Thermal Element Mterial (Sheathed)

M	镍铬硅-镍硅	NiCrSi-NiSi
N	镍铬-镍硅	NiCr-NiSi
E	镍铬-铜镍	NiCr-CuNi
F	铁-铜镍	Fe-CuNi
C	铜-铜镍	Cu-CuNi

偶丝对数 Wire Pairs

无	单支	Blank	Simplex
2	双支	2	Duplex

连接形式 Connection

5	活络管接头式Elbow Tube Connector
7	直形管接头式Straight Tube Connector
8	固定螺纹接头式 Fixed Thread Connector
9	活动螺纹接头式Movable Thread Connector

接线装置形式 Connection Device

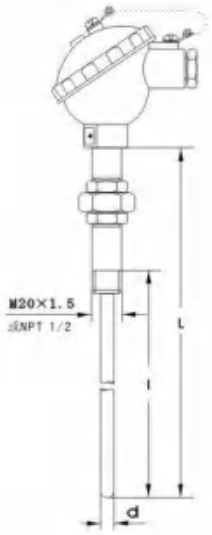
2	防喷式 Anti-spray
3	防水式 Water-proof

热安装套管见<热套管安装图>
Please refer to Thermowell Table

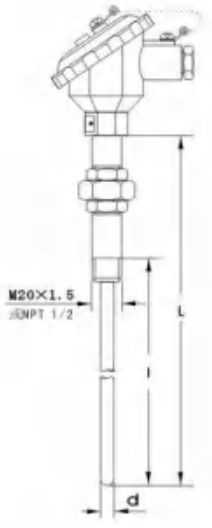
W R N $_{2}$ — 5 2 典型型号示例 Example of Classical Name

活络管接头式热电偶Thermocouple w/ Movable Tube Connector

型号 Type	分度号 Graduation	测温范围℃ Measuring Range	螺纹规格 Thread Spec	保护管材料 Thermowell Material	规格Specification d	规格Specification l
WRM-52 WRM$_2$-52	N	0-1000	M20×1.5	1Cr18Ni9Ti		
WRM-52A WRM$_2$-52A			NPT1/2			
WRN-52 WRN$_2$-52	K		M20×1.5			
WRN-52A WRN$_2$-52A			NPT1/2			
WRE-52 WRE$_2$-52	E	0-700	M20×1.5			
WRE-52A WRE$_2$-52A			NPT1/2			
WRC-52 WRC$_2$-52	T	0-350	M20×1.5			250
WRC-52A WRC$_2$-52A			NPT1/2		φ3	275 300
WRF-52 WRF$_2$-52	J	0-600	M20×1.5		φ4	350 400
WRF-52A WRF$_2$-52A			NPT1/2		φ5	450 550
WRM-53 WRM$_2$-53	N	0-1000	M20×1.5	1Cr18Ni9Ti	φ6	650 750
WRM-53A WRM$_2$-53A			NPT1/2		φ8	900 1150
WRN-53 WRN$_2$-53	K		M20×1.5			
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			



防喷式52 52A型
Anti-spray Type

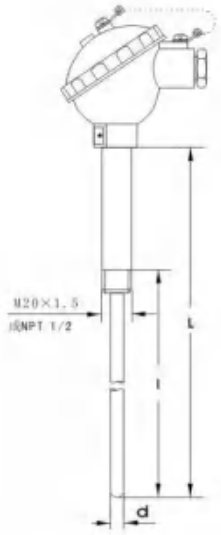


防水式53 53A型
Water-proof Type

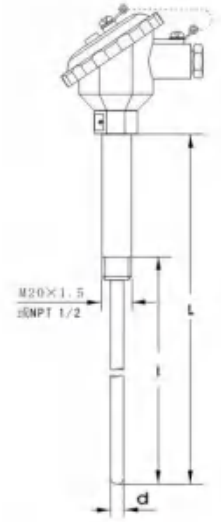
★:1）型号53、53A为防水式，防护等级IP55； 型号52、52A为防喷式，防护等级IP65；
Type 53,53A for water-proof type, proof class IP 55； Type 52,52A for anti-spray type, proof class IP 65
2）如无特殊之约定，L仅为参考尺寸，热电偶插入深度应为热安装套管U尺寸；
L is for reference only if no special agreement and the insert depth of the thermocouple shall be the size U of thermowell.
3) 热安装套管形式详见《热安装套管图》
Please see more for thermowell at Thermowel Table at the end of this book

● 直形管接头式热电偶 Thermocouple w/ Straight Tube Connector

型 号 Type	分度号 Graduation	测温范围℃ Measuring Range	螺纹规格 Thread Spec	保护管材料 Thermowell Material	规 格 Specification d	规 格 Specification l
WRM-72 WRM$_2$-72	N	0-1000	M20×1.5	1Cr18Ni9Ti	φ3 φ4 φ5	250 275 300 350 400 450
WRM-72A WRM$_2$-72A			NPT1/2			
WRN-72 WRN$_2$-72	K		M20×1.5			
WRN-72A WRN$_2$-72A			NPT1/2			
WRE-72 WRE$_2$-72	E	0-700	M20×1.5			
WRE-72A WRE$_2$-72A			NPT1/2			
WRC-72 WRC$_2$-72	T	0-350	M20×1.5			
WRC-72A WRC$_2$-72A			NPT1/2			
WRF-72 WRF$_2$-72	J	0-600	M20×1.5			
WRF-72A WRF$_2$-72A			NPT1/2			
WRM-73 WRM$_2$-73	N	0-1000	M20×1.5	1Cr18Ni9Ti	φ6 φ8	550 650 750 900 1150
WRM-73A WRM$_2$-73A			NPT1/2			
WRN-73 WRN$_2$-73	K		M20×1.5			
WRN-73A WRN$_2$-73A			NPT1/2			
WRE-73 WRE$_2$-73	E	0-700	M20×1.5			
WRE-73A WRE$_2$-73A			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			



防喷式72 72A型
Anti-spray Type



防水式73 73A型
Water-proof Type

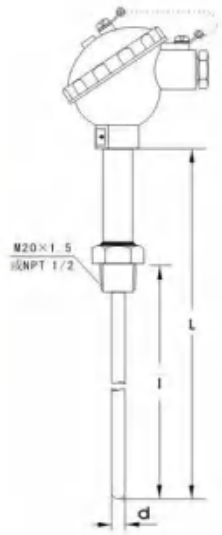
★:1）型号73、73A为防水式，防护等级IP55；型号72、72A为防喷式，防护等级IP65；
Type 73,73A for water-proof type, proof class IP 55； Type 72,72A for anti-spray, proof class IP 65
2）如无特殊之约定，L仅为参考尺寸，热电偶插入深度应为热安装套管U尺寸；
L is for reference only if no special agreement, and the insert depth of the thermocouple shall be size U of thermowell.
3) 热安装套管形式详见《热安装套管图》
Please see more for thermowell at Thermowel Table at the end of this book

固定螺纹管接头式热电偶 Thermocouple w/ Fixed Thread Tube Connector

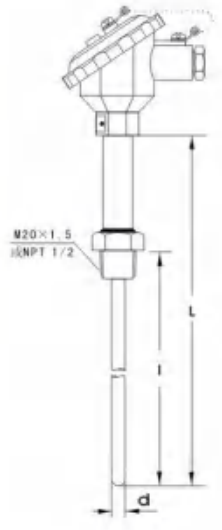
型号 Type	分度号 Graduation	测温范围℃ Measuring Range	螺纹规格 Thread Spec	保护管材料 Thermowell Material	规格 Specification D	规格 Specification l
WRM-82 WRM_2-82	N	0-1000	M20×1.5	1Cr18Ni9Ti		
WRM-82A WRM_2-82A			NPT1/2			
WRN-82 WRN_2-82	K		M20×1.5			
WRN-82A WRN_2-82A			NPT1/2			
WRE-82 WRE_2-82	E	0-700	M20×1.5			
WRE-82A 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			
WRM-83 WRM_2-83	N	0-1000	M20×1.5	1Cr18Ni9Ti		
WRM-83A WRM_2-83A			NPT1/2			
WRN-83 WRN_2-83	K		M20×1.5			
WRN-83A WRN_2-83A			NPT1/2			
WRE-83 WRE_2-83	E	0-700	M20×1.5			
WRE-83A WRE_2-83A			NPT1/2			
WRC-83 WRC_2-83	T	0-350	M20×1.5			
WRC-83A WRC_2-83A			NPT1/2			
WRF-83 WRF_2-83	J	0-600	M20×1.5			
WRF-83A WRF_2-83A			NPT1/2			

D: φ3, φ4, φ5, φ6, φ8

l: 250, 275, 300, 350, 400, 450, 550, 650, 750, 900, 1150



防喷式82 82A型
Anti-spray Type

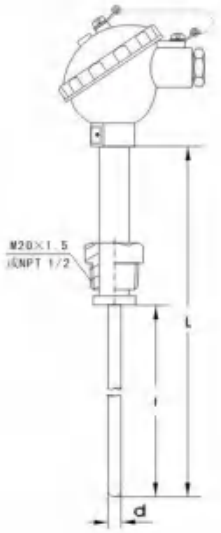


防水式83 83A型
Water-proof Type

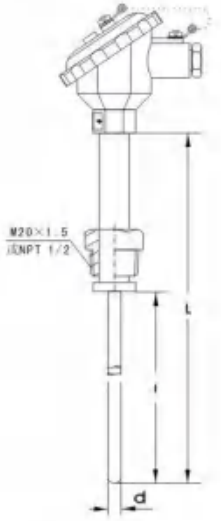
★:1）型号83、83A为防水式，防护等级IP55；型号82、82A为防喷式，防护等级IP65；
Type 83,83A for water-proof type, protection class IP 55； Type 82,82A for anti-spray, protection class IP 65
2）如无特殊之约定，L仅为参考尺寸，热电偶插入深度应为热安装套管U尺寸；
L is for reference only if no special agreement and the insert depth of the thermocouple shall be size U of thermowell.
3)热安装套管形式详见《热安装套管图》
Please see more for thermowell at Thermowel Table at the end of this book

● 活动螺纹接头式热电偶 Thermocouple w/ Moveable Thread Connector

型号 Type	分度号 Graduation	测温范围℃ Measuring Range	螺纹规格 Thread Spec	保护管材料 Thermowell Material	规格 Specification d	规格 Specification l
WRM-92 WRM_2-92	N	0-1000	M20×1.5	1Cr18Ni9Ti	Φ3	245
WRM-92A WRM_2-92A			NPT1/2			270
WRN-92 WRN_2-92	K		M20×1.5			295
WRN-92A WRN_2-92A			NPT1/2			345
WRE-92 WRE_2-92	E	0-700	M20×1.5		Φ4	395
WRE-92A WRE_2-92A			NPT1/2			445
WRC-92 WRC_2-92	T	0-350	M20×1.5		Φ5	545
WRC-92A WRC_2-92A			NPT1/2			645
WRF-92 WRF_2-92	J	0-600	M20×1.5		Φ6	745
WRF-92A WRF_2-92A			NPT1/2			899
WRM-93 WRM_2-93	N	0-1000	M20×1.5	1Cr18Ni9Ti	Φ8	1149
WRM-93A WRM_2-93A			NPT1/2			
WRN-93 WRN_2-93	K		M20×1.5			
WRN-93A WRN_2-93A			NPT1/2			
WRE-93 WRE_2-93	E	0-700	M20×1.5			
WRE-93A WRE_2-93A			NPT1/2			
WRC-93 WRC_2-93	T	0-350	M20×1.5			
WRC-93A WRC_2-93A			NPT1/2			
WRF-93 WRF_2-93	J	0-600	M20×1.5			
WRF-93A WRF_2-93A			NPT1/2			



防喷式92 92A型
Anti-spray Type

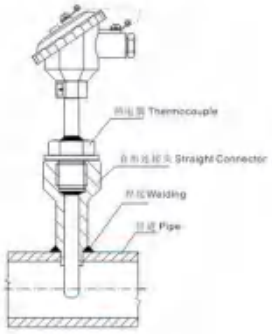


防水式93 93A型
Water-proof Type

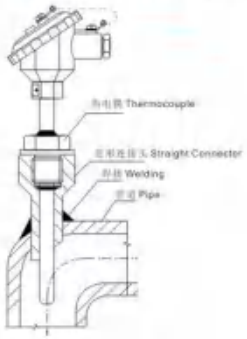
★:1）型号93、93A为防水式，防护等级IP55；型号92、92A为防喷式，防护等级IP65；
Type 93,93A for water-proof type, protection class IP 55； Type 92,92A for anti-spray, protection class IP 65
2）如无特殊之约定，L仅为参考尺寸，热电偶插入深度应为热安装套管U尺寸；
L is for reference only if no special agreement and the insert length of the thermocouple shall be size U of thermowell.
3）热安装套管形式详见《热安装套管图》
Please see more for thermowell at Thermowel Table at the end of this book

热电偶安装示意图
Thermocouple Installation Diagram

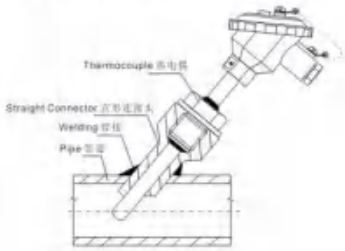
垂直管道安装方法
Installation Method of Vertical Pipe



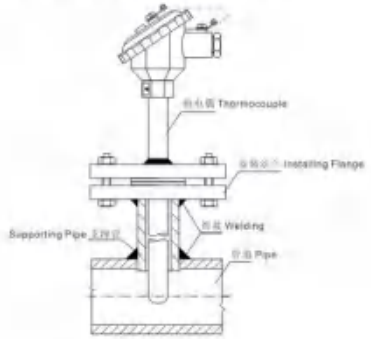
弯曲管道安装方法
Installation Method of Bending Pipe



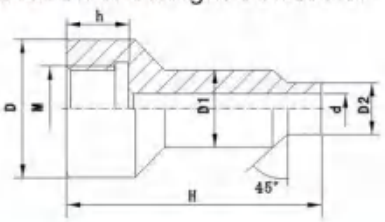
倾斜管道安装方法
Installation Method of Leaning Pipe



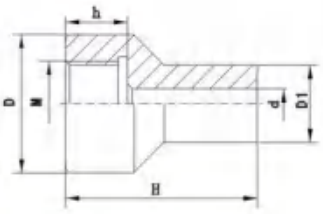
法兰安装方法
Flange Installation Method

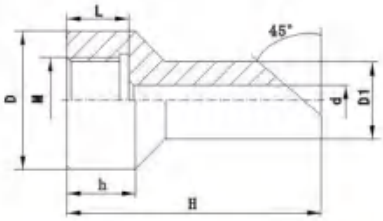


直形连接头规格
Specification of Straight Connector

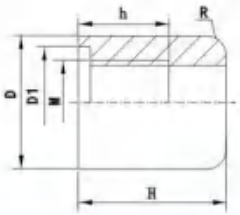


代号 Code	M	D	D_1	D_2	d	h	H
DH21A	M12×1.5	Φ24	Φ16	Φ12	Φ8	20	60
DH21B	M16×1.5	Φ24	Φ16	Φ12	Φ8	20	60
DH21C	M20×1.5	Φ28	Φ16	Φ12	Φ8	20	60
DH21D	M27×2	Φ39	Φ28	Φ24	Φ20	35	60
DH21E	M33×2	Φ48	Φ38	Φ30	Φ22	35	90
DH21F	NPT1/2	Φ28	Φ16	Φ12	Φ8	20	60
DH21G	NPT3/4	Φ39	Φ28	Φ24	Φ20	35	
DH21H	NPT1	Φ48	Φ38	Φ30	Φ22	35	90





代号 Code	M	D	D_1	d	h	H
DH22A	M12×1.5	Φ24	Φ16	Φ8	20	35
DH22B	M16×1.5	Φ24	Φ16	Φ8	20	35
DH22C	M20×1.5	Φ28	Φ16	Φ8	20	45
DH22D	M27×2	Φ39	Φ28	Φ20	35	60
DH22E	M33×2	Φ48	Φ38	Φ22	35	90
DH22F	NPT1/2	Φ28	Φ16	Φ8	20	45
DH22G	NPT3/4	Φ39	Φ28	Φ20	35	60
DH22H	NPT1	Φ48	Φ38	Φ22	35	90



代号Code	M	D	D_1	R	h	H
DH23A	M27×2	Φ47	Φ44	6	32	60
DH23B	M33×2	Φ55	Φ52	6	38	60

WZPK系列 WZPK Series

铠装热电阻

Sheathed Thermal Resistance

应用 Application

通常和显示仪表、记录仪表、计算机等配套使用。直接精确测量各种生产过程中的-200~+450℃范围内液体、蒸汽和气体介质以及固体表面温度。

It is usually cooperated with display meter, recording meter and computer etc., to measure the surface temperature of the mediums as liquid, steam and gas ranging from -200~+450℃ during various production processes directly.

特点 Features

- 热响应时间短，减小动态误差；
With short thermal response time, reducing dynamic error
- 直径小，可弯曲；
Small diameter, flexible
- 测量精确度高；
High measuring accuracy
- 进口薄膜电阻元件，性能可靠稳定；
Imported film resistor with reliability and stability

工作原理 Working Principle

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

It is based on that when temperature of object changes, the resistance will change accordingly, to measure temperature.When the resistance value changes, the working meter will display relevant temperature.

主要技术参数

Main Technical Parameters:

产品执行标准

Standard:

IEC751
IEC1515
JB/T 8623-2015
JB/T 8622-1997
GB/T 30121-2013

铠装热电阻保护管直径及材料

Thermowell Diameter & Material of Sheathed Thermal Resistance:

Type	套管直径 Diameter	套管材质Material
单支式 Simplex	Φ3	1Cr18Ni9Ti
	Φ4	
	Φ5	
	Φ6	
	Φ8	
双支式 Duplex	Φ3	
	Φ4	
	Φ5	
	Φ6	
	Φ8	

测温范围及允差 Measuring Range & Tolerance

型号 Type	分度号 Graduation	测温范围℃ Measuring Range	精度等级 Accuracy Class	允差 Tolerance
WZPK	Pt100	-200~+450	A级 Class A	±(0.15+0.002|t|)
			B级 Class B	±(0.30+0.005|t|)

注：t为感温元件实测温度绝对值

Notice: t is the absolute value of exact measured temperature

常温绝缘电阻

Insulation Resistance at Normal Temperature

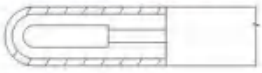
热电阻在环境温度为15~35℃，相对湿度不大于80%，试验电压为10~100V（直流）组电极与组电极、电极与外套管之间的绝缘电阻≥100MΩ。

The insulation resistance between one electrode group and the other, electrode and outer thermowell is ≥100M Ω.m under condition that environment temperature is 15~35℃, relative humidity is no more than 80%, testing voltage is 10~100V (D.C)

热响应时间 Thermal Response Time

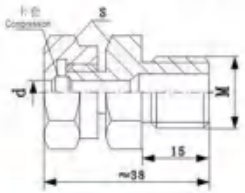
套管直径 Diameter	热响时间 $\tau_{0.5}$S Thermal Response Time t0.5 S
Φ3	≤3
Φ4	≤5
Φ5	≤6
Φ6	≤8
Φ8	≤10

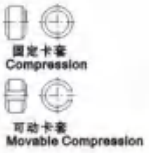
● 测量端结构形式
Measuring End Structure



● 安装固定形式
Mounting & Fixing Type

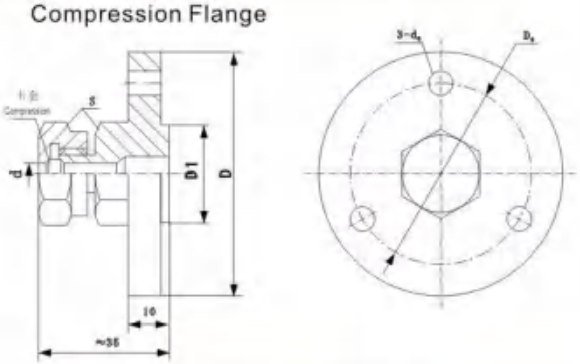
卡套螺纹式
Compression Thread





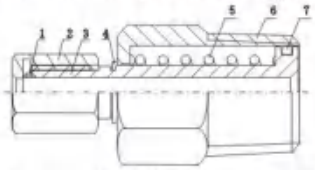
代号和尺寸 Code & Size	铠装阻外径d Outer Diameter				
	Φ8	Φ6	Φ5	Φ4	Φ3
M	M16×1.5			M12×1.5	
S	22			19	

卡套法兰式
Compression Flange



代号和尺寸 Code & Size	铠装电阻外径d Outer Diameter				
	Φ8	Φ6	Φ5	Φ4	Φ3
D	Φ60			Φ50	
D_0	Φ42			Φ36	
D_1	Φ24			Φ20	
S	22			19	
d_0	Φ9			Φ7	

●防震阻漏卡套螺纹
Shock-resistant & Anti-leakage Compression Thread

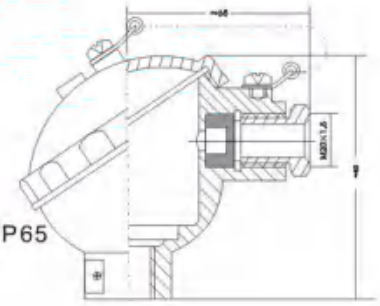


1 卡套　2 锁紧螺母　3 防震芯
4 卡簧　5 弹簧　6 固定螺纹　7 阻漏圈

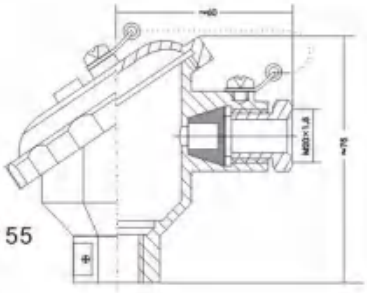
1.Compression　2.Locking Nut　3.Shock-resistance Core
4.Compression Spring　5.Spring　6.Ffixing Thread　7.Aanti-leakage Ring

● 接线盒形式
Connection Box Type

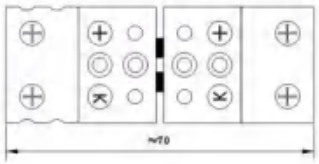
防喷式
Anti-spray type
防护等级：IP65
Protection Class: IP65



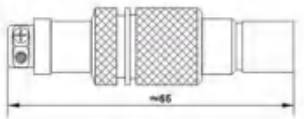
防水式
Water-proof type
防护等级：IP55
Protection Class: IP 55

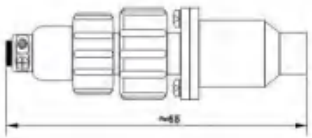


扁接插式
Flat Plug Type

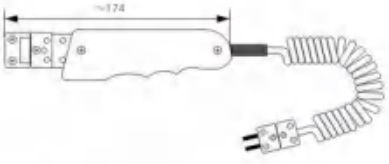


圆接插式
Round Plug Type

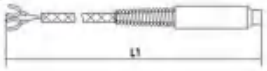




手柄式
Handle type



补偿导线式
Compensation Wire Type



型号命名方法 Naming

W 温度仪表 Temperature Instrument

Z 热电阻 Thermal Resistance

P 感温元件材料 Thermal Element Materials （Pt100）

K 铠装式 Sheathed

偶丝对数 Wire Pairs

无	单支 Blank Simplex
2	双支 2 Duplex

安装固定形式 Mounting & Fixing

1	无固定装置 W/o Fixing Device
2	固定卡套螺纹 Fixed Compression Thread
3	活动卡套螺纹 Movable Compression Thread
4	固定卡套法兰 Fixed Compression Flange
5	活动卡套法兰 Movable compression Flange
6	防震阻漏卡套螺纹 Shock-resistant & Anti-leakage Compression Thread

接线盒形式 Connection Box

0	接线座式 Connection Seat
2	防喷式 Anti-spray
3	防水式 Water-proof
6	圆接插式 Round Plug
7	扁接插式 Flat Plug
8	小接线盒式 Small Connection Box
9	补偿导线式 Compensation Wire

保护管直径 Diameter of Thermowell

3	Φ3
4	Φ4
5	Φ5
6	Φ6
8	Φ8

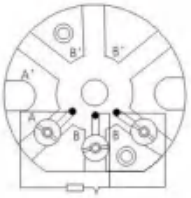
W Z P K $_{2}$ — 2 3 4 典型型号示例 Example of Classical Name

型号及规格 Type & Specification:

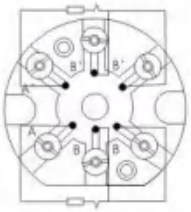
● 感温元件 Thermal Elements

型 号 Type	分度号 Graduation	测量范围℃ Measuring Range	精度等级 Accuracy Class	偶丝对数 Wire Pairs
WZPK-103	Pt100	-200~+450	A级或B级 Class A or Class B	单支 Simplex.
WZPK-104				
WZPK-105				
WZPK-106				
WZPK-108				
WZPK$_2$-104				双支 Duplex.
WZPK$_2$-105				
WZPK$_2$-106				
WZPK$_2$-108				

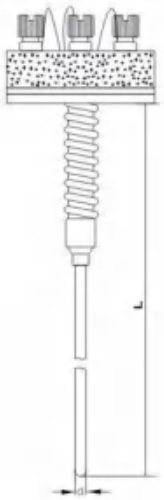
● 接线方式 Wiring Method



单支接线方法
Wiring Method (simplex)



双支接线方法
Wiring Method (duplex)



防震式
Shaking-proof Type

选型须知 Selection Notice

1）型号
Type
2）分度号
Graduation
3）精度等级
Accuracy class
4）安装固定形式
Mounting & Fixing type
5）长度或插入深度
Length or insert depth

例A：铠装热电阻，Pt100型，A级，固定螺纹M16×1.5，长度、防喷式接线盒450mm，插入长度300mm。

WZPK-226，Pt100，L=450×300，A级，M16×1.5

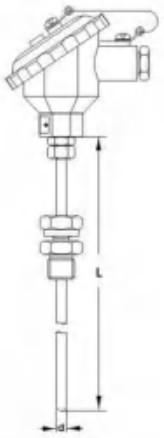
E.g.: Sheathed thermal resistance, type Pt100, Class A, fixed thread M16X1.5, length, anti-spray connection is 400mm, insert depth 300mm
WZPK-226，Pt100, L=450×300, Class A,M16×1.5

● 防水式铠装热电阻
Water-proof Sheathed Thermal Resistance

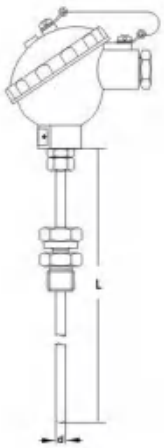
型 号 Type	分度号 Graduation	测量范围℃ Measuring Range	精度等级 Accuracy Class	安装固定装置 Mounting & Fixing Device
WZPK-133	Pt100	-200∽+450	A级或B级 Class A or Class B	无固定装置 W/o Fixing Device
WZPK-134				
WZPK-135				
WZPK-136				
WZPK-138				
WZPK$_2$-134				
WZPK$_2$-135				
WZPK$_2$-136				
WZPK$_2$-138				
WZPK-233				固定卡套螺纹 Fixed Compression Thread
WZPK-234				
WZPK-235				
WZPK-236				
WZPK-238				
WZPK$_2$-234				
WZPK$_2$-235				
WZPK$_2$-236				
WZPK$_2$-238				
WZPK-333				可动卡套螺纹 Movable Compression Thread
WZPK-334				
WZPK-335				
WZPK-336				
WZPK-338				
WZPK$_2$-334				
WZPK$_2$-335				
WZPK$_2$-336				
WZPK$_2$-338				
WZPK-433				固定卡套法兰 Fixed Compression Flange
WZPK-434				
WZPK-435				
WZPK-436				
WZPK-438				
WZPK$_2$-434				
WZPK$_2$-435				
WZPK$_2$-436				
WZPK$_2$-438				
WZPK-533				可动卡套法兰 Movable Compression Flange
WZPK-534				
WZPK-535				
WZPK-536				
WZPK-538				
WZPK$_2$-534				
WZPK$_2$-535				
WZPK$_2$-536				
WZPK$_2$-538				

13□型

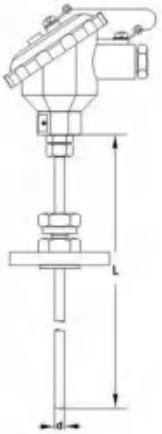
12□型



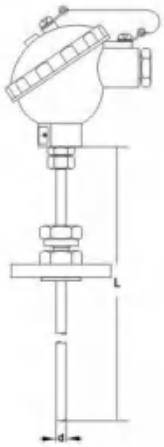
23□型
33□型



22□型
32□型



43□型
53□型



42□型
52□型

圆接插式铠装热电阻
Round Plug Type Sheathed Thermal Resistance

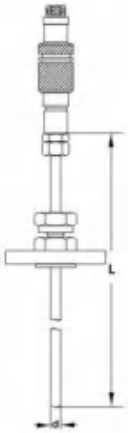
型 号 Type	分度号 Graduation	测量范围℃ Measuring Range	精度等级 Accuracy Class	安装固定装置 Mounting & Fixing Device
WZPK-163	Pt100	-200~+450	A级或B级 Class A or Class B	无固定装置 W/o Fixing Device
WZPK-164				
WZPK-165				
WZPK-166				
WZPK-168				
WZPK$_2$-164				
WZPK$_2$-165				
WZPK$_2$-166				
WZPK$_2$-168				
WZPK-263				固定卡套螺纹 Fixed Compression Thread
WZPK-264				
WZPK-265				
WZPK-266				
WZPK-268				
WZPK$_2$-264				
WZPK$_2$-265				
WZPK$_2$-266				
WZPK$_2$-268				
WZPK-363				可动卡套螺纹 Movable Compression Thread
WZPK-364				
WZPK-365				
WZPK-366				
WZPK-368				
WZPK$_2$-364				
WZPK$_2$-365				
WZPK$_2$-366				
WZPK$_2$-368				
WZPK-463				固定卡套法兰 Fixed Compression Flange
WZPK-464				
WZPK-465				
WZPK-466				
WZPK-468				
WZPK$_2$-464				
WZPK$_2$-465				
WZPK$_2$-466				
WZPK$_2$-468				
WZPK-563				可动卡套法兰 Movable Compression Flange
WZPK-564				
WZPK-565				
WZPK-566				
WZPK-568				
WZPK$_2$-564				
WZPK$_2$-565				
WZPK$_2$-566				
WZPK$_2$-568				

16□型

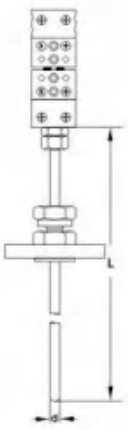
17□型

26□型
36□型

27□型
37□型



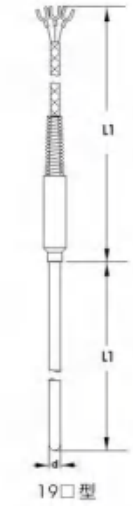
46□型
56□型



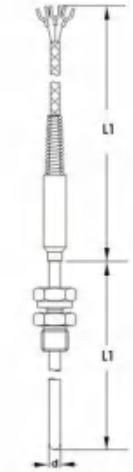
47□型
57□型

● 电缆式铠装热电阻
Cable Type Sheathed Thermal Resistance

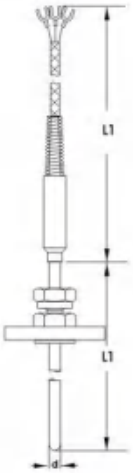
型 号 Type	分度号 Graduation	测量范围℃ Measuring Range	精度等级 Accuracy Class	安装固定装置 Mounting & Fixing Device
WZPK-193	Pt100	-200~+450	A级或B级 Class A or Class B	无固定装置 W/o Fixing Device
WZPK-194				
WZPK-195				
WZPK-196				
WZPK-198				
WZPK$_2$-194				
WZPK$_2$-195				
WZPK$_2$-196				
WZPK$_2$-198				
WZPK-293				固定卡套螺纹 Fixed Compression Thread
WZPK-294				
WZPK-295				
WZPK-296				
WZPK-298				
WZPK$_2$-294				
WZPK$_2$-295				
WZPK$_2$-296				
WZPK$_2$-298				
WZPK-393				可动卡套螺纹 Movable Compression Thread
WZPK-394				
WZPK-395				
WZPK-396				
WZPK-398				
WZPK$_2$-394				
WZPK$_2$-395				
WZPK$_2$-396				
WZPK$_2$-398				
WZPK-493				固定卡套法兰 Fixed Compression Flange
WZPK-494				
WZPK-495				
WZPK-496				
WZPK-498				
WZPK$_2$-494				
WZPK$_2$-495				
WZPK$_2$-496				
WZPK$_2$-498				
WZPK-593				可动卡套法兰 Movable Compression Flange
WZPK-594				
WZPK-595				
WZPK-596				
WZPK-598				
WZPK$_2$-594				
WZPK$_2$-595				
WZPK$_2$-596				
WZPK$_2$-598				



19□型



29□型
39□型



49□型
59□型

WZP系列

装配热电阻
Assembly Thermal Resistance

应用 Application

通常和显示仪表、记录仪表、电子计算机等配套使用。直接测量生产过程中的-200～+450℃范围内液体、蒸汽和气体介质以及固体表面温度。

It is usually connected with display meter, recording meter and computer etc. to directly measure the tem perature of liquid, vapor, gas and solid surface ranging from -200 to 450℃ during various production processes.

特点 Features

- 结构简单、稳定性好
  Simple structure and good stability performance
- 测量精确度高；
  High measuring accuracy
- 机械强度高，耐压性能好；
  High mechanical strength, good pressure-resisting performance

工作原理 Working Principle

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。

It is based on that when temperature of object changes, the resistance will change accordingly, to measure temperature.When the resistance value changes, the working meter will display relevant temperature.

主要技术参数
Main Technical Parameters

- 产品执行标准
  Standard:

  IEC751
  JB/T 8622-1997
  JB/T 8623-2015
  GB/T 30121-2013

- 常温绝缘电阻
  Insulation Resistance at Normal Temperature

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），铂热电阻的绝缘电阻应不小于100MΩ；铜热电阻的绝缘电阻应不小于50MΩ。

The insulation resistance of Pt thermal resistance shall be no less than 100MΩ, and the insulation resistance of Cu thermal resistance should be no less than 50MΩ under condition that environment temperature is 15~35℃, relative humidity is no more than 80%, testing voltage is 10~100V (D.C).

- 热响应时间 Thermal Response Time

在温度出现阶跃变化时，热电阻的输出变化至相当于该跃变化的50%，所需的时间称为热响应时间，用 $\tau_{0.5}$表示。

When the temperature has step-jumping change, the needed time for output of thermocouple changes to 50% of the step-jumping change, this time is called thermal response time, indicating with τ 0.5.

- 公称压力 Nominal Pressure

一般是指在工作温度下保护管所能承受的静态外压而不破裂。实际上，工作压力不仅与保护管材料、直径、壁厚有关，还与热电偶结构形式，安装方法、置入深度以及被介质的流速和种类等有关。

It is usually means the static outer pressure which the protection tube can offer and will not be broken the working temperature. In fact, working pressure not only has relationship with with protection tube material, diameter and thickness of wall, but also the structure form, installation method, inserting depth and the flow speed and type of the medium etc.

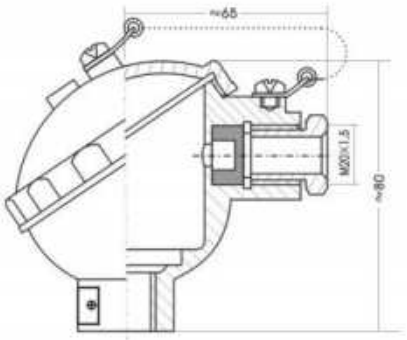
测温范围及允差
Measuring Range & Tolerance

型号 Type	分度号 Graduation	测温范围℃ Measuring range	精度等级 Accuracy class	允许偏差 Tolerance allowed
WZP	Pt100	-200~+450	A级 Class	±(0.15+0.002|t|)
			B级 Class	±(0.30+0.005|t|)
WZC	Cu50 Cu100	-50~+150	-	±(0.30+0.006|t|)

注：t为感温元件实测温度绝对值
Notice: t is the absolute value of exact measured temperature

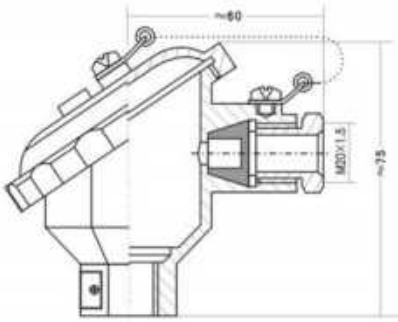
接线盒形式
Connection Box Type

防喷式
Anti-spray Type



防护等级 IP 65
Protection Class: IP 65

防水式
Water-proof Type



防护等级 IP 55
Protection Class: IP 55

注：电气出口M未特殊指明，一律视为M20×1.5

Notice:
The electric exit shall be considered as M20×1.5 if no indication

型号命名方法 Naming

W 温度仪表 Temperature Instrument

Z 热电阻 Thermal Resistance

感温元件材料 Thermal Element Materials

P	铂 Pt
C	铜 Cu

偶丝对数 Wire pairs

无	单支 Blank Simplex
2	双支 2 Duplex

安装固定形式 Mounting & Fixing

1	无固定装置 W/o
2	固定螺纹 Fixed Thread
3	活动法兰 Movable Flange
4	固定法兰 Fixed Flange
5	固定螺纹锥形保护管 Fixed Thread Wimble Thermowell

接线盒形式 Connection Box

2	防喷式 Anti-spray
3	防水式 Water-proof

保护管直径 Diameter of Thermowell

0	Φ16
1	Φ12

工作端形式 Type of Measuring End

G	变截面 Variable section

W	Z	P	2	—	2	2	0	G	典型型号示例 Example of Classical Name

感温元件 Thermal Elements

热电阻元件是测温仪表的基本结构之一，可分为铜热电阻元件和铂热电阻元件两大类，铜热电阻元件测温范围低，铂热电阻测温范围高，精度灵敏。

热电阻元件是一种温度传感器，其工作原理是：在温度作用下，电阻丝的电阻随之变化而变化。可用于测量-200~+450℃范围内的温度。与热电偶相比，其优点是：电气性能好，温度和电阻关系近于线性，偏差较小，且随着使用时间的增长偏差可忽略。

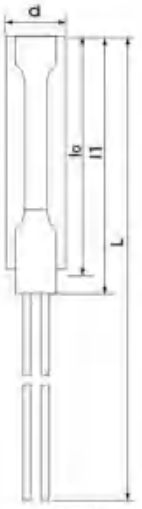
我公司生产的WZP系列铂热电阻元件，具有精确、灵敏、稳定等良好性能，结构小，可靠性好，热响应时间短，可做成多产品多规格的系列产品，为石油、化工、电力、轻工、机械、科研等行业提供新一代优质品。

Thermal resistor is one of basic structures of measuring instrument, including two types as Cu thermal resistor and Pt thermal resistor, Cu thermal resistor has lower measuring range and Pt thermal resistor has higher measuring range and acute accuracy.

Thermal resistor is a temperature sensor, its working principle is:

The resistance of resistance filament changes along with temperature under temperature effect. It is applicable for measuring temperature ranging from -200 to +450℃. It has following advantages comp-ared with thermocouple: good electric-gas performance, the relation between temperature and resi-stance is near tolinearity, less tolerance, the tolerance shall be ignorant with operation time increasing.

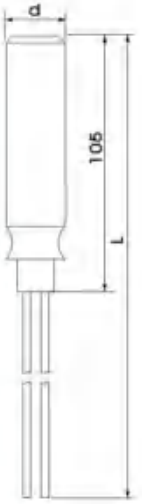
The WZP series Pt thermal resistor we produced has good accuracy, acute, stable etc. performances, small structure, good stability, short thermal response time. It can be made into series products with multi products and multi specifications, which supply the new generation products with favorable quality to petroleum, chemical industries, power, mechanism, light industry and technology research etc.



WZP-010、
WZP-011

骨架式热电阻元件 Skeleton Type Thermal Resistor

热电阻类别 Thermal Resistance Type	产品型号 Model #	分度号 Graduation	测温范围℃ Measuring Range	保护管材料 Thermowell Material	规格 Specification 直径 d mm Diameter	总长 Lmm Total length	Ln mm	L1 mm	热响应时间 t0.5(S) TRT
单支铂热电阻感温元件 Pt (Simplex)	WZP-010	Pt100 (BA1、BA2)*	-200~450	外保护层为1Cr18Ni9Ti不锈钢薄片 Outer protection is 1Cr18Ni9TiStainless steel film	φ12	300 350 450 550 650 900 1150 1400 1650 2150	85	105	<45
双支铂热电阻感温元件 Pt (Duplex)	WZP2-010								
单支铂热电阻感温元件 Pt (Simplex)	WZP-011				φ8	300 350 450 550	65	80	<15
双支铂热电阻感温元件 Pt (Duplex)	WZP2-011								
铜热电阻感温元件 Cu	WZC-010A	Cu50 (G)*	-50~+150	柴铜管 Cu tube	φ8	300 350 450 550 650 900 1150 1400 1650 2150			<20
铂热电阻感温元件 Pt	WZP-035S	Pt100	-50~+450	不锈钢套管 Stainless steel tube	φ6		35		<5
铜热电阻感温元件 Cu	WZC-011	Cu50 (G)*	-50~+150	不锈钢套管 Stainless steel Tube	φ4		25		<3



WZC-010A

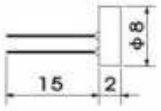
WZP-035S、WZC-001

注：①打"*"分度号作特殊规格订货；
It should be ordered as special specification if marked with *

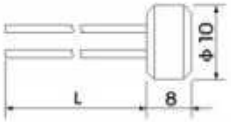
●薄膜式端面铂热电阻元件

Film Section Pt Thermal Resistor

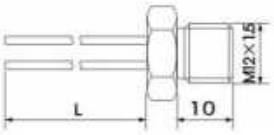
产品型号 Model Number	分度号 Graduation	测温范围℃ Measuring Range	精度等级 Accuracy Class	保护管材料 Thermowell Material	热响应时间 τ 0.5(S) TRT
WZPM-018	Pt100	-200~+450	B	陶 瓷 Ceramic	≤0.5
WZPM-0110		-50~+150	B	1Cr18Ni9Ti	≤5
WZPM-2012		-50~+150	B	1Cr18Ni9Ti	≤10



WZPM-018



WZPM-0110

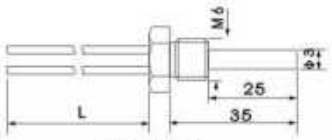


WZPM-2012

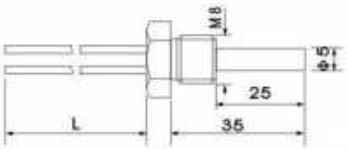
●内绕式铂热电阻元件

Inner-circling Pt Thermal Resistor

产品型号 Model Number	分度号 Graduation	测温范围℃ Measuring Range	精度等级 Accuracy Class	套管材料 Thermowell Material	热响应时间 τ 0.5(S) TRT
WZP-203S	Pt100	-50~+150	B	1Cr18Ni9Ti	≤5
WZP-205S		-50~+150	B	1Cr18Ni9Tii	≤5



WZP-203S



WZPM-205S

感温元件 Thermal Element

名称 Name	型号 Type	分度号 Graduation	测温范围℃ Measuring Range	规格Specification D	规格Specification L
单支铂热电阻 Pt Thermal Resistance (Simplex.)	WZP-105	Pt100	-200~500	φ3 φ4 φ5 φ6	310 360 410 460 510 560
双支铂热电阻 Pt Thermal Resistance (Duplex.)	WZP_2-105				

防喷式120 121型
Anti-spray Type

防水式130 131型
Water-proof Type

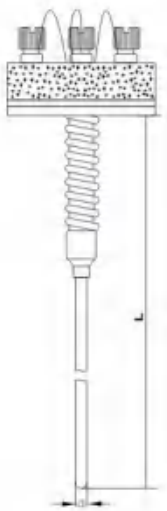
无固定装置热电阻
Thermal Resistance W/ Fixing Device

型号 Type	分度号 Graduation	测温范围℃ Measuring Range	热响应时间 TRT	规格Specification D	规格Specification L
WZP-120 WZP_2-120	Pt100	-200~+450	<90S	φ16	300 350 400 450 500 550 650 900 1150 1650 2150
WZP-120G WZP_2-120G			<24S		
WZP-121 WZP_2-121			<45S	φ12	
WZP-121G WZP_2-121G			<24S		
WZP-130 WZP_2-130			<90S	φ16	
WZP-130G WZP_2-130G			<24S		
WZP-131 WZP_2-131			<45S	φ12	
WZP-131G WZP_2-131G			<24S		
WZC-120	Cu50 CU100	-50~+150	<120S	φ16	
WZC-120G			<40S		
WZC-130			<120S		
WZC-130G			<40S		
WZC-121			<120S	φ12	
WZC-121G			<40S		
WZC-131			<120S		
WZC-131G			<40S		

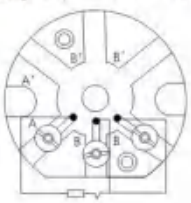
防喷式120G 121G型
Anti-spray Type

防水式130G 131G型
Water-proof Type

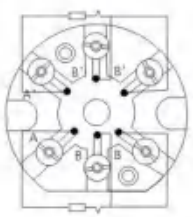
注：1、保护管材质为304S，其余材质可协议订货
The material of thermowell is 304S, other materials can due to agreement.
2、变截面型式为铠装元件
The variable section is sheathed elements.
3、其余长度可协议订货
The other length can be ordered by agreement.



接线方式 Wiring Method



单支接线方法
Wring Method (Simplex)

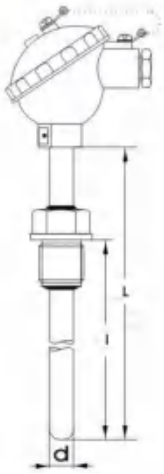


双支接线方法
Wring Method (Duplex.)

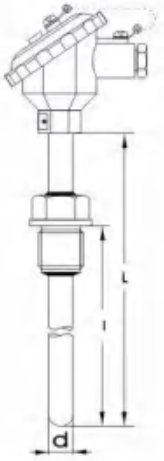
●固定螺纹式热电阻

Thermal Resistance w/ Fixed Thread

型 号 Type	分度号 Graduation	测温范围℃ Measuring Range	热响应时间 TRT	规 格 Specification D	规 格 Specification L×I
WZP-220 WZP$_2$-220	Pt100	-200∽+450	≤60S	Φ16	300×150 350×200 400×250 450×300 500×350 550×400 650×500 900×750 1150×1000 1650×1500 2150×2000
WZP-220G WZP$_2$-220G			≤24S		
WZP-221 WZP$_2$-221			≤45S	Φ12	
WZP-221G WZP$_2$-221G			≤24S		
WZP-230 WZP$_2$-230			≤60S	Φ16	
WZP-230G WZP$_2$-230G			≤24S		
WZP-221 WZP$_2$-221			≤45S	Φ12	
WZP-221G WZP$_2$-221G			≤24S		
WZC-220	Cu50 CU100	-50∽150	≤90S	Φ16	
WZC-220G			≤24S		
WZC-230			≤90S		
WZC-230G			≤24S		
WZC-221			≤90S	Φ12	
WZC-221G			≤24S		
WZC-231			≤90S		
WZC-231G			≤24S		



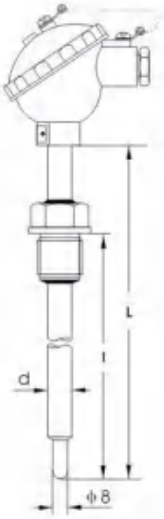
防喷式220 221型
Anti-spray Type



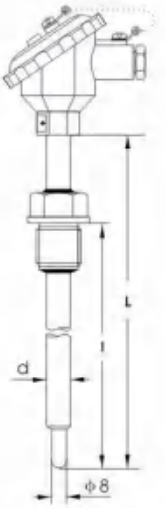
防水式230 231型
Water-proof Type

注：1、保护管材质为304S，其余材质可协议订货
The material of thermowell is 304S, other materials can due to agreement.
2、变截面型式为铠装元件
The variable section is sheathed elements.
3、其余长度可协议订货
The other length can be ordered by agreement.

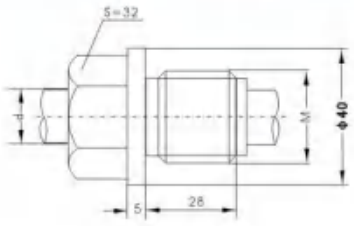
型号示列 Type Name	螺纹规格 Thread Specification 代号 Code	螺纹规格 Thread Specification M	公称压力 NP Mpa
WZP-230		M27×2	10
WZP-230A	A	G3/4	
WZP-230C	C	NPT3/4	
WZP-231G		M27×2	
WZP-231GA	A	G3/4	
WZP-231GC	C	NPT3/4	



防喷式220G 221G型
Anti-spray Type



防水式230G 231G型
Water-proof Type



安装固定型式：固定螺纹
Installation: Fixed Thread

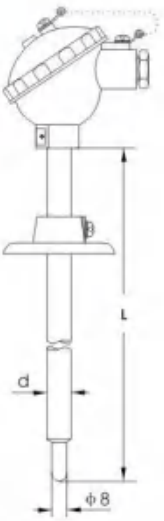
● 活动法兰式热电阻
Thermal Resistance W/ Moveable Flange

型 号 Type	分度号 Graduation	测温范围℃ Measuring Range	热响应时间 TRT	规 格 Specification D	L
WZP-320 WZP$_2$-320	Pt100	-200∽+450	<90S	φ16	300 350 400 450 500 550 650 900 1150 1650 2150
WZP-320G WZP$_2$-320G			<24S		
WZP-321 WZP$_2$-321			<45S	φ12	
WZP-321G WZP$_2$-321G			<24S		
WZP-330 WZP$_2$-330			<90S	φ16	
WZP-330G WZP$_2$-330G			<24S		
WZP-321 WZP$_2$-321			<45S	φ12	
WZP-321G WZP$_2$-321G			<24S		
WZC-320	Cu50 CU100	-50∽150	<120S	φ16	
WZC-230G			<40S		
WZC-330			<120S		
WZC-330G			<40S		
WZC-321			<120S	φ12	
WZC-321G			<40S		
WZC-331			<120S		
WZC-331G			<40S		

防喷式320 321型
Anti-spray Type

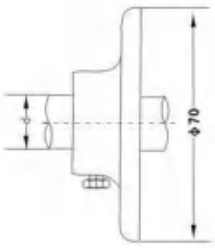
防水式330 331型
Water-proof Type

注：1、保护管材质为3045S，其余材质可协议订货
The material of thermowell is 3045S, other materials can due to agreement.
2、变截面型式为铠装元件
The variable section is sheathed elements.
3、其余长度可协议订货
The other length can be ordered by agreement.



防喷式320G 321G型
Anti-spray Type

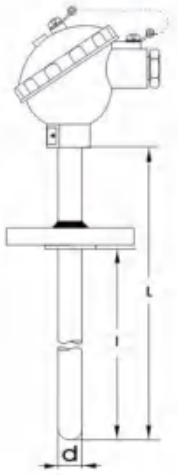
防水式330G 331G型
Water-proof Type



安装固定型式：活动法兰
Installation: Movable Flange

固定法兰式热电阻
Thermal Resistance w/ Fixed Flange

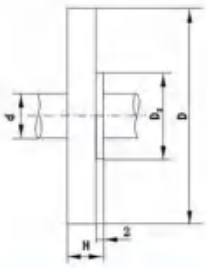
型号 Type	分度号 Graduation	测温范围℃ Measuring Range	热响应时间 TRT	规格 Specification	
				D	L×l
WZP-420 WZP$_2$-420	Pt100	-200∽+450	≤90S	Φ16	300×150 350×200 400×250 450×300 500×350 550×400 650×500 900×750 1150×1000 1650×1500 2150×2000
WZP-420G WZP$_2$-420G			≤24S		
WZP-421 WZP$_2$-421			≤45S	Φ12	
WZP-421G WZP$_2$-421G			≤24S		
WZP-430 WZP$_2$-430			≤90S	Φ16	
WZP-430G WZP$_2$-430G			≤24S		
WZP-421 WZP$_2$-421			≤45S	Φ12	
WZP-421G WZP$_2$-421G			≤24S		
WZC-420	Cu50 CU100	-50∽150	≤120S	Φ16	
WZC-420G			≤40S		
WZC-430			≤120S		
WZC-430G			≤40S		
WZC-421			≤120S	Φ12	
WZC-421G			≤40S		
WZC-431			≤120S		
WZC-431G			≤40S		

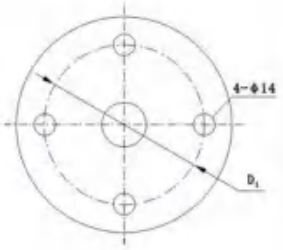


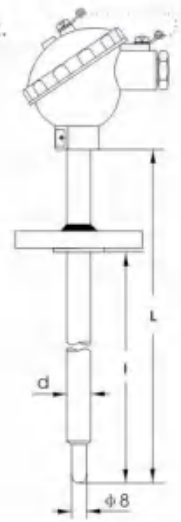
防喷式420 421型
Anti-spray Type

防水式430 431型
Water-proof Type

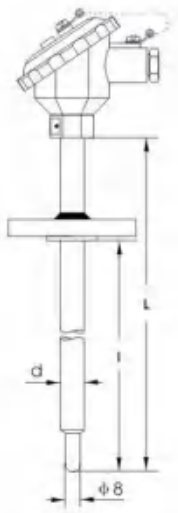
注：1、保护管材质为3045S，其余材质可协议订货
The material of thermowell is 3045S, other materials can due to agreement.
2、变截面型式为铠装元件
The variable section is sheathed elements.
3、其余长度可协议订货
The other length can be ordered by agreement.







防喷式420G 421G型
Anti-spray Type



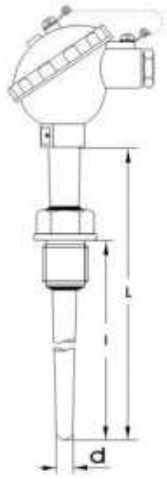
防水式430G 431G型
Water-proof Type

型号示例 Type	法兰规格 Flange Specification					公称压力NP Mpa
	D	D 1	D 2	H	d	
WZP-420	Φ105	Φ75	Φ55	16	Φ16	2.5
WZP-420G	Φ105	Φ75	Φ55			
WZP-421	Φ105	Φ75	Φ55	16	Φ16	
WZP-421G	Φ105	Φ75	Φ55			

固定螺纹锥形保护管热电阻
Thermal Resistance w/ Fixed Thread in Wimble Thermowell

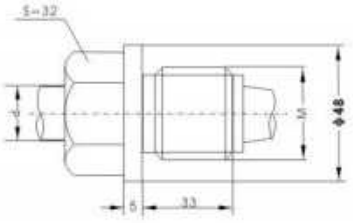
型号 Type	分度号 Graduation	测温范围℃ Measuring Range	热响应时间 TRT	规格 Specification	
				D	L×I
WZP-620 WZP$_2$-620	Pt100	-200～+450	≤90S	Φ15	300×150 350×200 400×250 450×300 500×350 550×400 650×500
WZP-620A WZP$_2$-620A			≤90S		
WZP-620 WZP$_2$-620			≤90S		
WZP-620A WZP$_2$-620A			≤90S		

注：1、保护管材质为1Cr18Ni9Ti，其余协议订货；
The material of thermowell is 1Cr18Ni9Ti, others will be ordered due to agreement.
2、元件为铠装式
Element is sheathed.

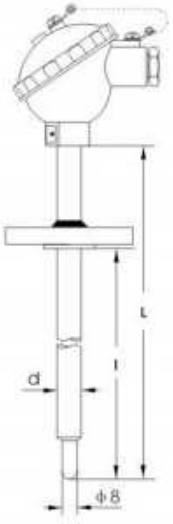


防喷式620 620A型
Anti-spray Type

型号示例 Type Model	螺纹规格 Thread Specification		公称压力 NP Mpa
	代号 Code	M	
WZP-620		M33×2	≤30
WZP-620A	A	NPT1	
WZP-630		M33×2	
WZP-630A	A	NPT1	



安装固定型式：固定螺纹锥形保护管
Installation: Fixed Thread in Wimble Thermowell



防水式630 630A型
Water-proof Type

可拆卸式热电阻 Knock-down Thermocpuple

W 温度仪表 Temperature Instrument

Z 热电阻 Thermal Resistance

感温元件材料(铠.装式) Thermal Element Mterial (Sheathed)

P	Pt100
Z	Cu

偶丝对数 Wire Pairs

无	单支	Blank	Simplex
2	双支	2	Duplex

连接形式 Connection

5	活络管接头式	Elbow Tube Connector
7	直形管接头式	Straight Tube Connector
8	固定螺纹接头式	Fixed Thread Connector
9	活动螺纹接头式	Movable Thread Connector

接线装置形式

2	防喷式	Anti-spray
3	防水式	Water-proof

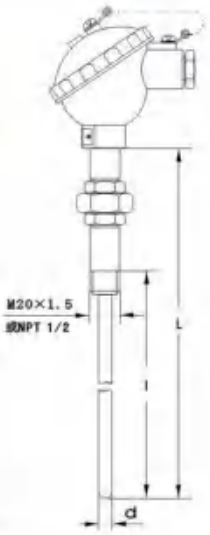
热安装套管形式见<热套管安装图>
Please refer to Thermowell Table

W Z P $_{2}$ — 5 2 典型型号示例 Example of Classical Name

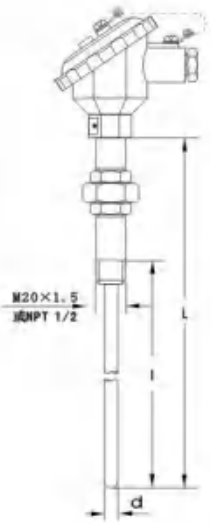
活络管接头式热电阻
Thermal Resistance w/ Movable Tube Connector

型号 type	分度号 Graduation	测温范围℃ Measuring Range	螺纹规格 Thread Specification	规格 Specification D	L
WZP-52 WZP$_2$-52	Pt100	-200～+450	M20×1.5	φ3 φ4 φ5 φ6 φ8	245 270 295 345 395 445 545 645
WZP-52A WZP$_2$-52A			NPT1/2		
WZP-53 WZP$_2$-53			M20×1.5		
WZP-53A WZP$_2$-53A			NPT1/2		
WZC-52	Cu50 CU100	-50～150	M20×1.5	φ5 φ6 φ8	745 899 1149
WZC-52A			NPT1/2		
WZC-53			M20×1.5		
WZC-53A			NPT1/2		

1）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尺寸计算；
L is for reference only if no special indication, and insert depthof thermocouple should be size U of thermowell.
2）热安装套管形式详见后面热安装套管型式图：
For thermowell type, pls refer to Thermowell Table at the end of this book.
3）元件为弹性铠装式元件
Elements are spring sheathed element.



防喷式52 52A型
Anti-spray Type

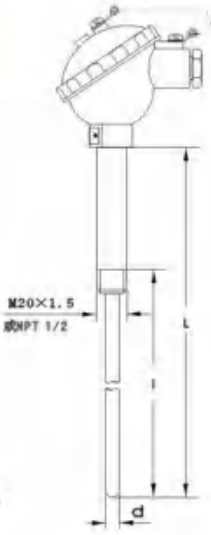


防水式53 53A型
Water-proof Type

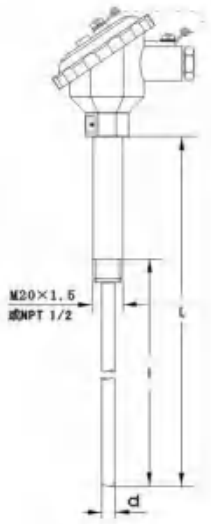
直形管接头式热电阻
Thermal Resistance w/ Straight Tube Connector

型号 type	分度号 Graduation	测温范围℃ Measuring Range	螺纹规格 Thread Specification	规格 Specification D	L
WZP-72 WZP$_2$-72	Pt100	-200～+450	M20×1.5	φ3 φ4 φ5 φ6 φ8	245 270 295 345 395 445 545 645
WZP-72A WZP$_2$-72A			NPT1/2		
WZP-73 WZP$_2$-73			M20×1.5		
WZP-73A WZP$_2$-73A			NPT1/2		
WZC-72	Cu50 CU100	-50～150	M20×1.5	φ5 φ6 φ8	745 899 1149
WZC-72A			NPT1/2		
WZC-73			M20×1.5		
WZC-73A			NPT1/2		

1）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尺寸计算；
L is for reference only if no special indication, and insert depthof thermocouple should be size U of thermowell.
2）热安装套管形式详见后面热安装套管型式图：
For thermowell type, pls refer to Thermowell Table at the end of this book.
3）元件为弹性铠装式元件
Elements are spring sheathed element.



防喷式72 72A型
Anti-spray Type

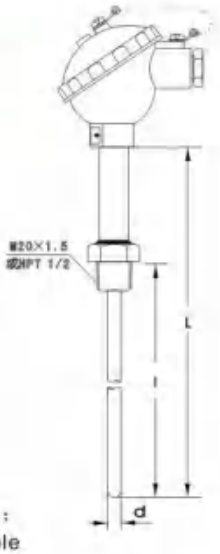


防水式73 73A型
Water-proof Type

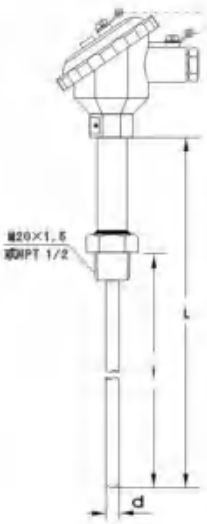
●固定螺纹管接头式热电阻
Thermal Resistance w/ Fixed Threaded Tube Connector

型 号 Type	分度号 Graduation	测温范围℃ Measuring Range	螺纹规格 Thread Specification	规格 Specification D	规格 Specification L
WZP-82 WZP$_2$-82	Pt100	-200～+450	M20×1.5	φ3 φ4 φ5 φ6 φ8	245 270 295 345 395 445 545 645 745 899 1149
WZP-82A WZP$_2$-82A			NPT1/2		
WZP-83 WZP$_2$-83			M20×1.5		
WZP-83A WZP$_2$-83A			NPT1/2		
WZC-82	Cu50 CU100	-50～150	M20×1.5	φ5 φ6 φ8	
WZC-82A			NPT1/2		
WZC-83			M20×1.5		
WZC-83A			NPT1/2		

1）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尺寸计算；
L is for reference only if no special indication, and insert depthof thermocouple should be size U of thermowell.
2）热安装套管形式详见后面热安装套管型式图；
For thermowell type, pls refer to Thermowell Table at the end of this book.
3）元件为弹性铠装式元件
Elements are spring sheathed element.



防喷式82 82A型
Anti-spray Type

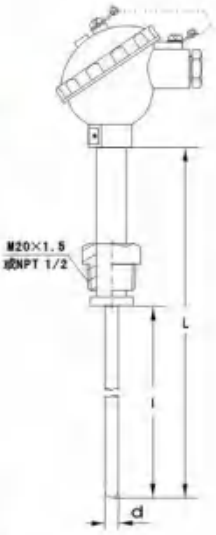


防水式83 83A型
Water-proof Type

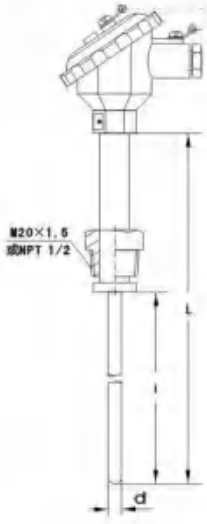
●活动螺纹管接头式热电阻
Thermal Resistance w/ Moveable Threaded Connector

型 号 Type	分度号 Graduation	测温范围℃ Measuring Range	螺纹规格 Thread Specification	规格 Specification D	规格 Specification L
WZP-92 WZP$_2$-92	Pt100	-200～+450	M20×1.5	φ3 φ4 φ5 φ6 φ8	245 270 295 345 395 445 545 645 745 899 1149
WZP-92A WZP$_2$-92A			NPT1/2		
WZP-93 WZP$_2$-93			M20×1.5		
WZP-93A WZP$_2$-93A			NPT1/2		
WZC-92	Cu50 CU100	-50～150	M20×1.5	φ5 φ6 φ8	
WZC-92A			NPT1/2		
WZC-93 WZC-93A			M20×1.5 NPT1/2		

1）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尺寸计算；
L is for reference only if no special indication, and insert depthof thermocouple should be size U of thermowell.
2）热安装套管形式详见后面热安装套管型式图；
For thermowell type, pls refer to Thermowell Table at the end of this book.
3）元件为弹性铠装式元件
Elements are spring sheathed element.



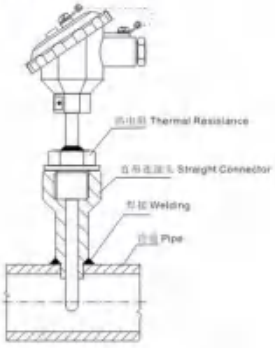
防喷式92 92A型
Anti-spray Type



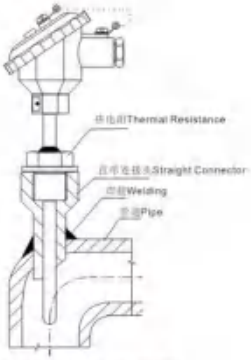
防水式93 93A型
Water-proof Type

热电阻安装示意图
Installation Sketch Map of Thermal Resistance

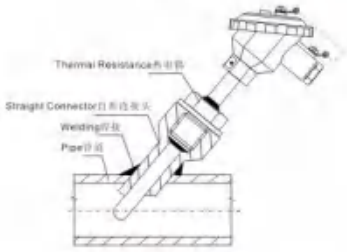
垂直管道安装方法
Vertical Pipe



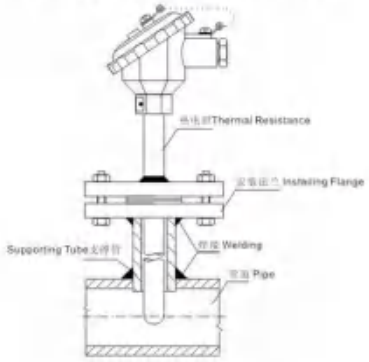
弯曲管道安装方法
Bending Pipe



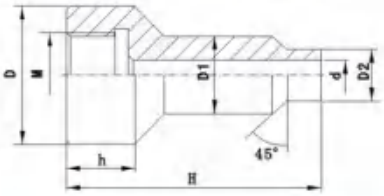
倾斜管道安装方法
Leaning Pipe



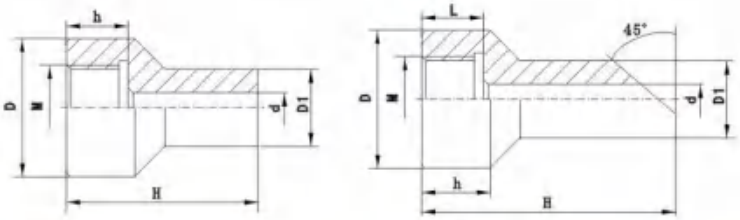
法兰安装方法
Flange Installation method



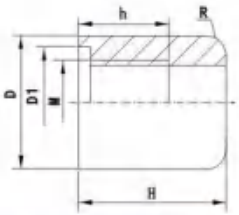
直形连接头规格
Straight Connector Specification



代号Code	M	D	D_1	D_2	d	h	H
DH21A	M12×1.5	ϕ24	ϕ16	ϕ12	ϕ8	20	60
DH21B	M16×1.5	ϕ24	ϕ16	ϕ12	ϕ8	20	60
DH21C	M20×1.5	ϕ28	ϕ16	ϕ12	ϕ8	20	60
DH21D	M27×2	ϕ39	ϕ28	ϕ24	ϕ20	35	60
DH21E	M33×2	ϕ48	ϕ38	ϕ30	ϕ22	35	90
DH21F	NPT1/2	ϕ28	ϕ16	ϕ12	ϕ8	20	60
DH21G	NPT3/4	ϕ39	ϕ28	ϕ24	ϕ20	35	
DH21H	NPT1	ϕ48	ϕ38	ϕ30	ϕ22	35	90



代 号Code	M	D	D_1	d	h	H
DH22A	M12×1.5	ϕ24	ϕ16	ϕ8	20	35
DH22B	M16×1.5	ϕ24	ϕ16	ϕ8	20	35
DH22C	M20×1.5	ϕ28	ϕ16	ϕ8	20	45
DH22D	M27×2	ϕ39	ϕ28	ϕ20	35	60
DH22E	M33×2	ϕ48	ϕ38	ϕ22	35	90
DH22F	NPT1/2	ϕ28	ϕ16	ϕ8	20	45
DH22G	NPT3/4	ϕ39	ϕ28	ϕ20	35	60
DH22H	NPT1	ϕ48	ϕ38	ϕ22	35	90



代号Code	M	D	D_1	R	h	H
DH23A	M27×2	ϕ47	ϕ44	6	32	60
DH23B	M33×2	ϕ55	ϕ52	6	38	60

WR/Z□系列

防爆 热电偶/阻

Explosion-proof Thermocouple / Thermal Resistance

应用 Application

通常和显示仪表、记录仪表、电子计算机等配套使用。直接测量生产现场存在碳氢化合物等爆炸的0~1300℃范围内液体、蒸汽和气体介质以及固体表面温度。

It is usually cooperated with display meter, recording meter and computer etc., to measure the surface temperature of the mediums as liquid, steam and gas ranging from 0~1300℃ during production locale which has explosive such as hydrocarbon compound.

特点 Features:

- 多种防爆形式，防爆性能好；
  Multi explosion-proof type, good explosion-proof performance
- 压簧式感温元件，抗振性能好；
  Spring thermal element with good shock-resistant performance
- 测量范围大；
  Wide measuring range
- 机械强度高，耐压性能好；
  High mechanical strength and good pressure-resistant performance

工作原理 Working Principle

防爆热电偶/阻利用间隙爆原理，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，从而进行测温。

Explosion-proof thermocouple/thermal resistance is making use of the clearance principle to design the connection box and other components with enough strength, and then seal all components which has dangers as fire, arc, and dangerous temperature in the connection box. When there is explosion in the cavity, the fire and temperature will not

主要技术参数 Main Technical Parameter

产品执行标准 Standard

IEC584
IEC751
IEC1515
GB 3836-2010
GB/T 30429-2013
GB26786-2011
JB/T8622-1997

常温绝缘电阻 Insulation Resistance at Normal Temperature

防爆热电偶在环境温度为15~35℃，相对湿度不大于80%，试验电压为500±50V（直流）电极及外套管之间的绝缘电阻≥100MΩ·m。

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）电阻及外套管之间的绝缘电阻≥100MΩ。

The explosion-proof thermocouple, the insulation resistance between electrode and protection tube is no less than 100M Ω.m under condition that environment temperature is 15~35℃, relative humidity is no more than 80% and testing voltage is 500+/-50V(D.C).

The explosion-proof thermal resistance, the insulation resistance between electrode and protection tube is no less than 100M Ω.m under condition that environment temperature is 15~35℃, relative humidity is no more than 80% and testing voltage is 10~100V (D.C).

注：对于铠装元件，其绝缘电阻值，则以铠装热电偶、阻的绝缘电阻值计算。

Notice: For sheathed element, the insulation resistance should be calculated from the insulation resistance of sheathed thermocouple and thermal resistance.

●热电偶测温范围及允差
Measuring Range & Tolerance of Thermocouple

型号	分度号	允差等级			
		I		II	
		允差值	测温范围℃	允差值	测温范围℃
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 ℃	-40~+133
		±0.004|t|	125~350	±0.0075|t|	133~350

●热电阻测温范围及允差
Measuring Range & Tolerance of Thermal Resistance

型号 Type	分度号 Graduation	测量范围 Measuring Range	精度等级 Accuracy Class	允许偏差 Tolerance
WZP	Pt100	-200~+500	A级	±(0.15+0.002|t|)
			B级	±(0.30+0.005|t|)

注：t为感温元件实测温度.
Notice: t is the exact measured temperature for thermal element.

● 取证一览表
Certificates List

防爆级别 Explosion-proof Class	防爆证号 Certificate Number	认证机构 Certifying Institution
dⅡB T4	GYB02544	NEPSI
dⅡB T5	GYB02562	NEPSI
dⅡCT4	GYB02621	NEPSI
dⅡCT5	GYB02632	NEPSI
iaⅡCT6	GYB02653	NEPSI

注：NEPSI防爆认证系国家级仪器仪表防爆安全监督检验站
NEPSI explosion-proof certifying system, national & meter explosion-proof security inspection

●防爆标志 Explosion-proof Indication

d Ⅱ □ T□

- T□ 温度组别：T1～T6 / Temperature group: T1-T6
- □ 防爆等级：A、B、C / Explosion-proof class: A B C
- Ⅱ 工厂用电气设备 / Electric equipment for plant
- d：隔爆型 / d: explosion separation type
- ia：本质安全型 / ia: Intrinsic safety type

●电气设备类别 Electric Device Category

Ⅰ类——煤矿井下用电气设备
Ⅱ类——工厂用电气设备

I------Electric device for coal mine well
II----Electric device for plant

●防爆等级 Explosion-proof Class

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安全间隙分为A、B、C三级。

It is divided into grade A, B and C according to maximum test safety gap in explosive gas compound.

类别 Category	级别 Class	最大试验安全间隙（MESG）mm Maximum Test Safety Gap (MESG)
Ⅱ	A	0.9≤MESG
	B	0.5<MESG<0.9
	C	MESG≤0.5

●温度组别 Temperature Goup

防爆热电偶的温度组别按其外露部分允许最高表面温度分为T1～T6。

Its temperature group is divided into T1~T16 according to its high surface temperature exposing parts allowed.

温度组别 Temperature Group	允许最高表面温度℃ Max Surface Temperature Allowed
T1	450
T2	300
T3	200
T4	135
T5	100
T6	85

● 防爆级别
Explosion-proof Class

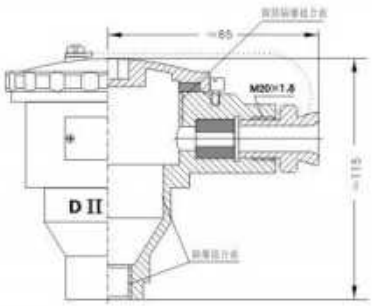
EXd Ⅱ □T□

Exia Ⅱ □T□

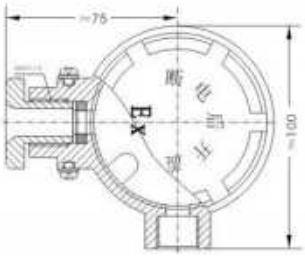
● 防护等级：IP65
Protection Class: IP 65

●接线盒形式
Connection Box Type

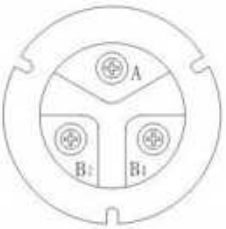
●d Ⅱ BT□级

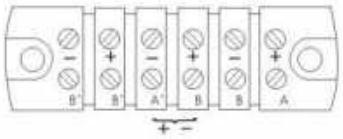


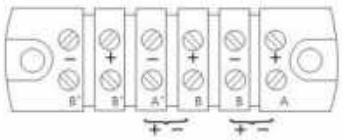
●d Ⅱ CT□级



● 安装端子形式
Installation End Type







● 可燃性气体、蒸汽级别、温度组别举例
Examples of Flammable Gas, Steam Class and Temperature Group

ⅡA类

序号	气体、蒸汽名称	分子式	温度组别
1	甲烷	CH_4	T1
2	乙烷	C_2H_6	T1
3	丙烷	C_3H_8	T1
4	丁烷	C_4H_{10}	T2
5	戊烷	C_5H_{12}	T3
6	已烷	C_6H_{14}	T3
7	庚烷	C_7H_{16}	T3
8	辛烷	C_8H_{18}	T3
9	壬烷	C_9H_{20}	T3
10	癸烷	$C_{10}H_{22}$	T3
11	丙烯	$C_3H_6=CH_2$	T2
12	苯乙烯	$C_6H_5CH=CH_2$	T1
13	苯	C6H6	T1
14	甲苯	C6H5CH3	T1
15	二甲苯	C6H4(CH3)2	T1
16	乙苯	C6H5C2H5	T2
17	萘	C10H8	T1
18	松节油		T3
19	石腊油		T3
20	煤焦油石脑油		T3
21	石油(包括车用汽油)		T3
22	燃料油		T3
23	煤油		T3
24	柴油		T3
25	动力苯		T1
26	一氧化碳	CO	T1
27	甲醇	CH_3OH	T2
28	乙醇	C_2H_5OH	T2
29	丙醇	C_3H_7OH	T2
30	丁醇	C_4H_9OH	T2
31	戊醇	$C_5H_{11}OH$	T3
32	已醇	$C_6H_{13}OH$	T3
33	苯酚	C_6H_5OH	T1
34	甲酚	$CH_3C_6H_4OH$	T1
35	双丙酮醇	$(CH_3)_2C(OH)CH_2COCH_3$	T1
36	乙醛	CH3CHO	T4
37	丙酮	$(CH_3)_2CO$	T1
38	2-丁酮(乙基甲基酮)	$C_2H_5COCH_3$	T1
39	2-戊酮	$C_3H_7COCH_3$	T1
40	2-已酮	$C_4H_9COCH_3$	T1
41	环乙酮	$CH_2(CH_2)CO$	T2
42	甲酸甲基	$HCOOCH_3$	T2
43	甲酸乙基	$HCOOC_2H_5$	T2
44	醋酸甲基	CH_3COOCH_3	T1
45	醋酸乙基	$CH_3COOC_2H_5$	T2
46	醋酸丙基	$CH_3COOC_3H_7$	T2
47	醋酸丁基	$CH_3COOC_4H_9$	T2
48	醋酸戊基	$CH_3COOC_5H_{11}$	T2
49	甲基丙烯酸甲酯	$CH_2=C(CH_3)COCH_3$	T2
50	醋酸乙烯酯	$CH_3COOCH=CH_2$	T2
51	乙酰基醋酸乙酯	$CH_3COCH_2COOC_2H_5$	T2
52	醋酸	CH_3COOH	T1
53	甲基氯	CH_3Cl	T1
54	氯乙烷	C_2H_5Cl	T1
55	溴乙烷	C_2H_5Br	T1
56	氯丙烷	C_3H_7Cl	T1
57	氯丁烷	C_4H_9Cl	T3
58	溴丁烷	C_4H_9Br	T3

ⅡA类

序号	气体、蒸汽名称	分子式	温度组别
59	二氯乙烷	C_2H_4Cl	T2
60	二氯丙烷	C_3H_6Cl	T1
61	氯苯	$C_6H_5Cl_2$	T1
62	二氯乙烯	$CHCl=CHCl$	T1
63	氯乙烯	$CH_2=CHCl$	T1
64	三氯甲苯	$C_6H_5CF_3$	T1
65	二氯甲烷	CH_2Cl_2	T1
66	氯乙醇	CH_2ClCH_2OH	T2
67	乙硫醇	C_2H_5SH	T3
68	氨	NH_3	T1
69	乙腈	CH_3CN	T1
70	亚硝酸乙酯	CH_3CH_2ONO	T6
71	硝基甲烷	CH_3NO_2	T2
72	硝基乙烷	$C_2H_5NO_2$	T2
73	甲胺	CH_3NH_2	T2
74	二甲胺	$(CH_3)_2NH$	T2
75	三甲胺	$(CH_3)_3N$	T4
76	二乙胺	$(C_2H_5)_2NH$	T2
77	三乙胺	$(C_2H_5)_3N$	T1
78	二氨基乙烷	$NH_2CH_2CH_2NH_2$	T2
79	苯胺	$C_6H_5NH_2$	T1
80	甲苯胺	$CH_3C_6H_4NH_2$	T1

ⅡB类

序号	气体、蒸汽名称	分子式	温度组别
1	丙炔	$CH_3C=CH$	T1
2	乙烯	C_2H_4	T2
3	环丙烷	$CH_2CH_2CH_2$	T1
4	1.3-丁二烯	$CH_2=CHCH=CH$	T2
5	丙烯腈	$CH_2=CHCN$	T1
6	氰化氢	HCN	T1
7	二甲醚	$(CH_3)_2O$	T3
8	乙基甲基醚	$CH_3OC_2H_5$	T4
9	二乙醚	$(C_2H_5)_2O$	T4
10	二丁醚	$(C_4H_9)_2O$	T4
11	环氧乙烷	CH_2CH_2O	T2
12	1.2-环氧丙烷	CH_3CHCH_2O	T2
13	1.4-二亚烷	$CH_2CH_2OCH_2CH_2O$	T2
14	1.3.5-三亚烷	$CH_2OCH_2OCH_2O$	T2
15	四氢糠醇	$CH_2CH_2CH_2OCHCH_2OH$	T3
16	丙烯酸甲酯	$CH_2=CHCOOCH_3$	T2
17	丙烯酸乙酯	$CH_2=CHCOOC_2H_5$	T2
18	呋喃	CH=CHCH=CHO	T2
19	丁烯醛	$CH_3CH=CHCHO$	T3
20	丙烯醛	$CH_2=CHCHO$	T3
21	四氢呋喃	$CH_2(CH_2)_2CH_2O$	T3
22	焦炉煤气		T1
23	四氟乙烯	C_2F4	T4
24	氯甲代氧丙烷	OCH_2CHCH_2Cl	T2
25	硫化氢	H_2S	T3

型号命名方法

W 温度仪表 Temperature Instrument

R 热电偶 Thermocouple
Z 热电阻 Thermal Resistance

感温元件材料 Thermal Element Materials		分度号 Graduation Mark	
M	镍铬硅-镍硅	N	NiCrSi-NiSi
N	镍铬-镍硅	K	NiCr-NiSi
E	镍铬-铜镍	E	NiCr-CuNi
F	铁-铜镍	J	Fe-CuNi
C	铜-铜镍	T	Cu-CuNi
P	铂热电阻	Pt100	Pt Thermal Resistance

偶丝对数 Wire Pairs

无 单支 Blank Simplex
2 双支 Duplex

安装固定形式 Mounting & Fixing

1 无固定装置 W/o
2 固定螺纹 Fixed Thread
4 固定法兰 Fixed Flange
5 活络管接头式 Movable Tube Connector
7 直形管接头式 Straight Tube Connector
8 固定螺纹管接头式 Fixed Thread Tube Connector
9 活动螺纹管接头式 Movable Thread Tube Connector

接线盒形式 Connection Box

4 防爆式 Explosion Proof

保护管直径 Diameter of Thermowell

0 Φ16
1 Φ20(Φ12)

防爆型式 Explosion-proof Type

B 隔爆式 Explosion-separation Type

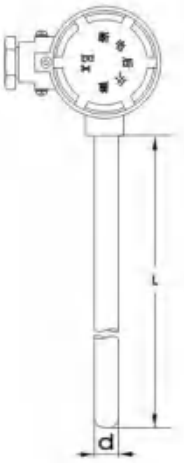
工作端形式 Operation End

G 变截面 Variable Section

典型型号示例 Example of Classical Name: W R N $_2$ — 2 4 0 B G

●无固定装置热电偶/阻
Assembly Thermocouple w/o Fixing Device

型 号 Type	分度号 Graduation	测温范围℃ Measuring Range	连接尺寸 Connecting Size	保护管材料 Thermowell Material	规格 Specification d	l
WRM-140B WRM$_3$-140B	N	0-800		1Cr18Ni9Ti	Φ16	150 200 250 300 350 400 500 750 1000 1500 2000
		0-1000		0Cr25Ni20		
WRM-140G WRM$_2$-140G		0-800		1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRN-140B WRN$_3$-140B	K	0-800		1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRN-140G WRN$_2$-140G		0-800		1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRE-140B WRE$_3$-140B	E	0-700		1Cr18Ni9Ti		
WRE-140G WRE$_2$-140G						
WRC-140B WRC$_3$-140B	T	0-350		1Cr18Ni9Ti		
WRC-140G WRC$_2$-140G						
WRF-140B WRF$_3$-140B	J	0-600		1Cr18Ni9Ti		
WRF-140G WRF$_2$-140G						



★:1）防爆热电偶Ⅰ级按协议订货；
Class I explosion-proof thermocouple shall be ordered as agreements
2）防爆热电阻A级按协议订货，结构同热电偶，性能同普通热电阻；
Class A explosion-proof thermal resistance ordered according to agreements, structure is the same with thermocouple, while performance is the same with common thermal resistance
3）保护管材质根据协议订货；
Protection tube material shall be ordered according to agreement
4）变截面型式内配铠装元件；
For variable section type, there should be sheathed element inside.
5）“L”可协议订货。
It can be ordered due to agreement for “L”.

选型须知

1）型号
2）分度号
3）防爆等级
4）精度等级
5）安装固定形式
6）保护管材质
7）长度或插入深度

Notice in type's selection

1)Type
2)Graduation
3)Explosion-proof Class
4)Accuracy Class
5)Mounting & Fixing
6)Thermowell Material
7)Length or Insert Depth

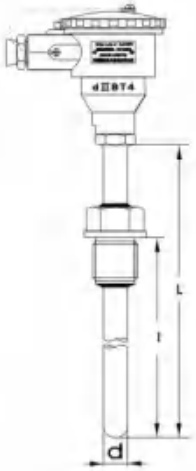
例A：防爆热电偶，K型，固定螺纹M27×2，隔爆等级dⅡBT4级，保护管材料316L，直径Φ16，长度450mm，插入深度300mm。则为：WRN-240，K，L=450×300，M27×2，dⅡBT4保护管316L

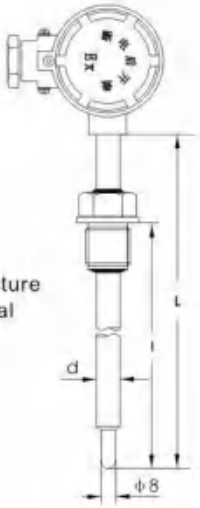
Example: explosion-proof thermocouple, type K, fixing thread M27×2,explosion-proof class 4 d I I B T, protection tube length of 316L 4500mm, insert depth 300mm.
WRN-240, L=450×300 ,M27×2, d I I B T4 protection tube316L

●固定螺纹式热电偶/阻

Thermocouple/ Thermal Resistance w/ Fixed Thread

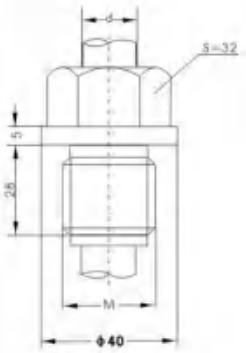
型 号 Type	分度号 Graduation	测温范围℃ Measuring range	热响应时间 TRT	保护管材料 Protection tube material	规格Specification d	规格Specification L×l
WRM-240 WRM_2-240	N	0-800	<90S	1Cr18Ni9Ti	Φ16	300×150 350×200 400×250 450×300 500×350 550×400 650×500 900×750 1150×1000 1650×1500 2150×2000
		0-1000		0Cr25Ni20		
WRM-240G WRM_2-240G		0-800	<24S	1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRN-240 WRN_2-240	K	0-800	<90S	1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRN-240G WRN_2-240G		0-800	<24S	1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRE-240 WRE_2-240	E	0-600	<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	0-500	<90S	1Cr18Ni9Ti		
WRF-240G WRF_2-240G			<24S			





★: 1) 防爆热电偶Ⅰ级按协议订货；
Class I explosion-proof thermocouple shall be ordered as agreements
2) 防爆热电阻A级按协议订货，结构同热电偶，性能同普通热电阻；
Class A explosion-proof thermal resistance ordered according to agreements, structure is the same with thermocouple, while performance is the same with common thermal resistance
3) 保护管材质根据协议订货；
Protection tube material shall be ordered according to agreement
4) 变截面型式内配铠装元件；
For variable section type, there should be sheathed element inside.
5) "L" 可协议订货。
It can be ordered due to agreement for "L".

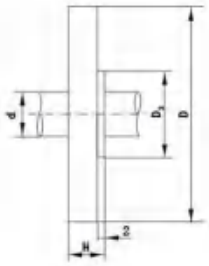
型号示例 Type model	螺纹规格 Thread specification 代 号 Code	M	公称压力NP MPa
WRN-240		M27×2	≤10
WRN-240A	A	G3/4	
WRN-240C	C	NPT3/4	
WRN-240G		M27×2	
WRN-240GA	A	G3/4	
WRN-240GC	C	NPT3/4	

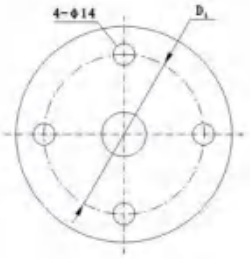


安装固定型式：固定螺纹
Installation & Fixing: Fixed Thread

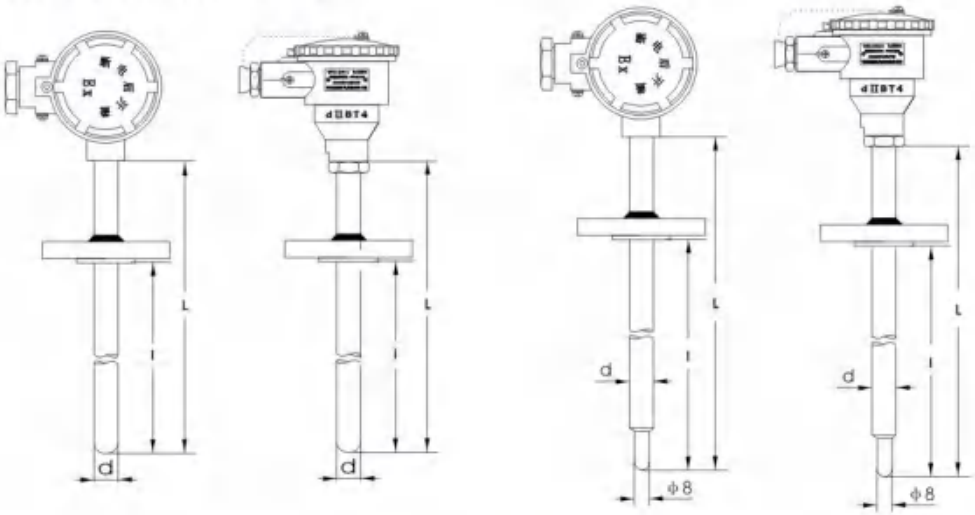
●固定法兰式热电偶/阻
Thermocouple & Thermal Resistance w/ Fixed Flange

型 号 Type	分度号 Graduation	测温范围℃ Measuring range	热响应时间 TRT	保护管材料 Thermowell Material	规 格Specification	
					d	L×l
WRM-440 WRM_2-440	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
		0-1000		0Cr25Ni20		
WRM-440G WRM_2-440G		0-800	<24S	1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRN-440 WRN_2-440	K	0-800	<90S	1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRN-440G WRN_2-440G		0-800	<24S	1Cr18Ni9Ti		
		0-1000		0Cr25Ni20		
WRE-440 WRE_2-440	E	0-700	<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			



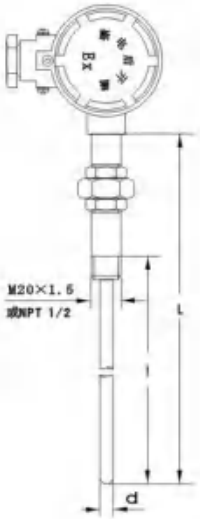


★:1）防爆热电偶Ⅰ级按协议订货；
Class I explosion-proof thermocouple shall be ordered as agreements
2）防爆热电阻A级按协议订货，结构同热电偶，性能同普通热电阻；
Class A explosion-proof thermal resistance ordered according to agreements, structure is the same with thermocouple, while performance is the same with common thermal resistance
3）保护管材质根据协议订货；
Protection tube material shall be ordered according to agreement
4）变截面型式内配铠装元件；
For variable section type, there should be sheathed element inside.
5）“L”可协议订货。
It can be ordered due to agreement for “L”.



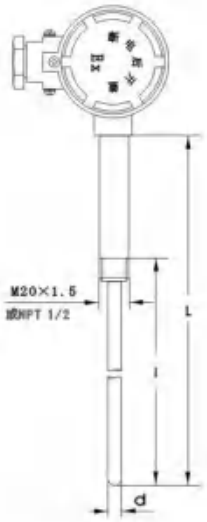
● 活络管接头式热电偶/阻
Thermocouple & Thermal Resistance w/ Moveable Elbow Connector

型 号 Type	分度号 Graduation	测温范围℃ Measuring Range	热响应时间 TRT	规 格 Specification	
				d	L×I
WRM-54 WRM_2-54	N	0-1000	<90S	φ16	300×150 350×200 400×250 450×300 500×350 550×400 650×500 900×750 1150×1000 1650×1500 2150×2000
		0-800			
WRM-54A WRM_2-54A		0-1000	<24S		
		0-800			
WRN-54 WRN_2-54	K	0-1000	<90S		
		0-800			
WRN-54A WRN_2-54A		0-1000	<24S		
		0-800			
WRE-54 WRE_2-54	E	0-600	<90S		
WRE-54A WRE_2-54A			<24S		
WRC-54 WRC_2-54	T	0-350	<90S		
WRC-54A WRC_2-54A			<24S		
WRF-54 WRF_2-54	J	0-600	<90S		
WRF-54A WRF_2-54A			<24S		



● 直形管接头式热电偶/阻
Thermocouple & Thermal Resistance w/ Straight Tube Connector

型 号 Type	分度号 Graduation	测温范围℃ Measuring Range	螺纹规格 Thread Spec	规 格 Specification	
				d	I
WRM-74 WRM_2-74	N	0-1000	M20×1.5	φ3 φ4 φ5 φ6 φ8	250 275 300 350 400 450 550 650 750 900 1150
		0-800			
WRM-74A WRM_2-74A		0-1000	NPT1/2		
		0-800			
WRN-74 WRN_2-74	K	0-1000	M20×1.5		
		0-800			
WRN-74A WRN_2-74A		0-1000	NPT1/2		
		0-800			
WRE-74 WRE_2-74	E	0-600	M20×1.5		
WRE-74A WRE_2-74A			NPT1/2		
WRC-74 WRC_2-74	T	0-350	M20×1.5		
WRC-74A WRC_2-74A			NPT1/2		
WRF-74 WRF_2-74	J	0-600	M20×1.5		
WRF-74A WRF_2-74A			NPT1/2		



1）如无特殊约定，L仅为参考尺寸，热电偶/阻插入深度应按热安装套管U尺寸计算；
L is reference size only if no special indication, the insert depth of thermocouple/ thermal resistance should be calculated according to U, the size of thermowell

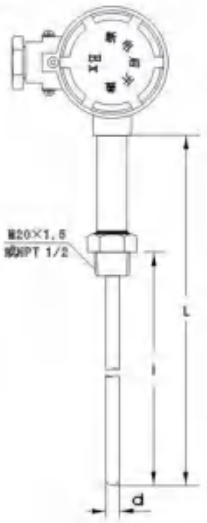
2）热安装套管详见后面的“热安装套管”；
Please refer to the Thermowell Installation Table at the end of this book.

3）元件为弹性铠装式元件，对于热电阻元件φ3只适用于单支元件
Element is spring sheathed element, thermal resistance element φ3 is suitable for simplex element only.

● 固定螺纹管接头式热电偶/阻

Thermocouple & Thermal Resistance w/ Fixed Threaded Tube Connector

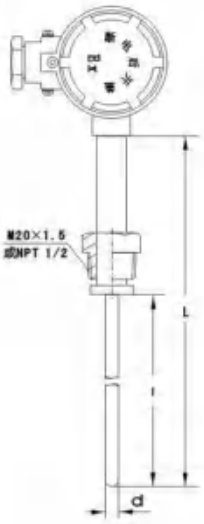
型号 Type	分度号 Graduation	测温范围℃ Measuring Range	螺纹规格 Thread Spec	规格 Specification d	规格 Specification l
WRM-84 WRM_2-84	N	0-1000	M20×1.5	φ3 φ4 φ5 φ6 φ8	250 275 300 350 400 450 550 650 750 900 1150
		0-800			
WRM-84A WRM_2-84A		0-1000	NPT1/2		
		0-800			
WRN-84 WRN_2-84	K	0-1000	M20×1.5		
		0-800			
WRN-84A WRN_2-84A		0-1000	NPT1/2		
		0-800			
WRE-84 WRE_2-84	E	0-600	M20×1.5		
WRE-84A WRE_2-84A			NPT1/2		
WRC-84 WRC_2-84	T	0-350	M20×1.5		
WRC-84A WRC_2-84A			NPT1/2		
WRF-84 WRF_2-84	J	0-500	M20×1.5		
WRF-84A WRF_2-84A			NPT1/2		



● 活动螺纹管接头式热电偶/阻

Thermocouple & Thermal Resistance w/ Moveable Threaded Tube Connector

型号 Type	分度号 Graduation	测温范围℃ Measuring Range	螺纹规格 Thread Spec	规格 Specification d	规格 Specification l
WRM-94 WRM_2-94	N	0-1000	M20×1.5	φ3 φ4 φ5 φ6 φ8	250 275 300 350 400 450 550 650 750 900 1150
		0-800			
WRM-94A WRM_2-94A		0-1000	NPT1/2		
		0-800			
WRN-94 WRN_2-94	K	0-1000	M20×1.5		
		0-800			
WRN-94A WRN_2-94A		0-1000	NPT1/2		
		0-800			
WRE-94 WRE_2-94	E	0-600	M20×1.5		
WRE-94A WRE_2-94A			NPT1/2		
WRC-94 WRC_2-94	T	0-350	M20×1.5		
WRC-94A WRC_2-94A			NPT1/2		
WRF-94 WRF_2-94	J	0-500	M20×1.5		
WRF-94A WRF_2-94A			NPT1/2		



1）如无特殊约定，L仅为参考尺寸，热电偶/阻插入深度应按热安装套管U尺寸计算；
L is reference size only if no special indication, the insert depth of thermocouple/ thermal resistance should be calculated according to U, the size of thermowell

2）热安装套管详见后面的“热安装套管”；
Please refer to the Thermowell Installation Table at the end of this book.

3）元件为弹性铠装式元件，对于热电阻元件φ3只适用于单支元件
Element is spring sheathed element, thermal resistance element φ3 is suitable for simplex element only.

WR 、WZ系列

电站热电偶(阻)

Power Station Thermocouple/ Thermal Resistance

□ 应用 Application

专业针对电站设计，可以满足30万、60万千瓦等发电机组及辅机测温需要。直接测量各种生产过程中的-100℃~800℃范围内液体、蒸汽和气体介质以及固体表面温度。

It is designed specially for power station, which can meet the temperature measurement demand of generator and assistant machine with300,000 KW and 600,000 KW, to measure the surface temperature of the mediums as liquid, steam and gas ranging from -100℃ to 800℃ during various production processes directly.

□ 工作原理 Working Principle

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

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。

The two electrodes of sheathed thermocouple are made of different conductor materials. Where there is temperature difference between measuring end and reference end, there will be hydroelectric potential, then the meter shows the corresponding temperature of the hydroelectric potential.

It is making use of the principle that when temperature of object changes, the resistance will change accordingly, to measure temperature. When the resistance value changes, the working meter will display relevant temperature.

□ 主要技术参数 Main Technical Parameters

产品执行标准 Standard

IEC584

IEC751

IEC1515

GB/T 30429-2013

JB/T8622-1997

JB/T8623-2015

○ 常温绝缘电阻

Insulation Resistance at Normal Temperature

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）电极与电极间、电极与外套管之间的绝缘电阻≥1000MΩ。

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）组电极与组电极电极与外套管之间的绝缘电阻≥100MΩ。

For thermocouple, environmental temperature is 20±15℃; relative humidity is not over 80%; test voltage is 500±50V (D.C.); insulation resistance between electrodes and electrodes, electrodes and outer thermowell is not less than1000MΩ.

For thermal resistance, environmental temperature is 15-35℃; relative humidity is not over 80%; test voltageis 10-100V(D.C.); Insulation resistance between electrodes and electrodes, electrodes and outer thermowell is not less than100MΩ.

●测温范围及允差
Measure Range & Tolerance

●热电偶
Thermocouple

型号 Type	分度号 Graduation	允差等级 Tolerance Class			
		I		II	
		允差值 Tolerance	测温范围℃ Temperature Range	允差值 Tolerance.	测温范围℃ Temperature Range
WRN	K	±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

●热电阻
Thermal Resistance

型号 Type	分度号 Graduation	测温范围 Tempesature Range	精度等级 Accuracy Class	允许偏差 Tolerance
WZP	Pt100	-200~+450	A级 Class A	±(0.15+0.002|t|)
			B级 Class B	±(0.30+0.005|t|)
WZC	Cu50 Cu100	-50~+150	-	±(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 actual temperature of thermal element.

WR 、WZ系列

热套热电偶(阻)

Thermocouple / Thermal Resistance w/ Thermowell

□ 应用 Application

适合于蒸汽管道、锅炉及其他对温度、压力、流速有所要求的场合。

It is applied to steam pipe, furnace and other occasions that have request on temperature, pressure, and flow speed.

□ 主要技术参数

Main Technical Parameters

○电气出口：M20X1.5，NPT1/2
Electric Outlet: M20 ×1.5, NPT1/2

○连接尺寸：M20X1.5，NPT1/2
Connection Size: M20 ×1.5, NPT1/2

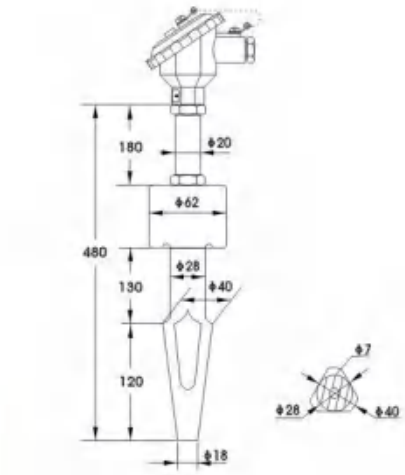
○防护等级：IP65
Protection Class: IP65

□ 型号及规格

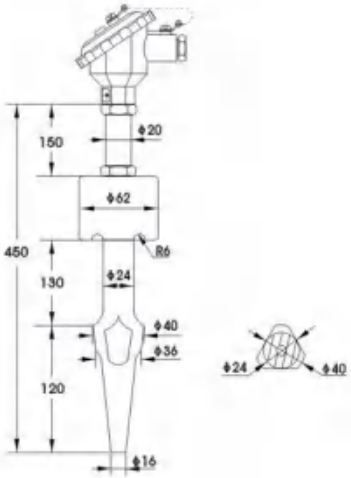
Type & Specification

型 号 Type	分度号 Graduation	测温范围℃ Temperature Range	公称压力 NP	热响应时间 TRT	备 注 Remarks
WRNR-01 WRNR$_2$-01	K	0∽800	≤30MPa	<180S	绝缘式 Insulation type
WRER-01 WRER$_2$-01	E	0∽600			
WZPR-01 WZPR$_2$-01	Pt100	-200∽500			
WRN-624 WRN$_2$-624	K	0∽800	≤30MPa		绝缘式 Insulation type
WRE-624 WRE$_2$-624	E	0∽600			
WZP-624 WZP$_2$-624	Pt100	-200∽500			
WRN-625 WRN$_2$-625	K	0∽800			接壳式 Shell-con-necting type
WRE-625 WRE$_2$-625	E	0∽600			

★:保护管材质为1Cr18Ni9Ti,其余材质根据协议订货.
Protection tube material is 1Cr18Ni9Ti,while other materials are ordered according to agreement.



01型



624 、625型

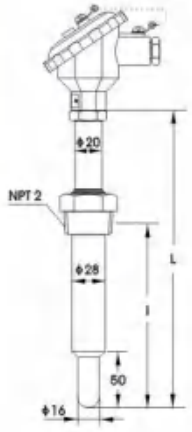
WR□、WZ□ 系列

热套热电偶(阻)

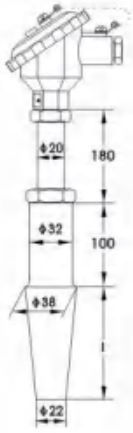
Thermocouple / Thermal Resistance w/ Thermowell

□ 型号及规格
Type & Specification

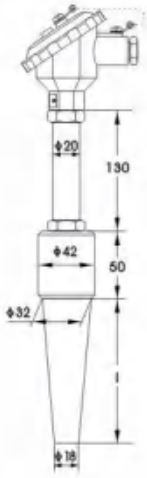
型 号 Type	分度号 Graduation	测温范围℃ Temperature Range	公称压力 NP	热响应时间 TRT.	规 格 L×1 Specification
WRNR-12 WRNR$_2$-12	K	0~800	≤10MPa	<180S	440×230 640×430 840×630 1380×1130 2500×1200 3000×1500 3500×1700
WRER-12 WRER$_2$-12	E	0~600			
WZPR-12 WZPR$_2$-12	Pt100	-200~500			
WRNR-12A WRNR$_2$-12A	K	0~800			
WRER-12A WRER$_2$-12A	E	0~600			
WZPR-12A WZPR$_2$-12A	Pt100	-200~500			
WRNR-13 WRNR$_2$-13	K	0~800	≤30MPa		330×50 380×100 430×150
WRER-13 WRER$_2$-13	E	0~600			
WZPR-13 WZPR$_2$-13	Pt100	-200~500			
WRNR-14 WRNR$_2$-14	K	0~800	≤15MPa		230×50 280×100 330×150 380×250 430×250 480×300
WRER-14 WRER$_2$-14	E	0~600			
WZPR-14 WZPR$_2$-14	Pt100	-200~500			
WRNR-14 WRNR$_2$-14	K	0~800	≤10MPa		230×50 280×100 330×150 380×250 430×250 480×300 530×350 580×400
WRER-15 WRER$_2$-15	E	0~600			
WZPR-15 WZPR$_2$-15	Pt100	-200~500			



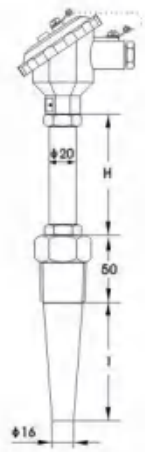
12型



13型



14型

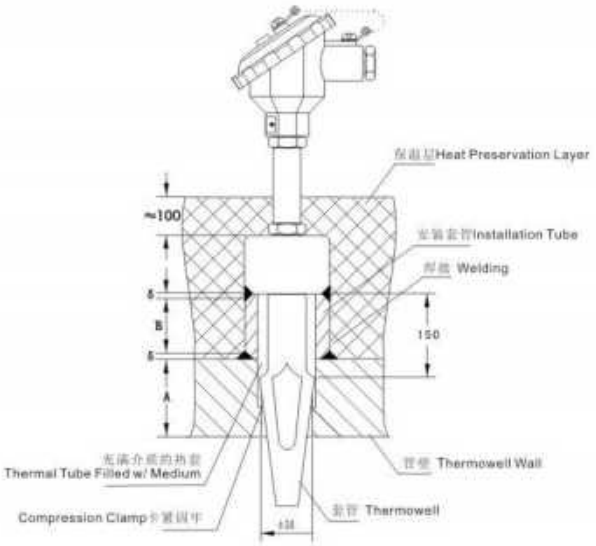


15型

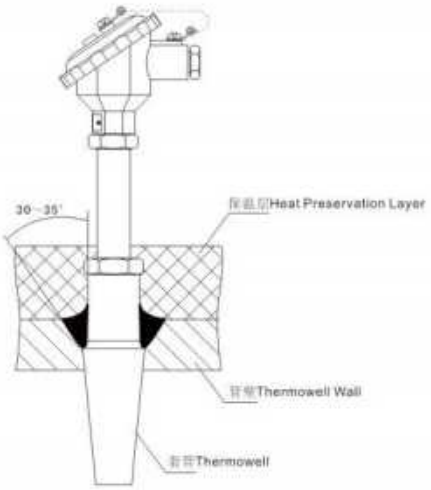
1）保护管材质为1Cr18Ni9Ti，其余材质根据协议订货；
Protection tube material is 1Cr18Ni9Ti, while other materials are ordered according to agreement

2）“H”尺寸常规为180，其余尺寸可根据需要协议订货。
Normal size of H is 180, while other sizes are ordered accoding to agreement

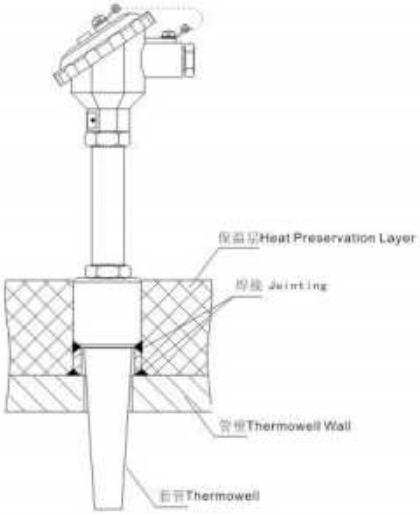
● 01型安装示意
Type01 Installation Sketch Map



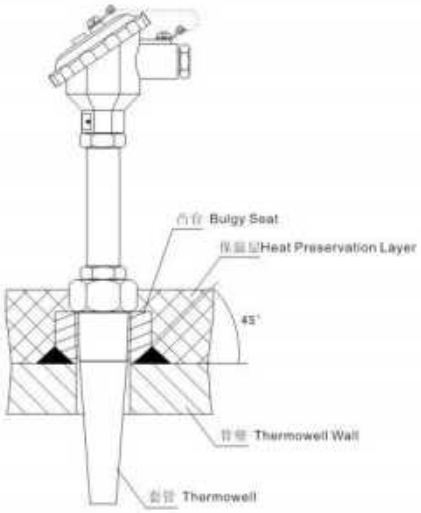
● 13型安装示意
Type13 Installation Sketch Map



● 14型安装示意
Type14 Installation Sketch Map



● 15型安装示意
Type15 Installation Sketch Map



WR□ 系列

炉顶 热电偶

Furnace Top Thermocouple

□ 应用 Application

适合于电厂锅炉炉顶及其它须远距离、高压测温场合。

It is applied to the top of power plant furnace and other occasions in which temperature is measured from distance or high voltage.

□ 主要技术参数 Main Technical Parameters

○电气出口：M16X1.5

Electric Outlet: M20 ×1.5, NPT1/2

○连接尺寸：M16X1.5

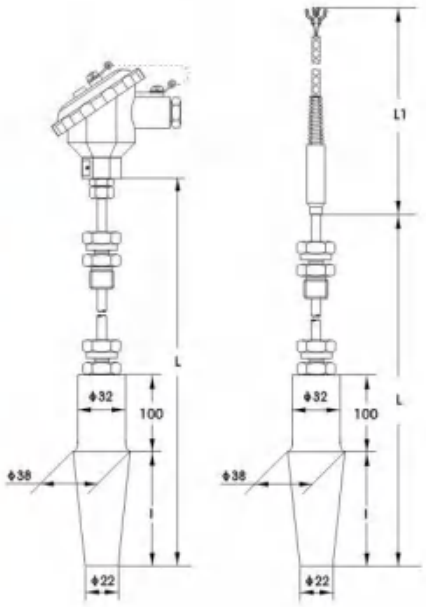
Connection Size: M20 ×1.5, NPT1/2

○防护等级：IP65

Protection Class: IP65

□ 型号及规格 Type & Specification

型 号 Type	分度号 Graduation	测温范围℃ Temperature Range	公称压力 NP	流 速 Flow Speed	规格Specification L	规格Specification l
WRN-0313 WRN_2-0313	K	0~800	≤30MPa	≤100m/s	1000 2000 3000 4000 5000 6000 8000 10000 12000 20000 25000	50 100 150
WRE-0313 WRE_2-0313	E	0~600				
WRN-0913 WRN_2-0913	K	0~800				
WRE-0913 WRE_2-0913	E	0~600				



★：1）保护管材质为1Cr18Ni9Ti，其余材质根据协议订货；

Protection tube material is 1Cr18Ni9Ti, while other materials are ordered according to agreement.

WR 系列

炉壁热电偶

Furnace Wall Thermocouple

□ 应用 Application

锅炉炉壁热电偶采用铠装热电偶做测温元件，做成电缆状，热接点紧固在带有不同曲面的不锈钢导体上，可用于锅炉管壁、炉壁及其他圆柱表面测量温度。

Sheathed thermocouple is used as measuring element for furnace wall thermocouple which forms cable condition. Thermal connection point is fixed on stainless steel with different curves. It is used to surface temperature measurement in furnace pipe wall, furnace wall and other cylinder surfaces..

□ 主要技术参数

Main Technical Parameter

○精度等级：Ⅰ、Ⅱ

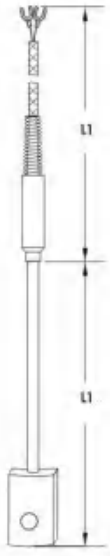
Accuracy Class: I II

○公称压力：常压

Nominal Pressure: Normal Pressure

○弯曲半径：R≥5D

Bending Radius: R≥5D



□ 型号及规格 Type & Specification

型 号 Type	分度号 Graduation	测温范围℃ Temperature range	热响应时间 $\tau_{0.5}$S TRT	测量端形式 Measurement Type	规 格 Specification L	L_1
WRNK-191M WRNK$_2$-191M WRNT-11 WRNT$_2$-11	K	0~800	≤2.5	绝缘式 Insulation type	1000 2000 3000 4000 5000 6000 8000 10000 15000 20000 25000	1000 2000 3000 4000 5000 6000 8000 10000 15000 20000 25000
WREK-191M WREK$_2$-191M WRET-11 WRET$_2$-11	E	0~600				

★：1）保护管材质为1Cr18Ni9Ti，其余材质根据协议订货；

Protection tube material is 1Cr18Ni9Ti, while other materials are ordered according to agreement

□ 安装形式及尺寸 Installation Ways & Size

安装方法：1）直接焊接于炉壁

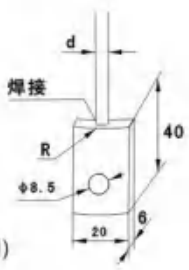
Installation Method: It is directly welded on furnace wall

2）M8螺钉紧固

M8 screw fastening

3）曲面尺寸R=29mm，R=100mm.

Curve size R=29mm,R=100mm



★:选型时应注明R大小（即管壁或炉壁直径）

Please remark the size of R when select type (diameter of furnace wall or tube wall)

WR 、WZ 系列

轴承热电偶(阻)

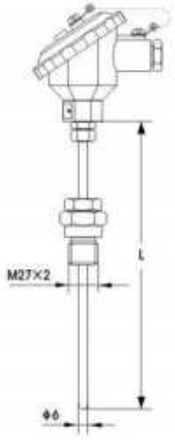
Bearing Thermocouple (Thermal Resistance)

□ 应用 Application

适合于电厂带有轴承设备的轴承及其它须防震场合测温。
It is applied to temperature measurement in power plant with bearing equipment and other shock resistant occasions.

□ 主要技术参数 Main Technical Parameters

○电气出口：M16X1.5
Electric Outlet: M20 ×1.5, NPT1/2
○连接尺寸： M27X2
Connection Size: M20 ×1.5, NPT1/2
○防护等级：IP65
Protection Class: IP 65



□ 型号及规格

Type & Specification

型 号 Type	分度号 Graduation	测温范围℃ Temperature Range	热响应时间 TRT	规 格Specification	
				d	L
WRNT-31	K	0~300	≤6S	Φ6	100 150 200 250 300
WRNT-31	E				
WZP-31T	Pt100	0~100	≤6S		

WR□ 、WZ □ 系列

石油化工 热电偶(阻)

Petroleum & Chemical Industry Thermocouple(Thermal Resistance)

□ 应用 Application

专业针对石油化工部门设计，可以直接测量-200℃~1600℃范围内液体、蒸汽和气体介质以及固体表面温度。

Special design for petroleum chemical industry,can measure the surface temperature of liquid, steam, and gas medium from 200℃ to 1600℃.

□ 工作原理 Working Principle

○热电偶的电极由两根不同导体组成。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。

○热电阻是利用电阻与温度呈一定函数的关系原理。当被测介质中有温差存在时，就会产生热电阻，工作仪表便显示出电阻值所对应的温度值。

The electrode of thermocouple is made up of two different conductor materials, when temperature difference between measure terminal and standard terminal exists, thermal electromotive force appears. Working meter shows temperature that corresponding to thermal electromotive force.

Thermal resistance is made use of the principle that there is reference relationship between the resistanceand temperature. When there is temperature differencein measured mediums, there will be thermal resistance,working meter will show the temperature corresponding tothe resistance.

□ 主要技术参数 Main Technical Parameters

● 产品执行标准 Standard

IEC1515
IEC584
IEC751
JB/T5518-91
JB/T5582-2014

● 测温范围及允差 Temperature Range & Tolerance

● 热电偶 Thermocouple

型号 Type	分度号 Graduation	允差等级 T. Class			
		I		II	
		允差值 T.	测温范围℃ T. range	允差值 T.	测温范围℃ T. Range
WRN	K	±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

● 热电阻 Thermal Resistance

型号 Type	分度号 Graduation	测温范围℃ T. range	精度等级 Accuracy Class	允许偏差℃ Tolerance
WZP	Pt100	-200~+450	A级 Class A	±(0.15+0.002|t|)
			—	±(0.30+0.005|t|)
WZC	Cu50 Cu100	-50~+150	B级 Class B	±(0.30+0.006|t|)

● 公称压力 Nominal Pressure

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

It is usually means the static outer pressure which the protection tube can offer and will not be broken under the working temperature. In fact, working pressure not only has relationship with with protection tube material, diameter and thickness of wall, but also the structure form, installation method, inserting depth and the flow speed and type of the medium etc.

WR□ 系列

高温高压热电偶

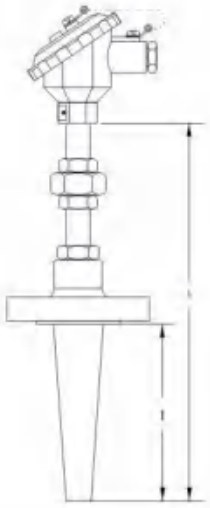
High Temperature and Pressure Thermocouple

□应用 Application

适合于石油、化工等生产过程中的高温高压场所的温度测量与控制。是炼油厂、高压聚乙烯等不可缺少的测温装置。

It is used to temperature measurement and control during production process under high temperature & pressure such as petroleum & chemical industry and is necessary temperature measuring device for refinery and HVPE production.

□主要技术参数 Main technical Parameters



○电气出口：M20×1.5，NPT1/2

Electric Outlet: M 20×1.5,NPT1/2

○连接尺寸：M20×1.5，NPT1/2

Connection Size: M 20×1.5,NPT1/2

○防护等级：IP65

Protection Class:IP65

○隔爆等级：dⅡBT4，dⅡCT5

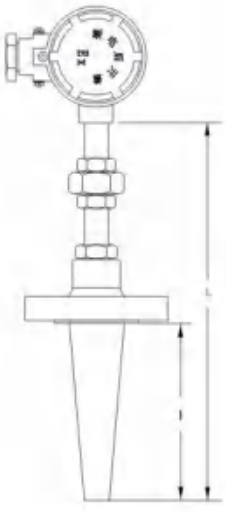
Explosion-separation Class: d II BT4, d II Ct5

○公称压力：15~40MPa

Nominal Pressure: 15~40Mpa

□型号及规格Type & Specification

型 号 Type	分度号 Graduation	测温范围℃ T. range	热响应时间 TRT	保护管材料 Thermowell Material	规格L×I Specification
WRNG-430 WRN_2G-430	K	0~800	<180S	1Cr18Ni9Ti	380×150 430×200 480×250 530×300 580×350 630×400 680×450
WREG-430 WRE_2G-430	E	0~600			
WRNG-440 WRN_2G-440	K	0~800			
WREG-440 WRE_2G-440	E	0~600			



★:1）热电偶Ⅰ级按协议订货；

Class I thermocouple shall be ordered according to agreement

2）保护管其余材质根据协议订货；

Other materials of thermowell shall be ordered as agreement

3）型号430为防水式，型号440为隔爆式

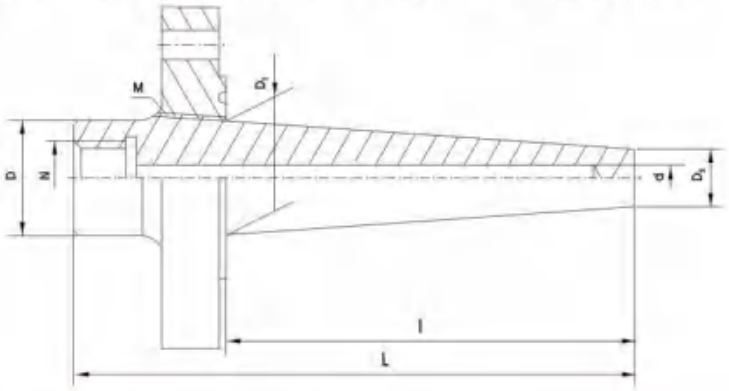
Type 430 is water-proof; type 440 is explosion-separation type

保护管材质及选用 Thermowell Material & Selection

材质 Material	使用温度 Operation Temperature	特点及用途 Features & Application
1Cr18Ni9Ti	-200~800	具有高温耐蚀性，通常作为一般耐热钢使用 W/ cauterization resisting performance in high temperature, normally for common thermal resisting steel.
304	-200~800	低碳含量，具有良好耐晶间腐蚀性，通常作为一般耐热钢使用 Low carbon content, w/ good Intergranular Corrosion resisting performance, normally for common thermal resisting steel.
316	-200~750	低碳含量，具有良好耐晶间腐蚀性，作为耐腐蚀钢使用 Low carbon content, w/ good Intergranular Corrosion resisting performance normally for cauterization resisting steel.
316L	-200~750	超低碳含量，具有良好耐晶间腐蚀性，作为耐腐蚀钢使用 Super low carbon content, w/ good Intergranular Corrosion resisting performance, normally for cauterization resisting steel.
310S	-200~1000	具有高温抗氧化性，耐腐蚀型通常作为耐热钢使用 W/ oxidation resisting performance in high temperature, cauterization type, normally for thermal resisting steel.
Gh3030	0~1100	镍基高温合金钢，具有优良抗氧化性，耐腐蚀型，通常作为耐热钢使用 High temperature nickel base alloy, w/ good oxidation resisting performance cauterization type,normally for thermal resisting steel.

套管形式选择 Tube Type Selection

法兰可选择900（PN15）~2500LB（PN40）RTJ等不同形式
Flange can be selected in different forms such as 900(PN15) ---2500LB (PN40) RTJ



代号 Code	N	M	D	d	D_1	D_2
A	M20X1.5 (NPT1/2)	NPT1"	φ34	φ7	φ23	φ18
B		NPT11/4"	φ45	φ7	φ28	φ22

选型须知 Type Selection

1）型号 1)Type
2）分度号 2)Graduation
3）精度等级 3) Accuracy Class
4）保护管材质及形式 4)Thermowell Material & Type
5）法兰规格及形式 5)Flange Specification & Type
6）长度或插入深度 6)Length & Insert Depth

例A：高温高压隔爆电偶，K型，Ⅰ级，保护管A型，插入深度300mm。WRNG-440A,L=450×300,dⅡBT4,316L, ANSI 1" 1500#RJ
Example: Explosion-separation Thermocouple under High Temperature & Pressure, Type K, Class I, Type A Thermowell, Insert Depth 330mm, WRNG-440A,L=450×300,dⅡBT4,316L, ANSI 1" 1500#RJ

□ 法兰型号及规格 Flange Type & Specification

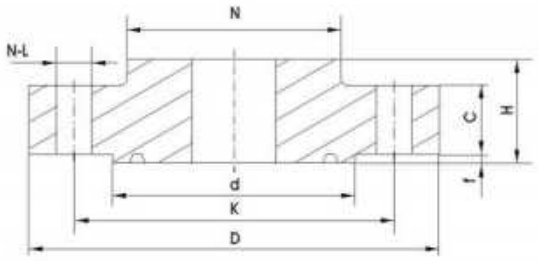
●法兰标准代号
Standard Code of Flange

标准类属 Standard Category	标准代号 Standard Code
中国国家标准 National Standard	GB9112~9131-88
中国化工部标准 Chemical Dept Standard	HG20592~20635-97 （HGJ44~76-91） （HG5001~5028-58）
中国机械部标准 Mechanical Dept Standard	JB/T74~90-94 （JB81~82-59）
美国标准 American Standard	ASME/ANSI B16.5-96
德国标准 German Standard	DIN 2628~2638-1975
日本标准 Japan Standard	JIS2201-1976

●法兰规格 Flange Spec
Flange Specification

CLASS150~600 RF

CLASS900~2500 RJ



RJ

WZ□系列

耐磨热电偶(阻)

Wear-resisting Thermocouple (Thermal Resistance)

□ 应用 Application

适合于电厂球磨机及磨煤机、水泥窑头、窑层等对保护管磨损严重的场合。用于沸腾焙烧炉、煤碳进料炉等测量装置有严重磨损的介质的测温。

It is used for ball mill machine and coal mill machine in power plant,or other environment with serious wear on thermowell, it is applied to the temperature measurment for boiling-bed roaster coal incoming furnace, .

□ 主要技术参数 Main Technical Parameters

○电气出口：M20×1.5，NPT1/2

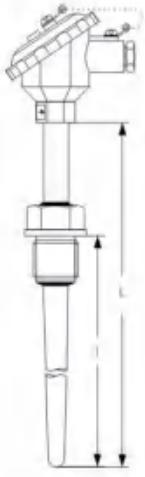
Electric Outlet: M 20×1.5,NPT1/2

○耐磨头硬度：HRC62～65

Wear-resisting Head Hardness, HRC~65

○防护等级：IP65

Protection Class:IP65



□ 申请专利号 Patent Number

922029806

□ 型号及规格Type & Specification

型 号 Type	分度号 Graduation	测温范围℃ T. range	公称压力 NP	热响应时间 TRT	规 格Specification d	规 格Specification L×l
NKWRN-230 NKWRN$_2$-230	K	0~800	≤10MPa	<180S	φ16	300×150 350×200 400×250 450×300 500×350
NKWRE-230 NKWRE$_2$-230	E	0~600				
NKWZP-230 NKWZP$_2$-230	Pt100	-200~500				
NKWRN-630 NKWRN$_2$-630	K	0~800	≤30MPa	<180S	φ16	550×400 650×500 900×750 1150×1000
NKWRE-630 NKWRE$_2$-630	E	0~600				
NKWZP-630 NKWZP$_2$-630	Pt100	-200~500				

保护管材质为1Cr18Ni9Ti，其余材质根据协议订货：

Thermowell material is 1Cr18Ni9Ti, other material shall be ordered as agreement

WR□系列

耐磨切断热电偶

Wear-resisting Cutting Thermocouple

□应用 Application

通过在耐磨头喷焊Ni+Wc35，使钢的硬度提高。适用于生产现场存在高耐磨固体颗粒或流体，当保护管发生损坏时可切断电偶。是炼油厂不可缺少的测温装置。

Improving the hardness of steel through painting and welding Ni + Wc35 on the wear-resisting head. It is used for the occasions that there is highly wearable solid or liquid, when there is destroy for thermowell, thermocouple can cut off the power. It is a necessary device for refineries.

□主要技术参数 Main Technical Parameters

○电气出口：M20×1.5，NPT1/2

Electric Outlet: M 20×1.5,NPT1/2

○耐磨头硬度：HRC62~65

Wear-resisting Head Hardness, HRC~65

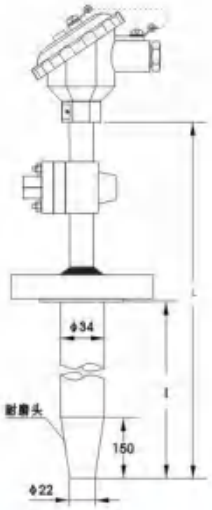
○防护等级：IP65

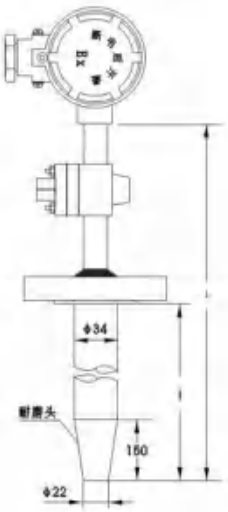
Protection Class:IP65

○隔爆等级：dⅡBT4，dⅡCT5

Explosion Separation Class

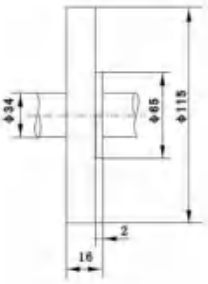
○公称压力 NP：2.5MPa

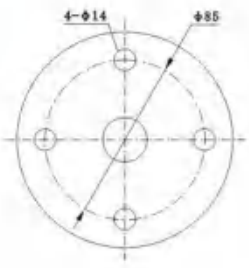




□型号及规格 Type & Specification

型 号 Type	分 度 号 Graduation	测温范围℃ T. range	保护管材料 Thermowell Material	热响应时间 TRT	规格 L×l Specification
QMWRR-430 QMWRR$_2$-430	S	0~1300	GH2140	<180S	450×300 500×350 550×400 600×450 650×500 750×600 950×750 1150×1000
QMWRN-430 QMWRN$_2$-430	K	0~1000	GH3030		
		0~800	1Cr18Ni9Ti		
QMWRE-430 QMWRE$_2$-430	E	0~600	1Cr18Ni9Ti		
QMWRR-440 QMWRR$_2$-440	S	0~1300	GH2140		
QMWRN-440 QMWRN$_2$-440	K	0~1000	GH3030		
		0~800	1Cr18Ni9Ti		
QMWRE-440 QMWRE$_2$-440	E	0~600	1Cr18Ni9Ti		





★:1）热电偶Ⅰ级按协议订货；

Class I thermocouple shall be ordered according to agreement

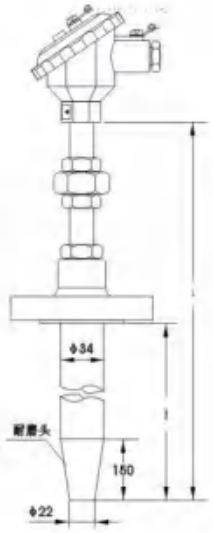
2）型号430为防水式，型号440为隔爆式

Type 430 is water proof, 440 is explosion separation.

WR□ 系列

耐磨阻漏热电偶/阻

Wear-resisting & Leakage-proof Thermocouple/ Thermal Resistance

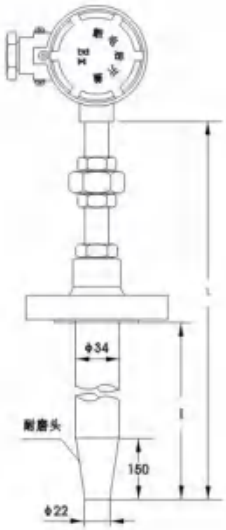


□ 应用 Application

在热电偶内部采用卡套卡死偶丝，彻底防止漏油或漏气。适用于生产现场存在高耐磨固体颗粒或流体，是炼油厂不可缺少的测温装置。

We adopt clamp inside the thermocouple to fasten wires to avoid oil or gas leakage thoroughly prevent it from oil or gas leakage completely. it is used for production with high abrasive solid granule or fluid on spot, it is necessary temperature measuring device for refineries.

□ 主要技术参数 Main Technical Parameters



○电气出口：M20×1.5，NPT1/2
Electric Outlet: M 20×1.5,NPT1/2

○耐磨头硬度：HRC62～65
Wear-resisting Head Hardness: HRC 62~65

○防护等级：IP65
Protection Class:IP65

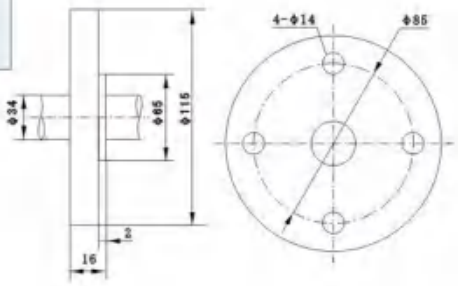
○隔爆等级：dⅡBT4，dⅡCT5
Explosion-separation Class: dⅡBT4, dⅡCT5

○公称压力：2.5MPa
Nominal Pressure: 2.5Mpa

□ 型号及规格 Type & Specification

型 号 Type	分度号 Graduation	测温范围℃ T. range	热响应时间 TRT	保护管材料 Thermowell Material	规格L×I Specification
WRN-430M WRN$_2$-430M	K	0~800	<180S	1Cr18Ni9Ti	450×300 500×350 550×400 600×450 650×500 750×600 950×750 1150×1000
WRE-430M WRE$_2$-430M	E	0~600			
WRN-440M WRN$_2$-440M	K	0~800			
WRE-440M WRE$_2$-440M	E	0~600			

★:元件为铠装式。
The elements are sheathed.



WZ□系列

防腐热电阻
Corrosion-resistant Thermal Resistance

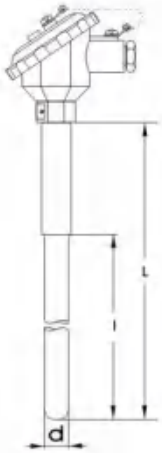
□ 应用 Application

采用新型防腐材料，外包覆聚四氟乙烯F46，适用于石油化工各种腐蚀性介质中测温。是氯碱行业的专用测温仪表。

We adopt new type corrosion-resistant materials and cover withF46 outside. It is used to measuretemperature of various corrosive medium in petroleum & chemical industry. It is special thermometer for soda chloride industry.

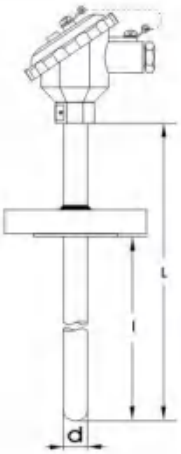
□ 主要技术参数 Main Technical Parameters

电气出口：M20×1.5，NPT1/2
Electric Outlet: M 20×1.5,NPT1/2
热响应时间：≤8S
Thermal Response Time: ≤8S
防护等级：IP65
Protection Class:IP65
精度等级：A、B级
Accuracy Class: A, B

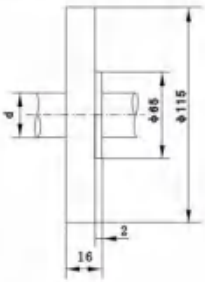


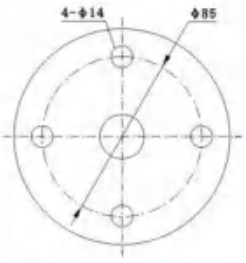
□ 型号及规格 Type & Specification

型 号 Type	分度号 Graduation	测温范围℃ T. range	热响应时间 TRT	保护管材料 Thermowell Material	规 格Specification	
					d	L×l
WZPF-230 WZP$_2$F-230	Pt100	-200~250	<180S	1Cr18Ni9Ti	φ16	300×150 350×200 400×250 450×300 500×350 550×400 650×500 750×600 1000×850
WZCF-230 WZC$_2$F-230	Cu50 Cu100	0~150				
WZPF-430 WZP$_2$F-430	Pt100	-200~250				
WZCF-430 WZC$_2$F-430	Cu50 Cu100	0~150				



★：1）元件为铠装元件；
The elements are sheathed.
2）保护管其余材质根据协议订货；
Other material of thermowell shall be ordered according to agreement





WR□系列

高温防腐热电偶

Corrosion-resistant Thermocouple Under High Temperature

□ 应用 Application

适用于各种生产过程中高温、腐蚀性场合，广泛应用石油化工、冶炼玻璃及陶瓷工业测温。

It is widely used to measure temperature during various production processes with high temperature and corrosion in petrochemical, metallurgy, glass and ceramic industries.

□ 主要技术参数 Main Technical Parameters

○电气出口：M20×1.5，NPT1/2

Electric Outlet: M 20×1.5,NPT1/2

○精度等级：Ⅰ、Ⅱ级

Accuracy Class: I, II

○防护等级：IP65

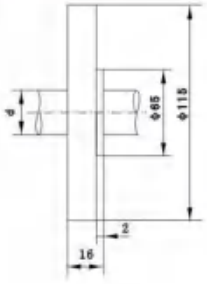
Protection Class:IP65

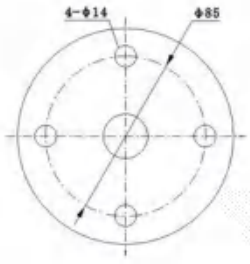
□ 型号及规格 Type & Specification

型 号 Type	分度号 Graduation	测温范围℃ T. range	保护管材料 Thermowell Material	热响应时间 TRT	规格 Specification	
					D	L×I
WRPF-330G WRP$_2$F-330G	S	0~1300	3YC52	<180S	Φ16	300×150 350×200 400×250 450×300 500×350 550×400 650×500 750×600 1000×850
WRQF-330G WRQ$_2$F-330G	R	0~1300				
WRRF-330G WRR$_2$F-330G	B	0~1600	MoSi$_2$			
WRPF-430G WRP$_2$F-430G	S	0~1300	3YC52			
WRQF-430G WRQ$_2$F-430G	R	0~1300				
WRRF-430G WRR$_2$F-430G	B	0~1600	MoSi$_2$			

★:热电偶Ⅰ级按协议订货；

Class I thermocouple shall be ordered as agreement

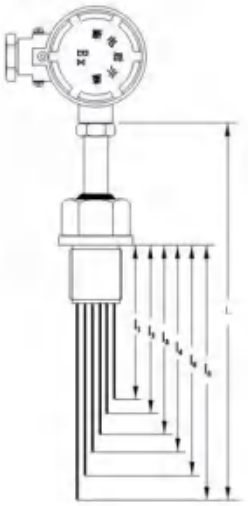




WR□ 系列

多点热 电偶/阻

Multi-point Thermocouple/ Thermal Resistance



□ 应用 Application

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

It is used for production locales which have no clear grads of temperature as well need temperature measurement of multi points. It is widely used in chemical fertilizer synthesizing tower and reserving tank devices.

□ 主要技术参数
Main Technical Parameters

电气出口：M27×2，NPT3/4 □

Electric Outlet: M 20×1.5,NPT1/2

热响应时间：≤4S

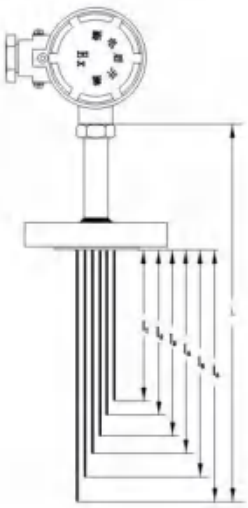
Thermal Response Time: ≤4S

防护等级：IP65

Protection Class:IP65

偶丝直径：Φ3

Wire Diameter: ϕ3



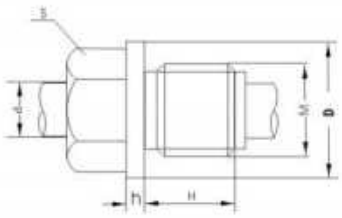
□ 型号及规格
Type & Specification

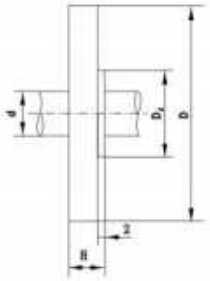
型 号 Type	分度号 Graduation	测温范围℃ T. range	测温点数 Measuring Points	保护管材料 Thermowell Material
WRNK-230D	K	0~1000	2~14	GH3030
		0~800		1Cr18Ni9Ti
WREK-230D	E	0~600		1Cr18Ni9Ti
WRNK-430D	K	0~1000		GH3030
		0~800		1Cr18Ni9Ti
WREK-430D	E	0~600		1Cr18Ni9Ti
WZPK-430D	Pt100	-200~+450		

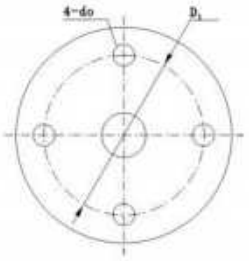
★：1）保护管其余材质根据协议订货；
Other thermowell material shall be ordered according to agreement.
2）外保护管和法兰尺寸根据用户而定。；
Size of outer thermowell and flange shall be designed according to users request.

□ 安装固定形式 Mounting & Fixing Type

●固定螺纹
Fixed Thread







测温点数 Measuring Points	M	D	H	h	S	d
2~6	M33X2	Φ48	33	5	36	Φ20
7~12	M42X2	Φ58	38	5	46	Φ22

测温点数 Measuring Points	D	D_1	D_2	H	D_0	d
2~6	Φ105	Φ75	Φ55	16	Φ14	Φ20
7~12	Φ115	Φ85	Φ65	16	Φ14	Φ34

□ 选型须知

1）型号
2）分度号
3）精度等级
4）热电偶点数
5）安装固定形式
6）保护管材质
7）长度或插入深度

Selection Notice

1)Type
2)Graduation
3)Accuracy class
4)Thermocouple Points
5)Mounting & Fixing Type
6)Thermowell Materials
7)Length or Insert Depth

WR□系列

多点隔爆热电偶/阻

Multi Points Explosion-separation Thermocouple/ Thermal Resistance

□应用 Application

适用于生产现场存在易燃易爆化合物，须同时测量多个位置或位置的多处测量。

It is used for production locales with flammable and explosive chemicals as well need multi points measurement.

□主要技术参数 Main Technical Parameters

○电气出口：M20×1.5，NPT1/2

Electric Outlet: M 20×1.5,NPT1/2

○热响应时间：≤8S

Thermal Response Time: ≤8S

○偶丝直径：Φ2、Φ3

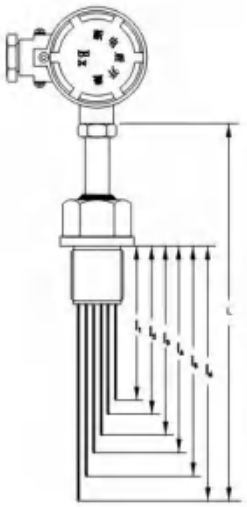
Wire Diameter: ϕ2 ϕ3

○防护等级：IP65

Protection Class:IP65

○隔爆等级：d ⅡBT4，d ⅡCT5

Explosion-separation Class: d IIBT4, d IICT5



□型号及规格 Type & Specification

型 号 Type	分度号 Graduation	测温范围℃ T. range	测温点数 Measuring Points	安装固定形式 Mounting & Fixing Type
WRNK-240D	K	0~1000	2~14	固定螺纹
		0~800		
WREK-240D	E	0~600		
WRNK-440D	K	0~1000		固定法兰
		0~800		
WREK-440D	E	0~600		
WZPK-440D	Pt100	-200~+450		

1）保护管材质根据协议订货；

we also supply/ produce protection tube of other materials

2）对于铂热电阻直径为ϕ3。

For Pt thermal resistance, the diameter is ϕ3

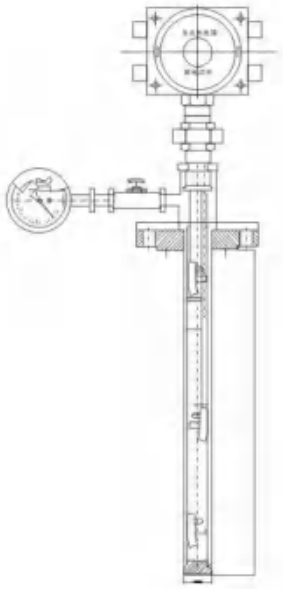
WR□系列

防泄漏多点热电偶

Containment multipoint thermocouple

□ 性能描述与产品优势

Performance description and product advantage:



1、防爆接线盒，适用于石油、石化等易燃易爆场。
2、活络接头，可更改接线盒的方向，便于现场操作。
3、采用压紧阻漏装置，防止气体或液体泄漏。
4、二次密封腔截止阀，发生泄漏及时关闭。
5、压力表，发生泄漏可通过压力表读数查看出来。
6、现场压力等级较高，采用法兰安装。
7、热电偶元件采用固定圈固定，使元件分离，实现单点抽芯可更换。
8、每支元件设置弹性压紧，使元件与套管内壁紧密接触，实现快速准确测温。

1, explosion-proof junction box, suitable for petroleum, petrochemical and other flammable and explosive fields.
2, loose coupling, can change the direction of the junction box, convenient for site operation.
3, using pressure leakage resistance device, to prevent the gas or liquid leakage.
4, secondary seal chamber cut-off valve, leak closed in a timely manner.
5, pressure gauge, leakage through the pressure gauge reading view.
6, the stress level is higher, the flange installation.
7, thermocouple elements with fixed ring fixed, separate the components, to achieve a single point of core-pulling replaceable.
8, set each element, the elastic compression, make components closely contact with the inner wall of the casing, achieve rapid accurate temperature measurement.

WR□、WZ□系列

特殊 热电偶(阻)

Special Thermocouple (Thermal Resistance)

□应用 Application

特殊结构设计，适合不同场合，可以直接测量200℃~1600℃范围内液体、蒸汽和气体介质以及固体表面温度。

Special structure design for different occasions, can measure the surface temperature of liquid, Steam and gas mediums ranging from 200℃ ~1600℃ drectly.

□工作原理 Working Principle

○热电偶的电极由两根不同导体组成。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。

○热电阻是利用物质在测温度变化时，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，工作仪表便显示出热电势所对应的温度值。

○The two electrodes of sheathed thermocouple are made of different conductor materials. Where there is temperature difference between measuring end and reference end, therewill be hydroelectric potential, then the meter shows the corresponding temperature of the hydroelectric potential.

○The thermal resistance is made use of the principle that when temperature changes,the resistance will change accordingly to measure temperature, and when resistance changes, the working instrument will show the corresponding temperature.

□主要技术参数 Main Technical Parameters:

○产品执行标准
Standard

IEC1515
EC584
IEC751
JB/T 5582-91
JB/T 8622-1997
JB/T 8623-2015
GB26786-2011

○公称压力 Nominal Pressure:

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

It is usually means the static outer pressure which the protection tube can offer and will not be broken under the working temperature. In fact, working pressure not only has relationship with with protection tube material, diameter and thickness of wall, but also the structure form, installation method, inserting depth and the flow speed and type of the medium etc.

○常温绝缘电阻
Insulation Resistance at Normal Temperature

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）电其绝缘电阻≥1000MΩ·m。

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），铂热电阻绝缘电阻应不小于100MΩ；铜热电阻绝缘电阻≥50MΩ。

The insulation resistance is no less than1000M Ω. munder condition that environment temperature is 20±15℃, relative humidity is no more than 80% and testing voltage is 500+/-50V(D.C).

The insulation resistance of Pt thermal resistance is noless than 100 MΩ and the Cu thermal resistance is noless than 50MΩ under condition that environment temperature is 15~35℃, relative humidity is no more than 80% and testing voltage is 10~100V(D.C).

测温范围及允差
Measuring Range & Tolerance

●热电偶
Thermocouple

型号 Type	分度号 Graduation	允差等级 Tolerance Class			
		I		II	
		允差值 Trce T.range	测温范围℃	允差值 Trce	测温范围℃T.range
WRN	K	±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
WRP	S	±1℃	0~+1100	±1.5℃	0~600
		±(1+0.003 (t-1100))	1100~+1600	±0.0025|t|	600~1600
WRQ	R	±1℃	0~+1100	±1.5℃	0~+1100
		±(1+0.003 (t-1100))	1100~+1600	±0.0025|t|	1100~+1600
WRR	B	-	-	-	-
		-	-	±0.0025|t|	600~1700

●热电阻
Thermal Resistance

型号 Type	分度号 Graduation	测温范围 T. Range	精度等级 AC.Class	允许偏差 Torance
WZP	Pt100	-200~500	A级 Class A	±(0.15+0.002|t|)
			B级 Class B	±(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.
Notice: t is real temperature measured for thermal element

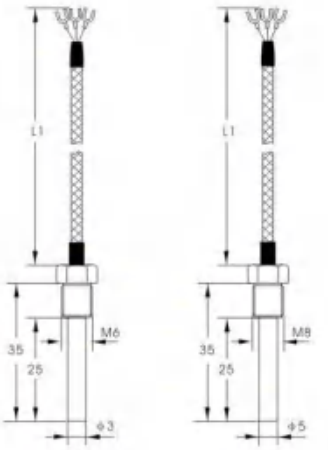
微型 热电偶(阻)

Mini-thermocouple (Thermal Resistance)

□ 应用 Application

适用于狭小场所的温度测量与控制。是纺织、涤纶等行业不可缺少的测温装置。

It is used for temperature measurement & control in narrow place. It is necessary measuring device for textile and polyester fiber industries etc.



WRE-203S
WZP-203S

WRE-205S
WZP-205S

□ 主要技术参数 Main Technical Parameters:

○精度等级

Accuracy Class

热电偶：Ⅱ级

Thermocouple: Class Ⅱ

热电阻：A、B级

Thermal Resistance: Class A, B

○公称压力：常压

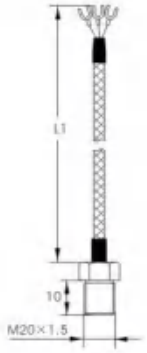
Nominal Pressure: Normal pressure

○接线形式： 电偶 两线制

Wiring Method: Thermocouple: Two Wire

电阻 三线制

Resistance: Three Wire



WRE-206S
WZP-206S

□ 型号及规格 Type & Specification

型 号 Type	分度号 Graduation	测温范围℃ T. Range	热响应时间 TRT	保护管材料 Thermowell Material	规格L Specification
WRE-203S	E	-40~ 250	<5S	1Cr18Ni9Ti	500 1000 1500 2000 2500 3000
WRE-205S			<8S		
WRE-206S			<10S		
WZP-203S	Pt100	-200~250	<5S		
WZP-205S			<8S		
WZP-206S			<10S		

微细铠装热电偶

Tiny Sheathed Thermocouple

□ 应用 Application

适用于狭小弯曲场所的温度测量与控制。是化工、化纤、制药等行业不可缺少的测温装置。

It is used for temperature measurement & control in narrow & bending place. It is necessary measuring device for chemical, chemical fiber and pharmaceutical industries etc.

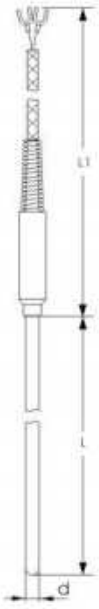
□ 主要技术参数 Main Technical Parameter

○精度等级：Ⅰ级或Ⅱ级
Accuracy Class: Class I or II

○公称直径：φ0.5、φ1、φ1.5
Nominal Diameter: φ0.5、Φ1 Φ1.5

○弯曲半径：R≥5D
Bending Radius :R≥5D

○公称压力：常压
Nominal Pressure: Normal pressure



□ 型号及规格 Type & Specification

型 号 Type	分度号 Graduation	测温范围℃ T. Range	热响应时间 TRT	保护管材料 Thermowell Material	规 格L×I Specification
WRNK-191S	K	0~600	<3S	1Cr18Ni9Ti	100×800 200×800 300×800 500×800 750×800
WREK-191S	E	0~400			

压簧固定热电偶

Spring Fixed Thermocouple

□ 应用 Application

采用弹性压紧装置，使测量端紧贴被测物表面。适用于塑料、轻纺及食品等行业测温。

We adopt spring fixed device on thermocouple to make the measuring end closely contact on the surface of measured object. It is used to measure temperature in plastic, light textile and foodstuff industries etc.

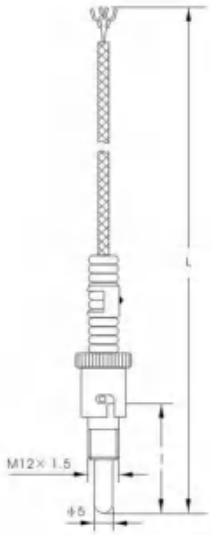
□ 主要技术参数 Main Technical Parameter

○精度等级：II

Accuracy Class: II

○热响应时间：＜5S

Thermal Response Time: ＜5s



□ 型号及规格 Type & Specification

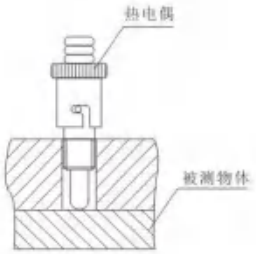
型 号 Type	分 度 号 Graduation	测温范围℃ T. Range	保护管材质 Thermowell Material
WRET-01	E	0~400	1Cr18Ni9Ti

★:1）热电偶Ⅰ级按协议订货；

Class I thermocouple shall be ordered according to agreements

□ 规格 Specification

总长L Total L	保护管长度l Thermowell l
1000	30
1500	30
2000	30
2500	30
3000	30
3500	30
4000	30
1000	60
1500	60
2000	60
2500	60
3000	60
3500	60
4000	60



□ 安装形式 Installation

WZ□系列

端面热电阻

Surface Measuring Thermal Resistance

□应用 Application

适合于电厂汽轮机及电机轴瓦或其它机体表面测温。

It is used to measure surface temperature for steam turbine, axis bush of motor in power plant or other machine body

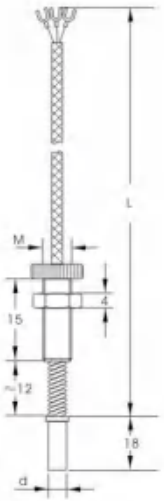
□主要技术参数 Main Technical Parameter

○精度等级：A、B级

Accuracy Class: Class A, B

○公称压力：常压

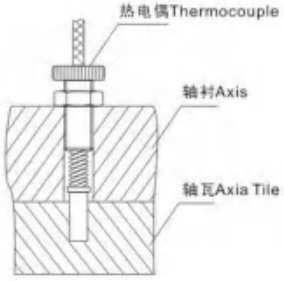
Nominal Pressure: Normal pressure



□型号及规格 Type & Specification

型号 Type	分度号 Graduation	测温范围℃ T. Range	公称压力MPa NP	热响应时间$\tau_{0.5}$S TRT	规格 Specification d	规格 Specification M	L
WZCM-201	Cu50 Cu100	-50~100	常压	≤15S	Φ6	M8×075	500 1000 1500 2000 2500
WZPM-201	Pt100	-100~150	常压	≤10S	Φ6	M8×075	
WZPM-201B	Pt100	-100~150	常压	≤10S	Φ87	M10×1	
WZPM-201	Pt100	-100~150	常压	≤10S	Φ 6× 18电阻管 Φ 6x18 ResistanceTube		
WZPM-201Y	Pt100	-100~150	常压	≤10S	Φ 6× 18电阻管 Φ 6x18 Resistance Tube 压簧 压片 Spring Compression Slice 2-M3× 8		

□安装方法 Installation



WZP系列

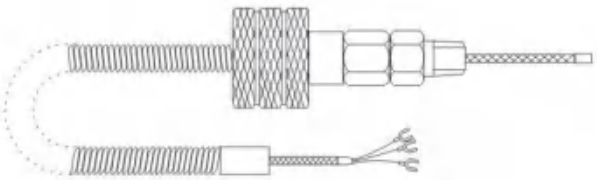
给水泵专用端面铂热电阻

Pt Surface Measuring Thermal Resistance for Water Supply Pump Specially

□ 应用 Application

适合于各种给水泵的温度测量

It is used to measure the temperature of each kind of water supply pump.



201型

□ 主要技术参数Main Technical Parameter

○精度等级：A、B级

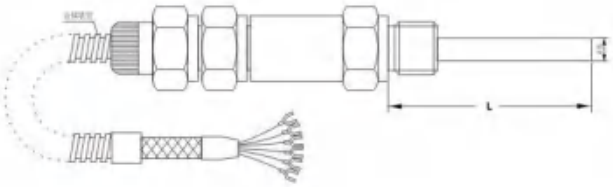
Accuracy Class: Class A, B

○公称压力：常压

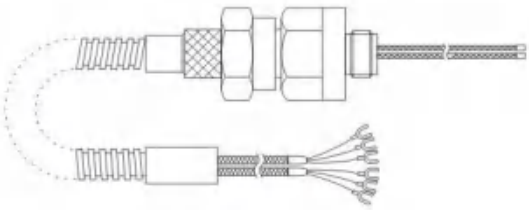
Nominal Pressure: Normal Pressure

○接线形式：三线制、六线制

Wiring Form: Three-wire, Six-wire



236S型



231型

□ 型号及规格Type & Specification

型 号 Type	分度号 Graduation	测温范围℃ T. Range	热响应时间$\tau_{0.5}$S TRT	电阻管规格Tube Spec.		金属软管 Metal Soft Tube D×L mm	耐油线长度 mm Length of Oil Resisting Wire
				d	螺纹 Thread		
WZPMP-201	Pt100	-50~100	≤10S	φ 3.2× 8	NPT 1/4	φ8×4000	4100
WZPM$_2$P-231	Pt100	-50~100	≤10S	φ 3.2× 8	M20×1.5 NPT 1/2	φ10×4000	5800
WZPM$_2$P-236S	Pt100	-100~300	≤15S	φ 6× 150	M20×1.5 NPT 1/2	φ10×4000	4600

插座式热电阻

Thermal Resistance w/ Socket-shaped

□ 应用 Application

采用接插件形式，安装方便。适用于测量-200~450℃范围内液体、气体及固体表面测温。
Easy for installation by using socket components. It is used to measure the surface temperature of liquid, gas and solid ranging from -200℃ to 450 ℃.

□ 主要技术参数 Main Technical Parameter

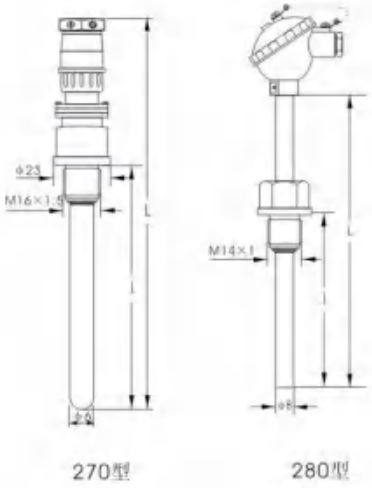
○精度等级：A、B级
Accuracy Class: Class A, B
○防护等级：IP65
Protection Class：IP65
○公称压力：常压
NP: Normal Pressure

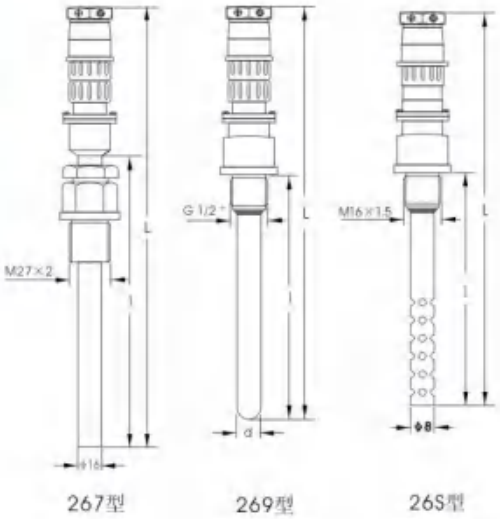
□ 型号及规格 Type & Specification

型 号 Type	分度号 Graduation	测温范围℃ T. Range	热响应时间 TRT.	保护管材料 TMT.	规 格 L Specification
WZP-260	Pt100	0~+100	<30S	1Cr18Ni9Ti	100 150 200 250 300
WZP$_2$-260			<45S		
WZP-267M	Pt100	-50~+150	<30S		
WZP-269	Pt100	-200~+300	<30S		75 100 150 200 250
WZP$_2$-269			<45S		
WZC-269	Cu50	-50~+100	<120S		
WZP-270	Pt100	-200~+420	<15S		50 75 100 150 200
WZC-270	Cu50	-50~+150	<45S		
WZC-280	Pt100	-200~+300	<30S		
WZP-26S	Pt100	-200~+300	<5S		50 75 100 125 150

★:热电阻A级按协议订货；
Class A thermal resistance shall be ordered according to agreements

产品型号 Product type	保护管直径d(mm) Thermowell Diameter d
WZP-269	φ16
WZP$_2$-269	
WZC-269	φ12





直角弯头 热电偶
Thermocouple w/ Right Angle Elbow

□ 应用 Application

适用于生产现场存在高温和有害气体对热电偶接线盒有影响，或不宜直接水平及垂直安装场合。

It is used for production on locales where there is high temperature and harmful gas which has affection to connection box of thermocouple or which is not suitable for direct horizontal and vertical installation.

□ 主要技术参数 Main Technical Parameter

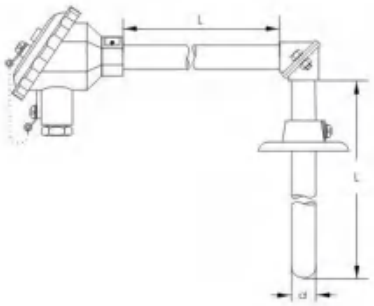
○电气出口：M20×1.5，NPT1/2
Electric Outlet: M 20×1.5,NPT1/2

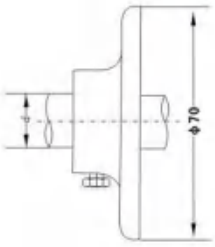
○精度等级：Ⅰ，Ⅱ
Accuracy Class: I, II

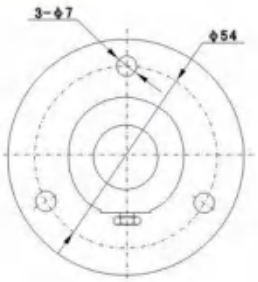
○防护等级：IP65
Protection Class:IP65

□ 型号及规格 Type & Specification

型 号 Type	分 度 号 Graduation	测温范围℃ T. Range	热响应时间 TRT.	保护管材料 TMT.	规格L×I Specification
WRN-530 WRN$_2$-530	K	0~800	≤90S	1Cr18Ni9Ti	300×150 350×200
WRE-530 WRE$_2$-530	E	0~600			400×250 450×300
WRM-530 WRM$_2$-530	N	0~800			500×350 550×500
WRC-530	T				600×450
WRJ-530 WRJ$_2$-530	J	0~600			650×500







高温贵金属热电偶

Thermocouple w/ Precious Metal for High Temperature

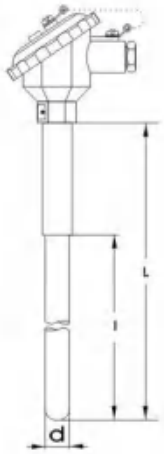
□ 应用 Application

适用于各种生产过程中高温场合，广泛应用于玻璃、陶瓷及工业盐浴炉等测温。
It is widely used to measure temperature during various production processes with high temperature in glass, ceramic and industry salt-bashing furnace..

□ 主要技术参数 Main Technical Parameter

○电气出口：M20×1.5，NPT1/2
Electric Outlet: M 20×1.5,NPT1/2
○精度等级：Ⅰ、Ⅱ
Accuracy Class: I, II
○防护等级：IP65
Protection Class:IP65
○偶丝直径：Φ 0.5
Wire Diameter: Φ 0.5
○公称压力：常压
Nominal Pressure: Normal pressure

□ 型号及规格 Type & Specification



型 号 Type	分度号 Graduation	测温范围℃ T. Range	保护管材料 TMT.	热响应时间 TRT.	规 格 Specification	
					d	L×I
WRP-130 WRP$_2$-130	S	0~1300	高铝质 High Al	<120S	Φ16	300×150 350×200 400×250 450×300 550×400 650×500 900×750 1150×1000 1650×1500 2150×2000
WRP-131 WRP$_2$-131				<360S	Φ25	
WRQ-130 WRQ$_2$-131	R	0~1300		<120S	Φ16	
WRQ-130 WRQ$_2$-131				<360S	Φ25	
WRR-130 WRR-131	B	0~1600	刚玉质 Corundum	<120S	Φ16	
WRR$_2$-130 WRR$_2$-131				<360S	Φ25	

WR□ 系列

炉管刀刃热电偶
Thermocouple w/ Edge on Furnace Tube

□ 应用 Application

采用刀刃式接头直接焊接于炉管表面，适用于石油工业炉管、塔壁表面温度测量。是炼油厂分馏塔必备测温装置。特别是炼油厂加氢炉管表面温度测量，炉管表面温度约为570℃，炉膛温度约为1000℃，微员压。

Weld an edge connector on the surface of furnace tube directly, suitable for the temperature measurement of industrial furnace tube, and surface temperature of tower wall in petroleum industries. It is necessary measuring device for fractionating tower in refinery. Especially for the surface temperature measuring for the furnace w/ hydrogen in refinery, the surface temperature of furnace tube is about 570℃, the temperature in furnace is about 1000℃.

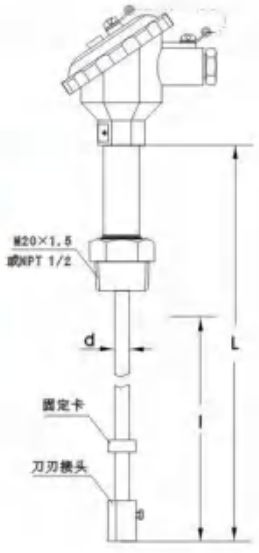
□ 主要技术参数 Main Technical Parameter

○电气出口：M20×1.5，NPT1/2
Electric Outlet: M 20×1.5,NPT1/2
○精度等级：Ⅰ、Ⅱ
Accuracy Class: I, II
○防护等级：IP65
Protection Class:IP65
○公称压力：10MPa
Nominal Pressure: 10MPa

□ 型号及规格 Type & Specification

型号 Type	分度号 Graduation	测温范围℃ T. Range	保护管材料 Thermowell Material	热响应时间 $\tau_{0.5}$S TRT.	规格 Specification D	规格 Specification L×I
WRNK-231D	K	0~1100	GH3030 316SS	≤10S	φ8 φ27	1000 1500 2000 3000
		0~800	1Cr18Ni9Ti			

保护管其余材质根据协议订货：
Other materials of thermowell shall be ordered according to agreement



WR□ 系列

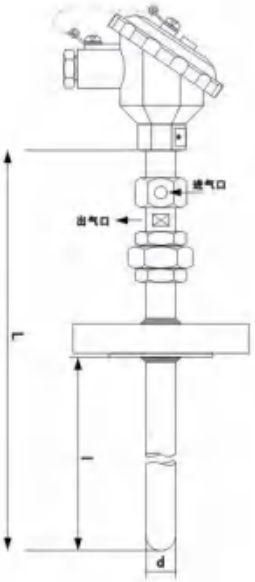
吹气 热电偶

Blowing Thermocouple

□ 应用Application

吹气型热电偶的结构原理是在感温元件和外保护管之间构成一定的气路,在气路中,通入一定压力的惰性气体,以排除或减少热电偶在高温、高压条件下还原气体的渗入,增加了吹气型热电偶的吸气特性,从而延长了热电偶的使用寿命。是30万吨合成氨装置中不可缺少的测温装置。

The structure principle of blowing thermocouple is: forming certain blowing circuit between thermal element and thermowell, and inject some inert gases to eliminate or reduce revers ed gas penetrating into thermocouple under condition of high temperature and pressure. This can add the inspiration characteristic of blowing thermocouple, and then can extend it s use life. It is necessary measuring device for 300 thousand synthetic ammonia production equipments.



□ 主要技术参数 Main Technical Parameter

○电气出口：M20×1.5，NPT1/2
Electric Outlet: M 20×1.5,NPT1/2

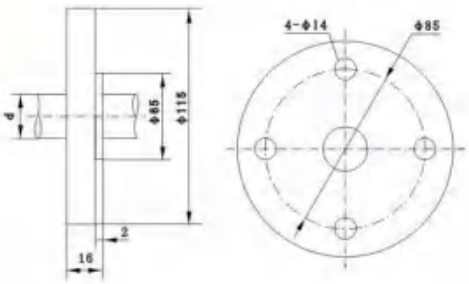
○防护等级：IP65
Protection Class: IP 65

○吹气压力：0.1MPa
Blowing Pressure: 0.1Mpa

○公称压力：2.5MPa
Nominal Pressure:2.5Mpa

□ 型号及规格Type & Specification

型 号 Type	分度号 Graduation	测温范围℃ T. Range	保护管材质 Thermowell Material.	规 格 Specification	
				D	L×l
WRPC-430 $WRPC_2$-430	S	800~1300	刚玉质 Corundum	φ20	650×500
WRRC-430 WRR_2C-430	B	800~1600	刚玉质 Corundum		850×700 900×750 1000×850 1150×1000



WRP系列

拱顶 热电偶

Thermocouple for Arch Top of Furnace

□ 应用 Application

拱顶热电偶是为了适应高炉拱顶温度的检测，而进行设计制造的新型热电偶。热电偶保护管选用进口SiC再结晶材料能够满足高炉测温的特殊要求，在构造上，有密封、耐振动、断管防喷出可以垂直安装和有快速装卸的法兰结构。

Thermocouple for arch top of furnace is new thermocouple designed and manufactured to suit to measure the temperature of arch top of furnace. The thermowell material is made use of imported SIC re-crystallized materials to meet special demands of high furnace temperature measurement.It has sealed, shock-resistant, anti-spray horizontal-available and quick-discharging flange structure on its structure.

□ 主要技术参数 Main Technical Parameter

○电气出口：M20×1.5，NPT1/2

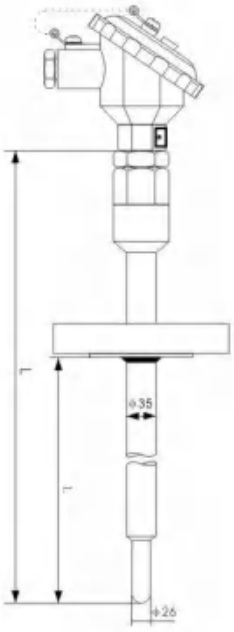
Electric Outlet: M 20×1.5,NPT1/2

○分度号：S

Graduation: S

○测温范围：0～+1300℃

Measuring Range:0~+1300℃



□ 型号规格 Type & Specification

型 号 Type	分度号 Graduation	测温范围℃ T. Range	保护管材质 TMT.	规 格Specification	
				D	L×I
WRP-430 WRP$_2$-430	B·S·R	0~+1600	SiC再结晶 外管 SIC re-crystallized Thermowell	φ35	1400×1250 1750×1600

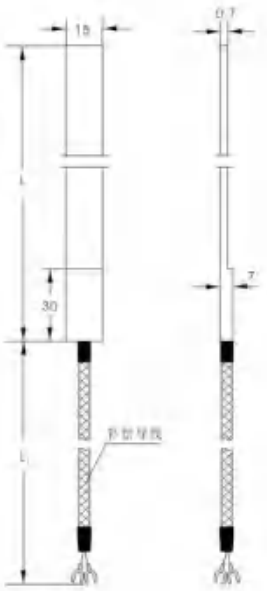
WR□、WZ□ 系列

电机热电偶（阻）
Thermocouple （Thermal Resistance）for Electric

□ 电机铁芯热电偶
Thermocouple for Steel Core of Electric

电机铁芯热电偶主要用于测量电机的定子铁芯温度，它除具有一般热电偶的特性外还具有抗振、耐压等优点，它的外保护管由非金属绝缘材料构成薄片状，因此具有良好的绝缘性能。使用时，可直接嵌入电极的铁芯，它与显示、记录、调节仪配合能直接测量0~150℃范围内温度。

This product is mainly used to measure the temperature of stator core, except the advantages that normal thermocouples have, it also has the advantages as resisting vibration and enduring pressure. The thermowell is made up of nonmetalic isolated material, so it has good isolation. It can be inserted into the core of electrode, cooperating with display, record and adjustor to measure the temperature 0~150℃ directly.



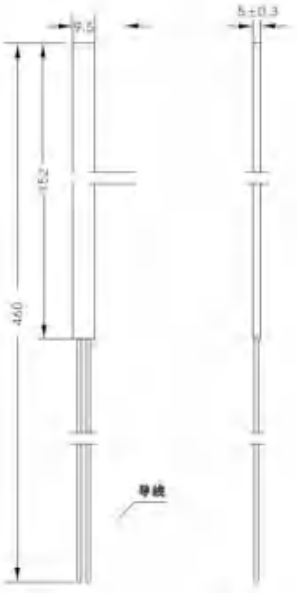
- ●型号规格： WRCT-01 Model#, WZCT-201
- ●测温范围：0～150℃ Temperature range, 0～150℃
- ●分 度 号：T Graduation: T
- ●热响应时间： $\tau_{0.5}$<30S TRT: $\tau_{0.5}$<30S
- ●名义长度l和补偿导线长度L（mm）：
  Nominal Length l & Compensating Wire Length L(mm):

60×2500，294×4000 390×4500，570×4500，590×4800，797×12700

□ 电机绕组铜电阻 Copper Resistance

电机绕组铜电阻主要用于测量大、中、小型电机绕组、定子及其它小间隙表面测温场合，它除具有热电阻的一般特性外，还具有抗振、耐压等优点，保护片采用非金属绝缘材料提高了元件的绝缘性能，它是电力工程必不可少的测温元件。

This product is mainly used to measure the copper and stator of big, middle, and small types of electric machines and others small clearance measurement occasion. Except the advantages that nomals have, it also has the advantages as resisting vibration and enduring pressure. The protective slice is made up of isolated material which improves the isolation, it is the must measurement element in electricity project.



- ●型号规格： WZCT-201 Model#, WZCT-201
- ●测温范围：0～120℃ Temperature range, 0～120℃
- ●分 度 号：Cu50 Graduation: Cu50
- ●允差：R0=50±0.05Ω Tolerance α=0.00428±0.00002
- ●热响应时间： $\tau_{0.5}$<30S TRT: $\tau_{0.5}$<30S
- ●压力试验：平面静压不小于0.14MPa
  Pressure Test: Plane Static Pressure ≥0.14MPa

WR□、WZ□ 系列

电机埋置式 热电阻 Thermocouple in Motor

适用于电机绕组及定子铁芯的温度测量。

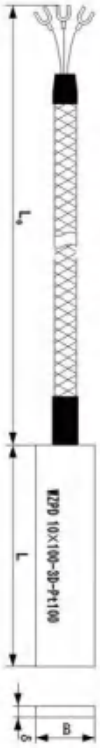
Suitable for the temperature measurement for the motor winding and stator core.

- ●型号规格： WZPD B×L 3D
  Specification: WZPD B×L 3D
- ●测温范围：0~300℃
  Measuring Range: 0~300℃
- ●分 度 号：Pt100
  Graduation: Pt100
- ●最大激励电流：5mA
  Max Exciting Current: 5mA
- ●绝缘等级：F级
  Insulation Class: F

□ 型号及规格 Type & Specification

WZPD B×L-3D-Pt100

- 分度号 Graduation
- 引出线长度代号 Length of Lines
  - A：150mm
  - B：400mm
  - C：1000mm
  - D：2000mm
  - E：3000mm
  - F：4000mm
  - G：5000mm
- 引出线数 Lines Lead out
- 传感器外形：宽度×长度
  Sensor Outside: Width X Length



◆ 传感器外形尺寸和极限偏差应符合下表规定：

The outer size and error limit of sensor should be referred to the list below

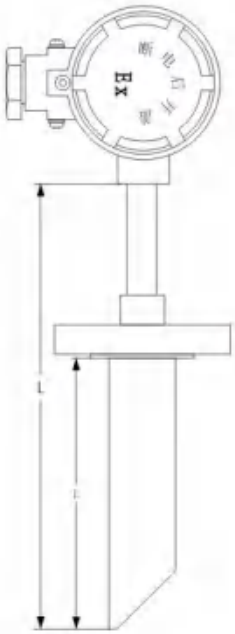
厚度 δ (mm) Thickness		宽度B(mm) Width		长度L(mm) Length	
基本尺寸 Basic Size	偏差 Error	基本尺寸 Basic Size	偏差 Error	基本尺寸 Basic Size	偏差 Error
2	0 -0.2	6	0 -0.2	30 45 60 100 200 250 300	+2 0
		8			
		10			
		12			
1.8	+0.3 0	12	±1	44	±0.5
5	0 -0.2	44	0 -0.2	100	±0.5
3	0 -0.2	44	0 -0.2	300	±0.5

WR□系列

裂解炉 专用热电偶

Special Thermocouple for Heating Cracker

□ 应用 Application



热电偶保护管采用特殊结构，使之紧贴于裂解炉管内侧，同时可以不影响物料流动。适合于乙烯生产过程中裂解炉温度测量与控制。

We adopt special structure for thermowell, make it access to inside of cracker tube closely and have effect brought by the flow of materials. It is suitable for temperature measuring and control in heating cracker during the ethylene production process.

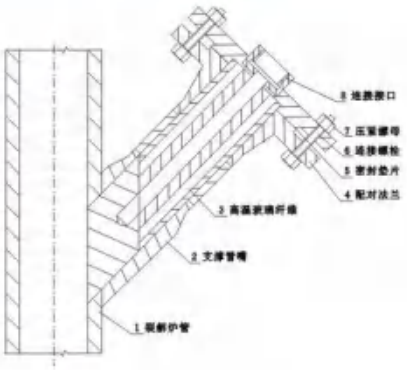
□ 主要技术参数 Main Technical Parameter

- ●电气出口：M20×1.5，NPT1/2
  Electric Outlet: M 20×1.5,NPT1/2
- ●连接尺寸：M27×2，NPT3/4
  Connection Size: M 20×1.5,NPT3/4
- ●防护等级：IP65
  Protection Class:IP65
- ●防爆等级：d II CT6
  Explosion-proof Class: d IICT6
- ●精度等级：Ⅰ级
  Accuracy Class: Class I

□ 型号规格 Type & Specification

型 号 Type	分度号 Graduation	测温范围℃ T. Range	热响应时间 $\tau_{0.5}$ TRT.	规 格 Specification
WRN-440J WRN_2-440J	K	0~1000	<180S	430×200 480×250

□ 安装示意图 Installation Sketch Map



1.Cracker Tube
2.Support Tube Mouth
3.High Temperature Glass Fiber
4.Paired Flange
5.Sealing Spacer
6.Connection Bolt
7.Compression Nut
8.Connector

WR□、WZ□ 系列　WR□系列

WRPG系列高温盐浴炉专用热电偶

Special Thermocouple for WRPG Series Salt Bath Furnace Under High Temperature

□ 应用 Application

WRPG系列高温盐浴炉专用热电偶，主要用于机械行业等高温盐浴炉的连续测量。该产品耐高温熔盐腐蚀及热冲击，可靠性高，使用寿命长，自83年获机械部科技二等奖后已推广到全国各地。本公司还有中温盐浴炉专用热电偶，使用效果也很好。

It is mainly used to continue measuring for salt bath furnace with high temperature in mechanical industry. This product is corrosion-resistant of high temperature melting salt, high reliability, long using expectancy. It has been promoted around country since achieving the second technology prize of mechanical department in 1983. we also produce special slat-bathing boiler with middle-temperature.

□ 特点 Features

- 采用金属陶瓷及刚玉双层保护管，形成复合型结构。

Adopting metallic ceramic and Corundum protection tube with double-film to form compound structure

- 连接件采用耐热合金制造，寿命长。

Connection plug manufactured by heat alloy, long using life

- 耐高温熔盐腐蚀，抗热震性好。

Corrosion-resistant for high temperature melting salt, good shock-proof performance

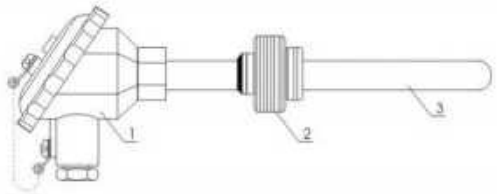
□ 品种规格 Type & Specification

型号 Type	分度号 Graduation	测温范围℃ T. Range	测量端保护管 Measuring End Thermowell			规格L或L×1(mm) Specification or L×l	热响应时间 $\tau_{0.5}$(秒) TRT.
			材料 Material	直径(mm) Diameter	长度(mm) Length		
WRPG-1323	S	0-1350	金属陶瓷 Metal Ceramic	φ23	300	500 1000	<90
WRPG-5323						500×500 750×750 1000×1000	

□ 主要技术指标 Main Technical Indicator

分度号 Graduation	允差值 Tolerance	使用寿命 Using Life	抗热震性 Heat & Shock-resisting	熔盐成份 Component of Fusing Salt
S	±0.25%t	在1280℃的$BaCl_2$熔盐中使用寿命大于1400小时 It is longer than 1400 hours in $BaCl_2$ fusing salt with temperature at 1280℃.	1280℃～15℃重复50次不出现裂纹 From 1280℃ to15℃, nocrack after repeated 50times	$BaCl_2$

□ 结构 Structure



1、接线盒 2、螺纹接头 3、金属陶瓷保护管

WRPG-1323

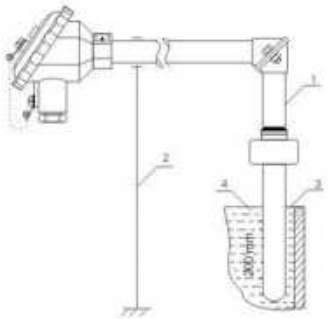
1.Connection Box
2.Thread Connector
3.Metallic Ceramic Thermowell

1、接线盒 2、直角联接头
3、螺纹接头 4、金属陶瓷保护管

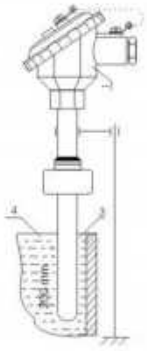
WRPG-5323

1.Connection Box
2.Straight Angle Connector
3.Thread Connector
4.Metallic Ceramic Thermowell

□ 安装 Installation



WRPG-5323



WRPG-5323

1、热电偶
2、支架
3、溶盐
4、置入深度

1.Thermocouple
2.Support
3.Fusing Salt
4.Insert Depth

WR□系列

BXW系列 便携式浸入型测温仪

BXW Series Portable Immerged Temperature Measurement Meter

□ 应用 Application

这是一种机电仪一体化的产品，热电偶，显示仪表，测枪三位一体；显示仪表为3½位数字显示，并带有峰值保持功能，如特殊需要，还可带记忆存储功能。

Ⅰ型产品其结构为热电偶，测枪一体化（不可拆卸）。

Ⅱ型产品是在Ⅰ型基础上在热电偶测量端配装功能各异可更换的耐腐蚀保护管，以适用于不同的测量介质。

Ⅲ型产品除具备Ⅰ、Ⅱ型的功能外，其热电偶与测枪可任意拆卸，以便于随时更换损坏的热电偶。

以上产品除Ⅰ型适用于气体温度测量外，其它产品主要适用于铝加工及有色冶金工业中铝、铜、锌液及氟化物电解质等溶体的温度测量，既可以间断使用，也可以在一定时间内连续测量。

This is an all-in-one electromechanical product, combining thermocouple, display meter and measurement gun together; Display meter is 31/2 digit display with peak keeping performance, if special, it also has memory performance.

The structure of type I is combining thermocouple and measurement gun, can't be disassembled.

Type II is based on type I, installing a renewable cauterization-resisting protection tube with various performances on the measurement end of thermocouple.

Except the performance of type II and I, the thermocouple of type III can be disassembled optionally, so that can renew the broken thermocouple any time.

□ 主要技术参数 Main Technical Parameters

型 号 Type	分度号 Graduation	允差值 Tolerance	测温范围℃ MeasuringRange	显示表 Display Meter	结构特征 Structure features
BXW-Ⅰ	K	±0.4%t 或 ±0.75%t	0~1000	3½位数字显示，精度0.5级 3½ Digital Display Accuracy Class: 0.5	整体式，用于气体温度测量。All-in-one, suitable for gas temperature measurement
BXW-Ⅱ					带有可更换的耐腐蚀保护管。Renewable cauterization-resisting protection tube
BXW-Ⅲ					同上，且铠装热电偶与枪体可拆卸更换 Same as above, and sheathed thermocouple and measurement gun can be disassembled and renewed.

注：铠装偶外皮材料使用GH3030时测温上限可达1300℃。

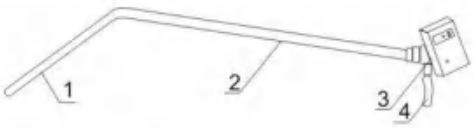
Notice: If useGH3030 as the outer material of sheathed thermocouple, the upper limit of temperature measurement can meet1300 ℃

□品种规格 Type & Specification

型号 Type	保护管 Thermowell				铠装偶 Sheathed Thermocouple	
	材料 Material	外径D(mm) Outer Diameter	长度L(mm) Length	适用介质 Suitable Medium	直径D(mm) Diameter	长度L(mm) Length
BXW-Ⅰ	1Cr18Ni9Ti HG3030	—	—	铝液电解质 Al Liquid Electrolyte	φ4 φ5 φ6 φ8	1000 1250 1500 1750 2000
BXW-Ⅱ	金属陶瓷 Metal Ceramic	φ16	300	铝液 Al Liquid		
				电解质 Electrolyte		
BXW-Ⅲ	金属陶瓷 Metal Ceramic	φ16 φ10	140 300 190	铝液 Al Liquid 电解质 Electrolyte 铜液 Al Liquid		

注：该种测温仪精度高，经计量局整体检定后，精度可达0.2%t,可用作现场校验仪。

Notice: The temperature measurement meter with high accuracy, its accuracy can reach 0.2% t, which can be used as correcting meter on spot , that is integrally inspected by measurement bureau.

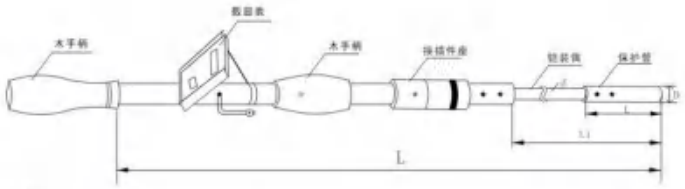


BXW-Ⅰ型
1、热电偶 2、测枪 3、数显表 4、手柄

Type BXW-I
1.Thermocouple
2.Measuring Gun
3.Digital Display Meter
4.Handle

BXW-Ⅱ型
1、保护管 2、热电偶 3、测枪 4、数显表 5、手柄

Type BXW-II
1.Thermowell
2.Thermocouple
3.Measuring Gun
4.Digital Display Meter
5.Handle



BXW-Ⅲ型
1、4 手柄 2、补偿导线的插头 3、数字温度表 5、6连接卡套甲、乙 7、热电偶 8、保护套管

Type BXW-III
1.4 Handle 2 Plug with Compensating Wire 3 Digital Display Meter
5, 6 Connecting Fastener 7Thermocouple 8 Thermowell

WR□Z系列 真空炉专用热电偶

Special Thermocouple for Vacuum Furnace

□ 应用 Application

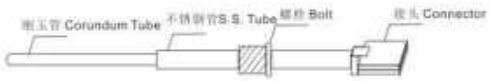
该系列产品由于采用了耐高温材料做保护管，因此可在1800～2000℃高温下长期稳定地工作。为防止真空热处理过程中零件与周围空气接触，必须预防空气进入真空炉，因此，对用于真空炉的热电偶的漏气率提出要求。通常以压升率指标来控制。进口真空炉的压升率小于0.268Pa/h。本公司生产的专用热电偶因采用实体化结构及密封性极强的接线方式，保证热电偶的压升率小于0.1Pa/h，可以有效地保证不破坏炉内的真空度。因此，该系列产品主要适用于高温真空及热处理等各种真空炉的温度测量，可替代价格昂贵的进口产品。

This seris are made use of high temperature resisting material for thermowell, so they can work stably and chronically from 1800 to 2000℃ We must hold the air into the vacuum furnace to avoid the parts contact to air in the vacuum thermal process, therefore, there is request about leakage for vacuum furnace thermocouple. Normally, it is controlled by the indicator of pressure raising rate. We can make sure thepressure raising rate of vacuum furnace is less than 0.268Pa/h. The special thermocouple we produce adopts materialization structure and the wiring method w/ strong seal performance, to make sure the pressure raising of thermocouple is less than 0.1Pa/h, and this can make sure never destroy the vacuum in furnace. So, this series products are mainly used to the temperature measurement of each kind of vacuum furnace in high temperature vacuum and thermal process, can replace the expensive imported products.

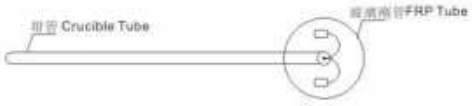
□ 品种规格 Specification

型号 Type	密封结构 Sealed Structure	分度号 Graduation	允差值 Tolerance	使用温度（℃） Using Temperature	热响应时间$t_{0.5}$（秒） TRT	保护管 Thermowell 材料 Material	保护管 Thermowell 直径d（mm） Diameter	长度L×1（mm） Length
WRRZ-235□ -265□ -295□	NPT1/2" 螺纹密封 Threaded Seal	B	±0.5t 或 ±0.25%t	600～1800	φ6, φ8管<60 φ10, φ12管<90	复合刚玉与耐热合金 Complex Corundum & Thermal Resisting Alloy	φ6 φ8 φ10 φ12 φ16	400×250 450×300 550×400 650×500 900×750 1150×1000 1650×1500
-435□ -465□ -495□	快速法兰（真空双胶圈密封） Quick Flange (Vacuum Double Glue Seal)							
WRW3Z-235□ -265□ -295□	NPT1/2" 螺纹密封 Threaded Seal	WRe3-WRe25	±0.5t 或 ±1.0%t	200～2000				
-435□ -465□ -495□	快速法兰（真空双胶圈密封） Quick Flange (Vacuum Double Glue Seal)							
WRW5Z-235□ -265□ -295□	NPT1/2" 螺纹密封 Threaded Seal	WRe5-WRe26						
-435□ -465□ -495□	快速法兰（真空双胶圈密封） Quick Flange (Vacuum Double Glue Seal)							

钨铼热电偶
WNi Thermocouple

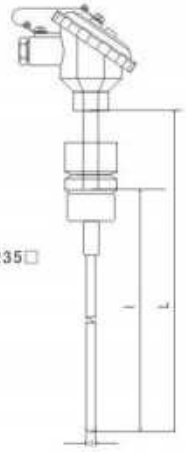


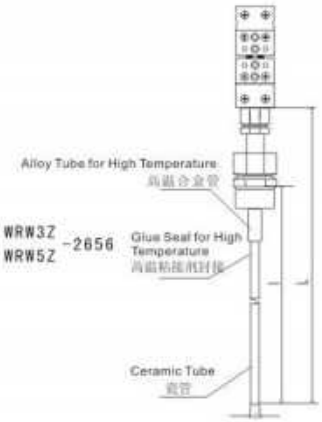
铂铑热电偶
Pt Thermocouple

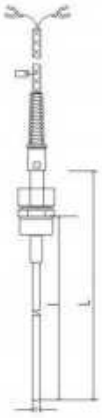


钨铼热电偶
WNi Thermocouple

铂铑热电偶
Pt Thermocouple







WR□B、WZPB系列

带温度变送器热电偶(阻)

Thermcouple (Thermal Resistance) with Temperature Transmitter

□ 应用 Application

通常和显示仪表、记录仪表、电子计算机等配套使用，输出4~20mA。直接测量各种生产过程中的0~1600℃范围内液体、蒸汽和气体介质以及固体表面温度。

It is usually used with display-meter,recording-meter and computer etc., outputting 4~20Ma, to directly measure temperature of liquid, vapor, gas medium and solid surface ranging from 0 to 1600 ℃ during various production processes.

□ 特点 Features

●二线制输出4~20mA，抗干扰能力强；
Two wire system output of 4~20Ma, strong anti-interference performance

●节省补偿导线及安装温度变送器费用；
Save cost of compensation wire & installation of temperature transmitter

●测量范围大；
Wide measuring range

●冷端温度自动补偿，非线性校正电路；
Automatic compensation of temperature at cold end, non-linearity correcting circuit

□ 工作原理 Working Principle

热电偶（阻）在工作状态下所测得的热电势（电阻）的变化，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。

Hydroelectric potential (resistance) of thermocouple (thermal resistance) will bring the unbalanced current signal through the electrical bridge, the signal will be amplified to 4~20mA D.C. signal and transfer to the instrument, the instrument will display the relevant temperature.

□ 主要技术参数 Main Technical Parameters

○产品执行标准
Standard

IEC584
IEC1515
IEC751
JB/T10201-2013
JB/T10202-2000

○测温范围及允差
Measuring Range & Tolerance

●热电阻
Thermal Resistance

型号 Type	分度号 Graduation	测温范围℃ Measuring Range	精度等级 Accuracy Class	允差 Tolerance
WZPB	Pt100	-200~+450	A级 Class A	±(0.15+0.002|t|)
			B级 Class B	±(0.30+0.005|t|)
WZCB	Cu50 Cu100	-50~+150	—	±(0.30+0.006|t|)

●热电偶
Thermocouple

型号 Type	分度号 Graduation	允差等级 Tolerance Class			
		I		II	
		允差值Tolerance	测温范围℃ Measuring Rang	允差值 Tolerance	测温范围℃ Measuring Rang
WRNB	K	±1.5℃	-40~+375	±2.5℃	-40~+333
		±0.004|t|	375~1000	±0.0075|t|	333~1300
WRMB	N	±1.5℃	-40~+375	±2.5℃	-40~+333
		±0.004|t|	375~1000	±0.0075|t|	333~1200
WREB	E	±1.5℃	-40~+375	±2.5℃	-40~+333
		±0.004|t|	375~800	±0.0075|t|	333~900
WRFB	J	±1.5℃	-40~+375	±2.5℃	-40~+333
		±0.004|t|	375~750	±0.0075|t|	333~750
WRCB	T	±1.5℃	-40~+125	±2.5℃	-40~+133
		±0.004|t|	125~350	±0.0075|t|	133~350

○输出信号：4~20mA，负载电阻250Ω，
Output Signal: 4~20ma, loading resistance, 250Ω
传输导线电阻100Ω
Transmitting wire resistance, 100Ω
○输出方法：二线制
Output Way: Two-wire
○允差等级：0.1；0.2；0.5
Tolerance Class :0.1, 0.2, 0.5
○供电电源：24V.DC±10%
Power Supply: 24V.DC ±10%
○防护等级：IP65
Protection Class: IP 65

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50Ω

Insulation resistance between instrument output connecting terminal and its case should be no less than 50 Ω

热响应时间 Thermal Response Time

当温度出现阶跃变化时，仪表的电流输出信号变化至相当于该阶跃变化的50%所需的时间，通常以τ0.5表示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τ0.5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τ0.5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 temperature has step-jumping change, the needed time for current output signal of instrument changes to 50% of the step-jumping change, this time is called thermal response time, indicating with τ0.5. When step-jumping response stable time of temperature transmitter is no more than1/5 times of τ0.5, thermal response time of instrument shall be considered as the thermal response time of thermocouple (thermal resistance).

When step-jumping response stable time of temperature transmitter is no more than1/2 times of τ0.5, thermal response time of instrument shall be considered as the thermal response time of temperature transmitter.

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。

$\triangle=\triangle_1+\triangle_2$

$\triangle_1$表示热电偶（阻）允许偏差；

$\triangle_2$表示变送器基本误差；

The basic error of instrument should be no more than the compound error caused by thermocouple (thermal resistance) and temperature transmitter.

$\triangle=\triangle1+\triangle2$

△1 tolerance value allowed by thermocouple (thermal resistance)

△2 basic error of temperature transmitter

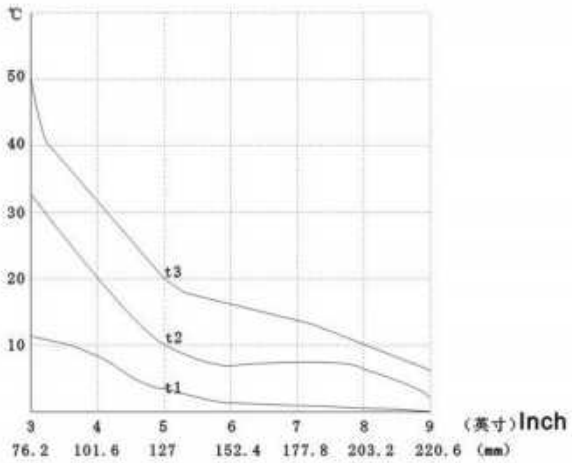
工作环境 Working Environment

安装场所等级 Installation Place Class	温度℃ Temperature	相对湿度% Relative Humidity	大气压力kPa Atmosphere Pressure
Cx1	-25~+55	5~95	86~106
Cx2	-25~+70		
Cx3	-40~+80		

支撑管长度确定
Determination of Support Tube Length

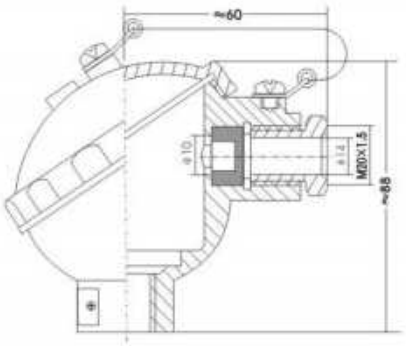
温度变送器的工作温度由支撑管所造成的壳体升温同环境温度之和。支撑管所造成的壳体升温见下图：

The working temperature of temperature transmitter equals to the case temperature rising caused by support tube and the environment temperature. For the case temperature rising caused by support tube, PLS see figure below:

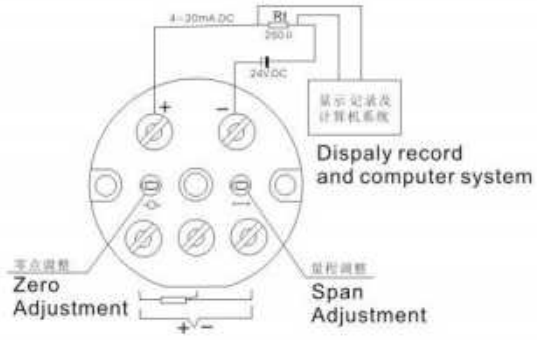


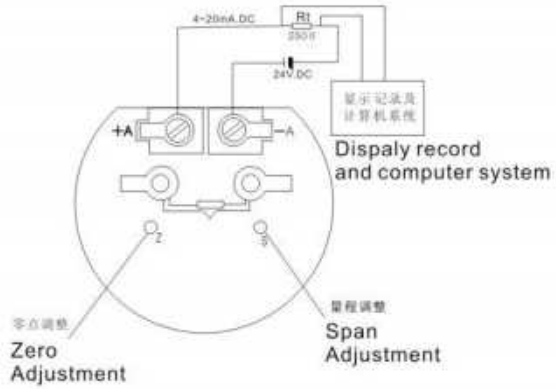
注：t_1=260℃ t_2=540℃ t_3=850℃
Notice:

● 接线盒形式
Connection Box Type



● 仪表接线方式 Instrument Wiring Method





型号命名方法 Naming

W 温度仪表 Temperature Instrument

类别 Type

R 热电偶 Thermocouple
Z 热电阻 Thermal Resistance

感温元件材料 Thermal Element Material

M 镍铬硅—镍硅 NiCrSi-NiSi
N 镍铬—镍硅 NiCr-NiSi
E 镍铬—铜镍 NiCr-CuNi
F 铁—铜镍 Fe-CuNi
C 铜—铜镍 Cu-CuNi

P 铂 Pt
C 铜 Cu

B 温度变送器 Temperature Transmitter

安装固定形式 Mounting & Fixing

1 无固定装置 W/o Fixing Device
2 固定螺纹 Fixed Thread
3 活动法兰 Movable Flange
4 固定法兰 Fixed Flange
5 活络管接头式 Movable Tube Connector
6 固定螺纹锥形保护管式 Fixed Thread Wimble Thermowell
7 直形管接头式 Straight Tube Connector
8 固定螺纹管接头式 Fixed Thread Tube Connector
9 活动螺纹管接头式 Movable Thread Tube Connector

接线盒形式 Connection Box

2 防喷式 Anti-spray

保护管直径 Thermowell Diameter

0 Φ16
1 Φ12(Φ20)
2 Φ20高铝质管Φ20 High Al Content Tube
3 Φ25高铝质管Φ25 High Al Content Tube

工作端形式 Operation End

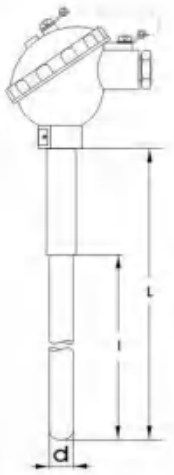
G 变截面 Variable Section

W R N B — 2 2 0 G 典型型号示例 Classical Example

型号及规格 Type & Specification

●无固定装置 Without Fixed Device

型号 Type	分度号 Graduation	测温范围℃ Measuring Range	热响应时间 TRT.	保护管材料 PTM	规格 Specification d	规格 Specification L×l
WRMB-122	N	0~1100	<120S	高铝质	φ16	300×150 350×200 400×250 450×300 500×400 650×500 900×750 1150×1000 1650×1500 2150×2000
WRNB-122	K					
WRMB-123	N				φ20	
WRNB-123	K					
WRMB-120 WRMB-120G	N	0~1000	<90S	0Cr25Ni20	φ16	
		0~ 800	<24S	1Cr18Ni9Ti		
WRNB-120 WRNB-120G	K	0~1000	<90S	0Cr25Ni20		
		0~ 800	<24S	1Cr18Ni9Ti		
WREB-120 WREB-120G	E	0~600	<90S	1Cr18Ni9Ti		
			<24S			
WRCB-120 WRCB-120G	T	0~350	<90S			
			<24S			
WRFB-120 WRFB-120G	J	0~500	<90S			
			<24S			
WZPB-121 WZPB-121G	Pt100	-200~450	<120S	1Cr18Ni9Ti	φ12	
			<24S			
WZCB-121 WZCB-121G	Cu50 Cu100	-50~150	<120S			
			<24S			



防喷式122 123型
Anti-spray Type 122 123

保护管其余材质根据协议订货；
Other materials of protection tube ordered according to agreement

防喷式120 121
Anti-spray Type 120 121

防喷式120G 121G
Anti-spray Type 20G 121G

选型须知
Type Selection:

1）型号
Type
2）分度号
Graduation
3）温度范围
Measuring range
4）热电偶（阻）精度等级
Accuracy class of thermocouple (thermal resistance)
5）安装固定形式
Mounting & fixing type
6）保护管材质
Protection tube material
7）长度或插入深度
Length or insert depth

例A：带温度变送器热电偶，K型，固定螺纹M27×2，保护管316L，长度450mm，插入深度300mm。

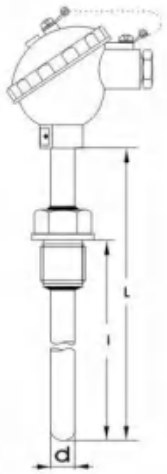
Example A: Thermocouple with temperature transmitter, type K, fixed thread M27×2, protection tube 316L, length 450mm. insert depth 300mm.

WRNB-220，L=450×300，dⅡBT4，-100~+200℃，保护管316L，螺纹M27×2

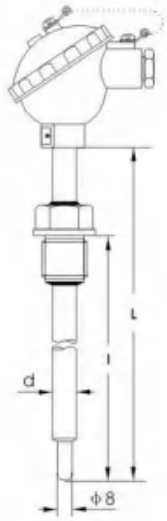
● 固定螺纹式 Fixed Thread Type

型 号 Type	分度号 Graduation	测温范围℃ Measuring Range	热响应时间 TRT.	保护管材料 PTM	规 格 Specification	
					d	L×I
WRMB-220 WRMB-220G	N	0~1000	≤90S	0Cr25Ni20	Φ16	300×150 350×200 400×250 450×300 500×400 650×500 900×750 1150×1000 1650×1500 2150×2000
		0~ 800	≤24S	1Cr18Ni9Ti		
WRNB-220 WRNB-220G	K	0~1000	≤90S	0Cr25Ni20		
		0~ 800	≤24S	1Cr18Ni9Ti		
WREB-220 WREB-220G	E	0~600	≤90S	1Cr18Ni9Ti		
			≤24S			
WRCB-220 WRCB-220G	T	0~350	≤90S			
			≤24S			
WRFB-220 WRFB-220G	J	0~500	≤90S			
			≤24S			
WZPB-221 WZPB-221G	Pt100	-200~450	≤120S	1Cr18Ni9Ti	Φ12	
			≤24S			
WZCB-221 WZCB-221G	Cu50 Cu100	-50~150	≤120S			
			≤24S			

保护管其余材质根据协议订货：
Other materials of protection tube ordered according to agreement

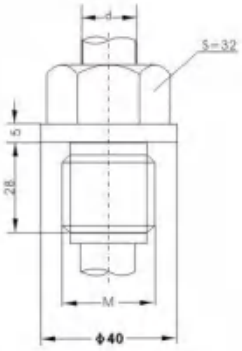


防喷式220 221型
Anti-spray Type 220 221



防喷式220G 221G型
Anti-spary Type 220G 221G

型号示例 Type model	螺纹规格 Thread Specification		d	公称压力 NP Mpa
	代号 Code	M		
WRNB-220		M27×2	Φ16	≤10
WRNB-220A	A	G3/4		
WRNB-220C	C	NPT3/4		
WZPB-221G		M27×2	Φ12	
WZPB-221GA	A	G3/4		
WZPB-221GC	C	NPT3/4		



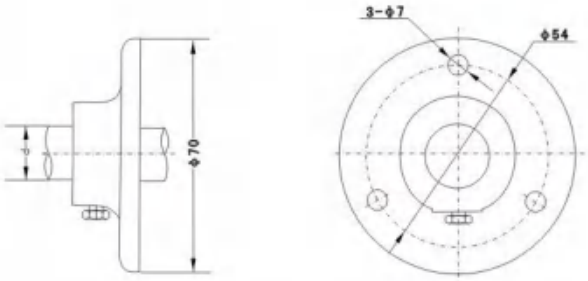
安装固定型式：固定螺纹
Installation & Fixing: Fixed Thread

活动法兰式 Movable Flange Type

型 号 Type	分度号 Graduation	测温范围℃ Measuring Range	热响应时间 TRT.	保护管材料 PTM	规 格 Specification	
					d	L
WRMB-320 WRMB-320G	N	0~1000	<90S	0Cr25Ni20	Φ16	300 350 400 450 500 650 900 1150 1650 2150
		0~ 800	<24S	1Cr18Ni9Ti		
WRNB-320 WRNB-320G	K	0~1000	<90S	0Cr25Ni20		
		0~ 800	<24S	1Cr18Ni9Ti		
WREB-320 WREB-320G	E	0~600	<90S	1Cr18Ni9Ti		
			<24S			
WRCB-320 WRCB-320G	T	0~350	<90S			
			<24S			
WRFB-320 WRFB-320G	J	0~500	<90S			
			<24S			
WZPB-321 WZPB-321G	Pt100	-200~450	<120S	1Cr18Ni9Ti	Φ12	
			<24S			
WZCB-321 WZCB-321G	Cu50 Cu100	-50~150	<120S			
			<24S			

防喷式320 321型
Anti-spray Type 320 321

保护管其余材质根据协议订货：
Other materials of protection tube ordered according to agreement



安装固定型式：活动法兰
Installation & Fixing: Movable Flange

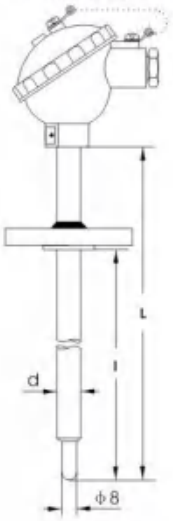
防喷式320G 321G型
Anti-spray Type 320G 321G

● 固定法兰式 Fixed Flange Type

型 号 Type	分度号 Graduation	测温范围℃ Measuring Range	热响应时间 TRT.	保护管材料 PTM	规 格 Specification	
					d	L×I
WRMB-420 WRMB-420G	N	0~1000	≤90S	0Cr25Ni20	φ16	300×150 350×200 400×250 450×300 500×400 650×500 900×750 1150×1000 1650×1500 2150×2000
		0~ 800	≤24S	1Cr18Ni9Ti		
WRNB-420 WRNB-420G	K	0~1000	≤90S	0Cr25Ni20		
		0~ 800	≤24S	1Cr18Ni9Ti		
WREB-420 WREB-420G	E	0~600	≤90S	1Cr18Ni9Ti		
			≤24S			
WRCB-420 WRCB-420G	T	0~350	≤90S			
			≤24S			
WRFB-420 WRFB-420G	J	0~500	≤90S			
			≤24S			
WZPB-421 WZPB-421G	Pt100	-200~450	≤120S	1Cr18Ni9Ti	φ12	
			≤24S			
WZCB-421 WZCB-421G	Cu50 Cu100	-50~150	≤120S			
			≤24S			

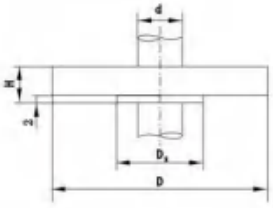
保护管其余材质根据协议订货；
Other materials of protection tube ordered according to agreement.

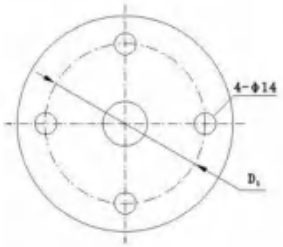
防喷式420 421型
Anti-spray Type 420 421



防喷式420G 421G型
Anti-spray Type 420G 421 G

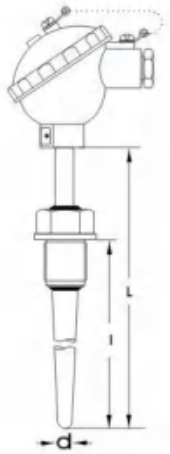
型号示例 Type	螺纹规格 Thread specification					公称压力 Mpa NP.
	D	D_1	D_2	H	D	
WRNB-420	φ95	φ65	φ46	14	φ16	≤2.5
WRNB-420G	φ105	φ75	φ56	16		
WZPB-421	φ115	φ85	φ65	16	φ16	
WZPB-421G	φ115	φ85	φ65			





安装固定型式：固定法兰
Installation & Fixing: Fixed Flange

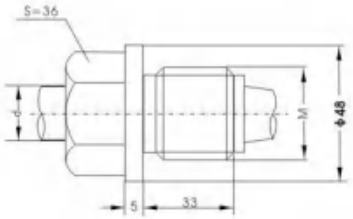
● 固定螺纹锥形保护管式
With Fixed Threaded Cone Connector Type



型 号 Type	分度号 Graduation	测温范围℃ Measuring Range	热响应时间 TRT.	保护管材料 PTM	规 格 Specification	
					d	L×l
WRMB-620 WRMB-620G	N	0~1000	<90S	0Cr25Ni20	Φ15	300×150 350×200 400×250 450×300 500×400
		0~ 800		1Cr18Ni9Ti		
WRNB-620 WRNB-620G	K	0~1000		0Cr25Ni20		
		0~ 800		1Cr18Ni9Ti		
WREB-620 WREB-620G	E	0~600		1Cr18Ni9Ti		
WRCB-620 WRCB-620G	T	0~350				
WRFB-620 WRFB-620G	J	0~500				
WZPB-621 WZPB-621G	Pt100	-200~450	<90S	1Cr18Ni9Ti		
WZCB-621 WZCB-621G	Cu50 Cu100	-50~150				

保护管其余材质根据协议订货；
Other materials of protection tube ordered according to agreement.

型号示例 Type Model	螺纹规格 Thread Specification		公称压力 NP Mpa
	代号Code	M	
WRNB-620		M33×2	≤30
WRNB-620A	A	NPT1	
WZPB-620		M33×2	
WZPB-620A	A	NPT1	

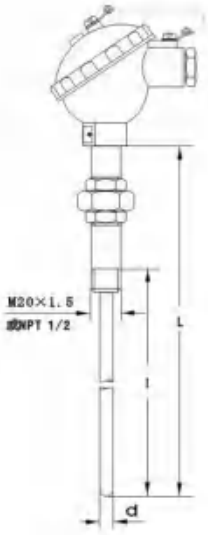


安装固定型式：固定螺纹锥形保护管
Installation & Fixing: Fixed Thread Wimble Thermowell

● 活络管接头式 Elbow Connector Type

型 号 Type	分度号 Graduation	测温范围℃ Measuring Range	螺纹规格 Thread Specification	保护管材料 PTM	规格Specification d	规格Specification L
WRMB-52	N	0~1000	M20×1.5	1Cr18Ni9Ti	φ3 φ4 φ5 φ6 φ8	245 270 295 345 395 445 545 645 745 899 1149
WRMB-52A			NPT1/2			
WRNB-52	K		M20×1.5			
WRNB-52A			NPT1/2			
WREB-52	E	0~600	M20×1.5			
WREB-52A			NPT1/2			
WRCB-52	T	0~350	M20×1.5			
WRCB-52A			NPT1/2			
WRFB-52	J	0~500	M20×1.5			
WRFB-52A			NPT1/2			
WZPB-52	Pt100	-200~450	M20×1.5	1Cr18Ni9Ti	φ5 φ6 φ8	
WZPB-52A			NPT1/2			
WZCB-52	Cu50 Cu100	-50~150	M20×1.5			
WZCB-52A			NPT1/2			

★：1）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;
L is only for reference if there is no special agreement, insert depth of thermocouple should be thermal protection tube with size U
2）热安装套管形式详见《热安装套管图》。
For more information about protection tube type, please see the figure.

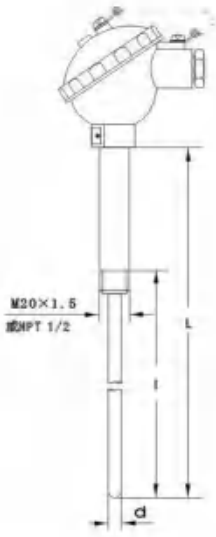


防喷式52 52A型
Anti-spray 52 52A

● 直形管接头式 Straight Tube Connector Type

型 号 Type	分度号 Graduation	测温范围℃ Measuring Range	螺纹规格 Thread Specification	保护管材料 PTM	规格Specification d	规格Specification L
WRMB-72	N	0~1000	M20×1.5	1Cr18Ni9Ti	φ3 φ4 φ5 φ6 φ8	245 270 295 345 395 445 545 645 745 899 1149
WRMB-72A			NPT1/2			
WRNB-72	K		M20×1.5			
WRNB-72A			NPT1/2			
WREB-72	E	0~600	M20×1.5			
WREB-72A			NPT1/2			
WRCB-72	T	0~350	M20×1.5			
WRCB-72A			NPT1/2			
WRFB-72	J	0~500	M20×1.5			
WRFB-72A			NPT1/2			
WZPB-72	Pt100	-200~450	M20×1.5	1Cr18Ni9Ti	φ5 φ6 φ8	
WZPB-72A			NPT1/2			
WZCB-72	Cu50 Cu100	-50~150	M20×1.5			
WZCB-72A			NPT1/2			

★：1）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;
L is only for reference if there is no special agreement, insert depth of thermocouple should be thermal protection tube with size U
2）热安装套管形式详见《热安装套管图》。
For more information about protection tube type, please see the figure.

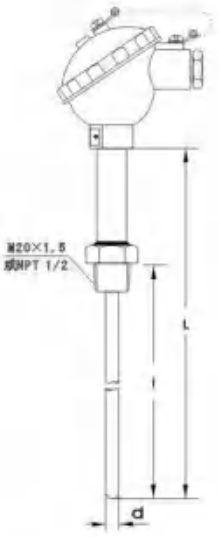


防喷式72 72A型
Anti-spray Type 72 72A

固定螺纹管接头式 Fixed Threaded Tube Connector

型 号 Type	分度号 Graduation	测温范围℃ Measuring Range	螺纹规格 Thread Specification	保护管材料 PTM	规格Specification d	规格Specification L_1
WRMB-82	N	0~1000	M20×1.5	1Cr18Ni9Ti	φ3 φ4 φ5 φ6 φ8	245 270 295 345 395 445 545 645 745 899 1149
WRMB-82A			NPT1/2			
WRNB-82	K		M20×1.5			
WRNB-82A			NPT1/2			
WREB-82	E	0~600	M20×1.5			
WREB-82A			NPT1/2			
WRCB-82	T	0~350	M20×1.5			
WRCB-82A			NPT1/2			
WRFB-82	J	0~500	M20×1.5			
WRFB-82A			NPT1/2			
WZPB-82	Pt100	-200 ~ 450	M20×1.5	1Cr18Ni9Ti	φ5 φ6 φ8	
WZPB-82A			NPT1/2			
WZCB-82	Cu50 Cu100	-50~150	M20×1.5			
WZCB-82A			NPT1/2			

★：1）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;
L is only for reference I there is no special agreement, insert depth of thermocouple should be thermal protection tubewith size U
2）热安装套管形式详见《热安装套管图》。
For more information about protection tube type, please see the figure.

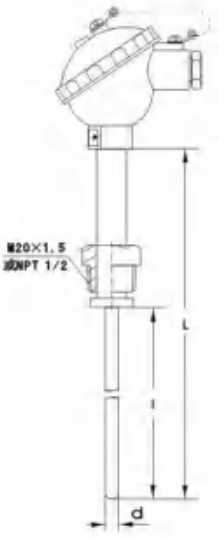


防喷式82 82A型
Anti-spray Type 82 82A

活动螺纹管接头式 With Loose threaded Tube Connector

型 号 Type	分度号 Graduation	测温范围℃ Measuring Range	螺纹规格 Thread Specification	保护管材料 PTM	规格Specification d	规格Specification L_1
WRMB-92	N	0~1000	M20×1.5	1Cr18Ni9Ti	φ3 φ4 φ5 φ6 φ8	245 270 295 345 395 445 545 645 745 899 1149
WRMB-92A			NPT1/2			
WRNB-92	K		M20×1.5			
WRNB-92A			NPT1/2			
WREB-92	E	0~600	M20×1.5			
WREB-92A			NPT1/2			
WRCB-92	T	0~350	M20×1.5			
WRCB-92A			NPT1/2			
WRFB-92	J	0~500	M20×1.5			
WRFB-92A			NPT1/2			
WZPB-92	Pt100	-200~450	M20×1.5	1Cr18Ni9Ti	φ5 φ6 φ8	
WZPB-92A			NPT1/2			
WZCB-92	Cu50 Cu100	-50~150	M20×1.5			
WZCB-92A			NPT1/2			

★：1）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;
L is only for reference if there is no special agreement, insert depth of thermocouple should be size U thermal protection tube
2）热安装套管形式详见《热安装套管图》。
For more information about protection tube type, please see the figure.



防喷式92 92A型
Anti-spray Type 92 92A

WR□B系列

带温度变送器管显示防爆热电偶(阻)

Explosion-proof Thermocouple (Thermal Resistance) with Temperature Transmitter Dispaly Tube

□ 应用 Application

通常和显示仪表、记录仪表、电子计算机等配套使用，输出4~20mA。直接测量各种生产过程中的-200℃~1300℃范围内液体、蒸汽和气体介质以及固体表面温度。

It is usually used with display meter, recording meter and computer etc. to directly measure temperature of liquid, vapor, gas medium and solid surface ranging from -200 to 1300 ℃ during various production processes with output of 4~20Ma.

□ 特点 Features

●二线制输出4~20mA，抗干扰能力强；
Two-wire system output of 4~20Ma, strong anti-interference performance
●节省补偿导线及安装温度变送器费用；
Save cost of compensation wire & installation of temperature transmitter
●测量范围大；
Wide measuring range
●冷端温度自动补偿，非线性校正电路；
Automatic compensation of temperature at cold end, non-linearity correcting circuit

□ 工作原理 Working Principle

隔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，使爆炸后的火焰温度传不到腔外，从而进行测温。热电偶（阻）产生的热电动势（电阻值）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。

Explosion-proof thermocouple makes use of gap explosion-separation principle. When there is explosion inside the box, the fire can be extincted and cooled theroughthe gap on the interface, and the fire temperature willnot lead outside, then measuring temperature. Hydroelectric potential (resistance) of thermocouple (thermal resistance) will bring the unbalanced current signal through the electricalbridge, the signal will be amplified to 4~20mA D.C. signal and transfer to the instrument, the instrument will display the relevant temperature.

□ 主要技术参数 Main Technical Parameters

● 产品执行标准
Standard

IEC 584
IEC 1515
IEC 751
GB 3836-2010
JB/T 10201-2000
JB/T 10202-2000

● 测温范围及允差
Measuring Range & Tolerance
●热电偶
Thermocouple

型号 Type	分度号 Graduation	允差等级 Accuracy Class I 允差值 Tolerance	I 测温范围℃ Measuring Range	II 允差值 Tolerance	II 测温范围℃ Measuring Range
WRNB	K	±1.5℃	-40~+375	±2.5℃	-40~+333
		±0.004|t|	375~1000	±0.0075|t|	333~1200
WRMB	N	±1.5℃	-40~+375	±2.5℃	-40~+333
		±0.004|t|	375~1000	±0.0075|t|	333~1200
WREB	E	±1.5℃	-40~+375	±2.5℃	-40~+333
		±0.004|t|	375~800	±0.0075|t|	375~900
WRFB	J	±1.5℃	-40~+375	±2.5℃	-40~+333
		±0.004|t|	375~750	±0.0075|t|	333~750
WRCB	T	±1.5℃	-40~+375	±2.5℃	-40~+133
		±0.004|t|	125~350	±0.0075|t|	133~1000

● 热电阻 Thermocouple

型号 Type	分度号 Graduation	测温范围℃ Measuring Range	精度等级 Accuracy Class	允许偏差 Tolerance Allowed
WZPB	Pt100	-200~+450	A级 Class A	±(0.15+0.002|t|)
			B级 Class B	±(0.30+0.005|t|)
WZCB	Cu50 Cu100	-50~150	-	±(0.30+0.006|t|)

注：t为感温元件实测温度绝对值。
Notice: t is the absolute value of actual temperature measured

● 输出信号：4~20mA，负载电阻250Ω，传输导线电阻100Ω

Output Signal: 4~20mA, Loading Resistance, 250Ω
Transforming Wire Resistance, 100Ω

输出方法：二线制
Output Method: Two Wire

● 精度等级

- 温度变送器精度等级：0.1；0.2；0.5
- 显示器精度：模拟指示2.5级；数字显示1.0级

Accuracy Class of Temperature Transmitter: 0.1, 0.2, 0.5
Accuracy of Display Meter: Analog Indication Class 2.5, Digital Display Class 0.1

● 供电电源：24V.DC±10%

Power Supply: 24V.DC +/-10%

● 防护等级：IP65

Protection Class: Ip65

● 防爆等级：

Explosion-proof Class:

隔爆形：dIIBT4，dIICT5，dIICT6
Explosion-separation: dIIBT4，dIICT5，dIICT6
本质安全形：iaIICT6
Intrinsic Safety: iaIICT6

Explosion-proof class:
Explosion-separation type: d IIBT4, d IICT4, d IICT6
Intrinsic safety type: iaIICT6

● 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。

Insulation resistance between instrument output wire connecting head and outer case should be no less than50 MΩ

● 热响应时间：Thermal Response Time

当温度出现阶跃变化时，仪表的电流输出信号变化至相当于该阶跃变化的50%所需的时间，通常以τ0.5表示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τ0.5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τ0.5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 temperature has step-jumping change, the needed time for current output signal of instrument changes to 50% of the step-jumping change, this time is called thermal response time, indicating with τ0.5.
When step-jumping response stable time of temperature transmitter is no more than1/5 times of τ0.5, thermal response time of instrument shall be considered as the thermal response time of thermocouple (thermal resistance).

When step-jumping response stable time of temperature transmitter is no more than1/2 times of τ0.5, thermal response time of instrument shall be considered as the thermal response time of temperature transmitter.

● 基本误差 Basic error

带温度变送器的热电偶（阻）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。

即：$\triangle=\triangle_1+\triangle_2$

$\triangle_1$为热电偶或热电阻的基本误差；

$\triangle_2$为温度变送器的基本误差。

The basic error of instrument should be no less than the compound error caused by thermocouple (thermal resistance) and temperature transmitter.

$\triangle = \triangle_1 + \triangle_2$

$\triangle_1$ tolerance value allowed by thermocouple (thermal resistance)

$\triangle_2$ basic error of temperature transmitter

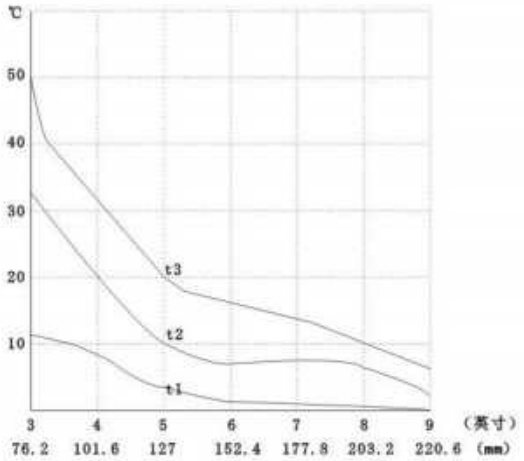
● 工作环境 Working environment

安装场所等级 Installation place class	温度℃ Temperature	相对湿度% Relative humidity	大气压力kPa Atmosphere pressure
Cx1	-25~+55	5~95	86~106
Cx2	-25~+70		
Cx3	-40~+80		

● 支撑管长度确定 Determination of Support Tube Length

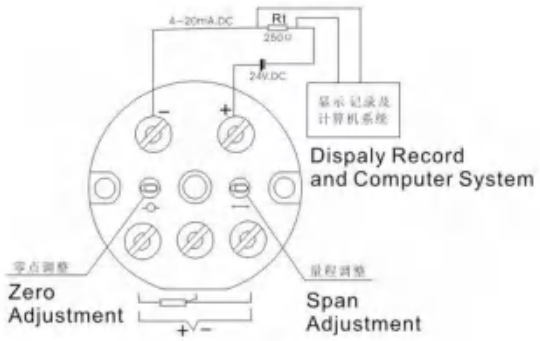
温度变送器的工作温度由支撑管所造成的壳体升温同环境温度之和。支撑管所造成的壳体升温见下图：

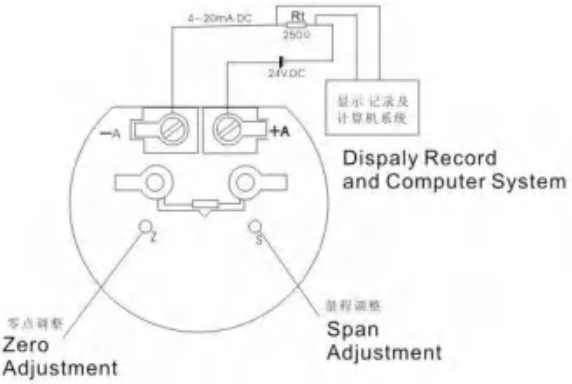
The shell temperature rising of the working temperature on temperature transmitter is the same with environment temperature. The shell temperature rising caused by support tube, PLS see figure below:



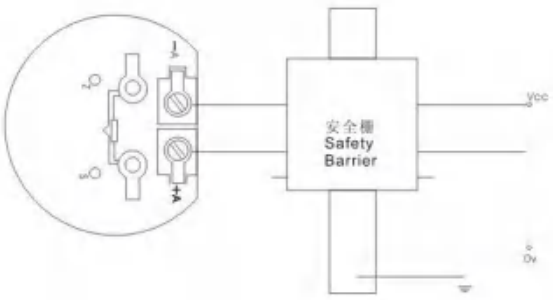
注：t_1=260℃ t_2=540℃ t_3=850℃

●仪表接线方式
Instrument Wiring Method



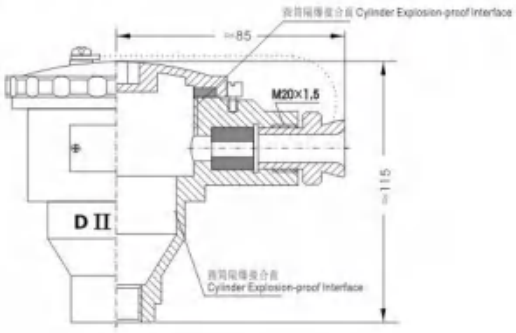


●本质安全式接线示意
Intrinsic Safety Wiring Method

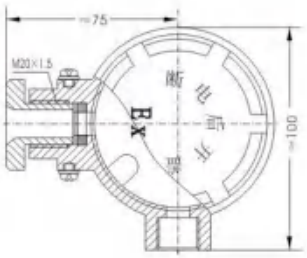


●接线盒形式
Connection Box Type

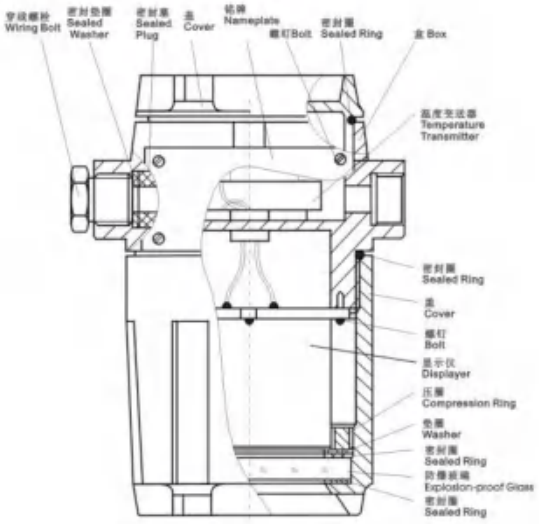
●dⅡBT口级



●dⅡCT口级



●带显示接线盒结构示意
W/ Display Wiring Method



型号命名方法 Naming

W 温度仪表 Temperature Instrument

类别 Type

R	热电偶 Thermocouple
Z	热电阻 Thermal resistance

感温元件材料 Thermal Element Materials

M	镍铬硅—镍硅 NiCrSi-NiSi
N	镍铬—镍硅 NiCr-NiSi
E	镍铬—铜镍 NiCr-CuNi
F	铁—铜镍 Fe-CuNi
C	铜—铜镍 Cu-CuNi
P	铂 Pt
C	铜 Cu

B 温度变送器 Temperature Transmitter

安装固定形式 Mounting & Fixing

1	无固定装置 W/o Fixing Device
2	固定螺纹 Fixed Thread
3	活动法兰 Movable Flange
4	固定法兰 Fixed Flange
5	活络管接头式 Movable Tube Connector
6	固定螺纹锥形保护管式 Fixed Thread Wimble Thermowell
7	直形管接头式 Straight Tube Connector
8	固定螺纹管接头式 Fixed Thread Tube Connector
9	活动螺纹管接头式 Movable Thread Tube Connector

接线盒形式 Connection Box

4	防爆式 Explosion-proof

保护管直径 Thermowell Diameter

0	Φ16
1	Φ20(Φ12)

工作端形式 Operation End

G	变截面 Variable Section

显示形式 Display

M	模拟显示 Analog Display
S	数字显示 Digital Display

附加安装形式 Additional Installation Type

无	正常安装 Blank	Normal
Z	分离安装 Z	Separation

W	R	N	B	—	2	4	0	G	S	Z

典型型号示例 Classical Example

型号及规格 Type & Specification

●无固定装置式 Without Fixing Device

型 号 Type	分度号 Graduation	测温范围℃ Measuring range	热响应时间 TRT	隔爆等级 PTM.	规格Specification d	规格Specification L
WRMB-140	N	0~800	<90S	dⅡBT4	Φ16	300 350 400 450 500 550 650 900 1150 1650 2150
WRMB-140G			<24S			
WRNB-140	K	0~800	<90S			
WRNB-140G			<24S			
WREB-140	E	0~600	<90S	dⅡCT5		
WREB-140G			<24S			
WRCB-140	T	0~350	<90S	dⅡCT6		
WRCB-140G			<24S			
WRFB-140	J	0~500	<90S	iaⅡCT6		
WRFB-140G			<24S			
WZPB-140	Pt100	-200~450	<120S			
WZPB-140G			<24S			
WZCB-140	Cu50 Cu100	-50~150	<120S			
WZCB-140G			<24S			

保护管材质为1Cr18Ni9Ti，其余根据协议订货；
other materials of protection tube ordered according to agreement

选型须知

1）型号
2）分度号
3）防爆等级
4）温度范围
5）热电偶（阻）精度等级
6）温度变送器（显示器）精度等级
7）安装固定形式
8）保护管材质
9）长度或插入深度

Type Selection :

1)Type
2)Graduation
3)Explosion-proof Class
4)Temperature Range
5)Accuracy Class of Thermocouple/Thermal Resistance
6)Accuracy Class of Temperature Transmitter/Displayer
7)Mounting & Fixing
8)Thermowell Material
9)Length or Insert Depth

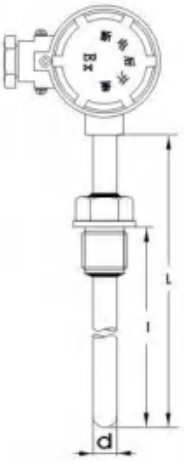
例A：带温度变送器防爆热电偶，K型，固定螺纹M27×2，防爆等级iaⅡCT4级，温度范围-200~+150℃，温度变送器精度等级0.5，保护管316L，长度450mm，插入深度300mm。

Example A: explosion-proof thermocouple with temperature transmitter, type K, fixed thread M27×2, accuracy class of temperature transmitter 0.5, protection tube 316L, length 450mm. Insert depth 300mm.

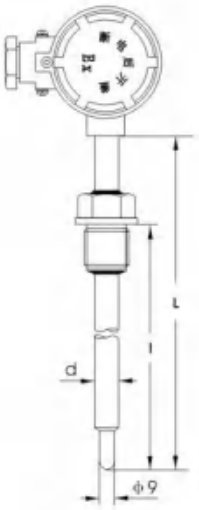
WRNB-140, L=450×300, iaⅡCT4, 温度变送器0.5级， 保护管316L，螺纹M27×2
WRNB-110, L=450×300, d IIbt4, temperature transmitter 0.5protection tube 316L, thread M27×2

固定螺纹式 Fixed Thread

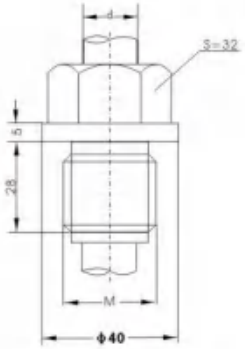
型 号 Type	分度号 Graduation	测温范围℃ Measuring Range	热响应时间 TRT	隔爆等级 Explosion-separation Class	规格Specification d	规格Specification L×I
WRMB-240	N	0~800	≤90S	dⅡBT4	φ16	300×150
WRMB- 240G			≤24S			350×200
WRNB-240	K	0~800	≤90S			400×250
WRNB- 240G			≤24S			450×300
WREB-240	E	0~600	≤90S	dⅡCT5		500×350
WREB- 240G			≤24S			550×400
WRCB-240	T	0~350	≤90S	dⅡCT6		650×500
WRCB- 240G			≤24S			900×750
WRFB-240	J	0~500	≤90S			1150×1000
WRFB- 240G			≤24S	iaⅡCT6		1650×1500
WZPB-241	Pt100	-200~450	≤120S		φ12	2150×2000
WZPB- 241G			≤24S			
WZCB-241	Cu50 Cu100	-50~150	≤120S			
WZCB- 241G			≤24S			



保护管材质为1Cr18Ni9Ti，其余材质根据协议订货：
Other materials of protection tube ordered according to agreement.



型号示例 Type Model	螺纹规格 Thread Specification 代号 Code	M	d	公称压力 NP Mpa
WRNB-240		M27×2	φ16	≤10
WRNB-240A	A	G3/4		
WRNB-240C	C	NPT3/4		
WRNB-240G		M27×2		
WRNB-240GA	A	G3/4		
WRNB-240GC	C	NPT3/4		

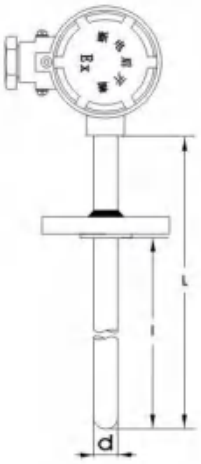


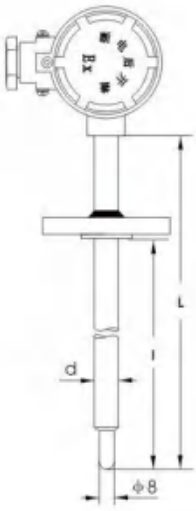
安装固定型式：固定螺纹
Installation & Fixing: Fixed Thread

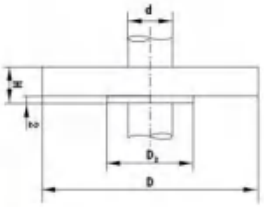
● 固定法兰式 Fixed Flange Type

型 号 Type	分度号 Graduation	测温范围℃ Measuring Range	热响应时间 TRT	隔爆等级 Explosion-separation Class	规格Specification d	规格Specification L×l
WRMB-440	N	0~800	<90S	dⅡBT4	ϕ16	300×150
WRMB-440G			<24S			350×200
WRNB-440	K	0~800	<90S			400×250
WRNB-440G			<24S			450×300
WREB-440	E	0~600	<90S	dⅡCT5		500×350
WREB-440G			<24S			550×400
WRCB-440	T	0~350	<90S			650×500
WRCB-440G			<24S	dⅡCT6		900×750
WRFB-440	J	0~500	<90S			1150×1000
WRFB-440G			<24S			1650×1500
WZPB-441	Pt100	-200~450	<120S	iaⅡCT6	ϕ12	2150×2000
WZPB-441G			<24S			
WZCB-441	Cu50 Cu100	-50~150	<120S			
WZCB-441G			<24S			

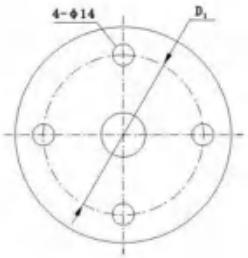
保护管材质为1Cr18Ni9Ti，其余材质根据协议订货：
other materials of protection tube ordered according to agreement / we may provide protection tube of other materials as user's demand







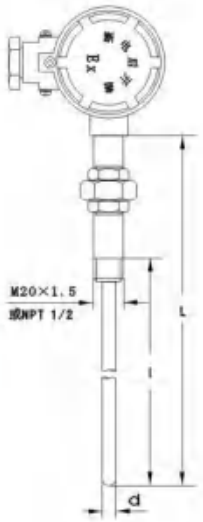
型号示例 Type Model	螺纹规格 Thread Specification D	D_1	D_2	H	d	公称压力 NP Mpa
WRNB-440	ϕ95	ϕ65	ϕ46	14	ϕ16	≤2.5
WRNB-440G	ϕ105	ϕ75	ϕ56	16		
WZPB-441	ϕ115	ϕ85	ϕ65	16	ϕ12	
WZPB-441G	ϕ115	ϕ85	ϕ65			



安装固定型式：固定法兰
Installation & Fixing: Fixed Flange

活络管接头式 Elbow Connector Type

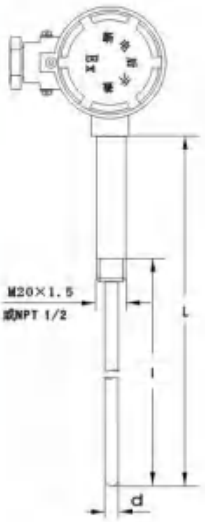
型 号 Type	分度号 Graduation	测温范围℃ Measuring Range	螺纹规格 TRT	隔爆等级 Explosion-separation Class	规格Specification d	规格Specification L_1
WRMB-54	N	0~800	M20×1.5	dⅡBT4	φ3 φ4 φ5 φ6 φ8	250 275 295 350 400 450 550 650 750 900 1150
WRMB-54A			NPT1/2			
WRNB-54	K	0~800	M20×1.5			
WRNB-54A			NPT1/2			
WREB-54	E	0~600	M20×1.5	dⅡCT5		
WREB-54A			NPT1/2			
WRCB-54	T	0~350	M20×1.5	dⅡCT6		
WRCB-54A			NPT1/2			
WRFB-54	J	0~500	M20×1.5			
WRFB-54A			NPT1/2	iaⅡCT6		
WZPB-54	Pt100	-200~450	M20×1.5		φ5 φ6 φ8	
WZPB-54A			NPT1/2			
WZCB-54	Cu50 Cu100	-50~150	M20×1.5			
WZCB-54A			NPT1/2			



1）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；
L is only for reference if no special agreement, insert depth of thermocouple should be size U thermal protection tube
2）热安装套管形式详见《热安装套管图》。
For more information about protection tube type, please see the figure.

直形管接头式 Straight Tube Connector Type

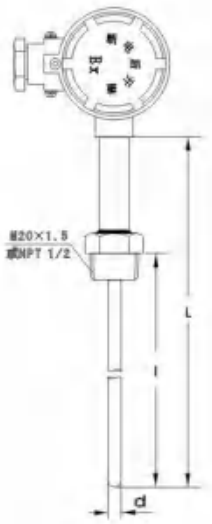
型 号 Type	分度号 Graduation	测温范围℃ Measuring Range	螺纹规格 TRT	隔爆等级 Explosion-separation Class	规格Specification d	规格Specification L_1
WRMB-74	N	0~800	M20×1.5	dⅡBT4	φ3 φ4 φ5 φ6 φ8	250 275 295 350 400 450 550 650 750 904 1154
WRMB-74A			NPT1/2			
WRNB-74	K	0~800	M20×1.5			
WRNB-74A			NPT1/2			
WREB-74	E	0~600	M20×1.5	dⅡCT5		
WREB-74A			NPT1/2			
WRCB-74	T	0~350	M20×1.5	dⅡCT6		
WRCB-74A			NPT1/2			
WRFB-74	J	0~500	M20×1.5			
WRFB-74A			NPT1/2	iaⅡCT6		
WZPB-74	Pt100	-200~450	M20×1.5		φ5 φ6 φ8	
WZPB-74A			NPT1/2			
WZCB-74	Cu50 Cu100	-50~150	M20×1.5			
WZCB-74A			NPT1/2			



1）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；
L is only for reference if no special agreement, insert depth of thermocouple should be size U thermal protection tube
2）热安装套管形式详见《热安装套管图》。
For more information about protection tube type, please see the figure.

固定螺纹管接头式 Fixed Thread Tube Connector

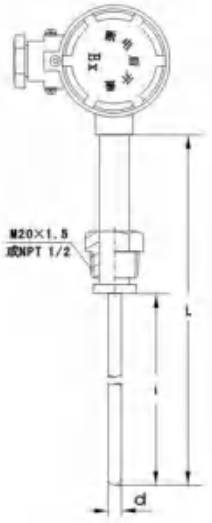
型 号 Type	分度号 Graduation	测温范围℃ Measuring Range	连接尺寸 Connection Size	隔爆等级 Explosion-separation Class	规格Specification	
					d	L_1
WRMB-84	N	0~800	M20×1.5	dⅡBT4	φ3	250
WRMB-84A			NPT1/2		φ4	275
WRNB-84	K	0~800	M20×1.5		φ5	295
WRNB-84A			NPT1/2		φ6	350
WREB-84	E	0~600	M20×1.5	dⅡCT5	φ8	400
WREB-84A			NPT1/2			450
WRCB-84	T	0~350	M20×1.5	dⅡCT6		550
WRCB-84A			NPT1/2			650
WRFB-84	J	0~500	M20×1.5	iaⅡCT6		750
WRFB-84A			NPT1/2			900
WZPB-84	Pt100	-200~450	M20×1.5		φ5	1150
WZPB-84A			NPT1/2		φ6	
WZCB-84	Cu50 Cu100	-50~150	M20×1.5		φ8	
WZCB-84A			NPT1/2			



1）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；
L is only for reference if no special agreement, insert depth of thermocouple should be size U thermal protection tube
2）热安装套管形式详见《热安装套管图》。
For more information about protection tube type, please see the figure.

活动螺纹管接头式 With moveable threaded tube connector

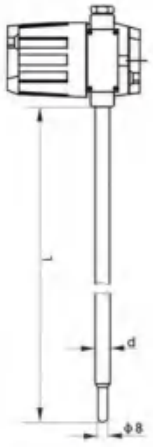
型 号 Type	分度号 Graduation	测温范围℃ Measuring Range	连接尺寸 Connection Size	隔爆等级 Explosion-separation Class	规 格Specification	
					d	L_1
WRMB-94	N	0~800	M20×1.5	dⅡBT4	φ3	250
WRMB-94A			NPT1/2		φ4	275
WRNB-94	K	0~800	M20×1.5		φ5	295
WRNB-94A			NPT1/2		φ6	350
WREB-94	E	0~600	M20×1.5	dⅡCT5	φ8	400
WREB-94A			NPT1/2			450
WRCB-94	T	0~350	M20×1.5	dⅡCT6		550
WRCB-94A			NPT1/2			650
WRFB-94	J	0~500	M20×1.5	iaⅡCT6		750
WRFB-94A			NPT1/2			900
WZPB-94	Pt100	-200~450	M20×1.5		φ5	1150
WZPB-94A			NPT1/2		φ6	
WZCB-94	Cu50 Cu100	-50~150	M20×1.5		φ8	
WZCB-94A			NPT1/2			



1）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；
L is only for reference if no special agreement, insert depth of thermocouple should be size U thermal protection tube
2）热安装套管形式详见《热安装套管图》。
For more information about protection tube type, please see the figure.

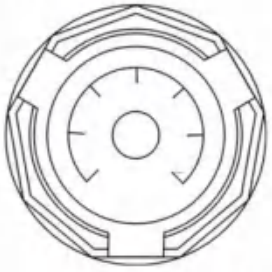
无固定装置式 Without Fixing Device

型号 Type	分度号 Graduation	测温范围℃ Measuring Range	热响应时间 TRT.	隔爆等级 Ex.-sep. Class	规格 Specification d	规格 Specification l
WRMB-140M WRMB-140S	N	0~800	<90S	dⅡBT4 dⅡCT5 dⅡCT6 iaⅡCT6	Φ16	300 350 400 450 500 550 650 900 1150 1650 2150
WRMB-140GM WRMB-140GS			<24S			
WRNB-140M WRNB-140S	K	0~800	<90S			
WRNB-140GM WRNB-140GS			<24S			
WREB-140M WREB-140S	E	0~600	<90S			
WREB-140GM WREB-140GS			<24S			
WRCB-140M WRCB-140S	T	0~350	<90S			
WRCB-140GM WRCB-140GS			<24S			
WRFB-140M WRFB-140S	J	0~500	<90S			
WRFB-140GM WRFB-140GS			<24S			
WZPB-141M WZPB-141S	Pt100	-200~450	<90S		Φ12	
WZPB-141GM WZPB-141GS			<24S			
WZCB-141M WZCB-141S	Cu50 Cu100	-50~150	<90S			
WZCB-141GM WZCB-141GS			<24S			



保护管材质为1Cr18Ni9Ti，其余材质根据协议订货：
Other materials of protection tube ordered according to agreement

带显示表头 w/ Display Head



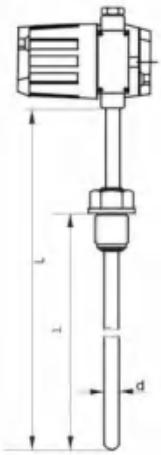
模拟表头（代号M）Simulation Head

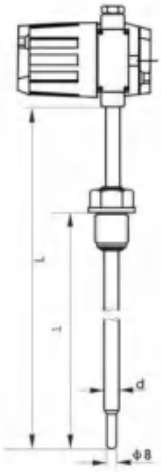
带显示接线盒结构示意 W/ Display Connection Box

数显表头（代号S）Digital-display Head

● 固定螺纹式 Fixed Thread

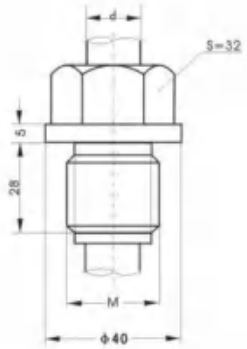
型号 Type	分度号 Graduation	测温范围℃ Measuring Range	热响应时间 TRT.	隔爆等级 Ex.-sep. Class	规格 Specification d	规格 Specification L×I
WRMB-240M WRMB-240S	N	0~800	<90S	dⅡBT4 dⅡCT5 dⅡCT6 iaⅡCT6	Φ16	300×150 350×200 400×250 450×300 500×350 550×400 650×500 900×750 1150×1000 1650×1500
WRMB-240GM WRMB-240GS			<24S			
WRNB-240M WRNB-240S	K	0~800	<90S			
WRNB-240GM WRNB-240GS			<24S			
WREB-240M WREB-240S	E	0~600	<90S			
WREB-240GM WREB-240GS			<24S			
WRCB-240M WRCB-240S	T	0~350	<90S			
WRCB-240GM WRCB-240GS			<24S			
WRFB-240M WRFB-240S	J	0~500	<90S			
WRFB-240GM WRFB-240GS			<24S			
WZPB-241M WZPB-241S	Pt100	-200~500	<90S		Φ12	2150×2000
WZPB-241GM WZPB-241GS			<24S			
WZCB-241M WZCB-241S	Cu50 Cu100	-50~150	<90S			
WZCB-241GM WZCB-241GS			<24S			





保护管材质为1Cr18Ni9Ti，其余材质根据协议订货；
Other materials of protection tube ordered according to agreement.

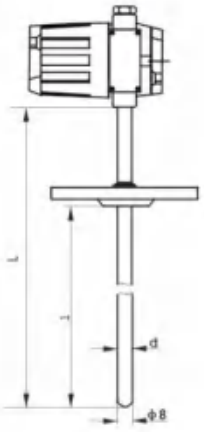
型号示例 Type Model	螺纹规格Thread Specification 代号 Code	螺纹规格Thread Specification M	d	公称压力 NP Mpa
WRNB-240S		M27×2	Φ16	≤10
WRNB-240SA	A	G3/4		
WRNB-240SC	C	NPT3/4		
WRNB-240GS		M27×2		
WRNB-240GSA	A	G3/4		
WRNB-240GSC	C	NPT3/4		

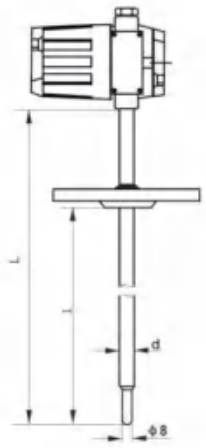


安装固定装置型式：固定螺纹

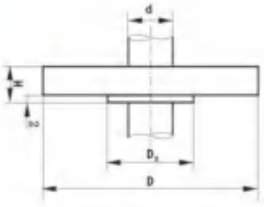
● 固定法兰式
Fixed Flange Type

型号 Type	分度号 Graduation	测温范围℃ Measuring Range	热响应时间 TRT.	隔爆等级 Ex.-sep. Class	规格Specification d	规格Specification l
WRMB-440M WRMB-440S	N	0~800	<90S	dⅡBT4 dⅡCT5 dⅡCT6 iaⅡCT6	Φ16	300×150 350×200 400×250 450×300 500×350 550×400 650×500 900×750 1150×1000 1650×1500 2150×2000
WRMB-440GM WRMB-440GS			<24S			
WRNB-440M WRNB-440S	K	0~800	<90S			
WRNB-440GM WRNB-440GS			<24S			
WREB-440M WREB-440S	E	0~600	<90S			
WREB-440GM WREB-440GS			<24S			
WRCB-440M WRCB-440S	T	0~350	<90S			
WRCB-440GM WRCB-440GS			<24S			
WRFB-440M WRFB-440S	J	0~500	<90S			
WRFB-440GM WRFB-440GS			<24S			
WZPB-441M WZPB-441S	Pt100	-200~500	<90S		Φ12	
WZPB-441GM WZPB-441GS			<24S			
WZCB-441M WZCB-441S	Cu50 Cu100	-50~150	<90S			
WZCB-441GM WZCB-441GS			<24S			

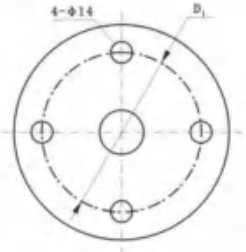




保护管材质为1Cr18Ni9Ti，其余材质根据协议订货；
Other materials of protection tube ordered according to agreement.



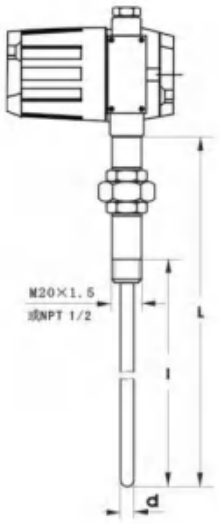
型号示例 Type Model	螺纹规格 Thread Specification D	D_1	D_2	H	d	公称压力 NP Mpa
WRNB-440S	Φ105	Φ75	Φ55	16	Φ16	≤2.5
WRNB-440GS	Φ105	Φ75	Φ55			
WZPB-441S	Φ105	Φ75	Φ55	16	Φ12	
WZPB-441GS	Φ105	Φ75	Φ55			



安装固定装置型式：固定法兰

● 活络管接头式 Elbow Connector Type

型号 Type	分度号 Graduation	测温范围℃ Measuring Range	螺纹规格 Thread Spec	隔爆等级 Ex.-sep. Class	规格 Specification d	规格 Specification l
WRMB-54M WRMB-54S	N	0~800	M20×1.5	dⅡBT4 dⅡCT5 dⅡCT6 iaⅡCT6	φ3 φ4 φ5 φ6 φ8	250 275 295 350 400 450 550 650 750
WRMB-54AM WRMB-54AS			NPT1/2			
WRNB-54M WRNB-54S	K	0~800	M20×1.5			
WRNB-54AM WRNB-54AS			NPT1/2			
WREB-54M WREB-54S	E	0~600	M20×1.5			
WREB-54AM WREB-54AS			NPT1/2			
WRCB-54M WRCB-54S	T	0~350	M20×1.5			
WRCB-54AM WRCB-54AS			NPT1/2			
WRFB-54M WRFB-54S	J	0~500	M20×1.5			
WRFB-54AM WRFB-54AS			NPT1/2			
WZPB-54M WZPB-54S	Pt100	-200~450	M20×1.5		φ5 φ6 φ8	904 1154
WZPB-54AM WZPB-54AS			NPT1/2			
WZCB-54M WZCB-54S	Cu50 Cu100	-50~150	M20×1.5			
WZCB-54AM WZCB-54AS			NPT1/2			

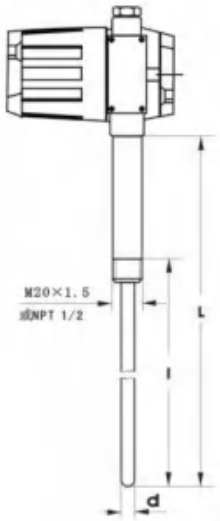


1）如无特殊之约定，L仅为参考尺寸，热电偶插入深度应为热安装套管U尺寸；
L is only for reference if no special agreement, insert depth of thermocouple should be size U thermal protection tube

2）热安装套管形式详见《热安装套管图》。
For more information about protection tube type, please see the figure.

● 直形管接头式 Straight Tube Connector Type

型号 Type	分度号 Graduation	测温范围℃ Measuring Range	螺纹规格 Thread Spec	隔爆等级 Ex.-sep. Class	规格 Specification d	规格 Specification l
WRMB-74M WRMB-74S	N	0~800	M20×1.5	dⅡBT4 dⅡCT5 dⅡCT6 iaⅡCT6	φ3 φ4 φ5 φ6 φ8	250 275 295 350 400 450 550 650 750 900 1150
WRMB-74AM WRMB-74AS			NPT1/2			
WRNB-74M WRNB-74S	K	0~800	M20×1.5			
WRNB-74AM WRNB-74AS			NPT1/2			
WREB-74M WREB-74S	E	0~600	M20×1.5			
WREB-74AM WREB-74AS			NPT1/2			
WRCB-74M WRCB-74S	T	0~350	M20×1.5			
WRCB-74AM WRCB-74AS			NPT1/2			
WRFB-74M WRFB-74S	J	0~500	M20×1.5			
WRFB-74AM WRFB-74AS			NPT1/2			
WZPB-74M WZPB-74S	Pt100	-200~450	M20×1.5		φ5 φ6 φ8	
WZPB-74AM WZPB-74AS			NPT1/2			
WZCB-74M WZCB-74S	Cu50 Cu100	-50~150	M20×1.5			
WZCB-74AM WZCB-74AS			NPT1/2			



1）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；

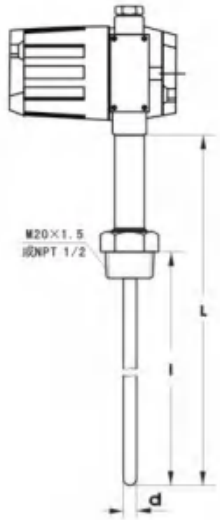
L is only for reference if no special agreement, insert depth of thermocouple should be size U thermal protection tube

2）热安装套管形式详见《热安装套管图》。

For more information about protection tube type, please see the figure.

●固定螺纹管接头式 Fixed Threaded Tube Connector

型　号 Type	分度号 Graduation	测温范围℃ Measuring Range	螺纹规格 Thread Spec	隔爆等级 Ex.-sep. Class	规 格 Specification	
					d	l
WRMB-84M WRMB-84S	N	0~800	M20×1.5	dⅡBT4 dⅡCT5 dⅡCT6 iaⅡCT6	φ3 φ4 φ5 φ6 φ8	250 275 295 350 400 450 550 650 750 900
WRMB-84AM WRMB-84AS			NPT1/2			
WRNB-84M WRNB-84S	K	0~800	M20×1.5			
WRNB-84AM WRNB-84AS			NPT1/2			
WREB-84M WREB-84S	E	0~600	M20×1.5			
WREB-84AM WREB-84AS			NPT1/2			
WRCB-84M WRCB-84S	T	0~350	M20×1.5			
WRCB-84AM WRCB-84AS			NPT1/2			
WRFB-84M WRFB-84S	J	0~500	M20×1.5			
WRFB-84AM WRFB-84AS			NPT1/2			
WZPB-84M WZPB-84S	Pt100	-200~450	M20×1.5			1150
WZPB-84AM WZPB-84AS			NPT1/2		φ5	
WZCB-84M WZCB-84S	Cu50 Cu100	-50~150	M20×1.5		φ6 φ8	
WZCB-84AM WZCB-84AS			NPT1/2			

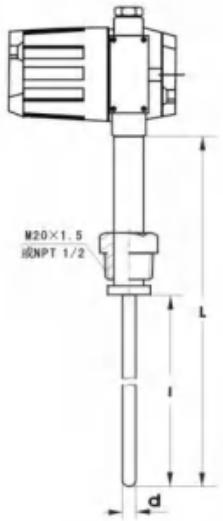


1）如无特殊之约定，L仅为参考尺寸，热电偶插入深度应为热安装套管U尺寸；
L is only for reference if no special agreement, insert depth of thermocouple should be size U thermal protection tube

2）热安装套管形式详见《热安装套管图》。
For more information about protection tube type, please see the figure.

● 活动螺纹管接头式 Moveable Threaded Tube Connector

型号 Type	分度号 Graduation	测温范围℃ Measuring Range	螺纹规格 Thread Spec	隔爆等级 Ex.-sep. Class	规格 Specification	
					d	l
WRMB-94M WRMB-94S	N	0~800	M20×1.5	dⅡBT4 dⅡCT5 dⅡCT6 iaⅡCT6	φ3 φ4 φ5 φ6 φ8	250 275 295 350 400 450 550 650 750 900 1150
WRMB-94AM WRMB-94AS			NPT1/2			
WRNB-94M WRNB-94S	K	0~800	M20×1.5			
WRNB-94AM WRNB-94AS			NPT1/2			
WREB-94M WREB-94S	E	0~600	M20×1.5			
WREB-94AM WREB-94AS			NPT1/2			
WRCB-94M WRCB-94S	T	0~350	M20×1.5			
WRCB-94AM WRCB-94AS			NPT1/2			
WRFB-94M WRFB-94S	J	0~500	M20×1.5			
WRFB-94AM WRFB-94AS			NPT1/2			
WZPB-94M WZPB-94S	Pt100	-200~450	M20×1.5		φ5 φ6 φ8	
WZPB-94AM WZPB-94AS			NPT1/2			
WZCB-94M WZCB-94S	Cu50 Cu100	-50~150	M20×1.5			
WZCB-94AM WZCB-94AS			NPT1/2			



1）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；
L is only for reference if no special agreement, insert depth of thermocouple should be size U thermal protection tube

2）热安装套管形式详见《热安装套管图》。
For more information about protection tube type, please see the figure.

DHWB系列

温度变送器

Temperature Transmitter

应用 Application

DHWB二线制、三线制温度变送器其技术指标和结构特性等方面处于国内领先水平，并达到国外90年代末同类产品水平，它给广大从事自动化控制设计人员和用户带来极大的方便。

隔爆型机电一体化温度变达器是我厂自行研究设计开发的产品，本产品按照最新颁布的国标和专标，并吸取了同类先进产品的优点，结构新颖，安全可靠，方便了用户，可在现场观察温度变化等特点。设计制造，热电性能和隔爆性能均符合国际IEC标准。本产品经国家仪表防爆安全监督检验站测试合格。

本产品可广泛用于石油、天然气、化工、冶金、热电、水泥、玻璃等行业，可与各种电动仪表、智能数显表及计算机控制系统等配套使用。

The technology index & structure characteristics ect. of DHWB double wire system, triple wire system temperature transmitter are ranking at national leading level, and also reaching the same products level abroad in late 1990s. it brings great convenience for many people with occupation of automatic control & design and other users.

Explosion-separation type mechanical-electrical integration temperature transmitter is designed and developed by our company. This product absorbs advantage of the same products according to the national standard & special standard newly promulgated. It features as novelty structure, safety reliable, convenient for users and observing the temperature change on spot. Design & manufacture, hydroelectric performance and explosion-separation are all in line with international IEC standard. This product is qualification which is tested by national instrument & meter explosion-proof safety surveillance inspection bureau

It is widely used in petroleum, natural gas, chemical industry, metallurgy, hydroelectric, cement, glass industries etc. it is connected with various electronic meter, intelligent digital-display meter and computer control system etc..

仪表主要特点

Main features for instrument

- 二线制传送，无需补偿导线；
Two wire transmitting, no compensation wire needed
- 抗干拢能力强，远传性能好；
Strong anti-interference performance, good remote-transmitting performance
- 结构简单，合理，安装方便；
Simple, suitable structure, convenient for installation
- 小型化、安全可靠，使用寿命长；
Small type, safety reliable, long life expectancy
- 三线制、二线制输入方法通用；
Both triple-wire system and double wire system input method are ok
- 液晶显示现场温度，清晰度高，无视觉误差。
Crystal-display temperature on spot with high clarity, without optical error

一次测量元件 Once Measuring Element		分度号 Graduation Mark	测量范围 Measuring Range
热电偶 Therm-ocouple	镍铬-康铜 NiCr-CuNi	E	0~800℃范围内任选
	镍铬-镍硅 NiCr-CuSi	K	0~1100℃范围内任选
	铂铑$_{10}$-铂PtRh$_{10}$-Pt	S	0~1300℃范围内任选
	铂铑$_{30}$-铂铑$_{6}$PtRh$_{30}$-PtRh$_{6}$	B	0~1600℃范围内任选
	铜-康铜 Cu-CuNi	T	0~400℃范围内任选
	铁-康铜 Fe-CuNi	J	0~750℃范围内任选
热电阻 Thermal Resistance	铜热电阻 Cu Thermal Resistance	Cu50	-50~150℃范围内任选
	铜热电阻 Cu Thermal Resistance	Cu100	-50~150℃范围内任选
	铂热电阻 Pt Thermal Resistance	Pt100	-200~500℃范围内任选

★：1）在测温范围800℃以下，隔爆型机电一体化温度变送器的防爆性能有效；

Explosion-proof performance of explosion-separation electro mechanical integration temperature transmitter operates under temperature measuring range below 800℃.

2）可按用户要求生产其它型号的变送器并配备智能数字显示仪表。

We are in position to produce other types transmitter with intelligent digital-display meter according to user's demand.

□特点 Features

● 供电电源24VDC，允许范围为18~30VDC；
power supply source 240DV, range allowed18~30VDC
● 输出信号为4~20mA；
Signal output 4~20ma
● 液晶显示现场温度；
Crystal-display temperature on spot
● 负载电阻：250Ω；
Loading resistance 250
● 允许基本误差：±0.5%F.S；
Basic errors allowed +/-0.5% F.S
● 温度附加误差：≤0.015 %/℃；
Additional error for temperature ≤0.015% ℃
● 零点及量和调整：满量程的±15%；
Zero point and value adjustment +/-15%
● 使用环境温度：-20~70℃；
Operation environment temperature -20~70℃
● 功耗：≤0.5W；
Power exhaustion: ≤0.5W
● 防爆标志：ia Ⅱ CT6；
Explosion-prooindication d IIBT4f
● 防护等级：IP65
Protection class IP 65

□型号命名方法 Naming

HNWB 温度变送器Temperature Transmitter

接线方式 Connection	
2	二线制 Two wire
3	三线制 Three wire

输出信号 Output Signal	
4	输出4—20mA
0	输出0—10mA

输入信号 Input Signal	
1	热电偶信号 Thermocouple Signal
2	热电阻信号 Thermal Sresistance Signal
3	直流豪伏信号D.C. mV Signal
4	远传电阻信号Remote Resistance Signal

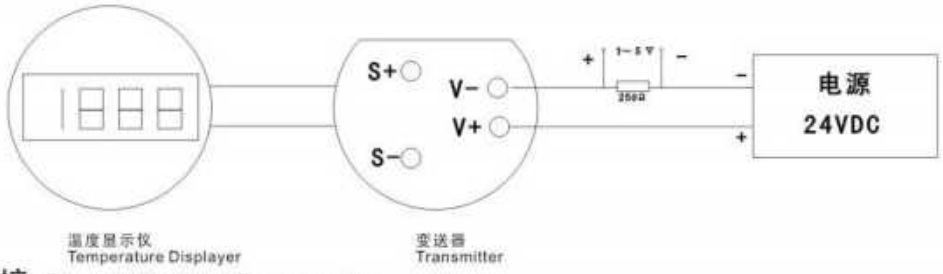
测温元件材料 Thermal Element Materials	
R	铂铑$_{30}$—铂铑$_{6}$ $PtRh_{30}$- $PtRh_{6}$
P	铂铑$_{10}$—铂 $PtRh_{10}$- Pt
K	镍铬—镍硅 NiCr-NiSi
E	镍铬—康铜 NiCr-CuNi
P	铂热电阻 Pt Thermal Resistance
C	铜热电阻 Cu Thermal Resistance

环境 Environment	
无	非防爆 Blank Non-explosion Proof
ia	本质安全型 ia Intrinsic Safety

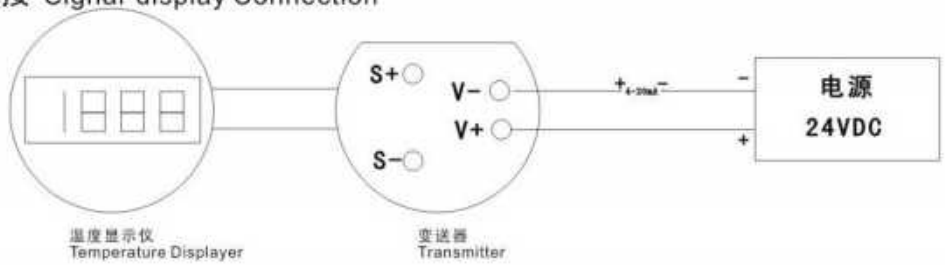
WB	2	4	1	K	ia	典型型号示例 Classical Example

系统连接 System Connection

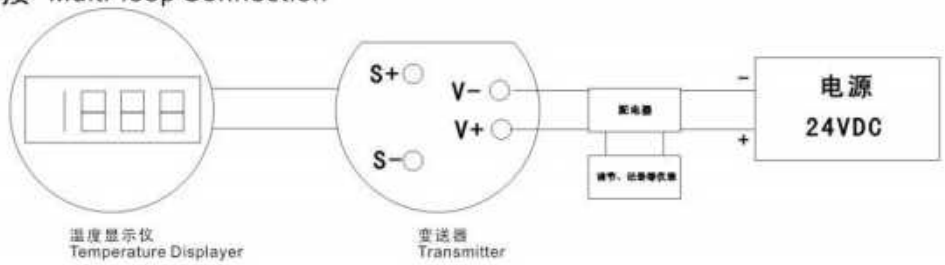
● 单回路连接 Signal-loop Connection



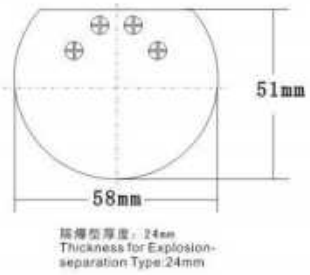
● 单显示连接 Signal-display Connection



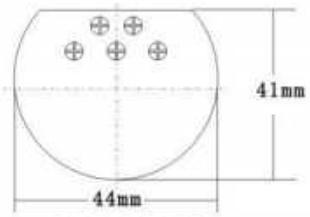
● 多回路连接 Multi-loop Connection



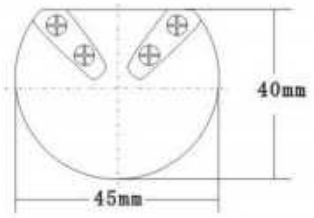
HNWB 信号转换器外形尺寸
Outer Size of WB Signal Transducer



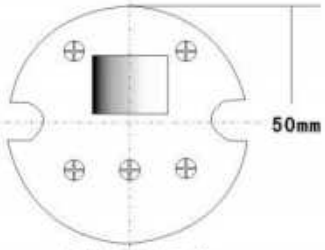
隔爆型厚度：24mm
Thickness for Explosion-separation Type:24mm



普通型三线制厚度：18mm
Thickness for Normal Type w/ Three Wire: 18mm
（含接线端子为22mm）
(23mm if including connection End)



普通型厚度：18mm
Thickness for Common Type:18mm
（含接线端子为27mm）
(27mm if including connection End)



隔爆型三线制厚度：20mm
Thickness for Explosion-separation Type w/ Three Wire: 20mm
（含接线端子为29mm）
(29mm if including connection End)

校验方法 Rectifying Method

- 用于爆炸危险场所时,请注意防爆标志与防护等级;
- 机电一体化温度变送器安装的环境必须是在-20℃~70℃内,当周围环境温度太高时,HNWB 信号转换器和显示模块可以与热电偶或热电阻分离安装.(我厂配有分离安装变送器的专用防爆盒);
- 加电前,请仔细检查电源的正负极性,不能接错,否则可能造成不可知后果;
- HNWB 信号转换器和显示仪模块用环氧树脂灌封固化,以加强其防震性能,并防湿、防腐、防潮;
- 温度变送器使用六个月后需进行校验。
- Please notice explosion indication & protection class under use of dangerous explosion environment
- The installation environment must be within -20~70℃ for electro mechanical integration temperature transmitter. If the temperature is so high, HNWB signal transducer and display module can be separately installed with thermocouple or thermal resistance. (We provide special explosion-proof box for separation installation transducer)
- Please check the electrical source before powering, don't connect with error, or causing unexpected result
- HNWB signal transducer and display module are been in solid form by circle-oxygen sealing, which strengthen shock-resistant performance, and anti-wet, anti-corrosion, anti-humidity.
- Temperature transmitter should be rectifying after used for six months

热电阻温度变送器校验方法

Rectifying method for thermal resistance with temperature transmitter

设备要求：4½数字电压表一台　0.01Ω~1KΩ电阻箱一台

　　250Ω线绕精密电阻一只　直流24V稳压电源一台

- 按系统连接方法接线
- 根据变送器铭牌上标明的传感器和量程范围，输入相应的阻值，使输出分别为1V和5V（可分别调整零点电位器满度电位器）
- 按量程十等分点输入各电阻值，检查各温度点输出是否符合精度范围
- 按说明书技术指标逐项进行测试，应符合技术要求

Equipment demand: 4 1/2 digital voltmeter (1) 1 resistance box with resistance 0.01Ω~1KΩ

　　250Ω precision resistance with revolving wire (1) stable voltage source with 24V DC. (1)

- Wire according to system connection method
- Input relevant resistance value according to sensor & range indicated on transducer, and output 1V & 5V respectively (adjust zero point electric-position and full electric-position machine respectively)
- Input each resistance value according to liangcheng +point, inspecting if each temperature point is in line with accuracy range
- Test one by one according to technology indication in description book, it should be in line with technology demand

热电偶温度变送器校验方法

Rectifying Method for Thermocouple w/ Temperature Transmitter

设备要求：4½数字电压表一台　UJ33a电位差计一台

　　250Ω线绕精密电阻一只　直流24V稳压电源一台

- 按系统连接方法接线
- 根据变送器铭牌上标明的传感器和量程范围，输入相应的电势，使输出分别为1V和5V（可分别调整零点电位器满度电位器）

●按量程十等分点输入各电阻值，检查各温度点输出是否符合精度范围

●按说明书技术指标逐项进行测试，应符合技术要求

Equipment demand: 4 1/2 digital voltmeter (1) UJ33a
electrical place differential gauge (1)
250 precision resistance with revolving wire (1)
stable voltage source with 24V DC. (1)

- Wiring according to system connection method
- Iinput relevant resistance value according to sensor & range indicated on transducer, and output 1V & 5V respectively (adjust zero point electric-position and full electric-position machine respectively)
- Input each hydroelectric potential value acco-rding to liangcheng +point, inspecting if each temper-ature point is in line with accuracy range
- Test one by one according to technology indication in description book, it should be in line with technology demand

订货须知

- 特殊规格订货可经双方协协商决定
- 可根据用户需要配用相应材质的保护管，如刚玉质或高铝质保护管。
- 如果有其它特殊要求请在订货时注明。

Order notice

special specification ordered as negotiation
we can provide protection tube of relevant material according to user's demand
PLS indicate if having special demand in order

WSS系列

双金属温度计
Bimetalli Thermometer

□应用 Application

双金属温度计是一种测量中低温度的现场检测仪表。可以直接测量各种生产过程中的-80℃~+600℃范围内液体、蒸汽和气体介质温度。

It is a kind of testing meter used to measure middle & low temperature on spot. It directly to measure temperature of liquid, vapor and gas medium ranging -80℃ to +600℃ during various production processes.

□特点 Features

●现场显示温度，直观方便；
Directly display temperature on spot with convenience

●安全可靠，使用寿命长；
Safety reliable, long life expectancy

●多种结构形式，可满足不同要求。
Many structure forms to meet different demands

□工作原理 Working Principle

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

Bimetallic thermometer is based on bimetal bended into ring shape. One side of bimetal expands after being heated, which shall result in revolving of indicator. The working meter shows relevant temperature value.

□主要技术参数
Main Technical Parameters

○产品执行标准
Standard
JB/T 8803-2015
GB 3836-2010

○标度盘公称直径：60，100，150
Nominal Diameter of dial: 60, 100,150

○精度等级：（1.0），1.5
Accuracy class 1.0, 1.5

○热响应时间：≤40S
Thermal response time: ≤40S

○防护等级：IP55
Protection class: Ip65

●角度调整误差
角度调整误差应不超过其量程的1.0%。

●回差
温度计回差应不大于基本误差限的绝对值。

●重复性
温度计重复性极限范围应不大于基本误差限绝对值的1/2。

● Angle-adjusting Error
Angle-adjusting error should be no more than 0.1% of its measuring range.

● Return Error
Return-error of thermometer shall be no more than the absolute value of basic error limit

● Repeat
Repeat range of thermometer shall be no more than 1/2the absolute value of basic error

●测温范围
Measuring Range

测量范围℃ Measuring range	适用范围 Application range	
	工业、商业 For Industry, Commerce	实验室、小型 For Small Lab
-80~+40	√	√
-40~+80	√	√
0~50	√	√
0~100	√	√
0~150	√	√
0~200	√	√
0~300	√	√
0~400	√	√
0~500	√	√

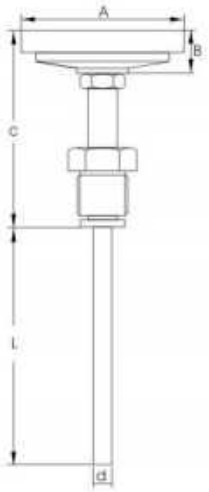
○正常工作大气条件
Normal Working Atmosphere condition

工作场所 Working Place	温度℃ Temperature	相对湿度% Relative Humidity
掩蔽场所 Shelter	-25~+55	5~100
户外场所 Outdoor	-40~+85	5~100

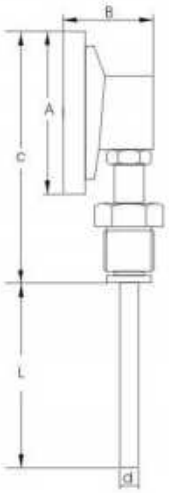
○测量端形式
Measuring End Form

一体化
All-in-one

抽芯式
Core Pulling



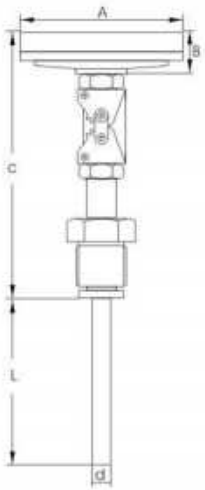
轴向型
Axial



径向型
Radial

○外形及尺寸
Size & Outer Shape

形式 Type	A	B	C	E	L	d
轴向型 Axial	65	23	73	-	75 100 150 200 300 400 500 750 1000	Φ6 Φ8 Φ10
	105	23	73	-		
	155	23	73	-		
径向型 Radial	65	50	110	34		
	105	50	110	34		
	105	50	110	34		
万向型 Universal	105	23	178	120		
	155	23	178	120		

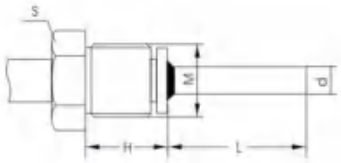


万向型
Radial

○安装固定形式 Mounting & Fixing Type

●可动外螺纹 Moveable Outer Thread

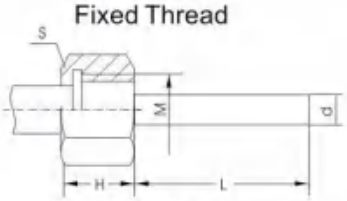
M	H	S	d
M16×1.5	12	18	φ6 φ8 φ10
M20×1.5	16	22	
M27×2	20	30	
NPT1/4	15	18	
NPT1/2	19	22	
NPT3/4	25	30	



固定螺纹
Fixed Thread

●可内外螺纹 Moveable Inner Thread

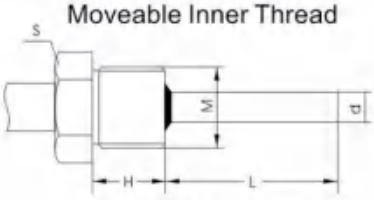
M	H	S	d
M16×1.5	12	18	φ6 φ8 φ10
M20×1.5	16	22	
M27×2	20	30	
NPT1/4	15	18	
NPT1/2	19	22	
NPT3/4	25	30	



可动内螺纹
Moveable Inner Thread

●固定螺纹 Fixed Thread

M	H	S	d
M16×1.5	12	18	φ6 φ8 φ10
M20×1.5	16	22	
M27×2	20	30	
NPT1/4	15	18	
NPT1/2	19	22	
NPT3/4	25	30	



可动外螺纹
Moveable Outer Thread

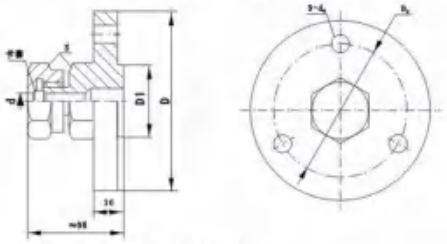
●卡套螺纹 Compression Thread

M	H	S	d
M12×1.5	15	19	φ6
M16×1.5	15	22	φ8
M20×1.5	16	24	φ10

卡套螺纹
Compression Thread

●卡套法兰 Compression Flange

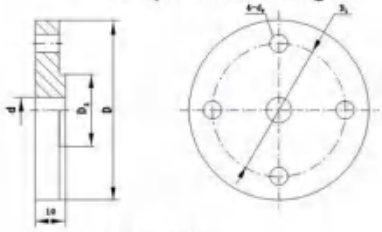
D	D_0	D_1	S	d_0	d
φ60	φ42	φ24	22	φ9	φ8 φ10



卡套法兰
Compression Flange

●固定法兰 Fixed Flange

D	D_1	D_2	H	d_0	d
φ105	φ75	φ55	16	φ14	φ8 φ10



固定法兰
Fixed Flange

注：可提供ANSI、JB、HG等标准法兰
Notice: we can supply ANSI, JB, HG etc. standard flange

型号命名方法 Naming

W 温度仪表 Temperature Instrument

S 金属膨胀式 Metal Expanding Thermal Element Materials

S 感温元件双金属片 Bimetal Slice

表壳公称直径 Nominal Diameter of Crust

3	60
4	100
5	150

位置特征 Location characteristic

0	轴向（直型）Axial (straight)
1	径向（角型）Radial (angle)
8	万向（可调角型）Universal (angle adjustable)

安装固定装置 Mounting & Fixing

0	无固定装置 w/o
1	可动外螺纹 Movable Outer Thread
2	可动内螺纹 Movable Inner Thread
3	固定螺纹 Fixed Thread
4	固定法兰 Fixed Flange
5	卡套螺纹 Compression Thread
6	卡套法兰 Compression Flange

防护形式 Blank Normal

无（未标注）	普通型 Normal
W	防护型 Protection
F	防腐型 Cauterization proof

W S S - 4 8 1 W 典型型号示例 Classical Example

型号及规格
Type & Specification

○轴向型
Axial Type

型 号 Type	测温范围℃ Measuring Range	精度等级 Accuracy Class	保护管材料 PTM.	规格Specification D	规格Specification L	安装固定装置 Mounting & Fixing Device
WSS-300	-80~+40 -40~+80 0~50 0~100 0~150 0~200 0~300 0~400 0~500 0~600	1.5	1Cr18Ni9Ti 304 316 316L 哈氏C-276	Φ60	75 100 150 200 300 400 500 750 1000	无固定装置 W/o
WSS-400				Φ100		
WSS-500				Φ150		
WSS-301				Φ60		可动外螺纹 Movable Outer Thread
WSS-401				Φ100		
WSS-501				Φ150		
WSS-302				Φ60		可动内螺纹 Movable Inner Thread
WSS-402				Φ100		
WSS-502				Φ150		
WSS-303				Φ60		固定螺纹 Fixed Thread
WSS-403				Φ100		
WSS-503				Φ150		
WSS-304				Φ60		固定法兰 Fixed Flange
WSS-404				Φ100		
WSS-504				Φ150		
WSS-305				Φ60		卡套螺纹 Compression Thread
WSS-405				Φ100		
WSS-505				Φ150		
WSS-306				Φ60		卡套法兰 Compression Flange
WSS-406				Φ100		
WSS-506				Φ150		

注：其余长度“L”可协议订货。
For other length, L can be ordered due to agreement.

● 径向型 Radial Type

型号 Type	测温范围℃ Measuring Range	精度等级 Accuracy Class	保护管材料 PTM.	规格Specification d	规格Specification L	安装固定装置 Mounting & fixing device
WSS-310	-80~+40 -40~+80 0~50 0~100 0~150 0~200 0~300 0~400 0~500 0~600	1.5	1Cr18Ni9Ti 304 316 316L 哈氏C-276	Φ60	75 100 150 200 300 400 400 500 750 1000	无固定装置 W/o
WSS-410				Φ100		
WSS-510				Φ150		
WSS-311				Φ60		可动外螺纹 Movable Outer Thread
WSS-411				Φ100		
WSS-511				Φ150		
WSS-312				Φ60		可动内螺纹 Movable Inner Thread
WSS-412				Φ100		
WSS-512				Φ150		
WSS-313				Φ60		固定螺纹 Fixed Thread
WSS-413				Φ100		
WSS-513				Φ150		
WSS-314				Φ60		固定法兰 Fixed Flange
WSS-414				Φ100		
WSS-514				Φ150		
WSS-315				Φ60		卡套螺纹 Compression Thread
WSS-415				Φ100		
WSS-515				Φ150		
WSS-316				Φ60		卡套法兰 Compression Flange
WSS-416				Φ100		
WSS-516				Φ150		

注：其余长度“L”可协议订货。
For other length, L can be ordered due to agreement.

● 135° 向型 135° Angle Type

型号 Type	测温范围℃ Measuring Range	精度等级 Accuracy Class	保护管材料 PTM.	规格Specification d	规格Specification L	安装固定装置 Mounting & Fixing Device
WSS-420	-80~+40 -40~+80 0~50 0~100 0~150 0~200 0~300 0~400 0~500 0~600	1.5	1Cr18Ni9Ti 304 316 316L 哈氏C-276	Φ100	75 100 150 200 300 400 400 500 750 1000	无固定装置 W/o
WSS-520				Φ150		
WSS-421				Φ100		可动外螺纹 Movable Outer Thread
WSS-521				Φ150		
WSS-422				Φ100		可动内螺纹 Movable Inner Thread
WSS-522				Φ150		
WSS-423				Φ100		固定螺纹 Fixed Thread
WSS-523				Φ150		
WSS-424				Φ100		固定法兰 Fixed Flange
WSS-524				Φ150		
WSS-425				Φ100		卡套螺纹 Compression Thread
WSS-525				Φ150		
WSS-426				Φ100		卡套法兰 Compression Flange
WSS-526				Φ150		

注：其余长度“L”可协议订货。
For other length, L can be ordered due to agreement.

● 万向型 Universal Type

型号 Type	测温范围℃ Measuring range	精度等级 Accuracy class	保护管材料 PTM.	规格Specification d	规格Specification L	安装固定装置 Mounting & fixing device
WSS-480	-80~+40 -40~+80 0~50 0~100 0~150 0~200 0~300 0~400 0~500 0~600	1.5	1Cr18Ni9Ti 304 316 316L 哈氏C-276	Φ100	75 100 150 200 300 400 400 500 750 1000	无固定装置 W/o
WSS-580				Φ150		
WSS-481				Φ100		可动外螺纹 Movable Outer Thread
WSS-581				Φ150		
WSS-482				Φ100		可动内螺纹 Movable Inner Thread
WSS-582				Φ150		
WSS-483				Φ100		固定螺纹 Fixed Thread
WSS-583				Φ150		
WSS-583				Φ100		固定法兰 Fixed Flange
WSS-584				Φ150		
WSS-485				Φ100		卡套螺纹 Compression Thread
WSS-585				Φ150		
WSS-486				Φ100		卡套法兰 Compression Flange
WSS-586				Φ150		

注：其余长度“L”可协议订货。
For other length, L can be ordered due to agreement.

选型须知 Type Selection:

1）型号 1)Type

2）表盘直径 2)Graduation

3）精度等级 3)Accuracy Class

4）安装固定形式 4)Mounting & Fixing Form

5）测温范围 5)Measuring Range

6）长度或插入深度 6)Length or Insert Depth

例A：万向型，表盘直径Φ100，测温范围0-400℃,1.5级，活动外螺纹M27×2，长度450mm，

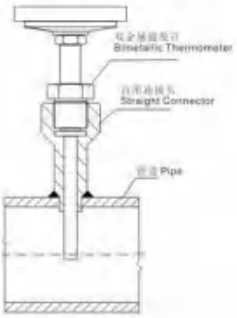
WSS-481，0-400℃，L=450，M27×2，1.5级

Example A: Universal Type, Dimeter of Meter is Φ100, Measuring Range 0-400℃, 1.5 Grade, Movable Outer Thread M27×2, Length 450mm

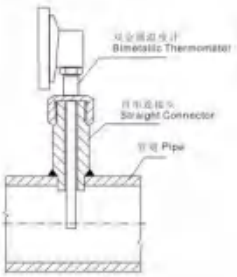
WSS-481，0-400℃，L=450，M27×2，1.5Grade

安装方法示意
Installation Sketch Map

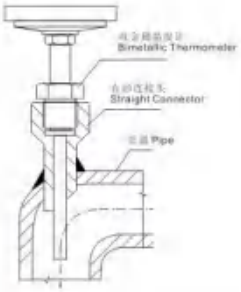
○垂直管道安装方法 Upright Pipe



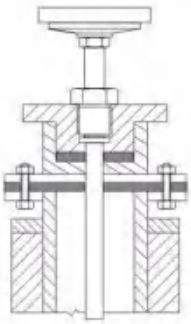
○垂直管道安装方法 Upright Pipe



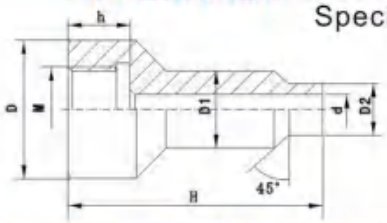
○弯曲管道安装方法 Bending Pipe



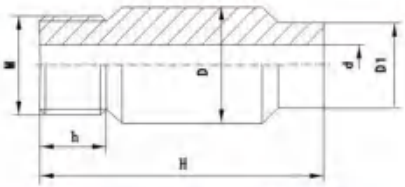
○法兰安装方法 Flange



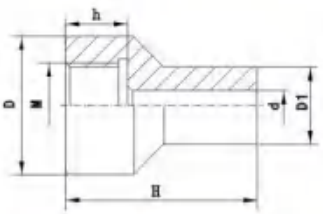
直接连接头规格 Direct Connector Specification

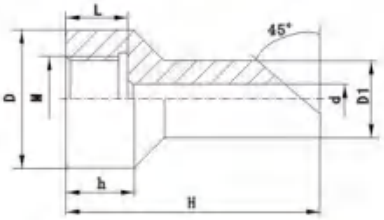


代号 Code	M	D	D_1	D_2	d	h	H
DH21A	M12×1.5	φ24	φ16	φ12	φ8	20	60
DH21B	M16×1.5	φ24	φ16	φ12	φ8	20	60
DH21C	M20×1.5	φ28	φ16	φ12	φ8	20	60
DH21D	M27×2	φ39	φ28	φ24	φ20	35	60
DH21E	M33×2	φ48	φ38	φ30	φ22	35	90
DH21F	NPT1/2	φ28	φ16	φ12	φ8	20	60
DH21G	NPT3/4	φ39	φ28	φ24	φ20	35	
DH21H	NPT1	φ48	φ38	φ30	φ22	35	90



代号 Code	M	D	D1	D	h	H
DH23B	M16×1.5	φ24	φ16	φ8	20	45
DH23C	M20×1.5	φ28	φ16	φ8	20	45
DH23D	M27×2	φ39	φ28	φ20	35	80
DH23E	M33×2	φ48	φ38	φ22	35	80
DH23F	NPT1/2	φ28	φ16	φ8	20	45
DH23G	NPT3/4	φ39	φ28	φ20	35	80
DH23H	NPT1	φ48	φ38	φ22	35	80





代号 Code	M	D	D_1	d	h	H
DH22A	M12×1.5	φ24	φ16	φ8	20	35
DH22B	M16×1.5	φ24	φ16	φ8	20	35
DH22C	M20×1.5	φ28	φ16	φ8	20	45
DH22D	M27×2	φ39	φ28	φ20	35	60
DH22E	M33×2	φ48	φ38	φ22	35	90
DH22F	NPT1/2	φ28	φ16	φ8	20	45
DH22G	NPT3/4	φ39	φ28	φ20	35	60
DH22H	NPT1	φ48	φ38	φ22	35	90

WSSX系列

电接点 双金属温度计

Electric Junction Bimetallic Thermometer

□ 应用 Application

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

It is used on production spot with demand of automatic control and alarming on temperature to directly measure temperature of liquid, vapor and gas medium ranging from -80℃ to 500℃ during various production processes.

□ 特点 Features

●现场显示温度，直观方便；
Directly display temperature on spot with convenience
●具有自动切断电源和报警功能；
Automatically break power and alarm
●安全可靠，使用寿命长；
High reliability and long life expectancy
●多种结构形式，可满足不同要求。
Many structure forms to meet different demands

□ 工作原理 Working Principle

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

Temperature change results in contact or break of electric contact which leads to operation of relay in circuit to realize automatic control and alarming.

□ 主要技术参数

Main Technical Parameters

○产品执行标准
Standard
JB/T 8803-2015
GB 3836-2010
○标度盘公称直径：100
Nominal Diameter of Dial 100
○精度等级：（1.0），1.5
Accuracy Class 1.0, 1.5

○热响应时间：≤40S
Thermal Response Time: ≤40S
○防护等级：IP55
Protection Class: Ip55

○电气参数
Electric Parameters

额定功率VA Rated Power	最高工作电压V Max. Working Voltage	最大允许电流 Max. Allowed Current
10	220 a.c	0.7A
	24 d.c	

○绝缘电阻
Insulation Resistance

额定电压 Rated Voltage	直流试验电压 Testing Voltage D.C	绝缘电阻 Insulation Resistance
24 d.c	100	7
220 a.c	500	20

○正常工作大气条件
温度-25~+55℃，相对湿度≤85%。
○设定点误差
设定点误差应不超过基本误差限的1.5倍。
○切换差
切换差应不超过基本误差限的1.5倍。
○切换重复性
切换重复性极限范围不大于基本误差限绝对值的1/2。
○ Normal Ambient Condition
Temperature -25~+55℃, relative humidity ≤80%
○ Setting Point Error
Setting point error should be no more than 1.5 times of basic error limit
○ Switching Error
It shall be no more than 1.5 times of basic error limit
○ Switching Repeat
Its limit range shall be no more than 1/2 the absolute value of basic error

型号命名方法 Type naming method

W 温度仪表 Temperature Instrument

S 金属膨胀式 Metal Expanding Thermal Element Materials

S 感温元件双金属片 Bimetal Slice

X电接点结构 X Structure of Electrical Junction

表壳公称直径 Nominal Diameter of Crust

4 100

位置特征 Location characteristic

0 轴向（直型）Axial (straight)
1 径向（角型）Radial (angle)
8 万向（可调角型）Universal (angle adjustable)

安装固定装置 Mounting & Fixing

0 无固定装置 w/o
1 可动外螺纹 Movable Outer Thread
2 可动内螺纹 Movable Inner Thread
3 固定螺纹 Fixed Thread
4 固定法兰 Fixed Flange
5 卡套螺纹 Compression Thread
6 卡套法兰 Compression Flange

电接点位式调节
Electrical Junction Location Adjustment

M 上下限 Upper and Down Limit
N 双上限 Double Upper Limit
P 双下限 Double Down Limit

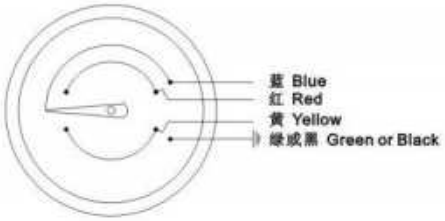
W S S X - 4 1 1 M 典型型号示例 Classical Example

型号及规格 Type & Specification

型号 Type	测温范围℃ Measuring Range	精度等级 Accuracy Class	保护管材料 PTM.	规格 Specification	安装固定装置 Mounting & Fixing Device
WSSX-400	-80~+40 -40~+80 0~50 0~100 0~150 0~200 0~300 0~400 0~500	1.5	1Cr18Ni9Ti 304 316 316L 哈氏C-276	75 100 150 200 300 400 400 500 750 1000	无固定装置 W/o
WSSX-401					
WSSX-480					
WSSX-401					可动外螺纹 Movable Outer Thread
WSSX-411					
WSSX-481					
WSSX-402					可动内螺纹 Movable Inner Thread
WSSX-412					
WSSX-482					
WSSX-403					固定螺纹 Fixed Thread
WSSX-413					
WSSX-483					
WSSX-404					固定法兰 Fixed Flange
WSSX-414					
WSSX-484					
WSSX-405					卡套螺纹 Compression Thread
WSSX-415					
WSSX-485					
WSSX-406					卡套法兰 Compression Flange
WSSX-416					
WSSX-486					

★：特殊形式可根据协议订货。
Notice: we may provide that type of special form as user's demand

电接点接线方式
Electric Junction Wiring Method



WSSX-B系列

隔爆 双金属温度计

Explosion-separation Bimetallic Thermometer

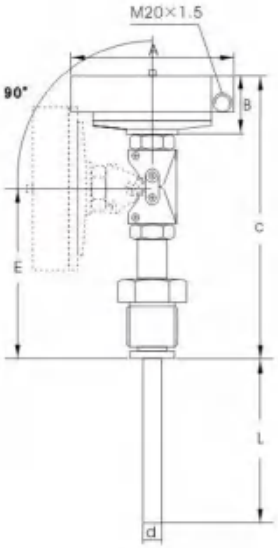
□ 应用 Application

双金属温度计可以直接测量生产现场存在碳化物等爆炸物各过程中的-80~+350℃范围内液体、蒸汽和气体介质以及固体表面测温。

It is used to directly measure temperature of liquid, vapor and solid surface ranging from -80℃ to +350℃ during production on spot with explosives such as hydrocarbon.

□ 技术参数 Technical Parameters

○标度盘公称直径：100
Nominal Diameter of Dial, 100
○热响应时间：≤40S
Thermal Response Time: ≤40S
○隔爆等级：dⅡBT4
Explosion-separation Class: d IIBT4
○额定功率：10VA
Rated Power: 10VA
○最高电压：24V
Max. Voltage: 24V
○最高工作电流：0.7A
Max. Working Current: 0.7A



□ 外形及尺寸 Outer Shape & Size

形式 Type	D	A	B	E	d
电接点轴向型 Axial Type w/ E. Junction	130	190	65	-	Φ8 Φ10
电接点万向型 Universal Type w/ E. Junction	130	215	60	110	

○型号及规格 Type & Specification

型号 Type	测量范围℃ Measuring Range	精度等级 Accuracy Class	保护管材料 PTM.	L	安装固定装置 Mounting & Fixing Device
WSSX-410B	-80~+40 -40~+80 0~50 0~100 0~150 0~200 0~300 0~400 0~500	1.5	1Cr18Ni9Ti 304 316 316L 哈氏C-276	75 100 150 200 300 400 400 500 750 1000	无固定装置 W/o
WSSX-480B					
WSSX-411B					可动外螺纹 Movable Outer Thread
WSSX-481B					
WSSX-412B					可动内螺纹 Movable Inner Thread
WSSX-482B					
WSSX-413B					固定螺纹 Fixed Thread
WSSX-483B					
WSSX-414B					固定法兰 Fixed Flange
WSSX-484B					
WSSX-415B					卡套螺纹 Compression Thread
WSSX-485B					
WSSX-416B					卡套法兰 Compression Flange
WSSX-486B					

★：特殊形式可根据协议订货。

Notice: we may provide that type of special form as user's demand

选型须知

Notices in type selection

1）型号

2）精度等级

3）测温范围

4）电接点位式调节

5）安装固定形式

6）插入长度

7）防爆等级

1)Type

2)Accuracy class

3)Measuring Range

4)Electric Contact Regulation

5)Mounting & Fixing

6)Insert Length

7)Explosion-proof Class

例A：隔爆型万向式双金属温度计，位式调节上下限，测温范围0-400℃,保护管316，插入长300mm，

WSS481BM，0-400℃，L=300，保护管316，防爆等级：dⅡCT5

Example A：Explosion-separtion Universal type Bimetallic Thermometer, Upper & Lower limit Adjustment, Measuring Range 0~400℃，Thermowell 316，Insert Length 300mm.

WSSX-481BM，0~400℃，L=300 Thermowell 316.

WSS系列

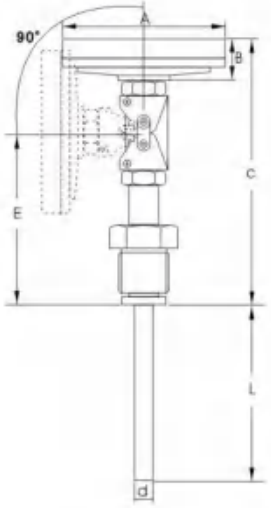
热套式 双金属温度计

Bimetallic Thermometer w/ Thermowell

□ 应用 Application

双金属温度计配合各式安装套管，满足不同压力等级要求。可以直接测量各种过程中的-80~+350℃范围内液体、蒸汽和气体介质以及固体表面测温。

It is connected / matched with various installation tubes to meet different demands on pressure class. It is used to directly measure temperature of liquid, vapor, gas medium and solid surface ranging from -80℃ to +350℃ during various production processes.

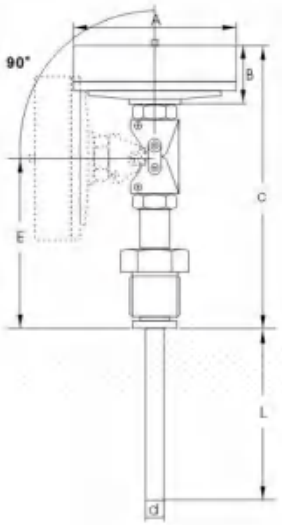


□ 技术参数 Technical Parameters

○标度盘公称直径：100、150
Nominal Diameter of Dial 100, 150
○精度等级：（1.0），1.5
Accuracy Class: 1.0, 1.5
○热响应时间：≤40S
Thermal Response Time: ≤40S
○防护等级：IP55
Protection Class: IP55
○连接尺寸：M20X1.5，NPT1/2
Connection Size: m201.5, NPT1/2

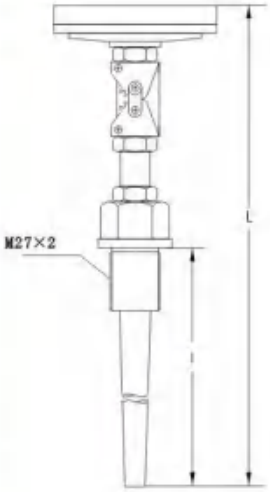
□ 外形及尺寸 Outer Shape & Size

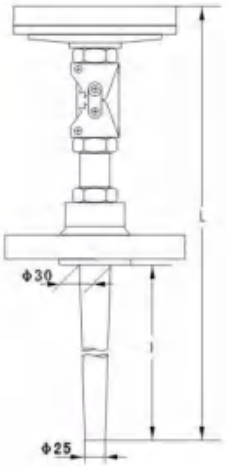
形式 Form	D	A	B	E	d
径向型 Radial	105	73	23	-	Φ8 Φ10
	155	73	23	-	
轴向型 Axial	65	110	50	34	
	105	110	50	34	
万向型 Universal	105	178	23	120	
	155	178	23	120	
电接点轴向 Axial w/ E. Junction	128	135	40	-	
电接点径向型 Radial w/ E. Junction	128	150	72	42	
电接点万向型 Universal w/ E. Junction	128	175	40	98	



型号及规格 Type & Specification

型号 Type	测量范围℃ Measuring Range	精度等级 Accuracy Class	保护和材料 PTM.	规格 Specification	公称压力 NP.	安装固定装置 Mounting & Fixing Device
WSS-403S	-80~+40 -40~+80 0~50 0~100 0~150 0~200 0~300 0~400 0~500	1.5	1Cr18Ni9Ti 304 316 316L 哈氏C-276	150 200 250 300 350 400 500 550	≤30Mpa	螺纹连接式 Thread Connection
WSS-503S						
WSS-413S						
WSS-513S						
WSS-483S						
WSS-583S						
WSSX-403S						
WSSX-413S						
WSSX-480S						
WSS-403L					1.5-40Mpa*	法兰连接式 Flange Connection
WSS-503L						
WSS-413L						
WSS-513L						
WSS-483L						
WSS-583L						
WSSX-403S						
WSSX-413L						
WSSX-483L						





★：1）可配各式安装套管，热安装套管形式详见《热安装套管图》；
It can match with different types thermal sleeves, please refer to Thermowell Table.
2）保护管其余材质根据协议订货；
We also produce protection tube of other materials as user's demand
3）打“*”表示公称压力根据法兰压力等级而定。
Nominal pressure with * depends on pressure class of flange.

选型须知 Type Selection

1）型号 1)Type
2）精度等级 2)Accuracy Class
3）测温范围 3)Measuring Range
4）安装固定形式 4)Mounting & Fixing Type
5）热安装套管形式 5)Thermowell Form
6）插入长度 6)Insert Length

例A：万向型双金属温度计，测温范围0-400℃,热安装套管LD01F，插入长300mm，WSS-483 LD01F，0-400℃，L=300

Example A: universal type bimetallic thermometer, measuring range 0~40℃, thermal mounting sleeves LD01F, insert length 300mm, WSS-483, LD01F, 0~40℃, L=300

WSSX系列

带热电偶（阻）双金属温度计

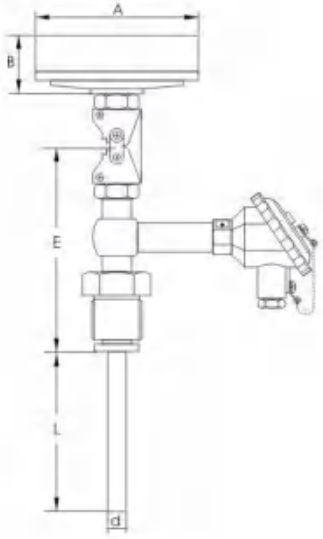
Bimetallic Thermometer with Thermocouple (Thermal Resistance)

应用 Application

采用双金属温度计与热电偶（阻）一体的方式，既满足现场测温需求，亦满足远距离传输需求。可以直接测量各种过程中的-80~500℃范围内液体、蒸汽和气体介质以及固体表测温。

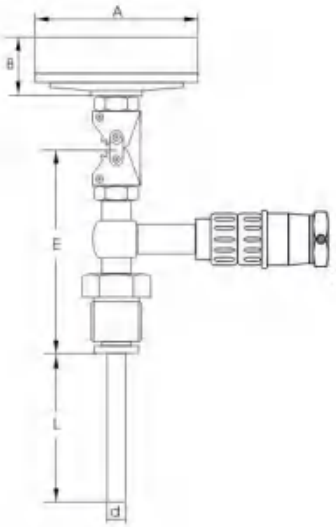
We adopt integral design for bimetallic thermocouple with thermocouple (thermal resistance) to meet demands on measuring temperature on spot or long distance transmission. It is used to directly measure temperature of liquid, vapor, gas medium and solid surface ranging from -80℃ to 5000℃ during various production processes.

技术参数 Technical Parameters



●标度盘公称直径：φ100、φ150
Nominal Diameter of dial 100, 150
●热响应时间：≤40S
Thermal Response Time: ≤40S
●防护等级：IP55
Protection Class: IP 55
●精度等级：
Accuracy Class: 1.0, 1.5
热电偶：I级，1.5℃；II级，2.5℃
Thermocouple: Class I, 1.5℃, Class II, 2.5℃
热电阻：A级：±(0.15+0.002|t|)
Thermal Resistance: Class A: +/- (0.15+0.002 /t/)
B级：±(0.30+0.005|t|
Class B: +/- (0.30+0.005 /t/)

外形及尺寸 Outer Shape & Size



形式 Form	D	A	B	E	d
径向型 Radial Type	105	73	23	-	φ12 φ14
	155	73	23	-	
轴向型 Axial Type	105	110	50	34	
	155	110	50	34	
万向型 Universal Type	105	178	23	120	
	155	178	23	120	
电接点轴向 Axial w/ E. Junction	105	135	40	-	
电接点径向型 Radial w/ E. Junction	105	150	72	42	
电接点万向型 Universal w/ E. Junction	105	175	40	98	

型号及规格
Type & Specification

型号 Type	分度号 Graduation	测温范围 Measuring Range	精度等级 Accuracy Class	保护管材料 Thermowell Material	插入长度 Insert Length
WSSE-401	E	-80~+40 -40~+80 0~50 0~100 0~150 0~200 0~300 0~400 0~500	1.5	1Cr18Ni9Ti 320 316 316L 哈氏c-276	150 200 300 400 500 750 1000
WSSE-501					
WSSE-411					
WSSE-511					
WSSE-481					
WSSE-581					
WSSP-401	Pt100				
WSSP-501					
WSSP-411					
WSSP-511					
WSSP-481					
WSSP-581					
WSSXE-401	E				
WSSXP-401	Pt100				
WSSXE-411	E				
WSSXP-411	Pt100				
WSSXE-481	E				
WSSXP-481	Pt100				

保护管其余材质根据协议订货。
Other material should be ordered according to agreement.

选型须知

1）型号
2）热电偶（阻）分度号
3）热电偶（阻）精度等级
4）双金属温度计精度等级
5）测温范围
6）安装固定形式
7）保护管材质
8）长度或插入深度

Type Selection Notice

1)Type
2)Graduation of Thermocouple (Thermal Resistance)
3)Accuracy Class of Thermocouple (Thermal Resistance)
4)Accaracy Class of Bimetal Thermometer
5)Measuring range
6)Installation & Fixing Type
7)Thermowell Material
8)Insert Length or Depth

例A：带热电偶双金属温度计，轴向型，E型，I级，测温范围0-400℃,活动螺纹M27×2，保护管316，插入长度300mm，

WSSE-401，0-400℃，L=300，I级，保护管316，螺纹27×2

Example: Bimetallic Thermometer with thermocouple, Axial Type, Type E, Class I, Measuring Range 0~40℃, Moveable Thread M27×2, Thermowell 316, Insert Depth 300mm

WSSE-401, 0~40℃,L=300, class I , Thermowell 316, thread M27×2

热安 装套管
Thermowell

应用 Application

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

It is matched with thermocouple (thermal resistance) and bimetallic thermometer to ensure their normal operation. It can be also used for environment under high pressure and with high flow speed.

特点 Features

- 全部参照IEC国际标准设计；
  All designed according to IEC international standard
- 盲孔加工厂，耐高压；
  Resistance again high pressure
- 与设备同期制造和安装；
  Manufactured and installed at same time with concerned equipment
- 不同压力等级，可满足不同需要。
  Different pressure class can meet different demands

工作原理 Working Principle

○公称压力 Nominal Pressure

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

It is usually means the static outer pressure which the protection tube can offer and will not be broken under the working temperature. In fact, working pressure not only has relationship with with protection tube material, diameter and thickness of wall, but also the structure form, installation method, inserting depth and the flow speed and type of the medium etc.

○水压试验 Water Pressure Test

对保护管的耐压和泄漏检查有要求时，须对保护管进行试验。试验压力为保护管公称压力的1.5倍。

When there is request about pressure resisting and leakage of thermowell, we need to test the thermowell, the tested pressure should be 1.5 times to the norminal pressure of thermowell.

○X射线探伤试验 X-ray Test

对保护管的壁厚、偏心距等项目检查有要求时，须按用户要求进行检查。

When there is request of wall thickness and eccentricity of thermowell, we need to test . according to user's demand.

型号命名方法 Name

TH 热安装套管 Thermowell

连接形式 Connection Type

01 螺纹连接 Thread
02 法兰连接式Flange
03 焊接式Welding

□ 序号 Series Number

套管材质 Thermowell Material

无（未标注） Blank	1Cr18Ni9Ti
A	304
B	316
C	316L
D	其它 Others

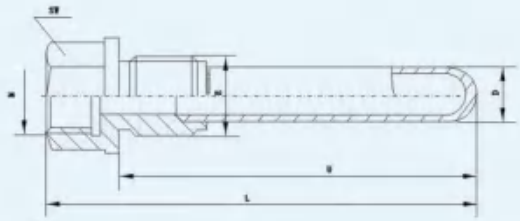
TH 02 A B 典型型号示例 Examples of Classical Name

选型须知 Type Selection Notice

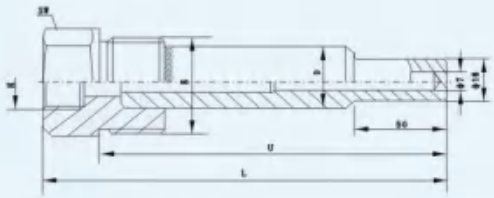
1）型号
Type
2）套管代号
Thermowell Code
3）插入深度
Insert Depth
4）套管材料
Thermowell Material

例A：装配热电偶，活络管接头式，K型，套管代号TH02AB，插入长度150mm。套管材料316，
WRN-52 TH02AB，U=150

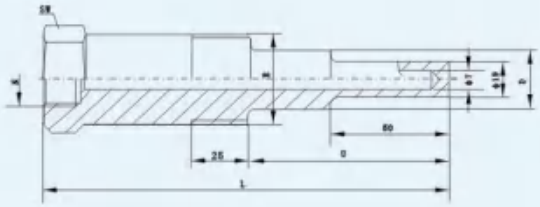
Example A: Assembly thermocouple, elbow tube connector, type K, thermowell code TH02AB, insert length 1500mm, thermowell material 316
WRN-52, TH02AB, U=150

外型及尺寸 Outer Shape and Size	型号 Type	N	E	D	SW	U	L
	TH01Y	M20X1.5 NPT1/2	M27X2	Φ16	32	95 145 195 245 345 445 545	150 200 250 300 400 500 600
	TH01V	M20X1.5 NPT1/2		Φ12			

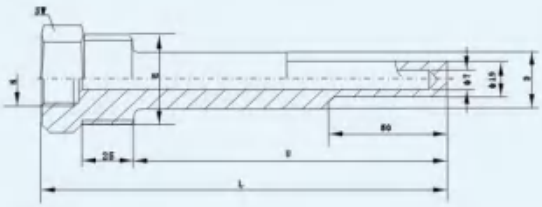
U（mm）	介质流速（m/S） Flow Speed	公称压力（NP）MPa
≤260	0	≤6.4
其余U Others	0	常压 Normal Pressure

	TH01V	M20X1.5 NPT1/2	M60X3	Φ28	36	230 430 630 1130	260 460 660 1160
	TH01V	M20X1.5 NPT1/2	NPT2				

U（mm）	介质流速（m/S） Flow Speed	公称压力（NP）MPa
≤1100	0	≤9.8

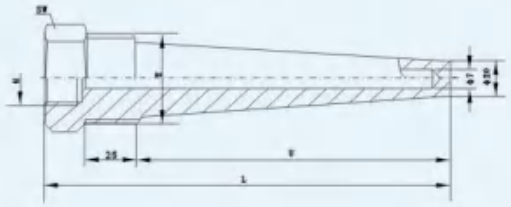
	TH01A	M20X1.5 NPT1/2	NPT1	Φ25.4	34	60 110 160 210 260 360	150 200 250 300 400 500
	TH01B	M20X1.5 NPT1/2	NPT3/4	Φ22.2			

U（mm）	介质流速（m/S） Flow Speed	公称压力（NP）MPa
≤360	0	≤6.4

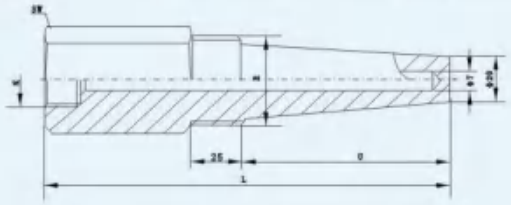
	TH01C	M20X1.5 NPT1/2	NPT1	Φ25.4		160 210 260 360 460 560	200 250 300 400 500 600
	TH01D	M20X1.5 NPT1/2	NPT3/4	Φ22.2			

U（mm）	介质流速（m/S） Flow Speed	公称压力（NP）MPa
≤560	0	≤6.4

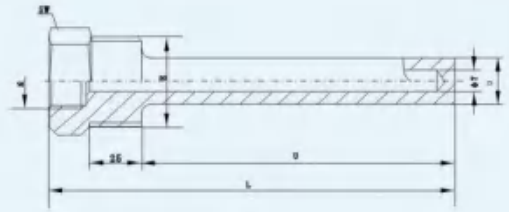
外型及尺寸 Outer Shape and Size



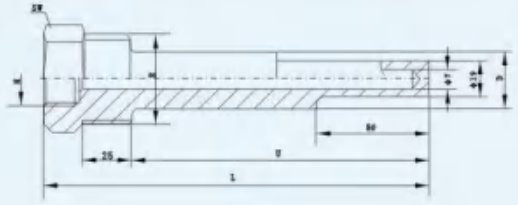
U（mm）	介质流速（m/S）Flow Speed	公称压力（NP）MPa
≤110	≤80	≤30
≤260	≤18	≤30
其余U Others	0	≤6.4



U（mm）	介质流速（m/S）Flow Speed	公称压力（NP）MPa
≤110	≤80	≤30
≤260	≤18	≤30
其余U Others	0	≤6.4

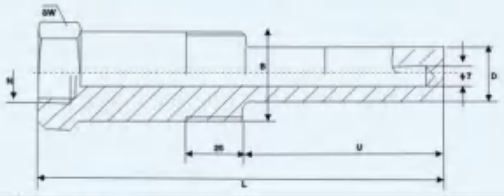
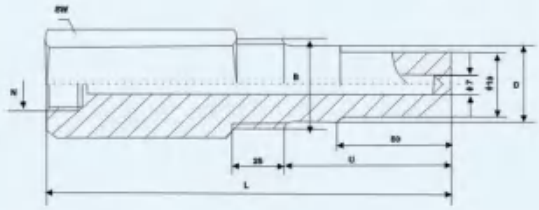
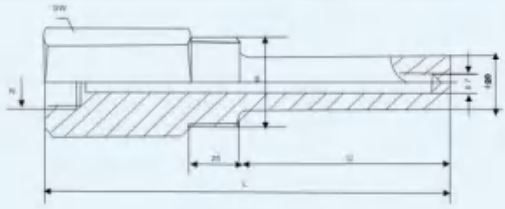
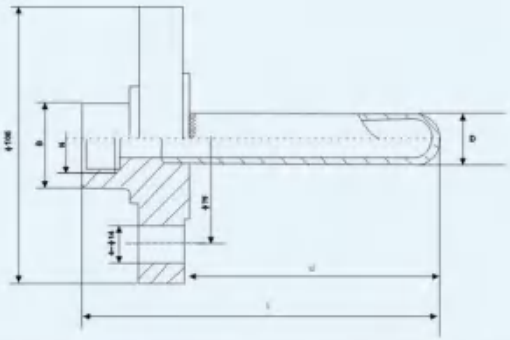


U（mm）	介质流速（m/S）Flow Speed	公称压力（NP）MPa
≤260	0	≤6.4
其余U Others	0	常压 Normal Pressure

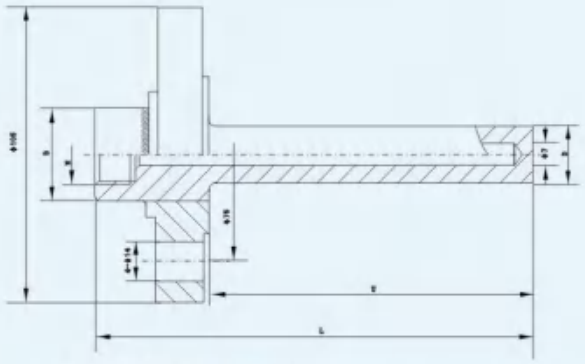


U（mm）	介质流速（m/S）Flow Speed	公称压力（NP）MPa
≤260	0	≤6.4
其余U Others	0	常压 Normal Pressure

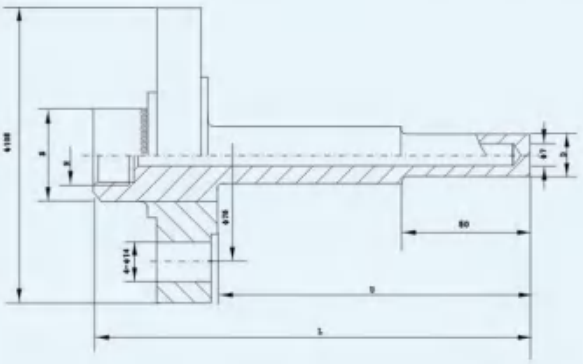
型号 Type	N	E	D	SW	U	L
TH01E	M20X1.5 NPT1/2	NPT1	-	34	60 85 110 160 210 260 360	100 125 150 200 250 300 400
TH01F	M20X1.5 NPT1/2	NPT3/4	-			
TH01G	M20X1.5 NPT1/2	NPT1	-	34	60 110 160 210 260 360	150 200 250 300 400 500
TH01H	M20X1.5 NPT1/2	NPT3/4	-			
TH01J	M20X1.5 NPT1/2	NPT1	Φ28	34	60 85 110 160 210 260 360	100 125 150 200 250 300 400
TH01K	M20X1.5 NPT1/2	NPT3/4	Φ22			
TH01L	M20X1.5 NPT1/2	NPT1	Φ22.2	34	110 160 210 260 360 460 560	150 200 250 300 400 500 600
TH01M	M20X1.5 NPT1/2	NPT3/4	Φ19			

外型及尺寸Outer Shape and Size	型号 Type	N	E	D	SW	U	L
	TH01N	M20X1.5 NPT1/2	NPT1	Φ28	34	60 85 110 160 210 260 360	150 200 250 300 400 500
U（mm） / 介质流速（m/S） Flow Speed / 公称压力（NP）MPa							
≤260 / 0 / ≤6.4							
其余U Others / 0 / 常压 Normal Pressure							
	TH01P	M20X1.5 NPT1/2	NPT1	Φ22	34	160 210 260 360	250 300 400 500
U（mm） / 介质流速（m/S） Flow Speed / 公称压力（NP）MPa	TH01Q	M20X1.5 NPT1/2	NPT3/4	Φ19			
≤260 / 0 / ≤6.4							
0 / 常压 Normal Pressure							
	TH01R	M20X1.5 NPT1/2	NPT1	Φ22	34	60 110 160 210 260 360	150 200 250 300 400 500
U（mm） / 介质流速（m/S） Flow Speed / 公称压力（NP）MPa	TH01S	M20X1.5 NPT1/2	NPT3/4	Φ19			
≤260 / 0 / ≤6.4							
0 / 常压 Normal Pressure							
	TH02F	M20X1.5 NPT1/2	Φ34	Φ16	-	114 161 211 261 361 461 713 963	144 194 244 294 394 494 748 998
U（mm） / 介质流速（m/S） Flow Speed / 公称压力（NP）MPa	TH02F	M20X1.5 NPT1/2	Φ34	Φ20	-		
≤260 / 0 / ≤6.4							
其余U Others / 0 / 常压 Normal Pressure							

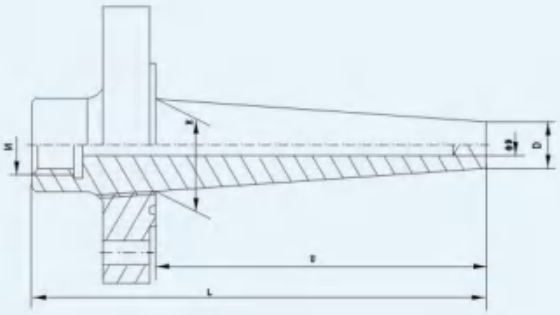
外型及尺寸 Outer Shape and Size



U（mm）	介质流速（m/S）Flow Speed	公称压力（NP）MPa
≤260	0	≤6.4
其余U Others	0	常压 Normal Pressure

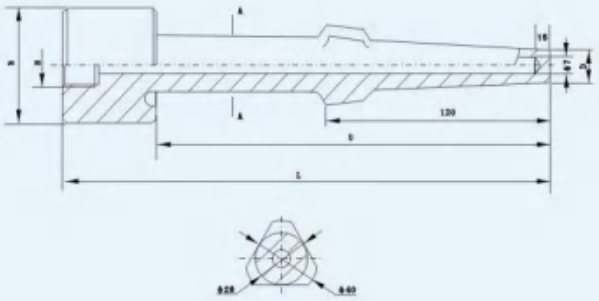
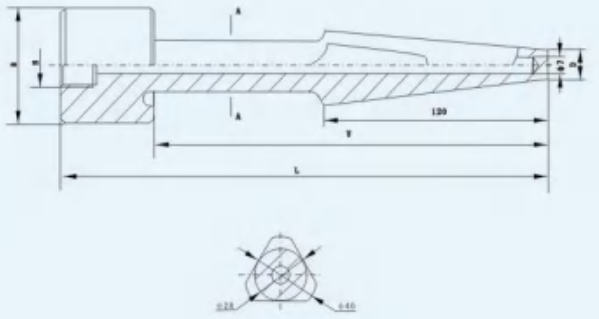
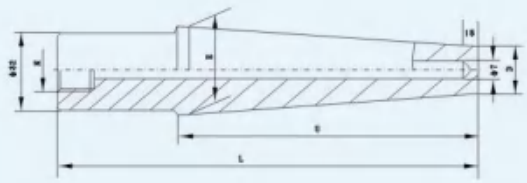


U（mm）	介质流速（m/S）Flow Speed	公称压力（NP）MPa
≤260	0	≤6.4
其余U Others	0	常压Normal Pressure

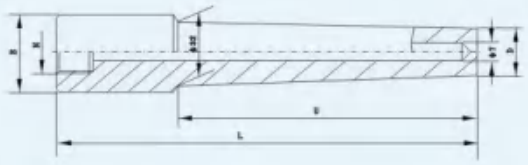


U（mm）	介质流速（m/S）Flow Speed	公称压力（NP）MPa
550	≤80	*≤40

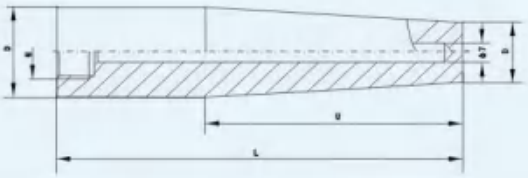
型号 Type	N	E	D	SW	U	L
TH02A	M20X1.5 NPT1/2	Φ41.5	Φ36	-	90 140 190 240 340 440 540	150 200 250 300 400 500 600
TH02B	M20X1.5 NPT1/2	Φ38	Φ28			
TH02C	M20X1.5 NPT1/2	Φ33.5	Φ13	-	95 145 195 245 345 445 545	150 200 250 300 400 500 600
TH02D	M20X1.5 NPT1/2	Φ26.5	Φ13			
TH02G	M20X1.5 NPT1/2	Φ25	Φ21	-	150 200 250 300 350 400 450 500 550	230 280 330 380 430 480 530 580 630
TH02H	M20X1.5 NPT1/2	Φ30	Φ25			

外型及尺寸 Outer Shape and Size	型号 Type	N	E	D	SW	U	L
	TH03J	M20X1.5 NPT1/2	Φ62	Φ16	-	250	300
U（mm） / 介质流速（m/S） Flow Speed / 公称压力（NP）MPa 250 / ≤80 / ≤30							
	TH03H	M20X1.5 NPT1/2	Φ62	Φ18	-	250	300
U（mm） / 介质流速（m/S） Flow Speed / 公称压力（NP）MPa 250 / ≤100 / ≤30							
	TH03G	M20X1.5 NPT1/2	Φ38	Φ22	-	50 100 150	150 200 250 300 350
U（mm） / 介质流速（m/S） Flow Speed / 公称压力（NP）MPa ≤150 / ≤80 / ≤30							

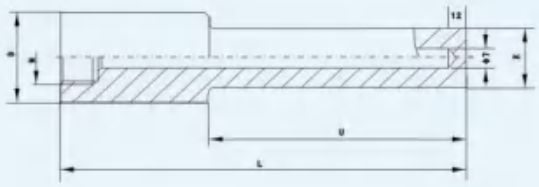
外型及尺寸 Outer Shape and Size



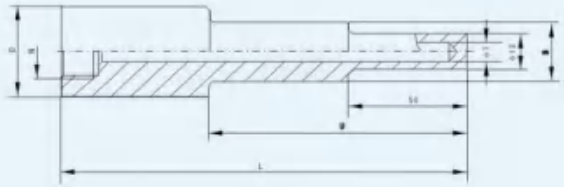
U（mm）	介质流速（m/S） Flow Speed	公称压力（NP）MPa
≤300	≤30	≤6.4



U（mm）	介质流速（m/S） Flow Speed		公称压力（NP）MPa	
	LD03C	LD03D	LD03C	LD03D
≤110	≤18	≤80	≤6.4	≤30



U（mm）	介质流速（m/S） Flow Speed		公称压力（NP）MPa	
	LD03C	LD03D	LD03C	LD03D
≤110	≤18	≤80	≤6.4	≤30
≤260	—	≤18	—	≤30
其余U	—	≤6.4	—	≤6.4
≤360	0	≤6.4	≤6.4	—



U（mm）	介质流速（m/S） Flow Speed	公称压力（NP）MPa
≤545	0	≤6.4

型号 Type	N	E	D	SW	U	L
TH03K	M20X1.5 NPT1/2	Φ42	Φ18	-	50 100 150 200 250 300	100 150 200 250 300 350
TH03E	M20X1.5 NPT1/2	Φ28	Φ18	-	100	250 300
TH03F	M20X1.5 NPT1/2	Φ28	Φ20	-	100	250 300
TH03C	M20X1.5 NPT1/2	Φ28	Φ36	-	95 145 195 245 345 445 545	150 200 250 300 400 500 600
TH03D	M20X1.5 NPT1/2	Φ36	Φ41.5	-	95 145 195 245 345 445 545	150 200 250 300 400 500 600
TH03A	M20X1.5 NPT1/2	Φ19	Φ26.5	-	95 145 195 245 345 445 545	150 200 250 300 400 500 600
TH03B	M20X1.5 NPT1/2	Φ22	Φ33.5	-	95 145 195 245 345 445 545	150 200 250 300 400 500 600

保护管材质及选用

材 质 Material	使用温度 Using Temperature	特点及用途 Features & Application
1Cr18Ni9Ti	-200~800	具有高温耐蚀性，通常作为一般耐热钢使用 W/ cauterization resisting performance in high temperature, normally for common thermal resisting steel.
304	-200~800	低碳含量，具有良好耐晶间腐蚀性，通常作为一般耐热钢使用 Low carbon content, w/ good Intergranular Corrosion resisting performance , normally for common thermal resisting steel.
316	-200~750	低碳含量，具有良好耐晶间腐蚀性，作为耐腐蚀钢使用 Low carbon content, w/ good Intergranular Corrosion resisting performance normally for cauterization resisting steel.
316L	-200~750	超低碳含量，具有良好耐晶间腐蚀性，作为耐腐蚀钢使用 Super low carbon content, w/ good Intergranular Corrosion resisting performance, normally for cauterization resisting steel.
蒙乃乐K500	-100~700	镍铜合金，具有良好耐晶间腐蚀性，适用于强硫酸等耐腐蚀性场合使用 Ni & Cu Alloy, w/ good Intergranular Corrosion resisting performance, suitable for the corrosion resisting locales w/ strong vitriol.
哈氏合金-276	-100~700	具有优良耐晶间腐蚀性，作为耐腐蚀钢使用 W/ good Intergranular Corrosion resisting performance, for cauterization resisting steel.
Inconel600	-100~1000	镍铬铁合金，具有优良高温抗氧化性，通常作为耐热钢使用 Ni & Cu Alloy,, w/ oxidation resisting performance in high temperature normally for thermal resisting steel.
310S	-200~1000	具有高温抗氧化性，耐腐蚀型，通常作为耐热钢使用 W/ oxidation resisting performance in high temperature, cauterization type, normally for thermal resisting steel.
Gh3030	0~1100	镍基高温合金钢，具有优良抗氧化性，耐腐蚀型，通常作为耐热钢使用 High temperature nickel base alloy, w/ good oxidation resisting performance cauterization resisting type,normally for thermal resisting steel.
Gh3039	0~1300	镍基高温合金钢，具有优良抗氧化性，耐腐蚀型，通常作为耐热钢使用 High temperature nickel base alloy, w/ good oxidation resisting performance cauterization type,normally for thermal resisting steel.
高铝质 High Al	0~1300	工业陶瓷管，具有优良抗氧化性，耐腐蚀型 Industrial ceramic tube, w/ good oxidation resisting performance cauterization resisting type.
刚玉质 Corundum	0~1600	工业陶瓷管，具有优良抗氧化性，耐腐蚀型 Industrial ceramic tube, w/ good oxidation resisting performance cauterization resisting type.
3YC52	0~1300	高温合金，具有优良抗氧化性，耐腐蚀型，机械性能好，适用于高温场所 High temperature alloy, w/ good oxidation resisting performance, cauterization resisting type, w/ good mechanical performance, for the occasions w/ high temperature.
二硅化钼 Two Molybdenum Silicides	0~1600	具有优良抗氧化性，耐腐蚀型，机械性能好，适用于高温场所 W/ good oxidation resisting performance, cauterization resisting type, w/ good mechanical performance, for the occasions w/ high temperature.

压力式 测温仪表

概述

该仪表比传统型压力式测温仪表有较大的创新和发展，温包体积可以缩小到原来的1/30，创造性地将传感器热电阻内置于测温元件内，实现了机电一体化的测温功能。形成了以压力式温度仪表为基本测温功能的远传、防震、防腐、电接点、温度信号变送等多功能系列化测温仪表，成为防爆电机轴承及冷却器测温的首选和专用仪表，该仪表分为防爆型和普通型两个系列。

产品特点

该仪表读数直观、反应速度快、灵敏度高，寿命长，集合了玻璃棒温度计、双金属温度计、气体压力式温度计的优点，是目前使用范围较广，性能较全面的一种机械式测温仪表。

型号意义

WTZ □ - 2 8 □ □

- 压力式测温仪表
- 仪表使用场所：普通型：无；防爆型：d
- 指针式
- 圆标尺270°
- 输出信号：3输出4-20mA；4输出电热偶；5输出Pt100；6电接点上下限(无防震)；7电接点单上限(无防震)；8电接点双上限(无防震)；0单指示
- 防震（Z）

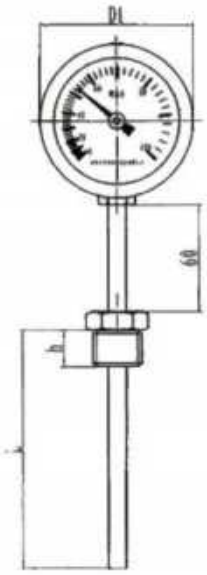
产品分类

名 称	型 号	功 能
防爆测温仪表	WTZd-283(Z)	压力式输出4-20mA信号防爆测温仪表(防震)
	WTZd-284(Z)	压力式输出热电偶信号防爆测温仪表(防震)
	WT Zd-285(Z)	压力式输出热电阻信号防爆测温仪表(防震) ※
	WTZd-286	压力式输出电接点上下限信号防爆测温仪表
	WTZd-287	压力式输出电接点单上限信号防爆测温仪表
	WTZd-288	压力式输出电接点双上限信号防爆测温仪表 ※
普通测温仪表	WTZ-280(Z)	压力式单指示测温仪表(防震)
	WTZ-283(Z)	压力式输出4-20mA信号测温仪表(防震)
	WTZ-284(Z)	压力式输出热电偶远传信号测温仪表(防震)
	WTZ-285(Z)	压力式输出热电阻远传信号测温仪表(防震) ※
	WTZ-286	压力式输出电接点上下限信号测温仪表
	WTZ-287	压力式输出电接点单上限信号测温仪表
	WTZ-288	压力式输出电接点双上限信号测温仪表

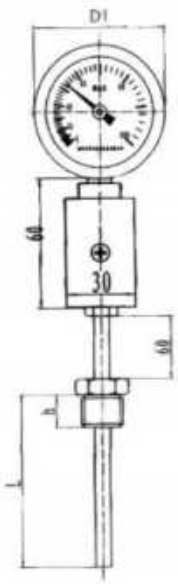
注:※ 产品应用较广。

□ 仪表安装尺寸

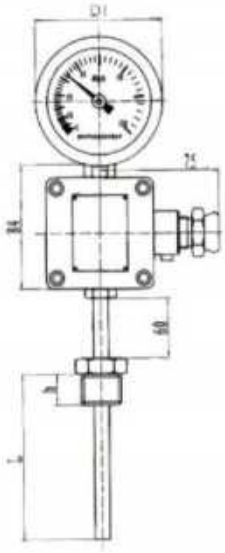
● a、螺纹固定：



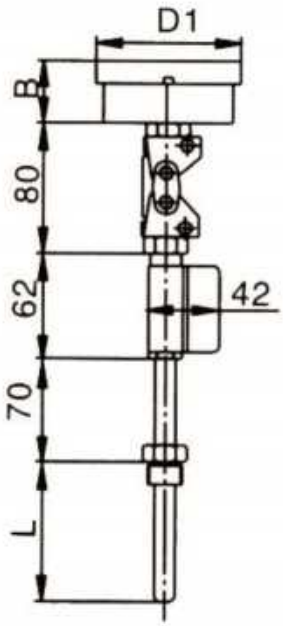
普通硬尾单指示型
（WTZ-280）



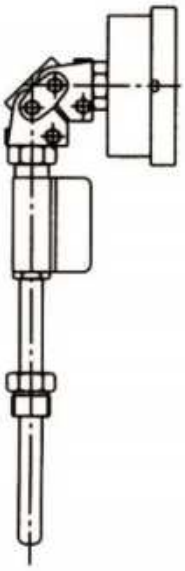
普通硬尾远传型
（WTZ-285）

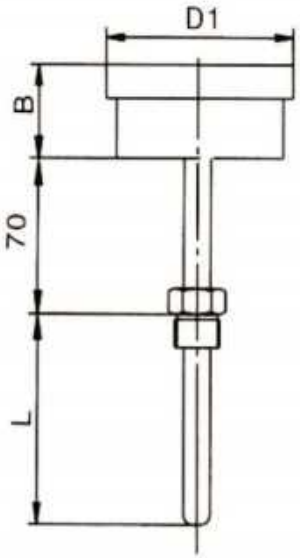


防爆硬尾远传型
（WTZd-285/3）



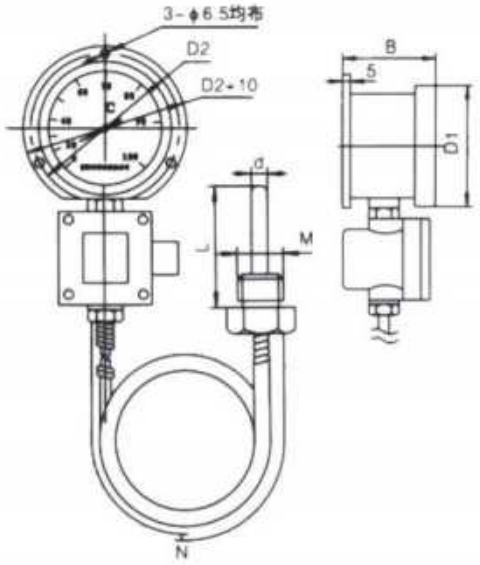
万向型式





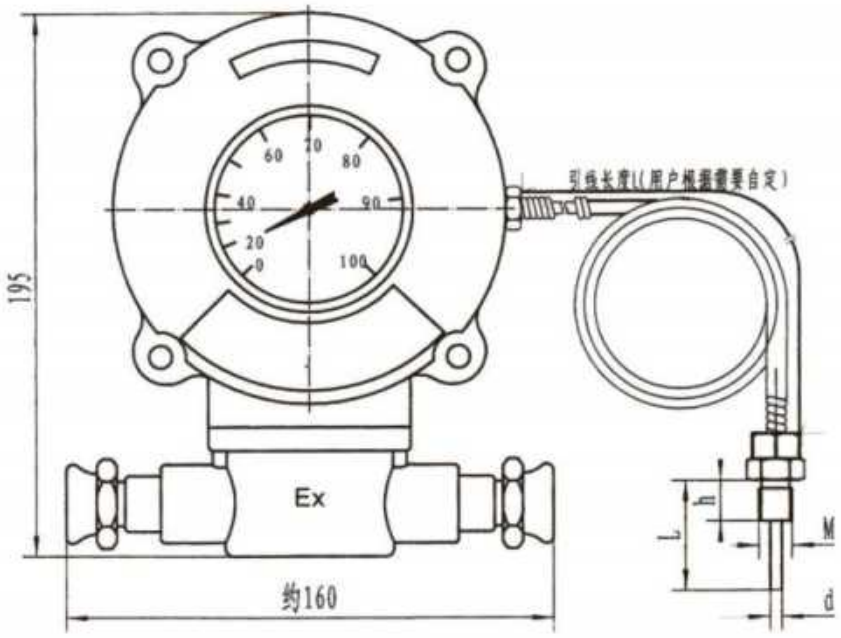
径向型式

● b、法兰盘固定：



外型尺寸 / 材质	Φ80			Φ100		
	B	D1	D2	B	D1	D2
不锈钢	38	85	100	38	110	120
铝	46	93	100			

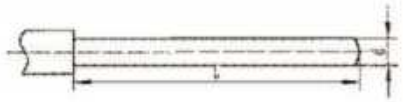
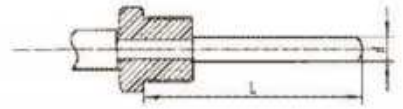
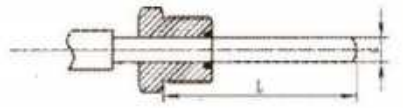
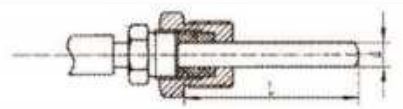
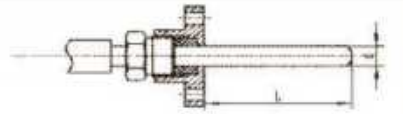
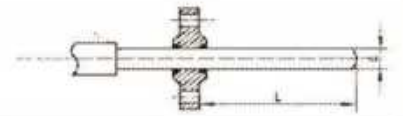
防爆软尾远传型（WTZD-285/3）



防爆电接点型（WTZd-286、287、288）

固定表头用法兰盘

● c、温包结构示意图及固定方式

温包结构示意图	固定方式		材料选用
	无固定螺丝		紫铜 紫铜镀铬 1Cr18Ni9Ti
	外活动螺丝	M27X2 G3/4 M16X1.5 G1/2	同上
	固定螺丝	同上	同上
	卡套螺丝	同上	同上
	卡套法兰盘	法兰盘尺寸 由用户提供	同上
	固定法兰盘	同上	同上

□ 防爆测温仪表

WTZd系列压力式防爆测温仪表是根据GB3836.1-2010《爆炸性环境第1部分：设备通用要求》GB3836.2-2010《爆炸性环境第2部分；由隔曝外壳"d" 保护的设备》的规定设计，制造成防爆型产品，专门用于除煤矿以外的其它爆炸性气体环境场合，该产品可对防爆电机或其它机械产品的轴承、轴瓦，以及管道或容器介质进行温度测量。

接线盒材质为铸铝轻质合金。

防爆标志为: ExdIIBT6 Gb、ExdIICT6Gb。

□ WTZd 283、284、285压力式防爆测温仪表

此类仪表输出4-20mA标准信号、热电偶或Pt100信号

1.1远传信号的实现

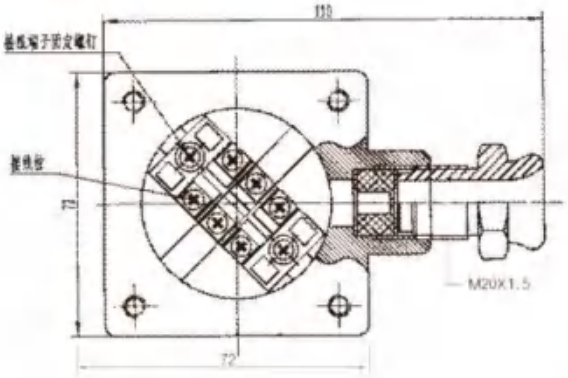
此类仪表是在测温元件内同时理置热电阻或热电偶感温元件，仪表的突出优点是单点测温实现双重指示，两个测温系统相互独立，互不影响各自的测量，提高了温度测量的可靠性和准确性。特别适用于测温现场没有电源，而又要求现场显示并将温度信号远传的场合。现场既可以通过指针指示温度，又可以将信号远传至控制室进行监控，实现机电一体化测温功能。

WTZd-285软尾

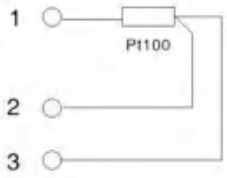
WTZd-285硬尾

WTZd-285硬尾钢管布线

□ 接线盒示意图

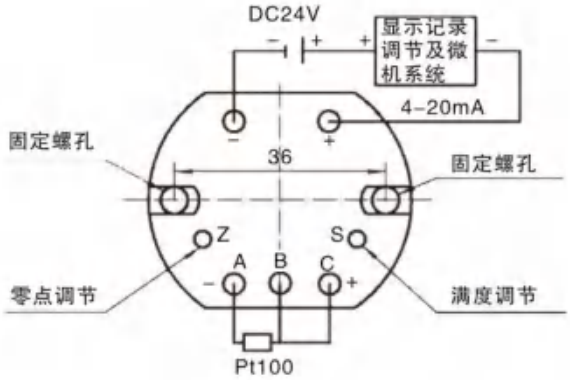


□ 热电阻接线图



□ 变送器接线图

变送器输出方式；
二线制4-20mA；
供电电源：DC24V。



□ 性能指标

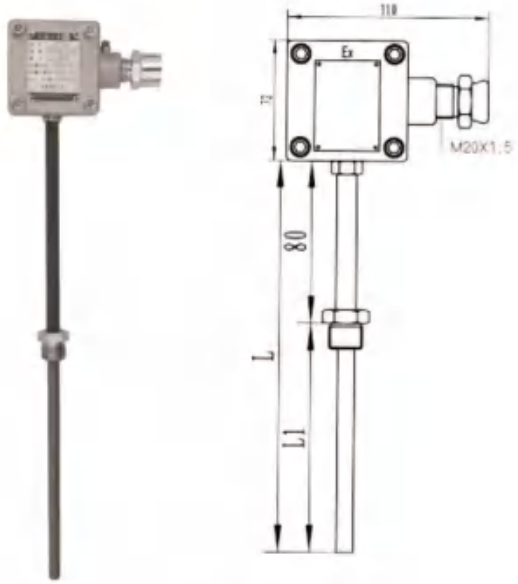
a. 测温范围：0-100℃, 0-120℃, 20-120℃；
b.精度等级：2.5级或1.5级；
c.探头尺寸：Φ10x 50 (或根据用户要求)；
d.探头安装螺纹： M16x1.5 (或根据用户要求)；
e.输出信号：Pt100 (或热电偶、 4-20mA信号)；
f,测量距离:1.5M (或根据用户要求)；
g.附加功能:防腐、绝缘，选型时另注；
h.密封圈内径Φ6或Φ10。

□ 选型示例

型号：WTZd-285
技术条件：Φ10x50， M16x1.5，输出Pt100，
测量距离1.5米。

□ WTZd-01测温仪表

此产品是WTZd-285的衍生产品，只提供远传信号(Pt100或4-20mA信号)，无现场显示，保护管尺寸和安装螺纹尺寸由用户提出。



WTZd-01

WTZd-286\287\288压力式电接点防爆测温仪表

● 此类仪表输出接点信号

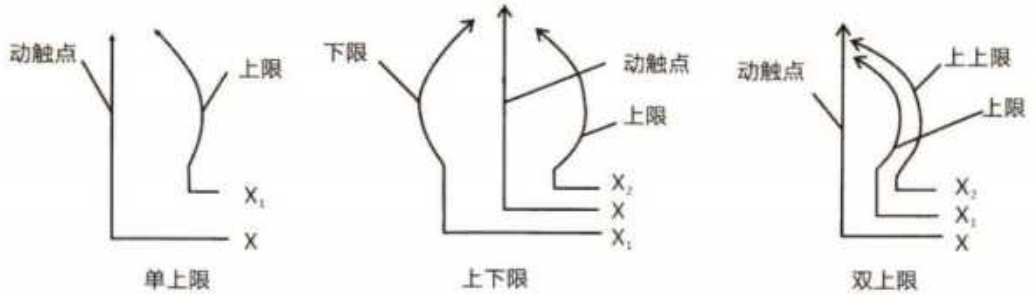
● 接点型式与电气参数

接点型式	额定功率（W）	额定电压（U）	绝缘电阻（MΩ）
针式接点	10	220	≥100

● 接点性能与接线方式

仪表型号	接点名称	接点数量	状态	设定方式
WTZd-286	上下限X_1、X_2	2	常开	内设定
WTZd-287	单上限X_1	1	常开	
WTZd-288	双上限X_1、X_2	2	常开	

● 接点示意图



接点温度设置

a、WTZd-288型内部设有双上限X_1和X_2两个电接点，指针为动接点，测量电机轴承温度时出厂设定静接点X_1为80℃，静接点X_2为90℃，当被测温度(动接点X)到达X_1点时，接点1接通，用户可通过安装蜂鸣器和报警指示灯，以便提醒工作人员到现场处理，

b、当温升到达X_2点时，接点2接通，用户可通过安装中间继电器，控制接触器排除故障；

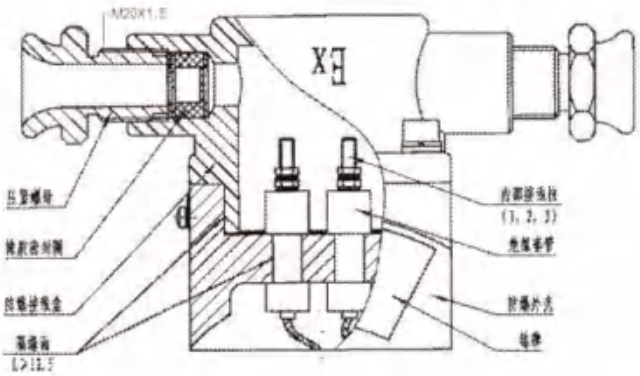
c、用户还可根据所需控温范围，断开电源后，打开表盖，拨动限位指针，重新设定X_1、X_2接点位置：

d、WTZd-287型内部设有一个电接点，出厂时固定静接点值为90℃；

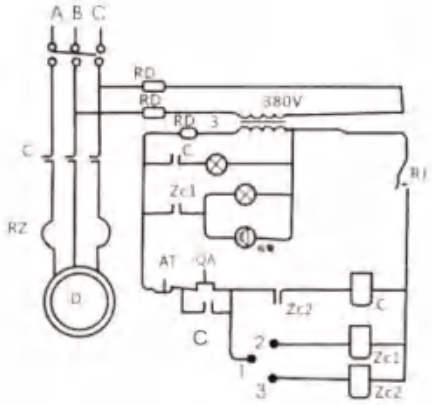
e、若需调整报警温度，须先断开电源后，再打开表盖，拨动限位指针，使接点固定于所设温度；

f、WTZd-286型内部设有上、下限两个电接点，温度设定可根据用户要求进行设定。

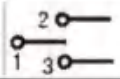
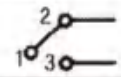
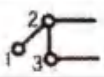
g、参考图



接线盒内结构图



控制原理图(仅供参考）

WTZd-288接点三种状态			
应对结果	电机正常工作	电机超温报警	电机断电

性能指标

a、测温范围：0-100℃，0-120℃，20-120℃；

b、探头尺寸：Φ10×50(或根据用户要求)；

c、探头安装螺纹：M16×1.5(或根据用户要求)，

d、报警温度设定：根据用户需要设定(出厂时设定为80℃或90℃)；

e、测量距离：1.5M或根据用户要求。

f、出线口密封圈内径Φ6或Φ10

选型示例

型号：WTZd-288。

技术条件：Φ10×50，M16×1.5，上限80℃，上上限90℃，测量距离1.5M。

普通测温仪表

WTZ压力式普通测温仪表是以基本形式WTZ-280为基础，派生283、284、285、286、287、288等，功能与其对应的防爆产品基本相同，只是产品应用在非防爆场合的温度测量和调节。表壳分为铸铝和不锈钢两种。

测温部分(温包)的材料：紫铜、紫铜镀铬或1Cr18Ni9Ti.

WTZ-280硬尾

铸铝喷塑
WTZ-280软尾

- WTZ-280为压力式温度仪表的基本形式
- WTZ-283、284、285为压力式远传信号测温仪表

该仪表是将铂热电阻与WTZ压力式温度仪表的温包置于同一测温装置内的复合仪表。两个测温系统相互独立，互不影响各自的测量，提高了温度测量的可靠性和准确性。

铂热电阻远传信号接线和变送器接线同WTZd-283、285

WTZ-285软尾

- WTZ-286、287、288为压力式电接点测温仪表

该仪表是在WTZ-280单指示的基础上安装了接点装置，通过调节结构，可以方便地改变指针的设定位置，当被测温度上升(或下降)到设定值时，仪表会给出一个开关信号，用于控制、调节或报警被测温度。

该仪表的接点型式与电气参数、接点性能与接线方式与其对应的防爆产品相同。

此类仪表在选型时注意：电接点仪表不具有防震功能。

WTZ-286、287、288
(带电接点)

BWTY系列 防爆测温仪表

□ 概述

BWTY系列测温仪表是我公司继WTZ之后新开发的又一款专门用于电机温度测量的指针式仪表，该仪表采用轻质合金外壳，设计美观，结构紧凑，弹性元件采用进口材质，精度高，可靠性好，性能稳定。

BWTY仪表实现均匀指示，克服了WTZ仪表前三分之一指示精度低、不回零的弱点，是一款理想的机电一体化温度测量仪表。

BWTY系列防爆测温仪表按照GB3836.1-2010《爆炸性环境第1部分:设备 通用要求》、GB3836.2-2010《爆炸性环境第2部分：由隔爆外壳“d”保护的设备》的规定设计，制造成防爆型产品，专门用于除煤矿以外的其它爆炸性气体环境场合，可对防爆电机或其它机械产品的轴承、轴瓦，以及管道或容器介质进行温度测量，广泛应用于石油、化工、医药、船舶、炼钢等易燃易爆场所。

仪表外壳材质为轻质合金。

防爆标志：ExdIICT6 Gb/DIP A21 TA T6、 ExeIIT6 Gb

□ 产品特点

a、观察方便、读数清晰、测温灵敏、性能稳定、抗震性强；

b、既可现场显示、又可输出远传信号；

c、具有传感、显示、远传一体化功能。

□ 型号意义

B WTY -20 □ □

- Z:防震型（无防震要求不标注）
- 3:输出4～20mA信号
- 4:输出热电偶信号
- 5:输出铂电阻信号Pt100
- 设计序号
- 液体压力式测温仪表
- 防爆型

□ 工作条件

a 环境温度-20～40℃；

b 相对湿度不大于95%(+25℃)

技术性能

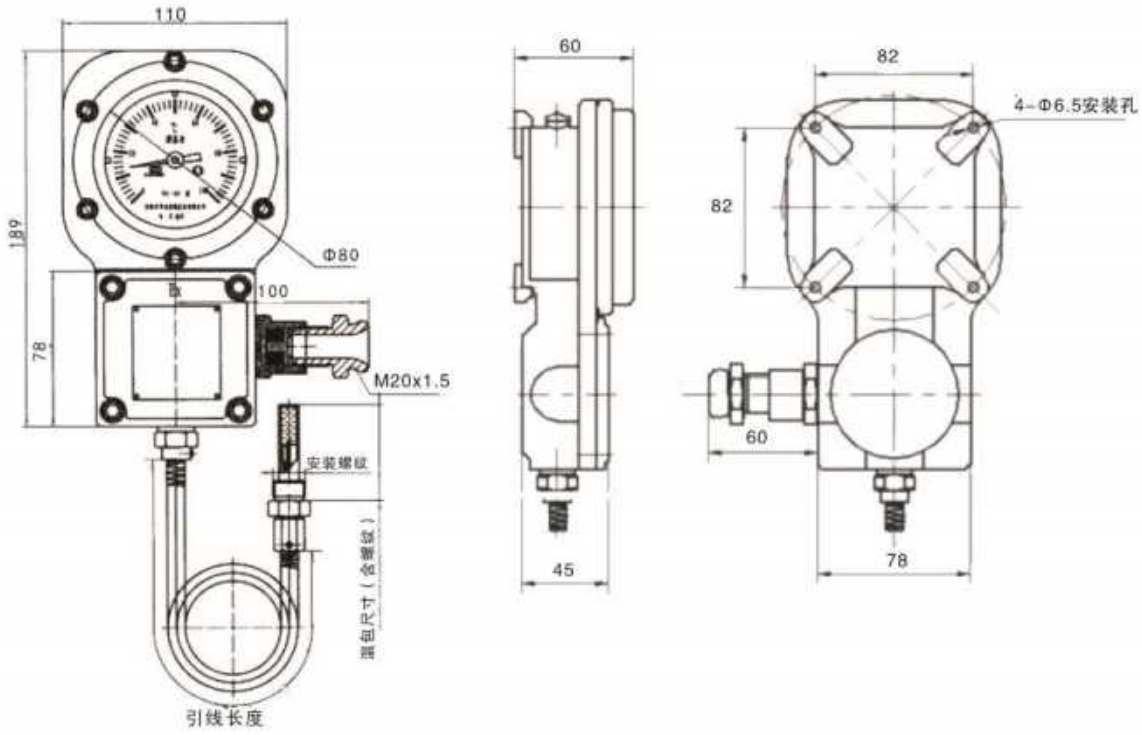
a、测温范围：0-100℃，0-120℃，20-120℃；
b、精度等级：2.5级或1.5级；
c、探头尺寸：Φ10×50(或根据用户要求。该类仪表探头尺寸可以更小）；
d、探头安装螺纹：M16×1.5(或根据用户要求)；
e、输出信号：Pt100(或热电偶4-20mA)；
f、测量距离：1.5M(或根据用户要求)；
g、防护等级：IP55；
h、附加功能：防腐、绝缘，选型时另注。

选型示例

型号：BWTY-205。技术条件：Φ10×50，M16×1.5，测量距离1.5M

外形与结构尺寸

安装尺寸82×82



安装与接线

a、安装仪表时应检查仪表铭牌的防爆标志与安装环境是否相符；

b、连接导线应选择铜质屏蔽电缆，其截面积不小于0.2平方毫米；

c、打开仪表接线盒，用板手拧开电缆引入装置的压紧螺母，将电缆线与接线盒中的接线柱(或接线端子)牢固相连接，然后安装上接线盒，并拧紧四角的螺丝；

d、仪表上的接地螺丝须用接地导线可靠接地；

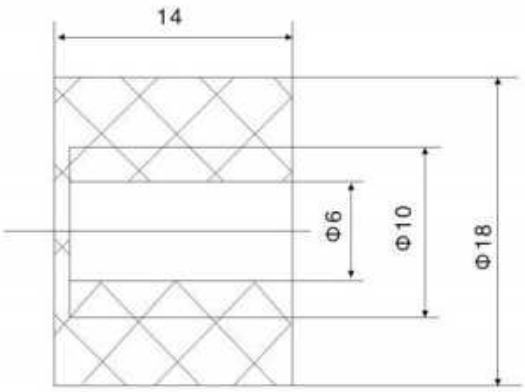
e、安装时，信号传输线应相隔不大于300mm的距离用扎头固定起来，信号传输线过长时，可挽在合适的位置，切勿乱抛，并远离发热设备；

f、仪表使用后，每年校验一次，有条件的可自己校验，也可返回厂家校验

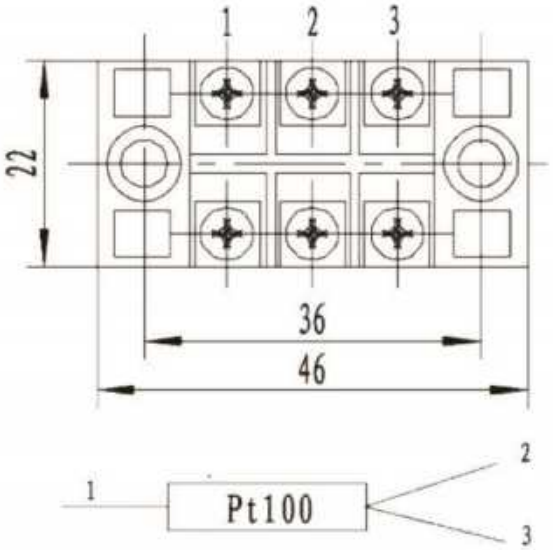
g、引人装置内密封圈老化变质时，应及时更换；

h、用户所用电缆最小外径为Φ6，建议选用Φ6-Φ10之间；

i、密封圈的尺寸为



j、接线盒内接线排示意图



HNUHZ系列 浮子液位计

概述

HNUHZ系列浮子液位计量是采用国外新技术、应用新材料、新工艺生产制造的直观式液位测量产品；该系列产品具有无源可夜视功能，可进行夜间液位监测；每台仪表配装我公司生产的磁浮子液位变送器还可实现数据远传、控制报警功能。

特点

1、指示部分与被测介质完全隔离；
2、显示清晰、醒目；
3、无源可夜视、安全可靠；
4、易于安装、维护方便；
5、可远传、控制报警。

用途与适用范围

类型	型号（尾注）	用途与适用范围	
基型		现场就地连续显示及夜视	有压储罐的液位测量。
夹套型	J		有伴热装置。适用于被测介质粘度较大且需要保持一定温度使其具有良好流动性的液位测量。
地下槽型	D		地下流动介质储罐，地上显示液位。 不适合有强烈振动和强磁的工作场合。
高温型	T		介质温度在（200~450）℃以内，可承受最大工作压力≤100MPa。
防腐型	F_0、F_1		可耐酸、碱、盐的腐蚀性介质的液位测量，但不适合浓硝酸、发烟硫酸、酮类和醚类腐蚀性介质的液位测量；承压低。
经济型	L		常温储罐的液位测量。
电远传型	（I-IV）E		可输出（4-20）mA电流信号及上下限报警信号
备注	夹套型、地下槽型、高温型、防腐型、经济型均可配液位变送器，以实现传远功能。		

工作原理与结构

本仪表是基于浮力和磁力原理设计的。仪表的浮子室与被测容器接成连通器，因而浮子室的液面与容器的液面等高。当被测容器内的液面发生变化时。浮子室内装有磁钢的浮子随液面升降。

地下槽型仪表，浮子与连接杆和磁钢一体化连接，浮子和磁钢之间有位置差。当液面变化时，浮子通过连续杆带动磁钢升降。经磁耦合驱动浮筒外壁上的显示器。

仪表主要由浮子（浮球）、浮子室（浮筒）组件、显示器、连接法兰等组成。

电远传型仪表，增加了液位变送器，即可输出与液面相对应的电阻值、电流值或开关报警信号。

技术参数

1、正常工作条件

环境温度 -25℃-70℃； 相对温度: 5%~100%（包括凝露和直接湿）；大气压力 86kPa-108kPa

2、测量范围：500mm~3000mm分档

3、测量误差：±10mm

4、工作压力：1MPa、1.6MPa、2.5MPa、4MPa、6.3MPa、10MPa

5、介质密度：0.5g/cm^3~1.8g/cm^{3}分档

6、介质粘度：≤0.05Pa·s

7、介质温度：0~200℃、0~450℃（高温型）

8、跟踪速度：≤0.8m/s

9、接触介质材料：1Cr18Ni9Ti,ABS,PVC,UPVC

测量范围（m）	0~0.5	0.5~2	2~3
测量精度（%）	±2	±1.5	±1

10、控制点误差：±10mm；
11、回差：不超过基本误差；
12、重复性误差：不超过基本误差；
13、开关控制点的接点容量：AC或DC220V：1A（纯阻性负载）；
14、控制点间最小间距（mm）：60；
15、外壳防护等级：IP65（防爆型）；
16、显示仪表：XMT-124D数字显示表（可设定上下限报警及输出4~20mA）；
17、防爆等级：Exd ⅡBT4或Exib Ⅱ BT4。

选型规则

HNUHZ浮子液位计 HN：企业代号 U：物位仪表 H：磁性浮子 Z：指示式

代码	安装指示方式
D	顶装翻柱式
C	侧装翻柱式

代码	介质密度（g/cm³）
1	0.45~0.51
2	0.51~0.65
3	0.65~0.75
4	0.75~0.9
5	0.9~1
6	1~1.8

代码	工作压力（单位：MPa）
0	常压
1	1.0
2	1.6
3	2.5
4	4.0
5	6.3
6	6.3
7	10

代码	测量范围；（安装法兰中心距离 单位；mm）
1	500
2	800
3	1100
4	1400
5	1700
6	2000
7	2500
8	3000

代码	类型
空格	基型
L	经济型
J	夹套型
D	地下槽型

代码	类型	接触材质
空格	无防腐	不锈钢
F_0	防腐型	UPVC
F_1	防腐型	ABS、PVC

代码	电远传
空格	无电远传
ⅠE	带数字显示表
ⅡE	（4.20）mA电流输出
ⅢE	上下限报警
ⅣE	（4.20）mA电流输出上下限报警

HN	UHZ	D	4	1	2	L	F_0	ⅢE（完整的产品规格代码示例）

示例：HNUHZ65412L为介质密度范围0.75-0.9g/cm³.工作压力1MPa，测量范围800mm的带上下限报警输出的电远传浮子液位计。

HNUG玻璃管式液位计

概述

玻璃管式液位计是在常压或较低压力下工作的最简单的直接指示式物位仪表，其可靠性和经济性是其它仪表不能相比的，作为基本的液位指示仪表在最简单的液位测量场合和自动化程度很高的大型工程项目中都不可缺少。

我公司生产管式液位计已有多年的历史，工艺先进、测试设备齐全，是物位仪表专业生产企业，产品符合机械部专业标准及化工部标准要求，在国内外均有广泛的应用。

特点

1、结构简单，经济适用、安装方便
2、直接指示、工作可靠

技术参数

1、工作正常条件
环境温度（℃）：-20~70　　相对湿度（%）：5~100（包括凝露和直接湿）
2、公称长度：500,600,800,1000,1100,1200,1400mm
3、工作压力：1.6MPa
4、介质温度：0~200℃
5、针型阀自动关闭压力：≤0.2MPa
6、伴热管工作压力：0.6MPa

选型规则

玻璃管式液位计（机械工业部专业标准ZBN12003）

HNUG 玻璃管式液位计　HN:企业代号　U:物位仪表　G:玻璃管式

代码	类型
1	不保温型
2	保温型

代码	安装中心距（L）mm	标尽刻度范围（L）mm
500	500	320
600	600	420
800	800	620
1000	1000	820
1100	1100	920
1200	1200	1020
1400	1400	1220

代码	连接方式	
A	平面法兰	HG5010-58 PN1.6Dn20
B	凸面法兰	HG5012-58 PN1.6DN20
C	锥管螺纹连接	R3/4"

HNUG 2 800 A　(完整的产品规格代码示例)

示例:DHUGZ2-800A,保温型公称长度800mm，平面法兰连接的玻璃管液位计

化工部标准 HG5-227

HN系列玻璃管式液位计

代码	类型
D	不保温型
W	保温型

代码	连接方式		
A	平面法兰	HG5010-58	PN1.6 DN20
B	凸面法兰	HG5012-58	PN1.6 DN20
C	锥管螺纹连接	R3/4"	

代码	接触介质零件材料
1	碳钢结构件（普通型）
2	不锈钢结构件（防腐型）

代码	安装中心距（L）mm	标尽刻度
500	500	320
600	600	420
800	800	620
1000	1000	820
1100	1100	920
1200	1200	1020
1400	1400	1220

HN W A I 800 （完整的产品规格代码示例）

示例:DHWAI-800,保温型平面法兰连接碳钢结构件,公称长度800mm的玻璃管液位计

特殊型号

HNUBZ4 HN 系列不锈钢玻璃管式液位计

代码	安装中心距（L）mm	标尽刻度
500	500	320
600	600	420
800	800	620
1000	1000	820
1100	1100	920
1200	1200	1020
1400	1400	1220

代号	连接方式	
空格	凹凸面平焊环松套钢制管法兰GB9121.5-88	PN1.6DN20

HNUBZ4 800 完整的产品规格代码示例

示例说明:DHUBZ4-800,公称长度800mm,凹凸面平焊环松套法兰连接的玻璃液位计

用途与适用范围

液位计类别名称	可选液位计型号	适用范围及用途	对介质的要求	工作压力(MPa)	工作温度(℃)
普通型玻璃管式液位计	HNDA(B)(C)Ⅰ(HNUG-1)	透明无腐蚀性介质的液位指示	对碳钢，耐油，橡胶，石棉板柔性石墨及丁晴橡胶不起作用	1.6	0-200
保温型玻璃管式液位计	HNWA(B)(C)Ⅰ(HNUG-2)	同1.但需要对介质加热以提高流动性的场合			
防腐型玻璃管式液位计	HNDA(B)(C)Ⅱ(HNUBZ-4)	透明但有一定腐蚀性介质的液位指示	对1Gr18Ni9Ti不锈钢，聚四氟乙烯不起作用		
保温防腐型玻璃管式液位计	HNWA(B)(C)Ⅱ	同2.3			

注：用户可根据要求的公称长度及连接方式选用不同规格品种的产品。

订货须知

1、订货时请注明型号规格、测量范围、工作压力、工作温度、介质密度等。
2、如有其它要求请特别注明。

安徽徽宁电器仪表集团有限公司国内销售网

The Domestic Sales Network of Anhui Huining Electric Meter & Appliance Group Co., Ltd

▶▶ **质量方针**：严格控制过程，争创一流品质，让用户满意是我们永恒的追求。

▶▶ **质量目标**：按ISO系列标准建立、实施和完善质量管理体系；产品一次交检合格率100%，对顾客的投诉4小时内给予答复，本省24小时给予解决，外省48小时给予解决。

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