防爆热电偶 Explosion proof thermocouple

应用

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

Application

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

工作原理

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

Working principle

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

特点

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

Characteristics

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

主要技术参数

1.产品执行标准
EC584，GB/T16839-1997，GB26786-2011，Gb3836。
2.常温绝缘电阻
热电偶在环境温度为20±15℃,相对湿度不大于80%,试验电压为500±50V（直流）电极与外套管之间的绝缘电阻≥1000MΩ.m。即1m长的试样的绝缘电阻为1000MΩ;10m长的试样的绝缘电阻为100MΩ;

Main technical parameters

1.Product implementation standard
IEC584,GB/T16839-1997,GB26786-2011,Gb3836.

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

取证一览表

防爆级别 Explosion-proof grade	防爆证号 Number of explosion-proof	认证机构 Certification body
dⅡBT4	GYB997151	NEPSI
dⅡCT5	GYB02475	NEPSI
iaⅡCT6	GYB05363X	NEPSI

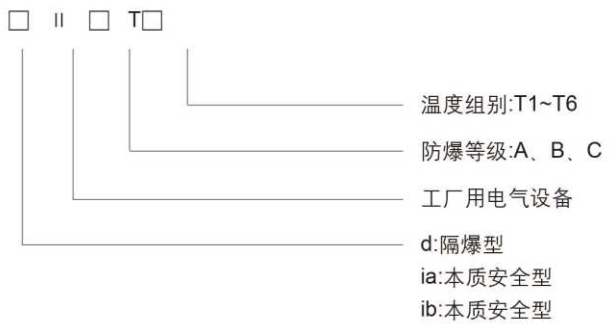
注：NEPSI防爆认证系国家级仪器仪表

Evidence list

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

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

防爆分组形式 Grouping for explosion-proof



电气设备类别

Ⅰ类——煤矿井下用电气设备
Ⅱ类——工厂用电气设备

Types of electrical equipment

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

防爆等级

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

Explosion-proof grade

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

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

温度组别

防爆热电偶的温度组别按其外露部分允许最高面温度分为T1~T6。

Temperature group

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

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

防爆级别 Explosion-proof grade

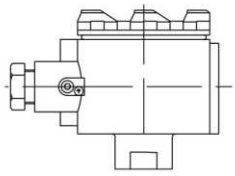
EXd II □T□
EXia II □T□
EXib II □T□

防护等级 Protection level

Ip65

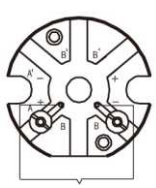
接线盒形式

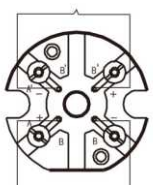
Junction box form



安装端子形式

Type of mounting terminal





型号命名方法 Naming method for model

W 温度仪表 Temperature instrument

R 热电偶 Thermocouple

感温元件材料 Material for temperature-sensing element

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

偶丝对数 Number of thermal wire couple

无 单支 Non, single support
2 双支 2 double support

安装固定形式 Installation and fixation form

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

接线盒形式 Junction box form

4 防爆式 Junction box form

保护管直径 Diameter of protective tube

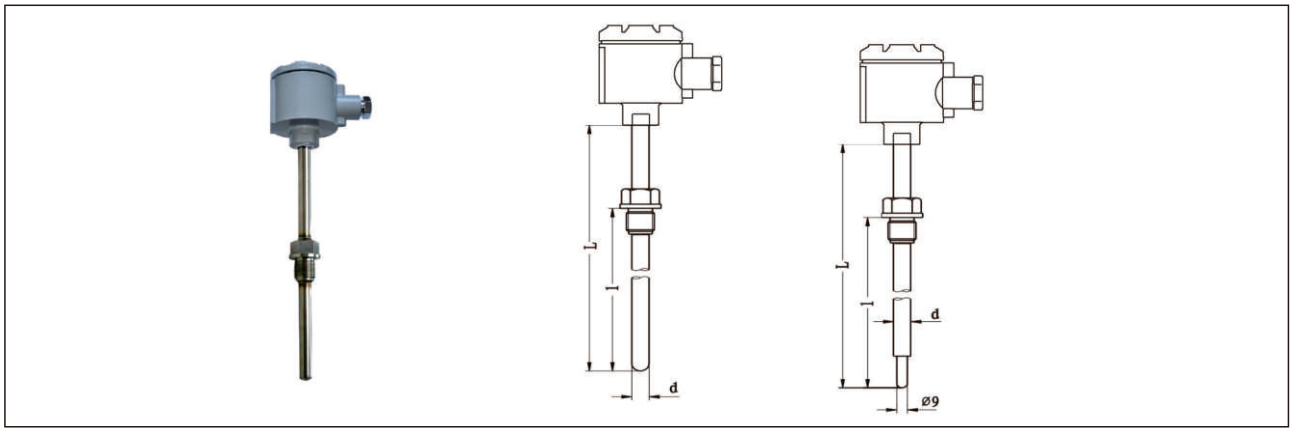
0 Φ16
1 Φ20

附加形式 Additional form

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

W	R	N	$_2$	-	2	4	1	G	典型型号示例 Examples of typical model

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

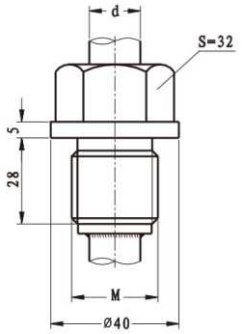


型 号 Model	分度号 Graduation	测温范围 ℃ Range of temperature measurement ℃	热响应时间 Thermal response time	保护管材质 Material for protective tube	规 格 Specification	
					d	L
WRM-240 WRM_2-240	N	0~800	＜90s	1Cr18Ni9Ti	Φ16	300×150 350×200 400×250 450×300 500×350 550×400 650×500 900×750 1150×1000 1650×1500 2150×2000
		0~1100		0Cr25Ni20		
WRM-240G WRM_2-240G		0~800	＜24s	1Cr18Ni9Ti		
		0~1100		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	0~800	＜90s	1Cr18Ni9Ti		
WRE-240G WRE_2-240G			＜24s			
WRC-240 WRC_2-240	T	0~350	＜90s	1Cr18Ni9Ti		
WRC-240G WRC_2-240G			＜24s			
WRF-240 WRF_2-240	J	0~600	＜90s	1Cr18Ni9Ti		
WRF-240G WRF_2-240G			＜24s			

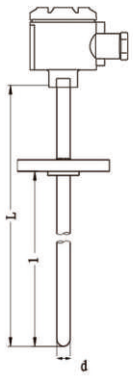
1)热电偶Ⅰ级按协议订货；
2)保护管其余材质根据协议订货；
3)公称压力≤4MPa。

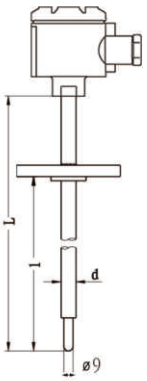
1) Thermocouple I is ordered according to the agreement.
2) The material for the rest protective tube is ordered according to the agreement.
3) Nominal pressure is: ≤4MPa.

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



固定法兰式热电偶 Fixed flange type thermocouple

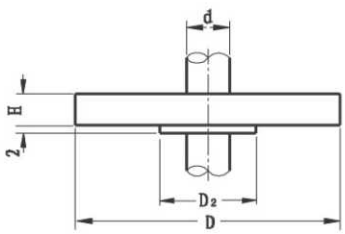


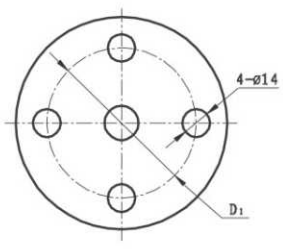


型 号 Model	分度号 Graduation	测温范围 ℃ Range of temperature measurement ℃	热响应时间 Thermal response time	保护管材质 Material for protective tube	规 格 Specification	
					d	L
WRM-440 WRM_2-440	N	0~800	＜90s	1Cr18Ni9Ti	Φ16	300×150 350×200 400×250 450×300 500×350 550×400 650×500 900×750 1150×1000 1650×1500 2150×2000
		0~1100		0Cr25Ni20		
WRM-440G WRM_2-440G		0~800	＜24s	1Cr18Ni9Ti		
		0~1100		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	0~800	＜90s	1Cr18Ni9Ti		
WRE-440G WRE_2-440G			＜24s			
WRC-440 WRC_2-440	T	0~350	＜90s	1Cr18Ni9Ti		
WRC-440G WRC_2-440G			＜24s			
WRF-440 WRF_2-440	J	0~600	＜90s	1Cr18Ni9Ti		
WRF-440G WRF_2-440G			＜24s			

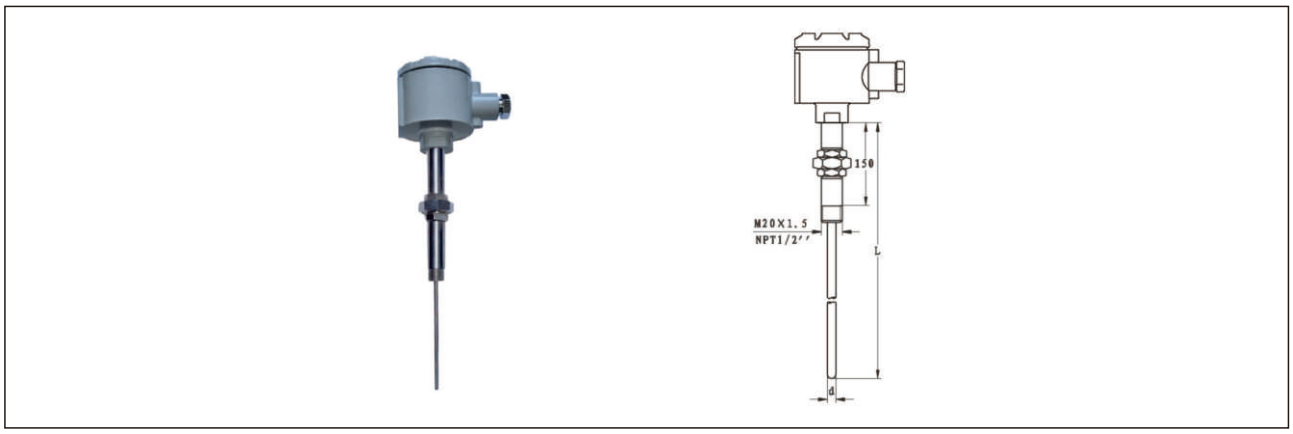
1)热电偶Ⅰ级按协议订货；
2)保护管其余材质根据协议订货；
3)公称压力≤4MPa。

1) Thermocouple I is ordered according to the agreement.
2) The material for the rest protective tube is ordered according to the agreement.
3) Nominal pressure is: ≤4MPa.





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

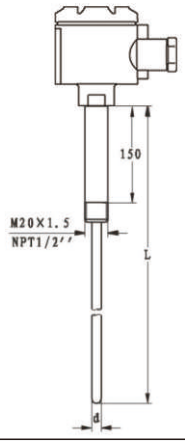


型号 Model	分度号 Graduation	测温范围 ℃ Range of temperature measurement ℃	连接尺寸 Connection size	规格 Specification	
				d	L
WRM-54 WRM_2-54	N	0~1100	M20×1.5	Φ3 Φ4 Φ5 Φ6 Φ8	250 275 300 350 400 450 550 650 750 900 1150
		0~800			
WRM-54A WRM_2-54A		0~1000	NPT1/2		
		0~800			
WRN-54 WRN_2-54	K	0~1000	M20×1.5		
		0~800			
WRN-54A WRN_2-54A		0~1000	NPT1/2		
		0~800			
WRE-54 WRE_2-54	E	0~600	M20×1.5		
WRE-54A WRE_2-54A			NPT1/2		
WRC-54 WRC_2-54	T	0~350	M20×1.5		
WRC-54A WRC_2-54A			NPT1/2		
WRF-54 WRF_2-54	J	0~500	M20×1.5		
WRF-54A WRF_2-54A			NPT1/2		

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

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

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

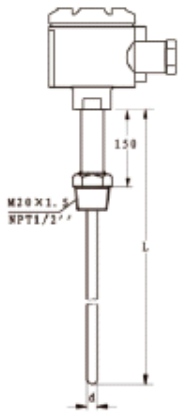


型号 Model	分度号 Graduation	测温范围 ℃ Range of temperature measurement ℃	连接尺寸 Connection size	规格 Specification	
				d	L
WRM-74 WRM_2-74	N	0~1100	M20×1.5	Φ3 Φ4 Φ5 Φ6 Φ8	250 275 300 350 400 450 550 650 750 900 1150
		0~800			
WRM-74A WRM_2-74A		0~1000	NPT1/2		
		0~800			
WRN-74 WRN_2-74	K	0~1000	M20×1.5		
		0~800			
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	0~500	M20×1.5		
WRF-74A WRF_2-74A			NPT1/2		

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

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

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



型号 Model	分度号 Graduation	测温范围 ℃ Range of temperature measurement ℃	连接尺寸 Connection size	规格 Specification	
				d	L
WRM-84 WRM_2-84	N	0~1100	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		

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

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