一体化温度变送器

Integrated Temperature Transmitter

产品应用

Product Application

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

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

产品原理

Product Principle

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

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

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

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

产品特点
Product Features

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

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

技术参数
Technical Parameter

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

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

3、测温范围及允差
热电偶

Temperature measurement range and tolerance
Thermocouple

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

热电阻 Thermal Resistor

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

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

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

4、取证一览表 List of certification information

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

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

天康集团

型号命名方法
Model Naming Method

W	温度仪表 Temperature Instruments

Z	热电阻 Thermocouple
R	热电偶 Thermal Resistor

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

K	铠装式 Armored	空白 Blank	装配式 Assembly

B	温度变送器 Temperature Transmitter

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

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

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

保护管直径 Protective tube diameter

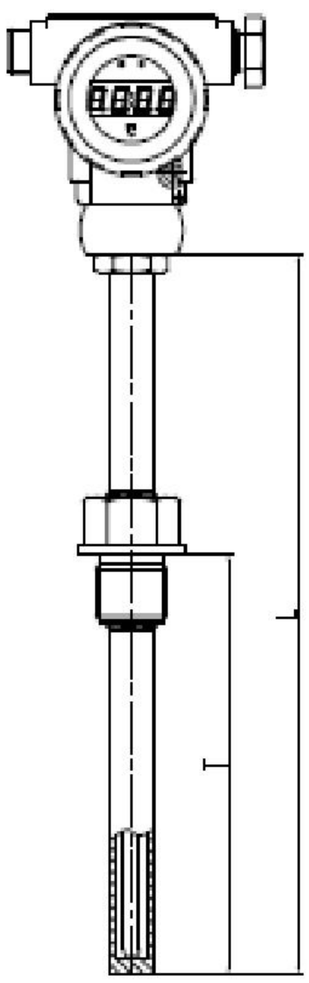
0：Φ16，1：Φ20，2：Φ2，3：Φ3，4：Φ4，5：Φ5
6：Φ6，8：Φ8，可为空白 May be blank

S	显示（可为空白）

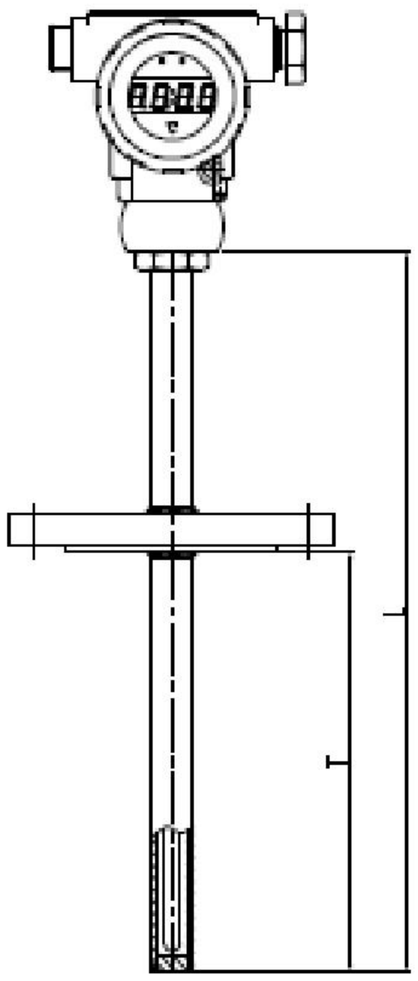
套管形式：见附件
Sleeve form: See attachment

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

结构示意图
Structure diagram



WZPB-240S/241S



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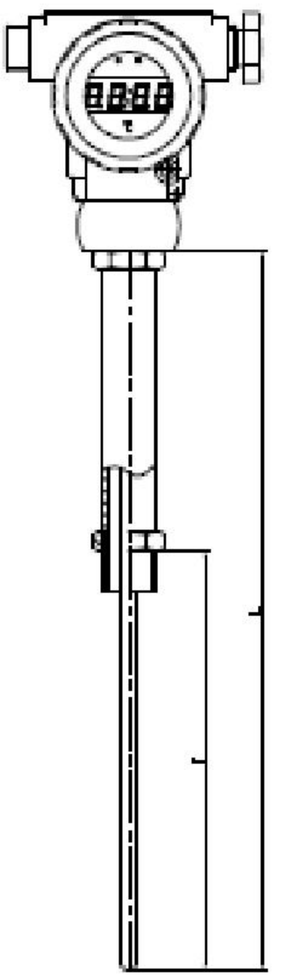

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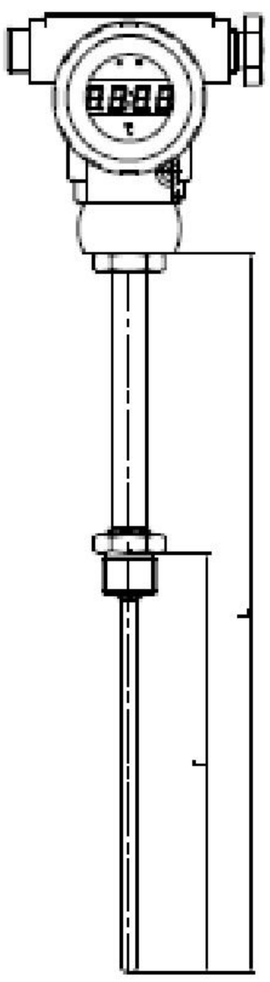

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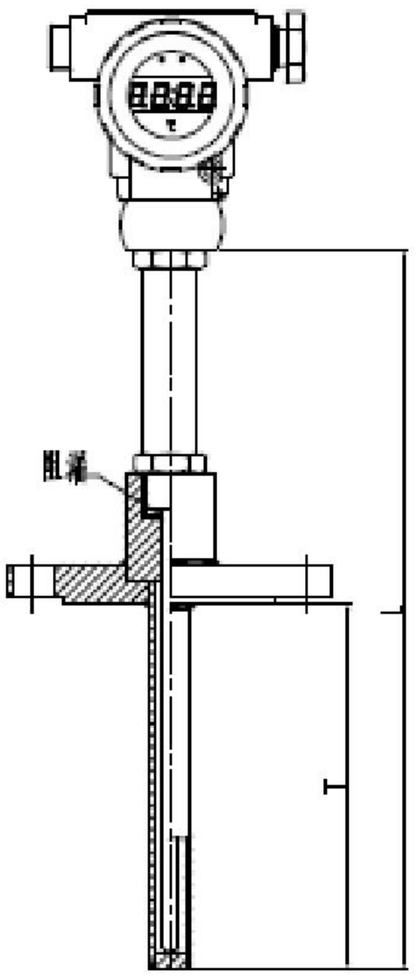

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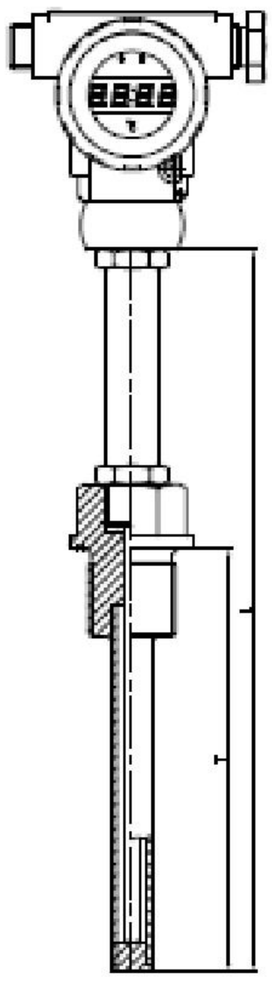

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