SBWR/Z 系列温度变送器

SBWR / Z Series Temperature Transmitter

使 用 说 明 书

Manual

上海南浦仪表厂

Shanghai nanpu meter factory

一、 概述

SBWR/Z 系列热电偶/热电阻温度变送器是 DDZ-S 系列仪表中的现场安装式温度变送单元。它采用二线制传送方式（电源与信号输出为二根公用导线），输出与被测温度成线性的 4-20mA 电流信号。变送器可以安装于热电偶、热电阻的接线盒内与之形成一体化结构，也可单独安装于仪表盘内作转换单元。作为新一代测温仪表，可广泛应用于石油、化工、纺织、冶金、机电、电力、航空、食品加工、医学工程等工业和科研领域，进行自动化温度检测、变送和控制。

该温度变送器业经国家级仪器防爆安全监督检验站（NEPSI）认可。符合 GB3836.1-2000、GB3836.4-2000 标准所规定的要求。本系列温度变送器装于测温热电偶/热电阻接线盒内构成一体化结构或作为功能模块装在检验设备作为整机应用时，仍须取得防爆检验机构的认可。

SBWR/Z 系列热电偶/热电阻温度变送器具有以下显著优点：

1、 工作环境温度宽：-25℃-85℃，-30℃-120℃。

2、 具有高精度冷端补偿电路、全温度范围绝对误差±0.5℃（S 热电偶±0.8℃）。

3、 先进的非线性校正电路，输出信号与被测温度成线性关系。

4、 内带漂移自校正系统，在整个工作温度范围内保证测量精度。

5、 附有特殊的控热机构，有效的控制热传导作用。

6、 采用环氧树脂封装，耐腐蚀，抗震性好，可靠性高。

7、 应用面广，既可与热电偶、热电阻形成一体化现场安装机构，也可作为功能模安装在检测设备中。

8、 独有的抗干扰电路设计、保证变送器在受到各种干扰下能够安全

可靠的工作，特别具有抗电磁干扰单元，适宜于现代电磁污染严重的环境。

二、 工作原理

变送器电路模块由放大单元、线性化单元、电压/电流转换、自校正电路、电压调整单元和反向保护电路等组成，对以热电偶为测温元件的变送器还包括有冷端补偿器，以热电阻为测温元件的还包括有 R/V 变换单元。

三、 主要技术指标

1、 基本误差：±0.1%FS、±0.2%FS、±0.5%FS。

2、 环境温度变化影响：0.2 级：0.02%FS/℃;0.5 级：0.05%FS/℃

3、 输出信号：4-20mA;电源、输出二线制传输;

4、 负载电阻：0-600Ω

5、 供电电源：12-36VDC，本安型温度变送器通过安全棚的供电电源为 22-34 VDC。

6、 工作环境:（1）环境温度：-25℃-85℃ （普通型温度变送器）

环境温度：-30℃-120℃ （高温环境温度变送器）

环境温度：-20℃-60℃ （防爆型温度变送器）

（2）相对湿度：5-95%RH，无冷凝

7、 防爆等级：本质安全型 ExiaIIC。

8、 防爆合格证号：GYB071444 /GYB071445/GYB071446。

GYB071447

四、 型号规格命名

型号：S B W □ □ □ □ □ □

1 2 3 4 5 6 7 8 9

1	**大类**	S	**DDZ-S 系列变送器**	
2	**小类**	B	**变送单元**	
3	功能类别	W	温度仪表	
4	测温元件种类	R	热电偶	
		Z	热电阻	
5	传输方式	2	二线制	
6	传感器分度号	1	K(Cu50)	
		2	J(Cu100)	
		3	E(Pt10)	
		4	T(Pt100)	
		5	S(Pt1000)	
		6	B	
		7	R	
		8	N	
7	电路类别	5	一体化现场安装（隔离型）	
		6	一体化现场安装（非隔离型）	
8	环境特征	无 标志	工作温度：-25℃~85℃	
		T	工作温度：-30℃~120℃	
9	安装尺寸	1、4、8	安装孔距 36、φ45*15	适合安装在普通防水式、防溅式、防喷式等接线盒中
		2	安装孔距 23、φ54*20	适合安装在隔爆接线盒中
		3	安装孔距 44、φ50*20	适合安装在 RT64、RT84M 等接线盒中
		5	安装孔距 44、φ51*24	适合安装在防喷式、统设防爆、RT64、RT84M 等接线盒中
		6	导轨安装式：82*30*29	适合安装在控制拒内的导轨上
		7	安装孔距 33~36、φ49*27	适合安装在防喷式、统设防爆及多种进口接线盒中

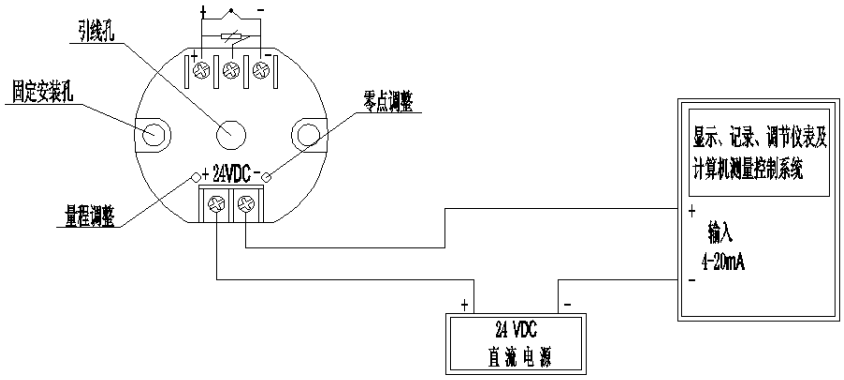
五、 测温范围

测温元件	分度号	量程范围（℃）
镍铬—镍硅	K	0-600 0-800 0-1000 0-1300 200-600 400-800 600-1000
铁—康铜	J	0-200 0-400 0-600 200-1000
镍铬—康铜	E	0-400 0-600 0-800 200-600 200-800 400-800
铜—康铜	T	0-200 0-300 -100-0 -200-0
铂铑 10—铂	S	0-1400 0-1600 600-1400 600-1600

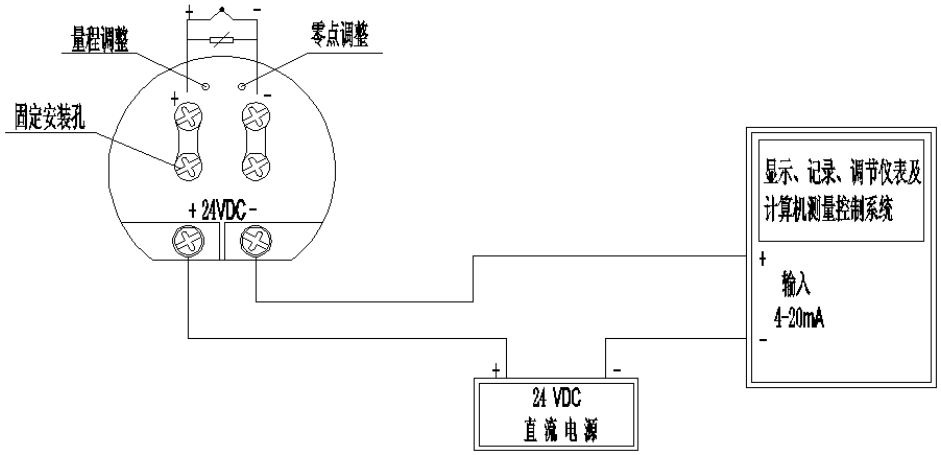
铂铑 30—铂 6	B	0-1400 0-1600 600-1400 800-1600
铂铑 30—铂	R	0-1300 0-1600 600-1600
铜电阻	Cu50	0-50 0-100 0-150 -50-50
	Cu100	
铂电阻	Pt10	0-50 0-100 0-150 0-200 0-300 0-400 0-500 0-600 -200-0 -100-0 -50-50
	Pt100	
	Pt1000	

六、 外形及接线方法

1、SBW□2□61 外形及接线方法



2、SBW□2□62 外形及接线方法



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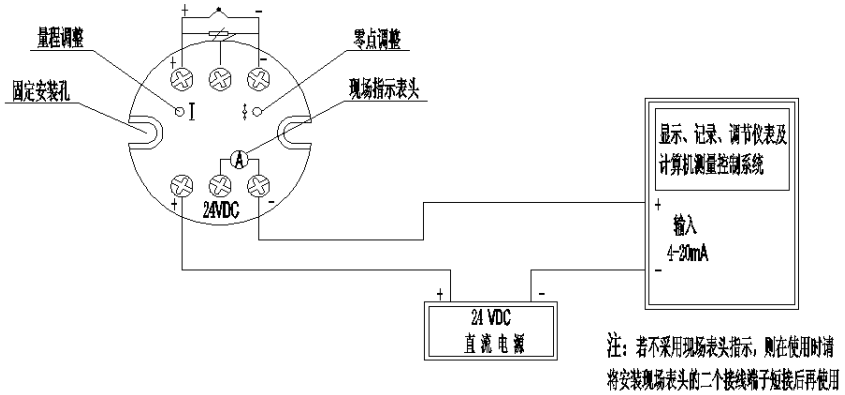

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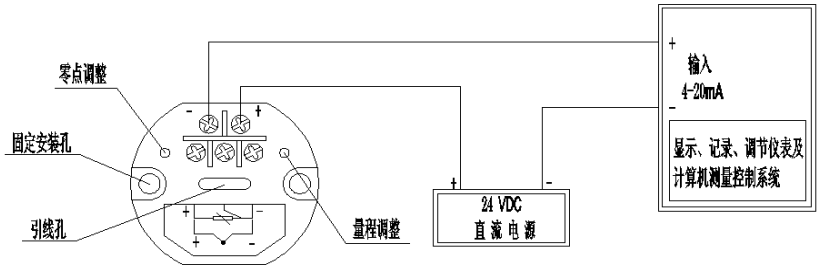
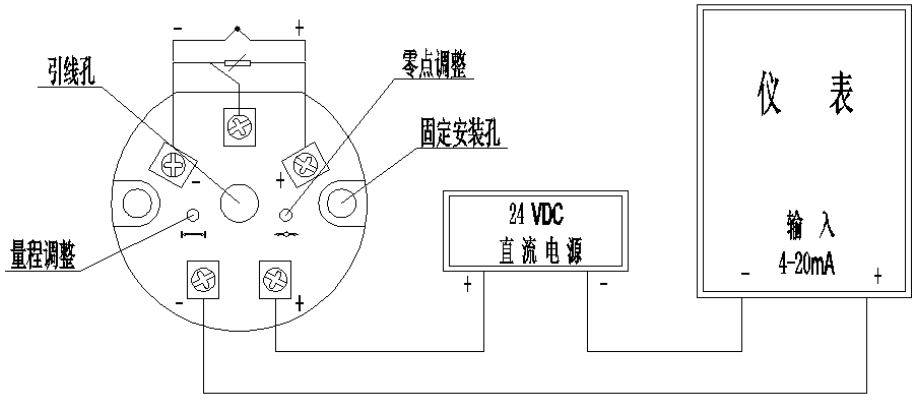
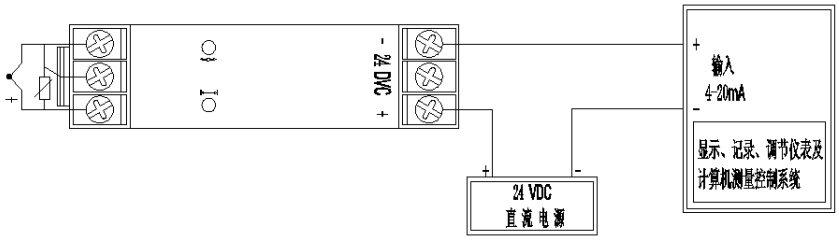


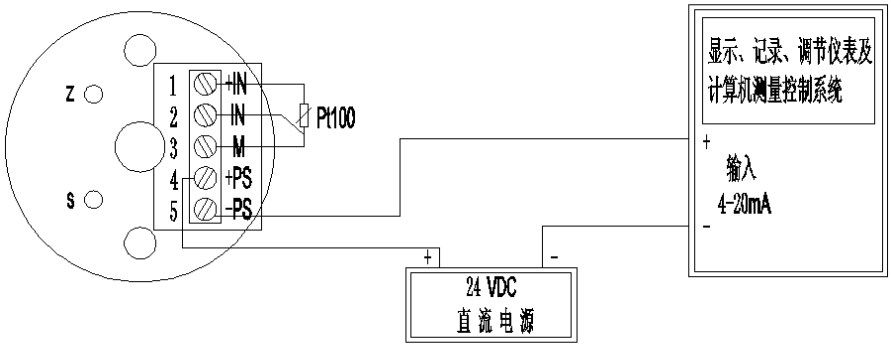
5、SBW□2□65 外形及接线方法



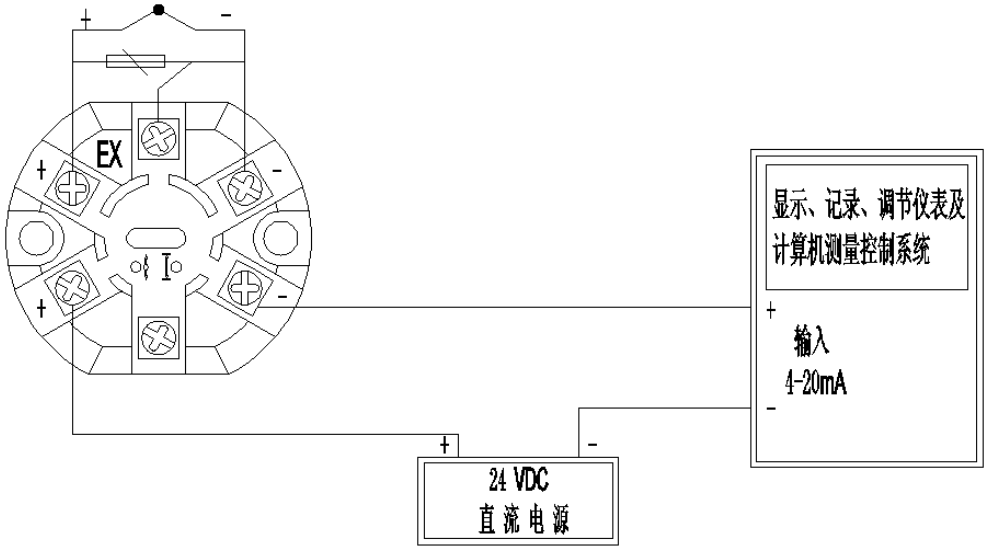
6、SBW□2□66 外形及接线方法



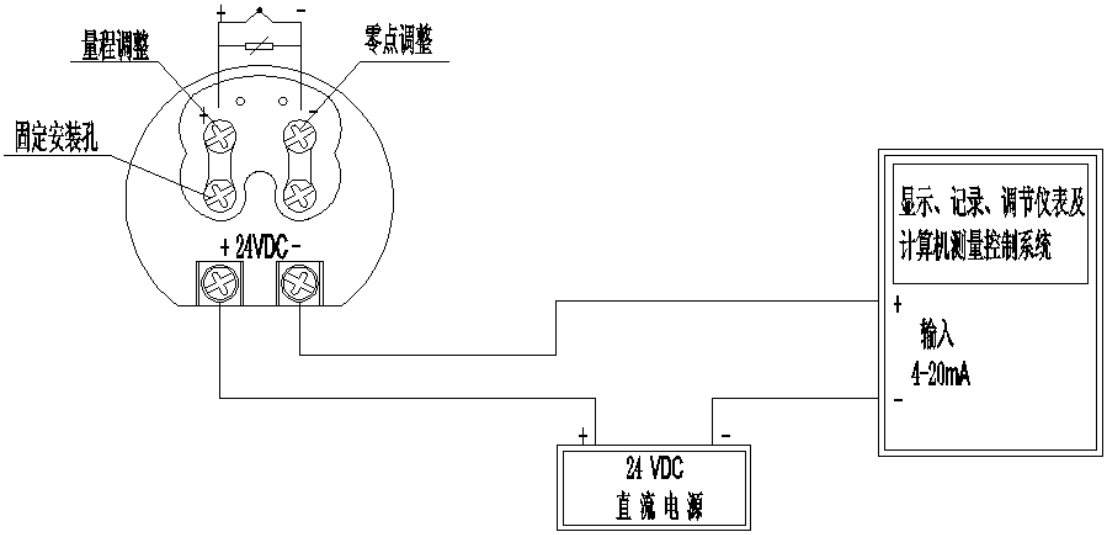
7、SBW□2□67 外形及接线方法



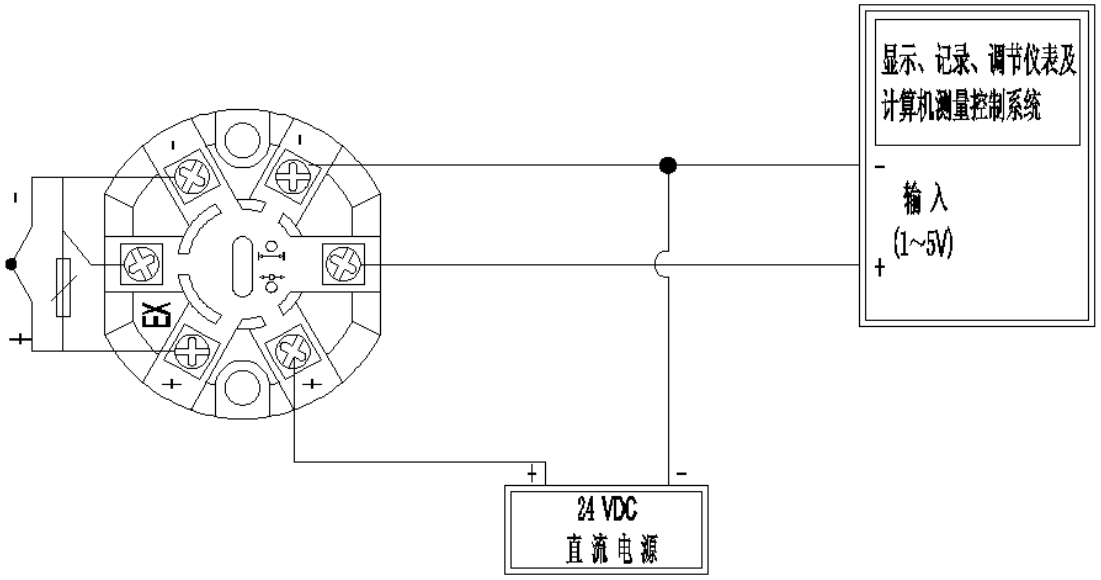
8、SBW□2□68 外形及接线方法



9、 SBW□2□69 外形及接线方法



10、SBW□2□68（1-5V）外形及接线方法



七、 本质安全型温度变送器安装使用注意事项：

1、 安装本质安全型温度变送器的外壳应可靠接地

2、 引入电缆为二芯屏蔽橡胶护套电缆，芯线截面积＞0.5mm^2，电缆屏蔽层与安装本质安全型温度变送器的外壳应绝缘，屏蔽层在安全区与安全棚汇流条相接后可靠接地。电缆允许分布电容≤0.08μF，电缆允许分

布电感≤1.5mH。

3、 必须与关注设备（LB802、LB902 齐纳安全栅）相配才能构成本安防爆系统。温度变送器与齐纳安全栅本安端之间的连接电缆必须符合上面第二条款的要求。

4、 安全棚应安装在安全场所且其安装使用必须符合安全棚使用说明书要求。

5、 用户安装使用和维护本产品时，必须遵守“中华人民共和国爆炸危险场所电气安全规程”和 GB50058.92“爆炸和火灾危险环境电力装置设计规范”的有关规定。

6、 选用本安型 SBW 系列温度变送器模块组成本安型一体化温度变送器还必须经国家制定的防爆检验机构认可后方能使用。

八、 成套性

随同每只产品一起提供的文件有：

1、 产品合格证

2、 产品使用说明书

九、 其它

1、 订货说明：用户在根据需求订货时须注明温度变送器型号与使用测量温度范围。用户在订货时若没有注明精确度，则对 SBWR 热电偶型温度变送器提供 0.5 级产品；对 SBWZ 热电阻温度变送器提供 0.5 级产品。

例 1：SBWZ2461 0-200℃ 0.2 级，表示：配用传感器为 Pt100 铂电阻，使用环境温度-25℃-85℃，要求变送器安装孔距为 36mm，使用测量温度 0-200℃，精确度 0.2 级。

例 2：SBWZ246T2 0-1300℃ 0.2 级，表示：配用传感器为镍铬硅 K，使用环境温度-25℃-120℃，要求变送器安装孔距为 23mm，使用测量温度 0-1300℃，精确度 0.2 级。

2、 用户在遵守温度变送器的保管、安装、使用等规定的条件下，自发货日期起 18 个月内，产品因制造质量而发生损坏货不能正常工作时，公司将免费为用户维修。如属用户保管、安装、使用不当所造成的损坏，由用户酌付修理成本费。

I. Overview

SBWR / Z Series thermocouple / RTD temperature transmitter is DDZ-S series of instruments installed on-site temperature-transmission unit. It uses second-line transmission system (power and signal output for the common wire 2), with output measured temperature of the linear 4-20mA current signal. Transmitter can be installed in thermocouple, RTD wiring of the box integration with the formation of structure can also be mounted on a separate panel to give a conversion unit. As a new generation of table thermometer can be widely used in petroleum, chemical, textile, metallurgical, mechanical and electrical, power, aviation, food processing, medical engineering, and other industrial and scientific research in the field, automated detection of temperature, transmission and control.

The temperature transmitter equipment by the national explosion-proof safety inspection stations (NEPSI) accreditation. With GB3836.1-2000, GB3836.4-2000 standard requirements. This series of temperature transmitters installed in thermocouple temperature / heat resistance wiring inside the box integration constitutes a structure or function as a module installed in the test

equipment as a whole application, the test explosion-proof required to obtain authorization.

SBWR / Z Series thermocouple / RTD temperature transmitter has the following significant advantages:

1, the work of a wide ambient temperature: -25 ℃ -85 ℃, -30 ℃ -120 ℃.

2, with high precision cold-end compensation circuit, the entire temperature range of error is ± 0.5 ℃ (S thermocouple ± 0.8 ℃).

3, advanced non-linear correction circuit, with the output signal into a linear relationship between the temperature measured.

4, with drift with self-tuning system, the entire operating temperature range of measurements to ensure accuracy.

5, with a special heat-controlled institutions, and effective control over the role of heat transfer.

6, using epoxy packaging, corrosion resistance, good anti-seismic and high reliability.

7, wide application, not only with the thermocouple, RTD integration of on-site installation of the formation of institutions can function as a module installed in the detection devices.

8, a unique anti-jamming circuit design to ensure that the transmitter can be all kinds of interference under safe and

reliable, particularly with anti-electromagnetic interference units, suitable for modern electromagnetic serious environmental pollution.

II、the principle of

Transmitter circuit module by module amplification, linear units, voltage / current conversion, self-tuning circuits, voltage regulator modules and components such as circuit protection reverse, the thermocouple for temperature measurement to the transmitter components include There are cold end Compensator to thermal resistance measurement for the components also include the R / V conversion unit.

III、the major technical indicators

1, the basic error: ± 0.1% FS, ± 0.2% FS, ± 0.5% FS.

2, the ambient temperature change: 0.2: 0.02% FS / ℃; 0.5 level: 0.05% FS / ℃

3, the output signal :4-20mA; power output transmission line system;

4, load resistance :0-600Ω

5, power supply :12-36VDC, this security-temperature through the safety studio transmitter power supply for 22-34 VDC.

6, the working environment: (1) ambient temperature: -25 ℃ -85 ℃ (general-temperature transmitter)

ambient temperature: -30 ℃ -120 ℃ (high-temperature ambient temperature transmitter)

ambient temperature: -20 ℃ -60 ℃ (temperature-explosion-proof transmitter)

(2) relative humidity :5-95% RH, without condensation

7, explosion-proof level: the nature of the security-ExiaIIC.

8, qualified No. explosion-proof: GYBO1452U.

IV、Specifications Model Name

Model: S B W □ □ □ □ □ □

1 2 3 4 5 6 7 8 9

1	Categories	S	DDZ-SSeries Transmitter	
2	Categories	B	Transmission unit	
3	Functional categories	W	Temperature meter	
4	The type of component temperature	R	Thermocouple	
		Z	RTD	
5	Transmission	2	Second-line system	
6	Dividing	1	K(Cu50)	

	sensors,	2	J(Cu100)	
		3	E(Pt10)	
		4	T(Pt100)	
		5	S(Pt1000)	
		6	B	
		7	R	
		8	N	
7	Circuit categories	5	Integration of on-site installation (Isolated)	
		6	Integration of on-site installation (non-isolated)	
8	Environmental characteristics	No signs	Operating temperature: -25 ℃ ~ 85 ℃	
		T	Operating temperature:-30 ℃ ~120℃	
9	安装尺寸	1、4、8	Distance to install 36、φ45*15	Suitable for installation in ordinary water-splash-type blowout preventer, such

				as cable box
		2	Distance to install 23、φ54*20	Suitable for installation in explosion-proof junction box in
		3	Distance to install 44、φ50*20	Suitable for installation in the RT64, RT84M such as cable box
		5	Distance to install 44、φ51*24	Suitable for installation in the BOP-based EC-proof, RT64, RT84M such as cable box
		6	Rail Mount ：82*30*29	Suitable for installation in the control of refuse within the rail
		7	Distance to install 33~36、φ49*27	Suitable for installation in the type blowout preventer, the EC set up a variety of import and explosion-proof junction box in

V, temperature range

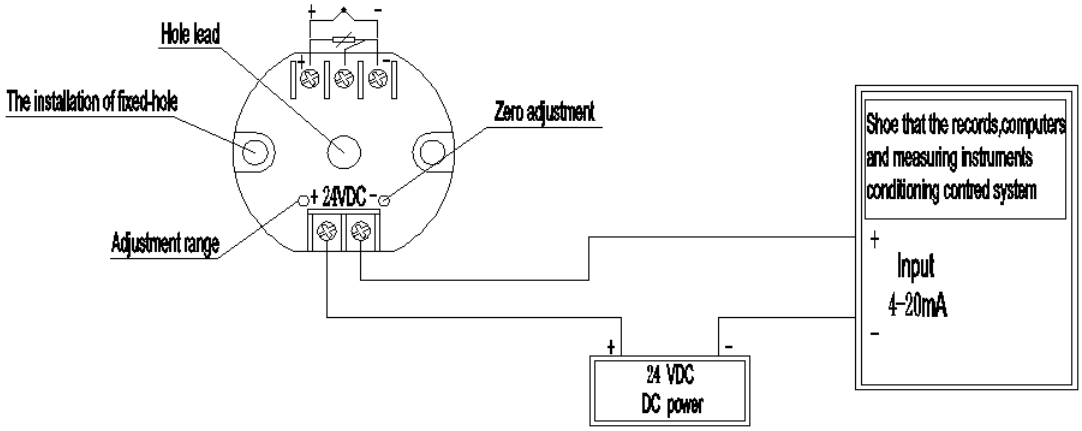
Temperature	Indexing	The scope of range（℃）

components		
Ni-Cr - Ni-Si	K	0-600 0-800 0-1000 0-1300 200-600 400-800 600-1000
Rail - constantan	J	0-200 0-400 0-600 200-1000
Nickel chrome - constantan	E	0-400 0-600 0-800 200-600 200-800 400-800
Copper - constantan	T	0-200 0-300 -100-0 -200-0
Platinum and rhodium 10 - Platinum	S	0-1400 0-1600 600-1400 600-1600
Platinum and rhodium 30 - Pt 6	B	0-1400 0-1600 600-1400 800-1600
Platinum and rhodium 30 - Platinum	R	0-1300 0-1600 600-1600
Copper resistance	Cu50	0-50 0-100 0-150 -50-50
	Cu100	
Platinum resistance	Pt10	0-50 0-100 0-150 0-200 0-300 0-400 0-500
	Pt100	0-600 -200-0 -100-0 -50-50

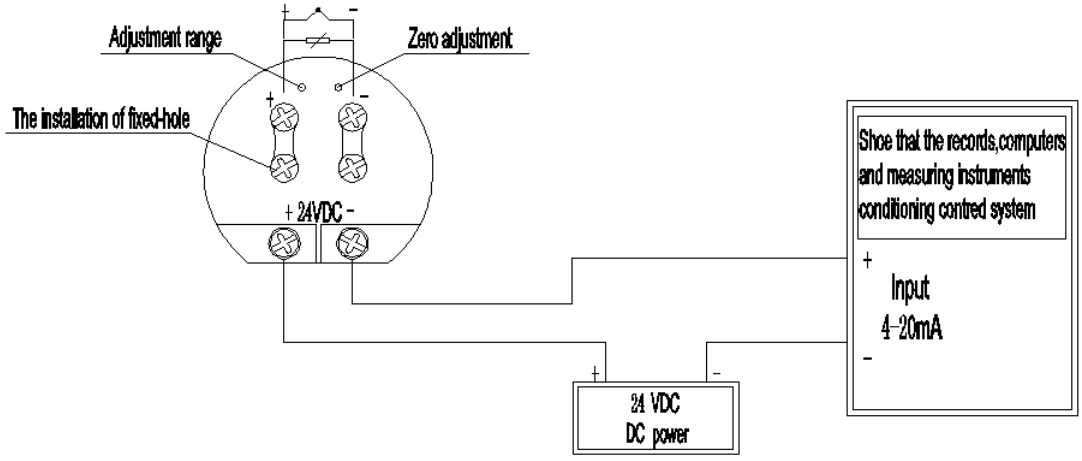
	Pt1000	

VI、shape and connection to

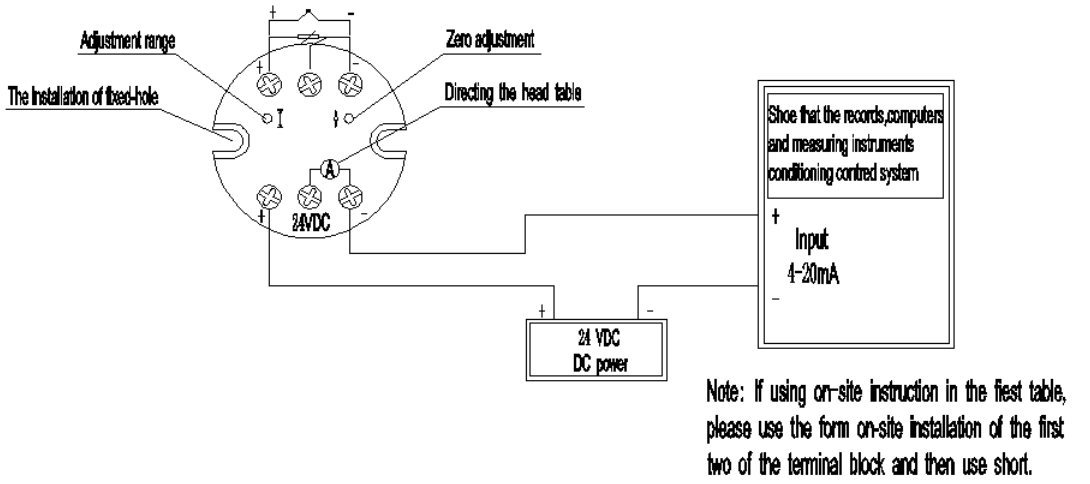
1, SBW □ 2 □ 61 form and method of connection



2, SBW □ 2 □ 62 form and method of connection

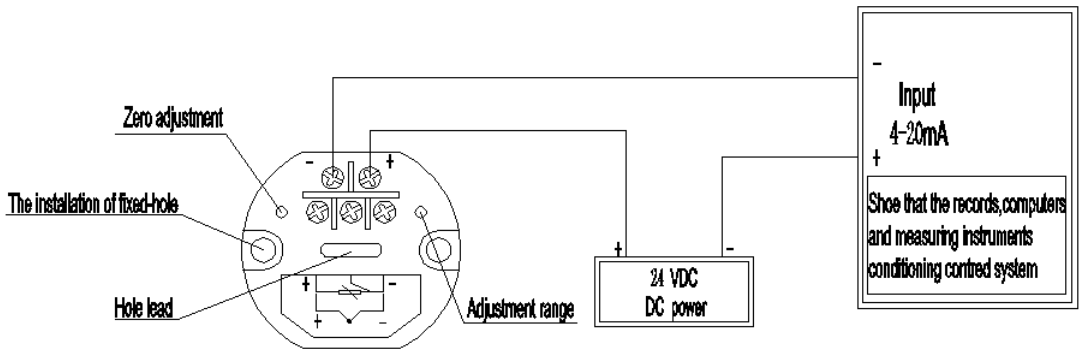


3, SBW □ 2 □ 63 form and method of connection

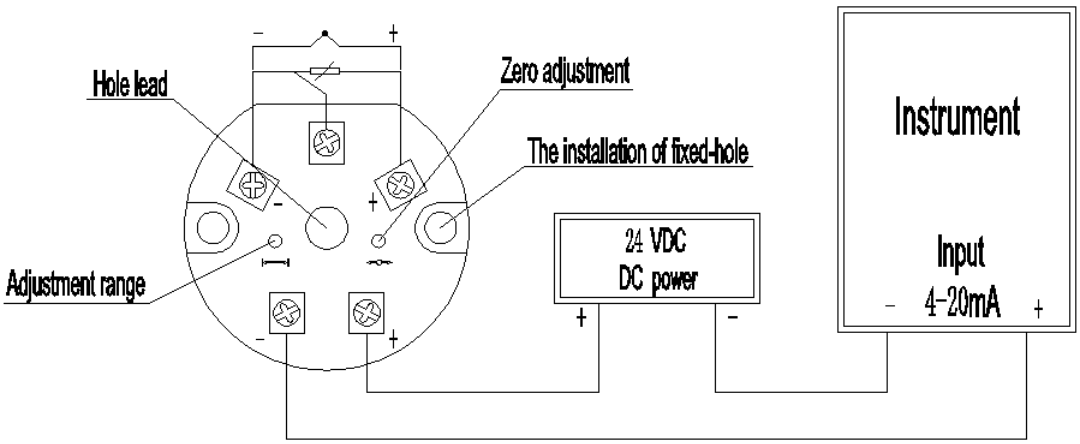


Note: If using on-site instruction in the fiest table, please use the form on-site installation of the first two of the terminal block and then use short.

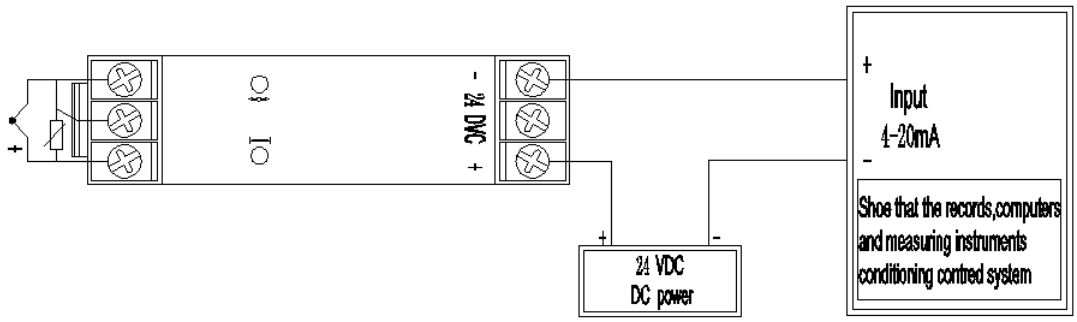
4, SBW □ 2 □ 64 form and method of connection



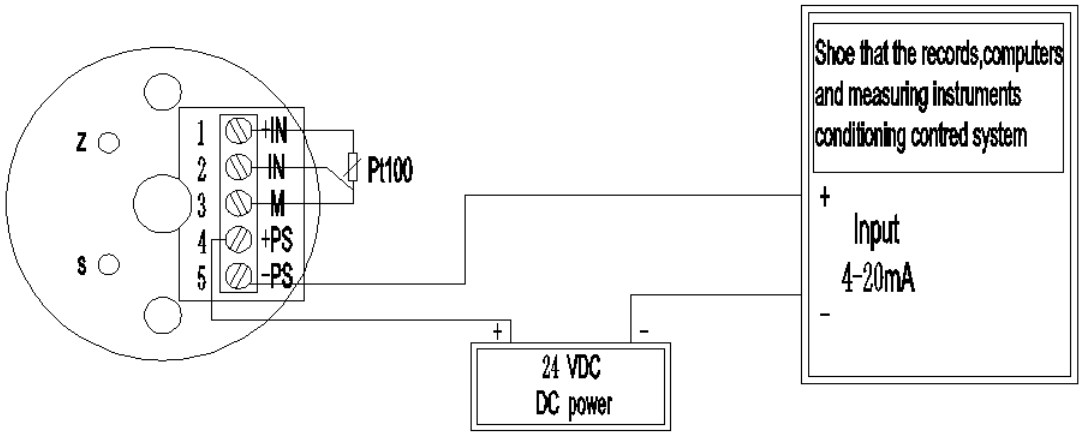
5, SBW □ 2 □ 65 form and method of connection



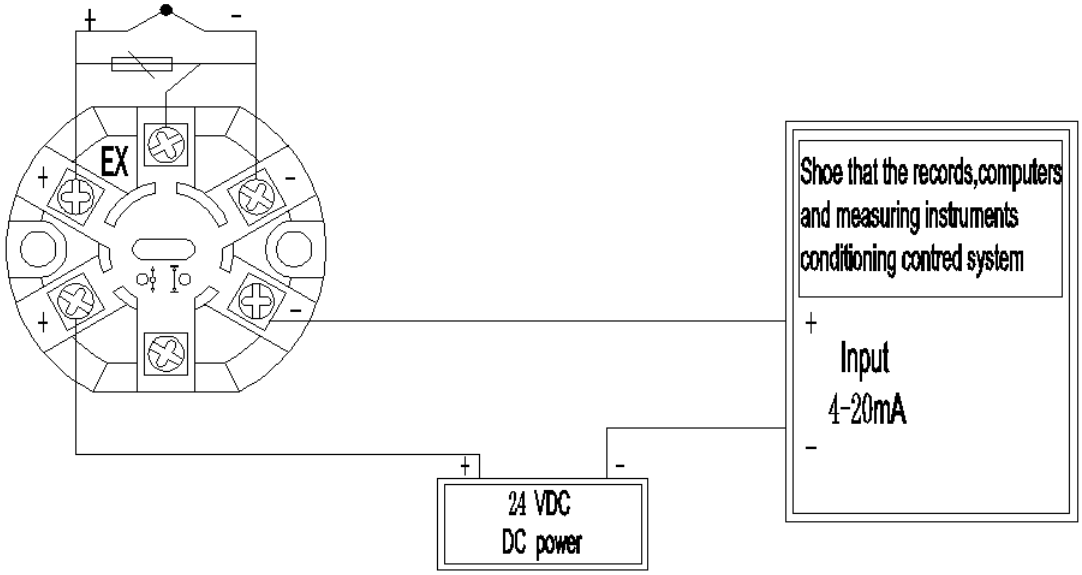
6, SBW □ 2 □ 66 form and method of connection



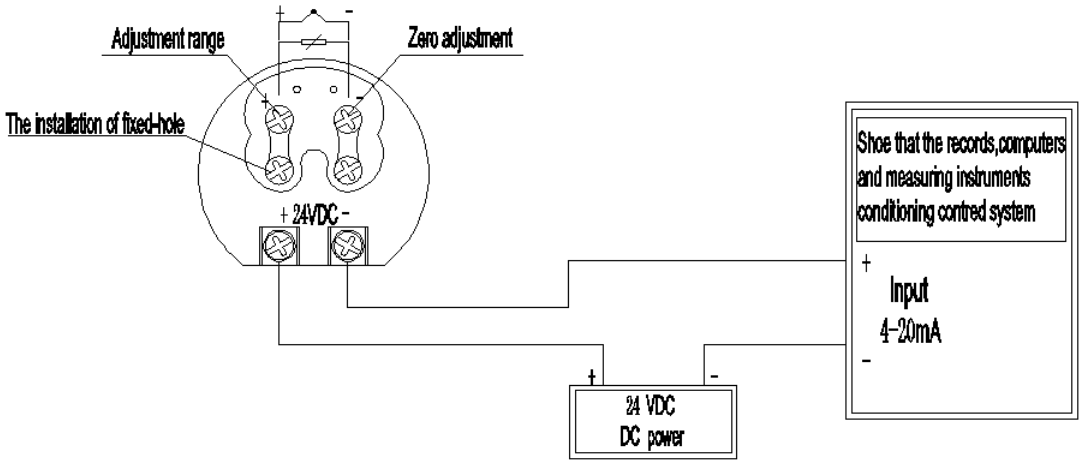
7, SBW □ 2 □ 67 form and method of connection



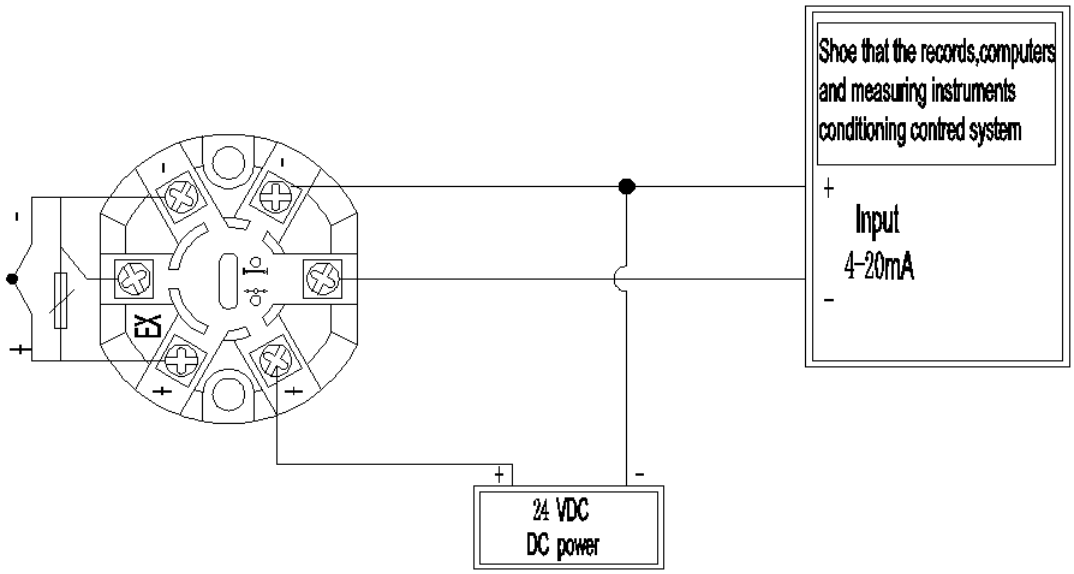
8, SBW □ 2 □ 68 form and method of connection



9, SBW □ 2 □ 69 form and method of connection



10, SBW □ 2 □ 68 (1-5V) form and method of connection



VII、safe temperature transmitter installation Notes:

1, the installation of the security nature of the shell-temperature transmitter should be reliable grounding

2, the introduction of two core shielded cable jacket rubber cables, cored wire cross-sectional area> 0.5mm2, with the installation of cable shield safe in the shell-temperature

transmitter should be insulated, shield in the safe area and security convergence shed Article Then, after reliable ground. To allow the distribution of cable capacitance ≤ 0.08μF, to allow the distribution of cable inductance ≤ 1.5mH.

3, must be concerned with the equipment (LB802, LB902 nanoamp Qi-wide shelf) in order to match this constitutes an explosion-proof system. Temperature Transmitter with this Qi nanoamp an all-shed between the end of the cable must be connected with the above provisions of the second.

4, shed security should be installed in a safe place and install its use must comply with the safety of the use of shelf prospectus requirements.

5, users install and maintain the use of this product, must abide by the "explosion of the People's Republic of dangerous places electrical safety," and GB50058.92 "explosion and fire risk environment for the design specification of electrical installations," the relevant provisions.

6, this choice of an SBW-Series temperature transmitter modules of this type an integrated temperature transmitter also must be approved by the development of the country's institutions approved after the explosion-proof test can be used.

VIII、sets of

Each product, together with the documents provided are:

1, product certification

2, the use of the product specification

IX、other

1, order: According to the needs of users in order to be marked with temperature transmitter model and the use of measuring temperature range. If the user does not state when the order accuracy, on-SBWR thermocouple temperature transmitter products provide 0.5; SBWZ of heat resistance temperature transmitter to provide 0.5 product.

Case 1: SBWZ2461 0-200 ℃ 0.2 class, said: equipped with sensors for Pt100 platinum resistance, the use of ambient temperature -25 ℃ -85 ℃, the requirements for transmitter installation Distance 36mm, the use of temperature measurement 0-200 ℃, precision 0.2 degrees.

Case 2: SBWZ246T2 0-1300 ℃ 0.2 class, said: equipped with sensors for use nickel-chromium silicon K, the use of ambient temperature -25 ℃ -120 ℃, the requirements for transmitter installation Distance 23mm, the use of temperature measurement 0-1300 ℃, Accuracy of 0.2.

2, user compliance with the temperature in the custody of the transmitter, installation, such as the use of the conditions laid down under the shipping date from 18 months to create quality

products as a result of the damage occurred while the goods does not work, will be free to carry out maintenance works. In the case of the custody of users, installation, improper use of the damage from the user discretion to pay the cost of repair costs.