WSS、WSSX 系列

WSS, WSSX Series

工业双金属温度计

Industrial double metal thermometer

说明书

Manual

上海南浦仪表厂

Shanghai nanpu meter factory

一、 用途

双金属温度计是一种适合测量中、低温的现场检测工业仪表。可用来直接测量气体、液体和蒸汽的温度。带电接点双金属温度计，并能在工作温度超过给定值时，自动发出控制信号切断电源或报警。

双金属温度计具有无汞害、易读数、坚固和耐振等优点，可代替工业玻璃水银温度计广泛适用于工业和科研部门。

双金属温度计分为普通型、户外型、防腐型三种。普通型外壳用铁皮电镀，保护管用不锈钢，适用于室内一般场合使用。户外型外壳用铝金制造，保护管，连接柱均采用不锈钢，密封性较好，适用于室内外，一般耐腐蚀场所。防腐型外壳采用全不锈钢，保护管、连接柱可用钼二钛材料，连接部分均采用密封胶，可适用于多数腐蚀介质、气体的测量。

二、 结构原理

双金属温度计感温元件采用多圈直螺旋形双金属片。一端固定，另一端（自由端）连接在芯轴上，轴向型温度计指针直接装在芯轴上。径向型结构指示针通过转角弹簧与芯轴连接。当温度变化时，感温元件自由端旋转，经芯轴传动指针在刻度盘上指示被测介质温度的变化值。

电接点温度计，指针上装有动接点，固定接点装在设业指针上指针触头随温度变化旋转，当温度达到或超过设定值时，接点闭合发出信号，以达自动控制和报警的目的。

三、 主要技术参数

1、 温度计为轴向型、径向型、135° 三种型式。

2、 温度计的精度等级为 1 级、1.5 级。

3、 温度计的测量范围见表一。

4、 温度计的时间常数不超过 40s。

5、 保护管的材料为 1Cr18Ni9Ti 不锈钢和钼二钛，其所能承受的分称压力为 6.4MaP。

6、 温度计分普通型、户外型、防腐型三种型式。

7、 温度计的接点为上、下限，单限，双上限（全部常开）。

8、 接点额定功率：10VA（无感负载）。

最高工作电压：220V。

最大工作电流：1A。

9、 指示表头使用环境温度-40~85℃。

10、 指示表头使用环境湿度 5~100%。

11、 WSS 系列双金属温度计属于耐震机械仪表。

12、 测量温度时应将保护管下面 100mm 长全部浸入被测量介质，以保持温度准确性。

13、 执行标准：JB/T8803-1998

四、 型号表示方法

节位		代号	表示意义	
第一节	第一位	W	温度测量仪表	
	第二位	S	金属膨胀式温度计	
	第三位	S	感温元件为热双金属片	
	第四位	X	带电接点	
		-	单指示	
第二节	第一位	3	表壳公称直径	Φ60mm
		4		Φ100mm

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		5		Φ150mm
	第二位	0	型式	轴向型
		1		径向型
		2		135° 角型
		6		万向型
	第三位	0	安装方式	无固定装置
		1		可动外螺纹
		2		可动内螺纹
		3		固定外螺纹
		4		固定法兰
		5		凸装
	第四位	F	户外型（铝合金外壳）	
		W	不锈钢外壳	

双金属温度计型号的组成

W S S X — 4 1 1

第一位 第二位 第三位 第四位　　第一位 第二位 第三位

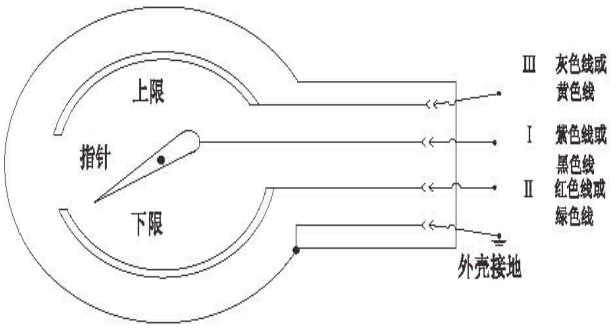
第一节　　第二节

型号示例：

表壳公称直径为Φ100（mm）的轴向式普通型双金属温度计，安装方式为可动外螺纹。

型号表示：WSS-401。

五、 接点接线示意



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六、 型号、规格、参考价

序号	型号	结构型式	表壳直径	保护管直径	保护管长度	安装螺纹	温度范围℃	备注
1	WSX-71	轴向电接点	Φ60	Φ6	75 100 150 200 250 300 400 500	M27*2	-60-40 -40-60 -40-80 -20-80 0-50 0-100 0-120 0-150 0-200 0-300 0-400 0-500	选择螺纹有M27*2、M16*1、M18*1.5 、G1/2、G3/4、M27*2 内螺纹 G3/4 内螺纹 “F”型号适用于室内有水、蒸汽及防腐场合。 尾长＞1500mm时保护管Φ12保护管。 “W”型号为全不锈钢外壳
2	WS-71	轴向	Φ60					
3	WSS-301	轴向	Φ60			M16*1.5		
4	WSS-311	径向	Φ60					
5	WS-70	轴向	Φ75			M16*1		
6	WSS-401	轴向	Φ100	Φ10	75 100 120 150 200 250 300 400 500 750 1000 1200 1500 1750 2000 2500 3000	M27*2		
7	WSS-411	径向	Φ100					
8	WSSX-401	轴向电接点	Φ100					
9	WSSX-411	径向电接点	Φ100					
10	WSS-401F	轴向	Φ126					
11	WSS-411F	径向	Φ126					
12	WSSX-401F	轴向电接点	Φ100					
13	WSSX-411F	径向电接点	Φ126					
14	WSS-501	轴向	Φ150					
15	WSS-511	径向	Φ150					
16	WSS-511F	轴向	Φ166					
17	WSS-511F	径向	Φ166					
18	WSS-461W	万向	Φ110					
19	WSS-401W	轴向	Φ110					
20	WSS-411W	径向	Φ110					

注：0-50℃表尾长≥100mm，WSS-481W 请注明轴芯式。

七、 型号与尺寸

代号 / 型号	A	B	C	D1	E	D2	见图
WSX-71	46	/	42	Φ60	80	Φ6	图一
WS-71	30	/	27	Φ60	68	Φ6	图一
WSS-311	60	46	25	Φ60	75	Φ6	图二
WS-70	30	/	25	Φ75	50	Φ6	图一
WSS-401	30	/	25	Φ100	80	Φ10	图一
WSS-401F	30	/	15	Φ126	80	Φ10	图一

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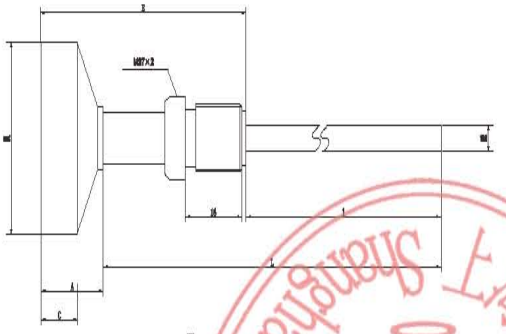
WSS-411	60	46	25	Φ100	90	Φ10	图二
WSS-411F	60	46	15	Φ126	105	Φ10	图二
WSS-501	30	/	20	Φ150	80	Φ10	图一
WSS-501F	30	/	15	Φ166	80	Φ10	图一
WSS-511	60	46	20	Φ150	113	Φ10	图二
WSS-511F	60	46	15	Φ166	113	Φ10	图二
WSSX-401	60	/	48	Φ100	108	Φ10	图一
WSSX-411	87	72	50	Φ100	90	Φ10	图二



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八、 使用和维护

1、 双金属温度计保护管浸入被测介质中的长度必须大于感温元件的长度，一般

浸入长度大于 100mm，0-50℃量程的浸入长度大于 150mm，以保证测量的准确性。

2、 双金属温度计在保管、使用安装及运输中，应避免碰撞保护管，切勿使保护管弯曲变形及将表壳当扳手使用。

3、 各类双金属温度计不宜用于测量敞开容器内介质温度，带接点温度计，不宜在工作振动较大场合的控制回路中使用。

4、 温度计在正常的情况下，应予定期检验。一般以每隔 6 个月检验一次为宜。

5、 电接点温度计不允许在强烈震动下工作，以免影响接点可靠性。

6、 WSS 万向型温度计的波纹管只有 0.1mm 厚，所以转向时必须旋松 M4 螺母、螺丝。并小心转向，切勿用力。安装时必须用两把扳手，以免损坏。

7、 本产品实行三包。

九、 订货须知

1、 订货时须写明产品的型号、测量范围、安装螺纹、保护管长度，外壳公称直径、精度级别等技术参数。

2、 需要户外型和防腐品种的须注明。

3、 用户有特殊要求时，须具体注明。

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I、 Use

Two-metal thermometer is a suitable measure, the low temperature of the industrial scene detection instruments. Can be used to direct measurement of gas, liquid and steam temperature. Charged contact bimetallic thermometer and can work in temperature over a given value, the automatic control signals cut off the power or the police.

Bimetal thermometers with mercury-free harm, easy reading, strong and resistant to vibration, and other advantages, instead of industrial glass mercury thermometers widely applied to industrial and scientific research departments.

Two-metal thermometer into ordinary type, outdoor type, preservative-three. Ex-general with shell plating, stainless steel and effective protection, apply to indoor use of general occasions. Al-casing of the outdoor production, protection of connecting the columns are stainless steel, seal better, apply to indoor and outdoor, general corrosion-resistant places. Use of all anti-corrosion stainless steel casing, the protection of linking the two molybdenum-titanium materials can be used to connect parts of a sealant, applicable to most corrosive medium, the gas measurement.

II、 the structure principle

Two-metal thermometer temperature components used more laps straight double-helix-shaped metal sheets. One end fixed, the other side (the Liberal side)

connected to the Mandrel, axial-pointer directly with the thermometer on the Mandrel. Radial-type structure through direct contacts with the corner of Spring Mandrel connection. When the temperature changes, temperature-free components rotation, the Mandrel transmission pointer in the dial on the instructions of the change in temperature measured media value.

Xinhua contact thermometer, with indicators on the dynamic contact, in constant contact with the guidelines established guidelines on contact with the temperature changes in rotation, when the temperature reached or exceeded settings, close contact sent a signal to achieve the purpose of automatic control and alarm.

III、 the main technical parameters

1, the thermometer for the axial type, radial-type, 135 ° three types.

2, the accuracy of the thermometer as a class, 1.5.

3, the thermometer measured the scope of a table.

4, the time constant temperature not exceeding 40 S.

5, the protection of the materials for 1 Cr18Ni9Ti stainless steel and titanium molybdenum Second, the points that can bear the pressure of 6.4 MaP.

6, the thermometer at ordinary type, outdoor type, three types of anti-corrosion.

7, the contact point for the thermometer on the floor, single-limit, double the ceiling (all normally open).

8, contact Power Rating: 10 VA (no flu load).

The maximum operating voltage: 220 V.

The largest current work: 1 A.

9, the first direct use of environmental temperature table -40 ~ 85 ℃.

10, directed the first use of the environment in Table 5 to 100 percent humidity.

11, WSS series of dual-metal thermometer Seismic mechanical meters.

12, the temperature measurement should be the protection of below 100 mm long been immersed all media measurement, in order to maintain temperature accuracy.

13, implementation of the standards: JB/T8803-1998

IV、 models that way

Festival -		Code	That sense	
Section 1	First	W	Temperature measuring instruments	
	Second	S	Metal expansion thermometer	
	Third	S	Hot temperature components for the double-metal	
	Fourth	X	Charged contact	
		-	Single-instruction	
Section II	First	3	Case nominal diameter	φ60mm
		4		φ100mm
		5		φ150mm
	Second	0	Type	Axial -
		1		Radial -
		2		135 °-angle
		6		Universal -
	Third	0	Installation	No fixtures
		1		Moving outside the thread
		2		Moving within the thread
		3		Fixed, thread
		4		Fixed flange

		5		With convex
	Fourth	F	Outdoor (aluminum alloy shell)	
		W	Stainless steel casing	

Double models thermometers metal components

W	S	S	X	_____	4	1	1

first second third fourth　　first second third

Section 1　　Section II

Model examples:

Case said the diameter of φ100 (mm) of the general-axial dual-metal thermometer, for the installation of movable thread.

Model said: WSS-401.

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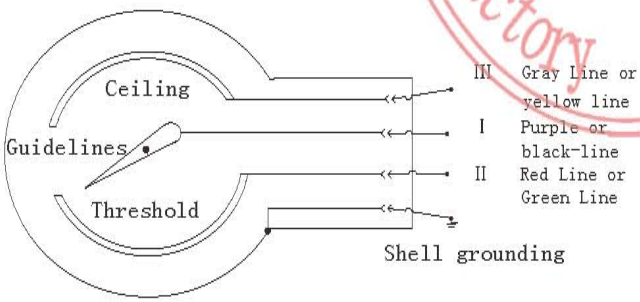
V、 contact indicate wiring



VI、 models, specifications, the reference price

NO.	Model	Structure	Case diameter	Protection of the diameter	Length of protection	Installation thread	Temperature range ℃	Remarks
1	WSX-71	Axial, contact	φ60	φ6	75 100 150 200 250 300 400 500	M27*2	-60-40 -40-60 -40-80 -20-80 0-50 0-100 0-120 0-150 0-200 0-300 0-400 0-500	Select a thread M27 * 2, M16 * 1, M18 * 1.5, G1 / 2, G3 / 4, M27 * 2 Thread G3 / 4 Thread "F" models applicable to the indoor water, steam and anti-corrosion occasions. Mei-> 1500 mm, the protection of the φ12 protection. "W" model for the whole stainless steel casing
2	WS-71	Axial	φ60					
3	WSS-301	Axial	φ60			M16*1.5		
4	WSS-311	Radial	φ60					
5	WS-70	Axial	φ75			M16*1		
6	WSS-401	Axial	φ100	φ10	75 100 120 150 200 250 300 400 500 750 1000 1200 1500 1750 2000 2500 3000	M27*2		
7	WSS-411	Radial	φ100					
8	WSSX-401	Axial, contact	φ100					
9	WSSX-411	Radial, contact	φ100					
10	WSS-401F	Axial	φ126					
11	WSS-411F	Radial	φ126					
12	WSSX-401F	Axial, contact	φ100					
13	WSSX-411F	Radial, contact	φ126					
14	WSS-501	Axial	φ150					
15	WSS-511	Radial	φ150					
16	WSS-511F	Axial	φ166					
17	WSS-511F	Radial	φ166					
18	WSS-461W	Universal	φ110					
19	WSS-401W	Axial	φ110					
20	WSS-411W	Radial	φ110					

Note :0-50 ℃ table tail length ≥ 100 mm, WSS-481W-please specify core axis.

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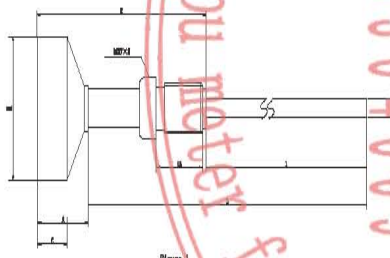
VII、 model and size

Code / Model	A	B	C	D1	E	D2	见图
WSX-71	46	/	42	Φ60	80	Φ6	Figure 1
WS-71	30	/	27	Φ60	68	Φ6	Figure 1
WSS-311	60	46	25	Φ60	75	Φ6	Figure 2
WS-70	30	/	25	Φ75	50	Φ6	Figure 1
WSS-401	30	/	25	Φ100	80	Φ10	Figure 1
WSS-401F	30	/	15	Φ126	80	Φ10	Figure 1
WSS-411	60	46	25	Φ100	90	Φ10	Figure 2
WSS-411F	60	46	15	Φ126	105	Φ10	Figure 2
WSS-501	30	/	20	Φ150	80	Φ10	Figure 1
WSS-501F	30	/	15	Φ166	80	Φ10	Figure 1
WSS-511	60	46	20	Φ150	113	Φ10	Figure 2
WSS-511F	60	46	15	Φ166	113	Φ10	Figure 2
WSSX-401	60	/	48	Φ100	108	Φ10	Figure 1
WSSX-411	87	72	50	Φ100	90	Φ10	Figure 2



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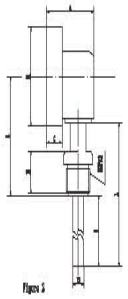

VIII、 use and maintenance

1, double the protection of submerged metal thermometer measured the length of medium temperature must be greater than the length of components, the general immersion longer than 100 mm ,0-50 ℃ range greater than the length of immersion 150 mm, to ensure the accuracy of measurement.

2, double-metal thermometer in custody, installation and use of transport, protection of the collision should be avoided, not to make the protection of deformation and Case will use the wrench.

3, various types of dual-metal thermometer should not be used to measure open containers medium temperature, contact with the thermometer, it is not appropriate in the work of vibration larger occasions the use of the control loop.

4, the thermometer under normal circumstances, should be regularly inspected. General every six months to test a suitable.

5, electrical contacts are not allowed in the thermometer under strong vibration, so as not to affect contact reliability.

6, WSS universal bellows-type thermometer only 0.1 mm thick, so to the time of spin-M4 nuts, screws. And to carefully and not forced. Installation of two wrenches to be used, so as to avoid damage.

7, the Three Guarantees products.

IX、 ordering notes

1, ordering products to be specified the type, range, the installation thread, the protection of the length of the shell diameter, precision-level and other technical parameters.

2, and the preservation needs of outdoor-type varieties must state.

3, users with special requirements, the need to specify.

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