Datasheet **Model** SUP-WZPK

Supmea

Temperature sensor

Brief introduction

Temperature Probes with Terminal Head： RTD sensor SUP-WZPK and TC sensor SUP-WRNK. Temperature probes are mainly used for measuring temperatures in fluids and gasses. A decisive selection criterion is the reliable sealing feature of this installation type with vacuum and with overpressure. The application areas are, among others, in the air conditioning technology and refrigeration engineering as well as the HVAC, kiln and apparatus engineering sector.

Protection tubes made of various materials protect the measuring insert against chemical influences and mechanical damage. The appropriate protection tube material is selected according to the conditions on site.

SUP-WZPK **series**

Highlights：

- Temperature range from -200 to 450 °C for RTD, 600℃to 1600℃.
- With built-in measuring insert
- Available with transmitter
- Tolerance class：Class A

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TC principle

A thermocouple is a closed loop circuit that consists of two dissimilar metal wires welded together at both ends. When a temperature difference exists between the two junctions, thermal electromotive force (EMF) is generated and an electric current flows in the closed circuit. The direction and magnitude of the EMF generated depend upon the temperature of the two junctions and upon the materials making up the themocouple and are not affected by the size or length of the thermocouple wire. Temperature can be measured by knowing beforehand the change of EMF per degree change of temperature for a certain thermocouple.

RTD principle

Generally, electrical resistance of metal varies, depending on the temperature. Platinum in particular is more linear and has a larger temperature coefficient than most other metals. It is therefore, most suitable for temperature measurements. Platinum has excellent properties chemically and physically. Industrial high purity elements are readily obtained for long term use as a resistance elements for temperature measurements. The characteristics are specified in JIS and other foreign standards; thus, it permits a highly accurate temperature measurement.

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Temperature sensor

Technical parameters:

Tolerance of RTD to temperature and applicable standard table

Standard / Type	IEC 751		JIS C 1604	
	Class	Tolerance ℃	Class	Tolerance ℃
Pt100 （R(100℃）/R（0℃） =1.3851	A	±（0.15+0.002 丨 t 丨）	A	±（0.15+0.002 丨 t 丨）
	B	±（0.3+0.005 丨 t 丨）	B	±（0.3+0.005 丨 t 丨）

RTD operating temperature range

Symbol	Division	Operating temp range ℃
L	For low temperature	-200-+100
M	For medium temperature	0-350
H	For high temperature	0-500

TC tolerance and applicable standard										
	JIS C1605				IEC 584-2			ASTM E230		
	Temp Range	Class	Tolerances ℃		Temp Range	Class	Tolerances℃	Temp Range	Class	Tolerance ℃
SN SK	-40℃-+375℃	1	±1.5	N K	-40℃-+375℃	1	±1.5	+0℃-+1260	STD	±2.2℃-±0.75%

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	+375℃-+1000℃		±0.004|t|		+375℃-+100℃		±0.004|t|	℃		
	-40℃-+333℃	2	±2.5		-40℃-+333℃	2	±2.5		SP	±1.1℃-±0.4%
	+333℃-+1200℃		±0.0075|t|		+333℃-+1200℃		±0.0075|t|			
	-167℃-+40℃	3	±2.5		-167℃-+40℃	3	±2.5	-200℃-0℃	STD	±1.1℃-±2%
	-200℃--167℃		±0.015|t|		-200℃--167℃		±0.015|t|			

SE	-40℃-+375℃	1	±1.5	E	-40℃-+375℃	1	±1.5	+0℃-+870℃	STD	±1.7℃-±0.5%
	+375℃-+800℃		±0.004|t|		+375℃-+800℃		±0.004|t|			
	-40℃-+333℃	2	±2.5		-40℃-+333℃	2	±2.5		SP	±1℃-±0.4%
	+333℃-+900℃		±0.0075|t|		+333℃-+900℃		±0.0075|t|			

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	-167℃-+40℃	3	±2.5		-167℃-+40℃	3	±2.5	-200℃-0℃	STD	±1.7℃-±1%
	-200℃--167℃		±0.015 | t |		-200℃--167℃		±0.015 | t |			
SJ	-40℃-+375℃	1	±1.5	J	-40℃-+375℃	1	±1.5	+0℃-+760℃	STD	±2.2℃-±0.75%
	+375℃-+750℃		±0.004 | t |		+375℃-+750℃		±0.004 | t |			
	-40℃-+333℃	2	±2.5		-40℃-+333℃	2	±2.5		SP	±1.1℃-±0.4%
	+333℃-+750℃		±0.0075 | t |		+333℃-+750℃		±0.0075 | t |			
ST	-40℃-+125℃	1	±0.5	T	-40℃-+125℃	1	±0.5	+0℃-+370℃	STD	±1℃-0.75%
	+125℃-+350℃		±0.004 | t |		+125℃-+350℃		±0.004 | t |			
	-40℃-+133℃	2	±1.0		-40℃-+133℃	2	±1.0		SP	±5℃-0.4%

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Temperature sensor

	+133℃-+350℃		±0.0075| t |		+133℃-+350℃		±0.0075| t |			
	-67℃-+40℃	3	±1.0		-67℃-+40℃	3	±1.0	-200℃-0℃	STD	±1℃-±1.5%
	-200℃--67℃		±0.015| t |		-200℃--67℃		±0.015| t |			

Components material of TC		
Symbol	Positive polarity	Negative polarity
N	Alloy consisting mainly of nickel, chromium and silicone	Alloy consisting mainly of nickel, and silicone
K	Alloy consisting mainly of nickel and chromium	Alloy consisting mainly of nickel and aluminum
E	Alloy consisting mainly of nickel and chromium	Alloy consisting mainly of nickel and copper
J	Iron	Alloy consisting mainly of nickel and copper
T	Copper	Alloy consisting mainly of nickel and copper

Operating temperature range (in air)					
Sheath OD(mm)	N	K	E	J	T
0.25	-	500*[1]	-	-	-
0.5		600*[1]	-	-	-

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Temperature sensor

1.0	900*3	650	900*3	650	450	300
2.0	1200*3	650	1200*3	650	450	300
3.0	1260*3	750	1260*3	750	650	350
5.0	1260*3	800	1260*3	800	750	350
6.0	1260*3	1000*1 900*2	1260*3	800	750	350
8.0	-	1050*1 1000*2	-	800	750	350

SPE-ST100 PT100

SPE-ST300 K/S/E/J/T/R/B/N

Measuring range:

Cold junction length L1: 100mm（standard）

Sensor diameter R：6mm（standard）

Thread type M：M20*1.5（standard）

Fitting length L2：30mm（standard）

Output：4-20mA, 1-5V (with transmitter)

Installation：flange，clamp，direct insertion，Screw base

Connection head length L3：88mm（standard）

Connection head length L4：91mm（standard）

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Datasheet **Model** SUP-WZP

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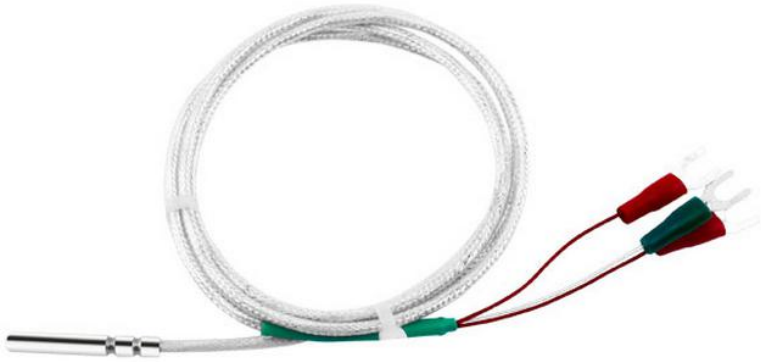
Temperature sensor



SUP-WZP **variants**

Application

The resistance thermometer is specially suited to temperature measurement in machinery, power stations and plants in gaseous or liquid media like air, steam, water and oil.

Highlights

• High flexibility through user-specific insertion lengths and variable process connections
• Fast response time
• Different types of thermocouples

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Datasheet **Model** SUP-WZP

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Temperature sensor

Technical parameters：

TCR (temperature coefficient of resistance): 3850ppm/K

Temperature range:-50 to 500℃

Wire material：Platinum nickel plating

Stability: R0≤0.04% (500℃, 1000hours)

Vibration resistance rating: at least 40ga (10-2000HZ)

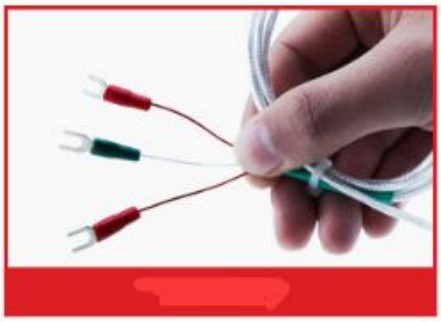
Insulation resistance: ＞100MΩ under 20 ℃, ＞2MΩ under 500 ℃

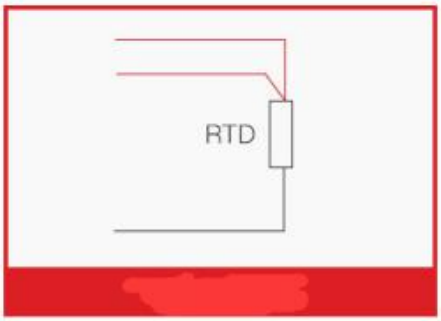
Natural coefficient：0.4K/mW under 0 ℃

Response time: water@2m/s t0.5=0.05s t0.9=0.15s

Air@2m/s t0.5=0.05s t0.9=0.15s

Size: L*R*Cable length=4*30*1, 4*30*2 , 4*30*3, 4*30*5...





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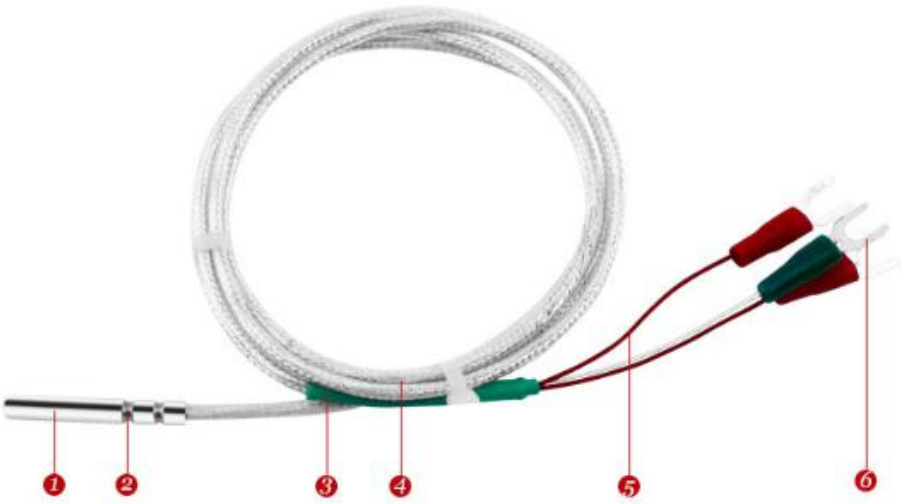
Temperature sensor



1: 304L sensor
2: Junk ring
3: Temperature and flame retardant coating
4: PTFE shielded cable
5: MM connecting cable
6: Terminal

Sensor:

Measure range: -50 to 200℃ （standard）
Sensor diameter（R): 4MM （standard）
Sensor length (L): 30MM（standard）
Cable length: 1M/3M/5M
Tolerance class：Class A（standard）

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Datasheet **Model** SUP-WZP

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Temperature sensor

SUP-WZP **variants**

Order Code

Basic type
A SUP-WZP variants

Operating temperature
C1 -50~200℃
C2 -50~100℃
C3 0~200℃
C4 -50~400℃

Sensor diameter
D1 1m
D2 2m
D3 6m
D4 8m
D5 10m

Cable length
E1 1m
E2 2m
E3 3m
E4 4m
E5 5m

Sensor length
F1 30mm
F2 60mm
F3 100mm
F4 200mm

Order code: ☐ ☐ ☐ ☐ ☐

Order example: A C1 D1 E1 F1

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Datasheet **Model** SUP-WZP

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Temperature sensor

SUP-WZP RTD& SUP-WRN TC

Order Code

Basic type
A SUP-WZP RTD
B SUP-WRN TC

Operating temperature in ° C
C -50~200℃
D Other

Fitting length
E 50mm
F 100mm（standard）
G 200mm
H 500mm

Tolerance class according
I Class A(standard)
J Class B

Process connection
K M20*1.5（standard）
L G1/4
M G1/2
N Other

Sensor diameter
O 4mm
P 6mm
Q 8mm

Temperature transmitter
R With temperature transmitter(4-20ma output)
T Without temperature transmitter

Order code: ☐ ☐ ☐ ☐ ☐ ☐ ☐

Order example: A C F I K P R

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