

VPS800 Series Thermocouple Transducer

Operational Principle

The VPS800 series thermocouples are manufactured using stable conductive materials for their electrodes. Each thermocouple consists of two different conductive materials that form a closed circuit. When there is a temperature difference between the measuring junction and the reference junction, a current flows through the circuit and generates a thermoelectric voltage.

The junction used to measure the temperature of the medium is known as the measuring (or hot) junction, while the other junction is referred to as the cold (or reference) junction. The cold junction is connected to the display instrument, which converts the thermoelectric voltage into a corresponding temperature reading.

Product Application

- Power
- Petroleum
- Chemical industry
- Boiler
- Metallurgy

Product features

- Short thermal response time reduces dynamic error
- Flexible installation and use
- Wide temperature measurement range
- High mechanical strength and excellent pressure resistance
- The product features laser marking for unique identification, ensuring full traceability.



Technology Information

Product performance standard IEC584 IEC1515 GB/T16839 - 1997

Insulation resistance at room temperature

The ambient temperature is $20\pm 5^{\circ}\text{C}$, the relative humidity is not greater than 80%, the test voltage is $500\pm 50\text{V}$ (DC), and the insulation resistance between the electrode and the outer sheath is $\geq 1000\text{M}\Omega\cdot\text{m}$.

Example: A 1-meter-long sample with an insulation resistance of $1000\text{M}\Omega$; A 10-meter-long specimen with an insulation resistance of $100\text{M}\Omega$.

Specification and Material of the Fused Thread

Single branch type:

Casing diameter ($\Phi 3$, $\Phi 4$, $\Phi 5$, $\Phi 6$, $\Phi 8$, $\Phi 10$, $\Phi 12$, $\Phi 16$) E, J, T thermocouples: 1Cr18Ni9Ti, K and N thermocouples: 1Cr18Ni9Ti; GH3030 S thermocouples: GH3030

Double-branch type:

Casing diameter ($\Phi 4$, $\Phi 5$, $\Phi 6$, $\Phi 8$), E, J, and T thermocouples: 1Cr18Ni9Ti; GH3030 K and N thermocouples: 1Cr18Ni9Ti; GH3030, S thermocouple: GH3030

Measurement range, tolerance, recommended operating temperature

K (Nickel-chromium-Nickel-silicon, model PS8000-WRnk)

Class I error: $\pm 1.5^{\circ}\text{C}$ (-40 to $+375^{\circ}\text{C}$), $\pm 0.004|t|$ (375 to 1000°C)

Class II error: $\pm 2.5^{\circ}\text{C}$ (-40 to $+333^{\circ}\text{C}$), $\pm 0.0075|t|$ (333 to 1200°C). Material of the casing: 1Cr18Ni9Ti

Outer diameter 3.0-8.0mm: Long-term use temperature $\leq 800^{\circ}\text{C}$, short-term use temperature $\leq 900^{\circ}\text{C}$. Sleeve material: GH3030

Outer diameter 3.0mm: Long-term use temperature $\leq 800^{\circ}\text{C}$, short-term use temperature $\leq 900^{\circ}\text{C}$.

Outer diameter 4.0-5.0mm: Long-term use temperature $\leq 900^{\circ}\text{C}$, short-term use temperature $\leq 1000^{\circ}\text{C}$.

Outer diameter 6.0-8.0mm: Long-term use temperature $\leq 1000^{\circ}\text{C}$, short-term use temperature $\leq 1100^{\circ}\text{C}$.

N (Nickel-Chromium-Silicon-Nickel-Silicon, Model PS8000-WRMK)

Class I error: $\pm 1.5^{\circ}\text{C}$ (-40 to $+375^{\circ}\text{C}$), $\pm 0.004|t|$ (375 to 1000°C)

Class II error: $\pm 2.5^{\circ}\text{C}$ (-40 to $+333^{\circ}\text{C}$), $\pm 0.0075|t|$ (333 to 1200°C). Material of the casing: 1Cr18Ni9Ti

Outer diameter 3.0-8.0mm: Long-term use temperature $\leq 800^{\circ}\text{C}$, short-term use temperature $\leq 900^{\circ}\text{C}$. Sleeve material: GH3030

Outer diameter 3.0mm: Long-term service temperature $\leq 900^{\circ}\text{C}$, short-term service temperature $\leq 1000^{\circ}\text{C}$.

Outer diameter 4.0-5.0mm: Long-term service temperature $\leq 1000^{\circ}\text{C}$, short-term service temperature $\leq 1100^{\circ}\text{C}$.

Outer diameter 6.0-8.0mm: Long-term service temperature $\leq 1100^{\circ}\text{C}$, short-term service temperature $\leq 1200^{\circ}\text{C}$. Sleeve material: GH3039

Outer diameter 3.0-4.0mm: Long-term use temperature $\leq 1000^{\circ}\text{C}$, short-term use temperature $\leq 1100^{\circ}\text{C}$.

Outer diameter 5.0-8.0mm: Long-term use temperature $\leq 1100^{\circ}\text{C}$, short-term use temperature $\leq 1200^{\circ}\text{C}$.

E (Nickel-chromium-Copper-nickel alloy, model PS8000-WREK)

Class I error: $\pm 1.5^{\circ}\text{C}$ (-40 to $+375^{\circ}\text{C}$), $\pm 0.004|t|$ (375 to 800°C)

Class II error: $\pm 2.5^{\circ}\text{C}$ (-40 to $+333^{\circ}\text{C}$), $\pm 0.0075|t|$ (333 to 900°C). Material of the casing: 1Cr18Ni9Ti

Outer diameter 3.0-5.0mm: Long-term use temperature $\leq 600^{\circ}\text{C}$, short-term use temperature $\leq 700^{\circ}\text{C}$.

Outer diameter 6.0-8.0mm: Long-term use temperature $\leq 700^{\circ}\text{C}$, short-term use temperature $\leq 800^{\circ}\text{C}$.

J (Iron-copper-Nickel alloy, Model PS8000-WRFK)

Class I error: $\pm 1.5^{\circ}\text{C}$ (-40 to $+375^{\circ}\text{C}$), $\pm 0.004|t|$ (375 to 800°C)

Class II error: $\pm 2.5^{\circ}\text{C}$ (-40 to $+333^{\circ}\text{C}$), $\pm 0.0075|t|$ (333 to 900°C)

Casing material: 1Cr18Ni9Ti

Outer diameter 3.0-5.0mm: Long-term use temperature $\leq 600^{\circ}\text{C}$, short-term use temperature $\leq 700^{\circ}\text{C}$.

Outer diameter 6.0-8.0mm: Long-term use temperature $\leq 600^{\circ}\text{C}$, short-term use temperature $\leq 750^{\circ}\text{C}$.

T (Copper-Copper Nickel, Model PS8000-WRCK)

Class I error: $\pm 0.5^{\circ}\text{C}$ (-40 to $+125^{\circ}\text{C}$), $\pm 0.004|t|$ (25 to 350°C)

Class II error: $\pm 1^{\circ}\text{C}$ (-40 to $+133^{\circ}\text{C}$), $\pm 0.0075|t|$ (133 to 350°C). Material of the casing: 1Cr18Ni9Ti

Outer diameter 3.0-5.0mm: Long-term use temperature $\leq 250^{\circ}\text{C}$, short-term use temperature $\leq 300^{\circ}\text{C}$.

Outer diameter 6.0-8.0mm: Long-term use temperature $\leq 300^{\circ}\text{C}$, short-term use temperature $\leq 350^{\circ}\text{C}$.

S (Platinum Rhodium₁₀-Platinum, Model PS8000-WRPK)

Class I error: $\pm 1^{\circ}\text{C}$ ($0 \sim +1100^{\circ}\text{C}$), $\pm [1 \div 0.003(t-1100)]$ ($1100 \sim 1600^{\circ}\text{C}$)

Class II error: $\pm 1.5^{\circ}\text{C}$ ($0 \sim +600^{\circ}\text{C}$), $\pm 0.0025|t|$ ($600 \sim 1600^{\circ}\text{C}$). Material of the casing: GH3039

Outer diameter 3.0-4.0mm: Long-term use temperature $\leq 1000^{\circ}\text{C}$, short-term use temperature $\leq 1100^{\circ}\text{C}$.

Outer diameter 5.0-8.0mm: Long-term use temperature $\leq 1100^{\circ}\text{C}$, short-term use temperature $\leq 1200^{\circ}\text{C}$.

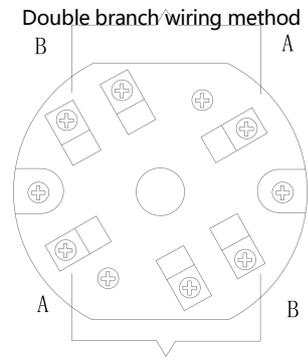
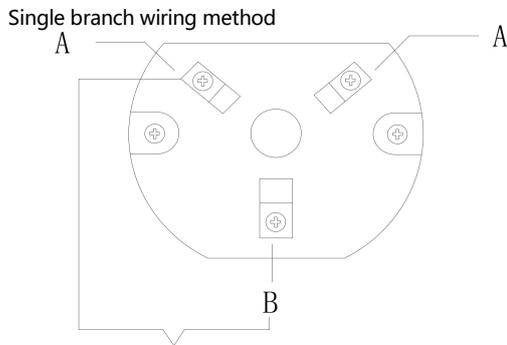
Note: t is the actual temperature measured by the temperature-sensing element

Model and Naming Method

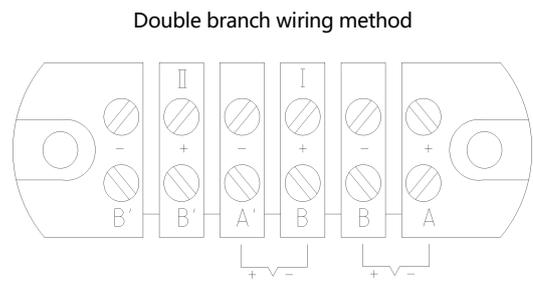
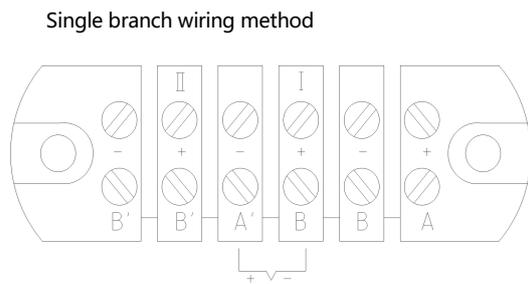
Product line					
VPS800-W	Temperature meter				
Class					
R	Thermocouple		Z	Heat Resistance	
	Thermistor material	Division mark		Thermistor material	Division mark
P	Platinum Rhodium ₁₀ -Platinum	S	E	Nickel chromium/Copper nickel	E
M	Nickel chromium silicon/Nickel-silicon	N	C	Copper/ Copper nickel	T
N	Nickel chromium / Nickel silicon	K	F	Iron / Copper-nickel	J
Assembly form					
K	Armored	None	Fabricated		
Logarithm of the common thread					
None	Single branch	2	Two branches		
Fixed installation type (specifications for threads or flanges must be specified in the contract)					
1	No fixed device	2	Fixed thread	3A (Default)	Thread of movable baffle
4	Fixed flange	5	loose type flange	3B	Thread for card holder
Type of junction box					
3	Waterproof junction box	4	Explosion-proof junction box	6	Stainless steel junction box
7	Flat splice	8	Circular plug-in	9	Compensated wire type
Protective pipe diameter (the contract must specify the insertion length below the thread or flange)					
0	Φ16	3	Φ3	6	Φ6
1	Φ12	4	Φ4	8	Φ8
2	Φ10	5	Φ5		
T1	Φ20	T2	Φ25		
Pipeline connection method (If threaded connection is used for on-site pipeline connection, the thread specification must be stated in the contract)					
TH01	Protective tube welding	TH02A	Mounting base	TH03	Flange tube
		TH02B	Mounting base with welded tube		
Protective tube diameter (The length below the slope must be stated in the contract)					
0	Φ16	1	Φ12	2	Φ10
M	Contact block type	G	Brace type/variable cross-section		
Other requirements					
QT	Other requirements				

Mode of connection

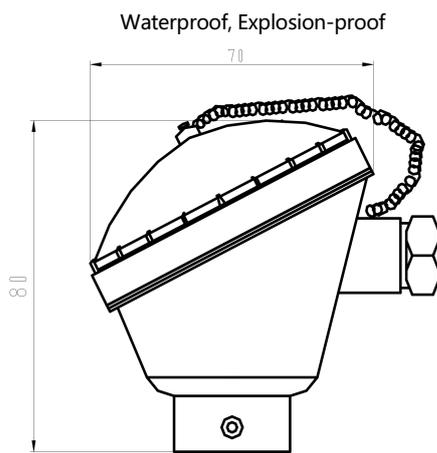
I. Armored Thermocouple



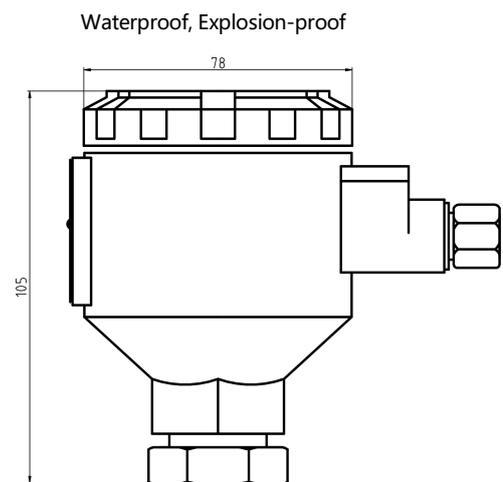
II. Explosion-proof Thermocouple



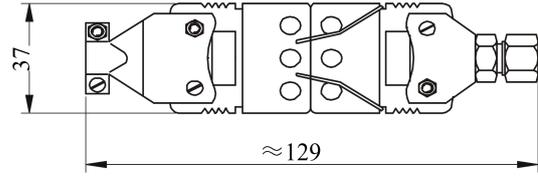
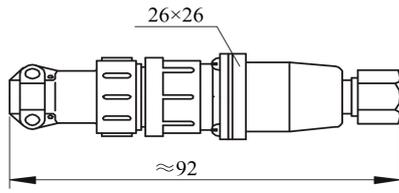
Wiring box dimensions



Round type flat type

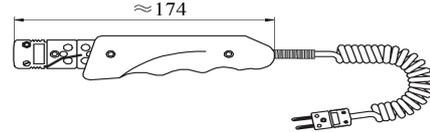
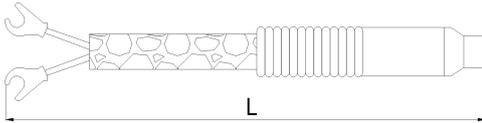


round type flat type



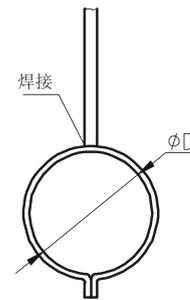
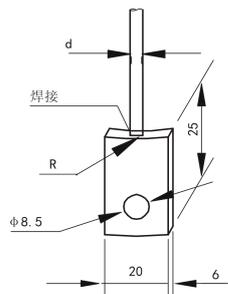
Compensated wire type handle type

Compensated wire type handle type



Contact block type clamp type

Contact block type clamp type



Note: Specify R size when selecting the type