

**PETROCHEMICAL INDUSTRY THERMOCOUPLE / THERMAL RESISTANCE**
**SERIES**
**Application**

The series is especially designed for temperature measuring of petrochemical industry. Capable to directly measure temperature of  $-200\sim+1600^{\circ}\text{C}$  of liquid, steam, gas and solid, etc.

**Operation Theory**
**1. Thermocouple**

The electrodes are made of different kinds of material. When temperature difference occurs between measuring end and reference end, thermal EMF appears, then display instrument indicates temperature value relative to thermal EMF.

**2. Resistance**

Thermal resistance measure temperature according to temperature changing characteristic of medium. When resistance value changes, temperature value relative to resistance value is indicated on display instrument.

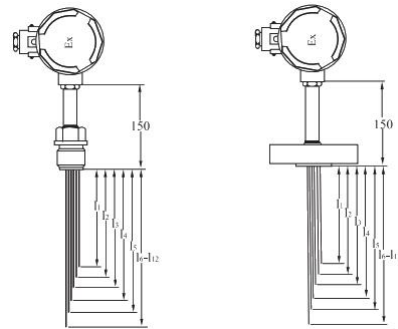
**Measuring Range and Tolerance**
**1. Thermocouple**

Model	Graduation	Tolerance			
		I		II	
		Value	Measuring Range $^{\circ}\text{C}$	Value	Measuring Range $^{\circ}\text{C}$
CMWRN	K	$\pm 1.5^{\circ}\text{C}$	$-40\sim+375$	$\pm 2.5^{\circ}\text{C}$	$-40\sim+333$
		$\pm 0.004   t  $	$375\sim 1000$	$\pm 0.0075   t  $	$333\sim 1200$
CMWRE	E	$\pm 1.5^{\circ}\text{C}$	$-40\sim+375$	$\pm 2.5^{\circ}\text{C}$	$-40\sim+333$
		$\pm 0.004   t  $	$375\sim 1000$	$\pm 0.0075   t  $	$333\sim 900$
CMWRP	S	$\pm 1^{\circ}\text{C}$	$0\sim 1100$	$\pm 2.5^{\circ}\text{C}$	$0\sim 600$
		$\pm [1+0.003(t-1100)]$	$1100\sim 1600$	$\pm 0.0025   t  $	$600\sim 1600$
CMWRQ	R	$\pm 1^{\circ}\text{C}$	$0\sim 1100$	$\pm 2.5^{\circ}\text{C}$	$0\sim 1100$
		$\pm [1+0.003(t-1100)]$	$1100\sim 1600$	$\pm 0.0025   t  $	$1100\sim 1600$
CMWRR	B	-	-	-	-
		-	-	$\pm 0.0025   t  $	$600\sim 1700$

**2. Thermal Resistance**

Model	Graduation	Measuring Range $^{\circ}\text{C}$	Accuracy	Tolerance
CMWZP	Pt100	$-200\sim+500$	A	$\pm(0.15+0.002   t  )$
			B	$\pm(0.30+0.005   t  )$
CMWZC	Cu50 Cu100	$-50\sim+100$	---	$\pm(0.30+0.005   t  )$

## Multi Points Thermocouple



The series is suitable for simultaneously measuring temperature of various positions or points of same position in occasion which temperature grade is not so obvious. Widely applied in fertilizer synthesis tower and instrument like storage tank, etc.

### Technical Reference

Electric Outlet: M27×2 / NPT3/4

Thermal Response Time: ≤8ms

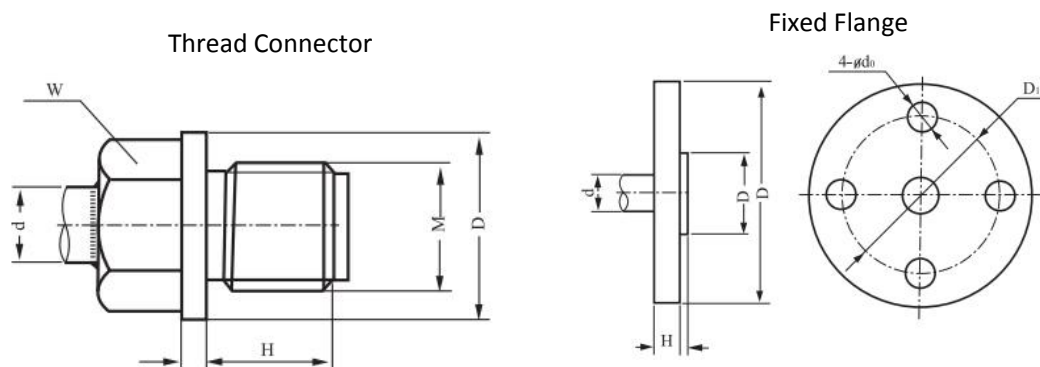
Filament Diameter: Φ3mm

Protection: IP65

### Models and Specification

Model	Graduation	Measuring Range °C	Measuring Points	Protection Tube Material
CMWRND-230	K	0~1000	2~12	GH3030
		0~800		1Cr18Ni9Ti
CMWRND-230	E	0~600		1Cr18Ni9Ti
CMWRND-430	K	0~1000		GH3030
		0~800		1Cr18Ni9Ti
CMWRND-430	E	0~600		1Cr18Ni9Ti
CMWZPD-230	Pt100	-50~+500		
CMWZPD-430				

### Mounting & Fixing





Xi'an CAMON Automatic Instruments Co.,Ltd

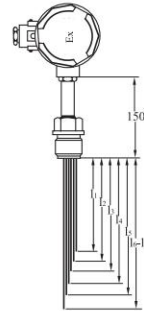
Thread Connector

Measuring Points	M	D	H	h	SW	d
2~6	M27×2	Φ40	28	5	32	Φ20
7~12	M33×2	Φ48	33	5	36	Φ34

Fixed Flange

Measuring Points	D	D <sub>1</sub>	D <sub>2</sub>	H	D <sub>0</sub>	d
2~6	Φ105	Φ75	-	5	32	Φ20
7~12	Φ115	Φ85	-	5	36	Φ34

## Multi Points Explosion Suppression Thermocouple / Thermal Resistance



The series is suitable for simultaneously measuring temperature of various positions or points of same position in occasion which contains flammable and explosive chemicals. Widely applied in rectifying tower of petrochemical.

### Technical Reference

Electric Outlet: M20×1.5, NPT1/2

Filament Diameter:  $\Phi 1, \Phi 2, \Phi 3$

Thermal Response Time:  $\leq 8\text{ms}$

Protection: IP65

Explosion Suppression: dII BT4.dII CT5

### Models and Specification

Model	Graduation	Measuring Range °C	Measuring Points	Mounting & Fixing	
CMWRND-240	K	0~1000	2~12	Fixed Thread	
		0~800			
CMWRED-230	E	0~600		2~12	Fixed Flange
CMWRND-440	K	0~1000			
		0~800			
CMWRED-440	E	0~600			Fixed Thread
CMWZPD-240	Pt100	-50~+500			
CMWZPD-440			Fixed Flange		

### Product Variety

#### Single-branch Multi Points Type:

Combine multi thermocouple in one protection tube.

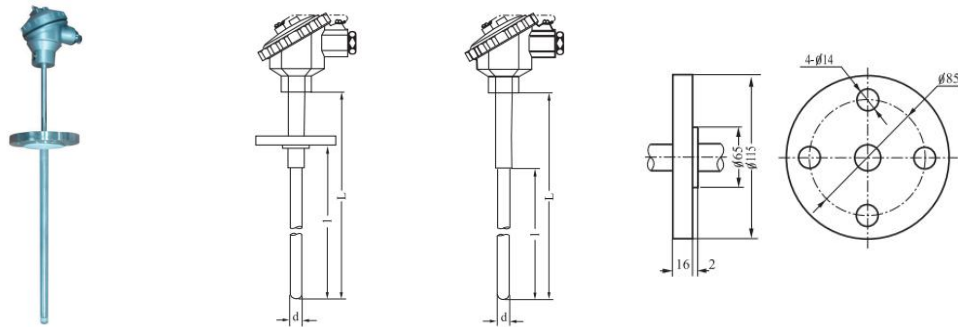


#### Multi Branch Multi Points Type:

It is made of separated multi-branch and multi points thermocouple with different length. Multi-grade anti-leak structure prevent hot-wind leak from part's broken. Taper sealing structure, quick-replace and convenient maintenance of parts.



## Anti-corrosive Thermal Resistance



Introduced new anti-corrosive material with PTFE F4 coating, suitable for measuring temperature of corrosive medium in petrochemical industry. It is specially designed for temperature measuring of chlor-alkali industry.

### Technical Reference

Electric Outlet: M20×1.5, NPT1/2

Explosion Suppression: dIIBT4.dIICT5

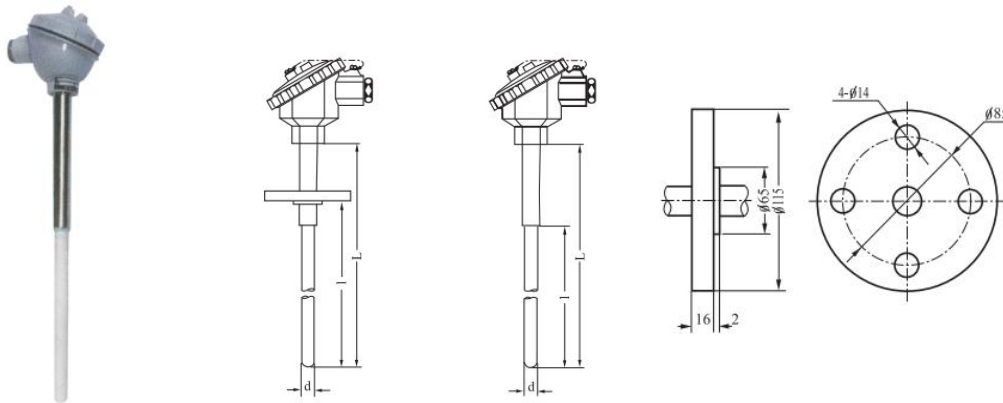
Thermal Response Time: ≤8ms

Protection: IP65

### Models and Specification

Model	Graduation	Measuring Range °C	Thermal Response Time	Protection Tube Material	Specification	
					d	L×1
CMWZPF-130	Pt100	-200~+500	<80s	1Cr18Ni9Ti	Φ 16	300×150
CMWZPF <sub>2</sub> -130	Cu50 / Cu100	0~150				350×200
CMWZPF-430	Pt100 / Cu50	-200~+500				400×250
CMWZCF-430	Cu100	0~150				450×300
						500×350
						600×450
						650×500
						750×600
						1000×850

## High Temperature Anti-corrosive Thermocouple



Suitable for high-temperature, corrosive medium occasion. Widely applied in petrochemical, metallurgy, glass and ceramic industries.

### Technical Reference

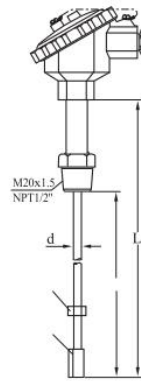
Electric Outlet: M20×1.5, NPT1/2

Accuracy: I, II

Protection: IP65

### Models and Specification

Model	Graduation	Measuring Range ℃	Thermal Response Time	Protection Tube Material	Specification	
					d	L×1
CMWRPG-130	S	0~1300	<80s	3YC52	Φ 16	300×150 350×200 400×250 450×300 500×350 600×450 650×500 750×600 1000×850
CMWRQG-130	R					
CMWRRG-130	B	0~1600				
CMWRPG-430	S	0~1300		3YC52		
CMWRQG-430	R					
CMWRRG-430	B	0~1600		MoSi2		

**Boiler Pipe Knife-shaped Joint Thermocouple**

Introduced knife-shaped joint which is directly welded on the surface of boiler pipe. Suitable for temperature measuring of petrochemical and tower surface, etc. Especially, the essential device for fractionating tower of oil refinery.

**Technical Reference**

Electric Outlet: M20×1.5, NPT1/2

Accuracy: I, II

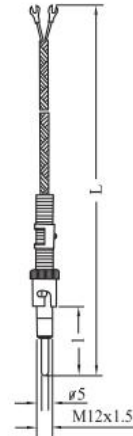
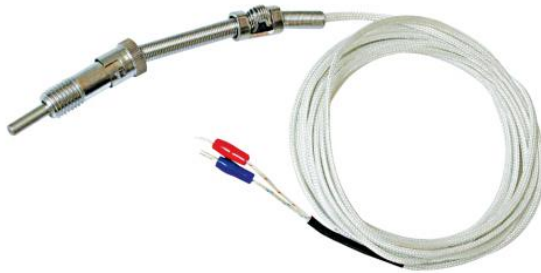
Protection: IP65

Pressure: 10Mpa

**Models and Specification**

Model	Graduation	Measuring Range ℃	Thermal Response Time	Protection Tube Material	Specification	
					d	L
CMWNKD-231	K	0~1000	<10s	GH3030 446SS	Φ8	1000
		1500				
		0~800		1Cr18Ni9Ti	Φ12.7	2000 3000

## Spring Fixed Thermocouple



Introduced spring fixing device to make measuring end closely contact surface of tested object. Widely applied in plastic, textile and food industries.

### Technical Reference

Accuracy: I,II

Thermal Response Time:  $\leq 5s$

### Models and Specification

Model	Graduation	Measuring Range $^{\circ}C$	Protection Tube Material
CMWRET-01	E	0~250	1Cr18Ni9Ti
CMWRNT-01	K	0~600	

### Length

Total Length	Protection Tube Length
1000	30
1500	30
2000	30
2500	30
3000	30
3500	30
4000	30
1000	60
1500	60
2000	60
2500	60
3000	60
3500	60
4000	60



## Socket Type Thermal Resistance



Introduced socket-mount which is convenient for mounting. Capable to directly measure temperature of  $-200\sim+450^{\circ}\text{C}$  of liquid, steam, gas and solid, etc.

### Technical Reference

Accuracy: A, B

Protection: IP65

Pressure: Normal

### Model and Specification

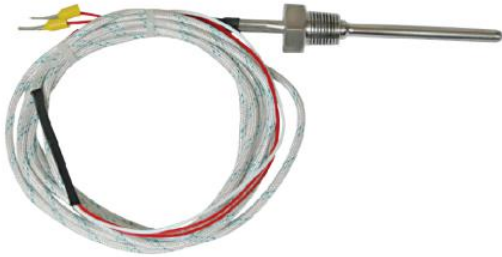
Model	Graduation	Measuring Range $^{\circ}\text{C}$	Thermal Response Time	Protection Tube Material	Specification	
					d	L×1
CMWZP-260	Pt100	0~100	<30s	1Cr18Ni9Ti	100 ,200, 300 150 ,250 ,350	75,180,300
			<45s			100,200,400
CMWZPM-267		-50~+150	<30s			75,150,250
CMWZP-269		-200~+300	<30s			100,200
			<45s			185 ,285
CMWZP-270		-200~+420	<15s			40,75,150
CMWZP-280	-200~+300	<30s	75,150,250			
			175 ,250 ,350 200 ,300	100,200		

## Special Thermocouple (Thermal Resistance)

### Application

Special designed structure to satisfy measuring in various occasion. apable to directly measure temperature of  $-200\sim+1600^{\circ}\text{C}$  of liquid,steam,gas and solid,etc.

### Models for Fiber Machinery



CMWXDZ-001



CMWXDZ-001



CMWXDZ-003



CMWXDZ-004



CMWXDZ-005



CMWXDZ-006

## Special Series



CMWXDZ-007



CMWXDZ-008



CMWXDZ-009



CMWXDZ-010



CMWXDZ-011



CMWXDZ-012



CMWXDZ-013



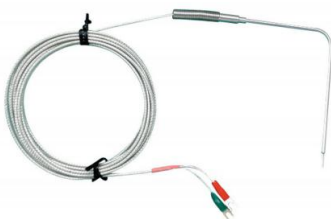
CMWXDZ-014



CMWXDZ-015



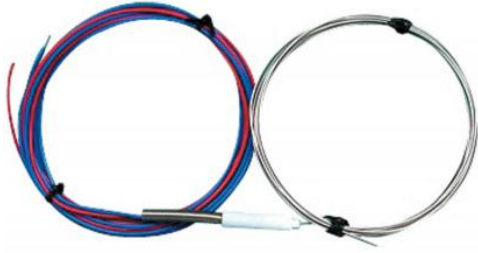
CMWXDZ-016



CMWXDZ-017



CMWXDZ-018



CMWXDZ-019



CMWXDZ-020



CMWXDZ-021



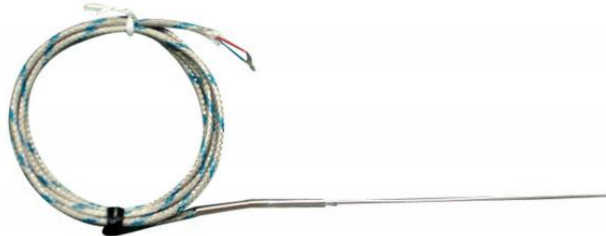
CMWXDZ-022



CMWXDZ-023



CMWXDZ-024



CMWXDZ-025

## Surface Temperature Measuring Series

