

## Assembly Thermocouple

### Application

It is usually connected with displaymeter, recording meter and computer, etc. to directly measure temperature of liquid, vapor, gas and solid surface ranging from 0°C to 1300°C during various production process.

### Features

1. Easy assembly and convenient for replacement
2. Spring thermal element with good shock-proof performance
3. Wide measuring range
4. High mechanical strength, good pressure-resistant performance

### Operation Theory

The electrodes of assembly thermocouple are made of different materials. The temperature difference between measuring end and reference end results in pyroelectric potential, then displaymeter indicates the corresponding temperature to the pyroelectric potential.

### Main Technical Parameters

Executive Standard

IEC584

GB/T16839-1997

JB/T5582-1991

### Insulation Resistance at Normal Temperature

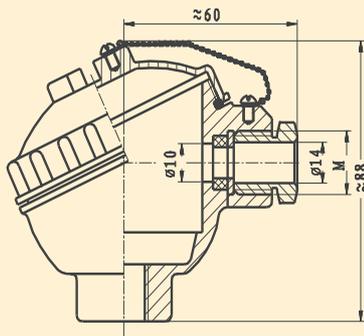
The insulation resistance between electrode and protection tube of assembly thermocouple shall be no less than  $1000\Omega \cdot m$  under condition that environment temperature is  $20 \pm 15^\circ\text{C}$ , relative humidity is no more than 80%, and testing voltage is D.C.  $500 \pm 50\text{V}$ .



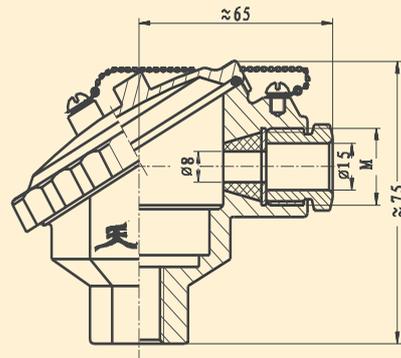
### Measuring Range & Tolerance

Type	Graduation	Tolerance Class			
		I		II	
		Tolerance Value	Measuring Range °C	Tolerance Value	Measuring Range °C
WRN	K	± 1.5 °C	-40~+375	± 2.5 °C	-40~+333
		± 0.004t/l	375~1000	± 0.0075t/l	333~1200
WRM	N	± 1.5 °C	-40~+375	± 2.5 °C	-40~+333
		± 0.004t/l	375~1000	± 0.0075t/l	333~1200
WRE	E	± 1.5 °C	-40~+375	± 1.5 °C	-40~+333
		± 0.004t/l	375~800	± 0.004t/l	333~900
WRF	J	± 1.5 °C	-40~+375	± 1.5 °C	-40~+333
		± 0.004t/l	375~750	± 0.004t/l	333~750
WRC	T	± 1.5 °C	-40~+125	± 1 °C	-40~+133
		± 0.004t/l	125~350	± 0.0075t/l	133~350

### Junction Box



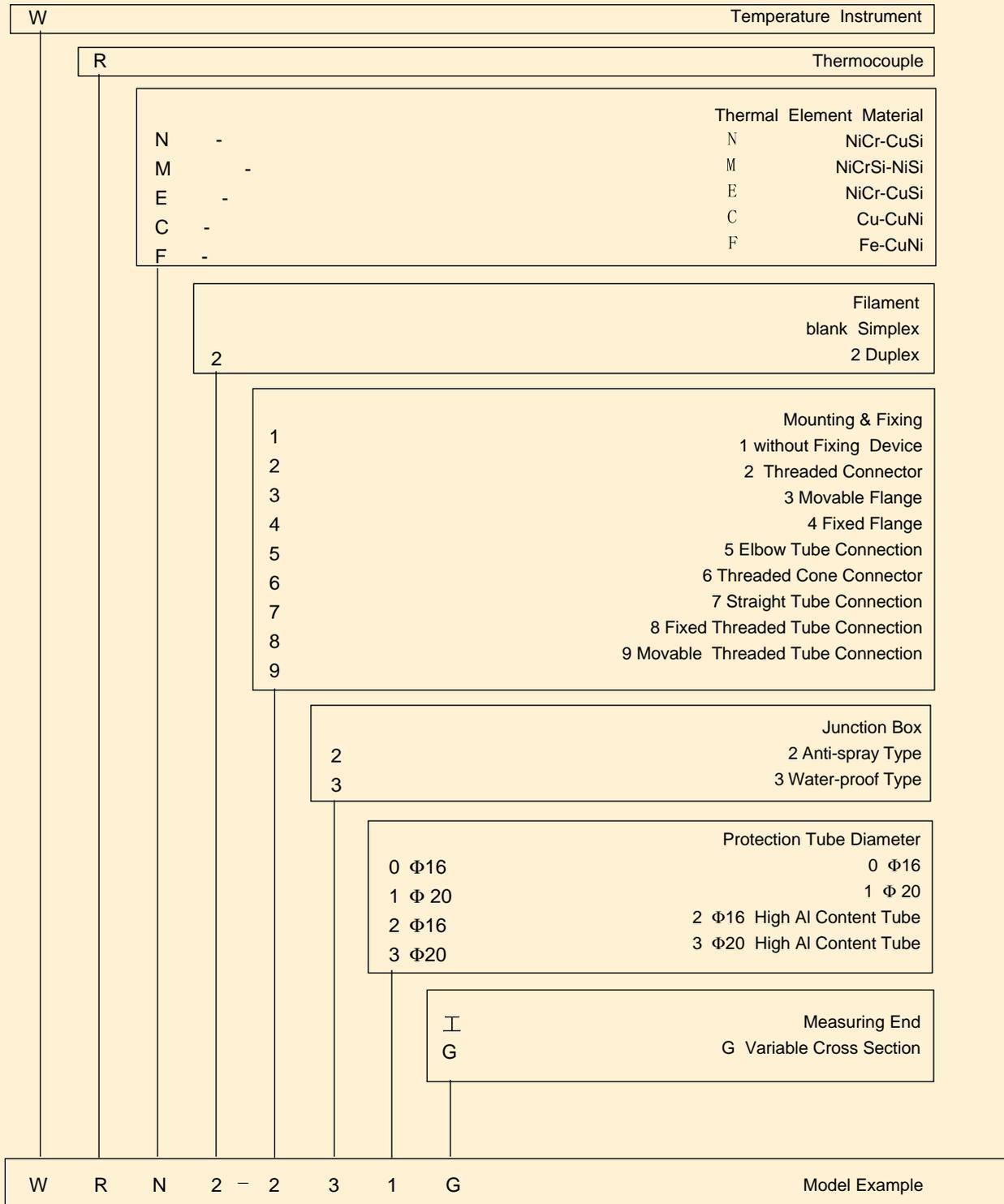
Anti-spray Type



Water-proof Type

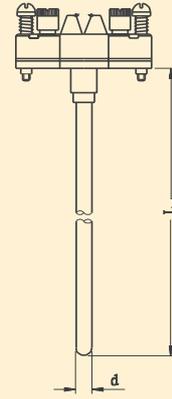


# Type Naming Method



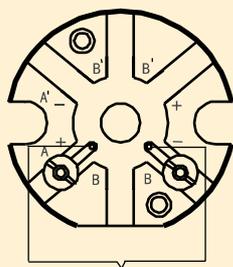
## Type & Specification

### Thermal Element

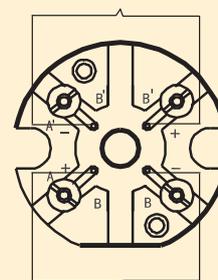


Description	Type	Graduation	Measuring Range °C	Specification	
				d	L
NiCrSi-NiSi	WRM-101	N	0~1000	Φ3	310
	WRM <sub>2</sub> -101				360
NiCr-NiSi	WRN-101	K	0~1000	Φ4	410
	WRN <sub>2</sub> -101				460
NiCr-CuSi	WRE-101	E	0~800	Φ5	510
	WRE <sub>2</sub> -101				560
Cu-CuSi	WRC-101	T	0~350	Φ8	660
	WRC <sub>2</sub> -101				910
Fe-CuNi	WRF-101	J	0~600	Φ8	1160
	WRF <sub>2</sub> -101				

### Wiring Method

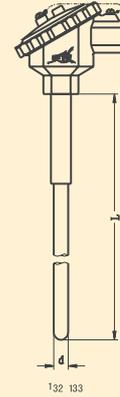
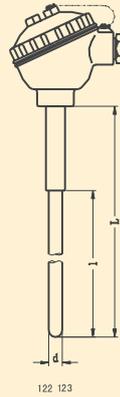


Wiring Method(simplex)



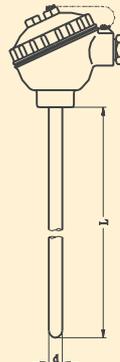
Wiring Method(duplex)

## Thermocouple without Fixing Device



Type	Graduation	Measuring Range °C	Thermal Response Time	Protection Tube Material	Specification					
					d	L × l				
WRM-122 WRM <sub>2</sub> -122	N	0 ~ 1200	< 240S	High Al Content	Φ16	300 × 150				
WRN-122 WRN <sub>2</sub> -122	K					350 × 200				
WRM-123 WRM <sub>2</sub> -123	N					400 × 250				
WRN-123 WRN <sub>2</sub> -123	K					450 × 300				
WRM-123 WRM <sub>2</sub> -123	N				0 ~ 1200	< 240S	High Al Content	Φ20	500 × 350	
WRN-123 WRN <sub>2</sub> -123	K								550 × 400	
WRM-132 WRM <sub>2</sub> -132	N							Φ16	650 × 500	
WRN-132 WRN <sub>2</sub> -132	K								900 × 750	
WRM-133 WRM <sub>2</sub> -133	N								Φ20	1150 × 1000
WRN-133 WRN <sub>2</sub> -133	K									1650 × 1500
WRM-133 WRM <sub>2</sub> -133	N								Φ20	2150 × 2000
WRN-133 WRN <sub>2</sub> -133	K									2150 × 2000

- ★: 1) Type122 for anti-spray type, protection class IP65  
 Type 132 for water-proof type, protection class IP55;  
 2) We also produce the thermocouple with protection tube of other material.



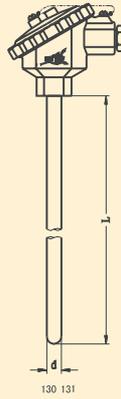
120 121



120G 121G

Type	Graduation	Measuring Range °C	Thermal Response Time	Protection Tube Material	Specification	
					d	L
WRM - 120	N	0 ~ 800	< 90S	1Cr18Ni9Ti	Φ 16	150 200 250 300 350 400 500 750 1000 1500 2000 2150
WRM <sub>2</sub> - 120		0 ~ 1000		0Cr25Ni20		
WRM - 120G		0 ~ 800	< 24S	1Cr18Ni9Ti		
WRM <sub>2</sub> - 120G		0 ~ 1000		0Cr25Ni20		
WRN - 120	K	0 ~ 800	< 90S	1Cr18Ni9Ti		
WRN <sub>2</sub> - 120		0 ~ 1000		0Cr25Ni20		
WRN - 120G		0 ~ 800	< 24S	1Cr18Ni9Ti		
WRN <sub>2</sub> - 120G		0 ~ 1000		0Cr25Ni20		
WRE - 120	E	0 ~ 700	< 90S	1Cr18Ni9Ti		
WRE <sub>2</sub> - 120			< 24S			
WRE <sub>2</sub> - 120G						
WRC - 120	T	0 ~ 350	< 90S	1Cr18Ni9Ti		
WRC <sub>2</sub> - 120			< 24S			
WRC <sub>2</sub> - 120G						
WRF - 120	J	0 ~ 600	< 90S	1Cr18Ni9Ti		
WRF <sub>2</sub> - 120			< 24S			
WRF <sub>2</sub> - 120G						
WRM - 121	N	0 ~ 800	< 20S	1Cr18Ni9Ti	Φ 20	
WRM <sub>2</sub> - 121		0 ~ 1000		0Cr25Ni20		
WRM - 121G		0 ~ 800	< 24S	1Cr18Ni9Ti		
WRM <sub>2</sub> - 121G		0 ~ 1000		0Cr25Ni20		
WRN - 121	K	0 ~ 800	< 120S	1Cr18Ni9Ti		
WRN <sub>2</sub> - 121		0 ~ 1000		0Cr25Ni20		
WRN - 121G		0 ~ 800	< 24S	1Cr18Ni9Ti		
WRN <sub>2</sub> - 121G		0 ~ 1000		0Cr25Ni20		
WRE - 121	E	0 ~ 700	< 120S	1Cr18Ni9Ti		
WRE <sub>2</sub> - 121			< 24S			
WRE <sub>2</sub> - 121G						
WRC - 121	T	0 ~ 350	< 120S	1Cr18Ni9Ti		
WRC <sub>2</sub> - 121			< 24S			
WRC <sub>2</sub> - 121G						
WRF - 121	J	0 ~ 600	< 120S	1Cr18Ni9Ti		
WRF <sub>2</sub> - 121			< 24S			
WRF <sub>2</sub> - 121G						



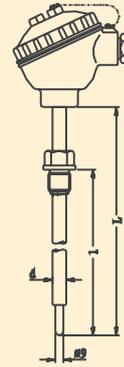


Type	Graduation	Measuring Range °C	Thermal Response Time	Protection Tube Material	Specification	
					d	L
WRM - 130	N	0 ~ 800	< 90S	1Cr18Ni9Ti	Φ 16	150 200 250 300 350 400 500 750 1000 1500 2000 2150
WRM <sub>2</sub> - 130		0 ~ 1000		0Cr25Ni20		
WRM - 130G		0 ~ 800	< 24S	1Cr18Ni9Ti		
WRM <sub>2</sub> - 130G		0 ~ 1000		0Cr25Ni20		
WRN - 130	K	0 ~ 800	< 90S	1Cr18Ni9Ti		
WRN <sub>2</sub> - 130		0 ~ 1000		0Cr25Ni20		
WRN - 130G		0 ~ 800	< 24S	1Cr18Ni9Ti		
WRN <sub>2</sub> - 130G		0 ~ 1000		0Cr25Ni20		
WRE - 130	E	0 ~ 700	< 90S	1Cr18Ni9Ti		
WRE <sub>2</sub> - 130			< 24S			
WRE - 130G			< 24S			
WRC - 130	T	0 ~ 350	< 90S	1Cr18Ni9Ti		
WRC <sub>2</sub> - 130			< 24S			
WRC - 130G			< 24S			
WRF - 130	J	0 ~ 600	< 90S	1Cr18Ni9Ti		
WRF <sub>2</sub> - 130			< 24S			
WRF - 130G			< 24S			
WRM - 131	N	0 ~ 800	< 20S	1Cr18Ni9Ti	Φ 20	
WRM <sub>2</sub> - 131		0 ~ 1000		0Cr25Ni20		
WRM - 131G		0 ~ 800	< 24S	1Cr18Ni9Ti		
WRM <sub>2</sub> - 131G		0 ~ 1000		0Cr25Ni20		
WRN - 131	K	0 ~ 800	< 120S	1Cr18Ni9Ti		
WRN <sub>2</sub> - 131		0 ~ 1000		0Cr25Ni20		
WRN - 131G		0 ~ 800	< 24S	1Cr18Ni9Ti		
WRN <sub>2</sub> - 131G		0 ~ 1000		0Cr25Ni20		
WRE - 131	E	0 ~ 700	< 120S	1Cr18Ni9Ti		
WRE <sub>2</sub> - 131			< 24S			
WRE - 131G			< 24S			
WRC - 131	T	0 ~ 350	< 120S	1Cr18Ni9Ti		
WRC <sub>2</sub> - 131			< 24S			
WRC - 131G			< 24S			
WRF - 131	J	0 ~ 600	< 120S	1Cr18Ni9Ti		
WRF <sub>2</sub> - 131			< 24S			
WRF - 131G			< 24S			

## Thermocouple with Threaded Connector



220 221

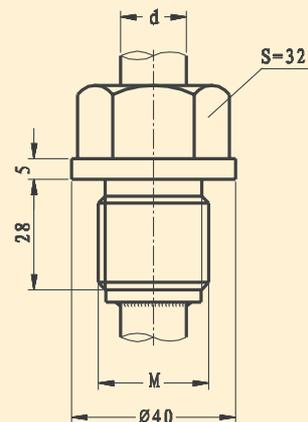


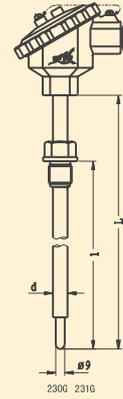
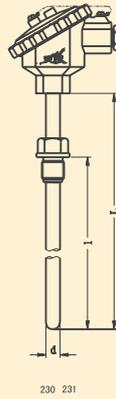
220G 221G

Type	Graduation	Measuring Range °C	Thermal Response Time	Protection Tube Material	Specification	
					d	L × I
WRM - 220	N	0 ~ 800	< 90S	1Cr18Ni9Ti	Φ 16	300 × 150 350 × 200 400 × 250 450 × 300 500 × 350 550 × 400 650 × 500 900 × 750 1150 × 1000 1650 × 1500 2150 × 2000
WRM <sub>2</sub> - 220		0 ~ 1000		0Cr25Ni20		
WRM - 220G		0 ~ 800	< 24S	1Cr18Ni9Ti		
WRM <sub>2</sub> - 220G		0 ~ 1000		0Cr25Ni20		
WRN - 220	K	0 ~ 800	< 90S	1Cr18Ni9Ti		
WRN <sub>2</sub> - 220		0 ~ 1000		0Cr25Ni20		
WRN - 220G		0 ~ 800	< 24S	1Cr18Ni9Ti		
WRN <sub>2</sub> - 220G		0 ~ 1000		0Cr25Ni20		
WRE - 220	E	0 ~ 700	< 90S	1Cr18Ni9Ti		
WRE <sub>2</sub> - 220			< 24S			
WRE - 220G			< 24S			
WRC - 220	T	0 ~ 350	< 90S	1Cr18Ni9Ti		
WRC <sub>2</sub> - 220			< 24S			
WRC - 220G			< 24S			
WRF - 220	J	0 ~ 600	< 90S	1Cr18Ni9Ti		
WRF <sub>2</sub> - 220			< 24S			
WRF - 220G			< 24S			
WRM - 221	N	0 ~ 800	< 20S	1Cr18Ni9Ti	Φ 20	
WRM <sub>2</sub> - 221		0 ~ 1000		0Cr25Ni20		
WRM - 221G		0 ~ 800	< 24S	1Cr18Ni9Ti		
WRM <sub>2</sub> - 221G		0 ~ 1000		0Cr25Ni20		
WRN - 221	K	0 ~ 800	< 120S	1Cr18Ni9Ti		
WRN <sub>2</sub> - 221		0 ~ 1000		0Cr25Ni20		
WRN - 221G		0 ~ 800	< 24S	1Cr18Ni9Ti		
WRN <sub>2</sub> - 221G		0 ~ 1000		0Cr25Ni20		
WRE - 221	E	0 ~ 700	< 120S	1Cr18Ni9Ti		
WRE <sub>2</sub> - 221			< 24S			
WRE - 221G			< 24S			
WRC - 221	T	0 ~ 350	< 120S	1Cr18Ni9Ti		
WRC <sub>2</sub> - 221			< 24S			
WRC - 221G			< 24S			
WRF - 221	J	0 ~ 600	< 120S	1Cr18Ni9Ti		
WRF <sub>2</sub> - 221			< 24S			
WRF - 221G			< 24S			
WRF <sub>2</sub> - 221G						

- 1) Type 220, 221 for water-proof type, protection class IP65;
- 2) We also produce the thermocouple with protection tube of other material.
- 3) Nominal pressure is 10Mpa.

Model Type	Thread Specification		d
	Code	M	
WRN-220		M27 × 2	Φ 16
WRN-220A	A	G3/4	
WRN-220C	C	NPT3/4	
WRN-221G		M27 × 2	Φ 20
WRN-221 G A	A	G3/4	
WRN-221GC	C	NPT3/4	





Type	Graduation	Measuring Range °C	Thermal Response Time	Protection Tube Material	Specification	
					d	L × l
WRM - 230	N	0 ~ 800	< 90S	1Cr18Ni9Ti	Φ 16	300 × 150 350 × 200 400 × 250 450 × 300 500 × 350 550 × 400 650 × 500 900 × 750 1150 × 1000 1650 × 1500 2150 × 2000
WRM <sub>2</sub> -230		0 ~ 1000		0Cr25Ni20		
WRM-230G		0 ~ 800	< 24S	1Cr18Ni9Ti		
WRM <sub>2</sub> -230G		0 ~ 1000		0Cr25Ni20		
WRN - 230	K	0 ~ 800	< 90S	1Cr18Ni9Ti		
WRN <sub>2</sub> -230		0 ~ 1000		0Cr25Ni20		
WRN-230G		0 ~ 800	< 24S	1Cr18Ni9Ti		
WRN <sub>2</sub> -230G		0 ~ 1000		0Cr25Ni20		
WRE - 230	E	0 ~ 700	< 90S	1Cr18Ni9Ti		
WRE <sub>2</sub> -230			< 24S			
WRE-230G						
WRC - 230	T	0 ~ 350	< 90S	1Cr18Ni9Ti		
WRC <sub>2</sub> -230			< 24S			
WRC-230G						
WRF - 230	J	0 ~ 600	< 90S	1Cr18Ni9Ti		
WRF <sub>2</sub> -230			< 24S			
WRF-230G						
WRM - 231	N	0 ~ 800	< 20S	1Cr18Ni9Ti	Φ 20	
WRM <sub>2</sub> -231		0 ~ 1000		0Cr25Ni20		
WRM-231G		0 ~ 800	< 24S	1Cr18Ni9Ti		
WRM <sub>2</sub> -231G		0 ~ 1000		0Cr25Ni20		
WRN - 231	K	0 ~ 800	< 120S	1Cr18Ni9Ti		
WRN <sub>2</sub> -231		0 ~ 1000		0Cr25Ni20		
WRN-231G		0 ~ 800	< 24S	1Cr18Ni9Ti		
WRN <sub>2</sub> -231G		0 ~ 1000		0Cr25Ni20		
WRE - 231	E	0 ~ 700	< 120S	1Cr18Ni9Ti		
WRE <sub>2</sub> -231			< 24S			
WRE-231G						
WRC - 231	T	0 ~ 350	< 120S	1Cr18Ni9Ti		
WRC <sub>2</sub> -231			< 24S			
WRC-231G						
WRF - 231	J	0 ~ 600	< 120S	1Cr18Ni9Ti		
WRF <sub>2</sub> -231			< 24S			
WRF-231G						
WRF <sub>2</sub> -231G						