

AMOURED THERMOCOUPLE SERIES

Application

The series normally cooperates with display instrument, recorder and computer, etc. to directly measure temperature of liquid, gas, steam and solid among $0^{\circ}\text{C} \sim 1300^{\circ}\text{C}$ during production process.

Features

1. Less thermal response time, reduce dynamic error.
2. Can bending mount
3. Wide measuring range.
4. High mechanical strength and pressure-resistance ability.

Measuring Range and Tolerance

Model	Graduation	Tolerance			
		I		II	
		Value	Measuring Range $^{\circ}\text{C}$	value	Measuring Range $^{\circ}\text{C}$
CMWRNK	K	$\pm 1.5^{\circ}\text{C}$	$-40 \sim +375$	$\pm 2.5^{\circ}\text{C}$	$-40 \sim +333$
		$\pm 0.004\text{tI}$	$375 \sim 1000$	$\pm 0.0075\text{tI}$	$333 \sim 1200$
CMWRMK	N	$\pm 1.5^{\circ}\text{C}$	$-40 \sim +375$	$\pm 2.5^{\circ}\text{C}$	$-40 \sim +333$
		$\pm 0.004\text{tI}$	$375 \sim 1000$	$\pm 0.0075\text{tI}$	$333 \sim 1200$
CMWREK	E	$\pm 1.5^{\circ}\text{C}$	$-40 \sim +375$	$\pm 1.5^{\circ}\text{C}$	$-40 \sim +333$
		$\pm 0.004\text{tI}$	$375 \sim 800$	$\pm 0.004\text{tI}$	$333 \sim 900$
CMWRFK	J	$\pm 1.5^{\circ}\text{C}$	$-40 \sim +375$	$\pm 1.5^{\circ}\text{C}$	$-40 \sim +333$
		$\pm 0.004\text{tI}$	$375 \sim 750$	$\pm 0.004\text{tI}$	$333 \sim 750$
CMWRCK	T	$\pm 1.5^{\circ}\text{C}$	$-40 \sim +125$	$\pm 1^{\circ}\text{C}$	$-40 \sim +133$
		$\pm 0.004\text{tI}$	$125 \sim 350$	$\pm 0.0075\text{tI}$	$133 \sim 350$
CMWRPK	S	$\pm 1^{\circ}\text{C}$	$0 \sim +1100$	$\pm 2.5^{\circ}\text{C}$	$0 \sim 600$
		$\pm [0.003(t-1100)]$	$1100 \sim 1600$	$\pm 0.0025\text{tI}$	$600 \sim 1600$

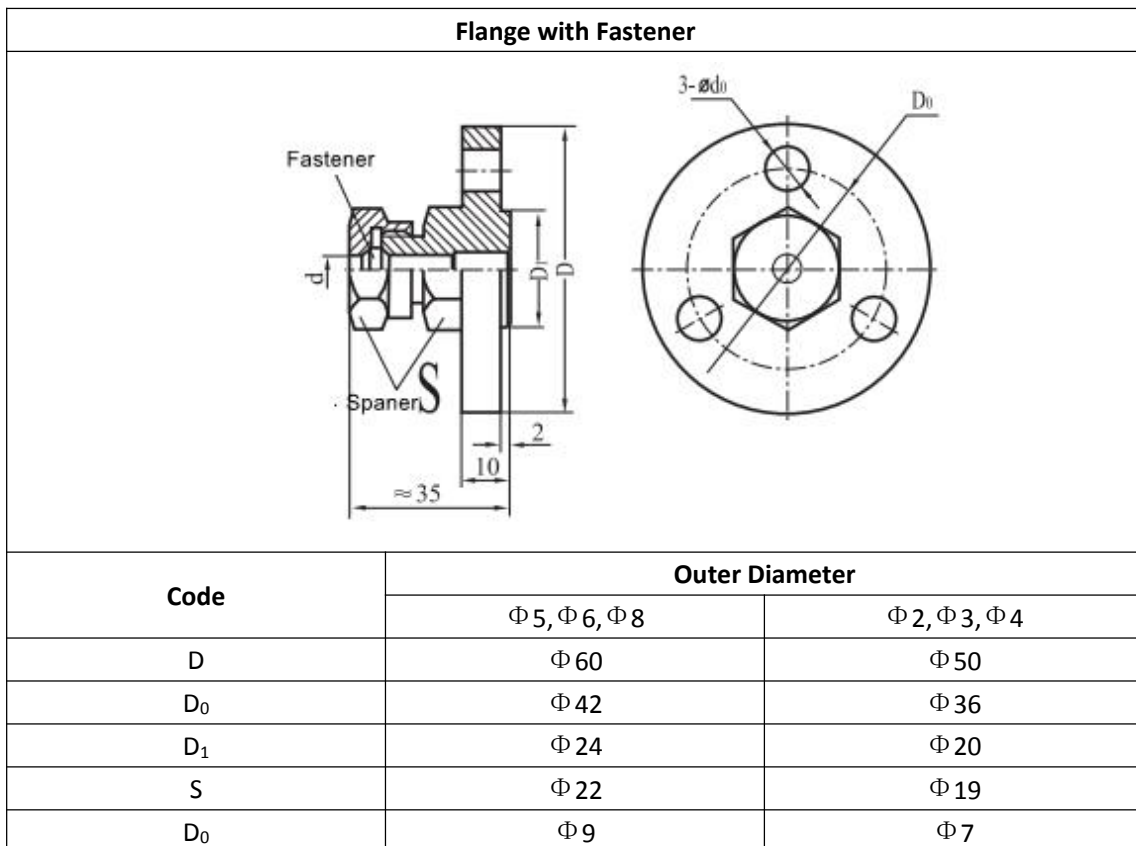
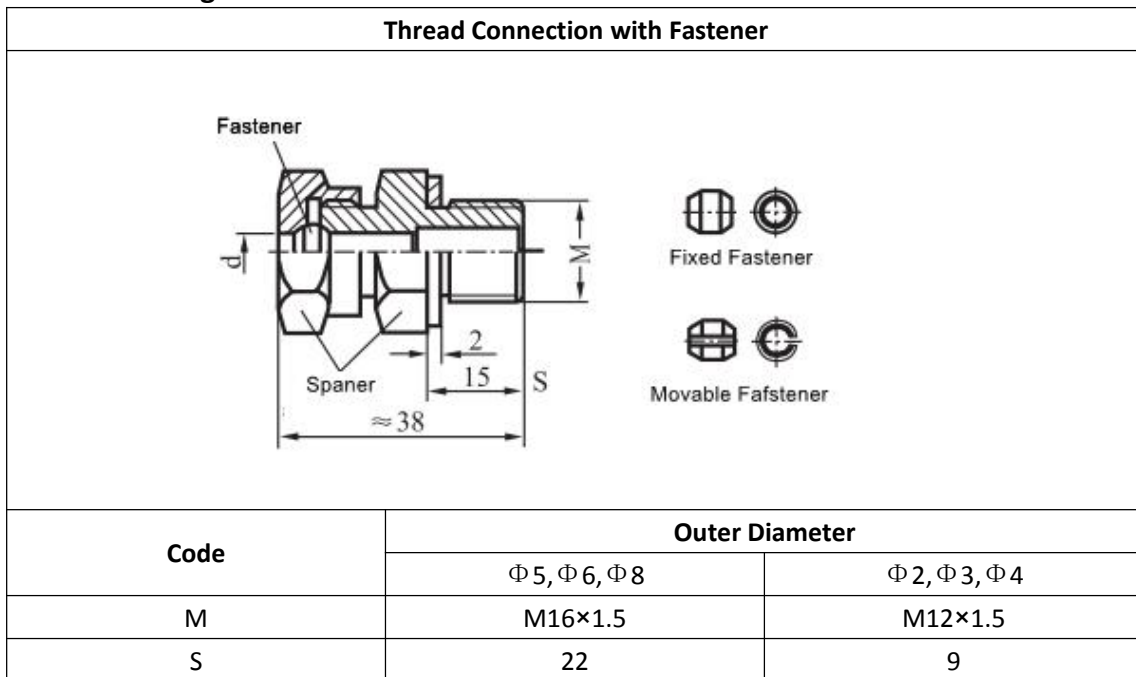
Insulation Resistance at Normal Temperature

The insulation resistance between electrode and protection tube is no less than $1000\text{M}\Omega \cdot \text{m}$ when environment temperature is $20 \pm 15^{\circ}\text{C}$, relative humidity is no more than 80% and test voltage is $500 \pm 50\text{V(DC)}$.

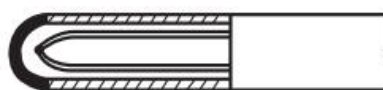
Diameter and Material of Thermocouple Wire

Thermocouple Type		Simplex	Duplex
Tube Diameter		$\Phi 2, \Phi 3, \Phi 4, \Phi 5, \Phi 6, \Phi$	$\Phi 3, \Phi 4, \Phi 5, \Phi 6, \Phi 8$
Tube Material	E, J, T	ICr18Ni9Ti	
	K, N	ICr18Ni9Ti / GH3030	
	S	GH3039	

Installation Figure

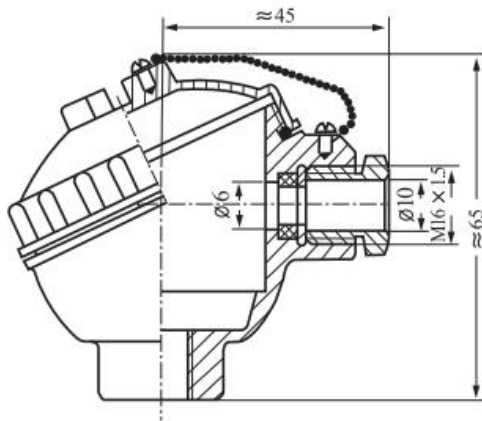


Measuring Tip Structure

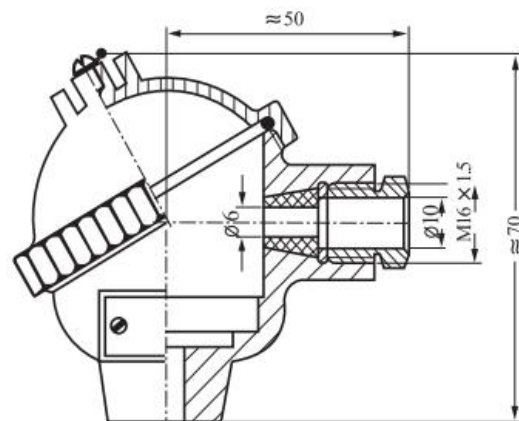


Insulation Type

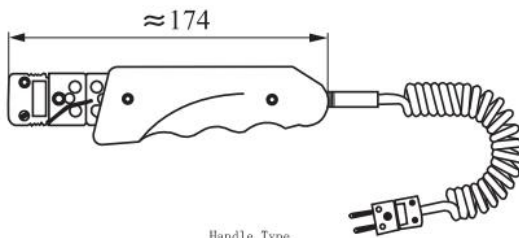
Junction Box



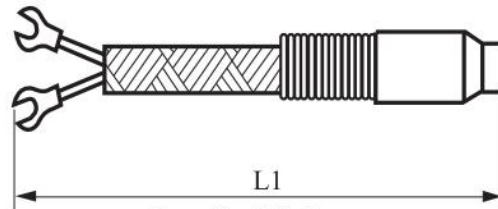
Anti-spray Type



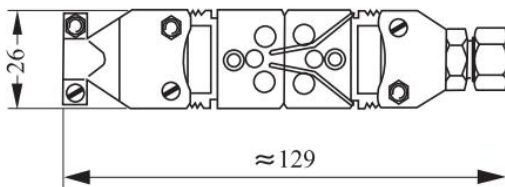
Water-proof Type



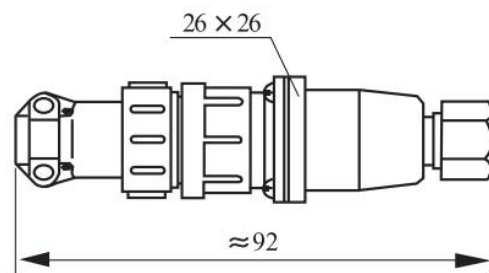
Handle Type



Compensational Wire Type



Flat Plug Type

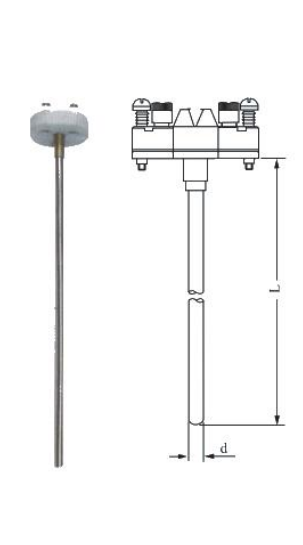


Round Plug Type

Recommend Operation Temperature

Category	Tube Material	Outer Diameter (mm)	Operation Temperature (°C)	
			Long Term	Short Term
NiCr-NiSi	1Cr18Ni9Ti	2.0	600	700
		3.0,4.0,5.0,6.0,8.0	800	900
	GH3030	2.0,3.0	800	900
		4.0,5.0 6.0,8.0	900 1000	1000 1100
NiCrSi-NiSi	1Cr18Ni9Ti	2.0	600	700
		3.0,4.0,5.0,6.0,8.0	800	900
	GH3030	2.0,3.0	900	1000
		4.0,5.0	1000	1100
		6.0,8.0	1100	1200
	GH3039	2.0,3.0,4.0	1000	1100
5.0,6.0,8.0		1100	1200	
NiCr-CuNi	1Cr18Ni9Ti	2.0	500	600
		3.0,4.0,5.0	600	700
		6.0,8.0	700	800
Fe-CuNi	1Cr18Ni9Ti	2.0	400	500
		2.0,3.0,4.0,5.0	500	600
		6.0,8.0	600	750
Cu-CuNi	1Cr18Ni9Ti	2.0,3.0,4.0,5.0	250	300
		6.0,8.0	300	350
PtRh10-Pt	GH3039	2.0,3.0,4.0	1000	1100
		5.0,6.0,8.0	1100	1200

Sensing Cell

	Description	Model	Graduation	Measuring Range (°C)	Dimension		
					d	L	
	NiCrSi-NiSi	CMWRM-101	N	0~1000	Φ3	310	
	NiCr-NiSi	CMWRN-101	K			360	
	NiCr-CuNi	CMWRE-101	E	0~800	Φ4	60	
	Cu-CuSi	CMWRC-101	T		0~350	Φ5	510
						Φ6	560
	Fe-CuNi	CMWRF-101	J	0~600	Φ8	660	
						910	
						1160	

Ordering Code

CMW R K -

1=insulation type ; 2=shell-connecting type

- 2=anti-spray type
- 3=water-proof type
- 4=explosion-proof type
- 6=round plug type
- 7=flat plug type
- 8=handle type
- 9=compensational wire type

- 1=without fixing device
- 2= thread with fixed fastener
- 3=thread with movable fastener
- 4=flange with fixed fastener
- 5=flange with movable fastener

Blank=simplex ; 2=duplex

Amoured Thermocouple

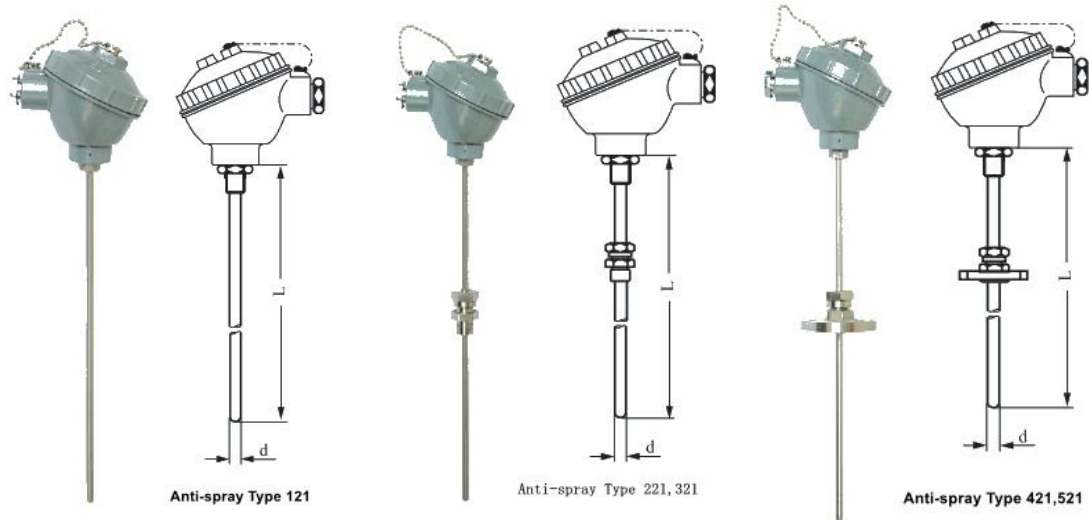
Sensing Cell Material:

- P=PtRh₁₀-Pt
- M=NiCrSi-NiSi
- N=NiCr-NiSi
- E=NiCr-CuNi
- C=Cu-CuNi
- F=Fe-CuNi

Thermocouple

Temperature Instrument

Models of Spray-proof Type



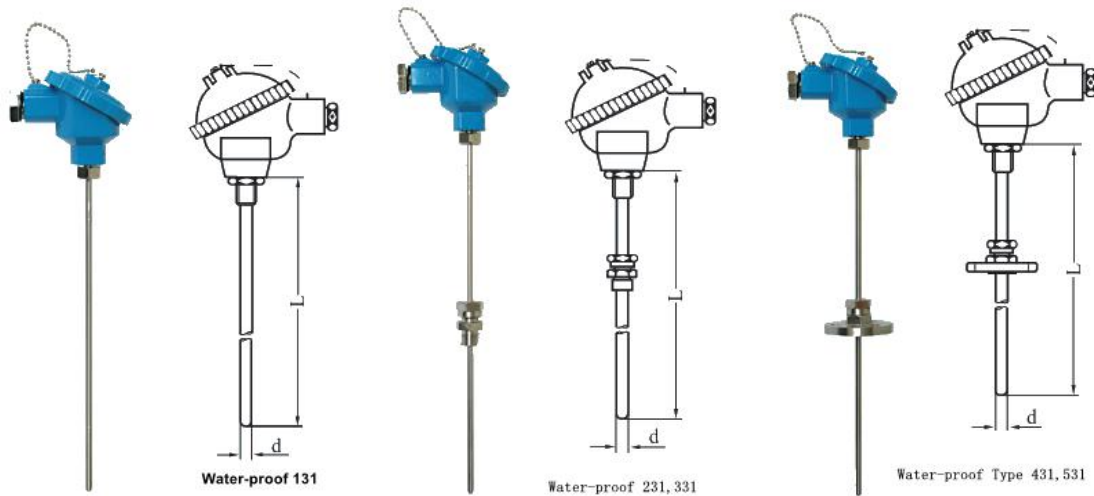
Model	Graduation	Measuring Range (°C)	Protection Tube Material	Mounting & Fixing
CMWRPK-121	S	0~1300	GH3039	without fixing device
CMWRMK-121	N	0~1100	GH3030	
CMWRMK ₂ -121		0~800	1Cr18Ni9Ti	
CMWRNK-121	K	0~1100	GH3030	
CMWRNK ₂ -121		0~800	1Cr18Ni9Ti	
CMWREK-121	E	0~600	1Cr18Ni9Ti	
CMWRCK-121	T	0~350		
CMWRFK-121	J	0~500		
CMWRPK-221	S	0~1300	GH3039	thread with fixed fastener
CMWRMK-221	N	0~1100	GH3030	
CMWRMK ₂ -221		0~800	1Cr18Ni9Ti	
CMWRNK-221	K	0~1100	GH3030	
CMWRNK ₂ -221		0~800	1Cr18Ni9Ti	
CMWREK-221	E	0~600	1Cr18Ni9Ti	
CMWRCK-221	T	0~350		
CMWRFK-221	J	0~500		
CMWRPK-321	S	0~1300	GH3039	thread with movable fastener
CMWRMK-321	N	0~1100	GH3030	
CMWRMK ₂ -321		0~800	1Cr18Ni9Ti	
CMWRNK-321	K	0~1100	GH3030	
CMWRNK ₂ -321		0~800	1Cr18Ni9Ti	
CMWREK-321	E	0~600	1Cr18Ni9Ti	
CMWRCK-321	T	0~350		
CMWRFK-321	J	0~500		



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CMWRPK-421	S	0~1300	GH3039	flange with fixed fastener
CMWRMK-421	N	0~1100	GH3030	
CMWRMK ₂ -421		0~800	1Cr18Ni9Ti	
CMWRNK-421	K	0~1100	GH3030	
CMWRNK ₂ -421		0~800	1Cr18Ni9Ti	
CMWREK-421	E	0~600	1Cr18Ni9Ti	
CMWRCK-421	T	0~350		
CMWRFK-421	J	0~500		
CMWRPK-521	S	0~1300	GH3039	flange with movable fastener
CMWRMK-521	N	0~1100	GH3030	
CMWRMK ₂ -521		0~800	1Cr18Ni9Ti	
CMWRNK-521	K	0~1100	GH3030	
CMWRNK ₂ -521		0~800	1Cr18Ni9Ti	
CMWREK-521	E	0~600	1Cr18Ni9Ti	
CMWRCK-521	T	0~350		
CMWRFK-521	J	0~500		

Models of Water-proof Type



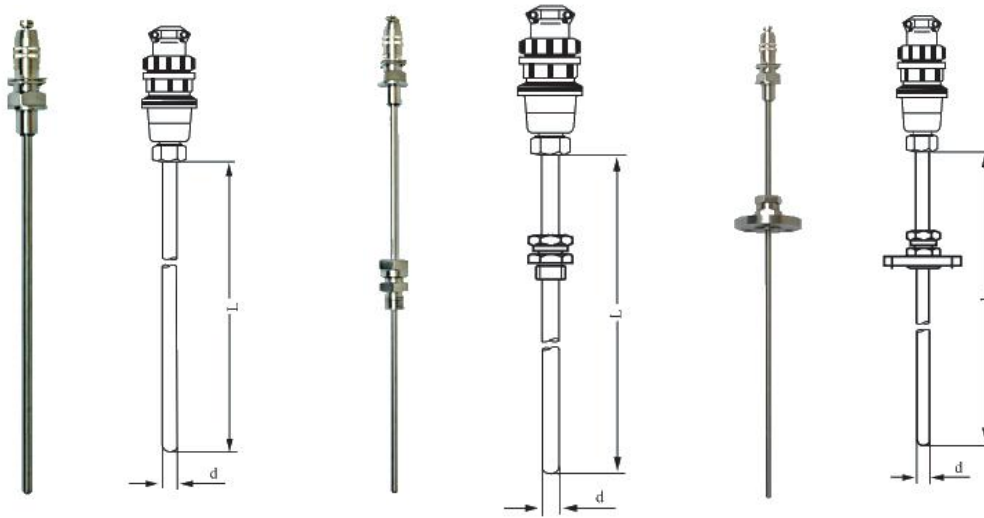
Model	Graduation	Measuring Range (°C)	Protection Tube Material	Mounting & Fixing
CMWRPK-131	S	0~1300	GH3039	without fixing device
CMWRMK-131	N	0~1100	GH3030	
		0~800	1Cr18Ni9Ti	
CMWRNK-131	K	0~1100	GH3030	
		0~800	1Cr18Ni9Ti	
CMWREK-131	E	0~600	1Cr18Ni9Ti	
CMWRCK-131	T	0~350		
CMWRFK-131	J	0~500		
CMWRPK-231	S	0~1300	GH3039	thread with fixed fastener
CMWRMK-231	N	0~1100	GH3030	
		0~800	1Cr18Ni9Ti	
CMWRNK-231	K	0~1100	GH3030	
		0~800	1Cr18Ni9Ti	
CMWREK-231	E	0~600	1Cr18Ni9Ti	
CMWRCK-231	T	0~350		
CMWRFK-231	J	0~500		
CMWRPK-321	S	0~1300	GH3039	thread with movable fastener
CMWRMK-331	N	0~1100	GH3030	
		0~800	1Cr18Ni9Ti	
CMWRNK-331	K	0~1100	GH3030	
		0~800	1Cr18Ni9Ti	
CMWREK-331	E	0~600	1Cr18Ni9Ti	
CMWRCK-331	T	0~350		
CMWRFK-331	J	0~500		
CMWRPK-431	S	0~1300	GH3039	flange with fixed fastener



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CMWRMK-431	N	0~1100	GH3030		
		0~800	1Cr18Ni9Ti		
CMWRNK-431	K	0~1100	GH3030		
		0~800	1Cr18Ni9Ti		
CMWREK-431	E	0~600	1Cr18Ni9Ti		
CMWRCK-431	T	0~350			
CMWRFK-431	J	0~500			
CMWRPK-531	S	0~1300	GH3039		flange with movable fastener
CMWRMK-531	N	0~1100	GH3030		
		0~800	1Cr18Ni9Ti		
CMWRNK-531	K	0~1100	GH3030		
		0~800	1Cr18Ni9Ti		
CMWREK-531	E	0~600	1Cr18Ni9Ti		
CMWRCK-531	T	0~350			
CMWRFK-531	J	0~500			

Models of Round Plug Type



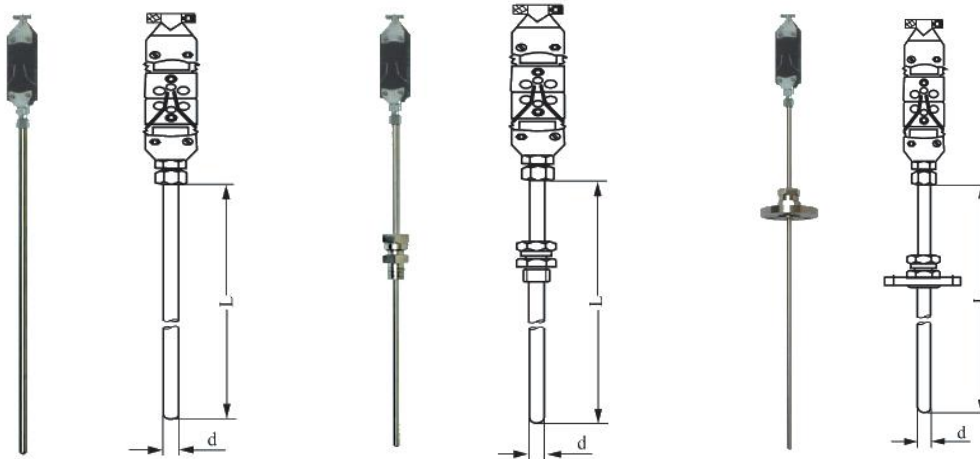
Model	Graduation	Measuring Range (°C)	Protection Tube Material	Mounting & Fixing
CMWRPK-161	S	0~1300	GH3039	without fixing device
CMWRMK-161	N	0~1100	GH3030	
			1Cr18Ni9Ti	
CMWRNK-161	K		GH3030	
			1Cr18Ni9Ti	
CMWREK-161	E	0~600	1Cr18Ni9Ti	
CMWRCK-161	T	0~350		
CMWRFK-161	J	0~500		
CMWRPK-261	S	0~1300	GH3039	thread with fixed fastener
CMWRMK-261	N	0~1100	GH3030	
			1Cr18Ni9Ti	
CMWRNK-261	K		GH3030	
			1Cr18Ni9Ti	
CMWREK-261	E	0~600	1Cr18Ni9Ti	
CMWRCK-261	T	0~350		
CMWRFK-261	J	0~500		
CMWRPK-361	S	0~1300	GH3039	thread with movable fastener
CMWRMK-361	N	0~1100	GH3030	
			1Cr18Ni9Ti	
CMWRNK-361	K		GH3030	
			1Cr18Ni9Ti	
CMWREK-361	E	0~600	1Cr18Ni9Ti	
CMWRCK-361	T	0~350		
CMWRFK-361	J	0~500		
CMWRPK-461	S	0~1300	GH3039	flange with fixed fastener



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CMWRMK-461	N	0~1100	GH3030	
			1Cr18Ni9Ti	
CMWRNK-461	K	GH3030		
		1Cr18Ni9Ti		
CMWREK-461	E	0~600	1Cr18Ni9Ti	
CMWRCK-461	T	0~350		
CMWRFK-461	J	0~500		
CMWRPK-561	S	0~1300	GH3039	
CMWRMK-561	N	0~1100	GH3030	
			1Cr18Ni9Ti	
CMWRNK-561	K	GH3030		
		1Cr18Ni9Ti		
CMWREK-561	E	0~600	1Cr18Ni9Ti	
CMWRCK-561	T	0~350		
CMWRFK-561	J	0~500		

Models of Flat Plug Type



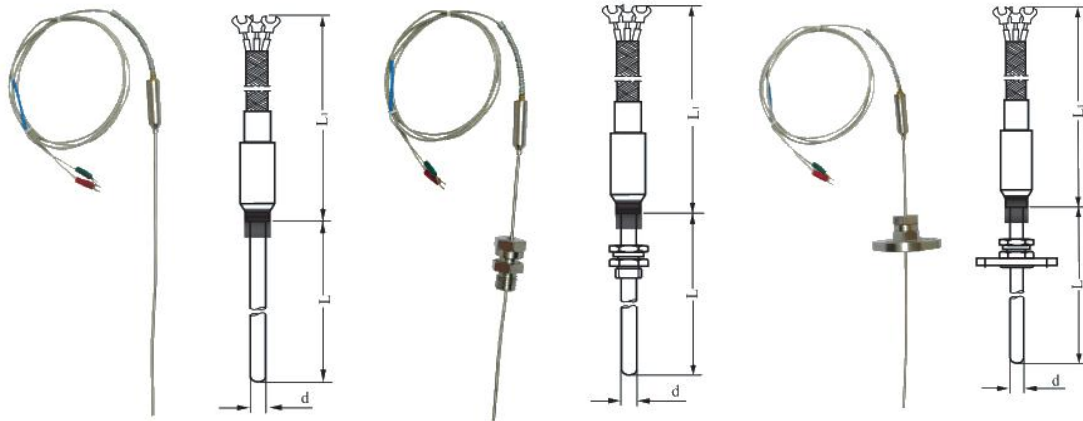
Model	Graduation	Measuring Range (°C)	Protection Tube Material	Mounting & Fixing
CMWRPK-171	S	0~1300	GH3039	without fixing device
CMWRMK-171	N	0~1100	GH3030	
			1Cr18Ni9Ti	
CMWRNK-171	K		GH3030	
			1Cr18Ni9Ti	
CMWREK-171	E	0~600	1Cr18Ni9Ti	
CMWRCK-171	T	0~350		
CMWRFK-171	J	0~500		
CMWRPK-271	S	0~1300	GH3039	thread with fixed fastener
CMWRMK-271	N	0~1100	GH3030	
			1Cr18Ni9Ti	
CMWRNK-271	K		GH3030	
			1Cr18Ni9Ti	
CMWREK-271	E	0~600	1Cr18Ni9Ti	
CMWRCK-271	T	0~350		
CMWRFK-271	J	0~500		
CMWRPK-371	S	0~1300	GH3039	thread with movable fastener
CMWRMK-371	N	0~1100	GH3030	
			1Cr18Ni9Ti	
CMWRNK-371	K		GH3030	
			1Cr18Ni9Ti	
CMWREK-371	E	0~600	1Cr18Ni9Ti	
CMWRCK-371	T	0~350		
CMWRFK-371	J	0~500		
CMWRPK-471	S	0~1300	GH3039	flange with fixed fastener
CMWRMK-471	N	0~1100	GH3030	



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			1Cr18Ni9Ti	
CMWRNK-471	K		GH3030	
			1Cr18Ni9Ti	
CMWREK-471	E	0~600	1Cr18Ni9Ti	flange with movable fastener
CMWRCK-471	T	0~350		
CMWRFK-471	J	0~500		
CMWRPK-571	S	0~1300	GH3039	
CMWRMK-571	N	0~1100	GH3030	
			1Cr18Ni9Ti	
CMWRNK-571	K		GH3030	
			1Cr18Ni9Ti	
CMWREK-571	E	0~600	1Cr18Ni9Ti	
CMWRCK-571	T	0~350		
CMWRFK-571	J	0~500		

Models of Compensational Wire Type



Model	Graduation	Measuring Range (°C)	Length		Mounting & Fixing		
			L	L1			
CMWRPK-191	S	0~1300	100	500	without fixing device		
CMWRMK-191	N	0~1100					
CMWRNK-191	K						
CMWREK-191	E	0~600					
CMWRCK-191	T	0~350					
CMWRFK-191	J	0~500					
CMWRPK-291	S	0~1300			200	thread with fixed fastener	
CMWRMK-291	N	0~1100			300		
CMWRNK-291	K				400		
CMWREK-291	E	0~600			500		
CMWRCK-291	T	0~350			750		
CMWRFK-291	J	0~500			1000		
CMWRPK-391	S	0~1300			1500	3000	thread with movable fastener
CMWRMK-391	N	0~1100			2000		
CMWRNK-391	K				3000		
CMWREK-391	E	0~600			4000		
CMWRCK-391	T	0~350	5000				
CMWRFK-391	J	0~500	7500				
CMWRPK-491	S	0~1300	10000	25000	flange with fixed fastener		
CMWRMK-491	N	0~1100	15000				
CMWRNK-491	K		25000				
CMWREK-491	E	0~600					
CMWRCK-491	T	0~350					
CMWRFK-491	J	0~500					
CMWRPK-591	S	0~1300			flange with movable fastener		
CMWRMK-591	N	0~1100					
CMWRNK-591	K						



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CMWREK-591	E	0~600			
CMWRCK-591	T	0~350			
CMWRFK-591	J	0~500			