

R/S-TYPE

補償導線 R/S-TYPE / 热電対 でんつい

Thermocouple R-TYPE / S-TYPE

適用領域 / Product Application

R/S TYPE 热电偶因採用高純度 (99.9999%) 之鉑金以及高純度氧化鋁保護管及絕緣礙子所以能達到 $\pm 0.25\%$ 的高精度要求。此種熱電偶可在真空還元氧化氣體和金屬蒸氣中直接使用。安定性好，也適合於製作熱電偶表準件，但熱電動勢小，溫度誤差值主要來自於補償導線，所以 R/S Type 之補償導線皆採用 CMOCC-7N 精煉單晶無氧銅及精密級鎌銅。

R/S TYPE Thermocouple is made of high purity (99.9999%)platinum and protected by high purity aluminum tube, therefore, it's able to achieve high accuracy of $\pm 0.25\%$ requirement. Such thermocouple element has also high stability in vacuum, oxidizing gases, and metal vapors. Such type of thermocouple has a samll thermal EMF . Temperature error value is mainly from the bad compensation wire. Therefore, R/S TYPE of compensation wires are made of refined CMOCC-7N OFC and high quality constantan.



美規 - 補償導線等級
US Thermocouple Grade



日規 JIS C 1610-1981
Japanese



德規 DIN 43710
German



國際等級 IEC 584-3
International

技術資料 / TECHNICAL DATA

種類 Material	適用溫度 Temp Range	耐燃性 Flame Retardant	耐磨性 Friction Resist.	耐油性 Oil Resist.	耐酸鹼性 Chemical Resist.	耐濕性 Waterproof	可繞性 Flexibility
塑膠 PVC	-10 ~ 105C	Bad	Good	Bad	Fair	Good	Excellent
橡膠 EPR/HYP Rubber	-15 ~ 110C	Bad	Good	Good	Good	Good	Excellent
矽膠 Silicone	-60 ~ 200C	Good	Good	Excellent	Excellent	Excellent	Excellent
矽膠 Silicone Waker 750	-60 ~ 300C	Good	Good	Excellent	Excellent	Excellent	Excellent
鐵氟龍 Teflon FEP	-100 ~ 200C	Excellent	Excellent	Excellent	Excellent	Excellent	Good
鐵氟龍 Teflon PFA	-267 ~ 260C	Excellent	Excellent	Excellent	Excellent	Excellent	Good
KAPTON	-267 ~ 316C	Good	Good	Good	Good	Fair	Fair
玻璃纖維 Fiberglass	-100 ~ 500C	Excellent	Fair	Fair	Excellent	Bad	Fair
二氧化矽玻璃纖維 Fiberglass	-100 ~ 710C	Excellent	Fair	Fair	Excellent	Bad	Fair
耐高溫陶瓷纖維 Ceramic Fiber	-100 ~ 1200C	Excellent	Bad	Fair	Excellent	Bad	Fair

縮寫對照表 / ABBREVIATION GUIDE

絕緣體縮寫表			導體縮寫表		
中文	English	Abbreviation	中文	English	Abbreviation
塑膠	PVC	P	無氧銅	Oxygen-Free Copper	OFC
橡膠	EPR/HYP Rubber	R	銅鎳合金	Ni-Copper	Ni-Cu
矽膠	Silicone Rubber	S	鎳鉻合金	Nickel-Chromiun	Ni-Cr
鐵氟龍	Teflon FEP	T	鎳鋁合金	Nickel-Alumel	Ni-Al
鐵氟龍	Teflon PFA	T	鐵	Iron	Iron/Fe
KAPTON	KAPTON/Polymide	K	鍍錫銅	Tinned Copper	Tc
玻璃纖維	Fiberglass	G	不鏽鋼	Stainless Steel	SUS304
耐高溫陶瓷纖維	Ceramic Fiber	C			
雲母	Mica	M			

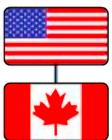
代號 Wire Code	規格 Specification	線徑 Dimension		絕緣材質 Insulation Material	導體材質 Conductor Material		環境溫度 Temp. Range	米 / 卷 Mt / Coils
		ID (mm)	OD (mm) H x L		正極 (+)	負極 (-)		
PP-RC-22S	0.3/4 x 2 (22 AWG)	1.45	2.60 x 3.80	PVC	OFC	Ni-Copper	0 ~ 105C	200
PP-RC-20S	0.3/7 x 2 (20 AWG)	1.50	2.60 x 3.80	PVC	OFC	Ni-Copper	0 ~ 105C	200
PP-RC-16S	0.6/4 x 2 (16 AWG)	2.45	4.40 x 6.70	PVC	OFC	Ni-Copper	0 ~ 105C	200
PP-RC-14S	0.6/7 x 2 (14 AWG)	3.00	4.55 x 7.65	PVC	OFC	Ni-Copper	0 ~ 105C	200
PSP-RC-14S	0.6/7 x 2 (14 AWG)	3.00	4.90 x 7.80	PVC-SUS304	OFC	Ni-Copper	0 ~ 105C	200
SPP-RC-14S	0.6/7 x 2 (14 AWG)	3.00	5.80 x 8.20	PVC-SUS304	OFC	Ni-Copper	0 ~ 105C	200
GG-RX-28	0.3 x 2 (28 AWG)	0.75	1.40 x 2.50	玻璃纖維 Fiberglass	OFC	Ni-Copper	0 ~ 200C	200
GG-RX-22	0.6 x 2 (22 AWG)	1.10	2.00 x 3.20	玻璃纖維 Fiberglass	OFC	Ni-Copper	0 ~ 200C	200
GG-RX-22S	0.3/4 x 2 (22 AWG)	1.20	2.05 x 3.30	玻璃纖維 Fiberglass	OFC	Ni-Copper	0 ~ 200C	200
GG-RX-20S	0.3/7 x 2 (20 AWG)	1.50	2.00 x 3.50	玻璃纖維 Fiberglass	OFC	Ni-Copper	0 ~ 200C	200
GG-RX-16S	0.6/4 x 2 (16 AWG)	2.15	2.90 x 4.60	玻璃纖維 Fiberglass	OFC	Ni-Copper	0 ~ 200C	200
GG-RX-14S	0.6/7 x 2 (14 AWG)	2.40	3.30 x 5.20	玻璃纖維 Fiberglass	OFC	Ni-Copper	0 ~ 200C	200
SGG-RX-24	0.5 x 2 (24 AWG)	1.00	1.65 x 2.85	玻璃纖維 - 不鏽鋼網 Fiberglass-SUS304	OFC	Ni-Copper	0 ~ 200C	200
SGG-RX-22	0.6 x 2 (22 AWG)	1.10	1.75 x 2.95	玻璃纖維 - 不鏽鋼網 Fiberglass-SUS305	OFC	Ni-Copper	0 ~ 200C	200
SGG-RX-22S	0.3/4 x 2 (22 AWG)	1.20	1.80 x 3.05	玻璃纖維 - 不鏽鋼網 Fiberglass-SUS306	OFC	Ni-Copper	0 ~ 200C	200
HH-R-36	0.127 x 2 (36 AWG)	0.50	0.95 x 1.45	二氧化矽玻璃纖維 Silica Fiber	OFC	Ni-Copper	0 ~ 710C	200
HH-R-33	0.254 x 2 (30 AWG)	0.65	1.10 x 1.55	二氧化矽玻璃纖維 Silica Fiber	OFC	Ni-Copper	0 ~ 710C	200
HH-R-24	0.5 x 2 (24 AWG)	1.00	1.20 x 1.90	二氧化矽玻璃纖維 Silica Fiber	OFC	Ni-Copper	0 ~ 710C	200
HH-R-22	0.6 x 2 (22 AWG)	1.10	1.70 x 2.70	二氧化矽玻璃纖維 Silica Fiber	OFC	Ni-Copper	0 ~ 710C	200
HH-R-20	0.8 x 2 (20 AWG)	1.30	1.75 x 2.75	二氧化矽玻璃纖維 Silica Fiber	OFC	Ni-Copper	0 ~ 710C	200
CC-R-24	0.5 x 2 (24 AWG)	1.00	1.20 x 1.90	陶瓷纖維 Ceramics Fiber	OFC	Ni-Copper	0 ~ 1200C	200
CC-R-20	0.8 x 2 (20 AWG)	1.30	1.75 x 2.75	陶瓷纖維 Ceramics Fiber	OFC	Ni-Copper	0 ~ 1200C	200
TT-RX-36	0.127 x 2 (36 AWG)	0.29	0.42 x 0.75	鐵氟龍 Teflon	OFC	Ni-Copper	0 ~ 200C	200
TT-RX-28	0.3 x 2 (28 AWG)	0.65	1.20 x 1.80	鐵氟龍 Teflon	OFC	Ni-Copper	0 ~ 200C	200
TT-RX-24	0.5 x 2 (24 AWG)	0.85	1.20 x 1.85	鐵氟龍 Teflon	OFC	Ni-Copper	1 ~ 200C	200
TT-RX-22	0.6 x 2 (22 AWG)	1.05	1.60 x 2.70	鐵氟龍 Teflon	OFC	Ni-Copper	0 ~ 200C	200
KK-R-24 KK-R-24S	0.5 x 2 (24 AWG) 0.2/7 x 2 (24 AWG)	1.00	1.20 x 2.20	KAPTON	OFC	Ni-Copper	0 ~ 400C	200

ANSI and IEC Color Codes

For Thermocouples, Wire and Connectors

補償導線國際色規 / 各国規格による補償導線カラーコード

All NIZING® Thermocouple Wire, Probes and Connectors are available with either ANSI or IEC Color Codes.



補 償 導 線

ANSI Code	Comments Environment- Bare Wire	Color Coding		International IEC 584-3	International IEC 584-3 Intrinsically Safe	CZECH British to BS 1843	Netherlands German to DIN 43710	Japanese to JIS C 1610- 1981	French to NFE-18801
		Thermocouple Grade	Extension Grade						
J	Reducing Vacuum, Inert. Limited Use in Oxidizing at High Temperatures. Not Recommended for Low Temperatures.								
K	Clean Oxidizing and Inert. Limited use in Vacuum or Reducing. Wide Temperature Range. Most Popular Calibration.								
V'	Alternative to KX Type Extension Wire for Low Temperature. Not Recommended for General Use.	None Established	None Established						
T	Mid Oxidizing, Reducing Vacuum or Insert. Good Where Moisture is Present Low Temperature and Cryogenic Applications.								
E	Oxidizing or Inert. Limited Use in Vacuum or Reducing Highest EMF Change Per Degree								
N	Alternative to Type K More stable at High Temperature						No Standard Use American Color Code		
R	Oxidizing or Inert. Do Not Insert in Metal Tubes. Beware of contamination. High Temperature	None Established							
S	Oxidizing or Inert. Do Not Insert in Metal Tubes. Beware of Contamination. High Temperature	None Established							
U'	Extension Guide Connecting Wire for R and S Thermocouples Also Known as RX and SX Extension Wire	None Established							
B	Oxidizing or Inert. Do Not Insert in Metal Tubes. Beware of Contamination. High Temperature. Common Use in Glass Industry.	None Established					No Color Standard		No Color Standard
G' (W)	Vacuum, Inert, Hydrogen. Beware of Embrittlement. Not Practical Below 399°C (750°F)Not for Oxidizing Atmosphere.	None Established					No Standard Use American Color Code		
C' (W5)	Vacuum, Inert, Hydrogen. Beware of Embrittlement. Not Practical Below 399°C (750°F)Not for Oxidizing Atmosphere.	None Established					No Standard Use American Color Code		
D' (W3)	Vacuum, Inert, Hydrogen. Beware of Embrittlement. Not Practical Below 399°C (750°F)Not for Oxidizing Atmosphere.	None Established					No Standard Use American Color Code		