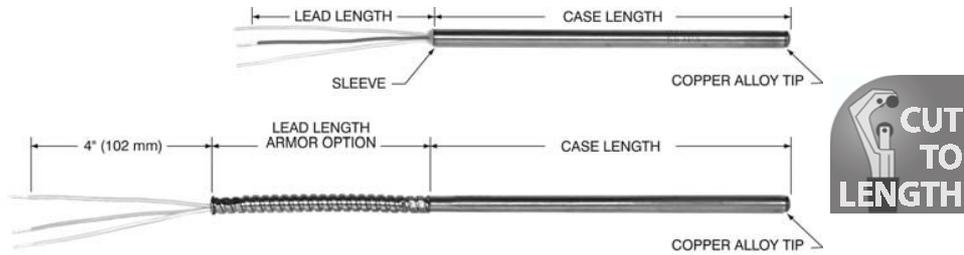


# Tip-sensitive RTDs & Thermocouples



## Overview

The probe sensing tip is constructed of copper alloy which is twenty times more conductive than stainless steel. The sensors react more quickly to changes and indicate tip temperature instead of stem temperature. The result is better accuracy in thermowells, bearings, and other installations. Minco recommends 0.250" diameter probes for use in thermowells.

- Copper alloy tip for fast response
- Accurate sensing to 260°C (500°F)
- Non-armor models can be user-shortened

## Specifications

### Temperature range:

**Thermocouple:** -184 to 260°C (-300 to 500°F).

**RTD:** -50 to 260°C (-58 to 500°F).

### Case:

Stainless steel with copper alloy tip.

### Minimum case length:

**Thermocouple:** 2.5" (63.5 mm).

**RTD:** • Single element probes: 2.8" (71.1 mm).  
• Dual element probes: 4.0" (101.6 mm).

### Maximum case length:

48" (1220 mm), longer on special order.

### Leads:

**Thermocouple:** Solid thermocouple wire, AWG 20 (except AWG 24 on model TC355). Specify PTFE insulation, stainless steel overbraid, or stainless steel armor.

**RTD:** 2, 3, or 4 leadwires, stranded copper with PTFE insulation. AWG 22, except 0.188" diameter dual probes AWG 24. For 2-lead RTDs add 0.03 Ω per foot (0.05 Ω per foot for 0.188" diameter dual probes) of combined case and lead length to element tolerance. Copper (CA, CC) models must have 3 leads.

### Time constant:

**Thermocouple:** Typical value in moving water:

- Grounded junction: 1.5 seconds.
- Ungrounded junction: 7 seconds.

### RTD:

- 2.0 seconds typical in moving water.
- 3.0 seconds for dual element models.

### Pressure rating:

100 psi (6.9 bar).

### Insulation resistance:

**Thermocouple:** 10 megohms minimum at 100 VDC, leads to case, ungrounded junctions only.

### RTD:

- Single element probes: 1000 megohms min. at 500 VDC, leads to case.
- Dual element probes: 100 megohms min. at 100 VDC, between elements and leads to case.

### Vibration:

Withstands 10 to 2000 Hz at 20 G's min. per MIL-STD-202, Method 204, Test Condition D.

### Shock:

Withstands 100 G's min. sine wave shock of 8 milliseconds duration.

### Model numbers: Thermocouples

	Model for probe diameter:		
	0.188" (4.8 mm)	0.215" (5.5 mm)	0.250" (6.4 mm)
Single junction	TC354	TC356	TC358
Dual junction	TC355	TC357	TC359

### Specification and order options: Thermocouples

TC356	Model number from table
T	<b>Junction type:</b> E = Chromel-Constantan J = Iron-Constantan K = Chromel-Alumel T = Copper-Constantan
G	<b>Junction grounding:</b> G = Grounded U = Ungrounded
200	<b>Case length:</b> Specify in 0.1" increments: Ex: 200 = 20.0 inches
S	<b>Covering over leadwires:</b> T = PTFE only G = Glass braid only S = Stainless steel overbraid A = Stainless steel armor
24	<b>Lead length in inches</b>
TC356TG200S24 = Sample part number	

### Specify and order products at:

[www.minco.com/sensors\\_config](http://www.minco.com/sensors_config)

*Specifications subject to change*



### Model numbers: RTD's

Element	Model for probe diameter:		
	0.188" (4.8 mm)	0.215" (5.5 mm)	0.250" (6.4 mm)
<b>Single element RTDs: No armor over leads</b>			
Platinum (0.00392 TCR) 100 Ω ±0.5% at 0°C	S54PA	S51PA	S53PA
Platinum (0.00385 TCR) 100 Ω ±0.06% at 0°C (Meets EN60751, Class A)	S554PM	S551PM	S553PM
Platinum (0.00385 TCR) 100 Ω ±0.1% at 0°C (Meets EN60751, Class B)	S854PD	S851PD	S853PD
Platinum (0.00385 TCR) 100 Ω ±0.5% at 0°C	S884PE	S881PE	S883PE
Copper (0.00427 TCR) 10 Ω ±0.2% at 25°C	S54CA	S51CA	S53CA
Nickel (0.00672) 120 Ω ±0.5% at 0°C	S54NA	S51NA	S53NA
<b>Single element RTDs: With armor over leads</b>			
Add element code (Ex: S154__=S154NA)	S154__	S151__	S153__
<b>Dual element RTDs: No armor over leads</b>			
Platinum (0.00392 TCR) 100 Ω ±0.5% at 0°C	S59PA	S56PA	S57PA
Platinum (0.00385 TCR) 100 Ω ±0.06% at 0°C (Meets EN60751, Class A)	S559PM	S556PM	S557PM
Platinum (0.00385 TCR) 100 Ω ±0.1% at 0°C (Meets EN60751, Class B)	S859PD	S856PD	S857PD
Platinum (0.00385 TCR) 100 Ω ±0.5% at 0°C	S889PE	S886PE	S887PE
Copper (0.00427 TCR) 10 Ω ±0.5% at 25°C		S56CC	S57CC
Nickel (0.00672) 120 Ω ±0.5% at 0°C	S59NA	S56NA	S57NA
<b>Dual element RTDs: With armor over leads</b>			
Add element code (Ex: S159__=S159NA)	S159__	S156__	S157__

### Specification and order options: RTD's

S56NA	Model number from table
125	Case length: Specify in 0.1" increments (Ex: 125 = 12.5 inches)
Y	# of leads per sensing element: Y = 2 leads Z = 3 leads X = 4 leads (PD only)
36	Lead length in inches
S56NA125Y36 = Sample part number	

### STOCKED PARTS

Case Diameter	Sensing Element	Case Material	# of Lead-wires	Lead Length	Lead Covering	Case Length	Stock Part #
0.188" (4.8mm)	CA	Stainless Steel with Copper Alloy Tip	3	36"	PTFE Insulated Leads	12.0"	S54CA120Z36
						18.0"	S54CA180Z36
						24.0"	S54CA240Z36
						12.0"	S54NA120Z36
						18.0"	S54NA180Z36
						24.0"	S54NA240Z36
	NA	Stainless Steel with Copper Alloy Tip	3	36"	PTFE Insulated Leads	12.0"	S54PA120Z36
						18.0"	S54PA180Z36
						24.0"	S54PA240Z36
						12.0"	S854PD120Z36
						18.0"	S854PD180Z36
						24.0"	S854PD240Z36
0.215" (5.5mm)	CA	Stainless Steel with Copper Alloy Tip	3	36"	PTFE Insulated Leads	12.0"	S51CA120Z36
						18.0"	S51CA180Z36
						24.0"	S51CA240Z36
						12.0"	S51NA120Z36
						18.0"	S51NA180Z36
						24.0"	S51NA240Z36
	NA	Stainless Steel with Copper Alloy Tip	3	36"	PTFE Insulated Leads	12.0"	S51PA120Z36
						18.0"	S51PA180Z36
						24.0"	S51PA240Z36
						12.0"	S851PD120Z36
						18.0"	S851PD180Z36
						24.0"	S851PD240Z36
0.250" (6.4mm)	CA	Stainless Steel with Copper Alloy Tip	3	36"	PTFE Insulated Leads	12.0"	S53CA120Z36
						18.0"	S53CA180Z36
						24.0"	S53CA240Z36
						12.0"	S53NA120Z36
						18.0"	S53NA180Z36
						24.0"	S53NA240Z36
	NA	Stainless Steel with Copper Alloy Tip	3	36"	PTFE Insulated Leads	12.0"	S53PA120Z36
						18.0"	S53PA180Z36
						24.0"	S53PA240Z36
						12.0"	S853PD120Z36
						18.0"	S853PD180Z36
						24.0"	S853PD240Z36

Note: Available up to 10 pieces or contact Minco Customer Service

Specify and order products at: [www.minco.com/sensors\\_config](http://www.minco.com/sensors_config)

Specifications subject to change