

# General Purpose Thermocouple Temperature Sensors



These general purpose sensors can be used in most liquid and air applications. Compression fittings are also available for installation. These probes can be used as stand-alone sensors, or they can be configured with a variety of termination options, and combined with controllers, indicators, or precision thermometers to create complete measurement systems.

## Specification

Sensing Elements: K, J or T to IEC 60 584-2:1995

Accuracy : Class 1

Operating Temperature: from -200 to + 750°C  
selection dependant

Output: Thermocouple (mV)

Cable Type: Selection – PFA-PVC-Fibreglass

## Accessories



Enclosures



4/20mA Transmitters



Fittings



Connectors



Controllers



# Sensor Configuration/Assembly

## Termination Heads

### Type: 5333A



2-wire programmable transmitter  
**5333A**

- RTD or Ohm input
- High measurement accuracy
- 3-wire connection
- Programmable sensor error value
- For DIN form B sensor head mounting

### Type: 5333D



2-wire programmable transmitter  
**5333D**

- RTD or Ohm input
- High measurement accuracy
- 3-wire connection
- Programmable sensor error value
- For DIN form B sensor head mounting

### Type: 5331A3B



2-wire programmable transmitter  
**5331A**

- RTD, TC, Ohm, or mV input
- Extremely high measurement accuracy
- 1.5 kVAC galvanic isolation
- Programmable sensor error value
- For DIN form B sensor head mounting

### Type: 5331D



2-wire programmable transmitter  
**5331D**

- RTD, TC, Ohm, or mV input
- Extremely high measurement accuracy
- 1.5 kVAC galvanic isolation
- Programmable sensor error value
- For DIN form B sensor head mounting

### Type: 5337D



2-wire transmitter with HART protocol  
**5337A**

- RTD, TC, Ohm, and bipolar mV input
- 2 analog inputs and 5 device variables with status available
- HART protocol revision selectable from HART 5 or HART 7
- Hardware assessed for use in SIL applications
- Mounting in Safe area or Zone 2/22

### Type: 7501

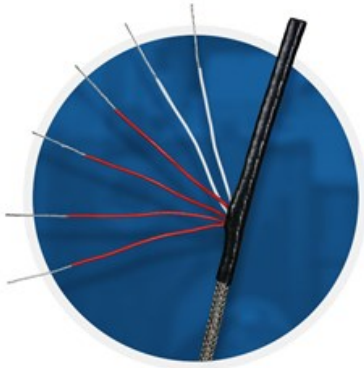


Field mounted HART temperature transmitter  
**7501**

- RTD, TC, Ohm, and bipolar mV input and analog output
- High definition local operator interface (LOI) with 3 optical buttons
- Selectable red or white backlight
- Ex d explosion proof / flame proof
- HART 7 functionality with HART 5 compatibility

**Full Transmitter Specification Can Be Viewed Via Transmitter Datasheet**

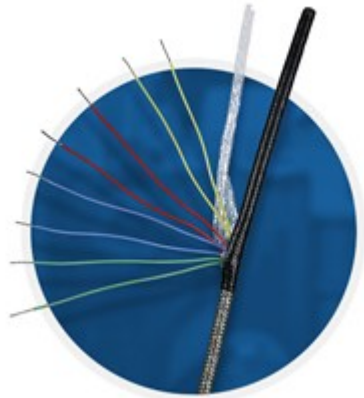
## Termination Heads



### **PVC**

-10C to 105C

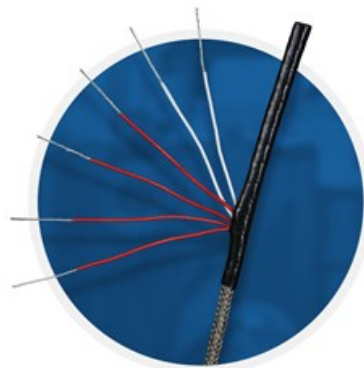
Good general purpose insulation for medium temperature environments. Waterproof and very flexible.



### **PTFE**

-260C to +260C

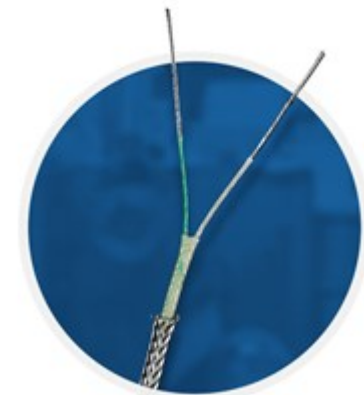
Resistant to oils, acids, other adverse agents and fluids. Good mechanical strength and flexibility.



### **Silicone Rubber**

-50 to +200

Offers excellent dielectric strength and flexibility. Operation over a wide temperature range and ease of silastic bonding are other outstanding characteristics of silicone rubber cable.



### **Glass fibre**

(Varnished)

-60C to 350C

Good temperature range but will not prevent ingress of fluids. Fairly flexible but does not provide good mechanical protection.



### **Stainless Steel Flexible Conduit**

withstands high temperatures

- Durable crush-proof construction
- Corrosion and rust resistant

# Color Codes for Thermocouples

International IEC 584-3	International IEC 584-3 Intrinsically Safe	USA Canada ANSI	Czech British BS 1843	German Netherlands DIN 43710	Japanese JIS C 1610-1981	French NFC 42-324	Type	Comments Environment - Bare Wire	Alloy Combination		Maximum Temperature Useful Range	EMF (mV) Over Max. Temperature Range	Limits of Error (Whichever is Greater)	
									+ Lead	- Lead			Standard	Special
							<b>K</b>	Clean Oxidising and Inert. Limited use in Vacuum or Reducing. Wide Temperature range most popular calibration	Nickel - Chromium Ni-Cr	Nickel-Aluminium Ni-Al (magnetic)	-200 to 1250°C Therm. Grade 0 to 200°C Ext. Grade	-6.458 to 54.886	<b>-200 to 1250°C</b> 2.2°C or 0.75% above 0°C 2.0% below 0°C 1.1°C or 0.4%	
							<b>J</b>	Reducing, Vacuum, Inert. Limited Use in Oxidising at high Temperatures not recommended for low Temperatures	± Fe (magnetic)	Copper-Nickel Cu-Ni	0 to 750°C Therm. Grade 0 to 200°C Ext. Grade	-8.095 to 69.553	<b>0 to 750°C</b> 2.2°C or 0.75% 1.1°C or 0.4%	
							<b>S</b>	Oxidising or Inert. Do not insert in metal tubes. Beware of Contamination. High Temperature	Platinum 10% Rhodium Pt-10% Rh	Platinum Pt	0 to 1450°C Therm. Grade 0 to 150°C Ext. Grade	-0.236 to 18.693	<b>0 to 1450°C</b> 1.5°C or 0.25% 0.6°C or 0.1%	
							<b>T</b>	Mild Oxidising, Reducing Vacuum or Inert. Good where moisture is present, low Temperature and cryogenic applications	Copper Cu	Copper-Nickel Cu-Ni	-200 to 350°C Therm. Grade -60 to 100°C Ext. Grade	-6.528 to 20.872	<b>-200 to 1250°C</b> 2.2°C or 0.75% above 0°C 2.0% below 0°C 0.5°C or 0.4%	
				No standard Use IEC 584-3 Color Codes			<b>N</b>	Alternative to Type K. More stable at high Temperatures	Omega-P Nicrosil Ni-Cr-Si	Omega-N Nisil Ni-Si-Mg	-270 to 1300°C Therm. Grade 0 to 200°C Ext. Grade	-4.345 to 47.513	<b>0 to 1450°C</b> 2.2°C or 0.75% above 0°C 2.0% below 0°C 1.1°C or 0.4%	
							<b>R</b>	Oxidising or Inert. Do not insert in metal tubes. Beware of contamination. High Temperature	Platinum 13% Rhodium Pt-13% Rh	Platinum Pt	0 to 1450°C Therm. Grade 0 to 150°C Ext. Grade	-0.226 to 21.101	<b>0 to 1450°C</b> 1.5°C or 0.25% 0.6°C or 0.1%	
							<b>E</b>	Oxidising or Inert. Limited use in Vacuum or Reducing. Highest EMF change per degree.	Chromega Nickel-Chromium Ni-Cr	Copper-Nickel Cu-Ni	-200 to 900°C Therm. Grade 0 to 200°C Ext. Grade	-9.835 to 76.373	<b>-200 to 900°C</b> 1.7°C or 0.5% above 0°C 1.0% below 0°C 1.0°C or 0.4%	
			No Standard. Use Copper Wire			No Standard. Use Copper Wire	<b>B</b>	Oxidising or Inert. Do not insert in metal tubes. Beware of contamination. High Temperature. Common use in glass industry.	Platinum 30% Rhodium Pt-30% Rh	Platinum 6% Rhodium Pt-6% Rh	0 to 1700°C Therm. Grade 0 to 100°C Ext. Grade	0 to 13.820	<b>0 to 1700°C</b> 0.5% above 800°C None established	