THERMOMETRICS
CORPORATION

Temperature Sensors

Thermocouples

MgO Insulated Sensors

RTD Assemblies

Food and Dairy Sensors

Pharmaceutical Sensors

Bearing Sensors

Thermowell Assemblies

Special Sensors

Themocouple Wire

Accessories

Instruments

1-866-RTDNTCS

18714 Parthenia St. Northridge, CA 91324

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www.thermometricscorp.com

www.pharmaceuticalsensors.com www.biomedtemperature.com www. autoclavesensors.com www.100ohm.com

Thermometrics Corporation has been a manufacturer of Thermocouples, RTD's and related accessories since 1965. Our company staff includes over 220 years of collective experience and is eager to meet any of our customer's challenges or requests. We are committed to providing outstanding service, competitive pricing and excellent lead times. We are quality audited to ISO-9001-2000 and have an excellent reputation both domestically and globally.

PRODUCTS AND SERVICES AVAILABLE

Thermocouple and RTD Sensors	Replacement Elements
Bearing Sensors	Thermistor Probes
Tube Skin Thermocouples	Multipoint Thermocouple and RTD Probes
Feed Thru's	Bimetal Dial Thermometers
Thermocouple Wire & Cable	Precision Wire Wound Resistors
RTD Leadwire	Thermowells and Protection Tubes
Waterproof Connectors	Custom Mounting Fittings

Calibration Services Include: Thermocouples, RTDs, Temperature Transmitters, Controllers and Indicators

INDUSTRIES SERVED

Oil, Gas & Petrochemical	Waste Water
Pharmaceutical	Compost
Paper & Pulp	Military
Mining	Dairy
Utilities	Power Generation
Marine	Refrigeration

REGISTERED COMPANY ISO 9001: 2000

SBA U.S. Small Business Administration

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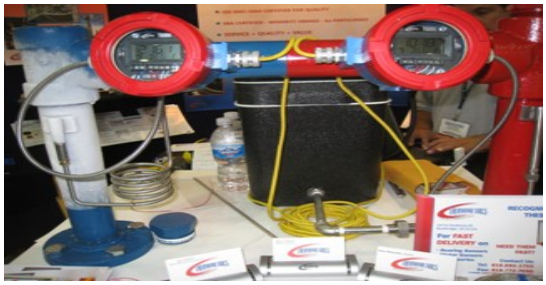
TABLE OF CONTENTS

Quick Order Guide



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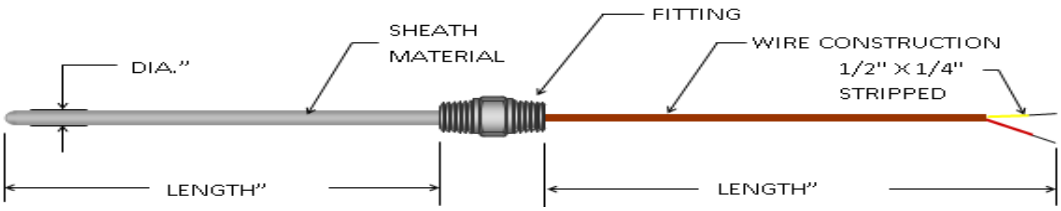

Assemblies offer a wide variety of configurations and termination styles to meet various applications.

Material

- 304 Stainless Steel
- 310 Stainless Steel
- 316 Stainless Steel
- INC. Alloy 600

**Special Material Available*

Diameter

- 0.010” (single TC)
- 0.020” (single TC)
- 0.032” (TC only)
- 0.040” (TC only)
- 0.063”
- 0.125”
- 0.188”
- 0.250”
- 0.313”
- 0.375”
- 0.500”

Construction

- S=Single Thermocouple
- D=Dual Thermocouple
- S2=Single 2 wire RTD
- S3=Single 3 wire RTD
- S4=Single 4 wire RTD
- D2=Dual 2 wire RTD
- D3=Dual 3 wire RTD
- D4=Dual 4 wire RTD
- MP=Multi-Point

Sensor

- B
- C
- E
- J
- K
- N
- R
- S
- T
- 10A– 10Ω copper @ 0°C
- 10B- 10Ω copper @ 25°C
- 100- 100Ω platinum @ 0°C
- 120- 10Ω nickel @ 0°C
- 500-500Ω platinum @ 0°C
- 1000-1000Ω platinum @ 0°C
- TH– Thermistor

Junction/Alpha

- G
- GWP
- GPT
- U
- UWP
- UPT
- E
- 385 PLT
- 390 PLT
- 392 PLT
- 421 CU
- 673 NI

Material

304 S.S. -Most commonly used low temperature sheath material. Good corrosion resistance. Subject to damaging carbide precipitation in the 900ºF to 1600ºF range. Max Temp. 1650°F

310 S.S. Mechanical and corrosion resistance similar to but better than 304 S.S. Very good heat resistance. This alloy contains 25% Cr, 20% Ni. Not as ductile as 304 S.S. Max Temp 2100°F

316 S.S.- Best corrosion resistance of the austenetic stainless steel grades. Good corrosion resistance in Hydrogen Sulfide. Subject to damaging carbide precipitation in the 900ºF to 1600ºF range. Max Temp. 1650°F

Other Available Materials

316L	ALUMINUM
347	TANTALUM
446	MONEL 400
INC-625	MOLYBDENUM
COPPER	HASTELLOY B-2
TITANIUM	HASTELLOY C-276

Junction

G – Grounded

Grounded Junction– The sheath and conductors are welded together forming a sealed integral junction. Recommended in Liquids, Gas, Moisture, or High Pressure. Response time approaches that of an exposed junction.

U – Ungrounded

Ungrounded Junction– Junction is fully insulated from welded sheath end. Electrically isolates junction from outer sheath. Response time is lights longer than grounded junction.

E – Exposed

Exposed Junction– Thermocouple conductors are butt welded. Insulation is sealed for moisture protection . This design provides the fastest response time but leaves the junction unprotected from corrosive or mechanical damage.

PT - Pointed Tip

Pointed tip– Is available for piercing probe applications.

WP - Welded Pad

Weld Pad- 300 series stainless steel 1” x 1” x 1/8” is available in grounded (GWP) and ungrounded (UWP) configurations. Weld pad can be parallel, perpendicular or curved per your specification.

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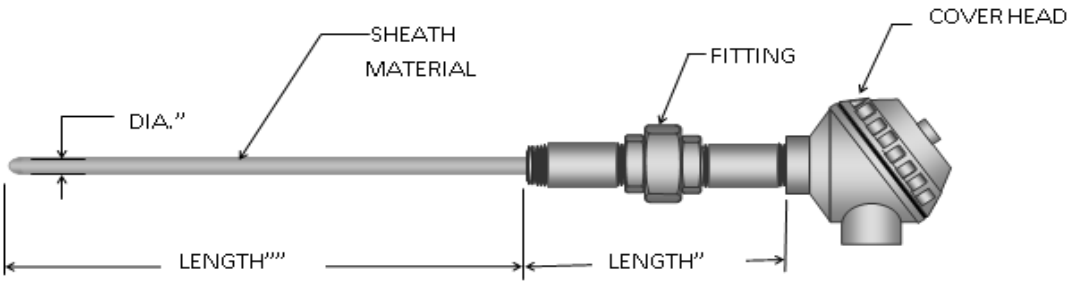

Immersion Length

Length In Inches

**Tip to first fixed obstruction*

Lead Style

- L1
- L2
- TL2
- L3
- TL3
- L4
- TL4
- L5
- TL5
- TLCC
- *add "S" for strain relief spring.

Lead Length

Lead Length in Inches.

Covering

- SS
- FA
- TFA
- PFA
- 0= None

Termination

- P
- J
- MP
- MJ
- ASCH
- SSCH
- EXH
- PH
- MPH
- MAH
- SL
- BW

Fittings

- 1/8"
- 1/4"
- 3/8"
- 1/2"
- 3/4"
- 1"
- 1/8" x 1/8"
- 1/4" x 1/4'
- 3/8" x 3/8"
- 1/2" x 1/2"
- 3/4' x 3/4"
- 1" x 1"
- S=Sanitary

Lead Styles:

L1 = Wires Exposed

L2 = PVC Insulated Lead Wire. Rated 105ºC, Epoxy Potted

L3 = Teflon Insulated Lead Wire. Rated 204ºC, Epoxy Potted

L4 = Fiberglass Insulated Lead Wire. Rated 204ºC, Epoxy Potted

L5 = Fiberglass Insulated Lead Wire. Rated 510ºC, Ceramic Cement

**For transition housing, add "T" to the order code. Ex. "TL2".*

**For spring strain relief spring, ass "S" to the order code. Ex."TL2S".*

Coverings:

SS=Stainless Steel Overbraid

TCTU=Tinned Copper Overbraid

FA*=Stainless Steel Flex Armor

TFA*=Teflon Coated Stainless Steel Flex Armor

PFA*=PVC Coated Stainless Steel Flex Armor

0=None

**Add length to armor code.*

Example; "PFA24"

Terminations

P=Male Plug * (MP = Mini Plug)

J=Female Jack* (MJ = Mini Jack)

ASCH=Aluminum Screw Cover Head

SCH=Stainless Steel Screw Cover Head

PH=Plastic Screw Cover Head

MPH=Mini Plastic Screw Cover Head

MAH=Mini Aluminum Screw Cover Head

EXH=Explosion Proof Head (USL, CSA)

HCH=Hinged Cover Head

HPH=High Profile Hinged Cover Head

SL=Spade Lugs (# 10 Screw Size)

BW=Bare Wire

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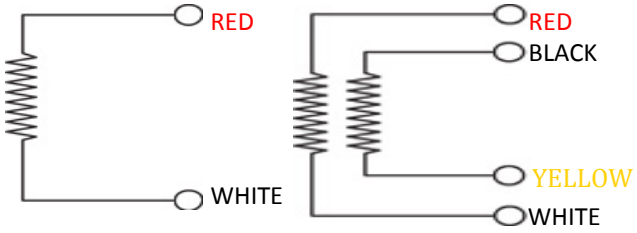
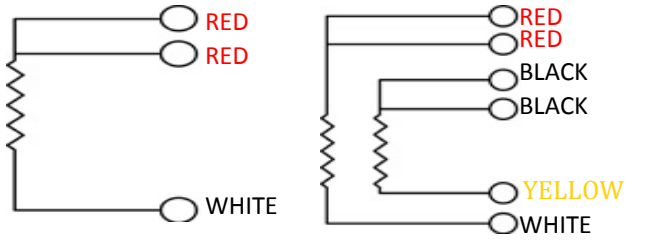
***Resistive Temperature Device (RTD)-** Are temperature sensors that contain a sensing element whose resistance changes with temperature. These sensors are often placed so they can be in a position in the process where it can reach the same temperature. Platinum wire or films RTDs are the most common type in use today. Platinum RTDs are used to measure temperatures from -400 °F to 1550 °F. Due to higher accuracy and repeatability RTDs are slowly replacing the use of thermocouples in many industrial applications below 1200°F.

Element Material	Base Resistance (ohms) Ω	TCR (Ohm/Ohm/C)	Base Resistance Tolerance +/-	TCR Tolerance
COPPER	10Ω @ 25C	.00427	0.2%	1%
COPPER	10Ω @ 25C	.00427	0.5%	1%
NICKEL	120Ω @ 0C	.00672	0.5%	1%
PLATINUM	100Ω @ 0C	.00385	0.6%	0.12%
PLATINUM	***100Ω @ 0C***	***.00385***	**0.12%**	**0.35%**
PLATINUM	100Ω @ 0C	.00385	0.5%	1%
PLATINUM	100Ω @ 0C	.00391	0.12%	0.35%
PLATINUM	100Ω @ 0C	.00391	0.5%	1%
PLATINUM	100Ω @ 0C	.00375	0.12%	0.35%
PLATINUM	100Ω @ 0C	.00392	0.5%	0.1%

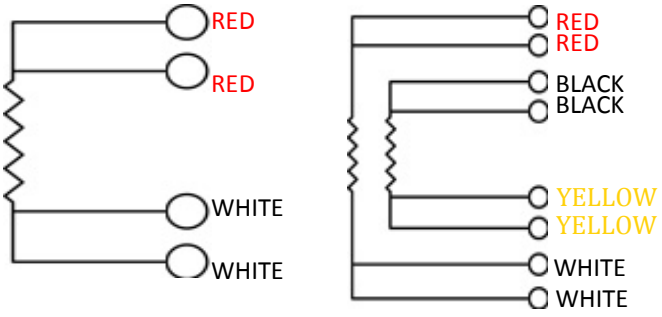
Two-Wire:
Provides one connection to each end of the element. This construction is suitable where the resistance of the lead wire may be considered as an additive constant in the circuit, and particularly where the changes in lead resistance due to ambient temperature changes may be ignored.



Three-Wire:
Provides one connection to one end of the element and two to the other end of the element. Connected to an instrument designed to accept three-wire input, sufficient compensation is usually achieved for leadwire resistance and temperature change in Leadwire resistance. This is the most commonly used configuration.



Four-Wire:
Provides two connections to each end of the element to completely compensate for leadwire resistance and temperature change in lead wire resistance. This configuration is used where highly accurate temperature measurement is vital.



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Thermocouples- Thermocouples consist of two electrical conductors made of different metals that are joined at one end. Changes in temperature at the measurement junction induce a change in electromotive force (emf) between the other ends. There are two groups, the base metal thermocouples J, K, T, E and N and the precious metal thermocouples R, S, C and B. Each type has a characteristic (emf) vs. temperature curve and application range. The EMF curve is very dependent on the composition of each conductor. Type J and K are the most widely used in industrial applications. Type J (iron vs. copper-nickel (Constantan)) is versatile in that it can be used in both oxidizing and reducing atmospheres up to 1,400°F. Iron rusts at low temperatures where condensation can form. Type K (nickel-chromium (Chromel) vs. nickel aluminum (Alumel) can be used up to 2,300°F in an oxidizing or inert atmosphere.

TYPE	MATERIAL	RANGE
B	Pt-30% Rh *vs.* Pt-6% Rh	- 32° **to** 3308°F 0° **to** 1820°C
C	Tungsten 5% Re *vs.* Tungsten 26% Re	-32° **to** 4208°F 0° **to** 2320°C
E	Ni-Cr alloy *vs.* a Cu-Ni alloy	-454° **to** 1832°F -270° **to** 1000°C
J	Fe *vs.* a Cu-Ni alloy	-346° **to** 2192°F -210° **to** 1200°C
K	Ni-Cr alloy *vs.* Ni-Al alloy	-454° **to** 2502°F -270° **to** 1372°C
N	Ni-Cr-Si alloy *vs.* Ni-Si-Mg alloy	-454° **to** 2372°F -270° **to** 1300°C
R	Pt-13% Rh *vs.* Pt.	-58° **to** 3214°F -50° **to** 1768°C
S	Pt-10% Rh *vs.*Pt	-58° **to** 3214°F -50° **to** 1768°C
T	Cu *vs.* a Cu-Ni alloy	-58° **to** 3214°F -270° **to** 400°C

Sensor Attributes

Criteria	Thermocouple	RTD
Range Measurement	-454°F to 4208°F -270°C to 2320°C	-400°F to 1472°F -240°C to 800°C
Accuracy	Medium	High
Response	Medium-High	High
Sensitivity (output)	Low	High
Repeatability	Poor-Fair	Excellent
Linearity	Fair	Good
Self Heating	No	Low
Tip (end) Sensitivity	Excellent	Fair
Lead Effect	High	Medium
Size/Packaging	Small-Large	Small-Medium

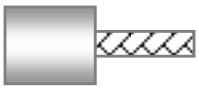
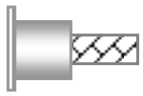
*Grounded vs. Ungrounded- A grounded junction places the junction in contact with the immediate case metal. In turn this allows for quicker response time. On the other hand, a tip that is grounded leaves it vulnerable to electromotive forces (EMF) in the environment, which potentially cause errors in the readings. An ungrounded junction is best suited when isolating the sensor is done and when response time is not a high priority.

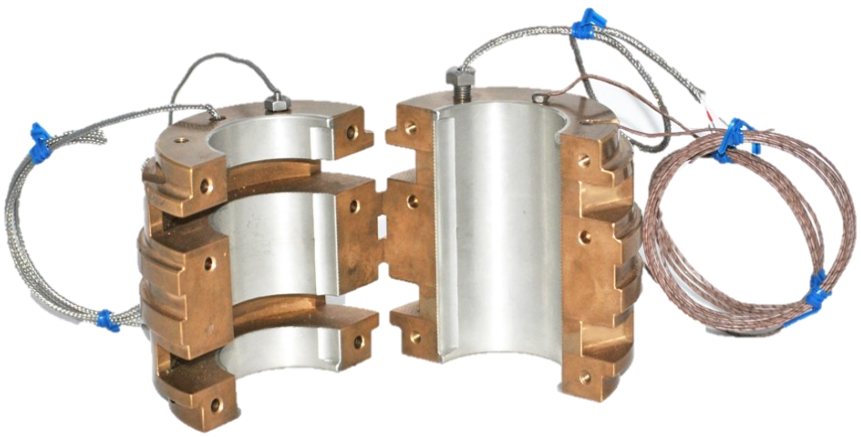
*Performance- Ensuring exceptional performance of the sensor requires it to be in good thermal contact with the process at hand. When using both a sensor and thermowell together, a suitable heat transfer compound is needed to fill the gap between the sensor and bore of the thermowell. This in turn will improve the transfer of heat between the process and the sensor.

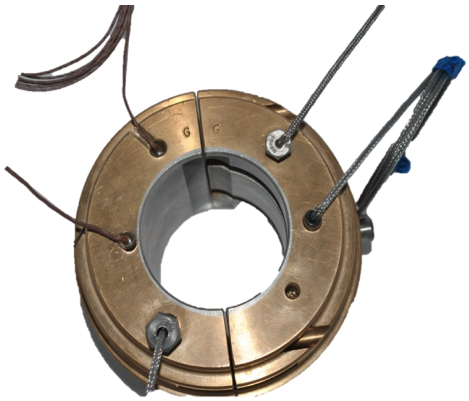
Embedment RTD's & Thermocouples

Applications: *Bearings, Babbitt Bearings, Shafts, Motor Windings, and Thrust Plates*

Thermometrics miniature temperature sensors used in rotating machinery are designed to measure the critical temperature of the bearing shoes operating in turbines, generators and other rotating equipment. Monitoring the bearing temperature of rotating equipment is very critical and can provide an early warning of the lubricating oil breaking down when it becomes too hot, allowing machine shutdown and necessary maintenance to take place.

Sensor Type	**Case Style A**  .275" OD x .250"L		**Case Style B**  .188"OD x .250" L		**Case Style C**  .125" OD x 0.300"L		**Case Style D**  .080" OD x 0.300"L		**Case Style E**  .275" OD x .250"L	
Platinum 100Ω ± .12% @ 0°	***SINGLE***	***DUAL***	***SINGLE***	***DUAL***	***SINGLE***	***DUAL***	***SINGLE***	***DUAL***	***SINGLE***	***DUAL***
	3 wire 22 awg	6 wire 22 awg	3 wire 22 awg	6 wire 26 awg	3 wire 26 awg	6 wire 30 awg	3 wire 30 awg	N/A	3 wire 22 awg	6 wire 30 awg
Thermocouple (J,K,T,E)	2 wire 22 awg	4 wire 24 awg	2 wire 24 awg	4 wire 24 awg	2 wire 24 awg	4 wire 24 awg	2 wire 30 awg	N/A	2 wire 20 awg	4 wire 24 awg





Temperature Range: -50° to 260°**C** (-58° to 500°**F**)

Lead Wires**:** Stranded silver-plated copper conductors with PTFE insulation and optional stainless steel overbraid.

Insulation Resistance**:** 10 Megaohms Min. at 100 VDC, leads to case (RTD)

10 Megaohms Min. at 100 VDC, Ungrounded only (T/C)

**Other wire gauges available upon request.*

**Fluid resistant wire available.*

**Custom configurations available.*

ACCESSORIES AVAILABLE

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Sanitary Assemblies

3-A sanitary system accepted practices pertain to the sanitation aspects of equipment used to produce frozen desserts, egg, milk, cottage cheese, and similar food and dairy products. Included are Culinary Steam, Boiler Feed Water, Heat Exchangers, Transfer Station, Silo Tank, Atmospheric Pasteurizers, Pipeline Milking Systems and Feed Production.

Why is 3A Sanitary Temperature Measurement Important?

The following sanitary systems are dependent upon accurate temperature measurement;

Pasteurization Systems include high temperature short time (HTST) at 105 degree's Celsius and higher heat shorter time (HHST) at 149 degree's Celsius. requirements.

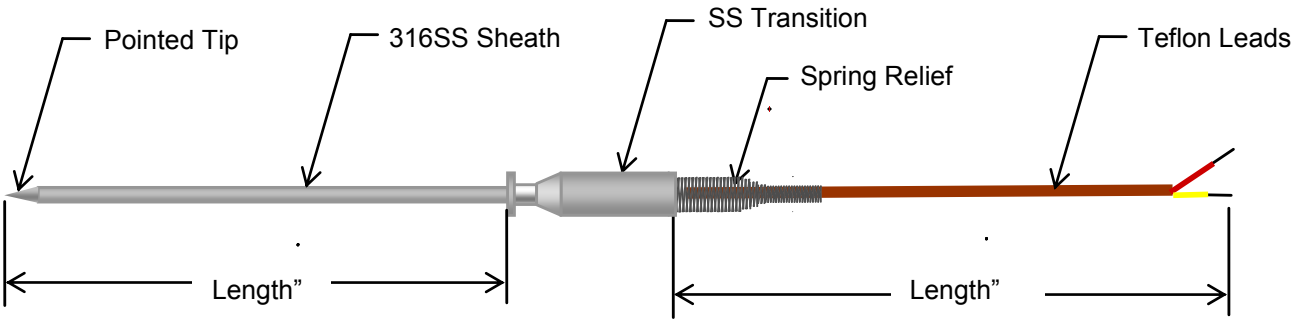
Boiler Feed Water Systems include temperature measurement to reduce water hardness and to prevent corrosion and scale in boilers and or to facilitate sludge removal for proper boiler care and operation.

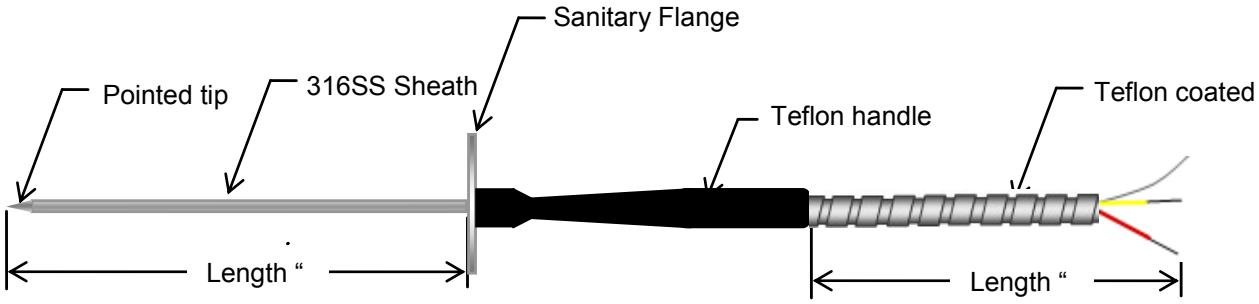
Sanitization Systems include temperature, time and the concentration of specific detergent solutions and bactericides. Cleaning and sanitizing procedures routinely include requirements at 121 degree's Celsius.

Such factors as flavor control, homogenization, clarification, and separation of the product are also directly affected by temperature.

The temperature control system typically uses an Indicating Thermometer to measure the process temperature. A second thermometer is used to limit the maximum temperature to a defined preset value.

The temperature sensors are installed in a fitting at the outlet of the heating and or cooling system with and or without the use of a sanitary flange. These sensors have been mercury column thermometers in the past, but are now being replaced by high accuracy resistance temperature detectors (RTD's).





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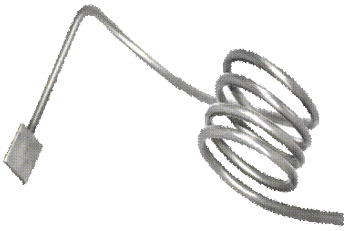
Petro-Chemical Sensors

Thermometrics Corporation manufactures temperature sensors, radiant tubeskin thermocouples, petrochemical sensors and gasifer thermocouples for refining facilities around the world. Tube skin refinery thermocouples manufactured with superior metallurgy are used to measure the temperature of process such as Coker, Purge Gas Recovery, Primary Reformer, and Synthesis Converter systems. The size of the sensors are designed for each particular application by an engineer during construction or retrofit of a factory or process. The type of thermocouple sensor used is generally a Type K due to it's optimum temperature range and cost factors. Tube skin thermocouples unique design with expansion loops allows the thermocouple temperature sensor tip to move as the process vessel expands and contracts.



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Plastic Industry

Melt bolt sensors are made from 304 stainless steel and can be provided with various insulating materials over the conductors. The bolt has ½-20 UNF threads, the industry standard tip dimensions, and are available in 3, 4, 6, 8, 10 and 12 inch lengths as standards. Other bolt configurations are available by request. They are used on extruder and injection molding machines to directly measure the melt temperature of the plastic as it moves through the barrel.

The **bayonet mount sensors** have a bayonet cap and spring mounted on a sheathed probe sensor. These rigid sensors general go into a temperature sensing port on the machine. Most ports have a 1/8NPT mounting thread, which a bayonet adaptor screws into. The bayonet mount provides spring loading for positive thermal contact and easy installation and removal of the sensor.

The **spring adjustable immersion sensor** has a bayonet cap that adjusts over either a 12” straight or an 8" bell end spring (both are standard) to allow for immersion depths of 1/2" to 11” or ½” to 7" respectively. These sensors are mounted via a bayonet adaptor and used in a variety of applications where ease of installation and quick disconnect is preferred. A wide array of standard and metric size bayonet caps and adapters are available.

The **flex armor adjustable immersion sensor** has a bayonet cap that adjusts over the flex armor. This allows for both protection and adjustable immersion depths. These sensors are mounted via a bayonet adaptor and used in a variety of applications where ease of installation and quick disconnect is preferred. A wide array of standard and metric size bayonet caps and adapters are available.

The **nozzle melt sensor** is placed into the nozzle of a plastic injection-molding machine and senses the actual temperature of the molten plastic prior to being injected into the mold. The standard bolt has ¼-28 threads and is stainless steel. It is available in either a fixed format, which allows for direct immersion but requires turning the entire assembly for installation. Or, in a free spinning format, which cannot be directly immersed, as it does not form a seal, however the fitting spins freely for installation. The small size makes this unit advantageous in a variety of limited space applications

The **ring and spade type sensors** have the element embedded into a stainless steel or brass housing in ring or spade configuration, various sizes are available. These units are held in place under a bolt or screw and measure the surface temperature of nozzles, extruder barrels, die heads, molds, and many other applicable surface temperatures.

The **Pad Sensors** are generally used for surface temperature measurement. The pad has the element sandwiched between two thin shims of either stainless steel, fiberglass or polyimide film. Using a worm drive hose clamp the pad can be easily installed on the outside of any size tube or pipe. It can be strapped in place on the barrel of an extruder, or it can be used under heater bands.

The **exposed element multiple purpose sensors** are constructed with insulated wire and an exposed element or junction. The tips can be bare or coated to provide electrical isolation and physical protection. A variety of insulations and overbraids are offered to satisfy many industrial processes, furnace certification, load checking, and laboratory test temperature measurement applications.

The **flexible extensions** are constructed using wire matched for the particular sensor they will be paired with. They are used as extension cords to provide suitable connections between sensors, jack panels, or instrumentation.

ANSI CALIBRATION

Type J

Type J is composed of positive leg, which is iron and a negative leg, which is approximately 45% nickel-55% copper. When protected by compacted mineral insulation and appropriate outer sheath, Type J is useable from 32° to 1400°F. It is not susceptible to aging in the 700-1000°F temperature range, (+2°F to +4°F drift) which occurs with ANSI Type E and K. This low cost, stable calibraion is primarily used with 96% pure MgO insulation and a stainless steel sheath.

Type K

Type K is composed of a positive leg, which is approximately 90% nickel, 10% chromium and a negative leg, which is approximately 95% nickel, 2% aluminum, 2% manganese and 1% silicon. When protected by compacted mineral insulation and appropriate outer sheath, type K is useable from (-32° to 2300°F). If temperature range falls between (600° to 1100°F), we recommend using type J or N because of aging which can cause a drift rate of, (2°to 4° F) in a few hours time. For applications below (32°F), special selection of alloys are usually required.

Type N

Type N is composed of a positive leg which is approximately 14% chromium, 1.4% Silicon and 84.6% Nickel, a negative leg which is approximately 4.4% Silicon, 95.6% Nickel. When protected by compacted mineral insulation and appropriate outer sheath, Type N is useable from (32° to 2300°F). Type N was developed to overcome several problems inherent in Type K thermocouples. Aging in the (600° to 1100°F) temperatures is considerably less. Type N has also been found to be more stable than Type K in nuclear environments.

Type T

Type T is composed of a positive leg which is pure copper and a negative leg which is approximately 45 % nickel, 55 % copper. When protected by compacted mineral insulation and appropriate outer sheath, Type T is usable from (32° to 662°F). Type T is very stable and is used in a wide variety of cryogenic and low temperature applications. For applications below (32°F) special selection of alloys are usually required.

Type E

Type E is composed of a positive leg which is approximately 90% Nickel, 10% Chromium and a negative leg which is approximately 45% Nickel, 55% copper. When protected by compacted mineral insulation and appropriate outer sheath, Type E is usable from (32° to 1652°F). This Thermocouple has the highest EMF output per degree of all recognized thermocouples. If the temperature is between (600° to 1100°F), we recommend using type J or N because of aging which can cause drift of (2° to 4°F) in a few hours time. For applications below (32°F), special selection of alloys are usually required.

ANSI CALIBRATION

Type S Type S is composed of a positive leg, which is 90% platinum 10% Rhodium and a negative leg which is 100% Platinum. When protected by compacted mineral insulation and appropriate outer sheath, Type S is usable from (32° to 2700°F). Reducing atmospheres are particularly damaging and easily contaminated. Type S should be protected with gas tight ceramic tubes, a secondary tube of porcelain and silicon carbide or metal outer tubes as conditions require.

Type R Type R is composed of a positive leg, which is 87% Platinum 13% Rhodium and a negative leg which is 100% Platinum. When protected by compacted mineral insulation and appropriate outer sheath, Type R is usable from (32° to 2700°F). Type R has a higher EMF output than type S. Also easily contaminated, and damaged by reducing atmospheres. Type R should by protected in a similar fashion as Type S.

Type B Type B is composed of a positive leg which is approximately 70% Platinum, 30% Rhodium and a negative leg which is approximately 94% Platinum, 6% Rhodium. When protected by compacted mineral insulation and appropriate outer sheath, Type B is usable from, (1600° to 3100°F). Also easily contaminated, and damaged by reducing atmospheres. The same protective measures as shown above apply to type B Thermocouples.

Type C Tungsten-5 % Rhodium/Tungsten-26 % Rhodium is generally referred to as type C. When protected by compacted mineral insulation and appropriate outer sheath, it is usable from, (32° to 4200°F). Used most often with Beryllium oxide insulation and either molybdenum or tantalum sheath. These combinations can only be used in an inert or vacuum environment.

MINERAL INSULATIONS

HIGH PURITY MAGNESIUM OXIDE (MGO) 99.4% MINUMUM PURITY	Low impurity levels make this insulation very useful for all thermocouples calibrations up to 2500°F Hygroscopic , compacts well.
STANDARD PURITY MAGNESIUM OXIDE (MgO0 96% MINIMUM PURITY	This lower cost insulation is similar to high purity MgO except should not be used in applications above 2000°F because of the impurity levels. Should not be used with platinum or in nuclear applications.
ALUMINA OXIDE ($AL_2 0_3$) 99.6% MINIMUM PURITY	Comparable to MgO in electrical properties but does not compact well. Commonly used as one piece insulator for noble metal calibrations. Maximum temperature recommended: 2400°F

ORDER CODE	SHEATH MATERIAL	MAXIMUM TEMPERATURE (CONTINUOUS SERVICE AIR)	NOTES
304	304 Stainless Steel	1650°F	Most commonly used low temperature sheath material. Good corrosion resistance. Subject to damaging carbide precipitation in 900° to 1600°F range.
304L	304 Low Carbon Stainless Steel	1650°F	Low carbon version of 304ss Low carbon content allows this material to be welded and heated in the 900° to 1600°F range without damage to corrosion resistance.
*310	310 Stainless Steel	2100°F	Mechanical and corrosion resistance similar to but better than 304ss . Very good heat resistance. This alloy contains 25% Cr, 20% Ni. Not as ductile as 304ss
*316	316 Stainless Steel	1650°F	Best corrosion resistance of the austenitic stainless steel grades. Good corrosion resistance in Hydrogen Sulfide. Subject to damaging carbide precipitation in the 900° to 1600°F range.
316L	316 Low Carbon Stainless Steel	1650°F	Same as 316ss, except low carbon version which allows for better welding and fabrication.
347	347 Stainless Steel	1600°F	Similar to 304 except nickel columbium stabilized. Designed to overcome susceptibility to carbide precipitation in the 900°to 1600°F range.
446	446 Stainless Steel	2100°F	Ferritic stainless steel which has good resistance to sulfurous atmospheres at high temperature. Good corrosion resistance to nitric acid, sulfuric acid and most alkalies. 27% chromium content gives this alloy this highest heat resistance of any ferrtic stainless steel.
INC	Inconel 600	2150°F	Most widely used thermocouple sheath material. Good high temperature strength, corrosion resistance, resistance to chloride-ion stress corrosion cracking and oxidation resistance to high temperature. Do not use in sulfur bearing environments. Good in nitriding environments
INC625	Inconel 625	1800°F	Excellent high temperature strength. Excellent resistance to pitting and crevice corrosion. Unaffected by radiation embrittlement.
MOL	Molybdenum	750°F (in Air)	Refactory metal. Brittle, cannot be bent. Use only in inert, vacuum or reducing atmospheres. Most commonly used with BeO insulation and Tungsten Rhenium conductors. Non-compacted assemblies only.
TI	Titanium	800°F	Lightweight, excellent strength in the 300° to 800°F temperature range. Excellent resistance to oxidizing acids such as nitric or chromic. Resistant to inorganic chloride solutions, chlorinated organic compounds and moist chlorine gas. Resistant to salt water spray and sea water.
MO	Monel 400	1000°F	1000°F Maximum in oxidizing conditions. Nickel-copper alloy with good corrosion resistance. Excellent resistance to sea water, hydrochloric acid and most alkalies.
HAB	Hastelloy B-2	1000°F (oxidizing) 1500°F (Reducing or Vacuum)	Excellent resistance to hydrochloric acid at all concentrations and temperature. Also resistant to hydrogen chloride, sulfuric, acetic, and phosphoric acid.
HAC	Hastelloy C-276	2000°F	Excellent corrosion resistance, especially in chlorinated environments. Resistant to ferric and cupic chlorides, solvents, chlorine, formic acids, acetic acids, brine, wet chlorine gas and hypochlorite.
CU	Copper OFHC	400°F	Excellent thermal conductivity. Used in special applications for research and low temperature applications.
TA	Tantalum	900°F (in air)	Refractory metal. Very ductile. Use only in inert or very good vacuums. Most commonly used with BeO and Tungsten Rhenium conductors. Do not use in environments containing nitrogen above 700°F
AL	Aluminum (1100)	600°F	Commercially pure aluminum. Used in special applications requiring good thermal conductivity.
AL20	Alloy 20	1800°F	Generic version of Carpenter 20CB-3 developed specifically for resistance to sulfuric acid.

Calibration Services

Thermometrics laboratory has an operating range of –100°C to +1200°C and is designed to support our research and production operations. Calibrations are performed in accordance with ANSI Z540 and MIL-STD 45662 and are traceable to N.I.S.T. Industrial specification such as AMS, ASTM, DIN, IEC, and JIS are common knowledge among our staff.

Temperature calibration is the laboratories business and our focus is to perform calibrations exactly the way our customer requires. We take the extra step and design documentation specifically for your requirements to enable you to maintain your calibration system, the way you want.

*Precision RTD Calibration with ITS-90, IPTS-68, Calendar Van Dusan or Polynomial Chart.
*Industrial RTD calibration with Data and Deviation from IEC-751.
*Meters, Transmitters & Switches.
*Thermistor & Bi-Metallic Calibration

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