



Temperature Measurement & Control

Custom Engineered Solution



Product Guide



Our Locations

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TempoTech Controls Inc.

Your source for custom engineered sensor solution

Established in 1989. Specialists in industrial process temperature measurement & control (-200°C to + 2500°C) using custom application specific sensors including infrared technology. Manufacturer of sensors and distributor of instrumentation products.. You can count on us to deliver high-quality Temperature sensor, engineering expertise, and our capability to manufacture custom sensors makes us the preferred choice for Customers

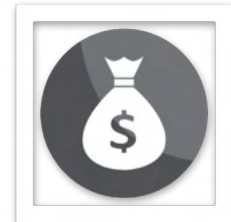
For TempoTech , customer satisfaction is the utmost priority. When you work with TempoTech Controls, you can expect three key elements to meet your expectation.



**On Time
Delivery**



**High Quality
and precision**



**Best price
in the market**

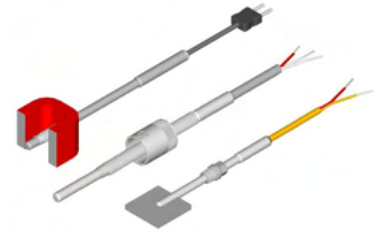
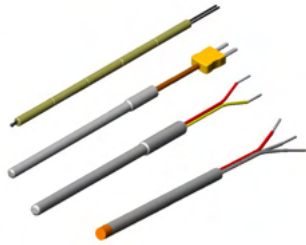
Our Mission

"To provide engineered custom solution for Temperature sensors with high quality, reliable products at competitive price. We thrive to provide continuous growth and opportunity for employees, customers and suppliers."



Miniature Temperature Sensor

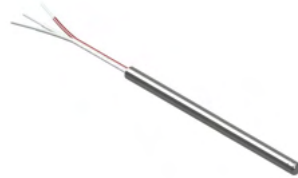
	Series TC10 & RTD10 Miniature Thermocouple & RTDs	Series TC20 & RTD20 Bolt On Thermocouple & RTD	Series TC30 & RTD30 Surface Mount Thermocouple & RTD
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Models	Miniature Thermocouples/RTDs <ul style="list-style-type: none"> General Purpose bare end Plug and Jack Connector style Cut to length style 	Bolt on thermocouples/Rtds <ul style="list-style-type: none"> Gasket Style Bolt on Surface Mount Screw in / Nozzle Style Melt Bolt Thermocouple/RTDs Ring Type Thermocouple 	Surface Temperature Thermocouple Rtds <ul style="list-style-type: none"> Magnet Thermocouple/Rtds Weld pad Thermocouples Shim Stock Thermocouple
Application	Basic Industrial Ovens and Heaters HVAC Food and Pharma Heat Treatment Plastic	Oil and Gas Plastic Injection Moulding Heaters Storage Tank surface	Heat Exchangers Boiler Chemical Industry
Measuring Range	-200 to 1250 (Temperature may vary to selected type of sensor)	-200 to 1250 (Temperature may vary to selected type of sensor)	-200 to 1250 (Temperature may vary to selected type of sensor)
Process Connection	Adjustable Fitting 1/8" NPT to 1/2" NPT, G1/2, Fixed Bushing 1/8" NPT to 1.0" NPT, G1/2, G1,	Melt Bolt UNF 1/2 Bolt on Sensor 1/4" to 1/2 (Std Pitch) 6 mm to 14 mm (Std Pitch)	NA
Approvals			
Key Features	<ul style="list-style-type: none"> Available in thermocouple type J, K, E, N, T , RTD Pt100, Pt1000, Ni120 and Cu10 Ohms A wide selection of sheath material to suit application requirement, 304ss, 316ss, 321ss, Inconel® 600, 800, Monel, etc. Sheath diameter is available from 0.040" to 0.750". Grounded, Ungrounded and Exposed junction to suite application requirement. Available with or without lead wire and connectors 		

Miniature Temperature Sensor

	Series TC40 & RTD40 Bayonet Style TC and RTDs	Series TC50 & RTD50 Tube and Wire Style TC and RTDs	Series EXT Tube and Wire Style TC and RTDs
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Models	Bayonet Style Thermocouple and RTDs <ul style="list-style-type: none"> Flexible Armor Bayonet Probe Rigid Probe Bayonet Flexible Spring Bayonet Proce 	Tube and Wire Thermocouple <ul style="list-style-type: none"> Insulated wire Thermocouple with exposed Junction Wire Thermocouple with SS TIP Wire Thermocouple with Ceramic Insulator 	Thermocouple and RTD Extension wire <ul style="list-style-type: none"> Extension wire with Connector Armored Extension wire with connector
Application	Plastic Extrusion Injection Molding Boiler Chemical Industry	Plastic Extrusion Injection Molding Boiler Chemical Industry	Plastic Extrusion Injection Molding Boiler Chemical Industry
Measuring Range	-200 to 700 C (Temperature may vary to selected type of sensor)	-200 to 700 C (Temperature may vary to selected type of sensor)	-200 to 700 C (Temperature may vary to selected type of sensor)
Process Connection	NA		
Approvals			
Key Features	<ul style="list-style-type: none"> Available in thermocouple type J, K, E, N, T , RTD Pt100, Pt1000, Ni120 and Cu10 Ohms A wide selection of sheath material to suit application requirement, 304ss, 316ss, 321ss, Inconel® 600, 800, Monel, etc. Sheath diameter is available from 0.040" to 0.750". Grounded, Ungrounded and Exposed junction to suite application requirement. Available with or without lead wire and connectors 		

Industrial Temperature Sensor

	Series TC70 & RTD70 Industrial RTDs and Thermocouple without extension	Series TC80 & RTD80 Industrial RTDs and Thermocouple with Nipple Union Extension	Series TC90 & RTD90 Remote Mount RTD and Thermocouple Assemblies
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Models	<ul style="list-style-type: none"> • Thermocouple and RTD Less thermowell • Thermocouple and RTD with Threaded Thermo-well • Thermocouple and RTD with Flanged Thermo-well • Thermocouple and RTD with pipewell 	<ul style="list-style-type: none"> • Thermocouple and RTD Less thermowell • Thermocouple and RTD with Threaded Thermo-well • Thermocouple and RTD with Flanged Thermo-well • Thermocouple and RTD with pipewell 	<ul style="list-style-type: none"> • Thermocouple and RTD with remote head Mount • Can be ordered with Thermowell
Application	Oil & Gas Chemical Processing Ovens and Heaters HVAC Food and Pharma Metal Processing	Oil & Gas Chemical Processing Ovens and Heaters HVAC Food and Pharma Metal Processing	Oil & Gas Chemical Processing Ovens and Heaters HVAC Food and Pharma Metal Processing Excellent product for remote installation of termination head.
Measuring Range	-200 to 1250 (Temperature may vary to selected type of sensor)	-200 to 1250 (Temperature may vary to selected type of sensor)	-200 to 1250 (Temperature may vary to selected type of sensor)
Process Connection	Adjustable Fitting 1/8" NPT to 1/2" NPT, G1/2, Fixed Bushing 1/8" NPT to 1.0" NPT, G1/2, G1,	Adjustable Fitting 1/8" NPT to 1/2" NPT, G1/2, Fixed Bushing 1/8" NPT to 1.0" NPT, G1/2, G1,	Adjustable Fitting 1/8" NPT to 1/2" NPT, G1/2, Fixed Bushing 1/8" NPT to 1.0" NPT, G1/2, G1,
Approvals			
Key Features	<ul style="list-style-type: none"> • Available in type J, K, E, N, T, RTD Pt100, Pt1000, Ni120 and Cu10 Ohms • A wide selection of sheath material to suit application requirement, 304ss, 316ss, 321ss, Inconel® 600, 800, Monel, etc. • Sheath diameter is available from 0.040" to 0.750". • Grounded, Ungrounded and Exposed junction to suite application requirement. • Available with or without lead wire and connectors 		

Industrial Temperature Sensor

Series TC60
Tube Skin Thermocouples



Models	<p>Tube Skin Weldpad Style Thermocouple</p> <ul style="list-style-type: none"> • Tube Skin Thermocouple with Head • Tube Skin with Head and Retractable Weld pad Tube • Tube Skin Thermocouple Bare End Wire • Tube Skin Thermocouple Replacement Element 		
Application	<p>Oil & Gas Chemical Processing Ovens and Heaters Heat Exchangers Boiler Tubes</p>		
Measuring Range	<p>-200 to 110 (Temperature may vary to selected type of sensor)</p>		
Process Connection	<p>Adjustable Fitting 1/8" NPT to 1/2" NPT, G1/2, Fixed Bushing 1/8" NPT to 1.0" NPT, G1/2, G1,</p>		
Approvals			
Key Features	<ul style="list-style-type: none"> • Available in type J, K, E, N, T. • A wide selection of sheath material to suit application requirement, 304ss, 316ss, 321ss, Inconel® 600, 800, Monel, etc. • Sheath diameter is available from 0.040" to 0.750". • Grounded, Ungrounded and Exposed junction to suite application requirement. • Available with or without lead wire and connectors 		

Industrial Temperature Sensor

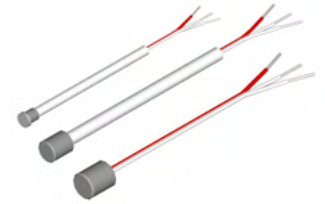
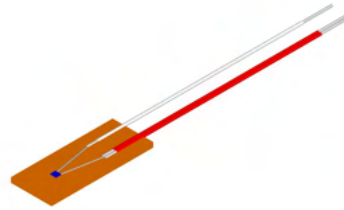
	Series TC100 Industrial Thermocouple with Ceramic Protection Tube	Series TC200 Industrial Thermocouple with Dual Ceramic Protection Tube	Series TC300 Industrial Thermocouple with Ceramic Protection Tube 90 Degree Angle
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Models	<ul style="list-style-type: none"> • Ceramic Protection tube without process threads • With Threaded Process Connection • With Flanged Connection 	<ul style="list-style-type: none"> • Ceramic Protection tube without process threads • With Threaded Process Connection • With Flanged Connection 	<ul style="list-style-type: none"> • Ceramic Protection tube without process threads • With Threaded Process Connection • With Flanged Connection
Application	Heating Furnace High Temp Ovens Molten Metal Furnace Kiln Furnace Heat Treatment	Heating Furnace High Temp Ovens Molten Metal Furnace Kiln Furnace Heat Treatment	Heating Furnace High Temp Ovens Molten Metal Furnace Kiln Furnace Heat Treatment
Measuring Range	0 to 1500 Deg C (Temperature may vary to selected type of sensor)	0 to 1500 Deg C (Temperature may vary to selected type of sensor)	0 to 1500 Deg C (Temperature may vary to selected type of sensor)
Process Connection	Fixed Bushing 1/4" NPT to 1.5" NPT, G1/2, G1, Flange: Adjustable Floor Flange Threaded Flange	Fixed Bushing 1/4" NPT to 1.5" NPT, G1/2, G1, Flange: Adjustable Floor Flange Threaded Flange	Fixed Bushing 1/4" NPT to 1.5" NPT, G1/2, G1, Flange: Adjustable Floor Flange Threaded Flange
Approvals			
Key Features	<ul style="list-style-type: none"> • Available in type J, K, R, B and S • A wide selection of sheath material to suit application requirement, Silicne Carbide, Alumina, Mullite, Sailon and Sintered Silicone carbide • Sheath diameter is available from 1/4" to 1.0". • Grounded, Ungrounded and Exposed junction to suite application requirement. • Available with or without lead wire and connectors 		

Temperature Sensor for Electric Motor

	Series SSTC & SSRTD Silicone Patch Surface RTD	Series KPTTC & KPTRTD Polyamide Surface Patch Thermocouple and RTD	Series EMBTC& EMBRTD Embedment (Button) Style Bearing RTD & Thermocouple
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Models	<ul style="list-style-type: none"> • General Purpose bare end • Plug and Jack Connector style • With Adhesive Liner 	<ul style="list-style-type: none"> • General Purpose bare end • Plug and Jack Connector style • With Adhesive Liner 	<ul style="list-style-type: none"> • Style A,B and C casing • Available with Mounting Kit • SS Armored
Application	Motor Winding Pipe Surface Any other uneven Surface	Motor Winding Pipe Surface Any other uneven Surface	Bearing Temperature Measurement in Electric Motors Pumps Gear Shafts and other moving parts.
Measuring Range	-40 to 260 Deg C (Temperature may vary to selected type of sensor)	-40 to 200 Deg C (Temperature may vary to selected type of sensor)	-40 to 220 Deg C (Temperature may vary to selected type of sensor)
Process Connection	NA	NA	NA
Approvals			
Key Features	<ul style="list-style-type: none"> • Available in thermocouple type J, K, E, N, T , RTD Pt100, Pt1000, Ni120 and Cu10 Ohms • A wide selection of sheath material to suit application requirement, 304ss, 316ss, 321ss, Inconel® 600, 800, Monel, etc. • Sheath diameter is available from 0.040" to 0.750". • Grounded, Ungrounded and Exposed junction to suite application requirement. • Available with or without lead wire and connectors 		

Temperature Sensor for Electric Motor

Series BTC & BRTD Bearing ThermoCouple , RTD elemnts & Assemblies		
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Models	<ul style="list-style-type: none"> • Standard Copper Tip • Cut to length style • With Connection Head and Mounting fitting 		
Application	Bearing temperature Surface Temperature Other Industrial Aplications		
Measuring Range	-50 to 260 (Temperature may vary to selected type of sensor)		
Process Connection	Adjustable Fitting 1/8" NPT to 1/2" NPT, G1/2, Fixed Bushing 1/8" NPT to 1.0" NPT, G1/2, G1,		
Approvals			
Key Features	<ul style="list-style-type: none"> • Available in thermocouple type J, K, E, N, T , RTD Pt100, Pt1000, Ni120 and Cu10 Ohms • A wide selection of sheath material to suit application requirement, 304ss, 316ss, 321ss, Inconel® 600, 800, Monel, etc. • Sheath diameter is available from 0.188" , 0.215" and 0.250" • Grounded, Ungrounded and Exposed junction to suite application requirement. • Available with or without lead wire and connectors 		

Food and Pharma Temperature Sensor

	Series RTD4000 Compact Sanitary RTD with Circular connector and	Series : ITRM Integral Transmitter RTD	Series TC5000&RTD5000 Sanitary Thermocouple and RTDs less thermowell
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Models	<ul style="list-style-type: none"> Standard RTD output with M12 Connector Standard RTD output with Extension Cable and connector 	<ul style="list-style-type: none"> Standard 4-20 mA output with M12 Connector Standard 4-20 mA output with Extension Cable and M12 connector 	<ul style="list-style-type: none"> Standard RTD output with Connection head SS, Poly, or Aluminum RTD with 4-20 mA output head mount transmitter
Application	CIP System Food processing Kettles Extruders Food Storage Tank Pasteurization Tank	CIP System Food processing Kettles Extruders Food Storage Tank Pasteurization Tank	CIP System Food processing Kettles Extruders Food Storage Tank Pasteurization Tank
Measuring Range	-200 to 260 Deg C (Temperature range may vary to selected type of sensor)	-200 to 260 Deg C (Temperature range may vary to selected type of sensor)	-200 to 260 Deg C (Temperature range may vary to selected type of sensor)
Process Connection	Adjustable Fitting 1/8" NPT to 1/2" NPT, G1/2, Fixed Bushing 1/8" NPT to 1.0" NPT, G1/2, G1, Tri-Clamp 16 AMP 1.0", 1.5", 2.0" and 3.0"	Adjustable Fitting 1/8" NPT to 1/2" NPT, G1/2, Fixed Bushing 1/8" NPT to 1.0" NPT, G1/2, G1, Tri-Clamp 16 AMP 1.0", 1.5", 2.0" and 3.0"	Adjustable Fitting 1/8" NPT to 1/2" NPT, G1/2, Fixed Bushing 1/8" NPT to 1.0" NPT, G1/2, G1, Tri-Clamp 16 AMP 1.0", 1.5", 2.0" and 3.0"
Approvals			
Key Features	<ul style="list-style-type: none"> Available in RTD Pt100, Pt1000, Ohms A wide selection of sheath material to suit application requirement, 304ss, 316ss, 321ss, Inconel® 600, 800, Monel, etc. Sheath diameter is available from 0.040" to 0.750". Grounded, Ungrounded and Exposed junction to suite application requirement. Available with or without lead wire and connectors 		

Food and Pharma Temperature Sensor

Series HH Compact RTD and TC with Handle			
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Models	Compact RTD with Handle <ul style="list-style-type: none"> Standard RTD output with M12 Connector Standard RTD output with Extension Cable and connector 		
Application	General Temperature measurement. Food Processing Other application		
Measuring Range	-200 to 260 Deg C (Temperature range may vary to selected type of sensor)		
Process Connection	NA		
Approvals			
Key Features	<ul style="list-style-type: none"> Available in RTD Pt100, Pt1000, Ohms Available with Plastic and Stainless steel handle Sheath diameter is available from 0.125" to 0.375". Available with or without lead wire and connectors 		

Thermowell and Pipe Well

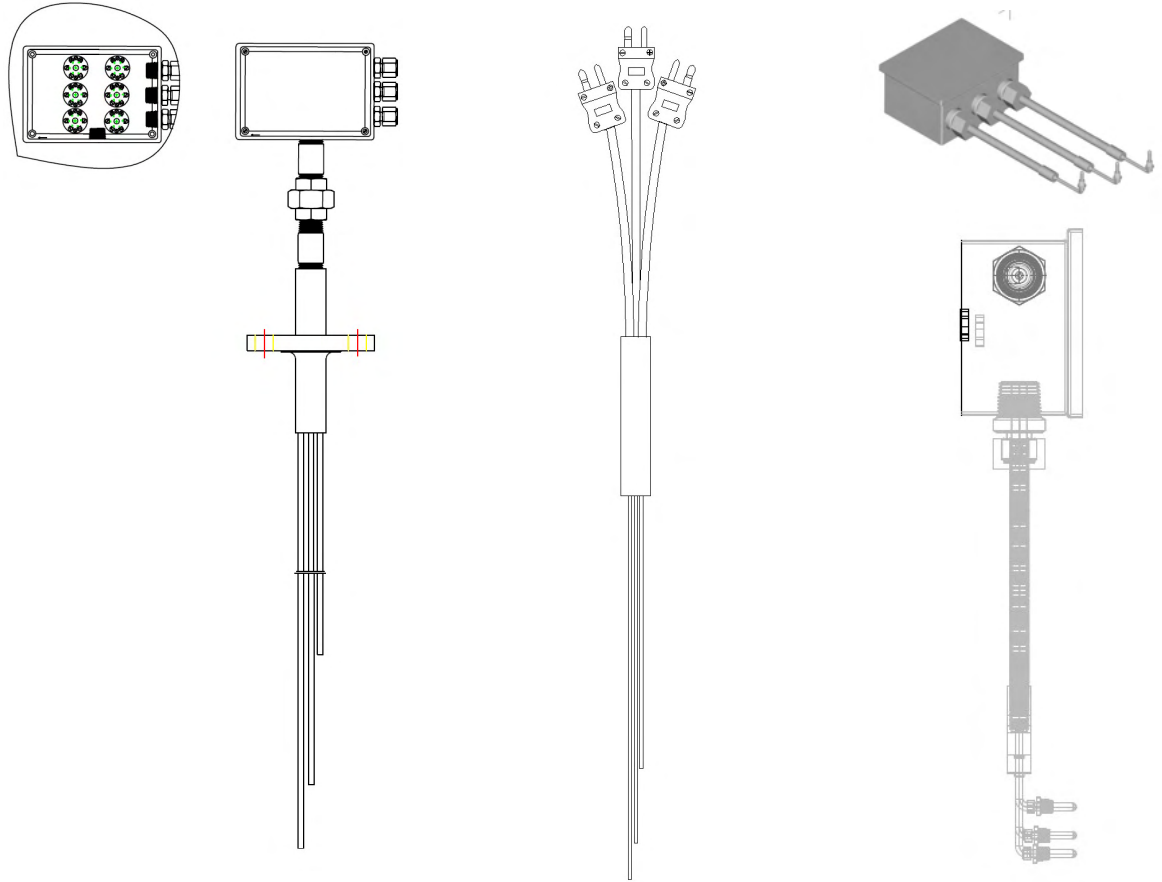
	Machined Barstock Thermowell	Welded Flange Barstock Thermowell	Pipe Well
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Models	<p>Threaded Bar stock Thermowell</p> <ul style="list-style-type: none"> • Straight Shank Threaded Well • Tapered Shank Threaded Well • Stepdown Threaded thermowell • Weldin Socket Thermowell 	<p>Welded Flange Thermowell</p> <ul style="list-style-type: none"> • Straight Shank Flanged Well • Tapered Shank Flanged Well • Stepdown Flanged thermowell 	<p>Metal and Ceramic Protection Wells</p> <ul style="list-style-type: none"> • Ceramic Protection Well with Threaded Connection • Metal Protection Well Threaded • Metal Protection Well Flanged
Application	<p>General Temperature measurement. Oil and Gas Chemical Processing Metal Procession Other application</p>	<p>General Temperature measurement. Oil and Gas Chemical Processing Metal Procession Other application</p>	<p>General Temperature measurement. Oil and Gas Chemical Processing Metal Procession Other application</p>
Process Connection	<p>Various as Required by Thermowell Design</p>	<p>Various as Required by Thermowell Design</p>	<p>Various as Required by Pipe Well Design</p>
Approvals	<p>CRN</p>	<p>CRN</p>	<p>CRN</p>
Key Features	<ul style="list-style-type: none"> • Wide selection of material o suite application • Bore to Suite Sheath diameter is available from 0.125" to 0.375". • CRN Number for all Canadian Province and Canada • Available NACE Certification on request. • Internal and External Pressure testing 		

Multipoint Temperature Sensor Assemblies

	Multipoint Sensor Assembly Free Hanging Style	Miniature Multipoint Sensor Assemblies	Flexible Multipoint sensor Assembly
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Applications	Oil & Gas Chemical Processing Ovens and Heaters Heat Exchangers Boiler Tubes	Oil & Gas Chemical Processing Ovens and Heaters Heat Exchangers Boiler Tubes	Oil & Gas Chemical Processing Ovens and Heaters
Approvals	CRN for Protection Well (On Request)	NA	NA
Key Features	<ul style="list-style-type: none"> • Wide selection of material o suite application • Can be customized to suit application • CRN Number for all Canadian Province and Canada for Protection well • Available NACE Certification on request for Protection wells 		



Wire and Cable






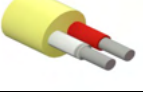
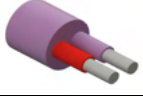
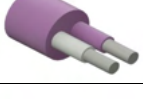
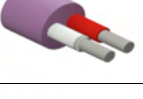
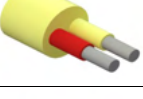


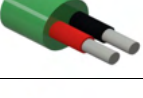




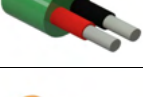
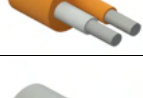



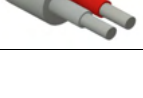
Thermocouple Grade

Thermocouple wire is used in the manufacture of thermocouple sensors and may be calibrated at temperatures above 200°C(392°F). It is exposed to high oven, furnace, and other process temperatures.

Thermocouple Extension Grade

Thermocouple extension wire is used to connect a thermocouple temperature sensor to a measurement or control device such as a transmitter, controller, recorder, or PLC. Extension wire is calibrated for operating temperatures below 200°C(392°F). Runs should not exceed 150 meters (500ft) with consideration for electrical noise pickup and grounding practices.

ANSI ,IEC & JIS Insulation Colour Coding & Magnet Check

Type	Color Codes			(+)	(-)
	ANSI	IEC	JIS		
T				Copper	Constantan
J				Iron (Magnetic)	Constantan
E				Chromel	Constantan
K				Chromel	Alumel (Magnetic)
R				Platinum	Platinum, 13% Rhodium
N				Nicrosil	Nisil
S				Platinum	Platinum, 10% Rhodium
B				Platinum,30% Rhodium	Platinum, 6% Rhodium

- Thermocouple grade wire has a brown outer jacket.
- Braided insulations (ie. fibreglass) may have a coloured tracer
- Extruded insulations (ie. PVC) will be a solid colour
- The RED conductor is always of negative polarity.
- ANSI: American National Standards Institute, standard MC96.1

Temperature Ratings of Insulation Materials

Material	Cont. Op. Temp Range C&F
PVC - Polyvinyl Chloride	-40 to 105 °C (-40 to 221°F)
NYL - Nylon	-51 to 149 °C (-60 to 300°F)
FEP - Teflon	-68 to 260 °C (-90 to 500°F)
TZL - Tefzel	-68 to 260 °C (-90 to 500°F)
KAP - Kapton	-20 to 316 °C (-4 to 600°F)
FGG - Fibreglass	0 to 482 °C (32 to 900°F)
HFG - High Temp. Fibreglass	0 to 704 °C (32 to 1300°F)
CFR - Ceramic Fibre	0 to 1204 °C (32 to 2200°F)

ANSI Limits of Error for Thermocouple Grade Wire

ANSI Letter	Standard Limits of Error (whichever is greater)	Special Limits of Error (whichever is greater)
T	+/- 1.0°C(1.8°F) or +/- 0.75%	+/- 0.5°C(0.9°F) or +/- 0.4%
J	+/- 2.0°C(4.0°F) or +/- 0.75%	+/- 1.1°C(2.0°F) or +/- 0.4%
E	+/- 1.7°C(3.1°F) or +/- 0.5%	+/- 1.0°C(1.8°F) or +/- 0.4%
K	+/- 2.2°C(4.0°F) or +/- 0.75%	+/- 1.1°C(2.0°F) or +/- 0.4%
R&S	+/- 1.5°C(2.7°F) or +/- 0.25%	+/- 0.6°C(1.1°F) or +/- 0.1%
B	+/- 0.5%	--
N	+/- 2.2°C(4.0°F) or +/- 0.75%	+/- 1.1°C(2.0°F) or +/- 0.4%

NOTE: Special **quarter** limits of error available upon request.

Operating Temperature Range for Thermocouple Wire

ANSI Letter	Range
T	-184°C (-300°F) to 371°C (700°F)
J	0°C (32°F) to 760°C (1400°F)
E	0°C (32°F) to 871°C (1600°F)
K&N	0°C (32°F) to 1260°C (2300°F)
R&S	538°C (1000°F) to 1482°C (2700°F)

ANSI Limits of Error for Thermocouple Extension Wire Operating Temp. Range: 0°C (32°F) to 200°C (392°F)

NOTE: Types R,S & B extension wire for Platinum thermocouples is Copper(+) and an Alloy of Copper (-).

ANSI Letter	Standard Limits of Error (whichever is greater)	Special Limits of Error (whichever is greater)
TX	+/- 1.0°C (1.8°F)	+/- 0.5°C (0.9°F)
JX	+/- 2.0°C (4.0°F)	+/- 1.1°C (2.0°F)
EX	+/- 1.7°C (3.1°F)	+/- 1.0°C (1.8°F)
KX	+/- 2.2°C (4.0°F)	+/- 1.1°C (2.0°F)
RX & SX	+/- 5.0°C (9.0°F)	N/A
BX	+/- 5.0°C (9.0°F)	N/A
NX	+/- 2.2°C (4.0°F)	+/- 1.1°C (2.0°F)

How to Specify Single & Multipair Wire & Cable

#TT ___ [1] - ___ [2] - _____ - _ - _____

Conductor Gauge	Ansi Calibration	Ins. & Jacket Material	Options (Wire)	Options (Cable)
16 or 16S	T or TX	PVC	"L" - Spec. Limits	
18 or 18S	J or JX	NYL	of Error	
20 or 20S	K or KX	FEP	"B" - Stainless Steel	
24 or 24S	E or EX	TZL	Overbraid	
30 or 30S	N or NX	KAP	"S" - Shield, Twisted	
	RX, SX, or BX	FGG	with Drainwire	
		HFG		
		CFR		

[1] - "S" - Stranded conductor, otherwise solid

[2] - "X" - Extension Grade, otherwise Thermocouple Grade

MultiPair Thermocouple Extension Cable

Add to Options in above catalogue number as follows:

- XPR - "X" No. of twisted pairs (ie. 4PR is 4 pairs), cabled
- OVS - Overall Al mylar shield with drainwire
- IOS - Individual pair and overall Al mylar shield with drainwire
- SIA - Steel (galvanized) interlocked armour, PVC jacket
- AIA - Aluminum interlocked armour, PVC jacket
- UUL - UL Approved for USA
- CUL - UL Approved for Canada
- CSA - CSA Certified
- FT4 - Flame Test 4 rated outer jacket
- CHL - Hazardous Locations rated
- 300 - 300 Volt insulation rating
- 600 - 600 Volt insulation rating
- SPE - Other special features

Examples:

- **#TT16S-K-FGG-B** - Specifies #16 gauge stranded conductor, type K calibration, thermocouple grade, fibreglass insulation with stainless steel overbraid, single pair wire
- **#TT20-JX-PVC-6PR-IOA-CSA-FT4-300** - Specifies #20 gauge solid conductor, type J calibration, extension grade, PVC insulation, 6 twisted pairs, individual & overall shield, CSA certified, Flame Test 4, 300V insulation rating, multipair cable

Registered Trade Names

- Kapton (KAP), Nylon (NYL), Teflon (FEP), Tefzel (TZL), Mylar ... **Dupont Co**
- Nextel (CFR) ... **3M Co.**
- Chromel(K+), Alumel (K-) ... **Hoskins Co.**
- Alloy 11(R & S -) ... **Harrison Driver Harris**
- Alloy 30-6 ... **Carpenter Technology**

Thermocouple and RTD Connectors



Mini Thermocouple and RTD connector



Standard Thermocouple and RTD connector



Instrument Cable with M8 and M12 Circular Connector



M8 and M12 Circular Connectors

Process Instruments and Transmitters



Data Loggers



Temperature Controllers



Loop Powered



Head mount Transmitter



DIN Rail Mount Transmitter and Signal Conditioner



Loop Powered Indicators

Basics of Thermocouples & RTD's

Thermocouples

Thermocouples are used to measure industrial process temperatures from -184°C (-300°F) to 1482°C (2700°F). They sense temperature at the tip when two dissimilar metal wires are joined together to form a junction. At the (+) & (-) terminals a millivoltage increases as the temperature goes up.

Thermocouples are "application specific" to exactly meet each customer's process needs... made to order and rarely off the shelf.

Since there are millions of industrial processes, there are millions of thermocouple variations. If the thermocouple is specified incorrectly, it may last for only a few minutes in the process. For harsh applications, some thermocouples last only a few months. It is difficult to predict service life for all applications.

As a manufacturer, TempoTech selects the "best fit" thermocouple for longest service life based on...

- **Maximum operating temperature**
- **Environment (liquid, gas, atmosphere, chemical etc)**
- **Mechanical Mounting Requirements**

The most common thermocouple calibration types are J & K and one lead is magnetic. The lead wires and outer jacket are colour coded

A thermocouple must be hooked up to instrumentation with thermocouple extension wire and the red lead is always negative.

Resistance Temperature Detectors (RTDs)

An RTD (Resistance Temperature Detector) looks similar to a thermocouple, but works on the principle of resistance increasing with temperature. 100 Ohms @ 0°C , 138.51 Ohms @ 100°C etc.

RTDs are much more accurate and linear than thermocouples and may be connected to instrumentation using copper wire.

RTDs have a Platinum element and therefore are more expensive than equivalent J or K thermocouples.

They come in (2), (3) or (4) wire versions, colour coded R&W, RR&W or RR&WW.

Generally RTDs are installed up to 450°C (842°F).

TempoTech Resistance Temperature Detector (RTD)

Standard Probe Specifications

TempoTech manufactured stainless steel RTD Probes use Platinum wire wound detectors for temperatures from -200 to 800°C continuous operation and Thin Film Platinum detectors for temperature range -50 to 400°C. Probes are Magnesium Oxide (MGO) filled with Teflon (PFA) insulated leadwires.

- **ACCURACY** (DIN class "A", PT100, 100 Ohms @ 0°C):
 - + - 0.35°C @ -100°C
 - + - 0.15°C @ 0°C
 - + - 0.35°C @ 100°C
 - Tighter tolerances are available i.e. 1/10 DIN B

- **TEMPERATURE COEFFICIENT** (Alpha): 0.00385 Ohms/Ohm/°C
- **STANDARDS**: DIN 43760 (1980), IEC 751 (1995), BS EN 6075 (1996), International Temperature Scale (ITS-90)
- **SELF HEATING** (detector): Less than 0.3°C with 10 mw dissipation @ 0°C
- **RESPONSE TIME**: 4 seconds for a 63% step change when measured in 25 and 100°C water flowing @ 3 ft/sec

- **OPTIONAL FEATURES:**
 - 1600 sheath
 - 392 alpha
 - duplex
 - other diameters including Metric, B, 1/3, 1/5, or 1/10 DIN tolerances
 - PT1000
 - Fiberglass insulated leadwire

For a more detailed description of the various connection options please contact our sales team.

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