

THERMOCOUPLE REFERENCE:

Max (°C)	Sheath	Conductor	Typical Use
1250	Pyrosil (Nickel, Chromium, Silicon Alloy)	Nicrosil/NiSil, Type N	Heat treatment furnaces, glass industry, ceramic industry manufacture, aluminium production.
1100	Stainless Steel, 25/20 Chromium Nickel Steel	Nickel Chromium, Nickel Aluminium, Type K	Blast furnace gases, reheat & annealing furnaces, brick kilns, flame failure devices, glass manufacture, power station boilers, flues, kilns, open hearth furnaces.
1100	Alloy 600 76/16/7, Nickel Chromium, Iron	Nickel Chromium/ Nickel Aluminium Type K, Nicrosil/ NiSil Type K	Heat treatment processes, chemical reactors, annealing furnaces, soaking pits, man-made fibre production, glass tank flues.
800	Stainless Steel, 18/10/1 Chromium, Nickel Titanium, Stabilised Steel	Nickel Chromium/ Nickel Aluminium Type K	Nuclear energy instrumentation, annealing furnaces, acetic and nitric acid production, heat exchangers, boiler steam and feed water.
750	Stainless Steel, 18/10/1 Chromium, Nickel Titanium, Stabilised Steel	Iron/Constantan, Type J	Reheat and annealing furnaces, aluminium heat treatment, chemical reactors. Coal briquetting plants, paper & pulp mills, polythene manufacture, tar stills.
750	Alloy 600 76/16/7, Nickel Chromium	Iron/Constantan, Type J	Reheat and annealing furnaces, aluminium heat treatment, chemical reactors. Coal briquetting plants, paper & pulp mills, polythene manufacture, tar stills.
400	Cupro Nickel	Copper/Constantan, Type T	Boiler flue gas at stack, food processing - bread ovens etc. Gearbox bearing, plastic moulding, sub-zero temperatures, turbo alternator condensers.
400	Stainless Steel, 18/10/1 Chromium, Nickel Titanium, Stabilised Steel	Copper/Constantan, Type T	Boiler flue gas at stack, food processing - bread ovens etc. Gearbox bearing, plastic moulding, sub-zero temperatures, turbo alternator condensers.

Cable Diameters Available (mm)

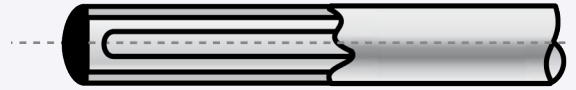
1.0, 1.5, 1.6, 2.0, 3.0, 3.2, 4.5, 4.8, 6.0, 6.4, 8.0

Supplied in Simplex & Duplex

TYPES OF HOT END JUNCTIONS

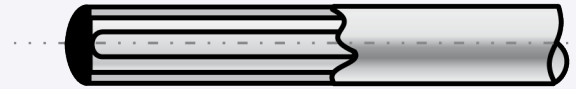
Insulated Junction

Insulated hot end junctions are suitable for most temperature applications, especially where low EMF pick up is essential.



Bonded Junction

Bonded or grounded junctions offer a slightly faster temperature response time than the insulated junction type. Not recommended for multi point instrumentation.



Junction Type	Advantages	Disadvantages
IJ	<p>Resistance can be checked before and after installation, to test the integrity of the sheath.</p> <p>The junction is electrically isolated from the sheath reducing the potential of stray voltages inducing errors.</p> <p>More shock resistant than the bonded type and will survive better under rapid temperature changes.</p> <p>Long term drift under cycling conditions is minimised.</p>	<p>Slower response rate than that of bonded or exposed junctions (typically 2 - 3 times longer than bonded)</p>
BJ	<p>Quicker response rate than insulated type junctions.</p> <p>The junction is at the very tip of the probe, intimate contact is achieved for accurate surface measurement</p> <p>Is recommended for high pressure applications</p>	<p>More susceptible to electrical noise and associated error.</p> <p>The thermal expansion of the sheath material may differ from the element to cause mechanical stress and work hardening of the materials.</p> <p>Faults in the insulation material are more difficult to detect.</p>
ICJ	<p>Advantage as per IJ but more thermocouples can be manufactured in order to verify readings, i.e. for a 4 core cable with a ICJ 4 thermocouple pairs can be used to verify readings as opposed to the 2 of a standard 4 core unit with IJ hot junction.</p>	<p>Slower response rate than that of bonded or exposed junctions (typically 2 - 3 times longer than bonded)</p>

THERMOCOUPLE TEST REQUIREMENTS

Description
Overall dimensions
Hot junction outside diameter
Insulation resistance
Electrical Continuity Check
Polarity Check

END TERMINATIONS AVAILABLE

Primary Temporary Seal:

Epoxy resin seal

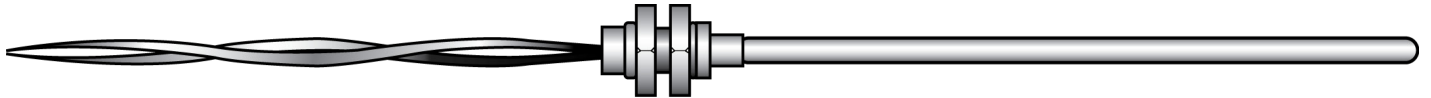
Maximum temperature 105°C



Pot Seals:

Plain: Various diameter plain bodied pot seals to house the transition joints of the sensor to the appropriate extension tails.

Threaded: 8mm ISO x 1mm pitch threaded potting seals to house the transition joints of sensor to the appropriate extension tails. Maximum temperature up to 105°C



Connectors:

Low cost high quality connectors which are colour coded to ANSI or IEC T/C types.

Available in two ranges - Standard and miniature

Glass polyamide body which give connectors a 220°C maximum temperature rating and high impact resistance.



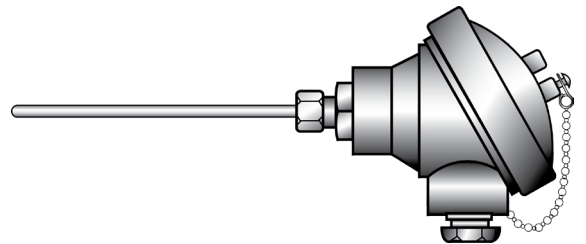
DIN Transmitter Plate / Ceramic Blocks:

A wide range of DIN Spring loaded terminal blocks and plates are available to suit particular customer applications.



Terminal Heads:

A wide range of Aluminium, Stainless Steel and Plastic terminal heads are available with a Rating of up to IP 68



INDUSTRIAL TEMPERATURE SENSORS & HEATING ELEMENTS LTD
Units 12 & 13, Prince Consort Road Industrial Estate, Hebburn, Tyne and Wear, NE31 1EH

www.ithltd.co.uk