

**TEMPERATURE PRODUCTS
FOR PHARMACEUTICAL AND
HEALTHCARE SECTORS**

THERMAL
Detection

TEMPERATURE PRODUCTS FOR PHARMACEUTICAL AND HEALTHCARE SECTORS

Welcome to Thermal Detection

Thermal Detection Ltd is an established leader in the design and manufacture of high quality temperature probes and temperature validation products for sterile services in the following sectors:

- Pharmaceutical Manufacturing
- Biotech
- Healthcare
- Hospitals
- Steam Autoclave OEM's

We have strong links with customers both in the UK and internationally.

We are driven by a strong commitment to quality, service and support and are accredited to ISO 9001.

The Company is located in a modern manufacturing facility in the North East of England and we have experienced engineering staff. This enables us to provide regular 'off-the-shelf' products as well as the in-house capability to custom engineer to our clients particular application.

This brochure showcases our growing range of products for sterile services. For more detail on any of the products, or to discuss your specific requirements, we would love to hear from you.

In addition to the brochure we have many resources on our website:

www.thermal-detection.com

- Product Videos
- Datasheets
- Technical Information
- Easy To Use Product Enquiry Forms



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to visit our website



THERMAL Detection

+44 (0)1642 602878
+44 (0)1642 618307
sales@thermal-detection.com
www.thermal-detection.com

ThermalDLtd
[linkedin.com/company/thermal-detection-limited](https://www.linkedin.com/company/thermal-detection-limited)

Thermal Detection Limited
Unit 6, Orde Wingate Way
Primrose Hill Industrial Estate
Stockton-on-Tees TS19 0GA UK



TEMPERATURE PRODUCTS FOR PHARMACEUTICAL AND HEALTHCARE SECTORS

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AUTOCLAVE TEMPERATURE PROBES

Thermal Detection manufacture a range of autoclave temperature probes, for all pharmaceutical steam, water cycle and hot air sterilisers. We supply the major steriliser manufacturers and end users across the world.

Probes available with a wide range of sizes and configurations to suit customer requirements.

Steriprobe® Autoclave Load / Chamber Temperature Probe

Product Code: [SL100]

Designed and built with a rugged construction, the Steriprobe® ensures reliable temperature measurement in the demanding conditions found in modern pharmaceutical steam and water cycle autoclave chambers.

Known in the USA as Sterimaster®

Product Information

- PT100 RTD to IEC 60751:2008, all classes.
- Thermocouple type 'T' or 'K' class 1 as IEC 60584-1:2013.
- Stainless steel flexible conduit for mechanical protection.
- All metallic parts in Grade 316L stainless steel.
- Silicone jacket FDA listed 21CFR 177 2600 [USP VI on request].
- Tailpiece feedthrough for mounting through autoclave wall.

Autoclave Load / Chamber Temperature Probe

Product Code: [SL150 / SL160]

The SL150 has all of the qualities of the Steriprobe® but without the conduit and tailpiece. Mounting takes place directly onto the jacketed cable.

The SL160 incorporates a 90° bend and is ideal for placement inside a liquid load. Used extensively in steam and water cycle autoclaves.

Known in the USA as 'Sterisensor'

Product Information

- Standard or chisel pointed tip configurations.
- PT100 RTD to IEC 60751:2008, all classes.
- Thermocouple type 'T' or 'K' class 1 as IEC 60584-1:2013.
- All metallic parts in Grade 316L stainless steel.
- Silicone jacket FDA listed 21CFR 177 2600 [USP VI on request].
- Various options for mounting directly onto the cable jacket.

AUTOClave TEMPERATURE PROBES

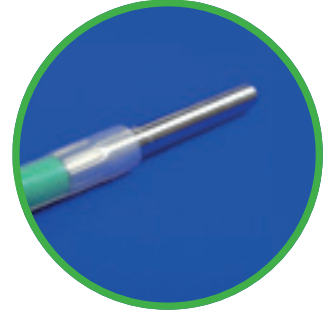
Mini Load Probe

Product Code: [SLB]

The SLB range of load probe is designed for use in the smaller bench top autoclaves often found in Dental, Veterinary, Tattoo & Piercing, Chiropody & Podiatry. Due to its size, it is light in weight, sleek and flexible which is ideal for the smaller autoclaves.

Product Information

- PT100 Class 'A' or thermocouples type 'T' & 'K'.
- All metallic parts in grade 316L.
- Cable FDA listed 21CFR 177 2600.
- Overall length 1.2M with various probe sizes



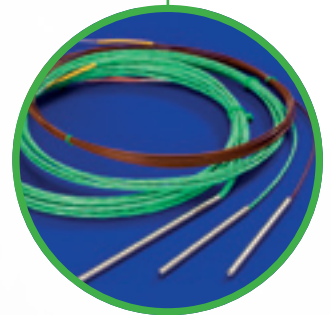
Autoclave Drain, Vent and Air Filter Probes

Product Code: [SD050]

This range of autoclave temperature probes offers a high level of reliability for monitoring autoclave drains, vents and air filters.

Product Information

- PT100 RTD to IEC 60751:2008, all classes.
- Thermocouple type 'T' or 'K' class 1 as IEC 60584-1:2013.
- All metallic parts in Grade 316L stainless steel.
- All sensor conductors PFA insulated with outer jacket in PFA.



Hermetically Sealed Autoclave Temperature Probe

Product Code: [SSA200]

Where the whole PT100 assembly requires periodic sterilisation. For example if permanently attached to a portable vessel, flask or container. The high specification military/aerospace connector is hermetically sealed within a 316 st.st outer case and can survive the conditions in a pharmaceutical autoclave cycle.

Product Information

- All wetted parts in grade 316L stainless steel.
- PT100 RTD to IEC 60751:2008, class A or AA.
- Can be fitted with tri-clover sanitary/hygienic flange or process thread.



AUTOCLAVE TEMPERATURE PROBES

Mounting Options for Autoclave Probes

All probes from Thermal Detection can be supplied with mounting options.

For Steriprobe [SL100] Mounting:

It is easy to seal onto the stainless steel tailpiece with a Hygienic Compression Fitting (HSC) with tri-clover flange, or threaded compression fitting (MSC) for threaded connection.

For [SL150/160] Mounting:

For this style of probe the seal is made directly onto the cable, using Teflon® olives. Available for single mounting (HSC or MSC) or multiple probes (MHSC).

The Multiprobe Hygienic Compression Fitting (MHSC) allows 2 or 3 probes to pass through a single tri-clover flange.

For Drain Probe [SD050] Mounting:

Threaded compression fittings (MSC) or Hygienic Compression Fitting (HSC) with tri-clover flange can be used to seal directly on to the probe.

All mounting options are available with Teflon® or stainless steel olives.

Additional services

All temperature probes can be specified with additional requirements such as:

- Electropolishing for a superior surface finish.
- UKAS calibration service.
- Material Certification.
- Special customer marking for traceability.
- TSE/BSE statement – ask for details.

PHARMACEUTICAL TEMPERATURE PROBES

Thermal Detection has a range of products to support all aspects of manufacturing, processing and laboratory applications. All our probes incorporate wetted parts in 316L stainless steel as standard. Probes are available with a wide range of sizes and configurations to suit customer requirements.

Freezer Probe

Product Code: [SD051]

The refrigerator and freezer probe is designed for monitoring the temperature inside laboratory refrigerator and freezers. Material and construction ensure the probes can withstand lower temperatures for extended periods.

Product Information

- All sensor conductors PFA insulated with outer jacket in PFA.
- PT100 RTD to IEC 60751:2008, all classes.
- Thermocouple type 'T' class 1 as IEC 60584-1:2013.



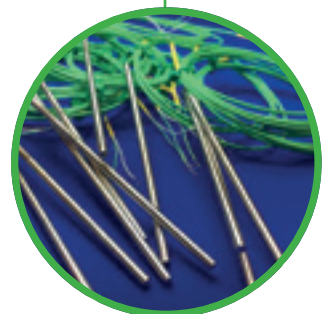
Oven Probe

Product Code: [SD052]

The oven probe is designed for monitoring the temperature inside laboratory ovens. Material and construction ensure the probes can withstand higher temperatures for extended periods.

Product Information

- PT100 RTD to IEC 60751:2008, all classes.
- Thermocouple type 'T' or 'K' class 1 as IEC 60584-1:2013.
- PFA or Kapton[®] insulated leads for up to 250°C or 300°C.
- High temperature version also available.



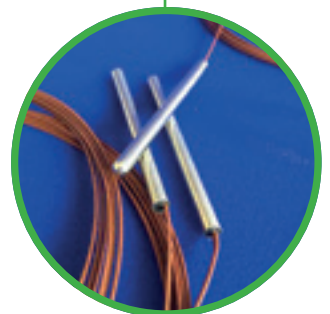
Cryogenic Temperature Probe

Product Code: [SD053]

The SD053 temperature probe is designed for use in cryogenic applications down to -196°C.

Product Information

- Available with cryogenic class B PT100 for the most stable readings or Type T sensors.
- Low temperature epoxy sealant for stability at low temperatures.
- All sensor conductors Teflon[®] insulated with outer jacket in PFA.



Washer Disinfection Probe

Product Code: [SD054]

This style of probe is designed for monitoring the temperature during a typical wash, disinfect and drying cycle. Material and construction ensure the probes can withstand temperatures throughout the process cycle of cleaning instruments and medical devices.

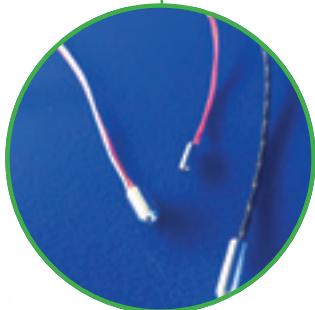
Product Information

- All sensor conductors PFA insulated with outer jacket in PFA.
- PT100 RTD to IEC 60751:2008, all classes.
- Thermocouple type 'T' class 1 as IEC 60584-1:2013.



PHARMACEUTICAL TEMPERATURE PROBES

Lyophilization (Freeze Dryer) Probes



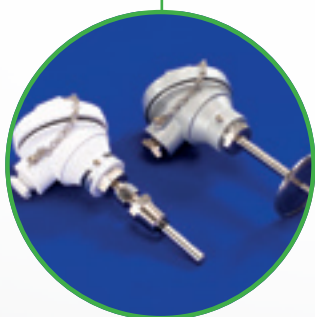
Product Code: [FD100]

The lyo probe is designed for use in the laboratory and production freeze dryers during the freezing and dehydration cycle. Both the miniature sensors for measuring small volumes and the standard size for chamber monitoring are constructed and have necessary materials that can withstand the conditions in this harsh environment.

Product Information

- All sensor conductors PFA insulated with outer jacket in PFA.
- PT100 RTD to IEC 60751:2008, all classes.
- Thermocouple type 'T' class 1 as IEC 60584-1:2013.

Light Duty Temperature Probe



Product Code: [LDP, LDPS, LDPH]

The LDP series temperature probe offers a simple and economical solution for temperature measurement on pharmaceutical process plant.

Product Information

- PT100 RTD to IEC 60751:2008, all classes.
- Thermocouple type 'T', 'J' and 'K' class 1 as IEC 60584-1:2013.
- Supplied as a plain stem as standard or with optional mounting arrangements: Screwed, fixed [LDPS]. Tri-clover hygienic/sanitary flange, fixed [LDPH]. or sliding fitting to allow for adjustment when installing [MSC].
- With or without a temperature transmitter to provide a signal output of 4 to 20mA.
- Various styles of terminal head including a grade 316 stainless steel version.

Medium Duty Temperature Probe

Product Code: [MDP, MDPS, MDPH]

The MDP series medium duty temperature probe for pharmaceutical processes has a rugged construction and allows for the replacement of the sensor insert whilst the main assembly remains connected to the process, eliminating process down time.

The MDP is supplied in two parts: the thermowell/pocket and a removable spring-loaded insert.

Product Information

- Supplied as two pieces. Thermowell and Spring loaded insert.
 - Insert available with
 - PT100 RTD to IEC 60751:2008, all classes.
 - Thermocouple type 'T', 'J' and 'K' class 1 as IEC 60584-1:2013.
- Plain pocket as standard or with optional mounting arrangements: Screwed, fixed [LDPS]. Tri-clover hygienic/sanitary flange, fixed [LDPH]. or sliding fitting to allow for adjustment when installing [MSC].
- With or without a temperature transmitter to provide a signal output of 4 to 20mA.
- Various styles of terminal head including a grade 316 stainless steel version.



PHARMACEUTICAL TEMPERATURE PROBES

Air Temperature Sensor

Product Code: [AA]

The Ambient Air Sensor is designed for the constant monitoring of air temperature in cleanrooms, laboratories, computer rooms and on the outside of buildings for frost protection for example.

Product Information

- Enclosures available in ABS thermoplastic or die-cast aluminium.
- Wall or surface mounted.
- Plain stem as standard or perforated to avoid wind chill in outdoor applications.
- Offered with or without a temperature transmitter to provide a signal output of 4 to 20mA.
- With cable gland as standard or various connectors for quick disconnect.
- Available in PT100 resistance thermometer [Class A or B].



Hygienic Surface Temperature Probe

Product Code: [HSP]

The pipe mounted surface temperature probe with highly polished clamp assembly is used where temperature monitoring of distribution lines in clean work areas is required. Suitable for pharmaceutical and food/dairy applications.

Product Information

- PT100 RTD to IEC 60751:2008, all classes.
- Thermocouple type 'T' class 1 as IEC 60584-1:2013.
- To suit various tube and pipe size distribution lines.
- Clamp in 316 stainless steel [highly polished].
- Edges and inside corners are chamfered or rounded for cleanliness and safety.
- Insert material is silicone rubber and compliant with FDA 21CFR 177.
- Either with terminal head and insert, plain probe or M12 assembly for quick removal.
- With or without transmitter.



Quick Connect Temperature Probe

Product Code: [QCP]

Quick Connect temperature probes allow the probe to be easily disconnected from the extension cable. Removing the probe from the process, for example for periodic calibration or replacement, can be achieved whilst leaving the extension cables in place.

Product Information

- PT100 RTD to IEC 60751:2008, all classes, single and duplex sensors.
- Sheath OD from 3mm OD to 8mm OD, any lengths.
- Probe temperature is -50°C to +250°C.
- Mating sockets straight or right angled.
- Push fit or lockable connectors.
- Conduit covered for mechanical protection.
- Integral temperature transmitter available.



PHARMACEUTICAL TEMPERATURE PROBES

Mineral Insulated Thermocouple and PT100

Product Code: [MIT / MIR]

Mineral insulated (MI) temperature probes are useful in applications where high temperature resistance, a degree of flexibility and long probe lengths are key requirements. Probes can be bent to allow placement in difficult to reach locations.

Product Information

- Flexible sheath material in Grade 316L, Grade 310, Grade 321, Grade 304 stainless steel or Inconel & Nichrome.
- Available in various diameters from as small as 0.5mm to 10.8mm. 0.25mm is available on special applications. Any length.
- Available in thermocouple [all types] MIT, or PT100 [all types] MIR.
- Single, duplex or triplex sensors (dependent on sheath diameter).
- Reduced and swaged tips available.

Thermowells and Pockets

Product Code: [MTW, HTW]

A wide range of fabricated and solid drilled thermowells can be supplied, to customers requirements, with process connections as follows:

Plain stem
Screwed
Flanged
Hygienic/Sanitary
Weld-in.

Product Information

- Materials include Grade 316L, Grade 310, Grade 304 stainless steel or Inconel 600 & 625, Monel, Hastelloy C276 & C22, and Nichrome.
- Available in various diameters and any length.
- Fabricated or solid drilled.
- Stem: parallel, tapered or stepped.
- Stem: can be FEP covered.
- Screwed: BSPP, BSPT, NPT & Metric any sizes.
- Flanged: raised face, any size.
- Hygienic: any size for use within sterile environments.

TEMPERATURE VALIDATION AND MAPPING

Thermal Detection has a range of time saving solutions that make temperature validation and mapping tasks quicker, easier and more reliable.

See our range of innovative products to assist with all aspects of validation within steam, water cycle and hot air autoclaves, fridges and freezers, freeze dryers, ETO chambers, stability chamber, incubators and warehouses. If you have a particular validation problem, give us a call.

Thermocouple Entry Gland

Product Code: [TCEG]

The Thermocouple Entry Gland [TCEG] is an essential tool for temperature validation of steam autoclaves.

The TCEG is a thermocouple feedthrough engineered to simplify the installation of validation thermocouples in a pharmaceutical autoclave and has been specified by satisfied end users and autoclave manufacturers for many years.

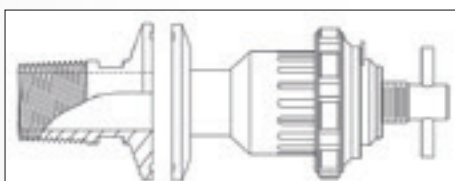
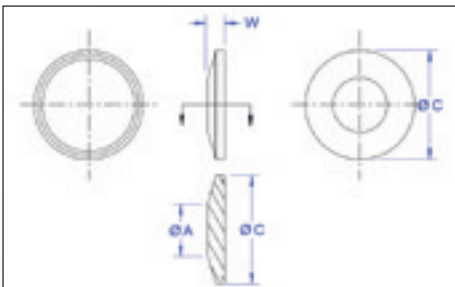
The side slots incorporate a curved base which follows the contour of the thermocouple jacket allowing them to nest and assist in the sealing process.

Product Information

- TCEG/1 (seals 18 thermocouples), TCEG/2 (seals 36 thermocouples).
- Gland body and wetted parts in Grade 316L stainless steel, and gland cap in CZ112 marine brass.
- Sealants in medical grade silicone and in accordance with FDA 21 CFR 177-2600 and USP VI.
- Integral locking mechanism prevents inadvertent cap removal.
- Suitable for 1/0.3mm, 1/0.5mm, 3/0.2mm & 7/0.2mm conductors.
- Replacement seals available.
- With the addition of a 'Y' or 'T' piece, two units can utilise a single chamber entry point providing up to 72 thermocouple measurements.
- Supplied with tri-clover. Customer specified flange or threads also available.

Mounting Options:

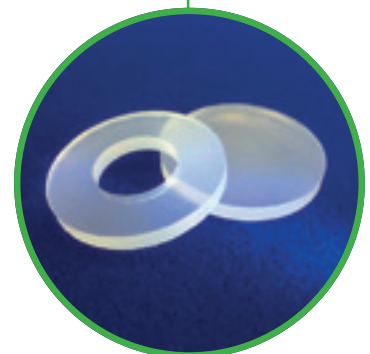
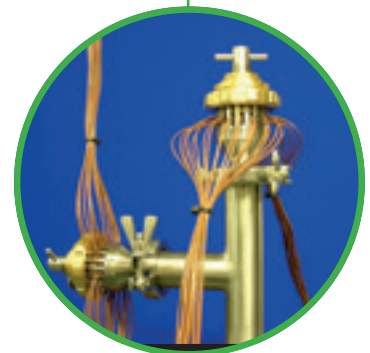
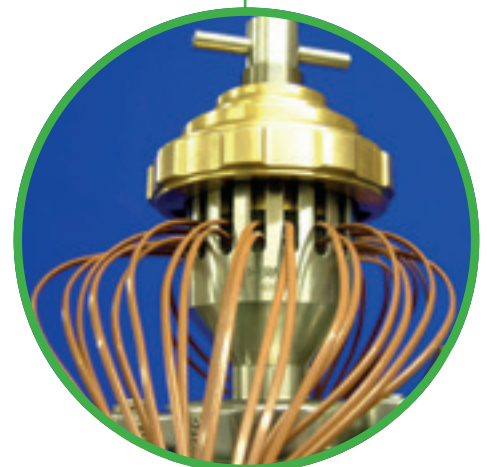
Tri-clover Flange



Nominal Size		Dimensions (mm)		
Imperial	Metric	Face Ø A	Flange Ø C	Width W
1" - 1½"	25	24.5	50.5	7.0
2"	50	39.0	64.0	7.0
2½"	n/a	53.5	77.5	7.0
3"	65	66.5	91.0	7.0

Screwed Connection

Where a screwed connection is available on the autoclave, an adaptor can be supplied along with the TCEG. The adaptor has either a 1" NPT or 1" BSPT thread form. A blank Tri-clover flange, Teflon® seal and safety clamp can be supplied for sealing off the adaptor when not in use.



TEMPERATURE VALIDATION AND MAPPING

Validation Thermocouples

Product Code: [VTFP]

Thermal Detection manufactures ready to use pre-cut Type T thermocouples for temperature validation and mapping of autoclaves, freeze driers, warehouses, hot-air tunnels and similar spaces.

All thermocouples are manufactured from Class 1 as IEC 60584-1:2013 in a variety of conductor formats, and to any length. The thermocouples are then prepared to the customers specification.

Our thermocouples are prepared with an Argon shrouded weld to ensure a hot junction that is stable, robust and durable.

Product Information

- Hot junction can be left bare, or encapsulated in Teflon®.
- Supplied individually, or can be secured together to form a loom or bundle for ease of placement.
- Optional copper discs soldered to hot junction for increased response. Ideal for freeze drier.
- Weep hole/drip cut.
- Identification tags.
- Type T as standard and type K also available.
- Plugs / sockets to meet customer requirements.



Wire Insulation	Conductor Format	Max Temp °C	Available Optional Extras					
			Bare HJ	Teflon Encapsulated HJ	316 st tip over HJ	Identification both ends of T/C	Weephole	Thermocouple mini/standard plug
PFA Extruded Smooth, easy to clean	1/0.3mm	250°C	✓	✓	✓	Heatshrink	✓	✓
	1/0.5mm	250°C	✓	✓	✓	Heatshrink	✓	✓
	3/0.2mm	250°C	✓	✓	✓	Heatshrink	✓	✓
	7/0.2mm	250°C	✓	✓	✓	Heatshrink	✓	✓
	13/0.2mm	250°C	✓	✓	✓	Heatshrink	✓	✓
PTFE Lapped Tightly wrapped to minimise capillary action	1/0.3mm	250°C	✓	✓	✓	Heatshrink	✗	✓
	1/0.5mm	250°C	✓	✓	✓	Heatshrink	✗	✓
Kapton® For high temperature applications such as depyrogenation	1/0.3mm	300°C*	✓	✗	✓	Heatshrink or st st tag	✗	✓
	7/0.2mm	300°C*	✓	✗	✓	Heatshrink or st st tag	✗	✓

*Note: Kapton® can be used up to 350°C for short durations

Also see the High Density Feedthrough [HD] for high vacuum application.

TEMPERATURE VALIDATION AND MAPPING

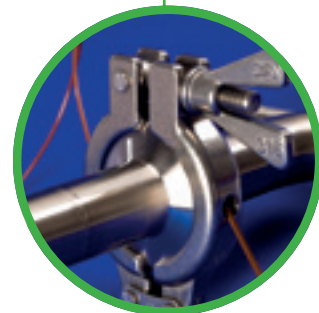
Validation Clamps

Product Code: [VC]

The validation clamp and gasket allow validation thermocouples to be placed inside a tri-clover joint. The validation clamp comes with 1 to 4 ports.

Product Information

- Clamps are in 304 or 316 grade stainless steel.
- Available with 1, 2, 3 & 4 ports.
- Suitable for 1/0.5mm & 7/0.2mm wire from Thermal Detection.
- Sizes are 0.5", 0.75" 1.0", 1.5" & 2".
- Gaskets to suit available in silicone and EPDM and can be supplied separately.



Bottle Cap Mounts

Product Code: [BC, GL45, BC-1, GL45-1]

Bottle cap mounts allow the accurate and secure placement of temperature probes or validation thermocouples inside bottles containing a liquid load.

Mounts can be designed to fit any bottle type, and customers can free issue caps for conversion.



	BC	GL45	BC-1	GL45-1
To Seal	Temperature probes	Temperature probes	Validation Thermocouples	Validation Thermocouples
Size/Number	1 probe: 2mm to 8mm diameter	1 probe: 2mm to 8mm diameter	1 -3 thermocouples depending on format	1 -3 thermocouples depending on format
Bottle Type	Non threaded	Threaded [GL45 or other]	Non threaded	Threaded [GL45 or other]
Guidance	N/a	N/a	Stainless steel cannular	Stainless or Teflon® cannular
Construction	316 stainless cap with integral mounting gland	Various style caps with 316 stainless fitting	316 stainless cap with integral mounting gland and 316 stainless cannular gland	Various style caps with 316 stainless fitting and Teflon® cannular
Sealant	Teflon®	Teflon®	Silicone	Silicone

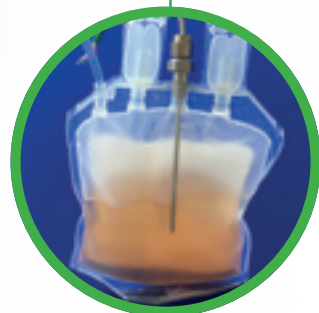
Bag or Pouch Holder

Product Code: [BPH, BTH]

The bag or pouch holder is designed to simplify the placement of temperature probe [BPH] or validation thermocouple [BTH] within a bag or pouch. It allows the sensing element to be located and fixed at a designated place within the pouch. The holders are custom designed to fit any bag or pouch.

Product Information

- Swaged fitting suitable for bag inlet.
- BPH to suit probes from 1.0mm to 6mm OD metric and 1/8" to 1/4" OD imperial.
- BTH to suit thermocouple wires 1/0.3mm, 1/0.5mm & 7/0.2mm.
- Material 316 stainless steel.
- Available as a pocket/thermowell.
- Stainless or Teflon® olives.



TEMPERATURE VALIDATION AND MAPPING

Ampoule Holders

Product Code: [BI]

Ampoule holders are designed to secure biological indicator ampoules and a validation thermocouple in the correct position within a liquid or non-liquid load, during the sterilisation cycle.

The clip mechanism ensures easy fitting and removal of the ampoule, and the rigid virgin Teflon® stem places the ampoule at the correct position within a container time and time again.

A bore through the centre of the stem allows a type T thermocouple wire to be located alongside the ampoule.

The holder can be supplied mated to a range of standard bottle caps or with a plain stem suitable for customers' existing silicone rubber bung.

T & Y Extension Tubes

Product Code: [TPE, YPE]

Can be used in conjunction with two thermocouple entry glands to increase the number of validation thermocouples to up to 72, ideal for extended temperature mapping exercises.

Product Information

- Hygienic tube material 316L stainless steel.
- Tube sizes: ¾", 1.0", 1.5", 2.0", 2.5 & 3.0" with tri-clover flange to suit.
- ASME BPE to SF1 versions available in the standard sizes.
- Extended versions available.
- Custom specifications available, combining tri-clover sizes.
- Reduced tees available for pressure sensors.
- Available pickled, passivated & electro-polished.

Clamps, Gaskets and Tri-clover Blanks

Product Code: [PTC, PTG, PTB]

A range of sanitary/hygienic clamps manufactured for use in the Pharmaceutical, Food & Dairy industries. All in stainless steel and assembled units are barrel polished for a high quality finish. Imperial and metric sizes.

Product Information

- Clamps: Imperial and metric, in 316 stainless steel.
- Gaskets: Imperial and metric sizes in EPDM, Silicone, Viton, Solid PTFE and PTFE Envelope.
- Blanks: Imperial and Metric.
- Vacuum Flanges mounts and gaskets also available.

Temperature Validation Kits

A range of pre-prepared validation kits containing all necessary components for temperature validation.

The kits are cased in an IP67 case with foam inserts.

VALIDATION THERMOCOUPLE WIRE

Validation Thermocouple Wire

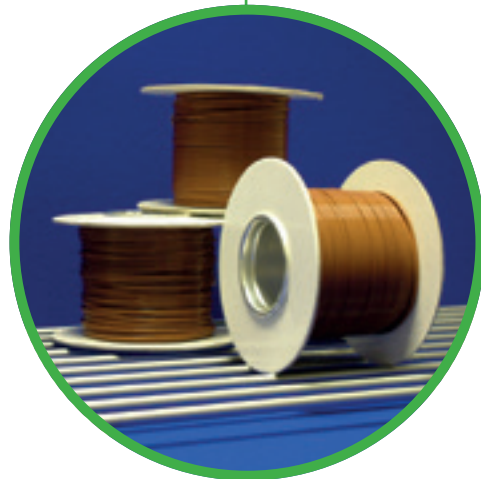
Product Code: [TE-TCT]

Thermal Detection supply a range of Type T validation wire on reels, allowing the customer to manufacture thermocouples on site.

All thermocouple wire supplied is class 1 material to BSEN 60584-1:2013 and is in IEC colours. For type 'T', PFA and PTFE insulated wires the copper leg is silver or nickel plated for reduced oxidation. Type K also available.

Thermal Detection always advises customers to use a capacitance welder to create a strong hot junction, see the Temperature Accessories section for details.

The following wire formats are available:



Wire Insulation	Conductor Format	Max Temp °C
PFA Extruded Smooth, easy to clean	1/0.3mm	250°C
	1/0.5mm	250°C
	3/0.2mm	250°C
	7/0.2mm	250°C
	13/0.2mm	250°C
PFA Twisted	1/0.3mm	250°C
	1/0.5mm	250°C
PTFE Lapped Tightly wrapped to minimise capillary action	1/0.3mm	250°C
	1/0.5mm	250°C
Kapton® For high temperature applications such as depyrogenation	1/0.3mm	*300°C
	7/0.2mm	*300°C

*Note: Kapton® can be used up to 350°C for short durations

TEMPERATURE ACCESSORIES

Transmitters



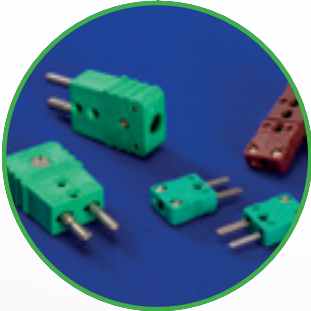
Thermal Detection offer the full range of in-head, DIN rail and field mounted temperature transmitters. We can supply transmitters with any of our manufactured temperature probes, or separately.

Temperature transmitters convert the PT100 or thermocouple sensor into a 4-20mA output and are available with optional ATEX certification and communication options.

Product Information

- Input: PT100 2,3 or 4 wire or any thermocouple type.
- Output: 4-20mA.

Temperature Probe Connectors



We offer a range of miniature and standard size connectors.

- Plugs (Male) and Sockets (female).
- Thermocouple all types.
- PT100 (Copper).

Capacitance Welders



Capacitance welders are designed for fast and efficient production of thermocouple hot junctions and other fine wire welds. Two models are available, the SR48 is our standard bench mounted capacitance welder and the SR80 is our premium bench mounted capacitance welder.

Kapton® Tape and Dots



Kapton® adhesive backed tapes are suitable for use in autoclave chambers. Ideal for taping thermocouples into position when temperature mapping. Also available in die-cut discs on a reel for easy application and removal.

Adaptors and Reducers



- 316 stainless steel.
- Tri-clover to male or female thread adaptors.
- Tri-clover to tri-clover reducers.
- Male to female threaded adaptors/reducers.
- Custom sizes available.

PROCESS CONNECTIONS

All of our temperature probes can be supplied with a wide range of fitting options to suit any application.

Hygienic Compression Fitting

Product Code: [HSC]

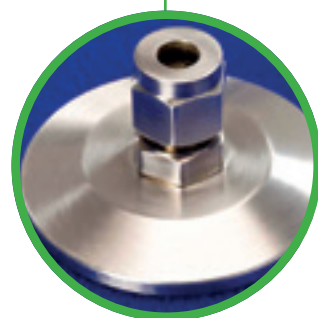
We have a wide range of hygienic compression fittings, designed to be used with our pharmaceutical and food range of probes and sensors.

Uses include the easy mounting of sensors into a process, allowing adjustment of insertion depths and easy removal.

Supplied with Teflon® olives to prevent damage to probe surface.

Product Information

- Probe /element diameters: To suit from 1.0mm to 8mm and 1/8" to 1/2" OD.
- Tri-clover sizes: 0.5-0.75", 1.0-1.5", 2.0", 2.5" and 3.0" (and metric equivalents).
- Vacuum flanges available.



Hygienic Compression Fitting for Multiple Sensors

Product Code: [MHSC]

Where ports are limited and multiple probes are required we have manufactured fittings to enable 2-3 probes through one port. Supplied with Teflon® olives to prevent damage to probe surface.

Product Information

- Probe /element diameters: To suit from 1.0mm to 6mm (imperial 1/8" to 1/4") dependant on flange size.
- Tri-clover sizes: 1.0-1.5", 2.0", 2.5" and 3.0" (and metric equivalents).
- Custom: mixed element sizes available.



Compression Fittings

Product Code: [MSC]

Thermal Detection offer a comprehensive range of compression fittings in 316 stainless steel to complement our temperature probes and sensors. They are easy to use and allow the mounting and adjustment of sensors to the correct insertion depth into a process.

Product Information

- Probe /element diameters: To suit from 1.0mm to 15mm and 1/8" to 1".
- Process threads: NPT, BSPT, BSPP or Metric or weld neck.
- Teflon® olives available.



PROCESS CONNECTIONS

Conax Sealing Glands



Thermal Detection Ltd is the UK distributor for Conax Technologies sealing glands, feedthroughs and fittings.

Conax Technologies Sealing Glands are based on soft-sealant technology with a high integrity seal.

The standard sealant materials in use are Neoprene, Teflon, Viton, Lava and Grafoil which give different sealing capabilities across a wide range of temperatures, pressures and environments.



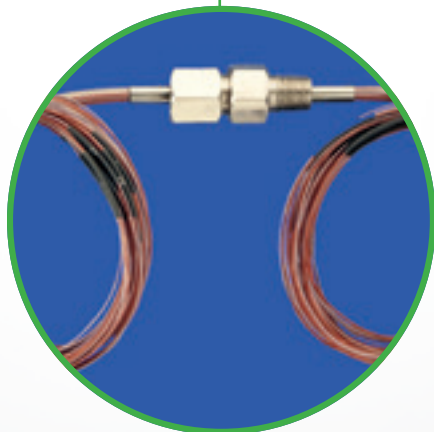
High Density Feedthroughs

Product Code: (HD)

Ideal for Lyophiliser (freeze dryer) applications and allows multiple insulated wires to be installed through a single port.

Product Information

- Number of wires: up to 60 wires per feedthrough.
- Wires: thermocouple pairs or copper wires for PT100's.
- Leak rate: 1×10^{-9} He scc/sec @ 20°C.
- Process connection: threaded or tri-clover.
- Multiple feedthroughs can be combined in one gland for up to 120 thermocouple pairs.



STEAM QUALITY TESTING

Steam Quality Test Kits

Thermal Detection offer a range of steam quality test kits and associated accessories, for performing the following tests on pharmaceutical autoclave steam supply, as specified in EN285.

- Non condensable gas.
- Steam superheat.
- Steam dryness value.
- Steam sample for laboratory analysis.

The kits are designed to assist the engineer by providing all the tools necessary in a convenient carrier.



SQ Kit Option	Kit L Lite	Kit A	Kit B	Kit C	Kit D	Kit E	Kit F
Non-Condensable Gas Apparatus	✓	✓	✓	✓	✓	✗	✓
Dryness Value Apparatus	✓	✓	✓	✓	✓	✗	✓
Superheat Apparatus	✓	✓	✓	✓	✓	✗	✓
Steam Sampling Apparatus	✗	✗	✗	✓	✓	✓	✗
Duel Input Thermometer	✗	✗	✓	✗	✓	✗	✗
Electronic Balance	✗	✗	✓	✗	✓	✗	✓
Electronic Calculator	✗	✗	✓	✓	✓	✗	✓
Steam Thermocouple Entry Gland	✗	✓	✓	✓	✓	✗	✓
Protective Gloves	✗	✓	✓	✓	✓	✓	✓
Set of Thermocouple Probes (Type T)	✗	✓	✓	✓	✓	✗	✓
Syringe Cooling Siphon Pump	✗	✓	✓	✓	✓	✓	✓

Steam Test Elbows

The steam test elbows are used in conjunction with steam quality test kits. A range of sizes are available to suit the customers steam system, also available in standard hygienic finish or ASME BPE.

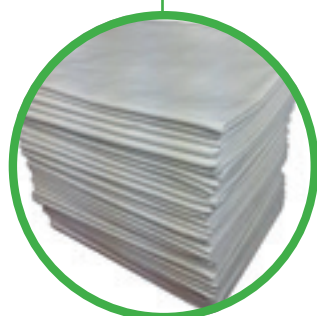


Steam Test Packs

The standard test pack sheets are designed to enable the Bowie and Dick test to be carried out on large steam sterilisers in accordance with EN285 and CFPP 01-01 for porous loads and fabrics. Conforming to EN 285 and CFPP 01-01.

Packs can be supplied ready laundered and folded for ease of use.












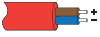


































A test pack wrap for easy preparation, and a handy carrier case are also available.



TECHNICAL INFORMATION

Thermocouple Information

International Thermocouple Colour Codes

TYPE	Conductors Max. Continuous Working Temp.	 IEC 584-1:1995 BS EN 60584-1:1995	 BS 1843	 ANSI MC96.1	 DIN 43714	 JIS C 1610-1981
J	Iron/Constantan +20 to 700°C					
K	Nickel Chromium/ Nickel Aluminium 0 to 1100°C					
T	Copper/Constantan -185 to +300°C					
E	Nickel Chromium/ Constantan 0 to +800°C					
N	Nicrosil/Nisil 0 to +1100°C					
R	Platinum / 13% Rhodium +Platinum 0 to 1600°C					
S	Platinum / 10% Rhodium +Platinum 0 to 1550°C					
B	30% Rhodium+ Platinum / 6% Rhodium +Platinum 0 to 1600°C					
KCA Compensating for type K	Copper/Constantan (Low Nickel) 0 to +80°C					
RCA/SCA Compensating for type R&S	Copper/ Copper Nickel 0 to +50°C					

Thermocouple Tolerances: IEC 60584-2:1993 / BS EN 60584-1:2013

TYPE	Thermocouple Material	Tolerance Class 1	Tolerance Class 2	Tolerance Class 3
Type T	Copper/Constantan (Cu/Con)	-40 to +350°C (+/-0.5°C) or +/-t x 0.004	-40 to +350°C (+/-0.5°C) or +/-t x 0.0075	-200 to +40°C (+/-1.0°C) or +/-t x 0.015
Type J	Iron/Constantan (Fe/Con)	-40 to +750°C (+/-1.5°C) or +/-t x 0.004	-40 to +750°C (+/-2.5°C) or +/-t x 0.0075	
Type E	Nickel Chrome/Constantan (NiCr/Con)	-40 to +800°C (+/-1.5°C) or +/-t x 0.004	-40 to +900°C (+/-2.5°C) or +/-t x 0.0075	-200 to +40°C (+/-2.5°C) or +/-t x 0.015
Type K	Nickel Chrome/Nickel Aluminium (NiCr/NiAl)	-40 to +1000°C (+/-1.5°C) or +/-t x 0.004	-40 to +1200°C (+/-2.5°C) or +/-t x 0.0075	-200 to +40°C (+/-2.5°C) or +/-t x 0.0075
Type N	Nicrosil/Nisil (NiCrNi/NiSi)	-40 to +1000°C (+/-1.5°C) or +/-t x 0.004	-40 to +1200°C (+/-2.5°C) or +/-t x 0.0075	-40 to +1000°C (+/-1.5°C) or +/-t x 0.004
Type R	Platinum-13% Rhodium/Platinum (Pt-13Rh/Pt)	0.0 to +1600°C (+/-1.5°C) or +/-[1+t (-1000)0.003]	-40 to +1600°C (+/-1.5°C) or +/-t x 0.0025	
Type S	Platinum-10% Rhodium/Platinum (Pt-10Rh/Pt)	0.0 to +1600°C (+/-1.5°C) or +/-[1+t (-1000)0.003]	-40 to +1600°C (+/-1.5°C) or +/-t x 0.0025	
Type B	Platinum-30% Rhodium/Platinum-6% Rhodium (Pt-30Rh/Pt-6Rh)		+600 to +1700°C (+/-1.5°C) or +/-t x 0.0025	+600 to +1700°C (+/-4.0°C) or +/-t x 0.005

AWG Wire Gauge Sizes

	Wire Dia (in)	Wire Dia (mm)	Single Conductor Wire	Multistranded Conductor Wire
16 AWG	0.0508	1.2903		
17 AWG	0.0453	1.1506		
18 AWG	0.0403	1.0236		
19 AWG	0.0359	0.9119		
20 AWG	0.032	0.8128		
21 AWG	0.0285	0.7239		13/0.2
22 AWG	0.0253	0.6426		
23 AWG	0.0226	0.5740		
24 AWG	0.0201	0.5105	1/0.5	7/0.2
25 AWG	0.0179	0.4547		
26 AWG	0.0159	0.4039		7/0.16
27 AWG	0.0142	0.3607		3/0.2
28 AWG	0.0126	0.3200	1/0.3	7/0.12
29 AWG	0.0113	0.2870		
30 AWG	0.01	0.2540		
31 AWG	0.0089	0.2261		
32 AWG	0.008	0.2032	1/0.2	
33 AWG	0.0071	0.1803		
34 AWG	0.0063	0.1600		
35 AWG	0.0056	0.1422		

General Information

Temperature Conversion Equations

From Unit	To Unit	Formula
Fahrenheit	Celsius	$T(^{\circ}\text{C}) = [T(^{\circ}\text{F}) - 32] \times 5/9$
Celsius	Fahrenheit	$T(^{\circ}\text{F}) = T(^{\circ}\text{C}) \times 9/5 + 32$
Fahrenheit	Kelvin	$T(\text{K}) = [T(^{\circ}\text{F}) + 459.67] \times 5/9$
Celsius	Kelvin	$T(\text{K}) = T(^{\circ}\text{C}) + 273.15$

PT100 Information

PT100 Temperature Tolerances (+/- °C)

Temp °C	EN 60751 2008 Class B	EN 60751 2008 Class A	EN 60751 2008 Class AA	1/10 DIN (not in standard)
-196	1.28			
-100	0.80	0.35		
-80	0.70	0.31		
-50	0.55	0.25	0.19	
-25	0.43	0.20	0.14	
0	0.30	0.15	0.10	0.03
25	0.43	0.20	0.14	0.04
50	0.55	0.25	0.19	0.06
75	0.68	0.30	0.23	0.07
100	0.80	0.35	0.27	0.08
125	0.93	0.40	0.31	
150	1.05	0.45	0.36	
175	1.18	0.50	0.40	
200	1.30	0.55	0.44	
225	1.43	0.60	0.48	
250	1.55	0.65	0.53	
275	1.68	0.70		
300	1.80	0.75		
325	1.93	0.80		
350	2.05	0.85		
375	2.18	0.90		
400	2.30	0.95		
425	2.43	1.00		
450	2.55	1.05		
475	2.68			
500	2.80			
550	3.05			
600	3.30			

Wire Wound Detector
Thin Film Detector

PRODUCT ENQUIRY FORMS

We have easy to complete Product Enquiry Forms on our website for most of our products.

Please visit:

www.thermal-detection.com



THERMAL Detection SL100/SL104 Autoclave Chamber/ Load Probe **Striprobe Starvacstar**

Product Enquiry Form

Please download PDF and fill in the boxes. Return form to sales@thermal-detection.com or fax to +44 1642 616267

Name: Email:
 Organisation: Tel:
 Country:

Section 1 - Unit dimensions (inches)

Probe Ø Probe length Chamber entry Tube Ø Tube depth Flange length

Section 2 - Sensor Configuration

Sensor Material: ☐ Single ☐ Duplex ☐ Triplex

Type T Thermocouple Only: ☐ Not Junction ☐ Grounded ☐ Insulated

PT100 Only: ☐ Type ☐ Class A ☐ 1/4 DIN ☐ 3-wire ☐ 4-wire

Section 3 - Optional Features

Reduced Probe Tip: ☐ Bend in Probe: ☐ Bend in Entry Tube: ☐ Chisel Pointed Tip: ☐

Section 4 - Mounting Options

Hygienic Compression Fitting: ☐ Threaded Compression Fitting: ☐

Thread Size: Multi probe option: ☐ Thread Type: Thread Size:

Section 5 - Application Details

Number of probes required: Additional information:

Make of autoclave:
 Industry Type:

Thermal Detection Limited
 Unit 6, Orde Wingate Way
 Riverside Industrial Estate
 Stevenage, Herts, England, SG1 1DA

Fax: +44 (0) 1642 616267
 Tel: +44 (0) 1642 602676
 Email: sales@thermal-detection.com
 Web: www.thermal-detection.com
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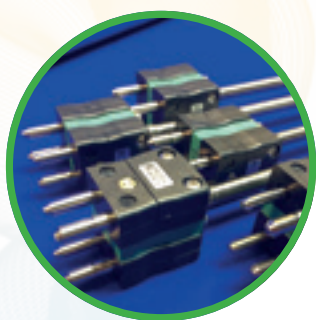
TEMPERATURE PRODUCTS FOR PHARMACEUTICAL
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Temperature Probe Enquiry Form

Please use the form below to tell us about your requirements.
Either scan and email to sales@thermal-detection.com
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Application Detail:

Supporting Sketch:



Interested in industrial applications such as Petrochemical, Marine, Food and Drink, Energy?

Thermal Detection manufacture a wide range of sensors, glands and accessories designed for Manufacturing, Engineering and Processing industries.

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☎ +44 (0)1642 602878

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✉ sales@thermal-detection.com

🌐 www.thermal-detection.com

🐦 ThermalDLtd

🌐 linkedin.com/company/thermal-detection-limited

Thermal Detection Limited
Unit 6, Orde Wingate Way
Primrose Hill Industrial Estate
Stockton-on-Tees TS19 0GA UK

