



Meet Our Design Team



Industrial Food Thermometers

from

SENSOR-TECH LTD

Castlebellingham, Co. Louth, Ireland

Telephone: +353 (0)42 9372068 email: info@sensortech.ie



Thermometer Specifications

Case

Round, Robust, heat resistant and highly polished for easy clean

Water Resistance

With No On/Off Switch and no accessible battery compartment, the thermometer is totally sealed against moisture. This means they can be used in more hazardous areas like cooking, production, fridges etc

Display

Permanently On

Battery Life

7 Years Plus, Replaced during Calibration

Calibration

All our Thermometers are calibrated to National Standards

Repeatability

The Calibration Certificate gives a reading of 0.1°C at 0.0°C on all Green Thermometers. This 0.1°C is repeatable and stable and can be checked using the Zero test. See back page "Application Guide" for more details on Calibration checks.

Accuracy

The Probe and Meter are as one ie. no connector. The quoted accuracy is given for the combined system error of both probe and thermometer.

PTFE Cable

Withstands temperature from -150°C to 200°C This allows the probes to be inserted in product while it is being cooked (oven temps up to 150°C) Extra cable is recommended for this purpose.

Probes

All tubes and fittings are stainless steel. There is a range of probes to meet different applications

- (1) Straight handle for use in liquid or soft product
- (2) T-Loop handle, allows a push, pull, twist action
- (3) Stem type where steel probe comes directly out of case. These probes are very durable.
- (4) Between Pack (low mass)
- (5) Air Probe Short Stem, low cost probe for use in Chillers, Display Cabinets, etc.
- (6) Air Probe with 1m lead, a low cost indicator for Freezers, Chillers, Hot Serve Overs, etc.

Repair/Calibration Policy

It is our policy that all thermometers should be returned and working good as new. They should also look as good as new. Cases will be changed during Repair/Calibration, if they are damaged or scuffed (included in the fixed cost).

Longevity

There is no limit on age. At Sensor-Tech we are proud that an increasing number of our thermometers are in everyday use in excess of 10 years.

No Ambient Effects

These thermometers do not require stabilisation. Use direct from office to cold store, a temperature difference of 40°C without any error.

With a permanently displayed temperature and long battery life (up to 10 years), these thermometers can be used in virtually any application, replacing Glass Mercury and Bimetal Dial Thermometers etc. within the temperature ranges -50°C to 120°C. Mounting the meter on the outside of a chiller/freezer and wiring the probe in through a 6mm hole in the wall gives a permanent display of the temperature, removable for calibration. The 6mm diameter Stem types have a range of BSP fittings which allows them to be mounted on pipe lines and tanks etc. A longer 6mm (up to 2 metres) can be used to measure *Bulk-Grain*.

Order Code: **TGAL** incl. calibration €59

AIR PROBE THERMOMETER (Wall Mounted with 1m lead)



Low Cost for use in Chillers, Freezers and Serve Over Hot Counters

Order Code: **TGPM** incl. calibration €109

PIPE MOUNTED THERMOMETER



Use with BSP fittings to mount in Pipe Lines, Tanks etc.

Order Code: **TGSS** incl. calibration €55

AIR PROBE THERMOMETER (Short Stem)



Low Cost for use in Chillers and Display Cabinets

Order Code: **TGS4** incl. calibration €95

STEM PROBE THERMOMETER



Use where tough probe is needed. Production, Cold Stores, Loading Bays etc.

TYPE	AREA	TEMPERATURE RANGE	ACCURACY	PROBE	PI
Green	General (All Areas)	-50°C to 120°C	Range -20°C to 120°C ± 0.4°C ± 1 digit Range -50°C to -20°C ± 1°C ± 1 digit	STRAIGHT (4mm dia tube 2ft cable)	STR (3.2mm 2ft)

TGS61 incl. cal €150

TGS62 incl. cal €190

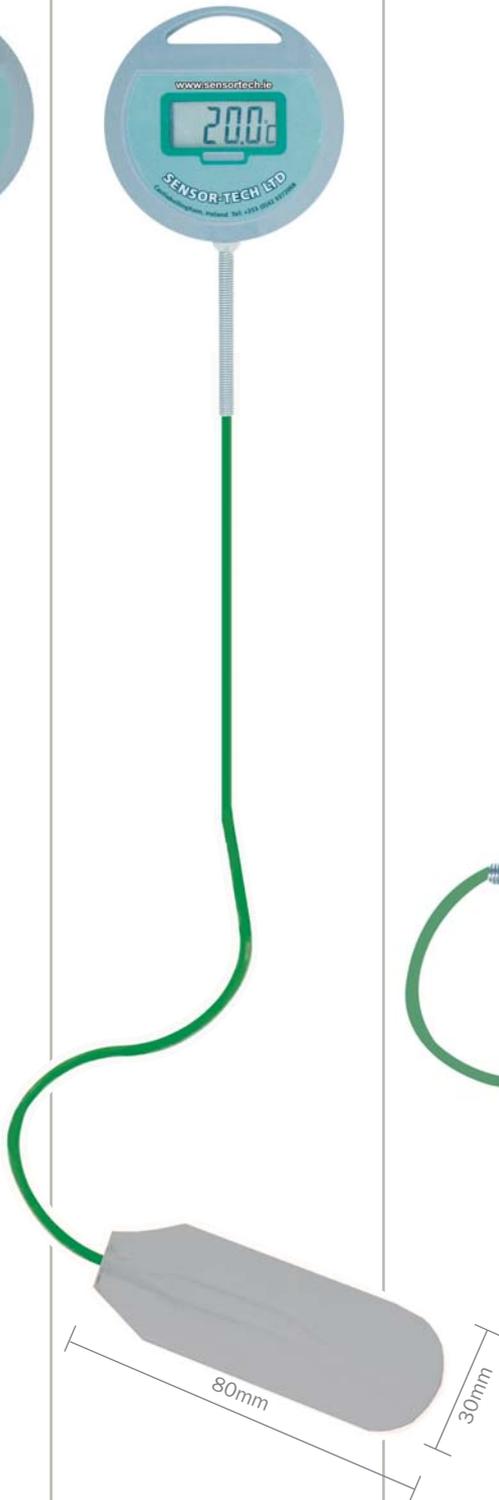
GRAIN PROBE THERMOMETER



Available with 1 metre or 2 metre long probe for measuring Grain temperatures etc.

TGBP incl. calibration €95

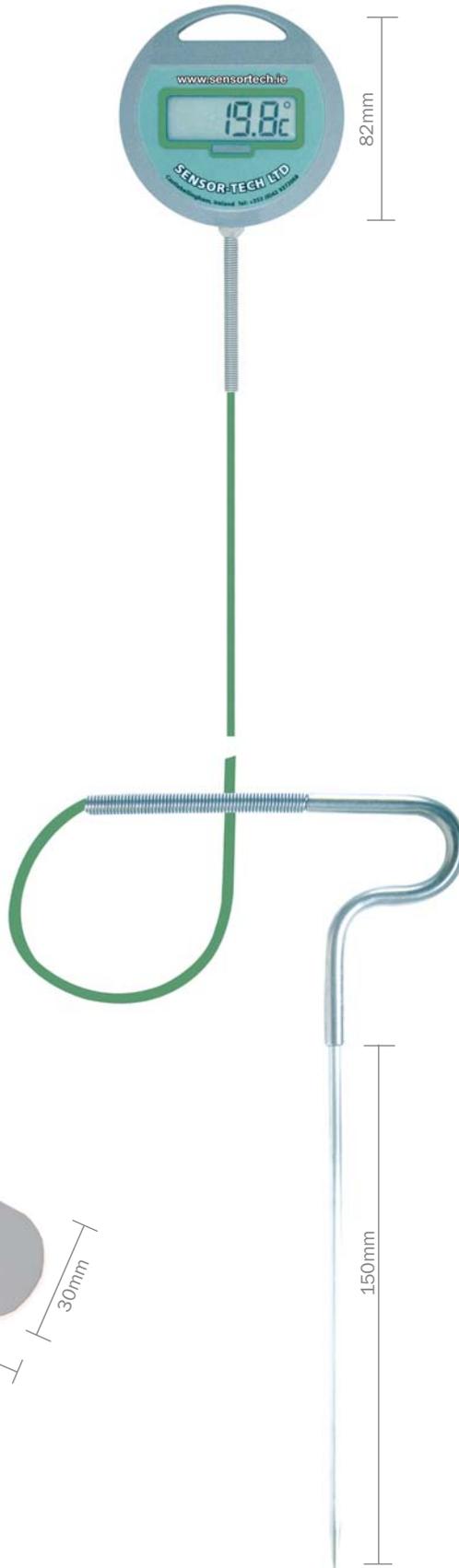
BETWEEN PACK/AIR THERMOMETER



Low Mass
Use as a non-destructive test for all prepared food products, shop displays etc. This thermometer is a must for those difficult temperatures such as bread, gas flushed packs, light salads, poly bags etc.

Order Code: TGTL incl. calibration €95

T-LOOP PROBE THERMOMETER



Our best selling thermometer
Use as a general purpose food manufacturing thermometer.

TGST3 incl. calibration €95

STRAIGHT PROBE THERMOMETER



General purposes Thermometer.
Use for Production, Retail, Fridge, Freezer, Transport etc.

PROBE STRAIGHT 4mm dia tube 2ft cable)	PROBE T-LOOP (4mm dia tube 2ft cable)	PROBE STEM (4mm dia tube)	PROBE STEM (6mm dia) L120mm / L300mm / L1m / L2m Grain	BETWEEN PACKS (Low Mass)	LABEL/CABLE Green
---	--	---------------------------------	---	-----------------------------	----------------------

If you need any further information or advice on a specific application, Please call:

SENSOR-TECH LTD

Telephone: +353 (0)42 9372068
Castlebellingham, Co. Louth, Ireland

Sensor-Tech Thermometers

Application Guide

PLEASE KEEP FOR HANDY REFERENCE

Calibration Interval is one year.

Calibration Check. It is important to have a means of checking the accuracy of your meter between Calibrations. The most popular checks are Zero and 100°C.

0.0°C Reference. Use crushed ice & water preferably in a vacuum flask. Firstly pack the flask with crushed ice & then top up with water to give a slushy ice mix. This is a very accurate, simple and mobile check.

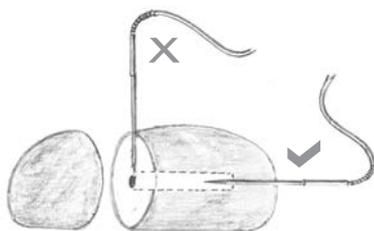
100°C Check. This is more difficult to achieve. Many people use a kettle to check the thermometer at boiling point.

Care must be taken to get an accurate result. Some makes of thermometers can be too sensitive and respond to the superheated steam in a seemingly erratic display of temperature.

- (1) Continuous boiling action will help to keep the water agitated. If hot water is allowed to settle a temperature strata begins to form, hot on top and cold on bottom
- (2) Allow for atmospheric pressures. Variations in pressure (both weather and altitude) will cause the boiling point to change. At sea level the error can be +/- 1°C (970 to 1030hp)
- (3) Use a Reference thermometer in place of (2) above

Core temperatures/meat product. This should be measured at the centre of the thickest part of the product. The probe should penetrate to at least 10 times its diameter away from bone, fat or gristle. With thin product such as Hamburgers and Pizzas the temperature should be measured by inserting the probe sideways. Use a suitable diameter probe.

Core temperature of cooking or cooked meats product. The temperature should be taken at the coldest part of the meat i.e. The centre core. The shape and location of this core will depend on the shape of the product. It is usually possible to see symmetry in the shape and therefore find an axis line. The diagram below shows a typically shaped boned meat product. It also applies to product in a cooking press.



- (1) It is not recommended to measure the core temperature by inserting the probe in from the top or side of the product or press lid. This is like trying to find "The Bulls Eye". It takes an expert on a good day to get it right and leaves no margin for error. The error in this case can be a few degrees C or more and is usually highlighted by differences in the readings between the internal oven probe and hand held thermometers.
- (2) The probe should be inserted in from the front or back along the centre axis of the product. The result of this simple change helps to de-skill the procedure while giving more accurate and repeatable readings. In the case of the cooking press this may mean drilling an extra hole in the press.

Frozen meat product. Hard frozen products (meat) should be drilled to insert probe. Ideally the drill size should be just big enough to make a tight fit with good Thermal Contact between wall of probe and product.

A drill size of about 0.5mm bigger than probe is ideal.

In practice 6mm or 1/4" drills are often used. This larger hole size leaves an air gap between product and probe resulting in possible error. To avoid this, the probe should be jammed in to the hole in such a way as to make good thermal contact with the product.

Comparing, two or more Thermometers. This method is often used to confirm accuracy. Ideally use an Ice Reference (see 0.0°C above). In practice however this may not be available. For a rough guide tie both probe tips together with an elastic band for good contact.

Between Pack. This is a non-destructive method for taking the temperatures of prepared food products. It can also be the most difficult. The probe choice will be determined by the type of product, Vacuum packed meat products (rashers & sausages) are good conductors of temperature helped by their close contact with the packaging. This makes it possible to take temps using small steel probes or Between Pack probes. However when measuring between products that are poor conductors such as bread, gas flushed vacuum formed packs, use low mass Between Pack probes. With salad dressing in a plastic container. Soup/milk in cartons, outer palletised cartons the probe choice will depend on the weight and depth of the cartons.

- (1) Use a probe with the lowest thermal mass that the situation will allow. i.e. the thinnest tube, the flattest sensor or a low mass sensor.
- (2) Keep the thermometer in the testing area to allow the meter and probe to stabilise. This is important for thermocouple type probes.
- (3) It may help to pre-cool a steel probe.

Non-contact, infrared Thermometers. These meters work on the principle that all bodies emit infrared radiation in proportion to their temperature. Using infrared detectors this temperature can be measured; however there are some problems in applying this technology to the everyday operations of the food industry. The accuracy of these measurements will depend on the following.

- (1) Emissivity. This relates to the ability of a body to absorb or reflect incident radiation. As a rule black bodies absorb all incident radiation so that all emitting radiations is a result of their own body heat. They have an emissivity factor of 1.0. However shiny surfaces reflect a lot of incident radiation and therefore need special compensation ie emissivity factor less than 1.0. This is not an exact science. It is not uncommon to get readings in a fridge that pick up your own body heat reflected from the shiny surfaces.
- (2) Ambient temperature compensation. As with all thermocouple thermometers these infrared detectors have internal temperature sensors which compensate for changes in ambient temperatures. They should be allowed to stabilise in the environment where they are being used. Check the manufacturer's specifications to make sure that they can operate at these ambient temperatures.
- (3) The laser dot is not the point of measurement. The surface being measured is described by the base of a cone whose tip is at the sensor and whose diameter varies with the distance between them. This "cone angle" is given as a ratio and is specified by the manufacturer. A 6:1 ratio for example means a distance of 6cm will measure a spot of 1cm.
- (4) Take the reading and remove the thermometer. Continuously holding the sensor over a product can cause errors through the heating or cooling effects of incident radiation on the sensor.
- (5) Difficult to calibrate
- (6) Use discerningly.