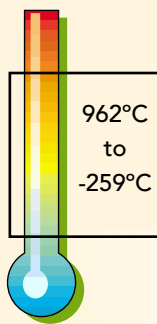


True Temperature Indicator 2

TTI-2



If you need the very finest bridge at the Millikelvin accuracy level then the Isotech TTI-2 will delight you. Here are just some of the reasons why TTI-2 is the preferred instrument in many laboratories including Isotech's Secondary Laboratory.

- 1 The display shows the true unfiltered single measurement value, not an artificially filtered value which appears stable only due to filtering and averaging of values.
- 2 There are no preset type controls such as variable resistors in the design, it is completely solid state. Calibration adjustments are software controlled.
- 3 There are no mechanical relays, so the TTI-2 has increased life and reliability.
- 4 Simultaneous display of two channels:- essential for high quality comparison calibration.
- 5 In statistics mode, the TTI-2 resolves and averages up to 50 readings of 2 channels simultaneously and present the mean values (Temperature, Resistance or Ratio) to $\pm 0.00001^\circ\text{C}$ resolution as well as giving the standard deviation of the mean value.
- 6 The TTI-2 uses a single power source which reduces noise effects considerably.
- 7 Password protection - prevents unauthorised tampering with the Bridge.
- 8 The Bridge automatically stops and awaits instruction once the standard thermometer has been either over temperatured, or has passed its recalibration date. What only time tells in the high build quality and reliability means we can truly recommend this outstanding piece of engineering.

With an uncertainty of better than 1mK (0.001°C), this temperature indicator is the best of its kind.

Based on its use, one German D.K.D. approved laboratory has obtained a calibration schedule with a total uncertainty of 0.5mK at the triple point of water.

Model No.	TTI-2
Measuring Current	0.5mA
Self heating test	$1/\sqrt{2}$ x measuring current
Measuring Range	Temperature: -200°C to $+850^\circ\text{C}$ (100Ω Probes) Temperature: -259°C to 962°C (25.5Ω Probes)
Resolution Temperature	0.01mK (Statistics Mode)
Uncertainty Temperature	Typically 1mK. (depending on temperature)
External resistor input	1
1 or 2 sensors	4 wire connected
Measuring time	.72 seconds
Data output serial interface	RS232 for easy data storage
2 analogue outputs	0 to 5 volts/10 bit
Ambient range	$0-35^\circ\text{C}$
Temperature coefficient	0.1ppm of total range/ $^\circ\text{C}$
Power	25W, 85-260VAC, 50/60Hz
Interference voltage suppression	180dB
Dimensions	Height 160mm Width 360mm Depth 375mm
Weight	8.5kg
Optional Extras	Standard or Industrial Platinum Resistance Thermometers Fixed Resistor for external connection UKAS Certification

How to Order

Model TTI-2 Please specify options required

The TTI-2 can be programmed with up to 10 thermometer characteristics and in Isotech's UKAS Laboratory, the TTI-2 is now the main measurement device.

Small changes in the software programme and a new user friendly front panel layout are the main changes that we asked our supplier to make.

If you would like to know more about the TTI-2 we have a video, a comprehensive handbook, and a P.T.B. evaluation.

Please fax us for more information.

For the selection of standards and total instrument uncertainties, please see page 40.

FEATURES: Accuracy up to $\pm 0.001^\circ\text{C}$ • Resolution up to 0.00001°C on average and standard deviation display • 10 thermometer characteristics can be programmed into the TTI-2 • Easy to use and understand • Proven operation at international level Indicates $^\circ\text{C}$, $^\circ\text{F}$, K or Ratio • 2 Thermometer channels plus 1 external reference resistor channel as standard • Range -259°C to $+962^\circ\text{C}$

Simple to use SPRT/PRT Instrument. High Accuracy, High Resolution



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The self-instructing menu-driven system is a delight to use. The structure is drawn out for you on the right. From the menu you can select temperature, resistance or ratio.

The 'stat' screen enables actual, mean and standard deviation to be displayed to the highest accuracy.

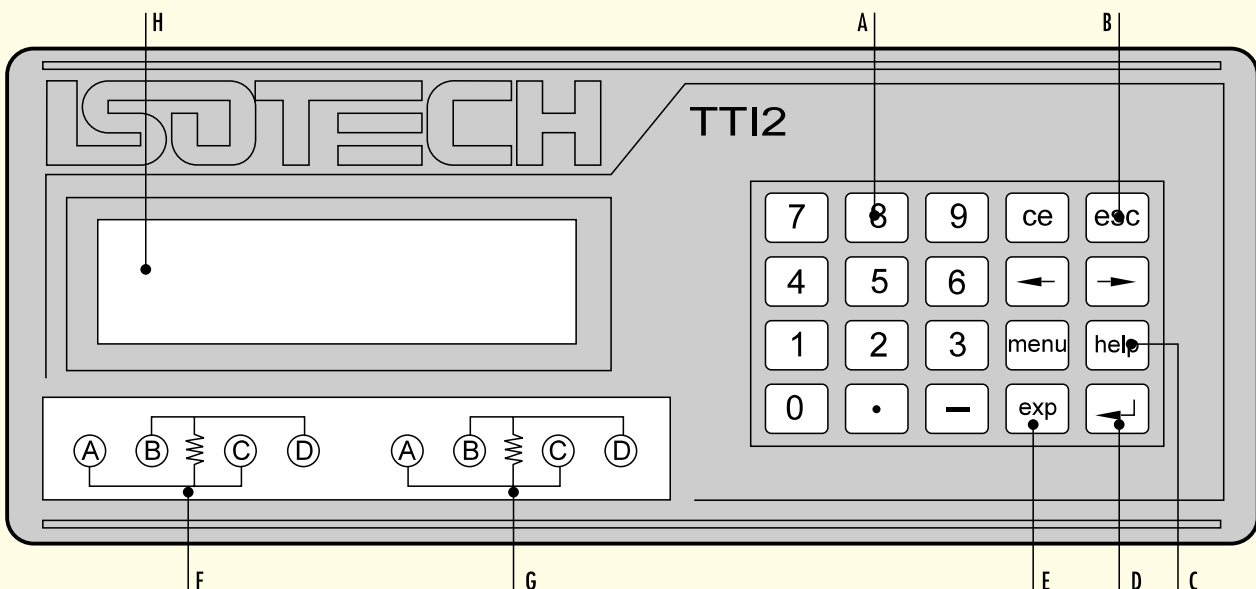
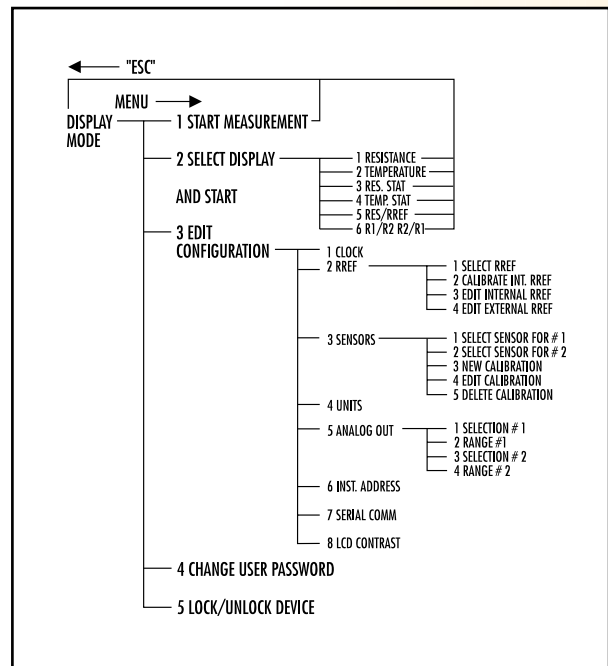
In the 'edit' configuration you can update the calibrations of your probes or reference resistor, change the units from °C to K to °F and set the temperature (or resistance) span for each of two 0 to 5V analog outputs.

L.C.D. contrast. This facility allows you to get the maximum contrast from the display at a variety of lighting levels and display angles.

User password. This is a very important safeguard and can be altered if the password becomes generally known. As further security you can have a second lock device to prevent anyone changing items on the menu.

- A Keypad for numeric input
- B Step down menu one tree branch
- C Provides on screen help
- D Enter
- E For exponential input
- F Sensor 1 connection
- G Sensor 2 connection
- H Back lit LCD display

Indicates 2 channels simultaneously. Resolution up to 0.00001°C on average and standard deviation display
 10 thermometer characteristics can be programmed into the T.T.I. 2. Easy to use and understand



True Temperature Indicator 2

TTI-2

We have spent a long time reviewing the currently available bridges and thermometers; and in conjunction with the manufacturer, Paar, have produced what we believe to be the most exciting piece of equipment we have seen.

It is very seldom that electronics these days are under specified, but with proper understanding and good practice, proven accuracies of better than 1mK have been achieved with the TTI 2.

The main features of the TTI 2 are:

Direct application of ITS 90 or the Industrial Platinum Thermometer curve.

Up to 10 Probe-specific sets of parameters can be entered from the front panel and stored in the instrument.

2 sensor inputs

Differential temperature measurement is easily achieved and 2 independent probes allow cross-check of the accuracy.

Temperature stabilised internal or external resistor makes the TTI 2 independent of ambient conditions.

The TTI 2 can display actual and mean temperatures and standard deviation, the latter two to a resolution of 0.00001°C, thus eliminating random errors and enabling the temperature stability of a sample to be estimated.

Password protection - prevents unauthorised parameter change.

Over-temperature alarm notifies the user that one or other thermometer has been taken outside its calibration range.

UKAS Certification of the thermometer and probes ensures International Traceability.

The TTI 2 encompasses the best of the D.C. measurement philosophy with automatic reversal of the measurement current to eliminate thermoelectric errors.

The precision and long term stability is dependent only on the reference resistor, which can easily be recalibrated. Alternatively, the thermometers can be referenced to an external reference resistor for ultimate precision.

Lightweight. The TTI 2 is truly portable at 10kg.

Handbook. The handbook is the clearest and most comprehensive we have seen.

RS 232 communications are standard.

2 programmable analog outputs.

Easy to use:

Proven operation at international level. Indicates °C, °F, K, W or Ratio.

2 Thermometer channels plus 1 external reference resistor channel as standard.

Range -259°C to 962°C.

Supplied with Cal NotePad software.

