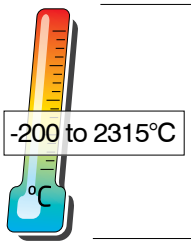

PRT and Thermocouple Thermometer
TTI - 7 PLUS

- Now accepts 25 and 100 Ohm Resistance Thermometers - Conversion to ITS-90 and IEC 751
- Eliminate unwanted thermal EMFs with current reversal
- Expandable to have 10 input channels
- Inbuilt data logger stores up to 4000 measurements
- Portable - 10 hours use from internal battery

The TTI-7 PLUS is a very high accuracy multi purpose digital thermometer for both platinum resistance thermometers and thermocouples. Laboratory users will welcome the features to eliminate Thermal EMF Errors and Self Heating Errors along with provision to store the calibration data of up to 20 PRT probes. The rugged aluminum case, internal battery pack and integrated power supply ensure reliable portable field use for demanding measurement applications all at great value for money.

Dual Channel input allows a probe on Channel B to be calibrated against a standard on Channel A - directly compare any combination of PRT and Thermocouple. The TTI-7 PLUS now supports thirteen thermocouple types, B, C, D, E, J, K, L, N, R, S, T, U, Au/Pt along with 25 and 100 Ohm platinum resistance thermometers.

Data Logging and Statistical Analysis

The TTI-7 PLUS includes an inbuilt data logger internally storing up to 4,000 date and time stamped readings. Recall the data from the front panel or send to a PC or Printer via the PC interface which is included as standard. The powerful math function enables statistical analysis of the captured data, mean, max, min, peak and standard deviation. The TTI-7 PLUS now also includes a real time rolling display.

Usability

Ease of use, password protected digital calibration and a large clear backlit LCD graphics panel ensure the TTI-7 PLUS is a delight to use. Resistance thermometer connections are via LEMO connectors. Both sub miniature thermocouple and standard thermocouple plugs are accepted directly into the thermocouple inputs with no need for further adapters.

Why the TTI-7 PLUS ?

The TTI-7 PLUS has the features you need for high accuracy temperature measurement. With resistance thermometers used at high temperatures unwanted thermal EMFs are generated, the TTI-7 PLUS can take two measurements switching the polarity then computing the average to eliminate this error source. Many other instruments lack the ability to eliminate thermal EMFs. The thermal EMF error can be greater than the quoted accuracy of an instrument, if you need small measurement uncertainty for high temperature PRT work you need this feature. Add the internal scanner to expand the instrument to have up to 10 channels - any or all can be scanned and lodged with the internal data logger.

High Accuracy

Highest accuracy is for Pt100 inputs, the TTI-7 PLUS Uncertainty of Measurement (1 Year) in the range -100°C to 500°C is 0.01°C. Watch for specifications that quote the value at -100°C and then get larger as the temperature rises. The TTI-7 PLUS is optimized over the most frequently used and useful temperature range. For thermocouple measurements the automatic CJC is far better than 0.1°C at 20°C. Great design care was taken, both thermocouple inputs are measured with separate Pt100 sensors. This approach gives outstanding CJC performance, again a point to check against other instruments which can have significantly less performance.

Sensor	Range (°C)	Resistance (Ohm)	Current	Resolution °C °F K	Uncertainty 1 year @ 20 ±5°C
Pt25	-200 to -100	2.5 to 15	1mA	0.001	0.02°C
Pt25	-100 to +500	15 to 75	1mA	0.001	0.01°C
Pt25	+500 to +670	75 to 115	1mA	0.001	0.02°C
Pt100	-200 to -100	10 to 60	0.5mA	0.001	0.02°C
Pt100	-100 to +500	60 to 280	0.5mA	0.001	0.01°C
Pt100	+500 to +670	280 to 460	0.5mA	0.001	0.02°C

Type	Range °C	Common Name	Resolution °C °F K	Standard	Uncertainty @20°C ±5°C 1 Year	Uncertainty @20°C ±5°C 60 Days
B	+250°C to +1820	Platinum / Rhodium	0.01	NIST 175	±(0.025% Rdg + 0.006%FS)*	±(0.02% Rdg + 0.006%FS)*
C	0 to +2315	Tungsten / Rhenium	0.01	ASTM E988	±(0.075% Rdg + 0.005%FS)	±(0.05% Rdg + 0.005%FS)
D	0 to +2315	Tungsten / Rhenium	0.01	ASTM E988	±(0.075% Rdg + 0.005%FS)	±(0.05% Rdg + 0.005%FS)
E	-200 to +1000	Chromel / Constantan	0.01	NIST 175	±(0.026% Rdg + 0.004%FS)	±(0.01% Rdg + 0.004%FS)
J	-210 to +1200	Iron / Constantan (SAMA)	0.01	NIST 175	±(0.03% Rdg + 0.005%FS)	±(0.008% Rdg + 0.005%FS)
K	-200 to +1372	Chromel / Alumel	0.01	NIST 175	±(0.035% Rdg + 0.006%FS)	±(0.01% Rdg + 0.006%FS)
N	-200 to +1300	Nicrosil / Nisil	0.01	NIST 175	±(0.035% Rdg + 0.005%FS)	±(0.01% Rdg + 0.005%FS)
R	-50 to +1768	Platinum / Rhodium	0.01	NIST 175	±(0.02% Rdg + 0.015%FS)	±(0.005% Rdg + 0.015%FS)
S	-50 to +1768	Platinum / Rhodium	0.01	NIST 175	±(0.02% Rdg + 0.015%FS)	±(0.005% Rdg + 0.015%FS)
T	-200 to +400	Copper / Constantan	0.01	NIST 175	±(0.025% Rdg + 0.015%FS)	±(0.005% Rdg + 0.015%FS)
U	-200 to +600	Copper / Constantan	0.01	DIN 43710	±(0.025% Rdg + 0.015%FS)	±(0.005% Rdg + 0.015%FS)
L	-200 to +500	Iron / Constantan	0.01	DIN 43710	±(0.03% Rdg + 0.005%FS)	±(0.008% Rdg + 0.005%FS)
Au/Pt	0 to +1000	Gold / Platinum	0.01	NIST - Burns	±(0.02% Rdg + 0.015%FS)	±(0.005% Rdg + 0.015%FS)

TC input for external CJC, automatic CJC is better than 0.1°C at 20°C, typically 0.01°C / °C over the range 0°C to 100°C
**Apply to readings above 600°C*

Model	TTI-7 PLUS
Temperature Range	Depending on Sensor -200 to 2315°C
Indicator units	°C, °F, K
Display	LCD Graphics Panel, 240 x 64 Dot with LED backlight contrast control via keyboard
Maths	Display Min / Max, Peak to Peak and Standard Deviation
PC Interface	RS232 and Software Included
Data Logging	Includes a data logging function, enabling up to 4000 single channel (2000 dual channel) readings to be stored together with a date and time stamp. The stored values can be recalled to the instrument display, downloaded to a PC file or printer.
Inputs	Thermocouples via sub miniature and standard connectors. Reference Junction Compensation - Automatic with internal sensor, or with external Pt100 probe. PRTs Lemo Socket.
Working Temperature	0°C to 40°C rel. humidity 80% max non condensing
Storage Temp.	-20°C to +50°C.
Main Supply	100/120/220/240 Volts +10% -13% 47 to 63Hz max. 40VA
Dimensions	Height 110mm Width 219mm Depth 315mm Weight 8kg
Battery	Sealed lead acid, rechargeable cell giving approximately 10 hours continuous operation. Internal battery charger.
Scanner Option	With the scanner option fitted, scanner cards may be inserted into slots on the rear panel, cards for thermocouples and Platinum Resistance Thermometers are available, giving a maximum of 10 measuring channels. Each scanner card has 4 channels and up to 2 cards may be fitted, either thermocouple or PRT in any combination.