TEMPMASTER-100 HIGH ACCURACY DIGITAL THERMOMETER

- Single or dual Pt100 inputs, A, B and A-B
- High resolution 0.01°C
- Very high accuracy and stability
- Better than 40 milliKelvin (0.04°C) system accuracy
- Wide range -199.99°C to +849.99°C
- PC software included
- Digital matching of calibrated sensors
- Reliable and very easy to use
- Circuitry self-calibrates for total stability
- 3 or 4 wire sensors with automatic recognition
- Readout directly in °C, °F, Kelvin, and Ohms
- RS232 (remote control and measure) as standard
- Programmable analogue output
- Bench mounting (or panel option)
- Rechargeable battery / mains adaptor
- Designed and manufactured in the EC by Labfacility
- CE compliance

A high precision portable thermometer for metrology and other exacting laboratory applications, the Tempmaster-100 is a proven instrument used world-wide as a laboratory and site standard in pharmaceutical, medical, food, environmental testing, R&D, and general industrial applications. It is particularly suitable as the reference standard for temperature calibration baths.

Individual calibrated sensors can have their appropriate calibration values programmed into the Tempmaster-100 using the PC software supplied. The non-volatile memory ensures that the values are retained (until such time as they are changed) even after switch-off. Where the calibration certificate relating to a particular probe states specific Ω values at stated temperatures, up to ten such values are entered into the Tempmaster-100 with their relevant temperature points using the software. The Tempmaster-100 therefore digitally self-calibrates to the individual Pt100 sensor and the temperature readout is corrected accordingly within the range of values programmed. Additional manual procedures are not required to compute precise temperature readings since these are displayed directly; miscalculation errors are thus eliminated. **Very high system accuracies, better than 40 milliKelvins (0.04°C)** are achieved using probe matching.

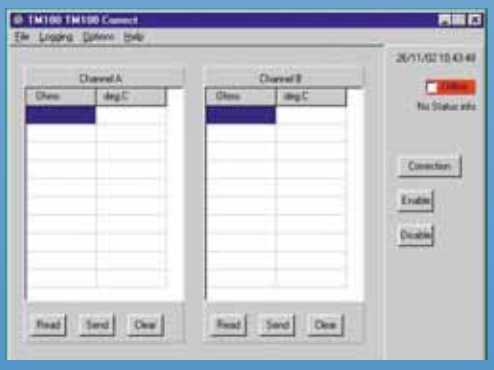
Two sets of calibration values can be held by the Tempmaster-100 in channels A and B. Additional sets of values can be stored on disk.

A common application for the Tempmaster-100 is the comparison calibration of “working” sensors against a calibrated reference standard or semi-standard sensor. For example, the sensor under test in channel B is compared against the reference sensor (with programmed corrections) in channel A.

Primary power is provided by an internal, rechargeable sealed lead-acid battery which provides up to 12 hours operation from a full charge. A mains adaptor is provided for re-charging and for operation directly from the mains.

The PC software for Windows provided offers:

- User-friendly operation
- Remote control & measure
- Programming &/ or editing of calibration correction values of Pt100 sensors
- Read correction values in instrument memory
- Load / Save / Print correction values
- Optionally log readings to file with date / time / user name / Probe ref. Number / Channel A / Channel B
- Includes Help file



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SPECIFICATIONS

All values are valid for a nominal 240V 50Hz supply and 20°C ambient temperature(±2°C).

General

Range/Sensor type	Pt100 to IEC 751 (ITS 90 refers). -199.99 to 849.99°C. R_0 =100Ω. Two input channels, each 3 or 4 wire connection with automatic recognition (with manual override).
Overall instrument accuracy(4 wire)	±0.02°C ±1 digit for range -200°C to +500°C. ±0.005% reading ±1 digit for range 500°C to 850°C.
Overall system accuracy (4 wire)	Better than ±0.04°C with TM-L250 precision probe from -50°C to +250°C with TM-COR.CAL 5 point UKAS calibration.
Linearisation conformity	±0.01°C.
Stability (vs ambient temperature)	0.0025°C/°C ambient change.
Warm-up time	Negligible under normal ambient conditions. Allow 5 to 10 minutes for full stability unless stored at low temperature.
Pt100 sensor current	0.5mA nominal.
Display resolution	0.01°C, K, °F, Ω.
Measurement units	°C, °F, K, Ω (user selectable).
Measurement modes	Input A or B or A-B (differential). Null facility in A-B mode.
Custom calibration (via PC software)	Up to 10 calibration values can be allocated to channels A and B. Values are retained in non-volatile memory until replaced by user.
Null function	Corrects differential temperature readout between the two sensors to zero.
Sensor lead resistance	25Ω each lead maximum.
Supply	Internal rechargeable batteries. Mains 220/240V 50/60Hz, adaptor included. Battery charge life up to 12 hours with full charge dependent on pattern of usage. Charger requirement 10-11.5V d.c. 1A.
Power consumption	10W nominal. Max. 20W when battery is charging.
Series mode rejection	60dB @ 50Hz (50mV rms applied).
Common mode rejection	30V rms applied between input and earth produces no measurable effect.
Ambient temperature range	0 to 50°C non-condensing. Ensure stable temperature for best accuracy. Allow adequate warm-up time if moved from region of low ambient temperature prior to use.
EMC compliance	Meets EMC regulations. RFI to BS EN 50081-1, 1992 and immunity to BS.EN 50082-1, 1992.
CE compliance	CE marked and compliant to current regulations.
Display	14mm LED, 5 digit, 999.99 range.
Front panel controls	5 x membrane keys for user functions.
Input connections	2 x Pt100 via "D" connectors.

Mechanical

Mechanical/Case	Metal bench-top. Optional panel mounting kit.
Dimensions	145 x 66 x 240mm deep.
Weight	1.5kg approximately.

Communications

RS232 (standard)	Remote control and measure. Isolated, 9600 Baud, 8 data, no parity, 1 stop bit.
PC software (standard)	PC software running in WINDOWS allows programming of custom calibration and preview of set values from a PC. Also provides a print facility and storage of sets of correction values.
Analogue output (standard)	Analogue 0 to 1 Volt d.c. between programmable lower and upper set limits. Accuracy 0.5% of reading. Non-isolated.

Accessories and Order Codes

TM-100	Tempmaster-100 (bench-mounting) supplied complete with battery charger, two Pt100 "D" connectors, operating manual and PC software.
TM-100-P	Tempmaster-100 (panel mounting) supplied with panel mounting brackets, battery charger, two Pt100 "D" connectors, operating manual and PC software.

Precision Pt100 Probes

Stainless steel probes, 6mm diameter with 2m screened PTFE lead and "D" connector.

TM – L250	250mm long, 250°C maximum.
TM – H450	350mm long, 450°C maximum.

UKAS Calibration

TM – UKAS	UKAS calibration of instrument alone.
TM – SYS.CAL	5 point UKAS certification of Tempmaster-100 with one probe. Please specify five temperatures.
TM-COR.CAL	5 point UKAS certification of Tempmaster-100 with one probe, after initial calibration of probe alone and programming of corrections. Please specify five temperatures.

Accessories

TM – Case	Carrying / storage case.
TM – TBLK3	Terminal block for connection of 3 wire Pt100s.
TM – TBLK4	Terminal block for connection of 4 wire Pt100s.

Specifications may be subject to change

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