BATTERIES - 'LO BAT' indicates that the batteries need replacing as soon as possible. The unit will continue to function but to maintain accuracy new batteries are required. Replace both batteries with AAA, MN2400 or equivalent 1.5 volt alkaline batteries. If 'Battery Flat' is displayed in the text line the instrument has detected that there is insufficient battery voltage left to function correctly. The instrument will shut down and will not measure again until new batteries have been fitted.

SOFTWARE REVISION - The software revision is shown at start-up in the Ambient Measurement mode.

EMC/RFI - Readings may be affected if the unit is operated within a radio frequency electromagnetic field strength of approximately 3 volts per metre, but the performance of the instrument will not be permanently affected.

GUARANTEE - This instrument carries a two-year guarantee against defects in either components or workmanship. During this period, products that prove to be defective will, at the discretion of ETI, be either repaired or replaced without charge. The product guarantee does not cover damage caused by fair wear and tear, abnormal storage conditions, incorrect use, accidental misuse, abuse, neglect, misapplication or modification. Full details of liability are available within ETI's Terms & Conditions of Sale at etiltd.com/terms. In line with our policy of continuous development, we reserve the right to amend our product specification without prior notice.

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MICROTHERMA SERIES THERMOMETERS

FEATURES

MicroTherma 1 - Selectable thermocouple type K, T, J, R, S, N & E. Hold reading. Max/Min reading.
MicroTherma 2 - Factory set thermocouple type K, T, J, R, S, N & E. Hold reading. Max/Min reading.
MicroTherma 3 - Factory set thermocouple type K, T, J. Factory set °C/°F. Hold reading.
MicroTherma 1 & 2 only - °C/°F selectable. CJC selectable internal/external. Trim set. Auto-off selectable on/off, clear max/min and selectable display contrast adjustment.

ON/OFF - To turn the instrument on press the ON/OFF button. All display segments will be tested. The Thermocouple type will be displayed in the text line above the displayed temperature. When turning off, the unit will remember the last settings and restart with the same configuration. The unit is now ready to measure temperature. To turn the instrument off press the ON/OFF button. 'Saving data' followed by 'Product OFF' will be displayed in the text line.

DISPLAY - The display has two sections. The main section is a 4½-digit temperature display located in the lower half of the viewing area, where measured values are displayed. The other section is a 12-digit alpha/numeric dot matrix text line, located at the top of the viewing area, above the temperature display. Set-up information and command prompts will be displayed here.

RESOLUTION - The unit resolution will be 0.1°, within the range ±1999.9° and will be 1° outside of this.

SENSORS - This unit should only be used with thermocouple probes made to one of the following standards and fitted with a suitable miniature thermocouple plug.

Type K	Nickel-chromium/Nickel-aluminium	BS EN 60584-1:2013
Type J	Iron/Constantan	BS EN 60584-1:2013
Type T	Copper/Copper-nickel	BS EN 60584-1:2013
Type R	Platinum 13% Rhodium	BS EN 60584-1:2013
Type S	Platinum 10% Rhodium	BS EN 60584-1:2013
Type N	Nicrosil/Nisil	BS EN 60584-1:2013
Type E	Chromel/Constantan	BS EN 60584-1:2013

All thermocouple tables to ITS 90.

AUTO-OFF - Auto-off is set at 30 minutes. This can be disabled. In ambient measurement mode (MicroTherma 1 and 2 only) the auto-off is fixed at 10 minutes.

AMBIENT MEASUREMENT - This facility allows the internal CJC temperature of the unit to be measured. This allows the user to determine if the unit has sufficiently acclimatised. Acclimatisation is crucial for accurate measurement. Start the unit by pressing and releasing the ON/OFF button while pressing the HOLD ▲ and MAX/MIN ▼ buttons (MicroTherma 1 and 2 only). Start the unit by pressing and releasing the ON/OFF button while pressing the HOLD button (MicroTherma 3 only). Do not release the HOLD ▲ and MAX/MIN ▼ buttons until the software revision is displayed.

°C/°F (MICROTHERMA 1 & 2 ONLY) - °C or °F is selectable in the Parameter Set-Up Menu.

HOLD - Press the HOLD ▲ button to hold the reading. 'HOLD' will illuminate in the display. Press again to release hold.

MAX/MIN (MICROTHERMA 1 & 2 ONLY) - Press the MAX/MIN ▼ button to show the max temperature in the dot matrix text line. Press again to show the minimum temperature. Press again to show the T/C type. Max and Min values will be cleared when instrument changes from °C to °F and vice versa or is switched off. Max/Min values can be cleared in the Parameter Set-up Menu.

TRIM FUNCTION (MICROTHERMA 1 & 2 ONLY) - This function allows a constant temperature offset to be entered to compensate for thermocouple probe tolerances. The trim value is selectable in the Parameter Set-Up Menu. Maximum trim value is ±2.5 °C (4.5 °F). The trim value will be displayed in the text line at start-up if it is not equal to zero.

INTERNAL/EXTERNAL CJC (COLD JUNCTION COMPENSATION) (MICROTHERMA 1 & 2 ONLY) - The unit will automatically adjust the thermocouple input to allow for changes in the ambient temperature when the CJC is set to 'INTERNAL'. Use CJC 'EXTERNAL' if the input is being wired through an "ice point reference". When using an "ice point reference", copper wires must be used from the reference to the MicroTherma input. This is selectable in the Parameter Set-Up Menu.

UNDER OR OVER RANGE/OPEN CIRCUIT - 'Range Error' will be displayed in the text line if the measured temperature is outside the range of the instrument (shown below). 'Range Error' will also be displayed if the sensor is open circuit.

Minimum and maximum instrument reading limits:

T/C type	min °C	max °C	min °F	max °F
K	-200.0	1372.0	-328.0	2501.0
T	-270.0	400.0	-454.0	752.0
J	-200.0	1200.0	-328.0	2192.0
R/S	0.0	1768.0	32.0	3214.0
N	-200.0	1300.0	-328.0	2372.0
E	-140.0	1000.0	-220.0	1832.0

BUTTON FUNCTION IN THE PARAMETER SET-UP MENU (MICROTHERMA 1 & 2 ONLY) - Press the MODE button to enter the parameter set-up menu. The parameter and its current setting will be shown in the text line. Press the MODE button to move to the next parameter. Use either the UP ▲ or DOWN ▼ button to change setting (i.e. Y to N, °C to °F, Internal CJC to External CJC). When setting display contrast press and hold the UP ▲ button to increase contrast (darken the display) and the DOWN ▼ button to decrease contrast (lighten the display). Press both UP ▲ and DOWN ▼ buttons together to return to the factory default. When adjusting the trim function press the UP ▲ button to increase the value and the DOWN ▼ button to decrease the value. Press both UP ▲ and DOWN ▼ buttons together to return to zero trim value. When all parameters have been scrolled through, 'End of list' will be displayed while the settings are saved.
Press the MODE button to enter the parameter set up menu.

Parameter Set-up Menu List :-

(MicroTherma 1 only)
T/C Type = <K> <T> <J> <R> <S> <N> <E>

(MicroTherma 1 and 2 only)
Temp in <°C> <°F>
<Internal CJC> <External CJC>
Set Trim = <Y> <N>
Auto-Off <Y> <N>
Clr Mx/Mn <Y> <N>
Contrast Set
End of List