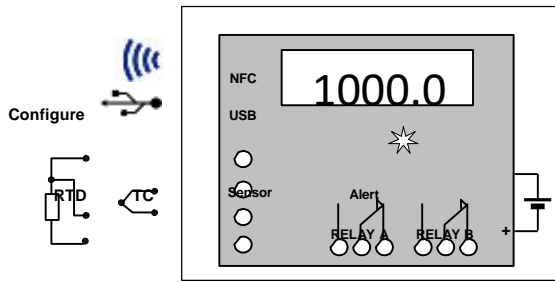




**User Guide
for
Precision Battery Powered
Digital Thermometer DTE**



DTE Precision Battery Powered Digital Thermometer with dual trip and NFC interface logging function. User Guide



Important - Please read this document before any installing.

Every effort has been taken to ensure the accuracy of this document, however we do not accept responsibility for damage, injury, loss or expense resulting from errors and omissions, and we reserve the right of amendment without notice.

IMPORTANT - CE & SAFETY REQUIREMENTS

- Product must be installed correctly providing environmental protection to IP65 or greater (Cable Entries).
- To maintain CE EMC requirements, Sensor wires must be less than 3 metres.
- Apart from the battery the product contains no serviceable parts. No attempt must be made to repair this product. Faulty units must be returned to supplier for repair.
- This product must be installed by a qualified person. All electrical wiring must be carried out in accordance with the appropriate regulations for the place of installation.
- Battery - Fire Explosion and Severe Burn Hazard. Do not attempt to re-charge, Crush, Incinerate, Disassemble, Heat above 100 °C (212 °F) or expose to water.
- Disposal of the battery must conform with the regulations applicable for the area use.

ABSOLUTE MAXIMUM CONDITIONS (To exceed may cause damage to the unit):-

Battery Voltage	+ 3.7 V dc (Protected for reverse connection)
Input Voltage	± 1 V between any terminals
Ambient	Temperature (-10 to 50) °C Humidity (10 to 95) % RH (Non condensing)
Relays	50 V dc 40 V ac rms

PRODUCT SPECIFICATION

Please refer to the product data sheet for full specification, available to download at www.kobold-direct.co.uk.

RECEIVE AND UNPACKING

Please inspect the packaging and instrument thoroughly for any signs of transit damage. If the instrument has been damaged, please notify your supplier immediately.

CONFIGURATION

The instrument is provided with a USB interface for direct connection to a PC. A free software tool is available from the manufacturer or supplier, please download from the website listed below. The tool is simple to use and provides the user with either basic or advanced modes of operation. Please refer to the software user manual for further information. This manual can be opened from the instrument configuration form or downloaded from the website listed below. Please note the software tool covers a large range of products, but offers a quick connect button for ease of use. Please note the LCD display is not capable of scrolling messages at low ambient temperatures. The instrument will automatically exit advanced mode into basic at temperature below -5 °C.

INSTALLATION AND BATTERY REPLACEMENT



IMPORTANT Always remove battery before any wiring takes place. Gain access to user adjustment and battery holder by twisting cap to release front panel assembly from case. For connection information please refer to the internal markings found on the protection panel.

SENSOR CONNECTION

General – The instrument is designed to be directly attached to the sensor probe assembly. Remote Probes may be used but the user must ensure all sensor entries maintain environmental protection to at least IP65 rating. To comply with CE EMC requirements the sensor wires should be no longer than 3 metres.

RTD – For best result we recommend using three wire connection, this method compensates for any lead resistance between the sensing element and instrument. Two wire connection is possible, refer to connection diagram on the instrument protection panel.

Thermocouple - Thermocouple wire type must be maintained from the sensor element to the instrument terminals. The terminals are effectively the cold junction point. Applicable extension may be used over limit ambient temperature ranges.

RELAY CONNECTION

Two independent change over contacts are provided. Screw terminals are provided for connection for wire size 16 to 20 AWG. All cable entries must be sealed to at least IP65 rating. The relay contacts are rated at 48 V dc 33 V ac rms @ 1 A (5 mA minimum current).

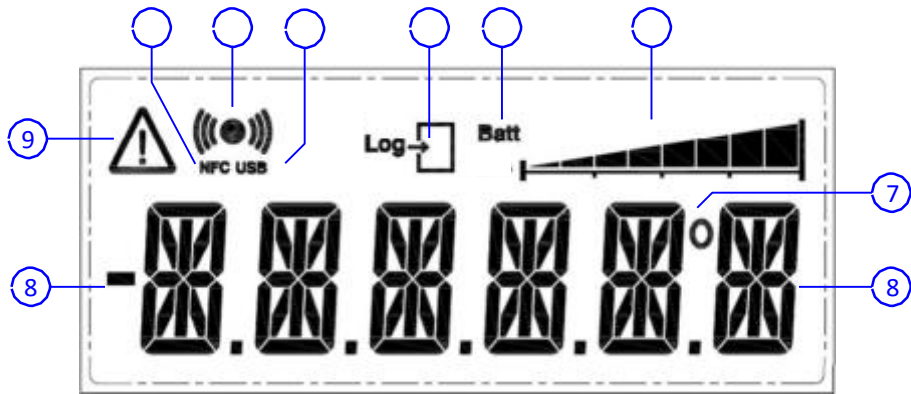
BATTERY

Please observe the above battery warnings. To remove battery use screw driver to ease the positive end of battery out of holder. Insert new battery negative end first then press into place. (Observe polarity). Battery type 3.6 V Lithium (2.4 A/Hr) CR14505 (IEC) AA case style. Please dispose of the battery in a responsible way.

OPERATION AND USER CONTROLS

DISPLAY

The display provides six 14 segment character for display of temperature and alpha numeric messages, together with a 8 segment bar graph and six icons. The display is capable of operating in an ambient temperature range of (-40 to 85) °C, but temperatures lower than -5 °C due to the slowing speed LCD scrolled messaging is not practical, so the display will automatically revert to basic mode showing temperature. Displays high contrast coupled with a digit height is 15.8 mm offering clear readouts at low ambient light and direct sunlight. The display layout is as follows :-

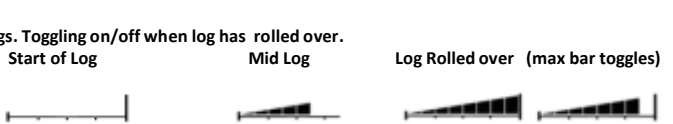


1. NFC – The Symbol on when a NFC field is detected. When a detected field is lost the symbol will turn off after a few seconds.
2. TRANSMIT/RECEIVE - Symbol on the either NFC or USB communication is active.
3. USB – Symbol on when USB port is connected to a PC. Please note the instrument will be powered from the USB port in this mode to increase battery life.
4. LOG and 6. BAR GRAPH – These two symbols indicate the state of the logger. The condition is dependent on the selected logger mode either single or Rolling mode.

Single Mode (Log to the maximum number of logs then stop)
 LOG - symbol off when logger is off or ended. On when logging.
 BAR GRAPH - Indicates the log volume



Rolling Mode (Log to the maximum number of logs then stop)
 LOG - Symbol off when logger is off . On when logging up to maximum number of logs. Toggling on/off when log has rolled over.
 BAR GRAPH - Indicates the log volume



5. BATT – Symbol on when low battery is detected.
7. DEG – Deg Symbol used to indicate either °C or °F on the last digit.
8. DIGITS - Six digit 14 segment display with – sign, range 9999.9 to -9999.9. Advance mode offers two temperature dependent 32 character message options.
9. WARNING ICON – This symbol will toggle on and off to indicate a warning. The warning symbol will be active either when the sensor signal is out of range or not connected or when the battery is low.

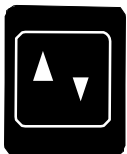


MULTIFUNCTION ALERT LED

The alert LED normal state is off, on alert the LED will emit a intense white light pule every 10 seconds. The led can programmed to pulse on the any of the following combined events :-

Mode	Description
No events	The Led never operates, extending battery life. (Factory default setting)
Battery	Alert on low battery detect.
Trip	Alert when the trip is on.
Temperature	In Advanced mode only the alert can be made to alert in any one of eight user set temperature bands. Example to alert operator when temperature is outside a safe operating range.

The function of the alert LED can be further enhanced with the option of displaying a alert message in advanced display mode.

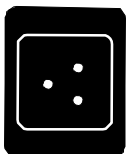


MAX/MIN BUTTON

This button allows the user display with or without timestamp dependent on the option selected by the configuration software:-

Timestamp off	- the maximum, minimum temperatures. (Factory default setting)
Timestamp on	- the maximum, minimum, average and now temperatures with timestamps , format “day”+ “date” + “month” + “Year” (see note *).

To clear Max/Min/Avg data press and hold button, the Alert LED will light after about 5 seconds. Keep the button held on until the light goes out. The data and time stamps will now be cleared.



RELAY BUTTON

This button allows the user display with or without timestamp dependent on the option selected by the configuration software:-

Timestamp off	- RelayA(B) Title, State, Action, Set point. (Factory default setting)
Timestamp on	- RelayA(B) Title, State, Action, Set point, Last Trip on time date , Last Trip off time date , format “day”+ “date” + “month” + “Year” (see note *).

To clear Latched Relay(s) press and hold button, the Alert LED will light after about 5 seconds. Keep the button held on until the light goes out. The latched relays will now be cleared.

In the case of latched relays the timestamp will apply to the latch set and clear.

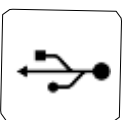


NFC LOGGER INTERFACE

The NFC interface allows the instrument to communicate with an Android Device with NFC connectivity.

The prime function of the interface is to read logged data from the device using a free app available to download.

The app allows the user to read existing logs, change the log manifest and start a new log, synchronise the instrument clock. Reset the maximum/ minimum/average readings.



USB LOGGER INTERFACE (connector inside housing)

The USB interface allows the instrument to communicate with a PC running the USBLogLink software

The prime function of the interface is to read logged data from the device using free software available to download.

The software allows the user to read existing logs, change the log manifest and start a new log, synchronise the instrument clock. Reset the maximum/minimum/average readings.

USBLogLink is available from the manufacturer or supplier.

Note *1 The time stamp requires the instrument real time clock time date to be maintained when the battery is replace (or when the clocks are put back or forward) , this can be done via the NFC interface app or the USB port configuration software.

GENERAL RECOMMENDATION



The instrument is a high accuracy digital thermometer. In order to ensure correct operation the following must be observed:-

- The product must be stored in a dry clean environment and remain in original packaging prior to installation.
- The instrument must not be installed adjacent to electro mechanical starters, controllers, thyristor power units or electrical switch gear.
- Any cleaning of the instrument must be done using a mild detergent and soft cloth. No solvents or abrasive cleaners should be used.
- Any external cable entries must be sealed to at least IP65 rating.
- Stated ambient operating conditions must not be exceeded. Battery life will reduce with higher ambient operating conditions.

WARNING: GROUNDED T/C PROBS



For configuring, reading live data or reading logged data

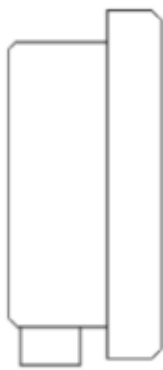
If using a grounded thermocouple probe on the input it is important not to connect the programming USB lead to a mains powered computer. It is possible to damage the instrument if connected in this way.

To avoid damage use one of the following methods :-

- # Disconnect the probe before configuration, reconnect the probe after configuration.
- # Ensure the probe and DM670 housing are not in contact with any conductive parts during configuration.
- # Use a laptop type computer running from its battery power supply, not connected to a mains supply, this is recommended for reading lived data or offsetting a unit if already installed in the field.
- # Use a USB isolator between the computer and the DM670.

MECHANICAL INSTALLATION

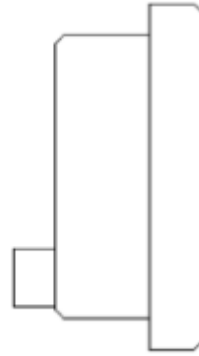
Case Styles - Note wall mounted versions are retained through three 4.5mm Dia holes



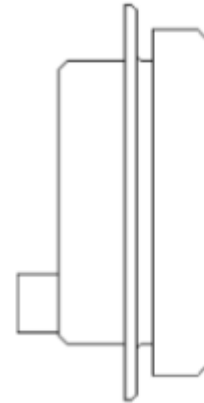
Style A Side Entry



Style B wall mount



Style C Rear Entry

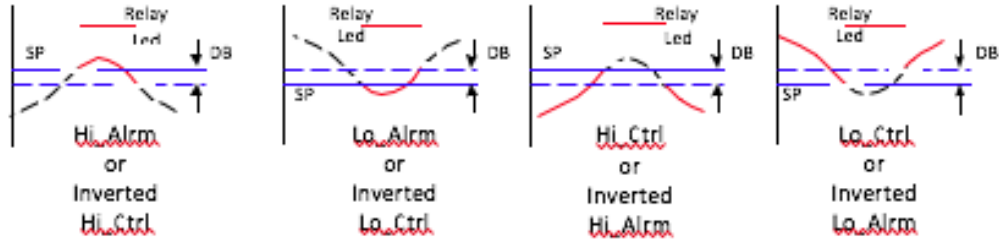


Style D Panel Mount

The enclosure must be sealed to at least IP65 rating to ensure correct operation of the electronics. Care must be taken when installing assembly to ensure the stated ambient operating conditions are not exceeded. Material Enclosure Stainless steel. Front panel membrane polycarbonate.

RELAY OUTPUTS

Dual relay change over contacts are available. The contacts are rated at 240 V ac 1 A (Non inductive) 30 V DC 1 A. An external snubber network is recommended when switching inductive circuits. Please ensure the snubber network is rated for the application. Four actions are provided, as detailed in the diagram below. The Alarm actions may also be used for inverted control applications, example the high alarm action can be used to control a cooling fan when used to control the temperature of a heat source. Adjustable setpoint and deadband are provided together with adjustable on and off delays for each relay. The delay range is (0 to 250) Seconds.



Action	Normal	Trip	Temperature range error	Power off
<u>Hi_Alm</u> / Inverted <u>Hi_Ctrl</u> <u>Lo_Alm</u> / Inverted <u>Hi_Ctrl</u>				
<u>Hi_Ctrl</u> / Inverted <u>Hi_Alm</u> <u>Lo_Ctrl</u> / Inverted <u>Lo_Alm</u>				

