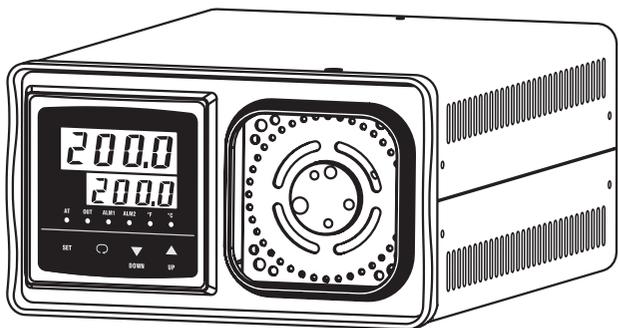
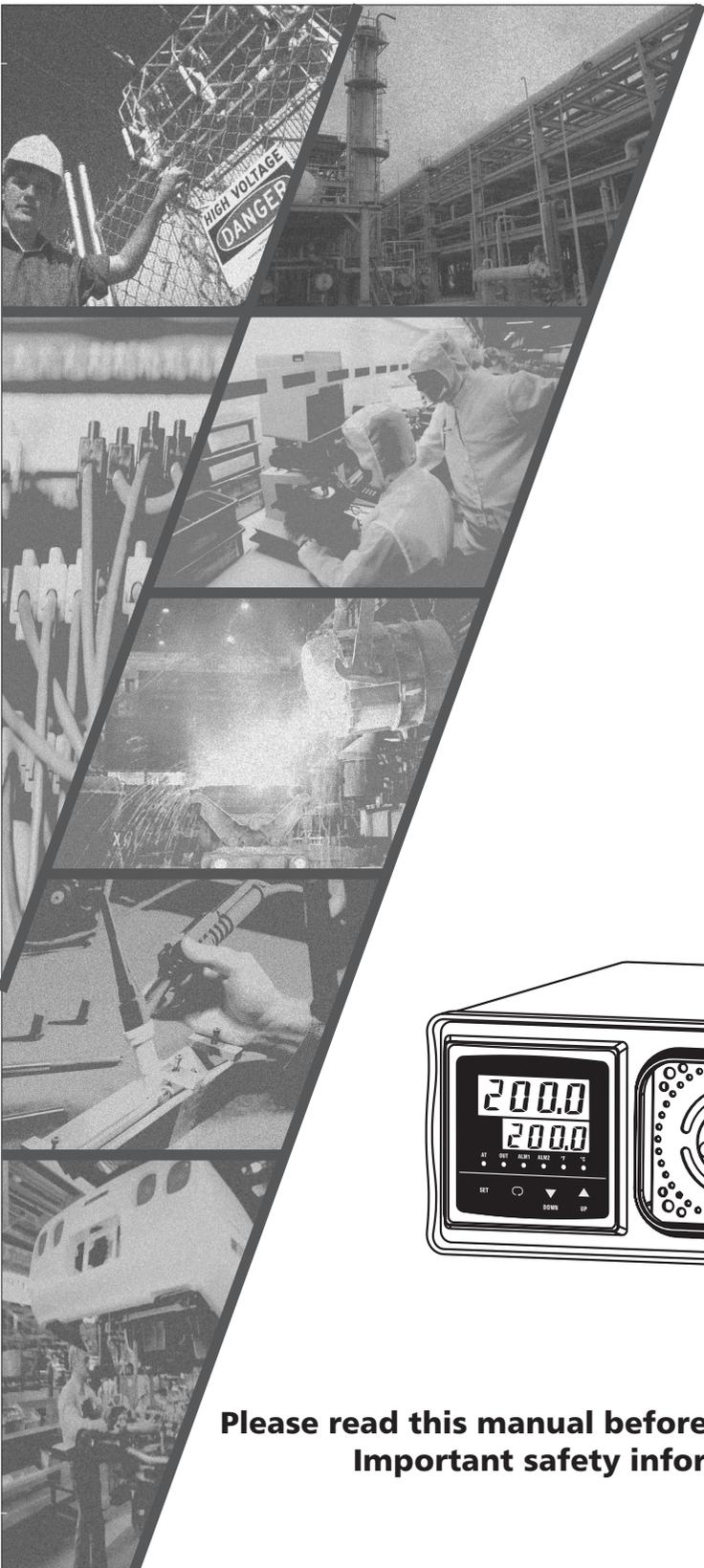


Dry-Well Temperature Calibrator User Manual



**Please read this manual before switching the unit on.
Important safety information inside.**



1. Safety Information

Use this instrument only as specified in this manual.

Otherwise, the protection provided by the instrument may be damaged.

Refer to the safety information in Warnings and Cautions.

1.1 Safety

Operate dry-blocks in an ambient temperature between +10 and +30°C (+15 to 25°C for optimum accuracy) and a humidity between 5 to 95%(Non condensing). The fan runs continuously to moderate the internal unit temperature. Always ensure that the air vents and fan aperture are clear and have at least 150mm distance between them and any obstructions. NEVER cover the unit while in operation, just operate when the fan stops. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be damaged.

The calibrator can operate at very high temperature. Precautions MUST be taken to prevent personal injury or damage to surrounding objects. Probes may be hot when removed from the units and should be placed on a heat resistant surface. The unit may remain hot for several minutes after switching off. DO NOT switch off if temperatures above +100°C. Allow to cool before storage.

Caution must be taken when removing probes and inserts from the units. If the unit is set at a high temperature the inserts will be very hot and could cause burns to the hands. Please use the insert removal tool supplied. After removal place hot probes and inserts only on a suitable heatproof surface.

Only place temperature probes in dry-block holes. These units are designed to be operated dry. DO NOT sprinkle any liquid into any of the dry-block holes.

These dry-blocks are designed to be rugged and durable but do contain electronics. DO NOT operate in dirty, dusty or very damp environments or near liquids that could present a hazard from electric shock.

1.2 Cautions

To avoid possible damage to the instrument, follow these guidelines.

- DO NOT plug the unit into 220V if the heater switches and fuse holder read 110V. This action will cause the fuses to blow and may damage the instrument.
- DO NOT use fluids to clean the target surface.
- DO NOT change the values of the calibration constants from the factory setting values. The correct setting of these parameters is important to the safety and proper operation of the calibrator.

2. Introduction

The serious dry-block heat sources allow users to check the accuracy of the thermometers and sensors as a system, on site, without the need for heavy, expensive equipment. The dryblocks are high accuracy, portable heat sources that are extremely easy to use. Simply plug in, switch on and set the dry-block to the temperature that you wish to test, insert your probe into the correct size well and record the reading of your thermometer and probe to the displayed temperature of the dry-block and the difference is the error of your instrument. For optimum accuracy and UKAS traceability use a reference thermometer to make comparison measurements.

The serious dry-blocks are controlled by a closed loop microprocessor based digital PID temperature controller system incorporating a heater and precision platinum RTD sensor housed in the aluminium block. Fan cooling allows rapid changes in block temperature upon demand. The required temperature may be adjusted in 0.1°C increments across the range of the instrument using the buttons on the front panel.

These units are ideal for use in a variety of industrial and process applications. Each unit is supplied with a traceable certification of calibration showing actual test data, which can be used as part of quality assurance programmes.

3. General Specifications

Temperature Range	+33 to 300°C(at 20°C ambient)
Accuracy	0.8°C ; Temp ≤ 100°C (±1.6°F; Temp ≤ 212°F) ±1.6°C; 100°C < Temp ≤ 200°C (±3.2°F; 212°F < Temp ≤ 392°F) ±2.8°C; 200°C < Temp ≤ 300°C (±5.6°F; 392°F < Temp ≤ 572°F)
Stability	±0.1°C; Temp ≤ 100°C (±0.2°F; Temp ≤ 212°F) ±0.2°C; 100°C < Temp ≤ 200°C (±0.4°F; 212°F < Temp ≤ 392°F) ±0.4°C; 200°C < Temp ≤ 300°C (±0.8°F; 392°F < Temp ≤ 572°F)
Resolution	0.1°C/0.1°F
Heating Time	30 minutes to max
Cooling Time	30 minutes to 100°C(122°F)
Aperture Diameter	Φ4.2mm Φ6.8mm Φ5mm Φ3.5mm
Power	220VAC(±10%), 1.25A/110VAC(±10%), 2.5A
Size	180x114x233mm
Weight	3kg

4. Environmental Conditions

Although the instrument has been designed for optimum durability and trouble-free operation, it must be handled with caution. The instrument should not be operated in an excessively dusty or dirty environment. Maintenance and cleaning recommendations can be found in the Maintenance section of this manual. The instrument operates safely under the following conditions:

- temperature range: 5-35°C (41-95°F)
- ambient relative humidity: 15-80%
- pressure: 75kPa–106kPa
- mains voltage within $\pm 10\%$ of nominal
- vibrations in the calibration environment should be minimized

5. Quick Start

5.1 Unpacking

Unpack the calibrator carefully and inspect whether any damage that may have occurred during shipment. If there is shipping damage, notify the carrier immediately. Verify that the following components are present:

- BX150 dry-block heat sources
- Power Cord
- User's Guide

5.2 Set Up

Place the calibrator on a flat surface with at least 8 inches of free space around the instrument. The prop may be swung down to raise the front of the instrument from a horizontal position. Plug the power cord into a grounded mains outlet (Note: this calibrator has two power specification of one model NO: 220V/AC and 110V/AC, please make sure whether the power value is suitable for the instrument before operation.)

Turn on the power to the calibrator by toggling the power switch on. The fan should begin quietly blowing air through the instrument and the controller display should illuminate after 3 seconds. After a brief self-test the controller should begin normal working. If the unit fails to work please check the power connection.

The heater will start operating to bring the temperature of the calibrator to the set-point temperature and the display will begin to show the actual target temperature.

5.3 Setting the Temperature

The procedure is as follows:

- Press the "ON" button to turn on the instrument.
- Press "UP" to setup the higher temperature, press "DOWN" to set up the lower temperature.
- Press the button once the temperature will be changed 0.1°C/°F, Press the button constantly the temperature will be changed 1°C/°F once. The front panel green LED display will indicate the actual set temperature.
- When the temperature changes, the value are flashing. Release "UP" or "DOWN" and then press "SET", the calibrator will automatically control the target assembly temperature to reach the set temperature in the stated time. The red LED display will indicate the temperature of the target assembly.
- After the temperature is setted the ultimate stability may take 10 to 20 minutes more of stabilization time.

6. Measurement Operation

6.1 Place the calibrator on a flat surface with at least 8 inches of free space around the instruments. The front of the instrument is towards to user.

6.2 Connect the calibrator to the power source, input proper voltage(110V or 220V).

6.3 Turn on the instrument to "ON" button.

6.4 Press "UP" to setup the higher temperature, press "DOWN" to setup the lower temperature. Press the button once the temperature will be changed 0.1°C/°F, Press the button constantly the temperature will be changed 1°C/°F once. The front panel green LED display will indicate the actual set temperature.

When the temperature changes, the value are flashing. Release "UP" or "DOWN" and then press "SET", the calibrator will automatically control the target assembly temperature to reach the set temperature in the stated time. The red LED display will indicate the temperature of the target assembly.

6.5 The Temperature parameter are set in the factory and locked, the user can press "UP", "DOWN" and "SET" to set the new set-point value.

6.6 If the user wants to change the temperature units, the unlock way is: Press the button of "SET" and "↻" at the same time. After unlock, first press "SET" button for three seconds into setup mode, the first line red LED will display "L o C 2", the second line green LED will display "pt2"; release "SET" and press "↻", the second line green LED will indicate the present temperature unit; press "UP" again to choose °C, press "DOWN" to °F, the temperature unit letter will be flashing in the process of choosing the temperature unit, then press, "SET" to confirm, green LED stop flashing, press "SET" again the calibrator return to operation. In order to keep good operation, please lock the values after the temperature unit changed. The way is: Press "↻" button three times, the first line red LED display "L o C 2", the second line green LED display "OFF", then press "UP" button two times, green LED will display "L o C 2", at last press "SET" to complete the temperature unit change.

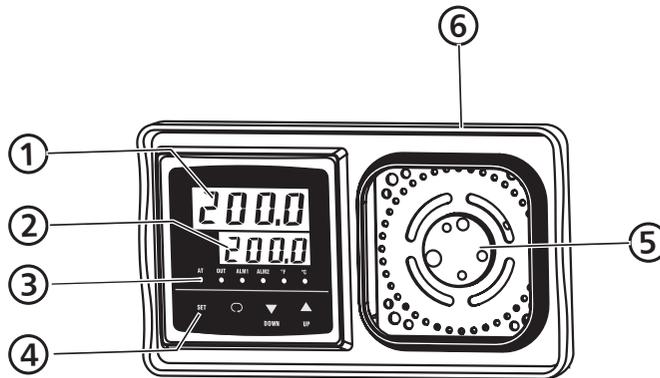


Fig 1.Front Panel Description

- ① The red LED in the first line
- ② The green LED in the second line
- ③ The indicator of the operation state
 - AT-Automotive parameter adjustment
 - OUT-The indicator of heat output
 - ALM1-Overload alarm
 - °F-°F temperature indicator
 - °C-°C temperature indicator
- ④ The keypad
 - SET-The set button
 - ↻-The enter button
 - DOWN-The down button
 - UP-The up button
- ⑤ The dry-block heat sources
- ⑥ The test hole for temperature sensor

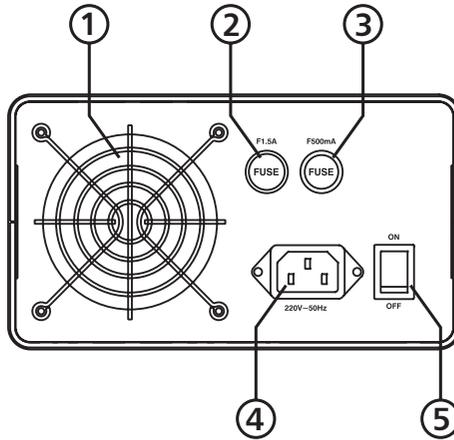


Fig 2. Back Panel Description

- ① Wind input
- ② Fuse of heater
- ③ Fuse of temperature control system
- ④ Input power socket
- ⑤ Power switch

6.7 Do not setup the temperature instantly too high, the Max span is about 100°C, after stability then set the temperature to higher again.

6.8 Reduce the temperature below 60° after measurement, when the temperature is reduced below 60°C the user can turn off the power.(warning: turning off the power at high temperature will be easy to destroy the calibrator, which should be coldened by fan.)

7. Maintenance

- The calibration instrument has been designed with the utmost caution. Ease of operation and simplicity of maintenance have been a central theme in the product development. Therefore, with proper care the instrument should require very little maintenance. Avoid operating the instrument in dirty or dusty environments.
- If the instrument is used in a manner not in accordance with the equipment design, the operation of the instrument may be damaged or safety hazards may arise.

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