



# **Dry Block Heater**

## ***User Manual & Setup Guide***

**TDB RANGE**

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**General  
Warning Sign**

**Warning sign:** signifies a general warning, and indicates a risk to people specified by the supplementary sign that if not avoided, may result in death or serious injury.



**Warning;  
Flammable**

**Warning; Flammable:** signifies a flammable warning, and indicates a risk of flammable content as specified by the supplementary sign that if not avoided, may result in a fire by igniting flammable material.



**Warning;  
Electricity**

**Warning; Electricity:** signifies a electricity warning, and indicates a risk of contact with electricity as specified by the supplementary sign that if not avoided, could result in injury.



**Warning; Hot  
Surface**

**Warning; Hot Surface:** signifies hot surface warning, and indicates a risk to people specified by the supplementary sign that if not avoided, will result in contact with hot surface.



**General  
Prohibition Sign**

**General Prohibition:** signifies a prohibited action, indicates a risk to people specified by the supplementary sign that if not avoided, will result in death or serious injury.



**Do Not Expose  
Outside**

**Do Not Expose Outside:** signifies prohibiting the exposure to direct sunlight, and indicates a raised temperature due to sunlight or placement on hot surface can cause harmful damage to cabinet.

**This user manual is intended for Thermoline's range of dry block heaters. We recommend that you read this user manual the whole way through before you start using the dry block heater. Consider this manual as a component of the dry block heater and an integral part to its function. We recommend keeping it close and within easy access.**

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## Intended Use

The Thermoline Dry Block Heater is designed to provide uniform dry heating of various shapes and sizes of tubes and vials featuring a wide temperature range from ambient +5°C to 150°C with an accurate control stability of +/- 0.2°C.

Heating blocks provide a safe, convenient and productive alternative to heating mantles and hotplates for accurate heating of PCR tubes, PCR strips, microcentrifuge tubes, microplates and cuvettes. Our single and triple aluminium block designs offer precise temperature control in small vessels.



# Product Specifications

Dry Block Heater User Manual By **Thermoline**



## Dimensions

### External

	TDB-1-4E	TDB-2-4E	TDB-4-4E
WxHxD (mm)	152x465x86	152x465x86	152x465x86

### Technical Specifications

Block Capacity	1	2	4
Temperature Range	Ambient +5°C to 150°C		
Temperature Stability within the Blocks	+/-0.5°C < 60°C +/-1°C > 60°C	+/-0.5°C < 60°C +/-1°C > 60°C	+/-0.5°C < 60°C +/-1°C > 60°C
Temperature Uniformity	+/-0.2°C to 60°C +/-0.2°C to 60°C	+/-0.5°C < 60°C +/-0.5°C > 60°C	+/-0.5°C < 60°C +/-1°C > 60°C
Heat up rate (external sensor) K/min	5	4.5	4
LED Display with timer (Programmable)	Range 0-99H59min	Range 0-99H59min	Range 0-99H59min
Electrical	165W/230V	250W/230V	430W/230V
Weight	1.5kg	3kg	7.5kg
Support Rod and Clamp	Optional	Optional	Optional

### Safety

Over Temperature Safety	✓	✓	✓
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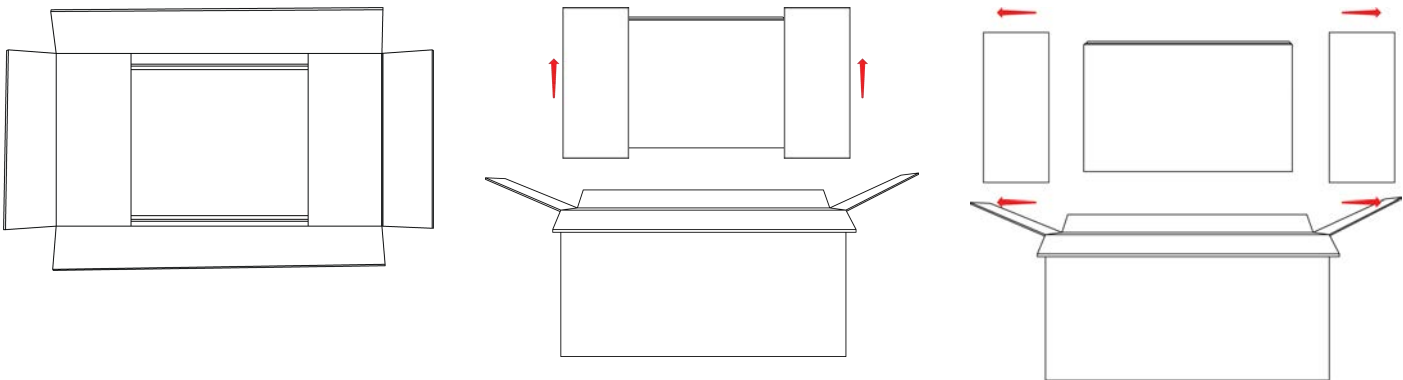
## Block Options

Block Code	Description
TAB-35-4E	Single block, Eppendorf tubes, 20 x 1.5mL, Ø11.5mm x 36.9mm
TAB-54-4E	Single block, Conical tubes, 12 x 15ml, Ø17.1mm x 44.5mm
TAB-55-4E	Single block, vials, 6 x 50ml Ø29.0 x 47.6mm
TAB-60-4E	Single block, PCR tube, 30 x 0.5mL, Ø7.9mm x 27.6mm
TAB-61-4E	Single block, microtube combination, 6/10/5 x 0.5/1.5/2ml
TAB-62-4E	Single block, Microtubes, 20 x 1.5mL, Ø11.1mm x 39.1mm
TAB-63-4E	Single block, Eppendorf tubes, 20 x 2.0ml, Ø11.5mm x 38.1mm
TAB-64-4E	Single block, Corning tubes, 20 x 2.0ml, Ø10.9mm x 38.1mm
TAB-66-4E	Single block, centrifuge tube combination, 4/3/2 x 1.5/15/50ml
TAB-67-4E	Single block, Round tubes, 30 x 6mm, Ø8.3mm x 48.4mm
TAB-68-4E	Single block, Round tubes, 24 x 10mm, Ø10.7mm x 48.4mm
TAB-69-4E	Single block, Round tubes, 16 x 12/13mm, Ø13.9mm x 48.4mm
TAB-70-4E	Single block, Round tubes, 20 x 12/13mm, Ø13.9mm x 48.4mm
TAB-71-4E	Single block, Round tubes, 12 x 15/16mm, Ø17.5mm x 48.4mm
TAB-72-4E	Single block, Round tubes, 8 x 20mm, Ø21mm x 48.4mm
TAB-73-4E	Single block, Round tubes, 6 x 25mm, Ø26.2mm x 48.4mm
TAB-74-4E	Single block, Round tubes, 4 x 35mm, Ø35mm x 47.6mm
TAB-75-4E	Single block, Round tubes, 12 x 17/18mm, Ø19.1mm x 48.4mm
TAB-76-4E	Single block, vials, 20 x 12mm, Ø12.7mm x 30mm
TAB-77-4E	Single block, vials, 20 x 15mm, Ø15.8mm x 35mm
TAB-78-4E	Single block, vials, 12 x 17mm, Ø17.8mm x 45mm
TAB-79-4E	Single block, vials, 12 x 19mm, Ø19.7mm x 45mm
TAB-80-4E	Single block, vials, 9 x 21mm, Ø21.7mm x 45mm
TAB-81-4E	Single block, vials, 8 x 23mm, Ø23.8mm x 45mm
TAB-82-4E	Single block, vials, 8 x 25mm, Ø25.8mm x 45mm
TAB-83-4E	Single block, vials, 6 x 28mm, Ø28.8mm x 45mm
TAB-84-4E	Single block, vials, 15 x 16mm, Ø16.4mm x 45mm
TAB-85-4E	Single block, 10x8 PCR tube strips, 0.2ml tubes
TAB-86-4E	Single block, 64 PCR tube strips, 0.2ml tubes
TAB-88-4E	Single block, 2x6 cuvettes, 12.5mm

Unpacking

Unpacking Process:

- The dry block heater will be delivered packed in a carton.
- Please see the below diagrams for removing the dry block heater from the carton.
- If upon opening your package damage is present, notify the detail of any damage to your supplier or to Thermoline Scientific without delay at +61 2 9604 3911 or email at [service@thermoline.com.au](mailto:service@thermoline.com.au).



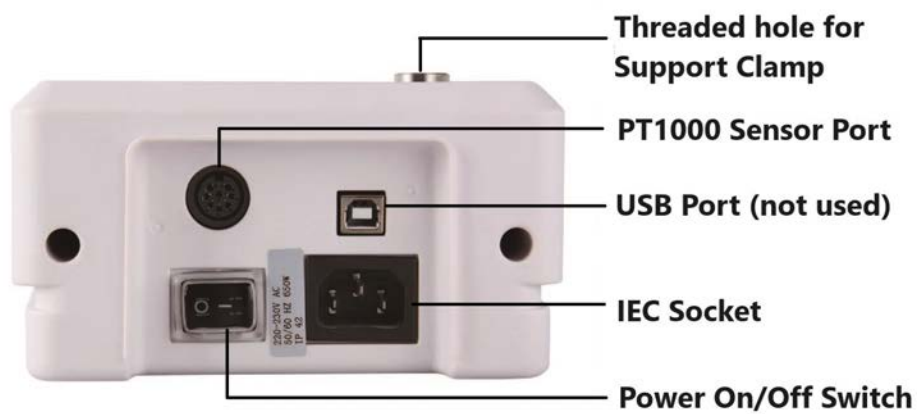
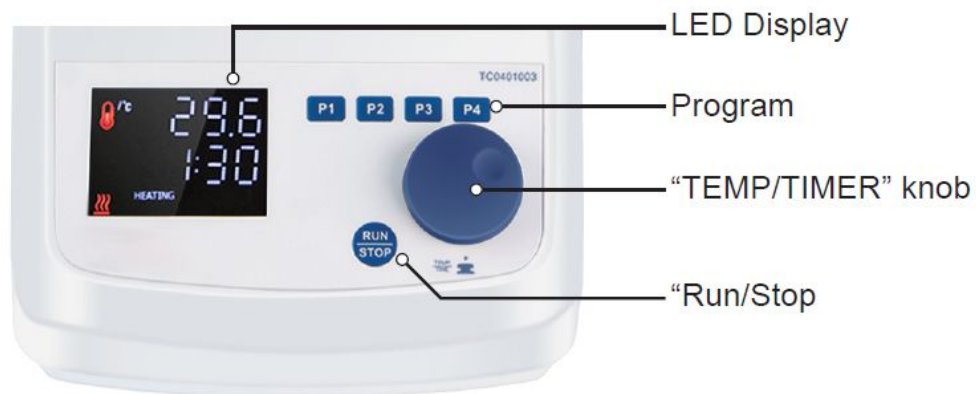
Packing List

	TDB-1-4E	TDB-2-4E	TWB-24-4E
Dry Block Heater	1	1	1
Power Lead	1	1	1
Threaded Handle	1	1	1
External Temperature Sensor PT1000	1	1	1
Operating manual	Downloaded from the Thermoline Website		

## Setup

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### Dry Block Heater Components





## Setup

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### Location

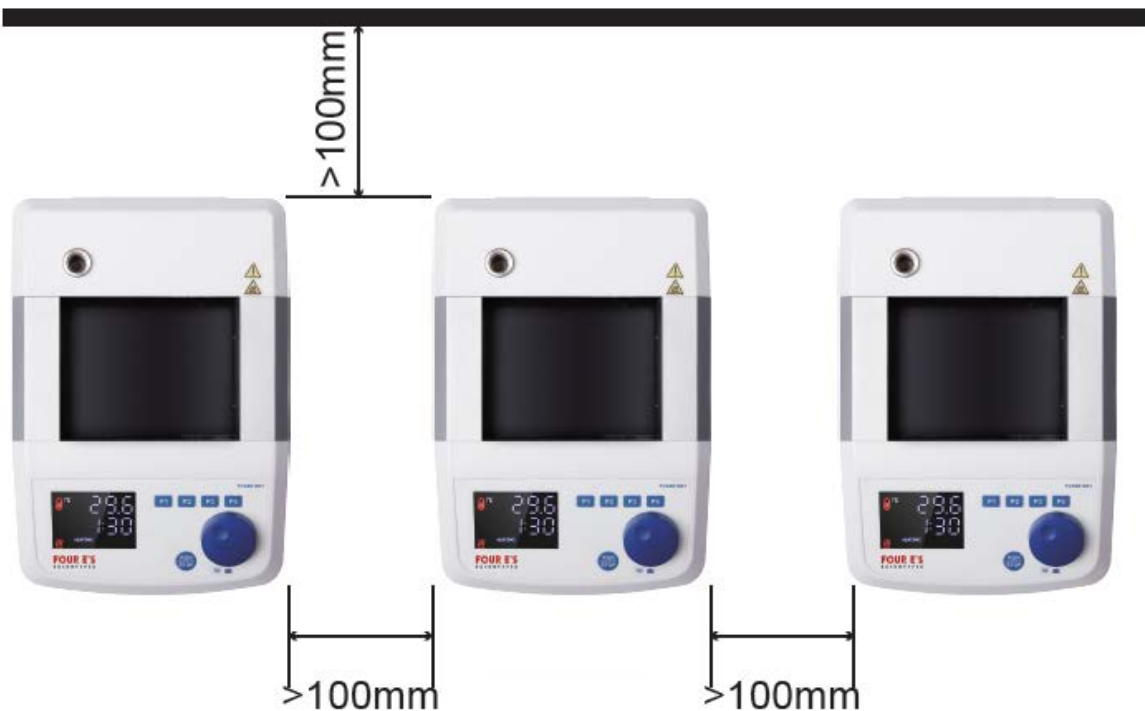
Ensure dry block heater is placed in the correct environment, away from direct sunlight or direct heat sources. The product shouldn't be placed in a room where the ambient temperature exceeds that of which it was designed to operate. The dry block heater should be stored inside at all times.

#### Extreme Operating Environment:

- **Temperature:** +5°C to +40°C
- **Humidity:** Up to 80%RH

Ensure the dry block heater is placed on a level surface and that the mains plug and the switch are easily accessible.

The dry block heater requires 100mm on the sides and back for ventilation and also to aid with accessibility.



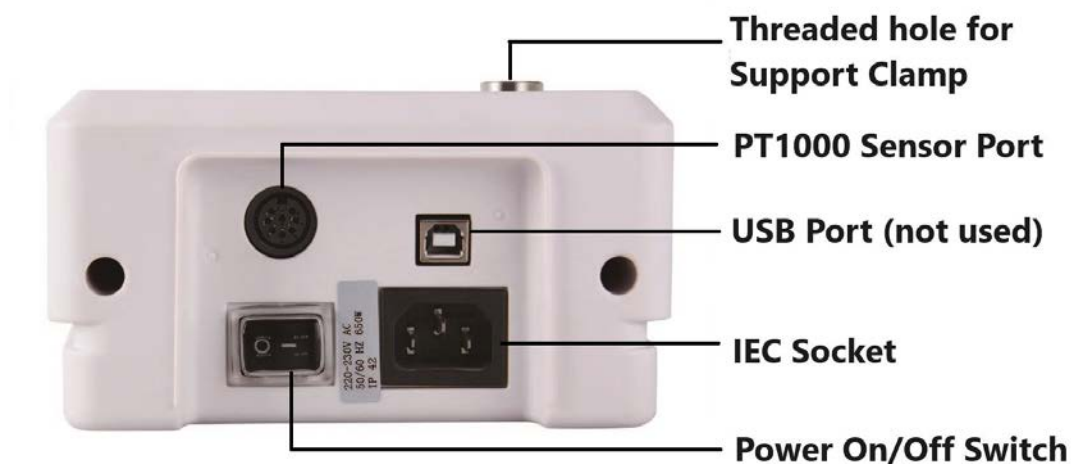
## Setup

### Electrical Connections

The dry block heaters require a 10amp 230V 50hz power supply.

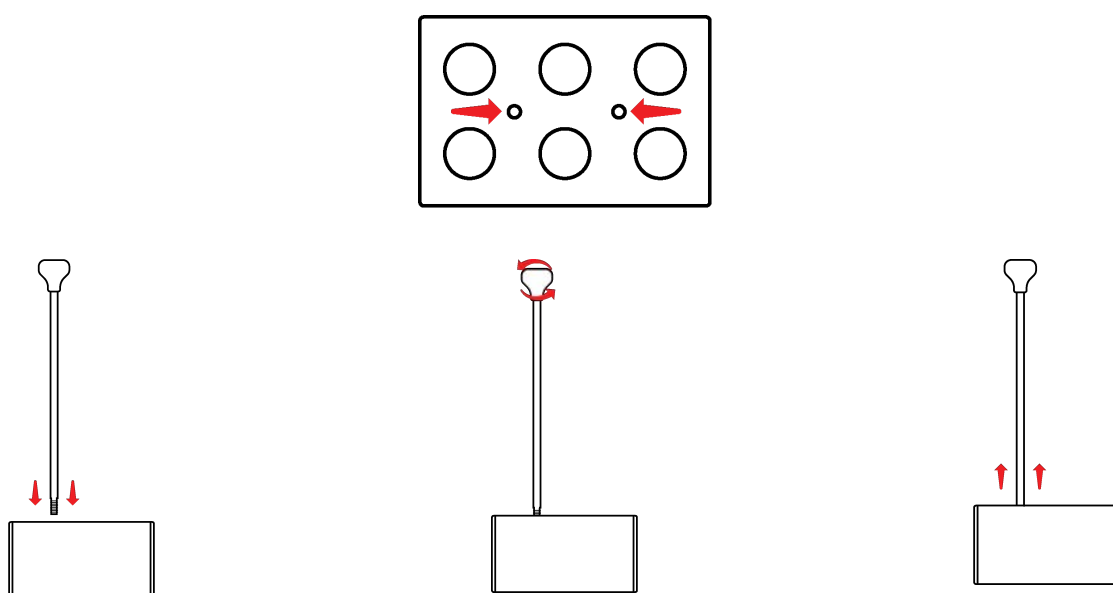
A dedicated outlet should be used for all dry block heaters. Do not use power boards or the like. Included with the dry block heater is a removable mains power lead with a three pin plug and straight female IEC plug.

On the dry block heater itself is a 10 amp male IEC socket (power port). Ensure that the mains plug and the switch are easily accessible.



### Loading

When in use, please ensure the dry block heater is loaded with a full complement of blocks (one, two or four, depending on the model). Included with the dry block heater is a handy tool that can be screwed into the threaded hole of the block to remove them (please take caution if the blocks are hot).



### Block Removal

## Setup

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### Cleaning

The interior and exterior can be cleaned as often as required using a soft cloth and soapy water. Never use abrasive cleaners or scouring pads, as these will scratch the surface and may result in corrosion. Never use caustic-type cleaning agents.

All dry block heaters have electrical components such as the temperature controller. These should not be subjected to any levels of moisture.

**Note:** Always switch the dry block heater off and unplug it from the power before cleaning.



### Dry Block Heater Warnings

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Dry block heaters should be stored inside at all times. Failure to adhere to this could cause significant drops in performance and damage to items stored inside.



The dry block heaters are not suitable for use with flammable solvents! They are fitted with components that may be the source of ignition.



Dry block heaters heat up to 150°C and can become hot. This includes the blocks.



When you remove packaging from the dry block heater you should be careful when using knives to cut tape and cardboard.

## Pre Use Procedure

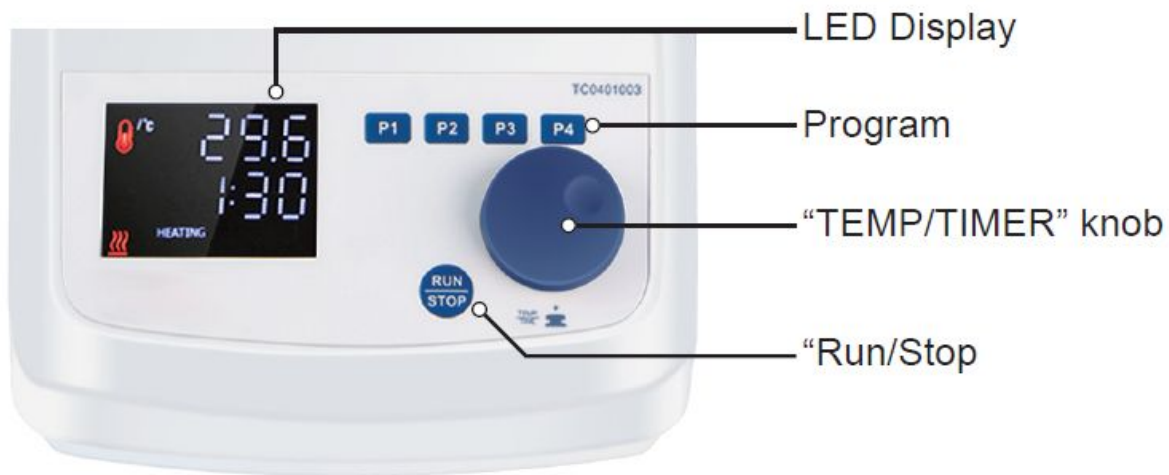
- Before proceeding, please make sure that all internal and external packaging has been removed from the appliance and that all tape, plastic bags and foam pieces have been removed.
- Place the appropriate amount of blocks into the dry block heater.
- Take the supplied lead and plug it into the male IEC socket on the rear of the dry block heater. Next, plug the 3 pin plug into a 10amp General Purpose Outlet.
- Turn the main switch at the back of the unit to 'ON' to power up the dry block heater.



## Dry Block Heater General Controls

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### Dry block Heater Controller



### Run/Stop

When first turned on the display will show the temperature/set temperature (changes approximately every 2 seconds).

To start the temperature control press to switch run/stop. Run/stop is also used to start programs and the count down timer.

### Temperature Control

#### Temperature Setting

The temperature setting can only be changed when the dry block heater is powered on but not when it's running. Pressing the blue knob "TEMP/TIMER" once the temperature value on the LED display will flash. When it is flashing, it can be adjusted using the "TEMP/TIMER" knob.

#### Time Setting

The time can only be changed when the dry block heater is powered on but not when it's running. Pressing the blue knob "TEMP/TIMER" will flash twice the time value on the LED display. When it is flashing, it can be adjusted using the "TEMP/TIMER" knob.

#### Switch between Fahrenheit and Celsius

To switch between the Fahrenheit and the Celsius, press P1 and P2 simultaneously.

#### Programming

The dry block heater can save four programs of temperature and time.

To select a program by either pressing one of the program buttons or using the "TEMP/TIMER" knob while the unit is not running.

To save a program, simply set the desired temperature and time and then press and hold one of the program buttons (approximately 5 seconds).

To start a selected program, use the the run/stop button.

#### Countdown timer

The dry block heater has a countdown timer function. To enter countdown mode, press P1 and P3 simultaneously. A clock icon will show on the screen once the countdown mode has been enabled. The countdown can be used to start one of the four preset programs, or if a program is not selected, the heating will start at the end of the countdown and keep heating until the user switches off the heating. The countdown timer is started using the run/stop button.

## Dry Block Heater General Controls

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### External Temperature Sensor

The purpose of the external sensor is so the controller can better control the temperature of the sample or the block. Each model comes with an external temperature sensor. To control using this sensor, simply plug it into the port on the back of the unit. The sensor can be placed in a dummy sample to react the same as the samples being heated.

### Temperature Calibration

The dry block heater can be calibrated using the internal temperature sensor CA01 or external temperature sensor. With the external sensor, you can use the automatic calibration CA02 or the manual calibration CA03 (please note CA01 is a manual calibration).

Press P1 and P4 simultaneously and the system will enter calibration mode. Without the PT1000 external sensor connected, its internal probe calibration with CA01 is displayed. With the PT1000 connected, it could be CA02 or CA03 displayed.

With the PT1000 external probe connected, you can switch between CA02 and CA03 by pressing the blue knob "TEMP/TIME". The automatic calibration using the external probe CA02 can only be carried out using a previously calibrated external probe (they are calibrated at the factory). The CA02 automatic calibration does not require a reference thermometer and the calibration will start from 30°C to 90°C automatically in sequence by pressing "Run/Stop".

In the calibration mode, P1, P2, P3 and P4 is for the calibration point of 30°C, 50°C, 70°C and 90°C respectively. In automatic calibration mode, the calibration point must start from 30°C, and steps will run automatically.

### Manual calibration

Put a high boiling point sample (above 100°C, for example: glycerin) into the block hole and then place a reference thermometer into the hole. Ensure the thermometer's precision is better than 0.1°C and the thermometer probe is wholly immersed into the sample. Make sure to put the thermometer into the hole in the middle of the block or close to the middle hole.

Press "Run/Stop" to start and the system will be in "Heating" mode.

After about 30 minutes of the "Holding" mode, read the data from the thermometer. Press the blue knob "TEMP/TIMER" and adjust the temperature of the machine to match the reading of the thermometer.

Press "Run/Stop" to save the calibration value, the system will stop heating.

Repeat the above steps for external sensor manual calibration at the other calibration points (P2, P3 and P4).

After the calibration is complete, please restart the dry block heater.

## Temperature Calibration

Item	Calibration Point	reading of the thermometer
1	30°C	
2	50°C	
3	70°C	
4	90°C	

See the below error codes and their descriptions.

Item	Fault description	Fault code
1	External sensor short-circuit	E1
2	Internal sensor open circuit	E2
3	Internal sensor short-circuit	E3
4	External sensor isn't in the block	E4

## Technical and Repair Support

When contacting Thermoline regarding information about the product, it is important to have the Serial Number and other related information with you. The serial number is on a white sticker, usually located near the power IEC socket.

Contact Thermoline service on +61 2 9604 3911 or email at [service@thermoline.com.au](mailto:service@thermoline.com.au)

 **Thermoline**

Model:  
Serial No:  
Watts/Amps:  
Volts:

Phone: +61 2 9604 3911  
Email: [hello@thermoline.com.au](mailto:hello@thermoline.com.au)



**2**  
Years  
Warranty

***Have the following information available when you contact the service department. Model number and serial number. This is generally found on the exterior of the dry block heater in the form of a stick-on label. The company name, address, contact name, contact phone number. A brief description of the problem. All warranty claims must be reported to, and agreed to by a Thermoline representative prior to any work being carried out.***

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## Standard 24 Month Warranty

### ***Thermoline Scientific Equipment Pty Ltd ABN 80 000 859 129 ('Thermoline')***

Thermoline warrants to the original purchaser that this product will perform to its product specification for a period of 2 years from date of purchase, provided that the installation of the product has been carried out in accordance with the latest version of the manufacturer's instructions and further provided that the use of the product complies with that specified in the relevant specification. Thermoline is not responsible for any loss or damage arising from incorrect usage, usage outside the suitability of the product as stipulated in the manufacturer's instruction, damage caused by accident, fire, flood, act of God or failure to properly install, operate or maintain the goods in accordance with the printed instructions provided.

The following statement applies only to product sales that fall within the definition of a Consumer Sale set out in the Australian Consumer Law contained within the Competition and Consumer Act (Cth) 2012:

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure. Notwithstanding the preceding clause and to the extent permissible by law, the liability of Thermoline is limited, in relation to the warranted product and at the option of Thermoline to:

Replacing the product or the supply of equivalent product;  
The repair of the product;  
The payment of the cost of replacing the product or of acquiring equivalent product; or  
The payment of the cost of having the product repaired.

To the extent permitted by law, all other warranties whether implied or otherwise, not set out in this Warranty are excluded and Thermoline is not liable in contract, tort (including, without limitation, negligence or breach of statutory duty) or otherwise to compensate the Purchaser for:

any increased costs or expenses;  
calibration/certification services;  
any loss of profit, revenue, business, contracts or anticipated savings;  
any loss or expense resulting from a claim by a third party.  
Any special, indirect or consequential loss or damage of any nature whatsoever caused by Thermoline's failure in complying with its obligations or the purchaser's failure due to accident damage, impact, misuse or negligence.

The benefits given to the purchaser in this Warranty are in addition to other rights and remedies under a law in relation to the products or services to which this warranty applies. This warranty applies only to products purchased and installed in Australia and does not cover any consumable items e.g. filters, light globes, ultrasonic nebulizers. The warranty does not extend to labour and freight costs where the warranted product is located outside Australia.

To make a warranty claim, contact Thermoline on 02 9604 3911 or [service@thermoline.com.au](mailto:service@thermoline.com.au).



**We are proudly  
Australian owned**

We will continue to invest in Australian  
manufacturing.

