

# Dry Bath Incubator

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**Cat. No. BT1110, BT1111, BT1112,  
BT1113**

Thanks for choosing BT Lab Systems' Dry Bath Incubator. This operation manual describes the function and operation of the instrument. In order to use the instrument properly, please read this manual carefully.

### **IMPORTANT SAFETY INFORMATION**

- Please read this operation manual carefully before using the instrument.
- The operation, maintenance and repair of the instrument should comply with the basic guidelines and warnings below. Ignoring these instructions will affect the life of the Instrument and safety precautions.
- This product is an indoor Instrument.
- These units are designed for laboratory use by persons knowledgeable in safe laboratory practices.
- The operator should never open or repair the instrument. Opening or repairing the instrument will void the guarantee and can cause accidents.
- The power plug should safeguard against an electric shock. The 3-pin plug supplied with the instrument should be matched with a suitable grounded socket.
- The temperature of the metal block will be very high during the normal operation. This will produce scalding or boiling liquid.
- Close the test tube lid before putting the tube into the block. Liquids may spill out in the block or onto the device if the tube lid is open, which will damage the block or the device.
- Make sure the outlet voltage complies with the voltage required. Make sure there is nothing else plugged into the same outlet. Hold the plug when pulling out the power line. Do not plug the cord in where it is a tripping hazard.
- The instrument should be used in an area with low temperature, little dust, no water, no sunshine or hard light and with good air circulation. Do not use where there is corrosive gas or a strong magnetic field. Keep far away from central heating, camp stove and other hot sources. Do not put the instrument in a wet and dusty area. The vent on the instrument is designed for aeration. Do not wall up or cover the vent. The distance between each device should be more than 100cm when there is more than one instrument.
- Main switch is on the rear of the device. Push "I" to power on the device, and push "O" to power off the device.
- Power off when not in use. If the instrument will not be used for a long period, unplug, and cover with a piece of cloth to protect it from dust.
- In case of the following, unplug the instrument at once and contact BT Lab Systems.
  - The instrument comes into contact with liquid
  - The instrument gets soaked or burned
  - The instrument emits an abnormal sound or smell
  - The instrument is dropped or the outer shell damaged
  - The instrument functions abnormally.

## **MAINTENANCE**

The well in the block should be cleaned with a cloth dampened by alcohol to assure good heat translation between the block and the test tube. If there are smudges on the instrument, clean it with a dry cloth.

Power off before cleaning the instrument. Do not put cleaning fluid into the well of the block. Do not use corrosive cleaning fluid.

## **INTRODUCTION**

The dry bath incubator is a microprocessor-controlled thermostat device with a high precision of temperature control. It is used for sample preparation. It is used as an alternative to the traditional water bath devices. It is used in the cultivation, preservation and reaction of various samples.

Applications include pharmaceutical, chemical, food safety, environmental and quality inspection.

## **KEY FEATURES**

- LCD display.
- Fast heating, uniform heating, accurate temperature control, high stability, low energy consumption and no noise.
- Built-in temperature calibration function, automatic fault detection and buzzer alarm function.
- Built-in temperature protection device, safe and reliable.
- Compact design, occupies little space.
- Various blocks for convenient replacement, easy cleaning and disinfection.

## **NORMAL OPERATING CONDITIONS**

Room temperature: 5 ° C ~ 30 ° C

Relative humidity: ≤ 70%

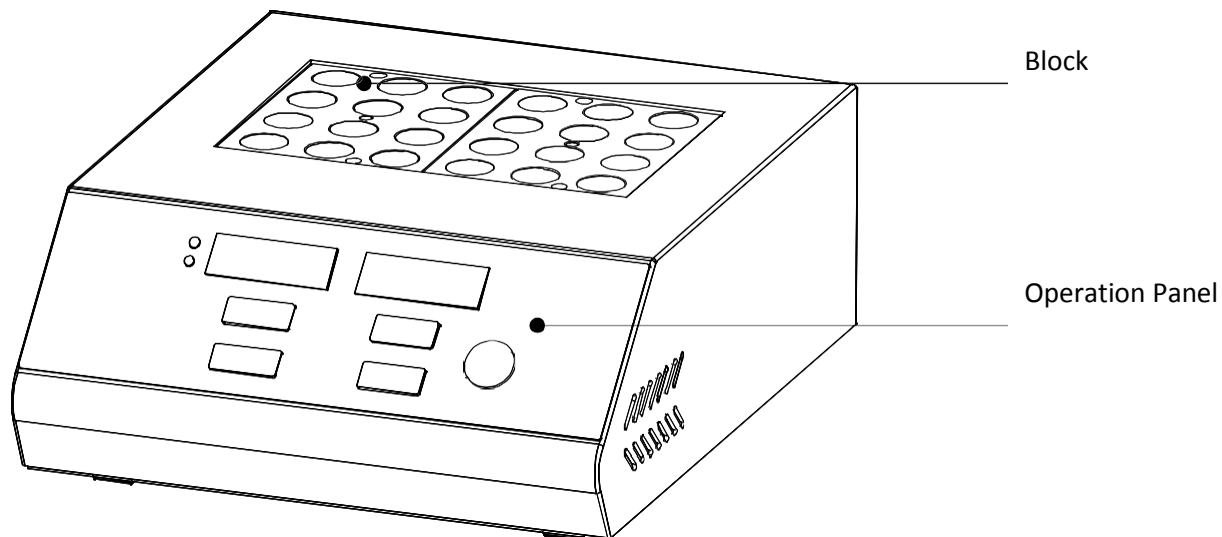
Power supply: 110V / 220V ~ 50/60Hz

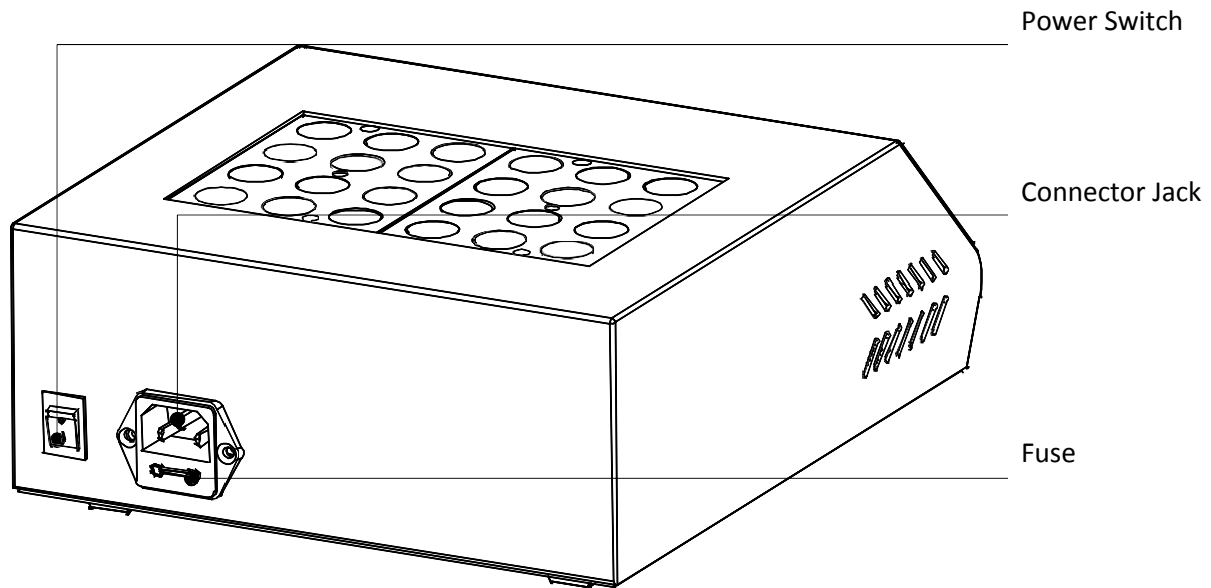
## TECHNICAL SPECIFICATIONS

Model	BT1110	BT1111	BT1112	BT1113
Temp. Control Range	R.T.+5°C ~150°C	R.T.+5°C ~150°C	R.T.+5°C ~150°C	R.T. +5°C ~120°C
Temp. Setting Range	5°C ~150°C	5°C ~150°C	5°C ~150°C	5°C ~120°C
Temp. Stability@40~100°C	≤±0.5°C	≤±0.5°C	≤±0.5°C	≤±0.5°C
Temp. Stability@>100°C	≤±1°C	≤±1°C	≤±1°C	≤±1°C
Block Temp. Uniformity@40°C	≤±0.3°C	≤±0.3°C	≤±0.3°C	≤±0.3°C
Block Temp. Uniformity@>100°C	≤±0.5°C	≤±0.5°C	≤±0.5°C	≤±0.5°C
Temp. Display Accuracy	0.1°C	0.1°C	0.1°C	0.1°C
Heating Speed	≤30min(20°C to 150°C)	≤30min(20°C to 150°C)	≤30min(20°C to 150°C)	≤30min(20°C to 120°C)
Time Range	1min ~99h59min	1min ~99h59min	1min ~99h59min	1min ~99h59min
Sample Capacity	1 standard block	2 standard blocks	2 blocks individually controlled	4 standard blocks
Voltage	AC 220V / 110V	AC 220V / 110V	AC 220V / 110V	AC 220V / 110V
Power	200W	400W	400W	600W
Fuse	250V, 2A/3A	250V, 3A/6A	250V, 3A/6A	250V, 5A/10A
Dimension	200 x 230 x	220 x 260 x	290 x 260 x 95mm	220 x 360 x
Net Weight	2.6kgs	3.3kgs	3.3kgs	4.7kgs

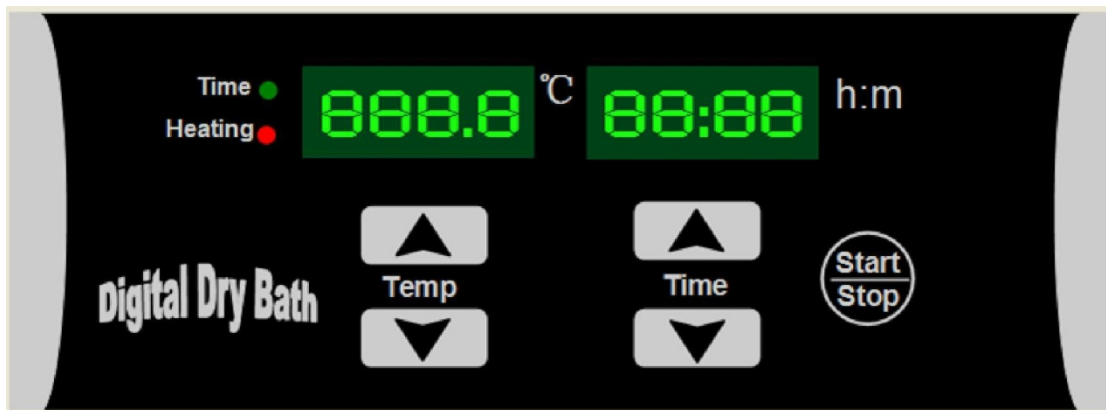
## OVERVIEW

This section describes the instrument's mechanical structure, the keyboard and functions of each key, as well as preparation before turning the power on. Please learn this section well before operating the instrument for the first time.





### KEYBOARD AND DISPLAY PANEL



### KEY FUNCTION

1. "Down" Arrow - Decrease button: decreases the value.
2. "Up" Arrow - Increase button: increases the value.
3. "Start/Stop"-Start/Stop button: Press to start operation after setting the temperature and time. Press this button for 2 seconds to stop the instrument.

## OPERATION

### **Temperature and Time Setting**

1. Power on, the LED displays "8".
2. Two seconds later, the value changes to block current temperature and setting time of the last operation. Example: "28.5" is the block current temperature, and "00:35" is the last setting time which means 35 minutes.
3. Click "UP" or "DOWN" arrow of "TEMP", the temperature value changes to the setting in the last operation. The last digit of the setting value flickers. Press "UP" or "DOWN" arrow of "TEMP" to change the temperature setting. Hold the key to change the value quickly. When the value reaches the target, release "UP" or "DOWN" arrow, the instrument confirms and saves the value.
4. Click "UP" or "DOWN" arrow of "TIME". The last digit of the time setting value flickers. Press "UP" or "DOWN" arrow of "TIME" to change the time setting. Hold the key to change the value quickly. When the value reaches the target, release "UP" or "DOWN" arrow, the instrument confirms and saves the value.

Note: The time setting "00:00" means no operation timing is set, the instrument runs continuously at the setting temperature.

### **Start/Stop**

1. After setting the temperature and time, click the Start/Stop key to start the instrument.  
When the instrument is heating, the dot "." of the temperature value flickers. When the temperature reaches the setting value, the dot "." stops flickering and the colon ":" of the time value begin to flicker. The time is counting down.  
When the time is up, the operation stops and a buzzer alarm sounds. The LCD displays current block temperature and time display is "OVER" which means the operation is complete.
2. When the operation completes, the instrument goes to waiting interface. Press "UP" or "DOWN" arrow to reset the temperature and time, then, press start/stop to start a new operation. Press start/stop without changing the setting to restart the operation.
3. Continuously press start/stop for 2 seconds during the operation to stop running. Press start/stop again to continue the operation.

## TEMPERATURE CALIBRATION

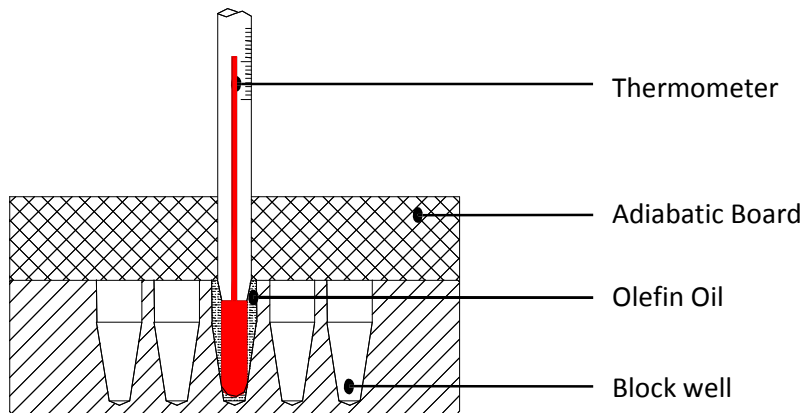
The temperature of the instrument has been adjusted before it is sold. If there is a deviation between the actual temperature and the displayed temperature, you can do as follows to calibrate it.

### NOTICE:

The instrument uses two temperature adjustments to ensure its accuracy. It is linearly adjusted on 40 ° C, and 100 ° C. The temperature accuracy will be within  $\pm 0.5$  ° C after the temperature calibration. Both the environmental and the block temperature should be lower than 35 ° C when calibrated.

### Adjustment Methods

1. Start up the instrument, it enters waiting interface. Make sure the current temperature in display is below 35 ° C. If the temperature is higher than 35 ° C please wait until it is below 35 ° C.
2. Inject olefin oil into one of the block wells. Put a thermometer into this well (the precision of the thermometer should be 0.1. The temperature ball should be immerse into the block well). Adiabatic material is needed on the block to separate it from the oil. Refer to the figure below.



NOTICE: To ensure the calibration precision, read the actual temperature and allow 20 minutes for the temperature to reach calibration point.

3. Press “UP” and “DOWN” arrow simultaneously to enter the temperature calibration interface. LED displays “ADJT” in the time display. The temperature displays the current temperature and the program auto controls the temperature to 40 ° C.

When the temperature reaches 40 ° C, the decimal digit begins to flicker. Wait for at least 20 minutes. The actual temperature of thermometer is 39.6 ° C. Press “UP” and “DOWN” arrow of temperature to change the temperature value to 39.6. Press “Start/Stop” to confirm.

Program saves the value. The temperature automatically rises to 100 ° C.

4. When the temperature reaches 100 ° C the decimal digit begins to flicker. Wait for at least 20 minutes. The actual temperature of the thermometer is 101.5 ° C. Press “UP” or “DOWN” arrow of temperature to change the temperature value to 101.5. Press “Start/Stop” to confirm.

5. After temperature have been adjusted, press “UP” and “DOWN” arrow simultaneously to exit the temperature calibration and return to waiting interface.

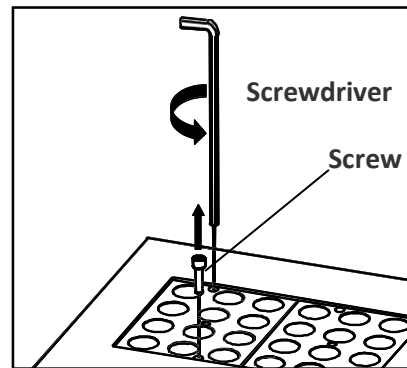
Notice:

After temperature calibration, the temperature display is the same as the practical temperature of block.

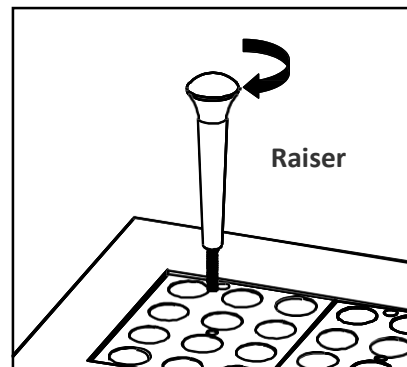
Press “UP” and “DOWN” arrow simultaneously during the calibration to exit the adjustment procedure. The calibration is stopped.

### ***Exchange of Block***

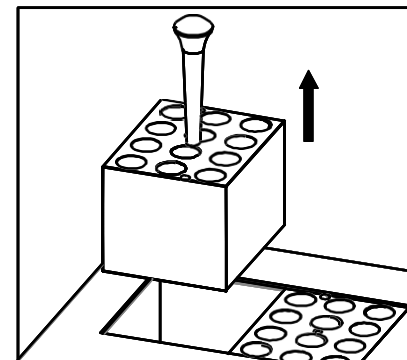
1. Pull out the two screws which attach the block to the heating board with the screwdriver.



2. Put the raiser in the center well of the block.

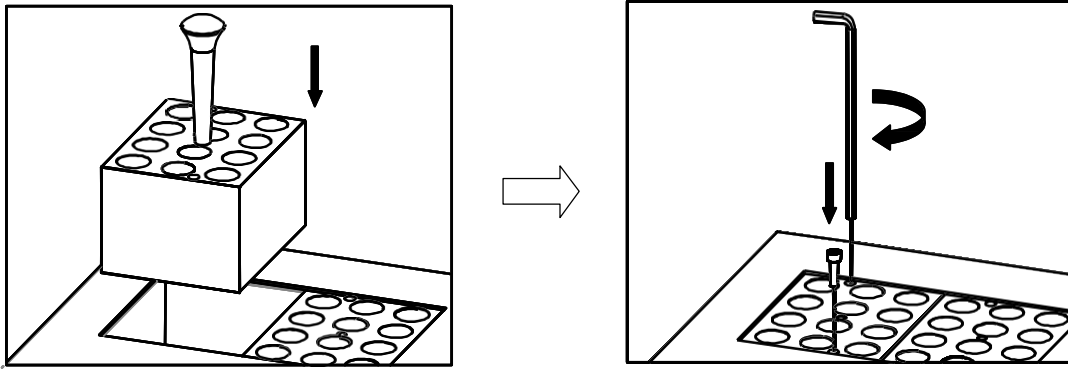


3. Pull out the block with the raiser.



4. Remove the raiser from the block, then attach the raiser to the replacement block. Put the block in the instrument and attach it with screws. Please be patient. This process is complicated.





## TROUBLE SHOOTING

Issue	Possible Causes	Solution
Display window doesn't respond after power-is turned on.	No power	Check the power connection.
	Broken Fuse	Exchange fuse (250V 4A Φ5x20)
	Broken Switch	Contact BT Lab
	Other	Contact BT Lab
The actual and displayed temperatures are different.	Broken sensor or loose block contact.	Contact BT Lab Systems
"ERR" in the display with an alarm sound.	Broken sensor or the room temperature is below Zero disconnected.	Contact BT Lab Systems
Block is not heating.	Broken sensor.	Contact BT Lab Systems
	Wiring damage	
	Broken heater	
Key does not work.	Key broken	Contact BT Lab Systems

## TECHNICAL SUPPORT

BT Lab Systems offers technical support for all of its products. If you have any questions about the product's use or, operation, please contact BT Lab Systems at the following:

E-Mail: [info@BTLabSystems.com](mailto:info@BTLabSystems.com)