Dry Bath Incubator

Cat. No. BT1108

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.

- 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. Do not touch any part of the body to the instrument to avoid scalding.

- 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 right side 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.

  o The instrument comes into contact with liquid

  o The instrument gets soaked or burned

  o The instrument emits an abnormal sound or smell

  o The instrument is dropped or the outer shell damaged

  o The instrument functions abnormally.

MAINTENANCE

The instrument and the accessories should be cleaned with a cloth dampened by alcohol.
If there are smudges on the instrument, clean it with a dry cloth.

Turn the power off before cleaning the instrument. Do not put cleaning fluid into the well of the block.

INTRODUCTION

The Dry Bath Incubator is designed with a microprocessor controller. It is used for preservation and reaction of samples, DNA amplification and electrophoresis and blood serum coagulation.

KEY FEATURES

- Temperature and time digital displayed in LCD and digital controlled.

- Displays program and current temperature.

- The time and temperature can be set.

- Metal block prevents product pollution.

- Easy replacement, cleaning and disinfecting of metal block.

- Temperature is adjustable.

- Buzzer sounds at end of temperature program.

NORMAL OPERATING CONDITIONS

Ambient temperature: 5 ° C ~30 ° C
Relative humidity: ≤ 70%
Power supply: 100-230V∼ 50/60Hz

TECHNICAL SPECIFICATIONS

Temperature range: R.T.+5 ° C ~100 ° C
Time range: 1 min ~ 99h59min
Accuracy of the temperature: ≤ 0.5 ° C
Display Accuracy: 0.1 ° C
Heating time: (from 20 ° C to 100 ° C) ≤ 15min
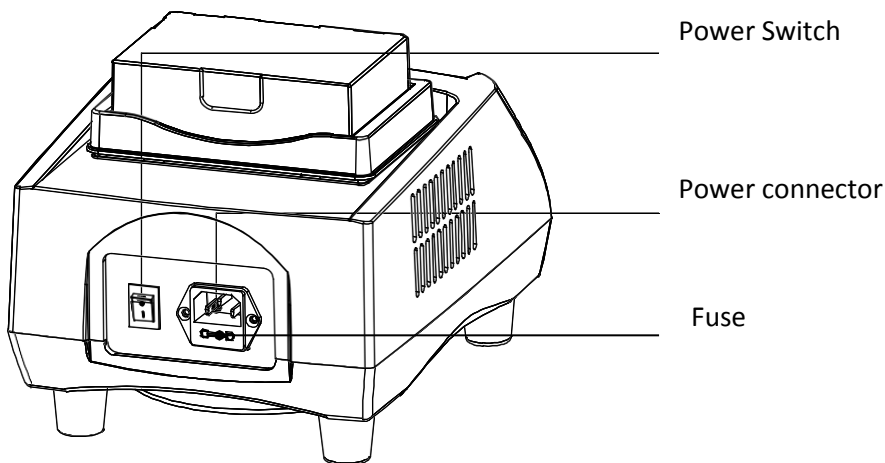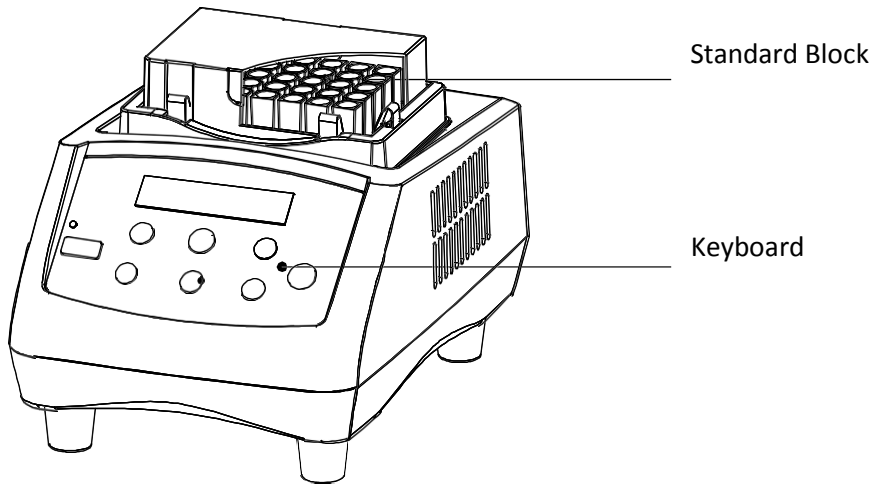Heating mode: Heater
Power supply: 150W
Fuse: 250V 3A Φ5×20
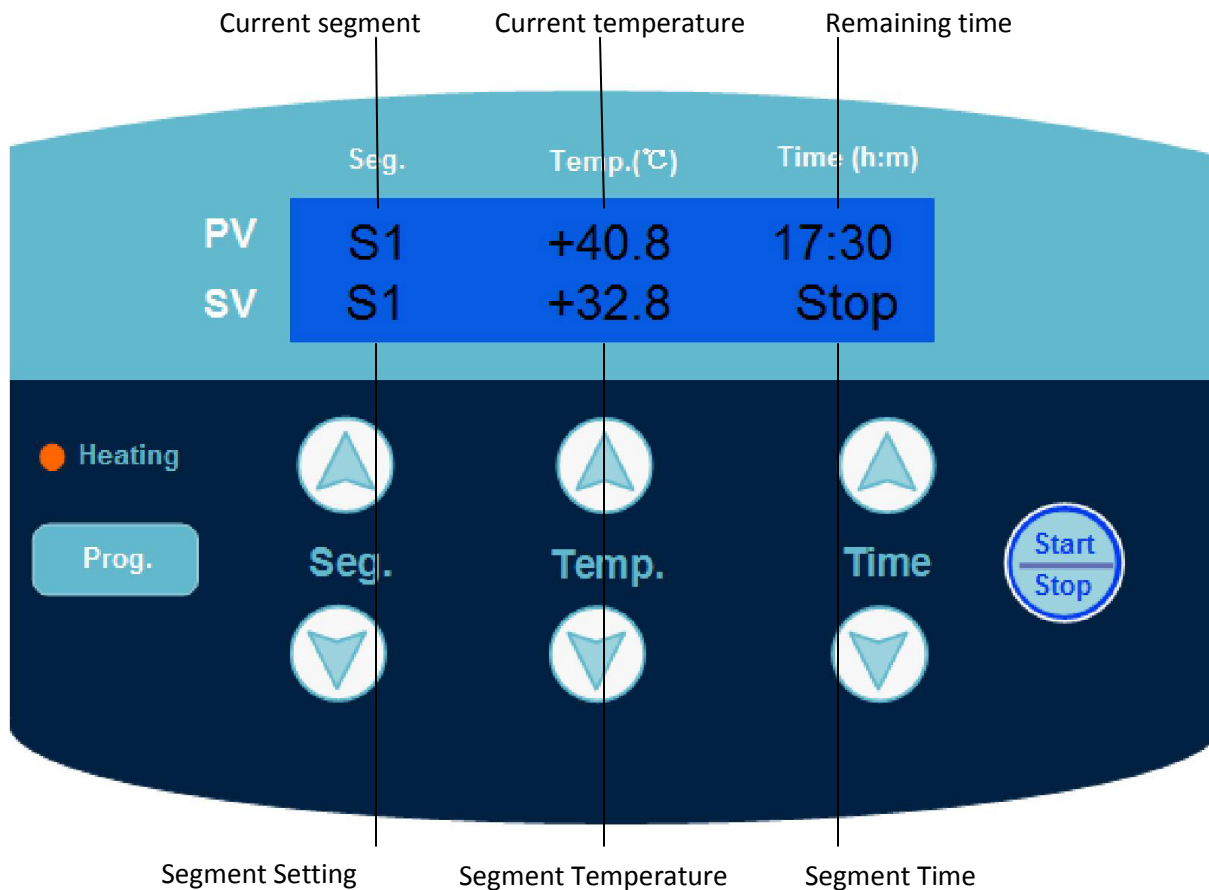Dimension: (mm) 270(D)×196(W)×170(H)
Net weight: (kg) 3.2

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.

Standard Block

Keyboard

Power Switch

Power connector

Fuse

KEYBOARD AND DISPLAY PANEL

Current segment   Current temperature   Remaining time

	Seg.	Temp.(℃)	Time (h:m)
PV	S1	+40.8	17:30
SV	S1	+32.8	Stop

Segment Setting   Segment Temperature   Segment Time

KEY FUNCTION

1. SEG "UP" or "DOWN" arrow - Key for selecting segment. Five segments can be selected (S1, S2, S3, S4, S5)

2. Temp. "UP" or "DOWN" arrow -Key for temperature setting. Press "UP" or "DOWN" arrow to set the target temperature. Holding "UP" or "DOWN" arrow will quickly set the temperature.

3. Time. "UP" or "DOWN" arrow -Key for time setting. Press "UP" or "DOWN" arrow to set the target time. Holding "UP" or "DOWN" arrow will quickly set the time.

4. PROG - Key for programming. Press "PROG" to select segment. Default starting segment is S1. The instrument can implement 4 programs: S1-S2, S1-S2-S3, S1-S2-S3-S4, S1-S2-S3-S4-S5.

5. Start/Stop - Press Start/Stop key to start or stop the program. To stop the program while operating hold the start/stop key for 2 seconds.

OPERATION

Single Temperature and Time Setting

1. The LCD reads "System-Testing" when the instrument is powered on.

2. Example: After 6 seconds, the display window for the current temperature shows 30.0 which indicates the block current temperature. Setting temperature shows 37.0 which indicates the target temperature. 10:00 is the former time, and S1 is the former program segment. Temperature unit is ° C. Time unit is hour:minute.

3. Pressing the TEMP "UP" or "DOWN" arrow will increase or reduce the temperature. Holding down the key will increase or reduce the unit. The program will auto confirm and save the setting.

   Pressing the Time "UP" or "DOWN" arrow will increase or reduce the time the same way. The program will auto confirm and save the setting.

4. Press Start/Stop to run the program.

5. Press SEG. "UP" or "DOWN" arrow. to select Segment. Set the segment's values according to step 3 above. A total of five segments can be set.

Multi-program Setting

1. Press "PROG" key to connect segments as S1-S2, S1-S2-S3, S1-S2-S3-S4, or S1-S2-S3-S4-S5.

   Note：the start segment is always segment S1.

2. Press "PROG" key to enter program display."Start:S1" means the first section of the multi-program is segment S1, it cannot be changed. "End:S2"means the last operation segment is segment S2. Example: Press the "UP" arrow key of Seg. to change it to "S4". Press "PROG" key to confirm. The multi-program setting is S1-S2-S3-S4.

3. Press "Start/Stop" key to run the multi-program.

   Note: Press "Start/Stop" key to run the multi-program after changing the segments.

TEMPERATURE CALIBRATION

If there is s deviation between the actual temperature and the displayed temperature, you can do as follows to calibrate it.
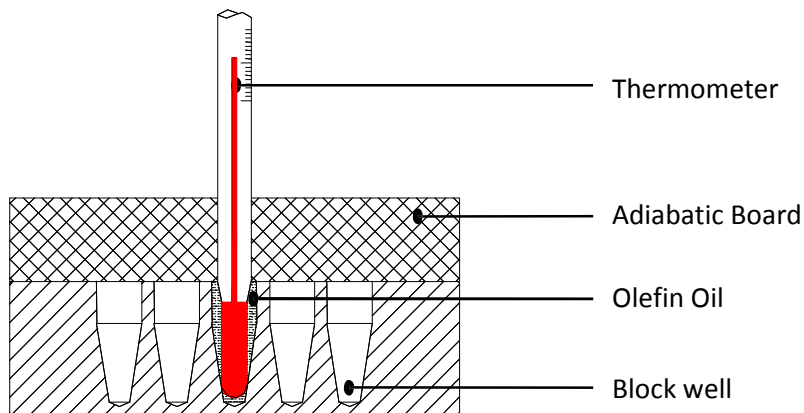
NOTICE:

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 double temperature adjustment. Both the environmental and the block temperature should be lower than 35 ° C when calibrated.

Notice: The temperature of the instrument has been adjusted before it is sold.

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 cone-shaped wells. Put a thermometer into this well (the precision of the thermometer should be 0.1. The temperature ball should be immersed into the block well). Adiabatic material is needed on the block to separate it from the oil.

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

3. Press the "UP" and "DOWN" arrow of Seg. simultaneously when the instrument is not operating. The program shows interface. Example: Practical temperature is behind "P" which shows 20.5, and the program automatically controls the temperature to 40 ° C. In the meantime, the sign * flickers. The value behind "AdjTemp" is the calibration temp. When temperature achieves 40 ° C, "ADJ" and * flicker together, the value behind "P:" is still the practical temperature.

    Press Stop/Start

4. Wait for 20 minute. The actual temperature of thermometer is 38.8 ° C. Press "UP" or "DOWN" arrow of Temp. to change the value behind "AdjTemp" to 38.8. Press "Start/Stop" to confirm.

   The program saves the value. Temperature rises to 100 ° C automatically. The sign "*" flickers.

5. When practical temperature reaches 100 ° C, "ADJ" and * flicker together.

6. Wait for 20 minutes, the actual temperature of thermometer is 98 ° C. Press "UP" or "DOWN" arrow of Temp. to change the value behind "AdjTemp" to 98.0. Press "Start/Stop" to confirm.

7. Program turns to interface for operation. After temperature calibration, the temperature display is the same as the practical temperature of block.

NOTICE:

During temperature calibration, press "UP" and "DOWN" arrow of Seg. simultaneously to cancel the calibration. The system keeps the former calibration. Do not simultaneously press "UP" and "DOWN" arrow of Seg. unless calibration is really needed.
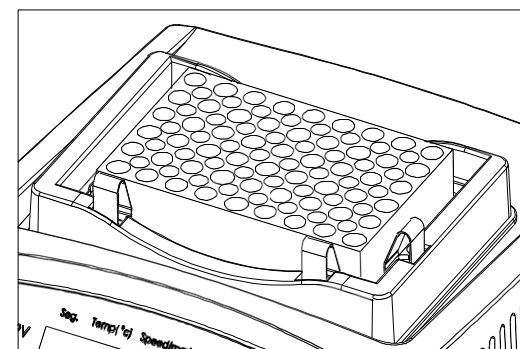
Exchange of Block

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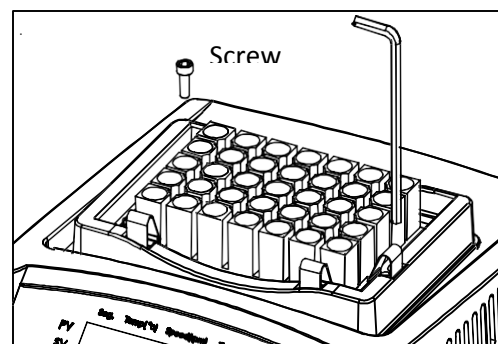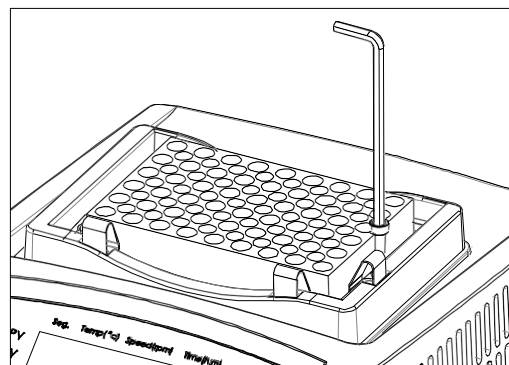

2. Pull out the block
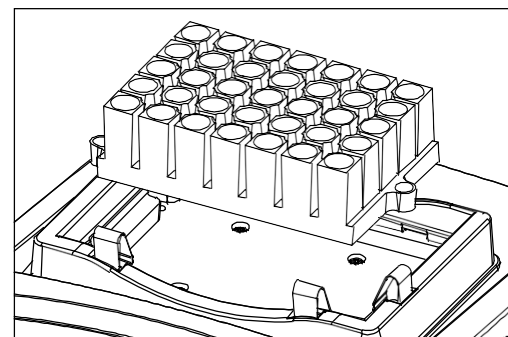
3. Insert another block

4. Attach the block with screws

TROUBLE SHOOTING

Issue	Possible Causes	Solution
Display window doesn't respond after power-is turned on.	No power	Check the power connection.
	Bad Fuse	Exchange fuse (250V 3A Φ5x20)
	Switch Failure	Contact BT Lab Systems
	Other	Contact BT Lab Systems
The actual and displayed temperatures are different.	Broken sensor or loose module contact.	Contact BT Lab Systems
"OPEN" in the display with an alarm sound.	The sensor is disconnected.	Contact BT Lab Systems
"SHORT" in the display with an alarm sound.	Short in the sensor.	Contact BT Lab Systems
Block is not heating.	Switch power failure	Contact BT Lab Systems
	Bad heater	
Button does not work.	Keyboard failure	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