Operation Manual

BSH6000
Iso-Block
Dry Bath Incubator

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Contents

Chapter 1 Introduction

The dry bath incubator is controlled by sophisticated software, which can be widely used for the preservation and reaction of samples, the amplification of DNA, the pre-denaturation of the electrophoresis, blood serum coagulation and a variety of laboratory procedures.

Features:

- **Large digital display of time and temperature**
- **Extremely accurate temperature control up to 105°C**
- **Built-in over-temperature protection**
- **In-Lab calibration**
- **Plastic lid for enhanced precision and eliminating waste of energy**
- **Independent temperature control over two separate chambers**

Chapter 2 Specifications

1. Ambient operating environment:

Ambient temperature：5°C ~ 35°C
Relative humidity：≤70%
Power supply：AC115V or 230V, 50-60Hz

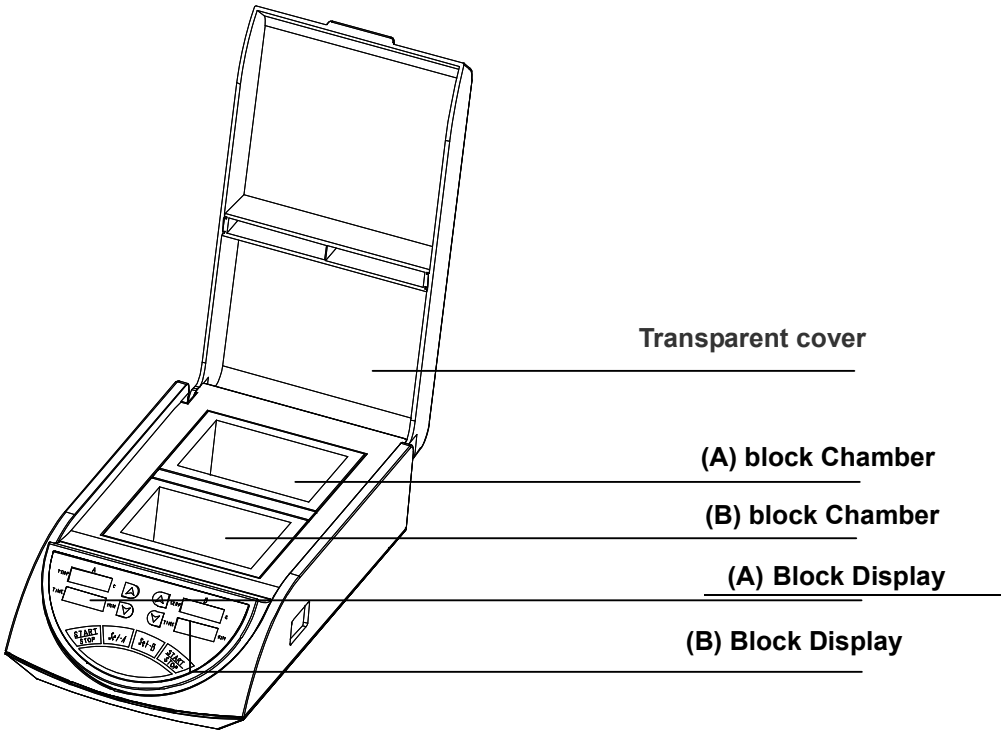
2. Technical Data:

Item No.	BSH6000
Temperature range	Ambient (Room Temp) +5°C ~ 105°C
Timer	Max. 99hr & 59min.
Temperature accuracy	≤ ±0.1 °C
Temperature uniformity	≤ ±0.2 °C
Heating time（20-105°C）	≤20min
Block Material:	Aluminum
Power	240W
Fuse	250V 4A Φ5×20
Dimensions (L×W×H)	6.3x14.5x5 in./16x36.5x13 cm
Warranty	2 Years

Chapter 3 Overview

This chapter focuses on the introductions of the structure, keypads and key-functions of the instrument, as well as preparatory work prior to initial operation.

1. Structure overview



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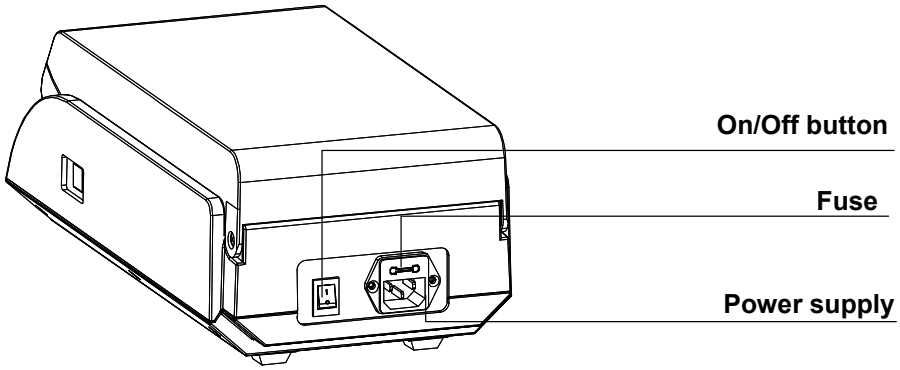
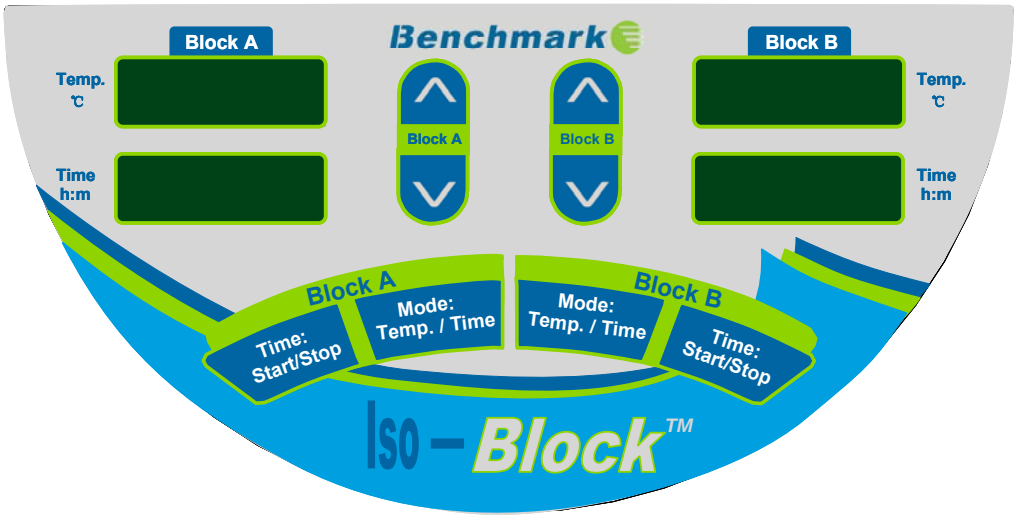


Keypads



3. Display

Mode — The "Mode" button is used to toggle between the time and temperature setting.

▼ — Down key: Used in both time and temperature mode to decrease the setting.

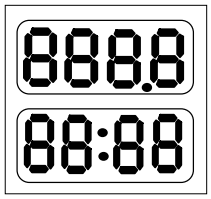
▲ — Up key: Used in both the time and temperature mode to increase the setting.

Start / Stop — Start/Stop key. After the temperature and time setting is selected, press this key to start the timer. This key can also be pressed to stop the timer.

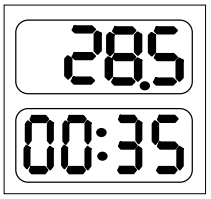
Chapter 4 Operation

1. Temperature and time setting

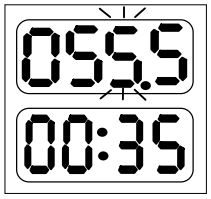
a) Press the On/Off switch to power on the instrument. The instrument performs a self test followed by an alarm to signal that the product is ready for use.



b) After about 3 seconds, the temperature will automatically increase to the most recent setting. The values shown on the display are actual settings (real time temperature and time remaining.) The example shows an actual temperature of 28.5°C and 35 minutes remaining.



c) To adjust the set temperature, press ▲ or ▼ keys until the desired temperature (Ex. 55.5) is showing on the display. After 5 seconds, this temperature is stored and the instrumnent will begin heating.



d) To set the time, Press the "Mode" key, the displayed time begins flashing, press ▲ or ▼ keys to set the desired time (ex 1 hour and 20 minutes). After 5 seconds the desired time is stored.

NOTE: The timer will not begin unless the "Start/Stop" button has been pressed

2. Timer Operation (Advanced)

The default setting of the instrument is designed so that the heater will continue to hold the set temperature even once time has expired and "oVEr" is showing on the time display. This setting can be adjusted so that the heater will shut down once time has expired. To adjust the advanced timer setting pres the "Mode" key and hold it for 10 seconds. After 10 seconds, the display will show "OP:1" use the ▲ or ▼ key to select "OP:2". The setting has now been changed and can be stored by pressing the "Start/Stop" key.

3. Temperature Calibration

The temperature of the instrument has been calibrated prior to shipment from the factory. However, in the event that an adjustemnt to the calibration is required, the user can adjust the calibration with either a thermometer/thermocouple.

Caution: the instrument uses double temperatures adjustment to ensure accuracy over a wide range of temperature. It is linearly adjusted at both 40° and 100°C.

3.1. Calibration with a thermometer, Block A:

a) Power on the machine and ensure that the temperature on the display is less than 35°C.

b) Inject olefin oil into one of the cone-shaped wells, and then put a thermometer/thermocouple into this well (make sure that the precision of the thermometer should be within 0.1℃ and the temperature ball should be absolutely immerged into the cone-shaped well). See Fig a.

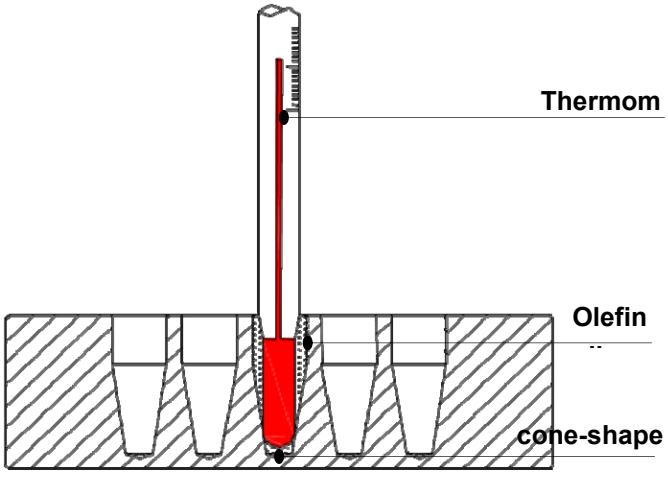
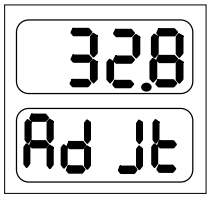


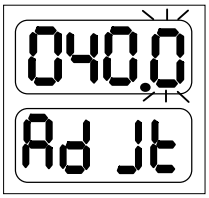
Fig a

c) Press "Mode" key without releasing, then press ▼ key at the same time and hold for 3 seconds, it will enter into the temperature calibration interface, see the right. At this point, " Ad Jt **" displayed, which indicates entering into temperature calibration program. The temperature displayed is current temperature and begins to rise to**



40.0° automatically.

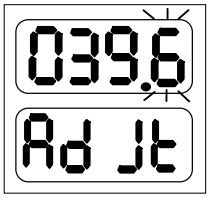
When the temperature reaches to 40° and is able to hold a constant temperature, the decimal digit begins to flicker.



After 20 minutes, the user can read the value on the Thermometer and use the up and down keys to enter the value of the thermometer.

Notes: Please read the actual value after 20 minutes' constant temperature to ensure the calibration accuracy.

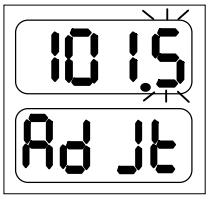
If the actual read out of thermometer is 39.6, modify the temperature to 39.6 by pressing ▼ or ▲. Then press "Start/Stop" to confirm the input value.



d) Then the instruments will the automatically begin to heat to 100℃. Once 100C is reched and held as constact, the decimal begins to flicker. After 20 minutes, the user can read the actual value from thermometer.

Notes: Please read the actual value after 20 minutes' constant temperature to ensure the calibration accuracy.

If the actual readout is 101.5, modify the temperature display to 101.5 by pressing ▼ or ▲. Then press "Start/Stop" to confirm the input value.



Use the same method to calibrate the temperature deviation in Block B.

Note: Pressing "Set" and "▼" simultaneously during the temperature calibration indicates exiting the temperature calibration program. The adjustments will be cancelled and the changed value will be of no effect.

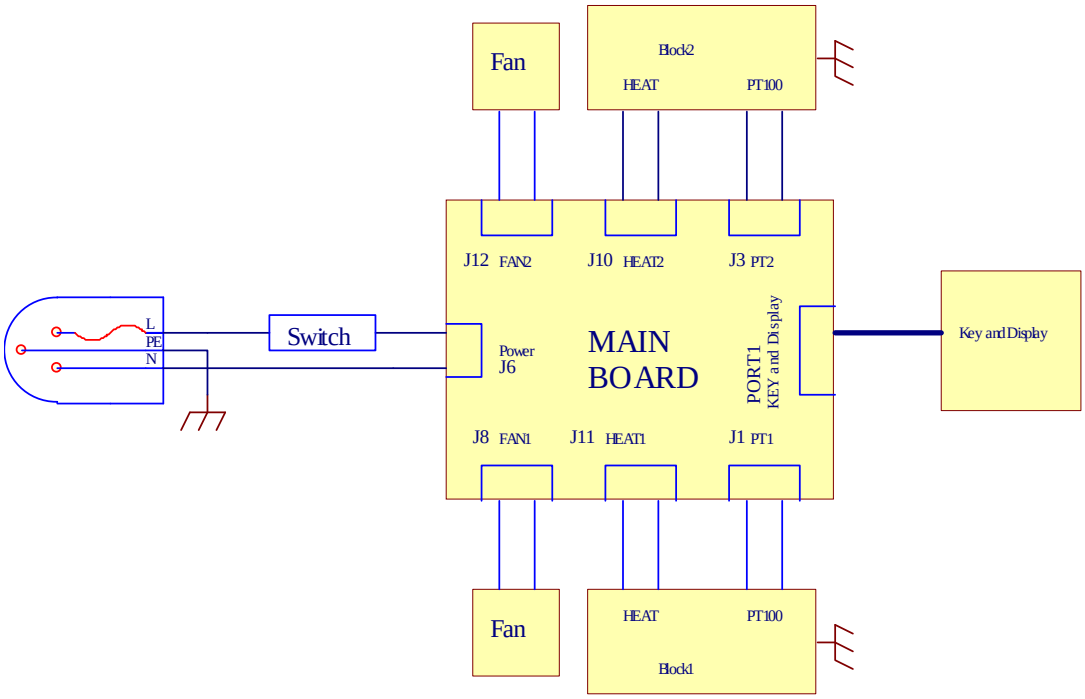
Chapter 5 Failure Analysis and Troubleshooting

Problems and actions

No.	Common problem	Possible cause	Action(s)
1	No display on the screen	No power on the main power plug	Check power supply and plugged properly
		Faulty fuse	Change fuse
		On/Off button broken	Change button
		Others	Contact the supplier
2	The actual and displayed temperatures are quite different	Broken sensor or loose contact of the block	Contact the supplier
3	"OPEn" displayed, alarming "beep"	Sensor disconnect	Contact the supplier
	"SHOr" displayed, alarming "beep"	Sensor short-circuit	
	"HHHH" displayed, alarming "beep"	Sensor broken, or block temperature is too high	
4	No heating	Sensor broken	Contact the supplier
		Heating tube broken	
5	Keys don't work	Faulty key	Contact the supplier

Annex：Wiring Diagram

（for reference only）



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