



A Geno Technology, Inc. (USA) brand name

Shaking Incubator

Cat. No. BT919. BT920

Thanks for choosing BT Lab Systems' Shaking 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

Users should understand how to use the instrument properly before operating it. 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. 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 opened 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.
- The main switch is on the rear of the device. Turn to "I" to power on the device, and turn to "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 conduction between the block and the test tube. If there are smudges on the instrument, clean it with a dry cloth.

Power off when cleaning the instrument. Do not drop the cleaning fluid in the well. Do not use corrosive cleaning fluid.

WARRANTY

The Shaking Incubator is warranted against defects in materials and workmanship for 1 year. If any defects occur in the instrument or accessories during this warranty period, BT Lab Systems will repair or replace the defective parts at its discretion without charge.

The above warranty is not valid if the instrument has had improper maintenance, damage caused by unauthorized repair or modification.

For any inquiry or request for repair service, contact your local BT Lab Systems office. Inform BT Lab Systems of the model and serial number of your instrument.

INTRODUCTION

The Shaking Incubator is designed for shaking and incubating standard micro-plates. It uses micro processing techniques combined with PID control. It has low noise and simple operation. It is used with micro plates and cell culture plate solutions which are mixed or incubated.

KEY FEATURES

- LCD displays the setting and actual temperature, time and shaking speed
- Simple touch operation interface, streamlined fuselage and convenient cleaning
- Heating of cover and bottom two-sides makes sample in each plate hole heat uniformly.
- Micro-processor controlled temperature and shaking speed. Good temperature control. Precise control of shaking speed
- Uses 2 plates (BT920) or 4 plates (BT919). Features beep alarm when operation ends
- Brushless motor drive, long life and maintenance free

NORMAL OPERATING CONDITIONS

Ambient Temperature: 5°C ~30°C

Relative Humidity: ≤70%

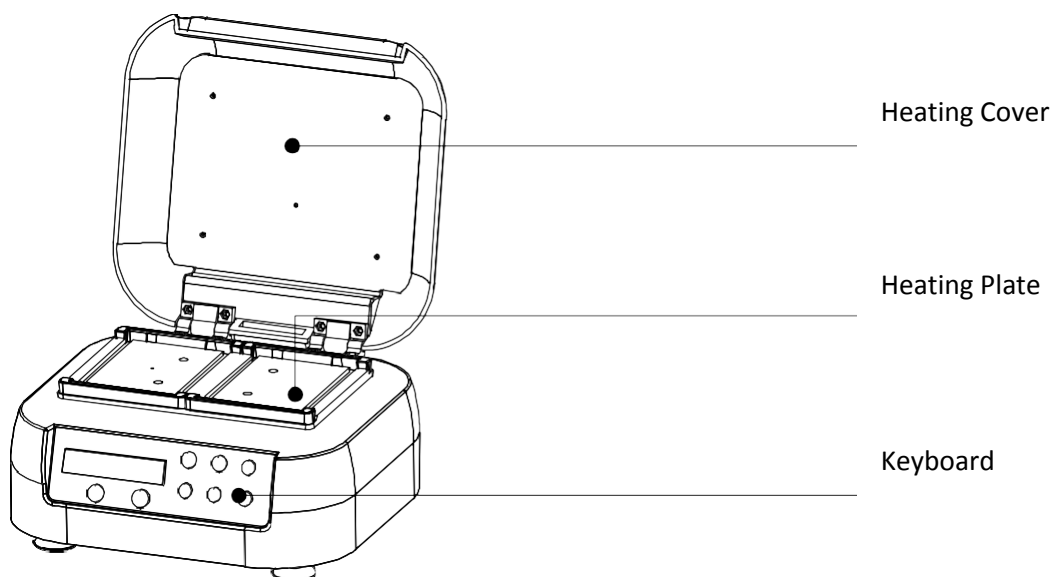
Power: AC 90~230V

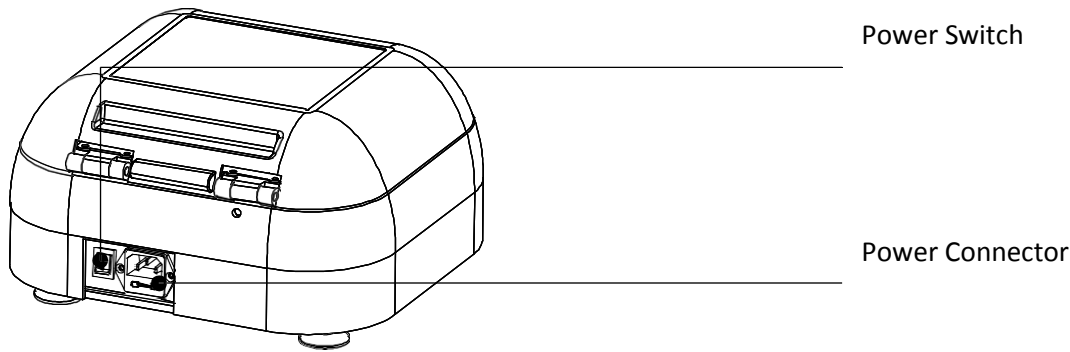
TECHNICAL SPECIFICATIONS

	BT920	BT919
Shaking Speed	300 ~1200rpm	
Shaking Orbit	3mm (horizontal)	2mm (horizontal)
Temperature range	RT+5°C ~70°C	
Timing Range	0 ~99h59min	
Block Temp. Uniformity	≤±0.5°C	
Temp. Control Accuracy	≤±0.2°C	
Heat Platform Temp. Accuracy	<0.3°C (detect @37°C)	
Heating time	<25min (from 20°C to 70°C)	
Capacity	2 plates	4 plates
Heating Parts	Heater	Heater
Input power	150W	250W
Dimension	284x264x157mm	345x310x178mm

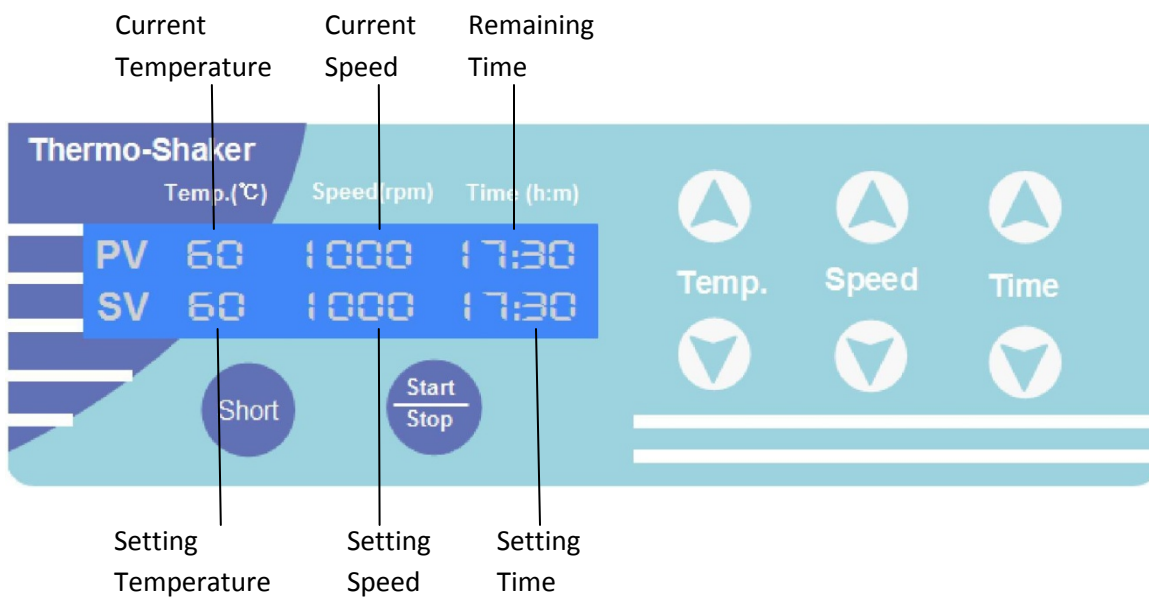
This section mainly describes the instrument's mechanical structure, the keyboard and functions of each key. Please learn this section well before the instrument is operated for the first time.

EQUIPMENT OVERVIEW





KEYBOARD AND DISPLAY PANEL



KEY FUNCTION

- TEMP**“UP” and “DOWN” arrow Temperature setting key. Press “UP” or “DOWN” arrow to set the target temperature. Holding “UP” or “DOWN” arrow can quickly set the temperature. Hold the “DOWN” arrow key until it displays “OFF” on the LCD, to shut the temperature function off.
- SPEED**“UP” and “DOWN” arrow Speed setting key. Press “UP” or “DOWN” arrow to set the target speed. Hold “UP” or “DOWN” arrow to quickly set speed. Hold “DOWN” arrow key until it displays “OFF” on the LCD to shut off the speed function.
- TIME** “UP” and “DOWN” arrow Time setting key. Press “UP” or “DOWN” arrow to set the target time. Hold “UP” or “DOWN” arrow to quickly set time. Hold “DOWN” arrow key until it displays “OFF” on the LCD to shut off the timing function.
- SHORT** Jog and mix key. Set target speed. Hold down this key and

the instrument will run at this speed. Release the key to stop the operation.

START/STOP

Key to start or stop. Briefly press Start/Stop key to start the program. Hold down the key to stop the program.

Setting Temperature, Speed and Time

1. When powered on the instrument enters into the initial program.

2. After 6 seconds, the LCD displays the program.

“S1 is the segment run in last operation. “30.0” indicates current temperature of the block.

“37.0” is setting temperature of last operation, “1000” is setting speed of the operation, “10:00” is the setting time in the last operation.

Temperature unit is ° C. speed unit is rpm,

Time unit is hour : minute.

S1	30.0	0	00:00
S1	37.0	1000	10.00

3. Press “UP” or “DOWN” arrow of Temp. The temperature setting value will increase or decrease. Hold “UP” or “DOWN” arrow to quickly increase or decrease the value.

Setting speed or time value is the same method as above temperature setting method.

The instrument confirms the settings and saves the settings automatically.

NOTICE: Pressing “UP” or “DOWN” arrow of Temp will autostart the instrument to the setting temperature. If not pressing “UP” or “DOWN” arrow, press “Start/Stop” to start operation.

After setting the program press “Start/Stop” to run. When the program is finished, an alarm will buzz five times. Mixing will be stopped. Temperature is kept at the setting value.

Run, Pause and Stop Functions

Hold “DOWN” arrow of Temp key until "OFF" is displayed, to shut the temperature function off. Hold “DOWN” arrow of Speed or Time key to shut the speed or timing function off.

Note: Shutting off the timing function means that the running time is ongoing. Run-time display shows "CON".

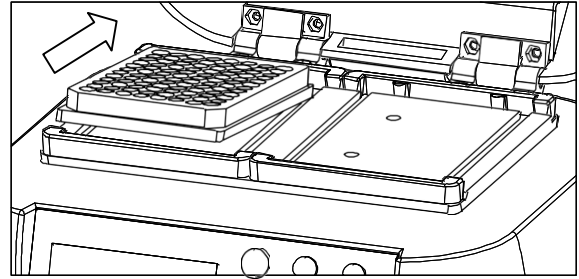
Touching Mixing Functions

Press the "Short Mix" key, the instrument starts to run, release "Short Mix" key to stop running. The display reads XXXRPM which is the mixing speed. XXXS is the jog running time. The longest display time is 999 seconds.

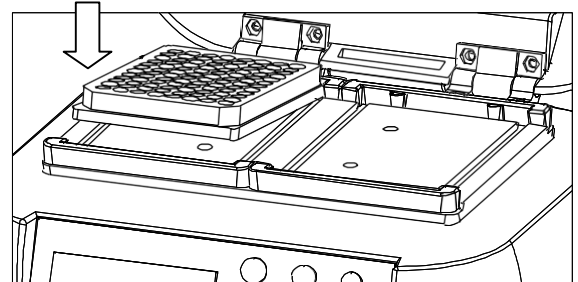
Note: In a single run, the highest mixing speed is the maximum set speed of the current section.

Block Replacement

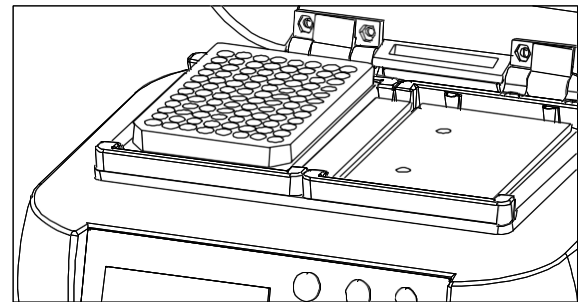
1. Open the heating cover, place one side of the micro-plate slightly downward to close to place the side in the direction of the arrow.



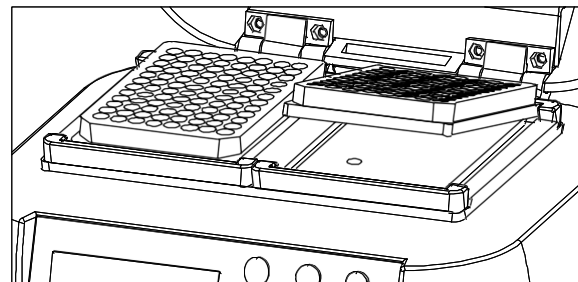
2. Press the other end of the micro-plate according to the direction of the arrow.



3. Press the micro-plate downward to make it connect with the thermostat tablet.



4. Attach another micro-plate as in the above method.



TROUBLE SHOOTING

Issues	Possible Causes	Solutions
Blank display when the instrument is powered on	No power	Check the power
	Broken adapter	Contact BT Lab Systems
	Broken switch	Contact BT Lab Systems
	Other	Contact BT Lab Systems
The actual and displayed temperatures are different	Broken sensor	Contact BT Lab Systems
“OPE.1” in the temperature display with an alarm sound	Temperature sensor of the heating cover is disconnected	Contact BT Lab Systems
“OPE.2” in the temperature display with an alarm sound	Temperature sensor of the heating plate is disconnected	Contact BT Lab Systems
“SHO.1” in the temperature display with an alarm sound	Short in the temperature sensor of the heating cover	Contact BT Lab Systems
“SHO.2” in the temperature display with an alarm sound	Short in the temperature sensor of the heating plate	Contact BT Lab Systems
“HHH.1” in the temperature display with an alarm sound	Over heating of the heating cover	Contact BT Lab Systems
“HHH.2” in the temperature display with an alarm sound	Over heating of the heating plate	Contact BT Lab Systems
“ERR1” in the speed display with an alarm sound	Rotor locked	Contact BT Lab Systems
“ERR2” in the speed display with an alarm sound	Rotor is running ,but display is “0 rpm”	Contact BT Lab Systems
“ERR3” in the speed display with an alarm sound	Actual speed is over max. speed	Contact BT Lab Systems
Heating block not heating	Broken heater	Contact BT Lab Systems
Button not working	Broken button	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