A Geno Technology, Inc. (USA) brand name

# Incubator Shaker

## Cat. No. BT921, BT922, BT924

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Thanks for choosing BT Lab Systems' Incubating Shaker. 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 warning 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 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.
- 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 instrument should be cleaned with a cloth dampened by alcohol, If there are smudges on the instrument, clean it with a dry cloth.

## INTRODUCTION

The incubator shaker is a temperature controlled biochemical instrument combining incubation and shaking function. It is used in cell culture, fermentation, hybridization, biochemistry, research of enzyme and cell tissue, etc. which require higher quality of temperature control and shaking speed. It can dynamically cultivate microbial cells and all kinds of strains.

## KEY FEATURES

- Integrates incubator and shaker. Saves laboratory space.
- Compactly designed, good temperature uniformity, low noise.
- Micro-processor controls temperature and shaking speed. Built-in timing function.
- Cover can be opened at a wide-angle, convenient to watch the sample.
- Built-in cover switch. When the cover is open for air circulation, heating and shaking will automatically stop. No temperature overheating problem.
- Unique speed control to ensure shaker is smooth in starting and avoids spilling liquid.
- Speed of the circulation fan is adjustable.
- Independent temperature alarm system. Heating is cut off when temperature is over the limited value.
- Alarm when program completes.
- Brushless DC motor has long life is maintenance free.

## NORMAL OPERATING CONDITIONS

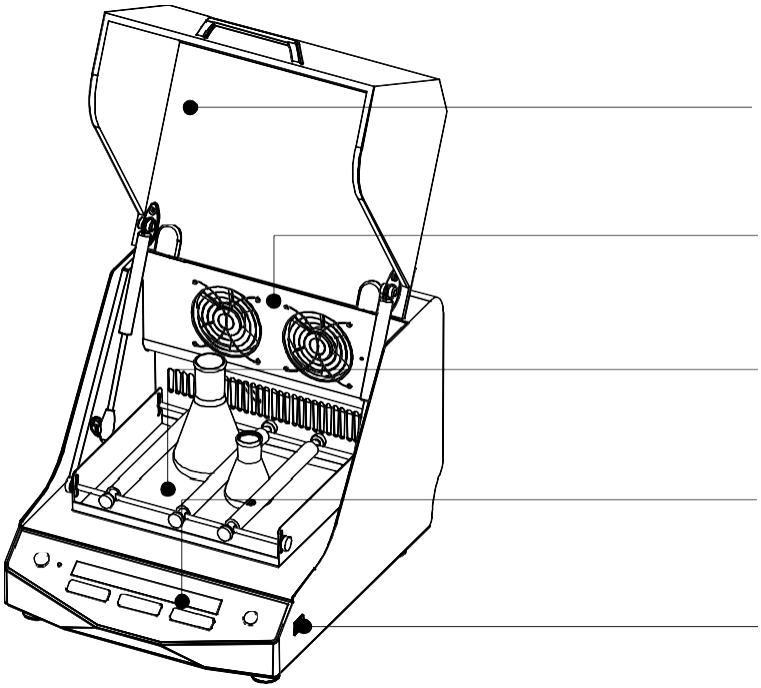
Ambient Temperature: 4°C ~45°C
Relative Humidity: ≤70%
Power: AC110V

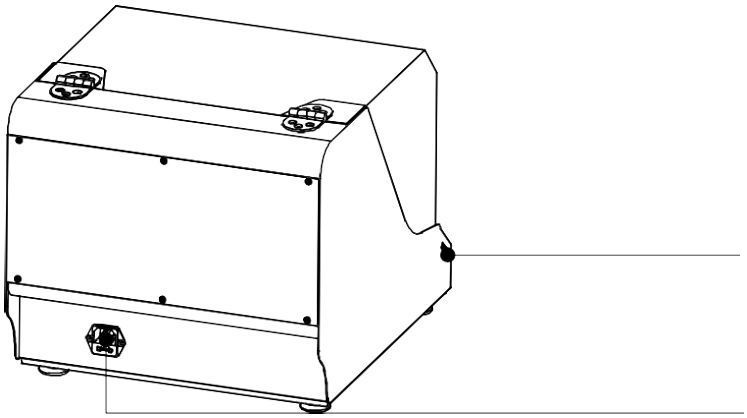
## TECHNICAL SPECIFICATIONS

| | BT921 | BT922 | BT924 |
|---|---|---|---|
| Temperature Control Range | R.T. +5 ~60°C | | |
| Temperature Display Accuracy | 0.1°C | | |
| Temperature Control Accuracy@37°C | ≤ ±0.3°C | | |
| Timing Range | 0 ~99h59min | | |
| Shaking Speed | 50 ~300 rpm | | 200 ~1200 rpm |
| Orbit | 20mm (horizontal) | | 3mm (horizontal) |
| Power Supply | AC110V 400W | AC110V 600W | AC110V 400W |
| Dimension | 360x435x320mm | 514x660x430mm | 360x435x320mm |
| Platform | 6 types of platforms optional | standard platform PW-420 (410x420x65mm) | standard platform PW-1500 (280x214x13mm) |

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

## EQUIPMENT OVERVIEW



## KEYBOARD AND DISPLAY PANEL


| | |
|---|---|
| + | Increase the speed, temperature or time setting value |
| - | Decrease the speed, temperature or time setting value |
| FAN | Key to switch display between shaking speed and fan speed. The indicator lights, the fan speed is displayed. Fan speed can be adjusted. |
| Stop/Start | Key to start or stop operation. Press Start/Stop key to start the operation. Hold Start/Stop key for 2 seconds to stop operation. |

## KEY FUNCTION

***Speed, Time and Temperature Setting***

1. LED displays all "8" when powered on. The instrument enters into the initial program with a beep.

   Press "UP" or "DOWN" arrow of speed key. It displays the last running speed. The unit digit flickers. Press "UP" or "DOWN" arrow of speed key to adjust the speed value. Continuously pressing makes the value to increase or decrease from unit digit, tens digit to hundreds digit. E.g., to set the speed to 250 rpm, continuously press "UP" arrow key until the speed value displays "250" release the "UP" arrow key. The instrument confirms and saves the setting value.

   Press FAN key, the indicator lights, display speed changes from shaking speed to fan speed. Press "UP" or "DOWN" arrow of speed key. It displays the last setting speed of fan. The unit digit flickers. Press "UP" or "DOWN" arrow of speed key to adjust the speed value. The key adjust in increments of 200rpm.

2. Press "UP" or "DOWN" arrow of time key. It displays the last setting time. The last digit flickers.

   Press "UP" or "DOWN" arrow of time key to adjust the timing value. Hold the key to change the value and increase or decrease in X10 speed.

3. Press “UP” or “DOWN” arrow of temperature key. It displays last setting temperature. The last digit flickers. Press “UP” or “DOWN” arrow of temperature key to adjust the temperature value. Hold the key to increase or decrease the value in X10 speed.

   NOTICE: The time set at 00:00 means the operation time is ∞.

***Start/Stop***

1. Press “start/stop” key to start the operation.
2. Press “start/stop” to run the program after adjusting the speed, time and temperature setting. When program completes, the instrument stops running and alerts.
3. Hold the “start/stop” key for 2 seconds to stop the program.
4. When the program completes, or the program is stopped by pressing the “start/stop” key, the instrument will be in stand-by mode. In stand-by mode, press “UP” or “DOWN” arrow of speed, time or temperature key to reset the value.
5. Press “start/stop” directly without adjusting any value in stand-by mode, the instrument operates the program the same as the last setting.

## TROUBLE SHOOTING

| **Issue** | **Possible Causes** | **Solution** |
|---|---|---|
| No signal display when powered on. | No power | Check the power |
| | Broken fuse | Exchange the fuse (250V 3.0A Φ5x20) |
| | Broken switch | Exchange the switch |
| | Others | Contact BT Lab Systems |
| The actual and displayed temperatures are different. | Broken sensor | Contact BT Lab Systems |
| “OPEN” in the temperature display with a beep alarm. | Temperature sensor is broken or ambient temperature is below 0□C | Contact BT Lab Systems |
| Sound but no shaking | Broken motor or broken connecting line. | Contact BT Lab Systems |
| Button doesn’t work | Broken press button | Contact BT Lab Systems |
| No sound with a beep alarm. | Transparency cover is not closed | Close the transparency cover |

## WARRANTY

The instrument 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.

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.

## 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