

Operation Manual



BSBT-401

Incubator Shaker

Thank you for Choosing Biolab products. Please read the "Operating Instructions" and "Warranty" before operating this unit to assure proper operation.

PREFACE

Thanks for choosing incubator Shaker. This operation manual describes function and operation of the instrument. In order to use the instrument properly, please read this manual carefully before operating the Instrument.

Opening Check

Please check the instrument and appendix with the packing list when you first open the packing case. If anything does not match with the packing list, please contact with the vendor or the producer.

Safety Warnings and Guidelines

1 Important operation information of the security

Users should have an entire conception of how to use the instrument properly before operating it. Please read this operation manual carefully before using the instrument.

1 Security

The operation, maintenance and repair of the Instrument should comply with the basic guidelines and the remarked warning below. Otherwise, it will affect the scheduled using life of the Instrument and the protection provided.



It is forbidden operating before read the operation manual. Read the guidelines and directions below and carry out the countermeasure according to them.



Before operation, read the manual carefully. These units are designed for using in the laboratory environments by who're knowledgeable in safe laboratory practices.



The operator should not open or repair the instrument by himself. Otherwise, the instrument will lose the qualification of repair guarantee or cause accidents. The company will repair the instrument based on warranty description.

When using the instrument for the first time or after the instrument is moved, it must be put to stand for at least 4 hours before starting to use, so as not to damage the compressor!!!



Before connecting the power supply, make sure that the voltage of the power supply matches the voltage required by the instrument. And make sure that the rated load of the power outlet is not less than the requirements of the instrument.



If the power cord is broken, it must be replaced. It must be replaced with a power cord of the same type and size. Do not put anything on the power cord when the instrument is in use. Do not place the power cord where people are moving.



Always hold the plug when plugging and unplugging the power cord. When inserting the plug, make sure that the plug is fully inserted into the socket. Do not pull the power cord when pulling out the plug.



The instrument should be put in the place where of low temperature, little dust, no water, no sunshine or hard light, and of good aeration, no corrosively gas or strong disturbing magnetic field, and far away from central heating, camp stove and other hot resource. Do not put the instrument in wet and dusty place.



Power off when operation finished. If do not use the instrument for a long period, pull off the connector plug, cover a piece of cloth on the instrument to prevent from dust.



Pull the connector plug from the jack at once in the following case, and contact the vendor.

- There is some liquid flowing into the instrument;
- Drenched or fire burned;
- Abnormal operation: such as abnormal sound or smell;
- Instrument dropping or outer shell damaged;
- The function has obviously changed.

2. Instruments Maintenance

The instrument and the accessories should be cleaned by cloth drenched with alcohol. If there are smutches on the instrument, clean them with cloth.

3 After Service

1) Warranty Description

Within one month of delivery, the company is responsible of exchange for breakdown caused by material or manufacture.

Within 12 months of delivery, the company is responsible of free repair for breakdown caused by material or manufacture. Proven with defect under warranty, the company will exchange the instrument or free repair it alternatively.

Instrument under warranty period should be delivered to the appointed maintenance department by user. Freight from user to maintenance department will be borne by user.

Freight for instrument resent to user will be borne by the company.

Repair out of warranty will be charged reasonable cost.

2) Warranty Coverage

Breakdown due to improper use, operation in inappropriate conditions, maintain or refitting without authorization are not in warranty coverage.

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01 Introduction

The incubator shaker BSBT-401 is one temperature controlled biochemical instrument combined incubation and shaking function. It is widely used in cell culture, fermentation, hybridization, biochemistry, research of enzyme and cell tissue, etc. which required higher quality of temperature controlling and shaking speed. It can dynamically and statically cultivate microbial cell and all kinds of strains.

Feature

1. PID speed control technology.
2. Integrate incubator and shaker. Save lab space.
3. Compact constant temperature space, good temperature uniformity, low noise.
4. Micro-processor controls temperature and shaking speed. Built-in timing function
5. Human friendly touch-tone operation interface. Cover can be widely angle opened, convenient to watch and pick sample.
6. Equipped with cover switch. When the cover is open, air circulation, heating and shaking will automatically stop.
No temperature overshoot problem.
7. Unique speed control circuit to ensure shaker smoothly start to avoid liquid spilling.
8. Circulation fan speed can be adjusted to avoid high-speed of the circulation fan making the sample volatilize
9. Independent temperature alarm system. Heating is cut off automatically when temperature is over the limited value.
10. Sound alarms after program finishes, it can also be set to runtime continuous operation.
11. Brushless DC motor, long life and maintenance-free.

02 Specifications

1. The Normal Operation Condition

Ambient Temperature: 4°C ~ 45°C

Relative Humidity: ≤70%

Power: AC220V, 50/60Hz

The Basic Parameters and Specifications

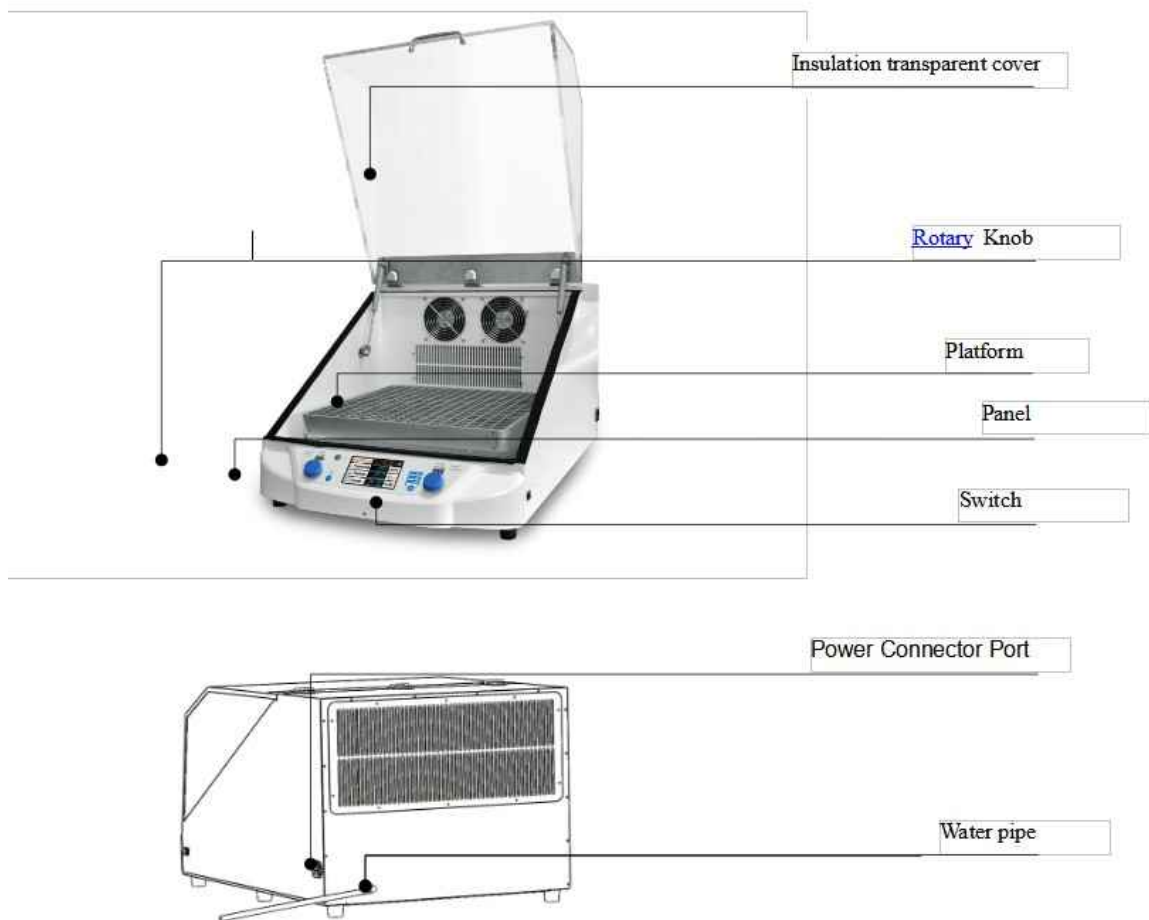
Type	BSBT-401 Incubator Shaker
Speed range	50rpm ~ 300rpm
Shaking orbit	20mm (circle)
Temp. Control Range	+4 ~60°C(R.T. ≤25°C)
Temp. setting range	4 ~60°C
Max. drop temp.	R.T. decrease 20°C@R.T.≥25°C
Temperature Display Accuracy	0.1°C
Temperature Control Accuracy@37°C	≤ ±0.3°C
Timing Range	1min ~99h59min (0 is forever)

Power Supply	AC220V , 50/60Hz
Power	1200W
Fuse	250V, 10A, Φ 5x20
Dimension	385x560x320mm
Net weight	61kgs
Platform	PW-420

03 Preparations

This chapter mainly describes the instrument's mechanical structure, the keyboard and functions of each key, as well as preparations before power on. Please learn this chapter well before the Instrument is to be operated at the first time.

1. Structure Description



2. Keyboard and Display Panel



3. Knob instruction:



Left knob: set temperature/time. Rotate the knob clockwise to increase the temperature/time, counterclockwise to decrease the temperature/time.



Right knob: Set the speed. Rotate the knob clockwise to increase the rotation speed. Rotate the knob counterclockwise to decrease the rotation speed. Short press to start the instrument, long press to stop the instrument.

4. Push-button Description:



Switch program group (press to check room temperature when running).



Press the button, Speed switches to fan speed adjustment, rotate the right knob clockwise, the fan speed increases, counterclockwise rotation, Fan speed decreases, then press again to exit.

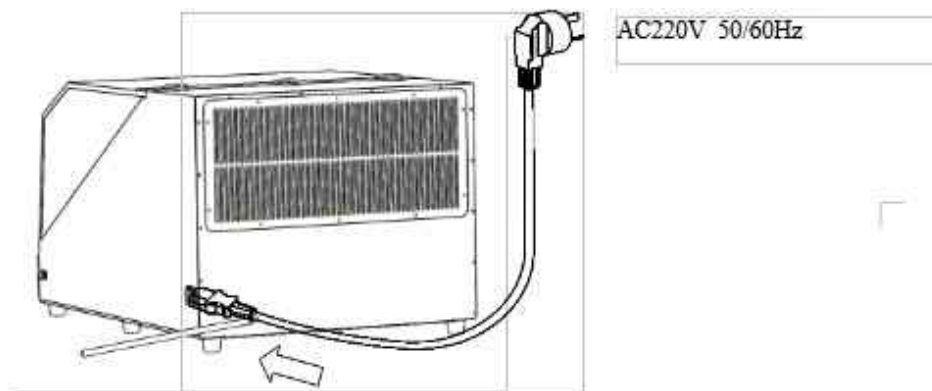


Compressor status control button, on is compressor on, off is off, Auto is intelligent control.

5. Indicator light description

- a) Fan: Set fan speed
- b) ON: Compressed compressor forced open
- c) OFF: Compressor forced shutdown
- d) AUTO: Compressor program automatic control

6. Power Connection



7. Platform

BSBT-401 equipped with PW-420 platform.



Platform PW-420 W.410 x D.420 x H.65mm

Conical flask 2000ml ×4

Conical flask 500ml ×12

Conical flask 250ml ×20

Conical flask 100ml ×35

Beaker 50ml ×16

04 Operation Guide

1. Speed, Time and Temperature Setting

a) Turn on the power switch and with the sound of “di...”, the screen will display the main interface. (see Figure 1).

b) The right knob is used to set the speed, clockwise plus counterclockwise decrease (see Figure 2, Figure 3).

c) The left knob is used to adjust the temperature or time, default temperature adjustment. The user can switch the temperature or time by pressing the left knob, clockwise plus counterclockwise decrease (see Figure 2, Figure 3)

d) During the operation of the instrument, the speed can be adjusted to facilitate user operation.



2. Start / Stop

a) Press the right knob to run the current program. The timer ends, the operation stops, and the buzzer sounds an alarm.

b) After the end of the operation, the instrument waits for the command at the end interface. At this time, adjust the left knob to reset the temperature or time; directly press the right knob to start the program according to the last set parameter.

c) During operation, long press the right knob to stop. Press this button again to restart the operation.

d) When the insulation cover is opened during operation, the speed, temperature and timing will all stop, and the speed of the fan will also drop to half of the original. The system will automatically enter the normal operation state when the thermal insulation cover is closed again.

e) The temperature control or motor cannot be started when the insulation cover is not closed.

Precautions:

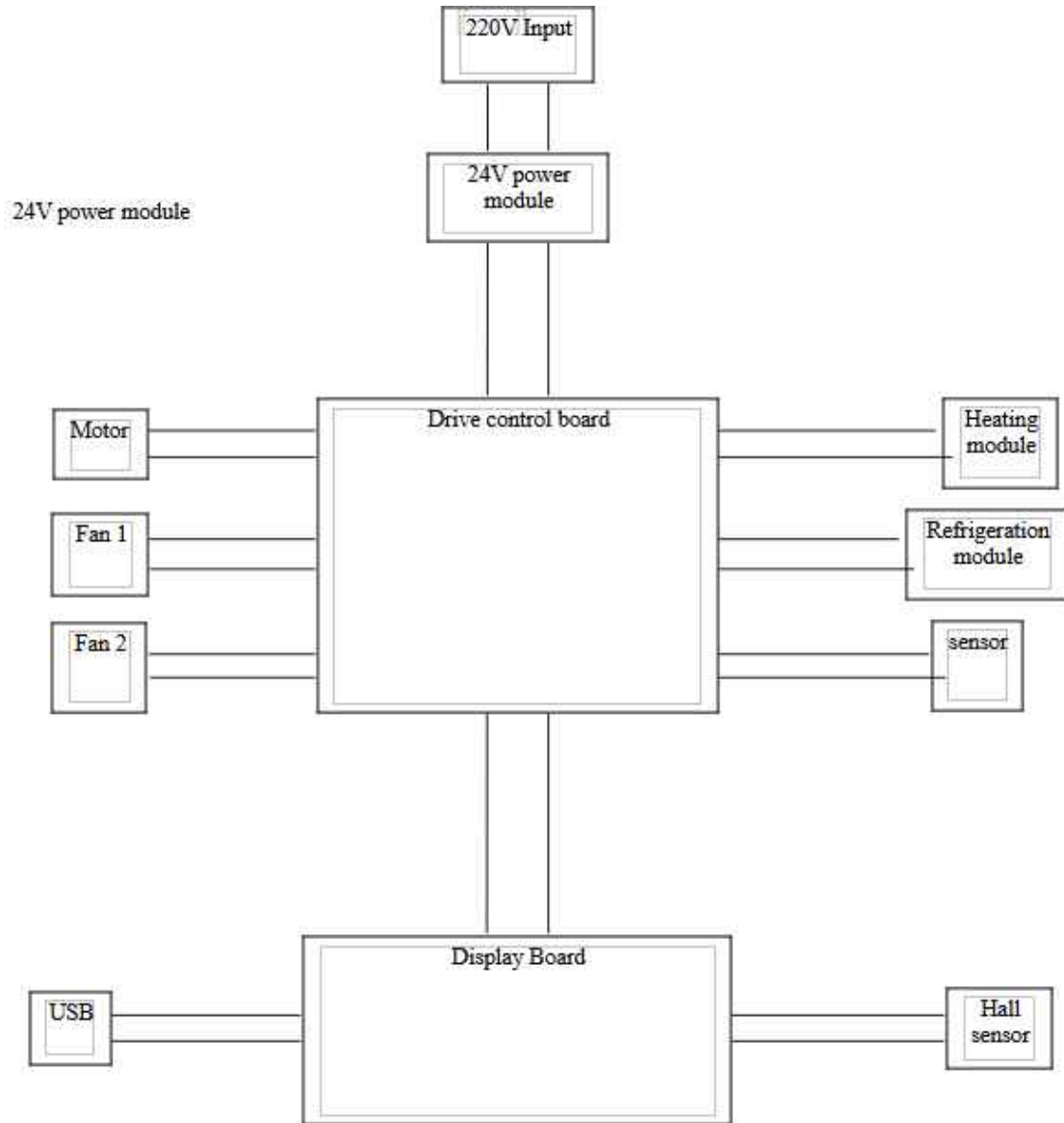
1. When the instrument is in use, the compressor working mode is in the "AUTO" state generally;
2. When the instrument is running at low temperature, in order to ensure the service life of the refrigeration system, please do the defrosting operation (pause or transitory heat up) once within 12 hours of operation.

05 Failure Analysis and troubleshooting

Failure Analysis and Processing Procedures

No.	Phenomenon	Possible Causes	Processing Procedure
1	No signal display when power on.	No power	Check the power
		Broken fuse	Exchange the fuse (250V 3.0A Φ 5x20)
		Broken switch	Exchange the switch
		Others	Contact with the seller
2	The actual and displayed temperatures are much different.	Broken sensor	Contact with the seller
3	Hearing but no shaking	Broken motor or broken connecting line.	Contact with the seller
4	Press invalid	Broken press button	Contact with the seller

Appendix A : Wiring Diagram of Incubator Shaker





Email: contact@biolabscientific.com

Website: www.biolabscientific.com