Shaking Incubator [Top Door Type] User Guide

User Guide for shaking Incubator (Top Door Type) Version 1.0

Model

LI-BS200, LI-BS200L

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Thank you for purchasing this product from LK Lab Korea co., Ltd.

This user guide provides explanations of function of product, user manual and cautions.

Be sure to read this manual thoroughly before using this product.

Particular attention should be paid to the used of the following warnings.

Indicates the situation requires user's attention.

Be careful when operating or controlling during usage.

[Caution]

Indicates a dangerous situation.
Failure of this warning could result in serious injury of equipment damage.

[Warning]

Table of Contents

1. Preparation

1.1 Product Introduction

This product is a shaking incubator that can be used with temperature control simultaneously with shake incubator. This product can be used for various culture experiments such as bacterial culture, germ culture and tissue of animals and plants culture. Also, this product is useful for constant temperature experiments such as various sample storage, plant storage experiment and environmental change experiment. Numerous functions and safeguards maximized user s convenience and safety. This product has the following features.

1.2 Product Features

1.2.1 Product Performance and Convenience

- Observe inside easily through glass door.

- PID control system with high performing microprocessor enables fast and precise temperature control.

- The built-in AUTO TUNING function can calculate PID value automatically according to the experiment environment to control the experiment temperature quickly and conveniently.

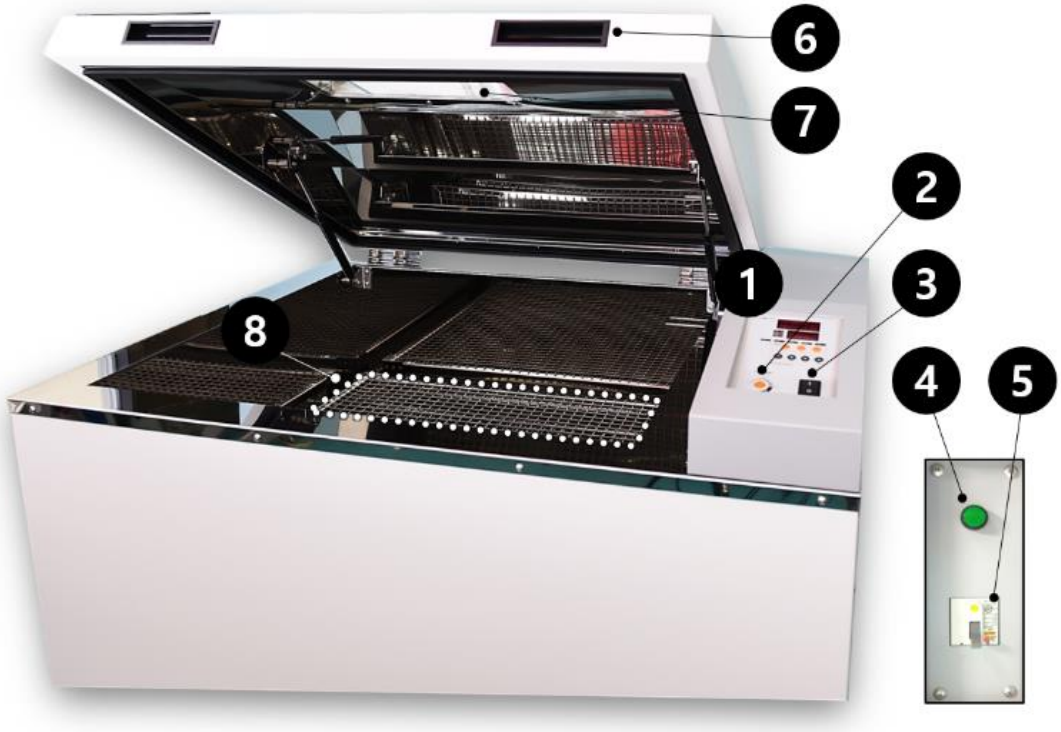
1.2.2 Safety

- Installed dual neutralized overtemperature safety device (1st Warning controller over-temperature alarm, 2nd Warning activates over-temperature shut-off circuit)

- When the door is opened, heater and fan stop to protect user from high temperature.

- In case of emergency, buzzer and the message on the screen will inform the user.

1.3 Product Structuer



[Shaking Incubator]

[1] Temperature Controller

Use for controlling the temperature.

[2] Over Temp. Limiter

If the temperature is raised above the set temperature, the heater power is cut off to prevent overheating. (Set 10% higher).

[3] Power Switch

Main power ON/OFF Switch.

[4] Lamp Switch

Internal light ON/OFF Switch.

[5] Circuit Braker

To prevent over current and short circuit.

[6] Door Handle

A handle that opens the door.

[7] Sight Glass

A window that can observe inside of the chamber.

[8] Spring Rack

Fix the test vessel during the experiment.

1.4 Product Installation

1.4.1 Product Component

Main Body (1ea), User Guide (1ea)

1.4.2 Product Installation Environment

- Avoid direct sunlight.
- Install at a flat place with low vibration
- Do not install in a place where flammable gas may leak.
- Do not install in a place where strong and high frequency noise may occur.
- Do not install the product where there is a risk of water leakage or short circuit.
- Do not install the product where there is high corrosive gas or dust.
- Do not install the product in an enclosed area.
- When installing the product, ensure a space approx. 20 cm around the product.

- Install this product at an ambient temperature of 5 to 40 degrees.
- Install in a place where the ambient humidity is 80% or less.

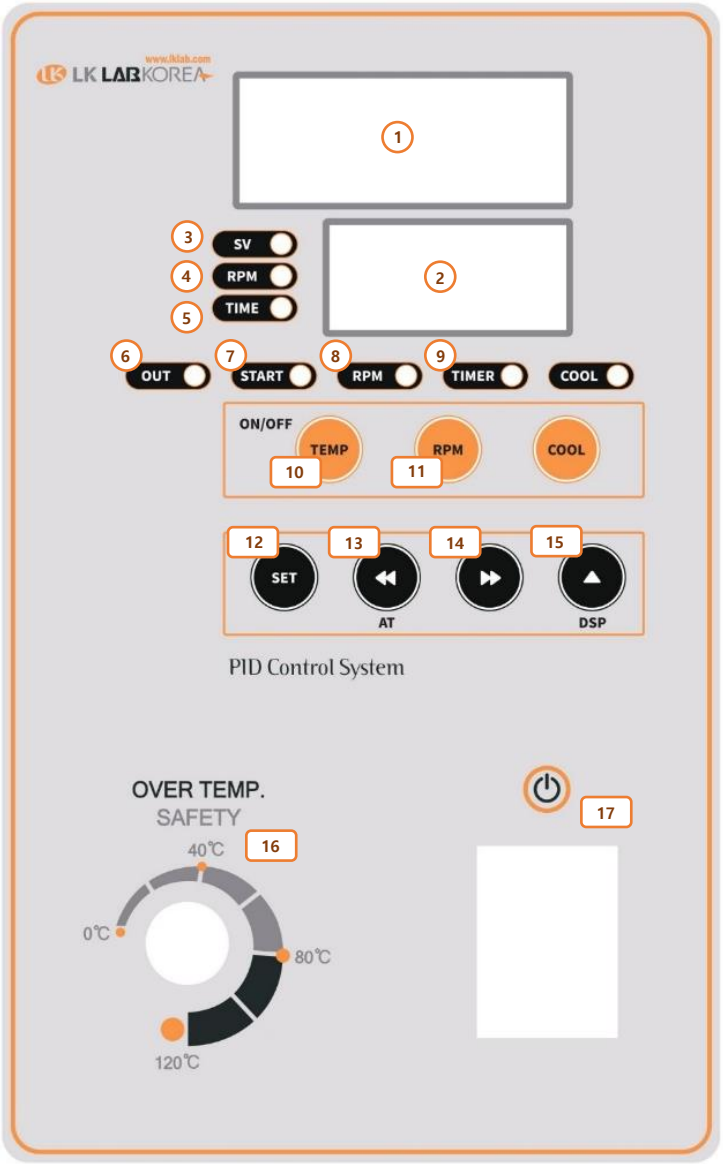
1.4.3 Power Connection

- Set the power switch to OFF.
- If the power cord is disconnected from the main body, connect with main body first then plug into the outlet.

- Supply power according to product specification
- Must use a grounded power source

2. Usage

2.1 Name of temperature controller and its function



[1] Current Temperature

[2] Temperature Setting, Current Speed, Time

[3] LED indicator for temperature setting

[4] LED indicator for RPM

[5] LED indicator for time

[6] LED indicator for temperature output

[7] ON/OFF indicator for temperature control function

[8] ON/OFF indicator for RPM control function

[9] LED indicator for time operation

[10] ON/OFF switch for temperature control function

[11] ON/OFF switch for RPM control function

[12] Switch for data selection

[13] Switch to move left & Auto Tuning

[14] Switch to move right

[15] Switch for increasing value & screen selection

[16] Over Temp. Safety

[17] Power Switch

2.2 Function of screen for controller

- Display current internal bath temperature on [1] display screen

- Display Temperature setting, RPM, or time operation on [2] display screen

- Press [15] button to display set temperature, RPM and time alternately

Display screen [3] indicates RPM;

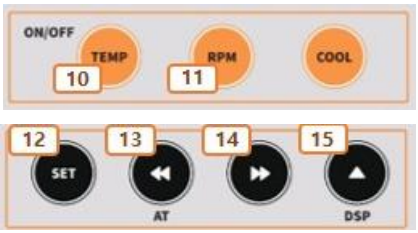
- Displays current RPM during operation
- Displays set RPM when operation is stopped

Display screen [4] indicates TIME;

- Displays remaining time during operation
- Displays set time when operation is stopped

(--.-- represents that motor is running)

2.3 Usage Method

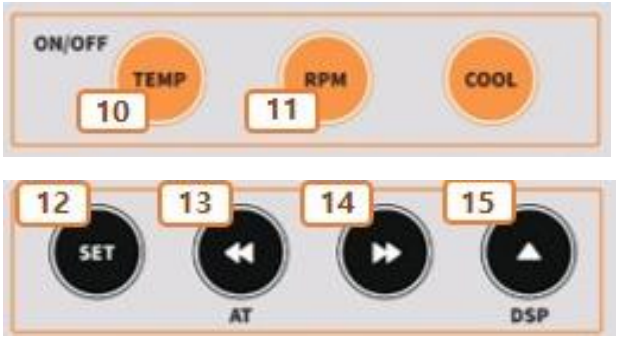


- Press [12] button 1 time to set the temperature (SV)

- Press [12] button 2 times to set shaking (RPM)

- Press [12] button for 3 times to set Time (Timer)

2.4 Operation Metheod



〈When Timer is not in use〉

1. When using only temperature

- After setting the TEMPERATURE only, press [10] button to operate the temperature (SV)

2. When using only Shaking

- After setting RPM/TIME(00.00), press [11] button to operate shaking (RPM)

3. When using temperature and shaking

- After setting TEMPERATURE/RPM/TIME(00.00), press [10,11] buttons to operate temperature (SV).

〈When timer is in use〉

1. When using temperature and time

- After setting the temperature/RPM(000)/TIME, press [10,11] buttons to operate

2. When using shaking and time

- After setting the RPM/TIME, press [11] button to operate RPM and TIME

〈When using low temperature〉

1. When using LI-BS200L,

- Press [10] button and CooL button sequentially

2.5 Auto Tuning Function

Auto Tuning can calculate the optimized P.I.D gain for the experiment environment in order to have an accurate and quick experiment. Since the calculated gain is saved automatically, the experiment with the same condition can be performed more than once if the tuning is set once. Auto Tuning can be stated only in the RUN state.

- Press [13] button for 5 seconds.

- When Auto Tuning is done, it will be controlled to the set temperature.

- In order to stop Auto Tuning, press [13] button again for 2 seconds

When Auto Tuning is activated, temperature can be raised above the set temperature

3. Maintenance

3.1 Management after use

- Turn off the Power Switch to OFF when experiment is done.
- If the main body becomes dirty, unplug the power cord then clean the contaminated area with alcohol.
- If the product is not in use for a long time, unplug the power cord and wipe it clean to store.

- Do not use strong acid or strong alkali or volatile solution to clean this product
- Perfectly dry after cleaning

3.2 Cause of abnoaml problem and matter of management

3.2.1 If the produnt does not turn on.

- Check the power supply.
- Make sure that short circuit breaker is ON which is located on the side of the main body.
- Make sure that the power switch is ON which is located on the side of the main body.
- Make sure that power cord is securely connected.
- Make sure that the breaker of the outlet is turned on which is connected to the main body.
- If all necessary action is made but still having a problem, please contact our A/S department.

3.2.2 If Circuit Breaker of main body constantly experiencing shot-circuit.

Please contact our A/S department

3.2.3 If temperature contol is not working

- Check if set temperature of over temp. limiter is 10% higher than the experiment temperature.
- Activate Auto Tuning.
- If all necessary action is made but still having a problem, please contact our A/S department.

3.2.4 Error Message

uuuu	Current temperature is higher than maximum value (100 ℃)
nnnn	Current temperature us lower than 0 ℃.
Err0	RPM value is 0 after Motor on switch is turned on for 15 seconds
Err1	RPM value is higher than maximum value +30RPM after Motor on
End	When operating time is completed

- Is product needs to be fixed, user must contact our A/S department or product purchased store to have it repaired. If disassemble the product or replace the parts on your own, it may not be possible to repair it.
- Damage beyond the normal fixing limit cannot be fixed.

3.3 Produnt A/S

3.3.1 Warranty Period

The warranty period is 1 year from the date of purchase. After 1 year, warranty service without charges are done and user needs to pay for repair or replacement of parts.
Within warranty period, user can receive A/S customer service from LK Lab Korea co., Ltd. or product purchased store.

3.3.2 Excepion from Warranty Period

Damage caused by fire or flooding, contamination due to unauthorized usage, not using liner power supply, usage during abnormal situation, misuse or malfunction will be the exceptions from receiving warranty service.

3.3.3 How to receive A/S

First, contact our A/S department of product purchased store then enclose your contact information along with the detailed symptoms of the product that you are sending. You will receive a quotation of repair for you to make a decision for repairing. If we do not hear from you within 2 weeks of submitting your quotation, the product will be returned.

A/S Department of LK Lab Korea co., Ltd. +82-(0)31-572-4952

4. Specification

Top Door Type

Cat. No.	Model	용량	Range
I03-02-250	LI-BS200	200 L	Ambient +5 ~80 ℃
I03-02-255	LI-BS200L		0 ~ 80 ℃

Cat. No.		I03-02-250	I03-02-255
Model		LI-BS200	LI-BS200L
Capacity		200 L	
Controller	Control	PID Control, Auto-Tuning	
	Display	LED Segment	
	Resolution	0.1 ℃	
Temperature	Range	Ambient +5 to 80 ℃	0 to 80 ℃
	Accuracy	±0,3 ℃ (at 37 ℃)	
	Uniformity	±1.7 ℃ (at 37 ℃)	±1.1 ℃ (at 37 ℃)
Shaking System	Range	20 ~ 350 rpm	
	Motion	Orbital	
	Stroke	20 mm	
	Max Load	25 kg	
Dimension	Internal	w750 x d720 x h400 mm	
	External	w1065 x d900 x h980 mm	
Electric supply	Power	1 Phase / 220 VAC / 60 Hz	
	Max Consumption	800 W (3.7 A)	1.8 kW (8.2 A)
	Power Line	Standard Plug	
Material	Interior	304 Stainless Steel	
	Exterior	Powder Coated Steel	
Other	Flask Capa.	100ml ~ 2L	

KBIZ 중소기업중앙회

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[계약일반사항]

제품종류(명)	각종실험기기		
소급담보일	2014년 04월 10일		
재판관할지역	대한민국	매 출 액	₩2,882,000,000

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대인,대물 일괄 연간 총 보상한도: ₩100,000,000

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[보험료 납입] 일시납

총 보험료 : ₩ 1,827,000

납입보험료: ₩ 1,827,000 (2014년04월09일)

이 보험은 만기 환급금이 없는 소멸성 상품입니다.

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2014년 04월 09일

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