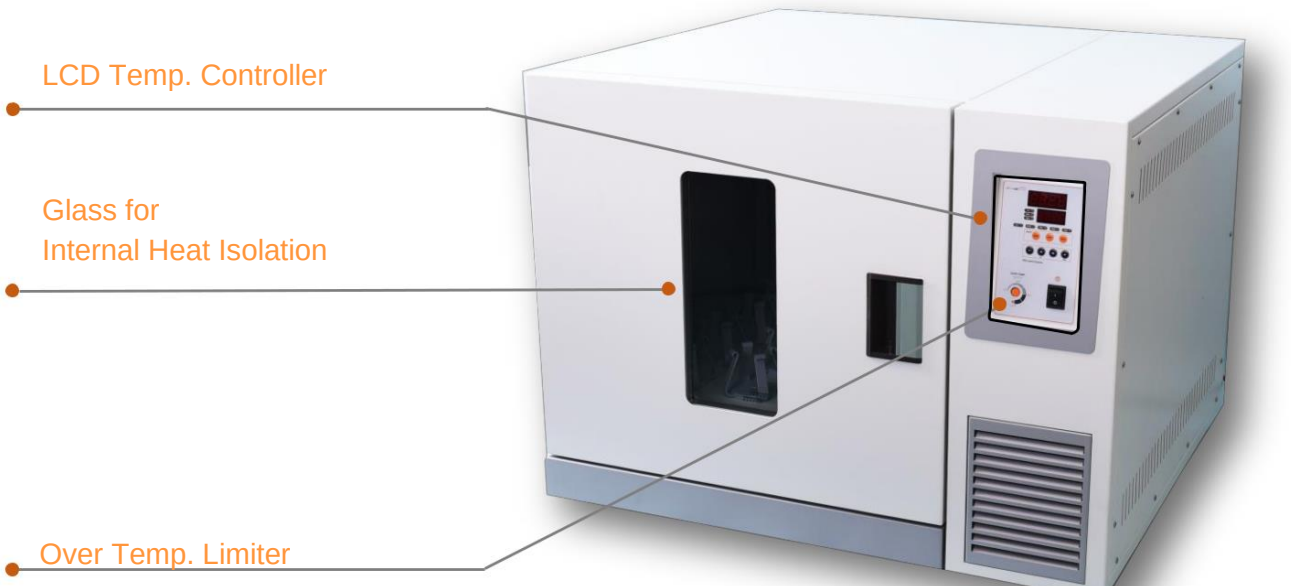


Shaking Incubator [Chamber Type]

User Guide

Model

LI-BS100, LI-BS100L

www.lklab.com

LK LABKOREA

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]

Contents

1. Preparation

1.1 Product Introduction

This product is a shaking incubator that can be used for temperature control simultaneously with a shaking incubator. It can be used for various culture experiments such as bacterial culture, germ culture, and tissue of animals and plant culture. Also, it is useful for constant temperature experiments such as various sample storage, plan 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

- Glass easy to observe through glass door.
- enables fast and precise temperature control by PID control system with high performing microprocessor
- The built-in AUTO TUNING function automatically calculate the PID value according to the experiment environment and 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 Structure

[Shaking Incubator]

[1] Temperature Controller
Use for temperature control

[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] Viewing Window
A window that can observe inside of the chamber

[5] Chamber
A space for experimentation and is made of stainless steel

[6] Plate platform
Fixing the experimental container during an experiment

[7] Circuit Breaker
Block the short circuit and over current

[8] Power Cord
A power cord of supplying the power to the product

1.4 Product Installation

1.4.1 Product Components

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 the 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

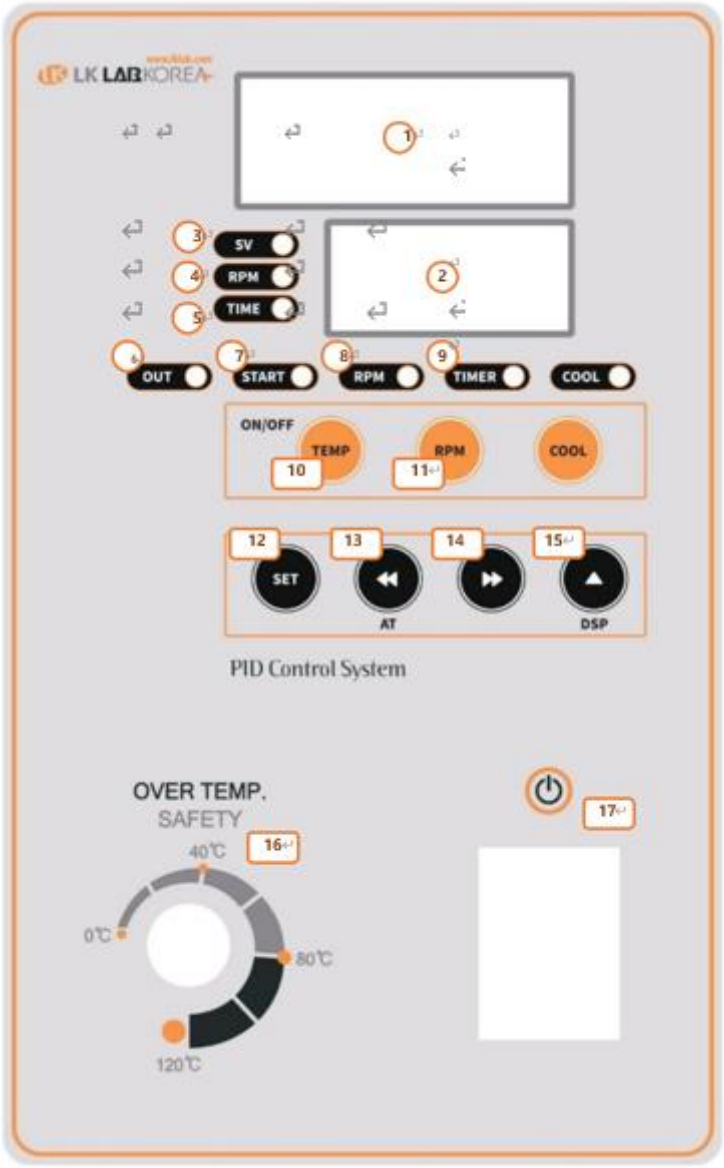
- Set the power switch of OFF.
- If the power cord is disconnected from the main body, connect it with main body first then plug into the outlet.

- 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 Controller Screen

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

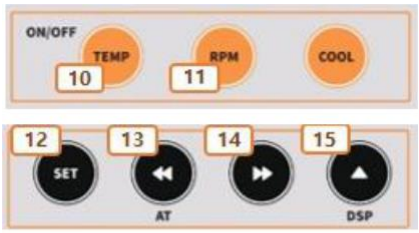
- Display temperature setting, RPM, or time operation on [2] display screen

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

Display screen [3] indicates RPM:
- Displays current RPM during operation
current RPM during operation
- Displays set RPM when operation is stopped

Display screen [4] indicates TIME:
- Displays remaining time during operation
- Dispalys set time when operation is stopped
(--.-- represents that motor is running)

2.3 Usage Method

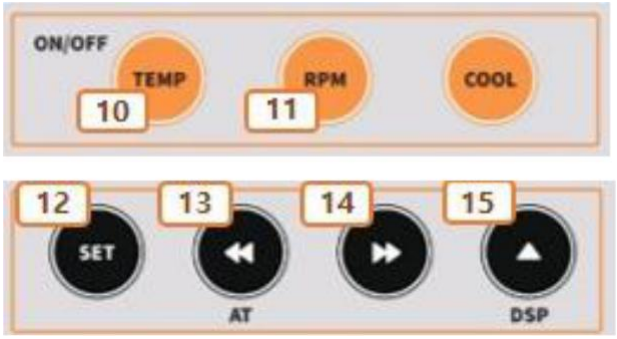


- Press [12] button 1 time to set the temperature(SV)

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

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

2.4 Operation Method



<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

2.4 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 Managemen 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 Abnomal Problem and Matter of Management

3.2.1 If the product 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 15seconds
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 Product 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 Exception 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

Chamber Type

Cat. No.	Model	용량	Range
I03-02-240	LI-BS100	125 L	Ambient +5 ~80 ℃
I03-02-245	LI-BS100L		0~80 ℃

Cat. No.		I03-02-240	I03-02-245
Model		LI-BS100	LI-BS100L
Capacity		125 L	
Controller	Control	PID Control, Auto-Tuning	
	Display	LED Segment	
	Resolution	0.1 ℃	
Temperature	Range	Ambient +5 to 70 ℃	0 to 70 ℃
	Accuracy	±0,3 ℃ (at 37 ℃)	
	Uniformity	±0.5 ℃ (at 37 ℃)	±0.6 ℃ (at 37 ℃)
Shaking System	Range	20 ~ 350 rpm	
	Motion	Orbital	
	Stroke	20 mm	
	Max Load	25 kg	
Dimension	Internal	w560 x d560 x h500 mm	
	External	w890 x d810 x h730 mm	
Electric supply	Power	1 Phase / 220 VAC / 60 Hz	
	Max Consumption	600 W (2.6 A)	1.4 kW (6.4 A)
	Power Line	Standard Plug	
Material	Interior	304 Stainless Steel	
	Exterior	Powder Coated Steel	
Flask Capa.	50 ~ 100 ml	Max 35ea	
	200 ~ 300 ml	Max 16ea	
	500 ~ 1000 ml	Max 12 ea	

KBIZ중소기업중앙회

생산물배상책임보험 증권

증 권 번 호	P151400668
계 약 자	(주)엘케이랩코리아
주 소	[136-075] 서울특별시 성북구 계문사길 57 - 3(안암동5가)
피 보 험 자	(주)엘케이랩코리아
주 소	[136-075] 서울특별시 성북구 계문사길 57 - 3(안암동5가)
가 입 기 간	2014년 04월 10일 00:00 ~ 2015년 04월 09일 24:00 (증권발행지의 표준시 기준)

[계약일반사항]

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

[가입조건]

[생산물배상책임]

대인,대물 일괄 연간 총 보상한도:	₩100,000,000
대인,대물 일괄 1청구당 보상한도:	₩100,000,000
자기부담금:	₩1,000,000

[사용약관]

생산물배상책임(PL)단체보험 공제약관
생산물배상책임보험(E) 보통약관 - 배상청구기준
날짜인식오류 부담보 추가약관
음성자체부담보특별약관
과징금부담보특별약관

[보험료 납입] 일시납

총 보험료 :	₩ 1,827,000
납입보험료:	₩ 1,827,000 (2014년04월09일)

이 보험은 만기 환급금이 없는 소멸성 상품입니다.

문의처 : 중소기업중앙회
손해공제부 (www.plkorea.com)
전화번호 : 1666 - 9988
팩스번호 : (0502) 397-0200

2014년 04월 09일
중 소 기 업 중 앙 회
회 장 김 기 [illegible]

77-9, Toegyewonro,
Toegyewonmyeon, Namyangjusi,
Gyeonggido, Korea, 12120

Office [Tel] 031-573-4952
[Fax] 031-527-4958

Shaking Incubator User Guide

77-9, Toegyewonro, Toegyewonmyeon, Namyangjusi,
Gyeonggido, Korea, 12120
Tel. 031-573-4952
Fax. 031-527-4958

www.lklab.com
LK LAB KOREA