Multi Chamber Water Bath

User Guide

Model

LB-WM631, LB-WM651

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LK LABKOREA

Thank you for purchasing the product of LK Lab Korea Co.,Ltd.

This User Guide describes your product's function,

operation and safe use.

Please read carefully and keep them in mind

before you operate products.

In case some parts which need extra care for users,

we put some marks as below for the occasion.

[Warning mark]

This is the mark for Dangerous Situation.
If users ignore this, it might cause of serious personal injury or damage to products. This is the mark that come up with the situation which needs extra care.
When users recognize this sign, they have to operate more carefully.

[Attention Mark]

This is the mark that come up with the situation which needs extra care.
When users recognize this sign, they have to operate more carefully.

Contents

1. Preparation

1.1 Instruction

This Digital Bath designed Chemical, Biological, Medical, Pharmaceutical and many other purposes. With various function and safety devices installed, designed for users' convenience and safety as the biggest priority of this equipment.

1.2 Feature

1.2.1 Function and Convenience

- Temperature control as 1/100 resolutions
- Available to control the temperature of heated sample or reagent by external sensor
- Operate easily and convenience with Graphic LCD Display Controller
- Available to fast and precision control with PID controlling system by high performance microprocessor
- Built-in AUTO TUNING function that can automatically calculate the PID value according to the experimental environment, so you can control the experimental temperature quickly and conveniently

1.2.2 Safety

- Double over temperature safety device installed.(1st Controller Alarm, 2nd Over temperature shutdown circuit)
- Abnormal situation occurs, a buzzer and message will notice the situation to the user.

1.3 Installation

1.3.1 Contents of a Product

Main Body(1ea), Power Cord(1ea), User Manual(1ea)

1.3.2 Installation Environment

- Avoid direct light.
- Place where with less vibration and flat surface.
- Maintain the temperature of the surrounding area the product placed between 5 to 40℃
- Maintain the humidity of surrounding the product placed below RH 80%
- Avoid the place where may occur flammable gas.
- Avoid the place where may occur noise and high frequency.
- Avoid the place where may occur overcurrent or water leak.
- Avoid the place where may occur corrosive gas or dust.
- Place where within 5 ~ 40 ℃ of temperature and below 80% of humidity.

1.3.3 Power Connection

1) Set the power switch as OFF.
2) In case of the power cord is separated from the main body, connect them first and plug the cord to the power supply point (outlet)

- When connecting to power, be sure to check the power specifications of the product and provide power that meets the specifications.
- Must use to use a power supply point (outlet) that is completely ground-connected.
- Do not touch the power cord with wet hands.

1.3.4 Initial Setting

1) Fully fill the solution into the bath (distilled water, oil, alcohol)
2) Set the value of Over Temp. Limiter

1.4 Structure

[Multi Chamber Water Bath]

[1] Temperature Controller

[2] Over Temp. Limiter

[3] Power Switch

[4] Bath Cover

[5] Drain

[6] Circuit Breaker

[7] Power Cord

[8] Heater Cover

[1] Temperature Controller

Controlling the temperature

[2] Over Temp. Limiter

If the temperature is going over the set temperature, prevents overheating by shutting the power of heater.

- Must be set 10% more that the temperature needed for the purpose

[3] Power Switch

ON/OFF switch for the main power.

[4] Bath Cover

Must be closed during operating at high or low temperatures.

[5] Drain

Use for draining solutions inside the bath. To open the valve, rotate counterclockwise.
(There are no Drain on the model Numbers LB-WD316 and LB-WD321)

Before draining, please check the temperature of the solutions.
User might get burned.

[6] Circuit Breaker

Breaker of overcurrent protection

[7] Power Cord

Supply the power to the equipment.

[8] Heater Cover

Supports the bottom heater so that it does not directly touch the bottom heater when putting flask, etc.

2. Operation

2.1 Naming & Function of Temperature Controller

[1] Graphic LCD

Available to check the status of the equipment and display data.

[2] Run Lamp

Light on during operation.

[3] Heater Lamp

Displaying output of the heater with flashing.

[4] Timer Lamp

Light on during timer is operating.

[5] A.T Lamp

Light on during auto tunning.

[6] Up Key

Use for increasing the set value

[7] Down Key

Use for decreasing the set value.

[8] Shift Key

Use for moving the position of set value and setting the Auto-Tuning mode.

[9] RUN / STOP Key

Use for operating, stop, and setting the value.

[10] Mode Key

Use for changing the menu.

[11] Message Display Window

Display the messages related to the status of the equipment.

[12] PV Display

Display current temperature value.

[13] SV Display

Display the target temperature value.

[14] TIMER Display

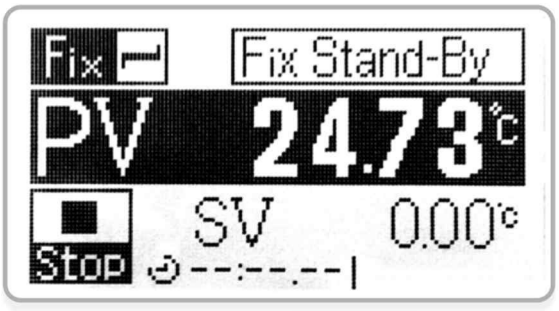
Display remaining time for operation

"--.--.--" means timer off.

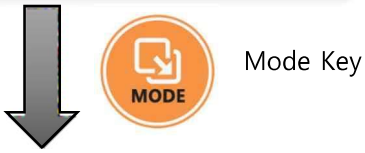
[15] RUN / STOP Display

Display the status of operating/stop of the equipment.

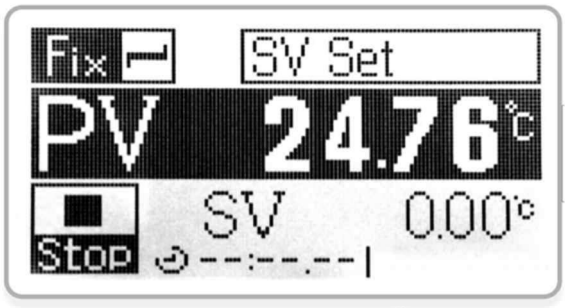
2.2 Operation Method



- Stand-By

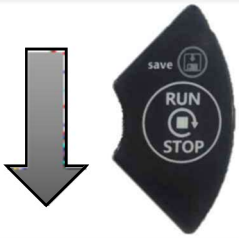


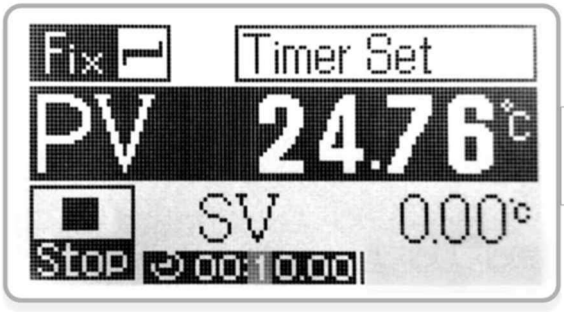
Mode Key



- SV Set Mode

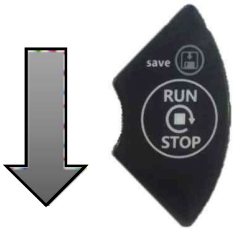
Set SV Value

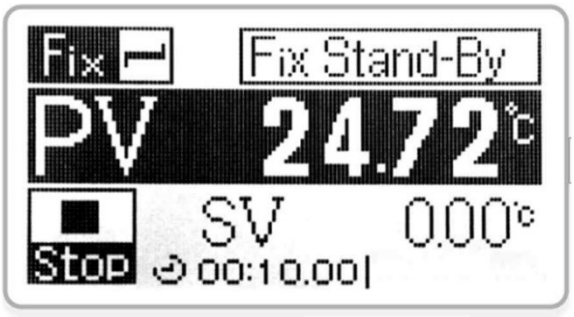




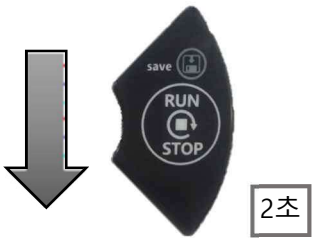
- Timer Set Mode

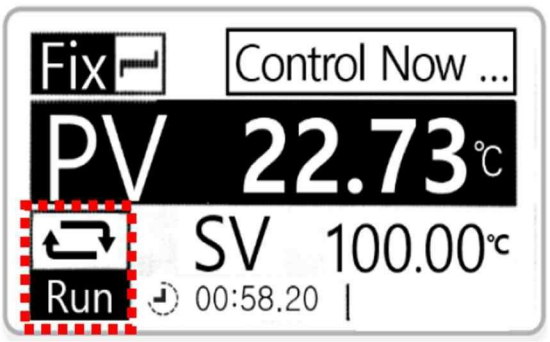
Set the Time.





- Stand-By

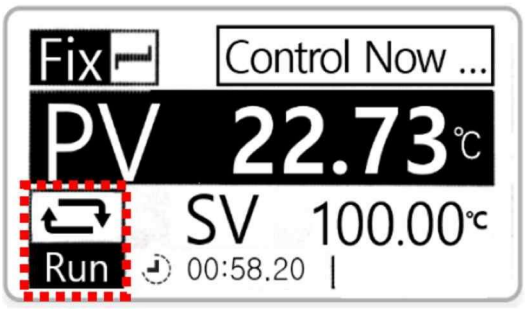




- Start Run

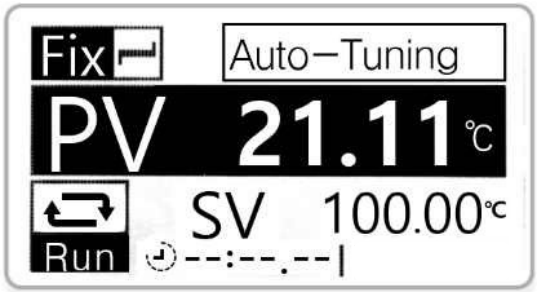
2.3 Auto Tuning

Auto Tuning can perform more accurate and faster experiments by self-calculating the optimal "P.I.D. Gain" for the experimental environment. The calculated Gain value is saved automatically so that the user needs only tuning once if the user wishes to proceed with the same experiment Once again. Auto-Tuning is only allowed to operate on the "RUN" state.



- Run

Key (Press at the same time for 3 seconds)



- Start with Auto-Tuning Message.

* After the Auto-Tuning, the equipment will operate with the set temperature.

* To stop Auto-Tuning, press the Shift and RUN/STOP buttons at the same time for 2 seconds. .

During Auto-Tuning, due to calculating, in order to reach set temperature Heater gives 100% output, so temperature go higher than the set value.

3. Maintenance

3.1 Maintenance After Use

- After use, Power Switch has to be turned off.
- If the equipment is contaminated, plug off the Power Cord and cleaning with Alcoholic liquid.
- If the equipment would not be used for a long time, plug off the Power Cord, clean, and store the equipment.

- Do not use strong acid, alkaline or volatility solution for cleaning the equipment.
- Also completely dry the equipment after cleaning.

3.2 Disorder & Solution

3.2.1 Power On Disorder

1) Please check the power supply.
2) Please check if the Power switch is "ON".
3) Please check if the circuit breaker is protruding forward.
4) Please check the Power cord is well connected with the main body.
5) Please check if circuit breaker on the outlet to which the device is connected is turned on.
6) Please contact our Tech. Support Department if still not working despite all actions taken.

3.2.2 Earth Leakage Breaker is keeping short continuously

1) Contact our Tech. Support Department.

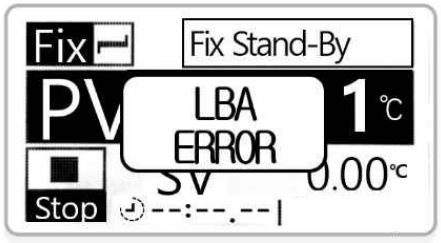
3.2.3 Out of Control the temperature

1) Please check if the Over Temp. Limiter set 0% higher than treat value.

2) Please operate auto tuning.

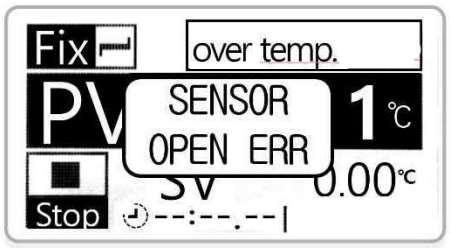
3) Please contact our Tech. Support Department if still not working despite all actions taken.

3.2.4 Error Message



<LBA; Control Routine Breaking Down Alarm>

If the error message "LBA" comes up, contact our Tech. Support Department



<Sensor Open Error>

Occurs when there is an abnormality in the sensor.
If using external sensor mode, Check well connected with the main body. If not using external sensor mode, Check the setting mode.

<Over Temp, Error>

The Error message will be displayed if it is overheated beyond the set temperature range. Please stop the equipment and wait until the temperature drops sufficiently. The status will be back to normal if press the Mode key after the temperature drop.

3.3 After Sales Service

3.3.1 Warranty

The warranty period is expired by 1 year after purchasing equipment. After 1 year, cannot get warranty repairing service. The user has to pay for replacing parts or repairing work. Within the warranty period, the user can get service from LK Lab Korea's Tech. Support Department or the Supplier of the equipment.

3.3.2 Exceptional Case of Warranty

Damage or defective by fire or inundation, carelessness usage, don't use standard liner power supply recommended, operation at abnormal condition, misuse or unskilled usage cannot get warranty service.

3.3.3 Applying After Sales Service

Firstly, contact our Tech. Support Department or Supplier of the products and inform detailed symptoms with the contact of the user by mail or fax. After receipt of after-sales service inquiry, our technician quotes and the user decides after getting quoted. In case of not responding after 2 weeks from receipt of the after-sales service inquiry, the product will be returned to the user.

- In case apply after-sales service, the user has to inquire to our Tech. Support Department or Supplier of the equipment. If the user randomly disassembles or changes parts inside, repair of equipment cannot be available.
- Disorder or defective out of reasonable ranges, cannot be available to repair.

4. Specification

Cat. No	Model	Type	Capacity
B04-02-050	LB-WD316	PID Controller	6 L x 3ea
B04-02-100	LB-WD321		11 L x 3ea

Cat. No.		B04-02-050	B04-02-100
Model		LB-WD316	LB-WD321
Capacity		6 L x 3 Bath	11 L x 3ea
Controller	Control	PID Control, Autotuning	
	Display	GLCD (Graphic LCD)	
	Resolution	0.01 ℃	
Temperature	Range	Ambient +5℃ to +100℃	
	Accuracy at 50℃	±0.3 ℃	
	Uniformity at 50℃	±1.12℃	±1.42℃
Dimension	Internal (w×d×h)	155×300×150 mm	240×300×150 mm
	External (w×d×h)	695×470×385 mm	960×470×385 mm
Electric Supply	Power	1 Phase / 220VAC / 60 Hz	
	Max Consumption	800 W x 3ea (10.9 A)	1 Kw x 3ea (13.4 A)
	Power Line	Standard Plug	
Material	Interior	304 Stainless Steel	
	Exterior	Powder Coated Steel	
Other	Drain	1/4" Hose Nipple Male	

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