Graphic LCD Temp. Controller

Over Temp. Limiter

Tempered Double-Safety Glass for
Internal Heat Isolation

Vacuum Oven [Program Type]

User Guide

Model

LO-VP232N, LO-VP313N, LO-VP424N, LO-VP525N

www.lklab.com

LK LABKOREA

LK Lab Korea Co., Ltd. : +82 (0) 31-572-4952

Thank you for purchasing 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.

This is the mark for Dangerous Situation.
If users ignore this, it might cause serious personal injury or damage to products.

[Warning Mark]

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

[Attention Mark]

Contents

1. Preparation

1.1 Instruction

This Vacuum Oven designed Chemical, Biological, Medical, Pharmaceutical and many other purposes.
This Vacuum Oven can be used for drying of a powdery or resinous substance, drying of hazardous substances that may react with Oxygen at high temperatures and have a risk of explosion, and heating a solvents with high boiling point.
With various function and safety devices installed, designed for users' convenience and safety as the biggest priority of this Vacuum Oven.
This Vacuum Oven has a following features.

1.2 Feature

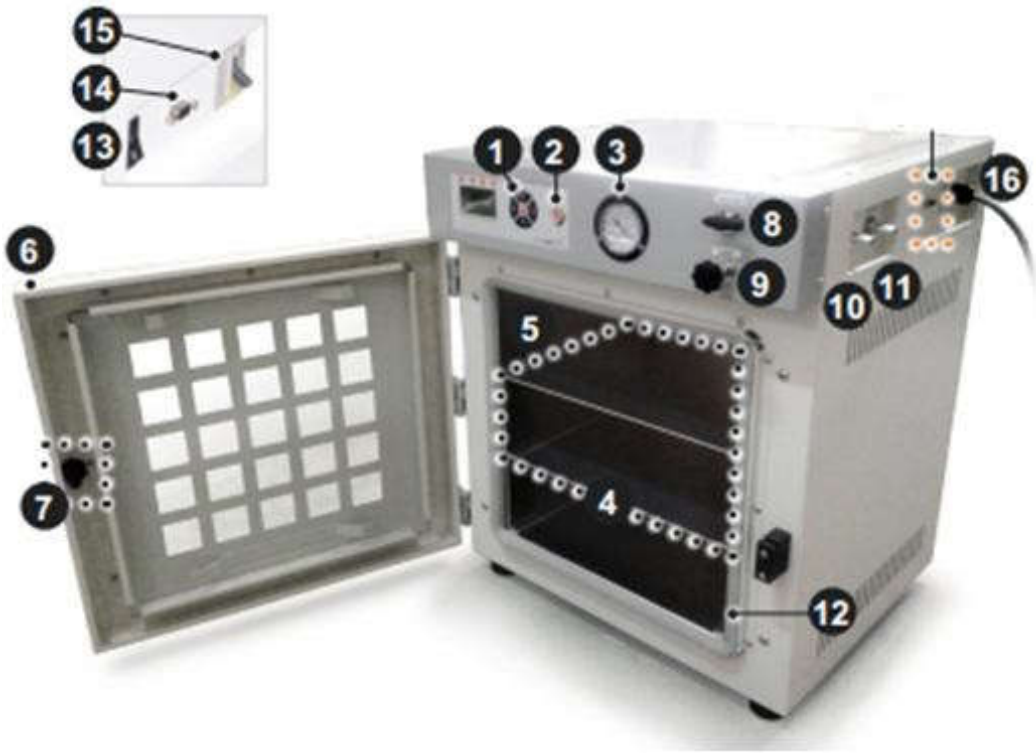
1.2.1 Function and Convenience

- Using DU-AL with great heat conductive.
- Equipped Vent valve to prevent spreading powder sample function from external air inflow during releasing vacuum.
- Observation inside through double safety glass door installed.
- Graphic LCD Display provide handy operation and control.
- Program designed to control at multiple temperature. (2 Pattern, 18 Segment)
- PID control system with high performance microprocessor provide quick and precision temperature control.
- By Auto Tuning installed provide automatic calculation of PID value based on test environment.
- Available to get the result or data of test from Vacuum Oven to PC with RS485 connection.

1.2.2 Safety

- Double over heated safety device installed
  (1st Controller Alarm, 2nd Forced Shut out Circuit)
- With appearance of disorder, alarm activated with buzzer and message displaying
- Product status can be displayed by installing Sign Tower Lamp (Optional)

1.3 Structure



[Vacuum Oven]

[1] Temperature Controller

Use for controlling temperature inside.

[2] Over Temp. Limiter

The temperature go over the set temperature, shut out the power of heater immediately to prevent overheat, user need to set 10% higher temperature from actual treat.

[3] Vacuum Gauge

Display vacuum pressure.

[4] Shelf

Heat transfer by conduction.

[5] Chamber

Space for treat made with stainless.

[6] Door

Installed double safety glass.

[7] Door Handle

Handle to open and close the door.

[8] Vacuum Valve

Open when vacuuming, and close before the pump stopped.

[9] Vent Valve

Open by adjusting when releasing the vacuum.

[10] Vent Port

By connecting with the vacuum pump, make the vacuum environment inside the chamber.

[11] Vacuum Port

Using to release vacuum or put inert gas.

[12] Door Packing

Seal inside with Silicon Packing.

[13] Power Switch

ON/OFF Switch for main power.

[14] Communication Port

RS485 communication port.

[15] Fuse

Circuit breaker to shut out an overcurrent.

[16] Power Cord

Supply electronic power to equipment.

1.4 Installation

1.4.1 Component

Main Body 1ea, User Guide 1copy, Shelf 1ea/2ea, Power Cord 1ea

1.4.2 Installation Environment

- Avoid direct light.
- Place where with less vibration and flat surface.
- Avoid the place where may occur flammable gas.
- Avoid the place where may occur strong high frequency noise.
- Avoid the place where may occur overcurrent or water leak.
- Avoid the place where may occur corrosive gas or dust
- Avoid the place where an enclosed.
- Secure a space of about 20CM around the product.

- Place where temperature between 5℃ to 40 ℃
- Place where ambient humidity under 80%

1.4.3 Power Connecting

- Set the Power Switch as "off".
- In case the power cord is separated from the main body, connect them first and plug the cord into the power supply point (outlet).

- Supply power that meets product specifications
- Must use power supply point that completely ground connected.

2. Operation

2.1 Naming and Function of Temperature Controller

[1] Graphic LCD

Display status of the equipment and various data.

[2] Run Lamp

Light on during the equipment operates.

[3] Heater Lamp

Display the output amount of heater by flickering.

[4] Timer Lamp

Light on during the equipment operates with timer.

[5] A.T Lamp

Light on during the equipment operates with auto tuning.

[6] Up Key

Use for increasing of set value and set of Fix Mode.

[7] Down Key

Use for decreasing of set value and set of Program Mode.

[8] Shift Key

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

[9] RUN / STOP Key

Use for operating, stop and set values.

[10] Mode Key

Use for changing menu.

[11] Display MODE

Users can select one between FIX(one temp.) and Program(multiple temps.) Mode.

[12] Message Displaying Window

Display of the message related status of the product.

[13] PV Display

Display current temperature of equipment.

[14] SV Display

Display target temperature the user set.

[15] TIMER Display

Timer display remain time for operation.

“--.--.--“means timer “off”.

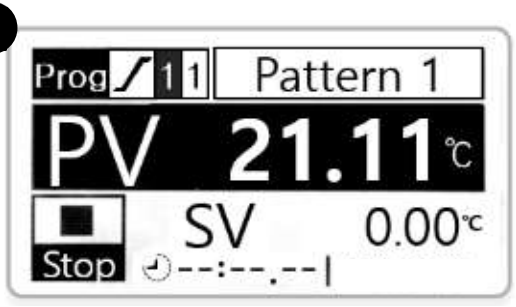
[16] RUN / STOP Display

Display the status RUN or STOP.

2.2 How to set the program

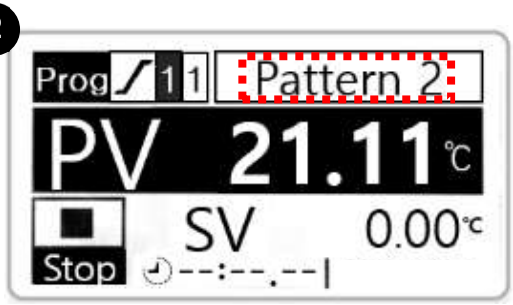
2.2.1 Pattern Setting

1



- Main menu Screen

2



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By pressing the [UP] button, change to Pattern 1.

- 

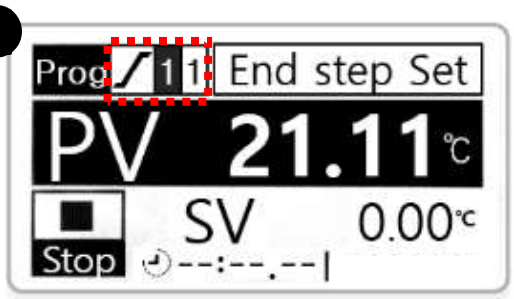
By pressing the [DOWN] button, change to Pattern 1.

- Set 2 Patterns 18 Steps
- Upto 9 steps can be set per Pattern

3 : Numbers of setting steps (upto 1~9)
1 : Current Step in setting

2.2.2 Step Setting

1



- Press the button 

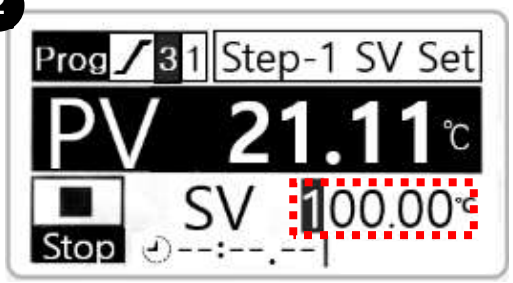
,

after pressing the button 

,

- Set the step (set upto 1~9 steps)

2



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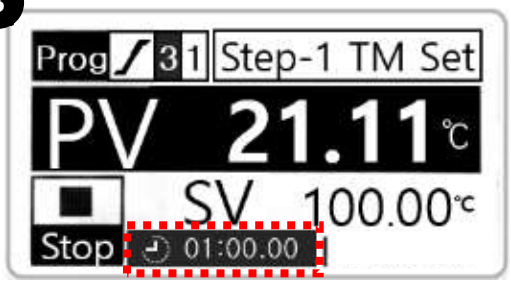
By pressing this button, set the temperature(SV)

3



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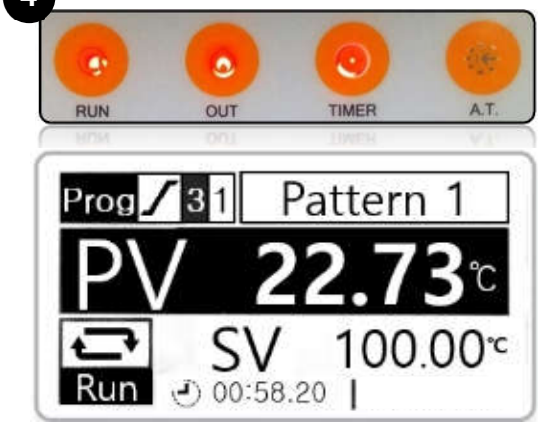
By pressing this button, set the time.

Con't ▶

Set the temperature, time, and Fan in the same way (2~4times repetitions)

4



– Start RUN mode by pressing the button for 3 seconds

If you press the [MODE] button for 3 seconds,
get back to the main menu while setting

3. Maintain

3.1 Maintaining 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 and Solutions

3.2.1 Power On Disorder

1) Please check the power supply.
2) Please check if Earth Leakage Breaker is "ON"
3) Please check if Power Switch is "ON"
4) Please check if Power Cord is well connected with the main body.
5) Please check the earth leakage breaker on the outlet connected to the main body is "ON"
6) Please contact our technical support department if still not working despite all actions taken.

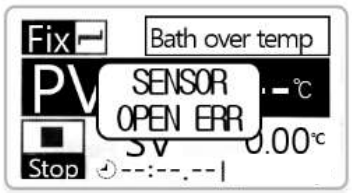
3.2.2 Earth Leakage Breaker is Keep short continuously

- Contact our technical support department.

3.2.3 Temperature Control Disorder

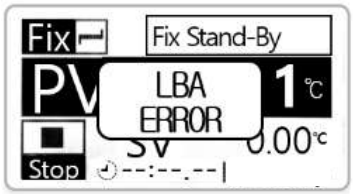
- Please check if the set value of Over Temp. Limiter set 10% above the experimental temperature.
- If still not working, contact our technical support department.

3.2.4 Error Message



〈Sensor Open Error〉

Occurs when there is an abnormality in the sensor.
Contact our technical support department.



〈LBA; Control Routine Breaking Down Alarm〉

Please Set the Over Temp. Limiter 10% above the experimental temperature value. If the error message still comes up, contact our technical support department.

- In case apply after-sales service, the user has to inquire to our technical 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.

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 Technical Support Department or the Supplier of the equipment.

3.3.2 Exceptional Case of Warranty

Damage or defective by fire or inundation, carelessness usage, do not 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 Technical 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.

LK Lab Korea After Sales Team : +82 (0) 31-572-4952

4. Specification

〈Program Type〉

Cat. No.	Model	Type	Capacity
O01-02-304	LO-VP232N	Program Controller	8 L
O01-02-312	LO-VP313N		28 L
O01-02-320	LO-VP424N		65 L
O01-02-322	LO-VP525N		125 L

Cat. No.		O01-02-304	O01-02-312	O01-02-320	O01-02-322
Model		LO-VP232N	LO-VP313N	LO-VP424N	LO-VP525N
Capacity		8 L	28 L	65 L	125 L
Vacuum		0~760 mmHg			
Controller	Control	Program Control			
	Display	GLCD (Graphic LCD)			
	Resolution	0.01 ℃			
	Program	2 Pattern, 18 Segment			
Temperature	Range	Ambient +15 to +250 ℃			
	Accuracy	±0,3 ℃ (at 100 ℃)			
Dimension (w x d x h)	Internal (mm)	200 x 200 x 200	300 x 300 x 300	400 x 400 x 400	500 x 500 x 500
	External (mm)	370 x 350 x 510	470 x 455 x 615	570 x 560 x 720	770 x 650 x 815
Electric supply	Power	1 Phase / 220 VAC / 60 Hz			
	Max Consumption	600 W (2.8 A)	600 W (2.8 A)	1.6 kW (7.3 A)	2.5 kW (11.2 A)
	Power Line	Standard Plug			
Material	Interior	304 Stainless Steel			
	Exterior	Powder Coated Steel			
Other	Aluminum Shelf	1ea	2ea		
	Vacuum Port	1/4" Hose Nipple Male			
	Vent Port	1/4" Hose Nipple Male			

KBIZ 중소기업중앙회

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)

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소급담보일	2014년 04월 10일		
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[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(II) 보통약관 - 배상청구기준
날짜인식오류 부담보 추가약관
품질저하부담보특별약관
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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]

Vacuum Oven [Program Type]

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77-9, Toegyewon-ro, Toegyewon-eup,
Namyangju-si, Gyeonggi-do, South Korea
Tel. 031-573-4952
Fax. 031-527-4958

www.lklab.com
LK LAB KOREA