



Forced Convection Oven [Program Type]

User Guide

Version 1.0

Model

LO-FP505, LO-FP510, LO-FP515, LO-FP525

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]

Indicates the situation requires user's attention.

Be careful when operating or controlling during usage.



[Attention mark]

Indicates a dangerous situation.

Failure of this warning could result in serious injury or equipment damage.

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1 Preparation

1.1 Introduction

This Oven designed Chemical, Biological, Medical, Pharmaceutical and many other purposes. This Oven can be used for drying many kinds of Glassware and Samples, samples Thermal Denaturalization, Dry Sterilization and test for measuring life at harsh environment, with excellent performance. With various function and safety devices installed, designed for users' convenience and safety as the biggest priority of this Oven.

1.2 Feature

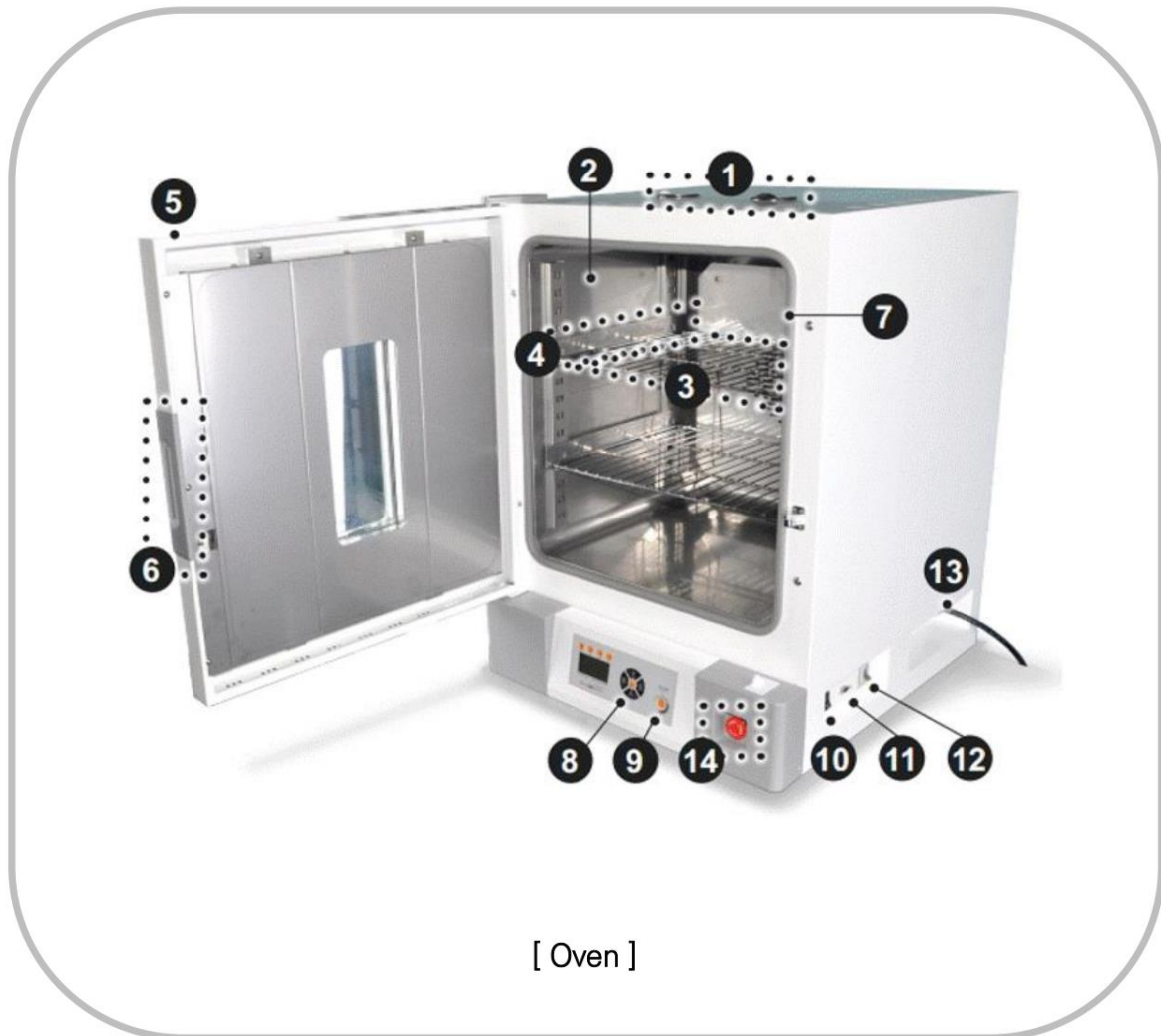
1.2.1 Performance and Convenience

- Heat Flow Circulation method, provide to equivalent temperature distribution inside chamber.
- Double-reinforced glass see-through windows allow you to conveniently observe the inside during operation
- Built-in program mode that can control the temperature of multiple stages. (2 Patterns, 18 Segments)
- Control the temperature rising time, maintaining time, and fall time precisely during operation.
- PID control system with high performance microprocessor provide quick and precision temp. control.
- Available to get the result or data of test from OVEN to PC with RS485 connection.

1.2.2 Safety

- User can promptly shut down equipment with 'Emergency Stop Button'.
- Double over heated safety device installed. (1st Controller Alarm, 2nd Forced Shut Out Circuit)
- No running of Heater and Fan during door open.
- Product's status can be checked with Optional Tower Sign Lamp.

1.3 Structure



[1] Vent Hole

Removing hume may occur during sample treats.

[2] Chamber

Space for treat made with stainless.

[3] Shelf

2 type as wire and perforated, used for put on the sample inside chamber.

[4] Shelf rail

Used for fixing shelf, adjustable of height of shelf.

[5] Door

Insulation between inside and outside of chamber, prevent overheated of surface.

[6] Door Handle

Handle to open and close the door.

[7] Door Packing

Packing for high temperature resistant seal the chamber.

[8] Temperature Controller

Use for controlling temperature inside.

[9] 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.

[10] Power Swtich

ON/OFF switch for main power.

[11] Communication Port

RS485 communication port.

[12] Earth Leakage Breaker

Block overcurrent and electrical short.

[13] Power Cord

Supply electronic power to equipment.

[14] Emergency Switch

For immediate stop in emergency situation.

1.4 Installation

1.4.1 Product Component

Main Body(1set), Power Cord(1ea), Wire Shelf(2ea),
Shelf Rail(4ea), User Guide(1copy)

1.4.2 Product Installation Environment

- Avoid direct light.
- Place where with less vibration and flat surface.
- Maintain the temperature of surrounding area the product placed between 5 to 40°C.
- Maintain the humidity of surrounding area 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.



/ Must place where temperature between 5 to 40°C and humidity under 80%

1.4.3 Power Connection

- 1) Set power switch and earth leakage breaker to OFF
- 2) In case the power cord is separated from main body, connect them first and plug the cord to power supply point(outlet)



/ Before plug to supply electronic power, please carefully check the electrical specification of equipment and considering the specification.
/ Must use power supply point that completely ground connected.
/ Do not touch the power cord with wet hand.

2 Operation

2.1 Naming and Function of Temperature Controller



[1] Graphic LCD

Available to check status of the equipment and display data.

[2] Run Lamp

Light on during the equipment operates.

[3] Heater Lamp

Display quantity of output with flickering.

[4] Timer Lamp

Light on during operate with timer.

[5] A.T Lamp

Light on during operate 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

User can select one between FIX(one temp.) and Program(multiple temp.) 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

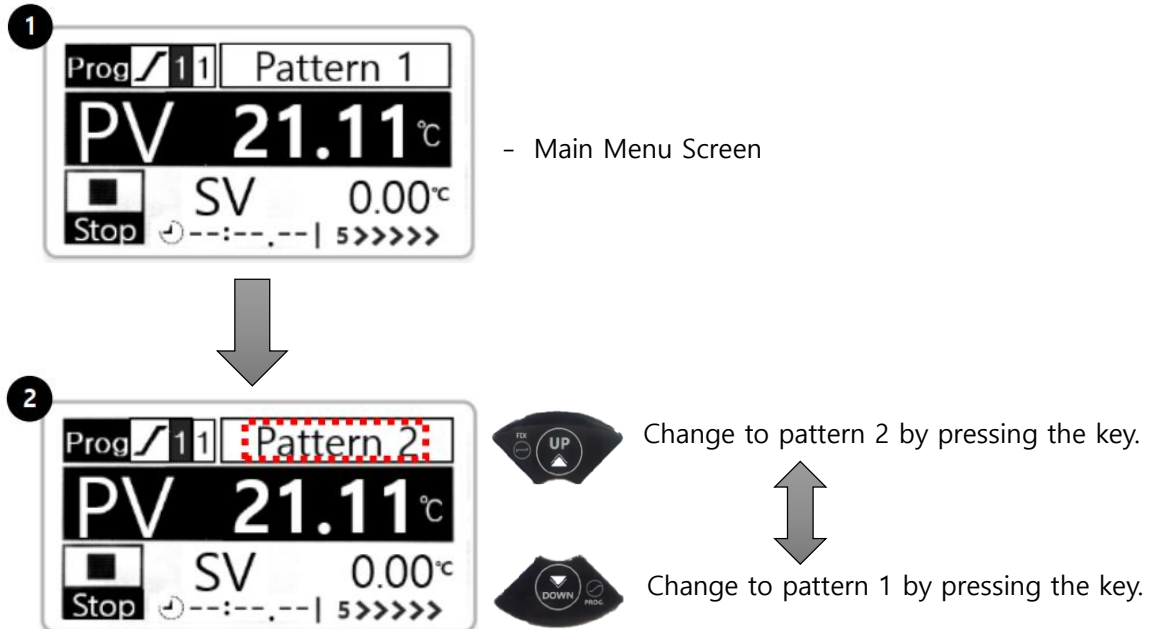
Timer display remain time for operation "--.--.--" means timer off.

[16] RUN/STOP Display

Display the status RUN or STOP.

2.2 Program Mode Setting

2.2.1 Pattern Setting



- Available to set up to 2 patterns and 18 segments.
- Per pattern, can set up to 9 segments



3 : Maximum number of steps set (1~9)

1 : corresponding step during setting

2.2.2 Step Setting



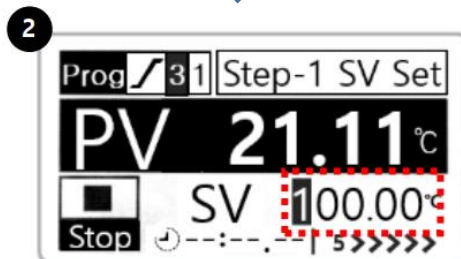
After pressing the key,



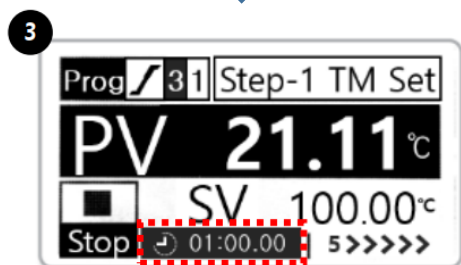
Set the step by pressing the key



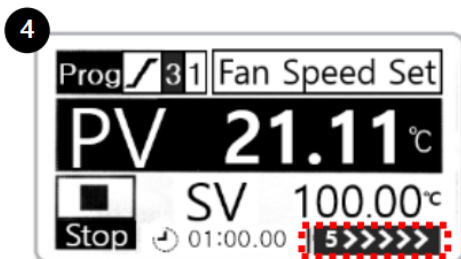
(available to set up to 1 ~ 9 Steps)



Set the temperature(SV) by pressing the key



Set the time by pressing the key

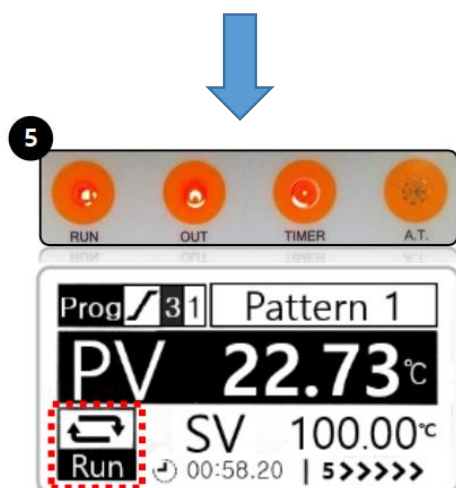


Set the fan by pressing the key



(recommend the fan setting values in 5 steps.)





Start Run by pressing the key
for 3 seconds.



Back to Main Menu Screen
if pressing the [MODE] key for 3 seconds during

3 Maintenance

3.1 Maintenance After Use

- After the experiment is complete, set the Power Switch to OFF.
- If the device becomes contaminated, unplug the power cord and clean the affected areas with an alcohol-based solution.
- When not in use for an extended period, unplug the power cord and clean the device before storing it.



- Do not use strong acid, strong base, or volatile solution when cleaning
- Dry completely after cleaning

3.2 Disorder & Solutions

3.2.1 If the Device Does Not Power On

- Please check the power supply.
- Ensure that the circuit breaker on the side of the device is in the ON position.
- Verify that the Power Switch on the side of the device is set to ON.
- Check that the Power Cord is securely connected.
- Check circuit breaker for the outlet to which the device is connected is turned ON.
- If the device still does not operate normally after performing all these checks, please contact our Customer Service department.

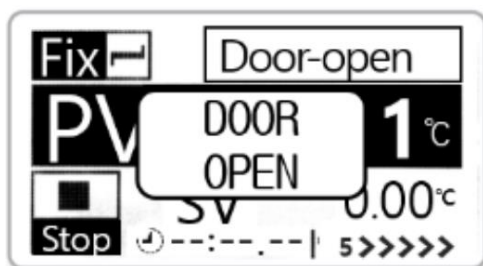
3.2.2 If the Device's Circuit Breaker Continually Trips

- Please contact our Technical Service department.

3.2.3 If Temperature is Not Controlled

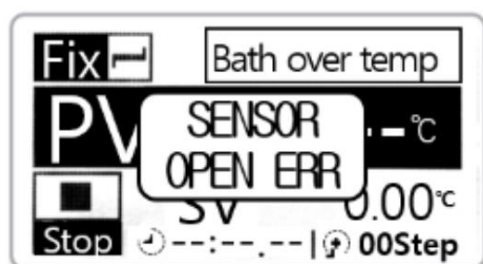
- Please check if the Over Temp. Limiter set 10% higher than set value.
- Please set the fan speed to 5 steps.
- If still not working after those solution above, contact our Technical Support Department.

3.2.4 Error Message



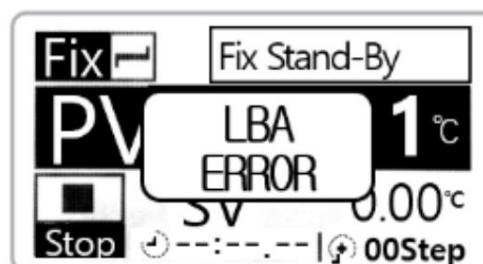
<Door Open>

When Door remains open.



<Sensor Open Error>

Occur when there is some problem with sensor, contact our Technical Support Department.



<LBA; Control Routine Breaking Down Alarm>

Please set the Over Temp. Limiter set 10% higher than treat value. If the error message still comes up after set, contact our Technical Support Department.



/ In the event of a service issue, please contact our Technical Support Department or the point of purchase for repairs. Disassembling the device or replacing parts on your own may result in voiding the warranty.
/ Repairs cannot be processed for damage that exceeds normal operational limits.

3.3 After Sales Services

3.3.1 Warranty Period

The warranty period is one year from the date of purchase. After one year, free warranty repair services will no longer be available, and you will be responsible for any repair or parts replacement costs. During the warranty period, you can receive service from LK Lab Korea's Customer Service department or the point of purchase.

3.3.2 Warranty Exclusions

Situations Not Covered by Warranty Warranty service will not be provided for damages caused by fire, flooding, contamination due to improper use, use of incorrect power supply, operation under abnormal conditions, or damage resulting from improper handling or misuse.

3.3.3 How to Request Warranty Service

To request service, please contact our customer service department or the point of purchase. Include your contact information along with a detailed description of the product's symptoms. After submitting your service request, we will send you an estimate. Please review the estimate and decide whether to proceed with the repair. If we do not receive a response within two weeks after submitting the estimate, the product will be returned to you.

4 Specification

Cat. No.		001-02-022	001-02-026	001-02-034	001-02-042
Model		LO-FP505	LO-FP510	LO-FP515	LO-FP525
Capacity		60 L	100 L	150 L	250 L
Controller	Control	Program Control			
	Display	GLCD (Graphic LCD)			
	Program	2 Pattern, 18 Segment			
	Resolution	0.01℃			
Fan Speed		1 ~ 5 Step			
Temperature	Range	주변 온도 +10 to +250℃			
	Accuracy at 100℃	±0.3℃			
	Uniformity at 100℃	±1.5℃	±1.5℃	±1.7℃	±1.8℃
Size	Interior (mm)	w400×d350×h420 mm	w480×d400×h530 mm	w550×d460×h600 mm	w700×d600×h600 mm
	External (mm)	w530×d625×h745 mm	w610×d675×h855 mm	w680×d735×h925 mm	w830×d875×h940 mm
Weight		55 Kg	63 Kg	75 Kg	90 Kg
Material	Interior	Stainless Steel 304			
	Exterior	Powder Coated Steel			
Electric Supply	Power	1 Phase, 220Vac, 50/60 Hz			
	Max Consumption	900 W(4.1A)	1.5 kW(6.8A)	1.8 kW(8.2A)	2.6 kW(11.9A)
	Power Line	Standard Plug			
Other	Wire Shelf	1 ea	2 ea		3 ea
	Vent Hole	Φ38 mm×2 ea			
Safety		Over Temp. & Current Protection, Automatical Fault Sensing System			

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User Guide

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