



LBX OVV Vacuum Drying Oven

Please read the User Manual carefully before use, and follow all operating and safety instructions!



user manual
english

User Manual



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Preface

Users should read this Manual carefully, follow the instructions and procedures, and beware of all the cautions when using this instrument.

Service

If help is needed, you can always contact your dealer or Labbox via www.labbox.com (declare an incidence)

Please, provide the customer service representative with the following information:

- Serial number
- Description of the problem
- Your contact information

Warranty

This instrument is guaranteed to be free from defects in materials and workmanship under normal use and service, for a period of 24 months from the date of invoice. The warranty is extended only to the original purchaser. It shall not apply to any product or parts which have been damaged on account of improper installation, improper connections, misuse, accident or abnormal conditions of operation.

For claim under the warranty, please contact your supplier.

1. Safety Warning Before Use

Strictly Prohibited:

The following situations may cause serious injury or death in the event of an accident.

- 1) Do not store volatile, flammable, or explosive materials in this device, as they may cause explosions or fires.
- 2) Do not place this device in an area exposed to rain, moisture, or water splashes; otherwise, it may cause accidents such as leakage, short circuits, or electric shocks.
- 3) Non-professional technicians must not disassemble, repair, or modify the equipment. Improper operation may result in fire or electric shock hazards.

Must Comply with the Following Measures:

The following situations may cause personal injury, equipment damage, and property loss.

- 1) This device should be installed on solid ground. If the ground is not stable or the installation location is unsuitable, personnel may be injured due to equipment overturning.
- 2) Use the dedicated power supply indicated on the nameplate of this device, and ensure that the power socket is grounded. The device must be reliably grounded to prevent accidental electrical leakage that could cause electric shock or fire.
- 3) Before performing any repairs or maintenance on this equipment, disconnect the power supply to prevent electric shock or personal injury.
- 4) When repairing or maintaining the equipment, wear gloves to prevent injuries from contact with sharp edges or corners.
- 5) If any abnormalities are detected in the operation of the device, immediately unplug the power cord and stop its operation. Continuing to operate under abnormal conditions may cause electric shock or fire.

2. Main Features

- 1) The oven is made of high-quality cold-rolled steel plate, with a surface treated using spray coating technology, giving it an elegant appearance.
- 2) The inner cavity walls are made of high-quality stainless steel, with easy-to-clean four corner arcs and excellent performance.
- 3) The oven features an adjustable door lock, an adaptive observation window frame, and a new high-temperature-resistant silicone sealing strip, ensuring good sealing performance.
- 4) It adopts a high-brightness LED digital tube intelligent PID controller, characterized by easy operation, precise temperature control, and timed operation.
- 5) The heating method uses outer wall conduction heating, which provides fast heating speed and a short constant temperature time.
- 6) The oven door features a double-layer glass structure, making it easy to observe the dried sample.
- 7) Equipped with an inflation port as standard, it allows for the convenient use of inert gas to fill the chamber for experiments.
- 8) This product includes over-temperature alarm, deviation correction, and sensor diagnostic functions.

3. Technical Specifications

Reference	DOVV-024-001	DOVV-052-001
Heating Method	Four-wall heat conduction and vacuum decompression	
Temperature Range	RT +10 – 250 °C	
Vacuum Range	< 133 Pa	
Temperature Resolution	0.1 °C	
Temperature Fluctuation	±1 °C	
Heating Time	80 min	100 min
Chamber	High-quality patterned stainless steel plate	
Shell	Cold-rolled steel plate, surface electrostatic spraying	
Insulation Layer	High-quality aluminum silicate cotton (with CE certification)	
Heater	Stainless steel electric heating tube	
Observation Window	Bulletproof tempered glass	
Vacuum Gauge	Pointer type, accuracy level 1.6	
Diameter of Nozzle	10 mm	
Rated Power	0.8 kW	1.4 kW
Temperature Control Method	Dual temperature intelligent PID	
Temperature Setting Method	Touch-type button settings	
Temperature Representation Method	Temperature measurement: displayed on the upper row of a four-digit digital tube; Set temperature: displayed on the bottom row of a four-digit digital tube	
Timer	0 – 9999 min (with timed waiting function)	
Running Functions	Fixed value operation, timed operation, automatic stop	
Additional Features	Sensor deviation correction, temperature overshoot self-tuning, internal parameter locking, power-off parameter memory	
Sensor	PT100	
Safety Devices	Over-temperature sound and light alarm	
Chamber Dimensions (width x depth x height) (mm)	300 x 300 x 270 mm	415 x 370 x 340 mm
Outer Dimensions (width x depth x height) (mm)	480 x 480 x 606 mm	560 x 540 x 680 mm
Outer Packaging Dimensions (width x depth x height) (mm)	590 x 550 x 750 mm	704 x 620 x 814 mm
Internal Volume	24 L	52 L
Maximum Number of Trays	4	6
Load Capacity per Tray	15 kg	
Spacing Between Trays	40 mm	
Rated Current of Power Supply (50/60 Hz)	AC220V/3.6A	AC220V/6.3A
Net Weight / Gross Weight (kg)	42 kg / 52 kg	67 kg / 92 kg

4. Instrument Operation and Display Instructions

Preparation Before Use

- 1) Connect the left suction port of the oven's control box to the vacuum pump using a vacuum rubber tube (inner diameter 9mm).
- 2) Before connecting the power to the oven, make sure the power switch is in the "off" position.
- 3) Make sure the vacuum drying oven is placed in a well-ventilated indoor area, free from any flammable or explosive materials around it.

Use

- 1) Place the items to be dried in suitable containers, then place them on the oven's interior partition.
- 2) Close the oven door and shut the air release/fine adjustment valve.
- 3) Connect the power to the vacuum oven and open the suction valve to begin the vacuum process. Once the vacuum gauge reading exceeds the required vacuum level, make sure to first close the vacuum valve before turning off the vacuum pump power. Finally, use the inflation and deflation valve to fine-tune the vacuum level to achieve the desired vacuum.
- 4) Connect the power to the vacuum oven, set the temperature and time parameters according to the instrument's operating instructions, and ensure that the oven is in proper working condition.
- 5) Depending on the drying time required for different items, turn off the power switch once the drying process is complete. After turning off the power, rotate the air release valve to release the vacuum inside the oven. Then, open the oven door (wait for the vacuum gauge to return to zero before opening the door) and remove the items. (If the temperature is still too high, wait for cooling or use heat-resistant gloves or tools to handle the items and avoid burns).

Panel Indication



Operation and Usage Methods

Reference and Setting of Temperature and Constant Temperature Time:

Press the “Set” button to enter the temperature setting mode. The prompt “SP” will appear in the lower row of the display window, while the temperature setting value will appear in the upper row (the first digit will blink). The desired setting value can be adjusted using the shift, increase, and decrease buttons. Press the “Set” button again to enter the constant temperature time setting mode. The prompt “St” will appear in the lower row of the display window, and the constant temperature time setting value will appear in the upper row (the first digit will blink). The desired setting value can be modified using the shift, increase, and decrease buttons. Press the “Set” button again to exit the setting mode. The modified settings will be automatically saved.

To enter the password setting mode, press and hold the “Set” button for about 3 seconds. The password prompt “Lc” will appear in the lower row of the controller display window, as shown in Figure 3. The current password value will appear in the upper row, and you can modify it by using the increase, decrease, and shift buttons. Press the “Set” button again. If the password is incorrect, the controller will return to the normal display mode. If the password is correct, it will enter the internal parameter setting mode. Press the “Set” button again to modify each parameter in sequence. Press and hold the “Set” button for another 3 seconds to exit this mode, and the parameter values will be automatically saved.

Internal Parameter Table 1

Parameter Indication	Parameter Name	Parameter Function Description	(Range) Factory value
Lc-	Password	When Lc=3, parameter values can be viewed and modified.	0
AL-	Over Temperature Deviation Alarm	When the “temperature measurement value > temperature setting value + AL” is reached, the alarm light will illuminate, the buzzer will sound, and the heating output will be disconnected.	(0~100 °C) 5.0
T-	Control Cycle	Heating control cycle.	(1~60 s) 5
P1-	Low Temperature Zone Proportion Zone	Time proportional adjustment.	(1.0~Range value) 35.0
I1-	Low Temperature Zone Integration Time	Integral adjustment.	(1~1000 s) 200
d1-	Low Temperature Zone Differential Time	Differential action regulation.	(0~1000 s) 200
P2-	Proportional Band	Time proportional adjustment.	(1.0~Range value) 35.0
I2-	Integral Time	Integral adjustment.	(1~1000 s) 200
d2-	Differential Time	Differential action regulation.	(0~1000s) 200
dc-	Inflection Point in Low-Temperature Zone	When the set temperature is $\leq$ dc, it is considered part of the low-temperature zone.	(0~Range value) 80.0
Pb-	Zero Position Adjustment	Correction of errors generated during sensor (low temperature) measurement. $Pb = \text{actual temperature value} - \text{instrument measurement value}$	(-50~50 °C) 0
PK-	Full Scale Adjustment	Correction of errors generated during sensor (high temperature) measurement. $PK = 1000 * (\text{actual temperature value} - \text{instrument measurement value}) / \text{instrument measurement value}$	(-999~999) 0

Et-	Timing Function	When ET=0, there is no timing function. When ET=1, the timing starts upon power-on. When ET=2, the timing starts once the set time is reached.	(0~2) 2
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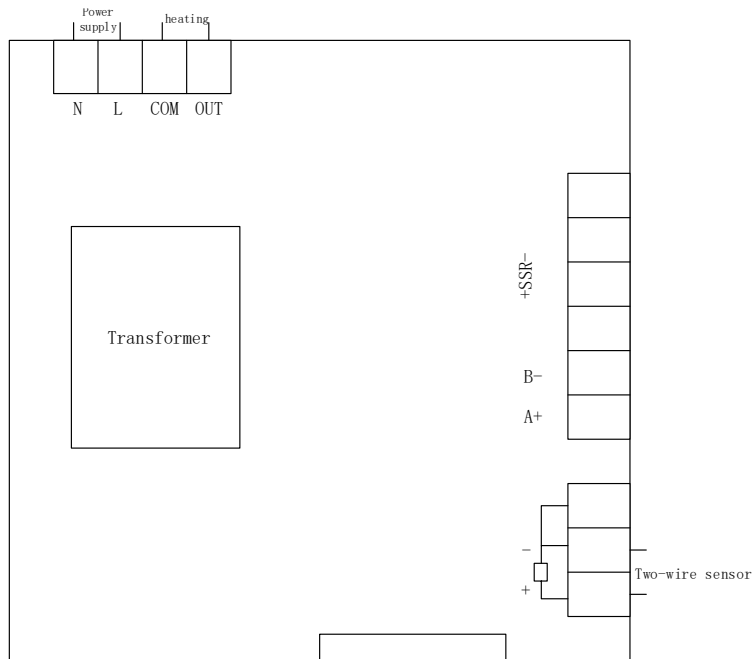
Parameter Indication	Parameter Name	Parameter Function Description	(Range) Factory value
Lc-	Password	When Lc=9, parameter values can be viewed and modified.	0
Co-	Turn Off Heating Output Deviation	When the temperature measurement value is $\geq$ the temperature set value + Co, turn off the heating output.	(0.0~50.0 °C) 5.0
Hn-	Constant Temperature Timing Method	0: Minute timing; 1: Hourly timing	(0~1) 0
En-	Constant Temperature at the End of Operation	En=0: End of operation shutdown output. En=1: Continue to maintain constant temperature after operation.	(0~1) 0
Lt-	Maximum Power Output	Maximum power percentage of heating output.	(0~100) 100
oP-	Gate Control Function	0: Turn off the door opening judgment function; 1: Enable the door opening judgment function.	(0~1) 1
rH-	Range Value	Set according to the temperature measurement range.	FCD: (0~400.0 °C) 250.0
ad-	Mailing Address	The communication address of this machine.	(1~32) 1

Internal Parameter Table 2

Comparison Table of English Names and Parameter Indicators

Parameter Indicator	SP	St	Lc	AL	T	P	■	d
English Name	SP	St	Lc	AL	T	P	■	d
Parameter Indicator	Pb	Pk	Co	Hn	oP	rH	En	Lt
English Name	Pb	Pk	Co	Hn	oP	rH	En	Lt

5. Instrument Wiring Diagram



6. Fault Analysis

Problem	Cause	Solution
No display on startup	Power supply not connected.	Check for voltage in the power socket.
	The power plug is not properly plugged in.	Check if the contact between the power plug and the socket is reliable.
	The power switch is not turned on.	Turn on the power switch on the right side of the oven.
	The fuse in the oven is damaged.	Replace the power fuse with one of the same specification.
The measured temperature is higher than the set temperature, or the instrument enters a high-temperature alarm state.	The oven door is not tightly closed.	Close the oven door tightly.
	The instrument has not yet reached the constant temperature state.	Wait a moment before making an observation.
After turning on, the temperature does not display and does not rise.	The power cord is not properly plugged in.	Insert the power cord properly.
	Sensor malfunction.	Notify the factory for repair.
	The heater is broken.	Notify the factory for repair.
When vacuuming, the pointer of the vacuum gauge does not move.	The door and all valves are not closed.	Check and close the doors and valves.
	There is dust on the sealing strip and glass.	Wipe the rubber strip and the inner surface of the glass clean with a damp cloth.
	The vacuum gauge pointer is broken.	Notify the factory for repair.

Nota importante para los aparatos electrónicos vendidos en España

Instrucciones sobre la protección del medio ambiente y la eliminación de aparatos electrónicos:



Los aparatos eléctricos y electrónicos marcados con este símbolo no pueden ser eliminados en forma de residuos urbanos.

De conformidad con la Directiva 2012/19/UE, los usuarios de la Unión Europea de aparatos eléctricos y electrónicos, tienen la posibilidad de devolver sus RAEE para su eliminación al distribuidor o fabricante del equipo después de la compra de uno nuevo. La eliminación ilegal de aparatos eléctricos y electrónicos es castigada con multa administrativa.

Remarque importante pour les appareils électroniques vendus en France

Informations sur la protection du milieu environnemental et élimination des déchets électroniques :



Les appareils électriques et électroniques portant ce symbole ne peuvent pas être jetés dans les décharges.

En réponse à la réglementation, Labbox remplit ses obligations relatives à la fin de vie des équipements électriques de laboratoire qu'il met sur le marché en finançant la filière de recyclage de ecosystem dédiée aux DEEE Pro qui les reprend gratuitement (plus d'informations sur www.ecosystem.eco).

L'élimination illégale d'appareils électriques et électroniques est punie d'amende administrative.

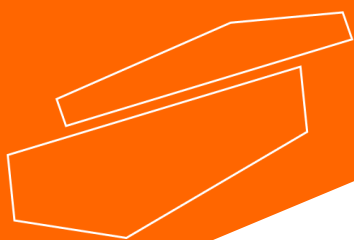
Nota importante per le apparecchiature elettroniche vendute in Italia

Istruzioni sulla protezione ambientale e sullo smaltimento dei dispositivi elettronici:



Le apparecchiature elettriche ed elettroniche contrassegnate con questo simbolo non possono essere smaltite come rifiuti urbani.

In conformità con la Direttiva 2012/19 / UE, gli utenti dell'Unione Europea di apparecchiature elettriche ed elettroniche hanno la possibilità di restituire i propri RAEE per lo smaltimento al distributore o al produttore di apparecchiature dopo averne acquistato uno nuovo. La rimozione illegale di apparecchiature elettriche ed elettroniche è punibile con una sanzione amministrativa.



www.labbox.com