Stacked Large Capacity Shaking Incubator
BJPX-SDW10/20
User Manual

SHANGHAI LORDERAN SCIENTIFIC INSTRUMENT CO., LTD.

Version 2022.5

Preface

Thanks for choosing LORDERAN products!

For your safe and convenient use and reasonable maintenance of this product, please read the instruction manual carefully before use, and keep it in a safe place for reference.

For any damage to the instrument caused by the user not following the "instrument use environment" stated in this manual, or personal failure to operate in accordance with the requirements of the "safety reminder", LORDERAN has no obligation and responsibility for this.

The user must do the following three points in use:

1. Always use protective equipment correctly (including clothes, gloves, goggles, etc.);
2. Always adopt good hygiene habits and operate in strict accordance with product instructions;
3. Everyone is obligated to take responsibility for their own safety.

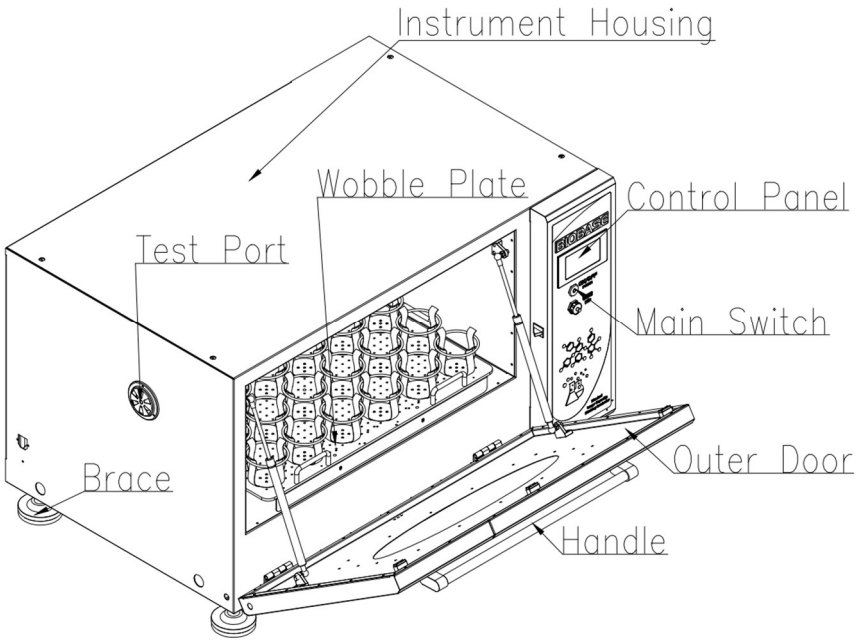
Notes: Because LORDERAN products are updated quickly, if the functions described in this manual are different from the functions of the product you purchased, please refer to the actual function.

Safety notes:

1. Please read this manual carefully when using this product for the first time.
2. Stacking horizontal constant temperature shaker can only be operated by trained and authorized personnel.
3. The maintenance of the equipment can only be done by the company's technical engineer or the company's authorized agent.
4. If the operator encounters a situation not mentioned in this manual, please contact the company's technical engineer or the company's authorized agent to inquire about the correct handling method.
5. Please use the accessories provided by LORDERAN. If the user wants to use other accessories, LORDERAN will not be responsible for the adverse consequences. But users can apply to Brocade to verify whether the accessories meet LORDERAN requirements.
6. Inspection and maintenance must be carried out on the stacked horizontal constant temperature shaker at specified intervals.
7. The stacked horizontal constant temperature shaker heats up the box through the back to achieve the constant temperature of the box. To ensure the normal operation of the machine and ventilation and heat dissipation, the back and left and right sides of the box shall be at least 30cm away from the wall, and the air inlet and outlet shall not be blocked by obstacles.
8. In case of machine failure or power failure, the temperature in the working chamber of the superimposed horizontal constant temperature shaker will fluctuate to some extent. If it cannot be repaired in a short time, please take out the culture medium and transfer it to other places that meet the requirements for the preservation temperature of the culture medium for storage to avoid damaging the culture medium.
9. The places marked with  symbols in the equipment need to refer to this manual when in use, in order to clarify the potential nature of the hazard and the countermeasures that must be taken.
10. Please use the equipment in accordance with the methods specified in this manual. If you do not use the equipment in accordance with the methods specified by the manufacturer, the protection provided by the equipment may be damaged.

Content

1. Overview



Structural diagram of superimposed horizontal constant temperature shaker

Due to product improvements and different models, the actual product may be different from the sketch, please refer to the actual product.

2. Working principle

The superimposed horizontal constant temperature shaker is a high-performance product with multi unit superposition, multi-function combination, multi amplitude gyration and multi temperature zone control, which is specially developed for small laboratories. It can be placed on a single platform or two or three platforms on top of each other, so as to realize the loading configuration of multiple 500ml triangular flasks when the floor area is less than 0.6 m^2. One device can meet the experimental requirements of dynamic culture and static culture at the same time, It can greatly meet the experimental requirements of laboratory personnel for miniaturization, large loading and flexibility of products, and is widely used in bacterial culture, fermentation, hybridization, biochemical reaction, enzyme and cell tissue research with high requirements for temperature and oscillation frequency. It has extensive and important applications in medicine, biology, molecular science, pharmacy, food, environmental protection and other research fields

Scope and application: Cell Culture, Extraction Experiment, Sample Mixing, Staining and Decolorization, Hybridization Experiment, Solubility Experiment, Plasmid Purification, Bacterial Suspension Preparation, Elution Process.

3. Main technical parameters

Stacking horizontal constant temperature shaker is composed of instrument cabinet, storage box, oscillating device and temperature control system

Product Model	BJPX-SDW10	BJPX-SDW20
Temperature Control Range ℃	RT+5~60	4~60
Display Mode	5-Inch Touch Screen	
Control Mode	P.I.D	
Temperature Resolution Accuracy ℃	0.1	
Temperature Fluctuation Degree ℃	≤±0.5	
Temperature Uniformity ℃	≤±1（37℃）	
Oscillation Mode	Gyratory	
Drive Mode	Single Shaft Balanced Drive Type	
Speed Range (r/min)	30~300	
Speed Accuracy (r/min)	±1	
Swing plate Amplitude (mm)	26	
Timing Range (min)	0~999	
Rocker Size (mm)	720*490	
Number Of Rocker Plates	1	
Maximum Single Configuration	250ml * 34 /500ml * 24 /1000ml * 15 /2000ml * 8 /3000ml * 6 Pieces (Note: If 3000ml is configured, 1. It is necessary to install a wide mouth flask with a height of ≤ 310mm; 2. When selecting a universal spring clamp, it cannot be installed)	
Volume（L）	190	
Working Room Size （mm）	870*590*398（Unit 1）	
External Dimensions （mm）	1150*780*640（Unit 2）	
Net Weight （Kg）	270	300
Power (W)	1500W	2200W
Power Supply	AC200~240V 50/60HZ	

Other	**Lighting Lamp (1 Piece)**
Sterilization	**Ultraviolet Lamp (2 Piece)**
Ambient Temperature Requirement ℃	**15~35**
Maximum Stacking Quantity/Set	**3**
Data Storage	**USB**
Studio Materials	**High Quality 304 Mirror Stainless Steel**
Door Opening Mode	**Up/Down Swing Door**

Note:"220V~" means that the equipment requires 220V AC.

4. Prepare and Notes before Operation

4.1 Transportation and handling requirements

a) The stacked horizontal constant temperature shaker shall not be transported upside down to avoid shaking and collision during transportation and damage to electrical components inside the chamber In addition, wooden brackets shall be installed at the bottom of the equipment during long distance transportation, anti-collision corner linings shall be added around the equipment, direct sunlight protection and rain protection devices shall be added, and foot supports shall be locked；
b) Lift from the bottom during short-distance transportation, the inclined surface should not be greater than 45 degrees, handle with care, and do not grab the door body or the lining as a stressed part;
c) On the flat ground, you can directly push the superposition type horizontal constant temperature shaker to move. When pushing the superposition type horizontal constant temperature shaker, you should release the foot support from the locked state, and pay attention to the casters not to damage the power cord. After the movement is completed, you will lock the foot support again to prevent the superposition type horizontal constant temperature shaker from moving at will

4.2 Storage environment requirements

a) Indoor storage;
b) Storage environment temperature: -4℃～30℃;
c) Relative humidity of storage environment: ≤85%;
d) Do not place it in a place where the temperature is too high and it is easy to splash;
e) The placing surface must be solid, horizontal, incombustible and able to bear the weight of the superimposed horizontal constant temperature shaker;

4.3 Operation environment requirements

a) Operating environment temperature: 5℃～35℃;
b) The relative humidity of the operating environment: ≤80%;

c) Rated power supply voltage: 220VAC;
d) Rated voltage frequency: 50Hz;
e) The installation surface must be solid, horizontal, incombustible and able to bear the weight of the superimposed horizontal constant temperature shaker during operation;
f) When in use, it should be placed in a place away from direct sunlight and away from heat sources;
g) It is required to leave more than 30cm space around the stacked horizontal constant temperature shaker for ventilation and heat dissipation;
h) Do not place it in places where the temperature is too high or splashing water;
i) There is no strong vibration and corrosive gas around during use;

4.4 Safety notes

a) Do not grab the door body or lining as a stressed component;
b) Remove all packaging components (including the protective foam in the box and the base of the box) before use;
c) Please check the random attachments and materials according to the packing list before use;
d) The product should be cleaned once before use;
e) Power supply voltage: This equipment uses 220V/50Hz AC power supply. If the voltage is lower than 198V or higher than 242V, a suitable automatic voltage stabilizer must be installed for use;
f) When using this superposition type horizontal constant temperature shaker, the power supply shall be equipped with low-voltage air circuit breaker and leakage protection device;
g) Dedicated independent sockets must be used and reliably grounded to ensure good grounding after the equipment is connected. Do not extend the length of the power cord arbitrarily. If you really need to extend it, you must use a copper core wire of 2.5mm² or more. The cross-sectional area of the copper core wire in the wall connected to the power socket must also be guaranteed to be above 4mm²;
h) It is strictly prohibited to put flammable, explosive dangerous goods, highly corrosive acids, alkalis, etc. into the stacked horizontal constant temperature shaker;
i) Do not connect the neutral wire (N end) and the ground wire (E end) of the socket together, otherwise the shell of the platelet constant temperature incubator will be electrified and an electric shock may occur;
j) The power cord cannot be used in bundles, placed under heavy objects, or close to heat sources such as compressors;
k) Do not place the equipment where it is difficult to operate the disconnect device;
Note: The stacked horizontal constant temperature shaker just connected to the power supply should not be put into the culture medium immediately. After the temperature of the incubator is stabilized, the culture medium should be put into the incubator for culture test.

5. Installation and Debugging

5.1 Remove packaging materials and tape

Remove all shipping packaging materials and tape, open the door and ventilate the equipment. If the shell panel is dirty, please use neutral detergent to remove the dirt and clean the residual neutral detergent with clean water (Undiluted detergent will destroy the composition of the plastic, please

refer to the detergent's manual to dilute the detergent). After cleaning, wipe it with a damp cloth, and then wipe the panel with a dry cloth.

5.2 Adjust the level foot and fixed foot cup

To adjust the foot support, first use an adjustable wrench to screw down and adjust the nut. After landing horizontally, screw up and tighten the nut to contact the lower part of the box for locking.

5.3 Ground

⚠ **Warning:**

Please use a power outlet with a ground wire to prevent electric shock. If the power socket is not grounded, qualified engineering and technical personnel must install the grounding wire.

Do not ground the equipment through gas pipes, power supply pipes, telephone lines or lightning rods. This type of grounding may cause electric shock due to incomplete loops.

5.4 For first use

5.4.1 After removing the package of the stacked horizontal constant temperature shaker, place the stacked horizontal constant temperature shaker (lock the foot support) according to the requirements of the use environment

5.4.2 The box has been cleaned when leaving the factory, but it is still recommended to use medical alcohol to wipe the stacked horizontal constant temperature shaker and dry it;

5.4.3 Connect the superposition horizontal constant temperature shaker to the power supply, click the key on the lower part of the display screen on the right side, and the main interface will light up for operation (all parameters have been set for direct operation). The oscillating device starts to operate, and the box temperature tends to be stable in about 30 minutes, indicating that the system is working normally and the commissioning is over;

5.4.4 For initial use, it is recommended to put the culture medium into the box after the temperature in the box reaches the use temperature;

5.4.5 In order to save electricity, try to reduce the number of times and time of opening the door (multiple operations may also damage the door seal and affect the sealing effect of the door body).

5.5 Safe operation and preventive measures

5.5.1 This manual contains important safety regulations, please read carefully and follow strictly.

All the items and procedures introduced here are intended for users to use this equipment correctly

and safely. If the precautions described here are followed, the user and anyone else will be protected from possible injury.

5.5.1.1 Danger (may cause serious property loss or personal injury)

a. This product must be grounded reliably and far away from electromagnetic interference sources (never use the neutral wire or the neutral wire as the ground wire).
b. Please use a power supply that conforms to the electrical parameters indicated on the nameplate of this equipment.
c. Do not insert metal objects such as nails or wires into any holes and gaps of the device or any exhaust ports for internal air circulation, otherwise accidental contact between the above objects and moving parts may cause electric shock or injury.
d. The product is not allowed to arbitrarily unplug or plug in the power plug without turning off the power switch during operation.
e. Do not damage or damage the power plug or power cord. If you unplug the plug from the power socket, you should hold the power plug firmly instead of pulling the power plug wire. If the plug wire is loose, do not use the power plug. It is not allowed to connect or cut the power cord at will, otherwise it may cause fire or electric shock.
f. Users are not allowed to disassemble, repair or modify the equipment by themselves. If any of the above operations are carried out by unauthorized personnel, it may cause fire or personal injury due to improper operation.
g. Do not store volatile or flammable materials in this equipment. Otherwise, it may cause an explosion or fire.
h. No objects should block the circulation holes of the air duct during use, or make the circulation of the air duct not smooth;

5.5.1.2 Warning (may cause property damage or personal injury)

a. The user must fully read and understand the instruction manual of this product before proceeding.
b. The 304 stainless steel inner tank is not acid resistant. Please pay attention to anti-corrosion measures and do not use acidic medium in the box.
c. When performing the following operations, the power cord of this product must be unplugged:
   ① Replace the fuse;
   ② The product fails to be inspected and repaired;
   ③ The product will not be used for a long time; d. Move the product.
d. Please use a power socket with a ground wire to prevent electric shock. If the power socket is not grounded, it must be installed by qualified engineering and technical personnel.

5.5.1.3 Attention (may cause the product to not work normally or affect the service life)

a. I. When the product is being transported, care should be taken to avoid damaging the vulnerable parts such as the instrument on the panel;
b. II. The equipment should be installed on a solid ground to keep it level. If the ground is not solid enough or the installation location is not suitable, the equipment may tip over or overturn and cause personal injury.
c. III. The product should be wiped off the condensed water inside the cavity after each storage to avoid corrosion of the cavity and affect its service life.
d. IV. Do not open/close the door of the product box by gravity, otherwise it will easily cause the door to fall off and damage the product;

e. V. Do not apply extra pressure to the glass door of the box door or scratch the glass surface with sharp objects, otherwise it will easily cause the glass to break or produce scratches;
f. VI. Do not place containers or heavy objects filled with water on the product, avoid water splashing on the product and cause short circuit or electric shock hazard, or heavy objects slipping and damage;
g. VII. This product must not be used outdoors.

5.5.2 Installation position

In order to make the equipment operate normally and obtain the best performance, please install the equipment in a place that meets the following conditions:

5.5.2.1 A place that will not be directly affected by direct sunlight or air flow from the air conditioner.

5.5.2.2 A place with clean air and sufficient ventilation (do not install in a small, closed room).

5.5.2.3 A place far away from the heat source.

5.5.2.4 A place with a solid and level ground.

5.5.2.5 A place where no flammable or corrosive gas exists.

5.5.2.6 A place not prone to high humidity.

⚠ **Warning**

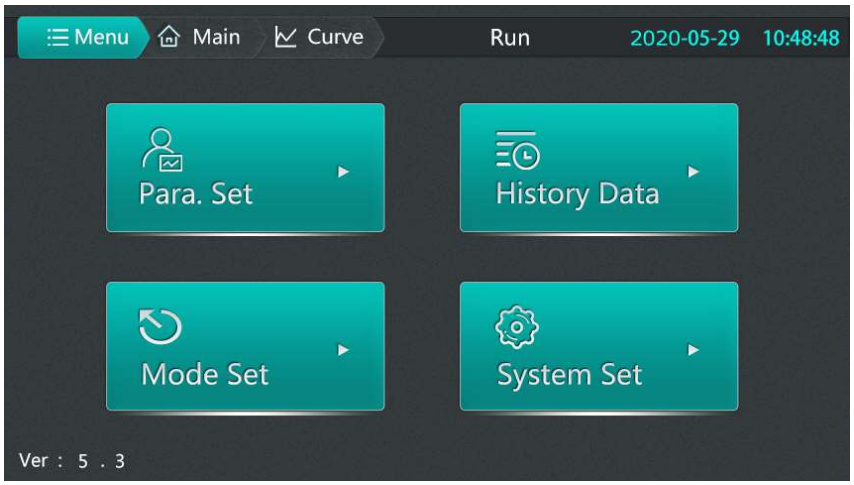
Do not use this device outdoors. If this equipment is splashed by rain, it may cause electric leakage or electric shock. Do not install this equipment in a humid place or a place where water may be splashed, otherwise it may cause electric leakage or electric shock due to reduced insulation.

⚠ **Warning**

Do not install the device in a place where flammable or volatile gas exists, otherwise it may cause an explosion or fire. Do not install the equipment in a location with acid or corrosive gas, otherwise it may cause leakage or electric shock due to corrosion.

6. Operation

6.1 Menu interface

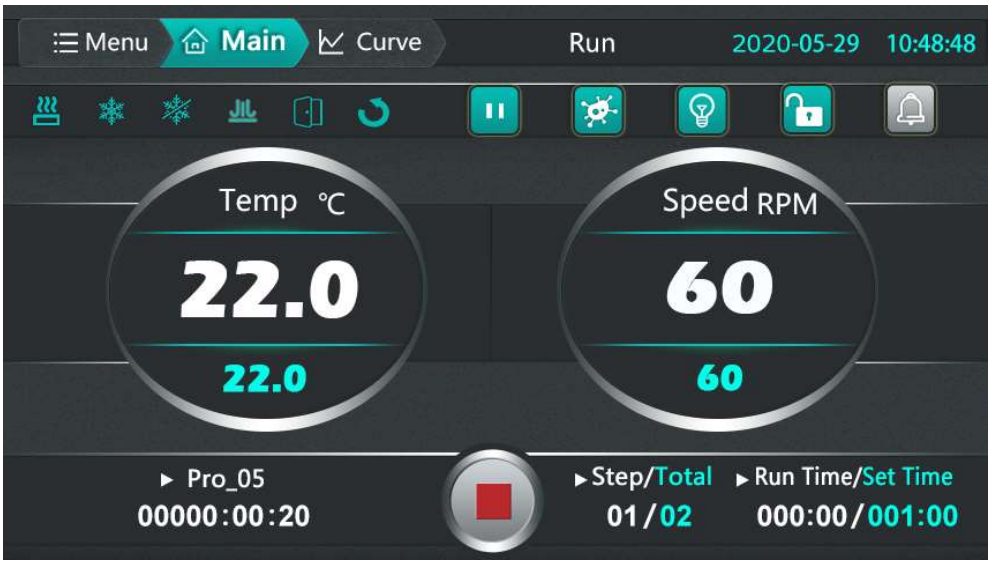


After the user logs in, click〖Menu〗on any interface to enter the directory interface. In the directory

interface, the user can enter the【history data】,【Mode Set】,【Parameter Set】and【System Setting】interface.

Note: In view of the special storage requirements after the platelet thawing is completed, in order to avoid the system operating parameters disorder caused by the wrong operation during use by the customer, the instrument will set all the operating parameters before leaving the factory, without the customer's secondary parameter settings. Therefore, customers only need to perform simple operation operations (the three interfaces of【Mode Set】,【User Settings】and【System Settings】do not require customers to perform touch operations), If there are special requirements for use or problems with the instrument itself, you need to set the system operating parameters and modes, and you can contact professional after-sales personnel to authorize one-to-one video guidance operations.

6.2 Main interface



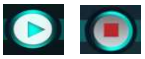
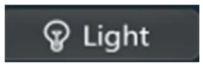
In【main】interface, users can view or set common data and carry out regular operations.

6.2.1 Icon description

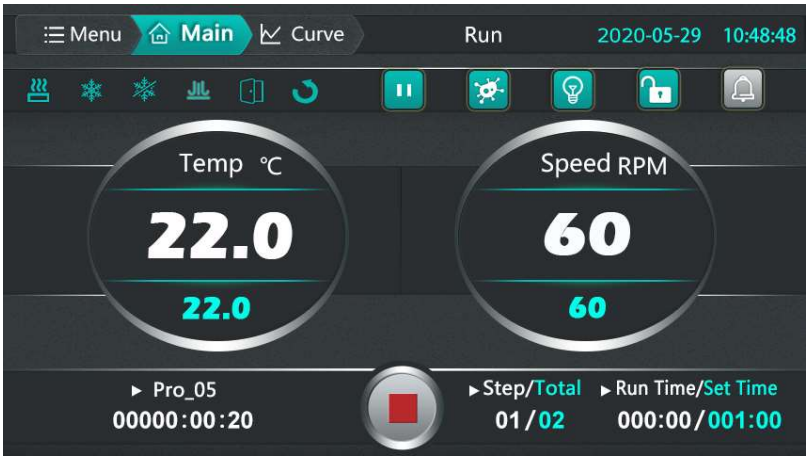
Name	Icon	Instructions	Name	Icon	Instructions
Heating		Heating is shown when output is available	Refrigeration		Keep glowing: Refrigeration output Flicker: Refrigeration delay
Defrost		Defrost is displayed when output is available	Solenoid valve		Solenoid valve has output display
Unlock		Unlocked	locked		Locked state
Warning		Flicker when there is an alarm	Door open		Door open state

Motor forward rotation		Motor forward rotation	Motor reversal		Motor reversal

6.2.2 Key Description

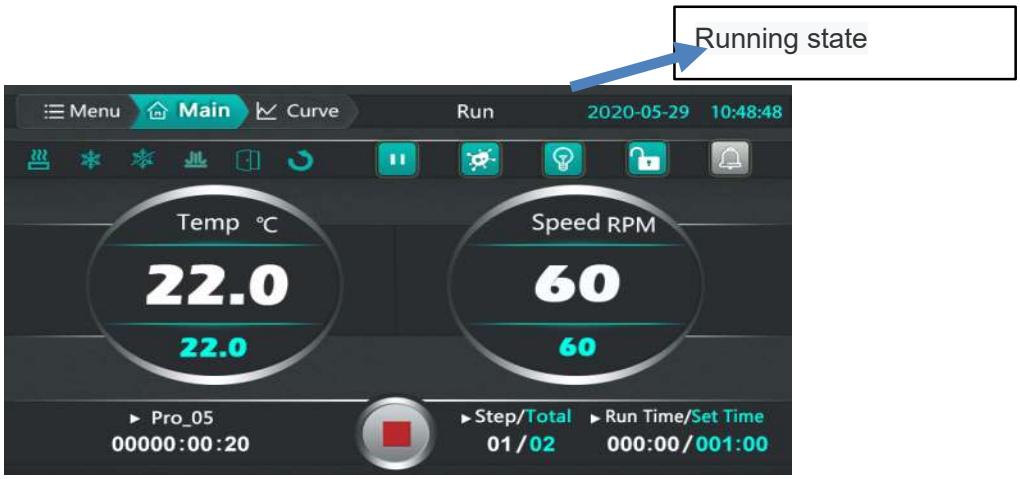
Icon	Name	Instructions
	【Menu】	Return to【Menu interface】
	【Warning】	Enter the alarm list interface, and you can view the detailed alarm content. The red icon indicates the current alarm
	【Run】/【Stop】	Click the pop-up dialog box to make the system enter the running or stop state
	【Lighting】	Click on or off the floodlight, and the button will light up (enable or hide this function can be selected).
	【Sterilization】	Click to turn on or off the sterilization lamp, and then the button will light up (enable or hide this function can be selected).
	【Suspended】	Click to suspend the motor operation, and then click to restore the motor operation. When the motor is paused, the button will appear brighter (enable or hide this function can be selected).
	【Lock screen】	Click the lock screen button to lock or unlock the screen

6.2.3 Running state



The two operating states of the system are displayed in the upper left corner of the [Main Interface], namely [Running] and [Stop running].

6.2.3.1 Running



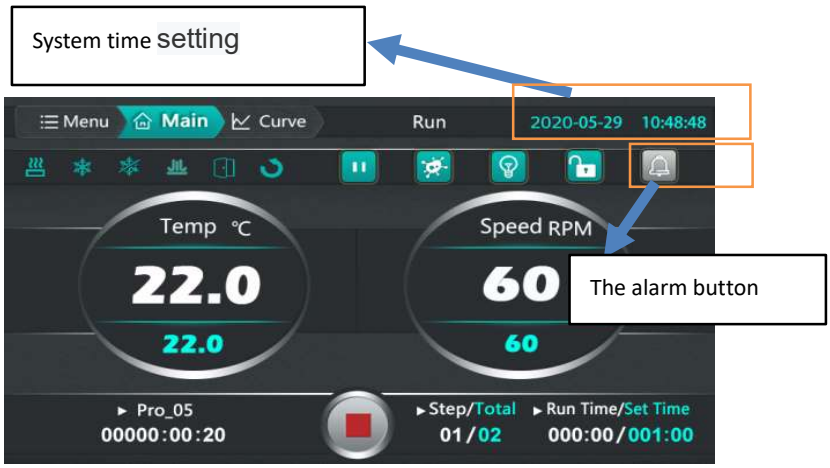
Click the [Run] button and the system directly enters the [Running] state, at which time the machine will directly enter the running state.

6.2.3.2 Stop running

After the running timing ends, the system closes all outputs and enters the state of【Stop running】.

6.2.4 System time setting

When there is an error in the system time, you can click the system real-time time in the [Main Interface] to correct the system time, as shown in the figure below:



6.2.5 Alarm function

When an alarm occurs in the system, the buzzer will give a warning, and the e【alarm】in the monitoring interface will turn red and blink. Click to enter the alarm list interface and check the specific alarm contents.

6.2.5.1 Temperature alarm

The temperature alarm includes 【over-temperature alarm】, 【lower-temperature alarm】and 【temperature overflow】, as shown in the following table:

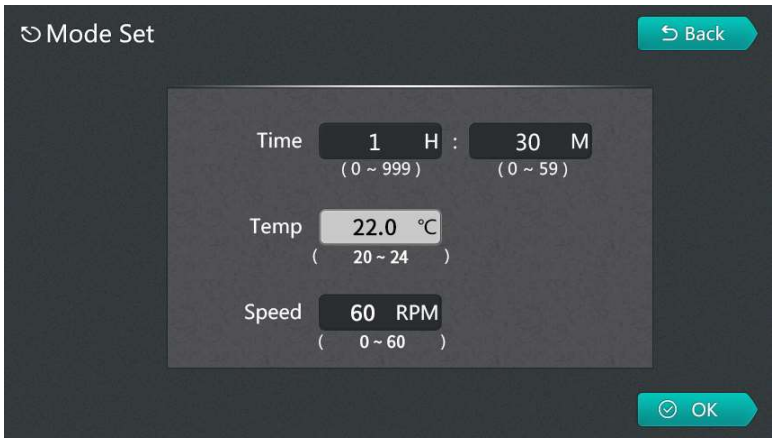
Alarm type	Instructions
Over temperature alarm	When "measured temperature > set value + over temperature alarm value", there will be temperature deviation alarm and buzzer will beep;
Lower temperature warning	When the "measured temperature < set value + under temperature alarm value", there is a temperature deviation alarm, set to 0 means there is no temperature deviation alarm, and the buzzer beeps;
Temperature overflow	When the sensor temperature fault occurs, a temperature overflow alarm will be generated, and the buzzer will continuously sing;

6.2.5.2 Other alarms

Alarm type	Instructions
Motor alarm	The motor fault alarm includes communication fault, power module fault, stalling, Hall error, bus under voltage, bus over voltage. When there is an alarm, the motor will stop running, the alarm light will be on, and the buzzer will beep continuously.
Door timeout alarm	When the opening time of the door exceeds the delay time of opening alarm, the alarm light will be on and the buzzer will beep.

6.3 Operation example

For example: set temperature 22.0℃, set speed 60RPM, set time 1H:30M. The setting operation flow is shown in the figure below:



Note: After leaving the factory, all parameters have been set except for the [set time] option, and there is no need for the user to perform secondary settings.

No.	Content	Instructions
1	Temperature setting	Click then can set the temperature value
2	Speed setting	Click then can set the motor speed value

3	Time setting	Click the time text box (hours: minutes) and set it to 0:0 means it runs all the time

6.4 Curve interface

6.4.1 Real-time temperature curve

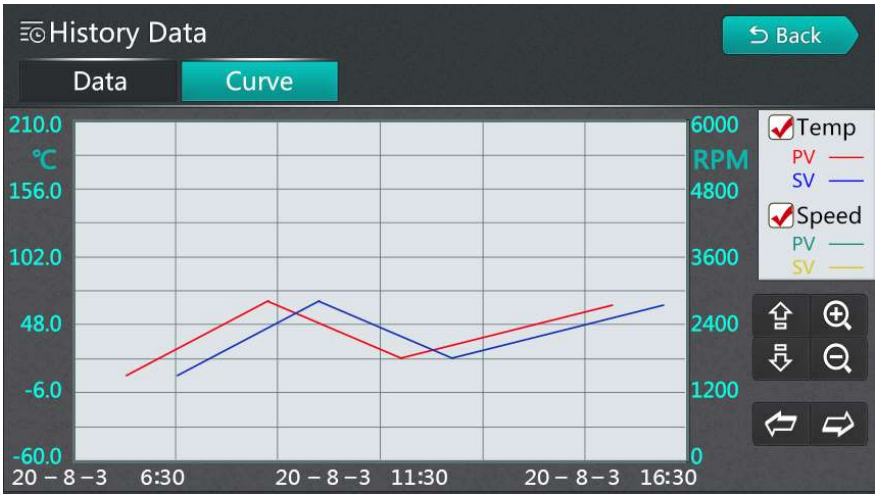
6.4.1.1 Interface instruction

Users can select the display of temperature curve and speed curve in the real-time temperature curve interface. The ordinate range is 10.0℃ and 50RPM above and below the set value (when the set value changes, the ordinate changes and the real-time is cleared.), The horizontal coordinate range is fixed with the data in the last 2 hours (the refresh rate is adjusted according to the actual situation).

6.4.2 History curve

6.4.2.1 Interface instruction

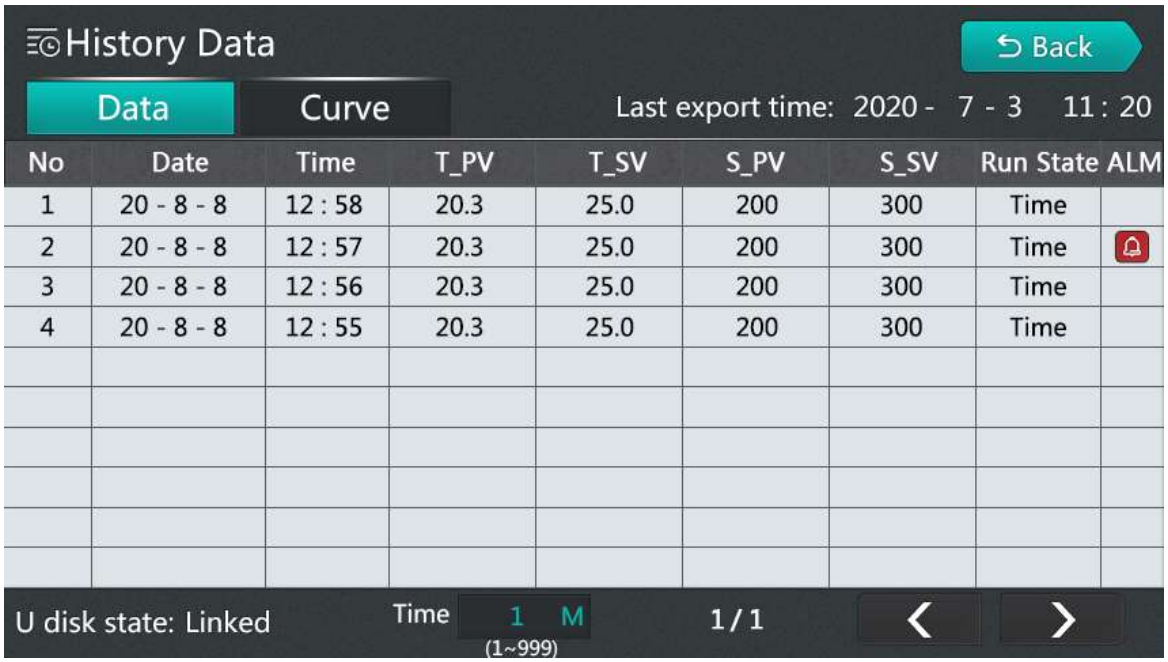
Users can click the【History data】in the【Menu】and enter the【History data】interface. The automatic temperature measurement, setting value, speed measurement, setting value, operation and alarm status historical data saved by the system can be viewed.



The user clicks the [historical data] button in the [directory interface], then clicks the [historical curve] button or slides left to enter the [data curve] interface. [Data curve] Each page of the interface displays 6-hour historical data curve, temperature curve and speed curve can be selected, can zoom in and out vertically, move up and down the curve, and can move left and right (curve page, time axis time changes accordingly);

6.5 History Data

6.5.1 Interface instruction



Users can click the【History data】in the【Menu】and enter the【History data】interface. The automatic temperature measurement, setting value, speed measurement, setting value, operation and alarm status historical data saved by the system can be viewed.

6.5.2 State Description

When you re-enter the【Data list】interface, update the last export time, and when a USB stick is inserted, the USB stick connection status will be updated to "connected"

6.5.3 Key Description

6.5.3.1 Export data

If the user needs to export the history data with the U disk, he/she can click【Export】to pop up the dialog box confirming whether to export or not. The user should confirm that the U disk has been inserted to avoid system errors. Click OK to complete the data guide operation, and update the last export time after the export is completed.Such as the right:

The exported file is saved in the U disk root, with the current real-time time as the file name, the file format is.DAT, and the data format is hexadecimal value.(up to 150000 historical data can be stored, and the maximum export time is about 3 minutes and 30 seconds).

Note:After the data export is completed, connect the USB flash disk to the computer and use the data analysis software (data analysis software v1.16.1) to export the excl data file. You can also directly use the software to analyze and view the data. Contact the company for after-sales processing for software acquisition.

6.5.3.2 Delete the data

6.5.3.3 If the user feels that there is too much data exported to the U disk, he can click the 【delete】 to pop up the confirm whether to delete dialog box.

Note: after deletion, the next U disk export data will be cleared to 0, please handle with caution.

6.6 Lighting Function

Click the light button on the main interface, the light will turn on, press it again, the light will go out, and the light will automatically turn on after opening the door. If you need to operate after closing the door, it is recommended to turn off the light manually, otherwise it will affect the overall temperature of the studio .

6.7 Sterilization Function

Click on the Sterilization button on the main interface, the Sterilization Timing dialog box appears, enter the timing time (the recommended disinfection time is 1h), click OK, and the UV lamp will light up. If you need to pause the disinfection, you can press it again and click OK. At this time, the UV lamp is off. It is also recommended to open the door first to reduce the humidity when the UV function is turned on. (When the machine is running, the compressor is cooled for a long time, and the humidity in the box may be high), so that the dry degree in the box can reach the normal indoor humidity value, otherwise the high humidity may cause the UV lamp to short-circuit, causing the machine to power off and cause accessories damaged, affecting normal use.

7. Safety notes

1. Since the superimposed horizontal constant temperature shaker has a refrigeration system, the distance between the back of the machine and the wall should be more than 30cm, and the distance between the two sides of the box should also be more than 30cm to ensure the normal heat dissipation of the refrigeration system and the air circulation around the instrument..
2. When the equipment is transported in a short distance, the inclination angle shall not be greater than 45° to avoid damage to the equipment's refrigeration system.
3. After the equipment is transported and placed in place, it should be left for (1-2) days before starting up, which is conducive to the normal operation of the equipment refrigeration system and prolongs its service life.
4. The equipment must be connected to a well-grounded power outlet and placed flat.
5. It is strictly prohibited to use corrosive liquid for disinfection on the superimposed horizontal constant temperature shaker.
6. Please turn off and cut off the power supply when moving, repairing and maintaining the stacked horizontal constant temperature shaker.
7. Use environment requirements:

a) Avoid locations with high temperature and high humidity

Avoid places with high temperature and high humidity, because the number of bacteria in the air in such places is far more than the number of bacteria in the normal ambient air. If necessary, install air conditioners in the room to avoid operating the instrument in a high temperature and high humidity environment.

b) Avoid places with excessive ventilation and places where many people pass by

Avoid locations near the door, air conditioner, fan, etc., because the breeze in such locations may make it easier for bacteria to enter the incubator.

c) Installed in a sterile room

In order to achieve a better preservation effect, please place the equipment in a sterile room as much as possible.

d) Use clean medical flask/culture dish

The pollution is mainly caused by the medical flasks/Petri dishes stored in the cavity. Therefore, please be sure to purchase the medical flasks/Petri dishes produced by manufacturers that are qualified for market sales, qualified for national inspection, and disinfected normally.

8. Pay special attention

Before putting in the culture medium, make the superposition horizontal constant temperature shaker run and reach the corresponding operating conditions of temperature, oscillation amplitude and frequency, then put in the culture medium for culture, mixing and other test operations!

8. Troubleshooting

The abnormal conditions of the superposition type horizontal constant temperature shaker are caused by improper use. Before commissioning maintenance, please check and eliminate by yourself according to the following table. Before troubleshooting, please confirm whether the power supply is properly connected, whether the power cord is obviously damaged, and whether the fuse is in good condition.

Fault	Checking parts	Methods
Button touch is not working	Control board	Check whether the power cord is energized is normally
		Check if the display is damaged
		Check whether the connection between the display screen and the control board is normal
		Check whether the control board is working normally
The device is not powered	Power supply	Check whether the power cord is connected properly
	Power line	Check whether the power cord is obvious damage
	Fuse	Check whether the fuse is in good condition
	Switching power supply	Check whether the output of the switching power supply is normal
	Control board	Check whether the control board is working properly
No cooling	The compressor does not start	Overheating protection, the power supply is not started, the compressor motor coil is damaged
	Compressor starts without cooling	Lack of refrigerant

	Heating does not work, circulation fan does not rotate	Check the heating circuit Check the circuit and replace the fan
	The evaporator is too icy to exchange heat and cold	Warming up the ice to reduce the number of door openings and the possibility of air leakage
The fan is not working	Micro switch	Check whether the micro switch is damaged
	Fan	Check whether the fan is damaged
	Line	Check whether the fan circuit is intact
	Control board	Check whether the control board is working normally
Abnormal temperature	Compressor	Insufficient cooling capacity, leakage of refrigerant, check whether the compressor and compressor circuit are damaged
	The use environment does	Improve environmental conditions
	Heating tube	Check whether the heating tube and the heating tube circuit are damaged
	Fan	Change the fan
	Sensor	Built-in temperature tester to check whether the temperature in the box is consistent with the displayed temperature
The glass door is not closed tightly	Sealing strip	Check whether the whole glass door is loose Check whether the door sealing strip is warped or aging
Big noise (more than 70dB) or there are abnormal sounds in operation	The fan is broken or friction between the fan and the air duct plate	Change the fan or increase the distance of the air duct
	Compressor (forced exhaust type) fan is broken	Sundries should be removed, or the fan should be replaced
	The box is not stable	Place the pad flat
	The compressor is not firmly fixed	Check whether the bolts are loose and form resonance

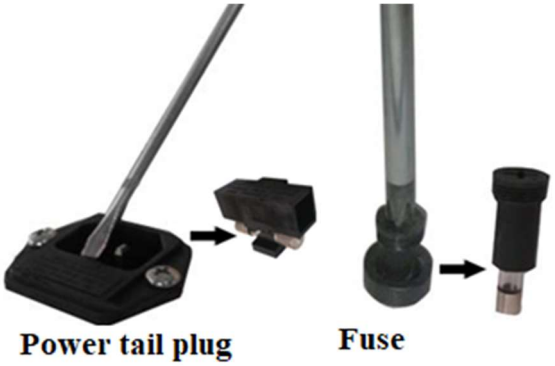
⚠The operation of the above electrical components must be carried out by a qualified electrician under safe conditions (cut off the power supply), and other components are not allowed to be disassembled by themselves. If it is disassembled without the consent of the technical engineer or agent dealer, LORDERAN will not be responsible for the adverse consequences;

When the equipment has a failure other than the above, please notify the maintenance department of our company immediately. For your safety, please do not repair the equipment by yourself;

If you need to order parts, you can find our technical service department. Please indicate the model and factory number of the superimposed horizontal constant temperature shaker you purchased.

Note: If the user cannot judge the fault, please contact the agent engineer as soon as possible, and do

not handle it by yourself, otherwise the warranty will not be given.
Examples of simple parts replacement, such as replacing the fuse (fuse): The fuse is located at the rear of the left side of the instrument. When replacing, first turn off the power supply and unplug the plug, use a cross screwdriver to press counterclockwise and unscrew the fuse socket, remove the fuse in the fuse socket and replace it with a new fuse, and then press clockwise and unscrew the fuse socket; The live wire fuse is located at the lower right side of the incubator. Use a slotted screwdriver to open the fuse socket and replace it with a new fuse, and then press it back (rated value and characteristics of the power socket zero wire fuse: F10AL250V, rated value and characteristics of the power socket live wire fuse: F10AL250V).



⚠Except for the insurance tube, the rest of the parts cannot be replaced by the user. If you need to replace other parts, please contact our company's professional after-sales engineers or agent dealers for replacement.
The final interpretation right belongs to the production and manufacturing company!

9. Maintenance

Frequency	Operation
Every day	Clean the inner chamber, swing plate and flask clamp
Every week	Cleaning the door seal
Every 1-3 years	Replace the door sealing strip and Z-belt

Wearing parts	Ultraviolet lamp (including lamp holder), lighting lamp
	Fuse

1. Clean the chamber and sealing strip in the working chamber Use cotton cloth or towel soaked in distilled water to clean the entire inner cavity and sealing strip, Wipe the contaminated inner cavity and the surface of the sealing strip with cotton cloth soaked in medical alcohol (75% alcohol concentration). After wiping all the foreign objects clean, use a clean dry cotton cloth or towel to wipe the moisture on the inner cavity and the sealing strip, and let it stand for half an hour before normal use.

⚠**Please use protective equipment (including clothes, gloves, goggles, etc.) when cleaning with alcohol;**

Please use the designated reagents for cleaning. Do not use cleaning agents or disinfectants that chemically react with equipment parts or materials contained in the equipment to cause danger. If you have any questions about the compatibility of the disinfectant or cleaning agent with the equipment parts or the materials contained in the equipment, please contact a technical engineer or an agent dealer;

If dangerous substances leak on the surface of the equipment or enter the inside of the equipment, use medical alcohol for thorough cleaning, and then use a clean dry cotton cloth or towel to absorb the residual moisture before continuing to use.

2. Clean the external surface and glass door

After cleaning the contaminated surface with medical alcohol or thinner, wipe it with a soft cotton cloth or towel.

3. The cycle of comprehensive maintenance

It is recommended that the overall maintenance cycle is one week or 100 working hours.

4. Maintenance method

a) Daily or weekly maintenance

Disinfection and cleaning of the operation area (refer to the first description);

Clean the external surface and glass door around the operating area (refer to the second description);

Check whether the various functions of the equipment are abnormal;

Record this maintenance;

b) Monthly maintenance

Clean the exterior surface and glass door (refer to the first description);

75% medical alcohol must be used to wipe the inner and outer surfaces of the box, the perspective window, the swing plate and the flask clamp of the equipment. After wiping, use cotton cloth soaked in distilled water for secondary cleaning. After cleaning, use dry cotton cloth to absorb the residual water and ventilate to dry.

Check whether the various functions of the equipment are abnormal;

Record this maintenance.

c) Annual maintenance

Check that the left and right corners of the front glass door are consistent and parallel;

Check whether there is fluorine leakage in the compressor pipeline;

Check whether there is water leakage or blockage at the leakage pipe and interface of the stacked horizontal constant temperature shaker;

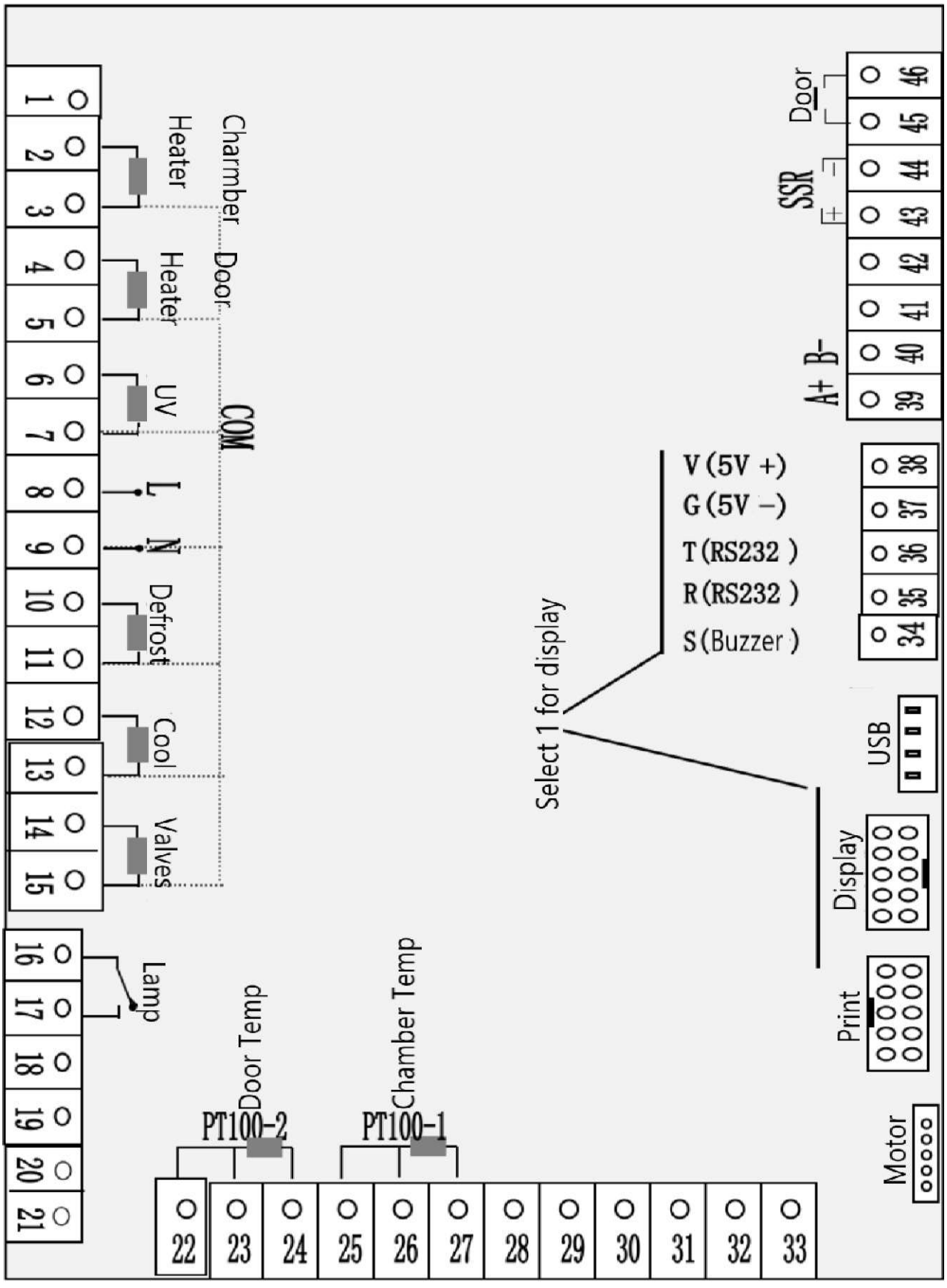
Record this maintenance.

⚠**After moving the box each time, let it stand for 24~48h before it can be used normally.**

⚠**When moving the box every time, try to keep the box parallel to the ground, and the inclination angle should not be greater than 45°.**

Note: The above-mentioned vulnerable parts such as UV lamps and lighting lamps are consumables, and their service life is not covered by the warranty. Please check the manual for details.

5. Circuit diagram



10. Label description

1) Company logo

Figure a

2) Fuse label

Figure b

3) Ground label

Figure c

4) UV lamp safe use label

Figure e

11. Warranty

1. The warranty period is twelve months from the date of purchase (excluding the wearing parts indicated in this document).
2. If the instrument and equipment during the warranty period become invalid or damaged due to improper use by the user, the company will not undertake the warranty obligation.
3. One year later, in the spirit of serving users, we will try our best to provide users with convenience.
4. The equipment service life is 6 years, and the production date is_____ .
5. Provide equipment drawings and some necessary technical data to maintenance organizations and maintenance personnel trained and approved by the company.

Appendix A

Packing list

No.	Name	Qty.	Remarks
1	Stacking horizontal shaker	Host	1
2	Instructions	File	1
3	Warranty Card	File	1
4	Certificate	File	1
5	Packing List	File	1
6	10AFuse Tube	Parts	2
7	Flask Holder（500ml）	Parts	24
8	Power Cord	Parts	1

The items listed in this list are consistent with the actual items in the box.