

# **BIOBASE**

## **Class N Table Top Autoclave BKM-K18/23N Operating Instruction**

**BIOBASE DISINFECTION(SHANDONG) CO., LTD.**

**Version 2021.12**

## Preface

You are welcome to use our small pressure steam sterilizer. In order to maximize its performance, please read this manual carefully before use, and install, use, operate and maintain it in strict accordance with the requirements of this manual to ensure that it serves you reliably and safely. (Safety protection that may affect the equipment if not used as specified by the Company)

This specification is suitable for the installation, operation and maintenance of small pressure steam sterilizers.

In this manual, the following symbols are used to indicate attention or high attention:



The expression should be highly valued.

Please read carefully and understand this manual before any operation, maintenance and maintenance of the equipment

The content of each chapter, especially those with the above signs, should be highly valued.

The instructions must be carefully kept to prevent loss or damage.



No one can, under any circumstances, tear off or remove any contents of the manual.

In the process of user learning and using the equipment, if the instructions in the manual disagree or are not involved in the manual, please contact us in time. We will answer for you in time. If necessary, we will upgrade or update the manual free of charge.

The preservation place of this manual should be kept ventilated and dry to avoid moisture and high temperature.

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## Equipment identification instructions



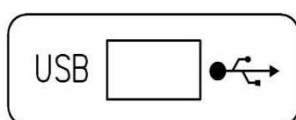
Earthing identification: The identification indicates the ground protection within the device.



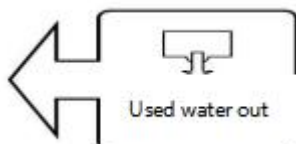
Anti-perm logo: The identification indicates that the temperature is high, so attention should be taken to prevent burns.



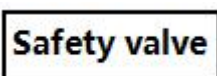
Important Information: The identification as here should be highly valued.



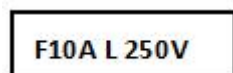
The USB interface ID



Discharge outlet



Safety valve identification



Power supply fuse identification

## Scope of application

Please read the safety warnings and precautions provided in this user guide to ensure that the sterilizer serves you safely and reliably, and may cause damage to the equipment if not used as specified in the instructions.

- 1、 Use a separate and ground-protected triple-hole power socket (220VAC, with 2000VA or above) and confirm the ground
- 2、 Protective terminal connection is reliable.
- 3、 The sterilizer power plug must be fully inserted into the power socket, do not use power other than specified.
- 4、 Do not plug and unplug the power plug to prevent electric shock.
- 5、 Do not damage, replace, drag, overbend or distort the power cord, do not put heavy objects on the power cord.
- 6、 Do not place the sterilizer on unstable workbenches, such as shaking tables, slopes, and shaking areas.
- 7、 Do not block or cover sterilizer doors, vents, or cooling windows.
- 8、 Do not place items on the sterilizer.
- 9、 If in the process of use, the sterilizer is found to have odor or abnormal noise, should cut off the power immediately, and then with
- 10、 Contact a local dealer or our sales and service department.
- 11、 If the sterilizer is not used for a long time, unplug the power cord plug to disconnect the power supply, and remove the button battery in the circuit board.
- 12、 Do not place the equipment near the heat source.
- 13、 When the equipment is in use, if the power grid interference, the LCD screen may appear, the use of the problem
- 14、 Households can be equipped with a voltage regulator, which can solve the above problems.
- 15、 The sterilization load must be accompanied with a chemical indicator.
- 16、 This sterilization is not suitable for powder, petroleum jelly, grease, packaging equipment, luminal equipment or objects not resistant to high temperature and high pressure.
- 17、 It is strictly prohibited to use the equipment to sterilize the liquid items, because the temperature and pressure can change during the operation
- 18、 Can cause the liquid to splash out.
- 19、 The equipment shall not be used for the sterilization treatment of sealed liquid items.



**Note:** No package shall be stored, transported and applied in clean condition without sterilization,

In case of reinfection or cross-infection.



**Note:** Only the production enterprise, the after-sales service unit or the authorized agency can check and provide it

Any parts; otherwise, equipment users and individuals

Do not replace any parts without permission.



**Note:** When the equipment fails, is seriously damaged and cannot be repaired or exceeds the service life, please press the equipment  
Use the relevant regional laws and regulations for processing.



**Note:** The electrical components should not be replaced, resulting in increased emission and reduced disturbance resistance.

**Environment conditions**

This product is suitable for the sterilization of solid instruments without packaging.

Normal service environment of the equipment:

Ambient temperature: 5°C ~40°C;

Relative humidity: not more than 85%;

Atmospheric pressure: 70 kPa ~ 106 kPa;

Note: Manufacturers and users should consider the influence of local atmospheric pressure on the sterilizer parameters.

Avoid heavy dust, oil fog, containing conductive particles, corrosive gas, combustible gas environment.

Avoid situations prone to electric shock or vibration.

Avoid high temperature and high humidity or easily wet places.

Avoid strong magnetic fields.

**Technical parameters and contraindications****Technical parameter**

Model	BKM-K18N	BKM-K23N
capacity	18L	23L
design pressure	0.28MPa	
working temperature	121/134°C	
The cavity material	S30408	
Power Supply	AC220V, 50/60Hz	
Power	1.6KW	
Ambient temperature	5-40°C	
Inner chamber size (mm) (Φ×L)	Φ250*350	Φ250*450
Overall dimensions (mm) (L×W×H)	700*495*410	650*495*410
weight (KG)	33	37
service life	Life of 5years (product life is obtained by accelerated aging test)	
Date of manufacture	See the label for the production	

**Software release version**

Release version: BKX-AT-K18/23N-DC-V0.1

Operating environment: hardware configuration; program development support software is: Keil uVision5; Version number is: v5.18; Master control board processor: STC12A560S2; storage: ATMEL24C02; IOThe device is a color LCD screen; No network conditions.

**Product property**

1. The difference between each point at the same time shall not exceed 2°C
2. For sterilization cycles of 121 and 134°C, the maintenance time should not be no less than 15min and 3min, respectively.

**Taboo**

There are no absolute contraindications, but not suitable for damp and heat sterilization.

## Equipment principle and main structural composition

The steam sterilizer is the principle of heat factor to kill microorganisms, the equipment design according to the specified sterilization process after the cold air in the chamber, with saturated hot and humid steam as the sterilization factor, in high temperature, high pressure, high humidity environment, according to the combination of certain pressure and time, realize the sterilization can be penetrated by steam.

Microbial killing category: It can kill microorganisms, including spores.

Structure composition: it is composed of sterilization device main body, sealing door, electric heating pipe, pipe system and control system, the internal chamber material is made of SU30408 stainless steel plate stretching, and the bearing instrument is stainless steel instrument bracket and tray.



- |                      |                   |
|----------------------|-------------------|
| 1.Door shell         | 2.Switch knob     |
| 3.discharge outlet.  | 4.Foot            |
| 5.LCD                | 6.Operate the key |
| 7.Printer (optional) | 8.USB             |
| 9.power switch       |                   |

## Installation and commissioning

### Put and install

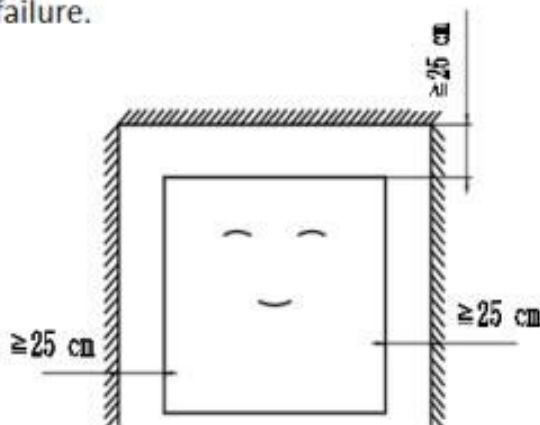
Place a small pressure steam sterilizer on a smooth, clean, and spacious table top to ensure solid stability. The distance between the rear and side of the sterilizer and the other objects is at least 250mm. Ensure good ventilation.**(Equipment should preferably be stored separately in one house)**

The presence of other objects except for the safe distance of them shall not affect the operation of the equipment. When the equipment operation failure, should be able to quickly cut off the power supply!





**Attention:** If the sterilizer is clingy wall, may cause internal heat agglomeration of sterilizer and cause failure.



## Power installation



**Attention:** Pls let the equipment grounding for your safety.

Use an independent and earth-protected three-hole power socket (the power socket load capacity should be greater than the rated load of the equipment) and confirm the reliable grounding.

Protective terminal connection is reliable.

The sterilizer power plug must be fully inserted into the power socket, and do not use power sources other than those specified.

Do not plug and unplug the power plug to prevent electric shock.

Do not damage, replace, drag, overbend, or distort the power cord, do not put heavy objects on the power cord.

## Water Source Requirements

The equipment does not need to be connected to water, you need to manually add water to the sterilizer tank. Please use distilled water or anion water.

Because the use of inappropriate water quality may shorten the service life of equipment, resulting in unnecessary failures. The water quality must meet the following requirements:

Conductivity less than 15 $\mu$ S/cm

The content of bleach is less than 2mg/L

PH 5 ~ 7

Hardness is less than 0.02mmol/L

## Storage environment

The sterilizer shall be placed in a clean, dry, dark, ventilated and indoor environment with small temperature difference.

- 1) Indoor temperature 5°C-40°C.
- 2) Relative humidity is not more than 85%.
- 3) Atmospheric pressure 70 kPa ~ 106 kPa.
- 4) Allowable voltage fluctuation range  $\pm 10\%$ .
- 5) No dust and pollution in the room.

## Operating Instructions

Step 1: Insert the equipment cable into the power interface, open the chamber door and remove the instrument panel.



Step 2: Turn on the boat type switch of the equipment and run the machine.



Step 3: First remove the water baffle in the cavity, pour 1200ml of distilled water into the cavity, and then place the water baffle inside.



Step 4: Place the sterilized items on the instrument plate.



Step 5: Close the door, rotate the door handle, and lock the door. When the door lock is in place, the screen displays the door Can Run!model of written characters.



(Note: each operation of the program must first open the chamber valve to detect whether the water in the cavity can meet the needs of a sterilization, and then close the chamber valve to start the program!)



Step 6: Turn on the power switch, plug the discharge pipe into the machine discharge outlet, and secure the discharge pipe into the discharge outlet.



Step 7: Switch the sterilization program by pressing the program key Program (program 1 is 134°C and program 2 is 121°C)

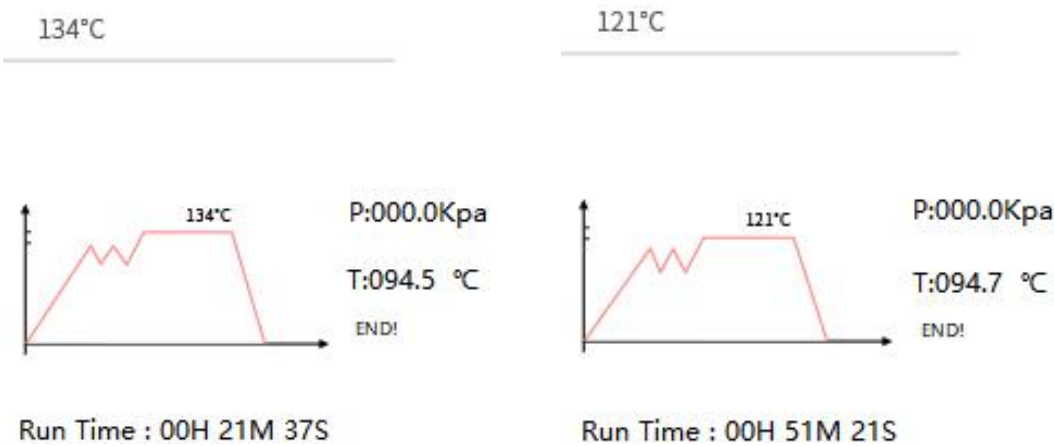


134°C	USB READY	121°C	USB ERROR
program	program	program	
N 134°C	P:000.0Kpa T:000.0 °C	N 121°C	P:000.0Kpa T:000.0 °C
Can Run!	Can Run!	Can Run!	
The door has been closed!	The door has been closed!	The door has been closed!	
Program 1		Program 2	

Step 8: Press the startup key (Start) to run the program.



Step 9: After the sterilization, a beep prompt will be heard. The machine automatically discharges steam and water, and confirms that the screen display pressure is 0, and opens the chamber door to remove the sterilized items.



Program	Type	Total loading(kg)	Each tray is loaded (kg)
121/134°C	No wrapped solid equipment	4.50	1.20

Step 10: After sterilization, because the sterilization load temperature is too high, please use the blue tray equipped with the equipment. Never contact directly with hand to avoid scald.



**Be careful**

1. Before the procedure, please ensure that the discharge pipe is connected to the discharge interface under the machine and fix the end of the discharge pipe in the discharge container (preferably metal container; if plastic container, please ensure that part of cold water is filled in the container to

prevent the container from high temperature steam deformation)

2. Wait for the screen pressure value before opening the door lid at 0.
3. Do not use corrosive or chemical water sterilization.
4. Other electrical products are not shared with the same socket.
5. Please Pay attention to the use of the correct voltage and frequency.
6. The equipment is standard with USB printing port, which can be inserted into the U disk to store the sterilization process data.(The U disk must be USB 2.0, and the U disk needs 5S inititime after insertion.)
7. If the program is not run to drain the pure water in the cavity, you can close the cavity door and press the drainage button to drain the water.

## Common faults and solutions

When the sterilization work is not complete, the buzzer makes sound and screen display problems.



Check: After waiting for the discharge outlet to discharge the internal steam (make sure the discharge pipe is connected before discharge), wait for the chamber pressure to become 0, open the cavity door (when there is pressure in the cavity, display below the display interface“Don't open the door!”) 。

ERR 001 (Exhaust air error)

ERR 002 (Heat up error)

ERR 004 (Predisinfect error)

Solution: Open the door cover. Check if the water is sufficient, add water, and check that the door is closed.

ERR 008 (Temp acquisition error)

Solution: Restart the machine and view the display temperature value.

ERR 080 (The running door is open)

Solution: After the pressure is 0, open the door lid and close the door again。

ERR 010 (Circuit board error)

Solution: Contact with the manufacturer.

ERR 200 (Sterilization error)

Solution: Check whether the machine has air leakage phenomenon, after the pressure back to 0, open the cavity door to check.





When the door cover cannot open occurs:

Remember not to hard spin the door cover handle. Hard spin causes machine damage.

Resolvent:

If the pressure is detected, the chamber will automatically discharge steam (make sure the discharge pipe is connected before discharge), and rotate the handle when the pressure is zero.

## Maintenance



**Before beginning maintenance, make sure that the equipment is powered off. At the same time, there is no pressure in the sterilization container.**

To ensure that the sterilizer is in good working condition and to minimize the number of failures, the operations described in this chapter must be followed.

Make sure that the equipment is off before starting maintenance. Meanwhile, there is no pressure in the sterilization vessel.

Wipe the door ring with a soft cloth or gauze at the end of daily work.

Remove the tray and tray holder, and wipe out the inner wall of the sterilization container with a gauze filled with detergent and water. Do not use steel slag wool or steel brush to avoid damage to the sterilization indoor wall.

Clean and remove the scale from the sterilization container chamber.

Once a week, the sterilization cover was wiped with a soft cloth.

Once a month, clean up the filter element in the pot.

Calibrate the safety valve annually.

Check the safety valve and the door transfer shaft once a year.

Once a year, check the internal pipe, remove the outer cover, make visual inspection, check whether the pipe and pipe interface have obvious damage or cracks, without the reinstallation of the outer cover, have the above situation, timely contact the manufacturer or supplier for repair and replacement.

Once a year, fastening joints and testing on-off conditions should be done by a professional electrician.

Once every 5 years, the door lock device must be inspected due to extreme loss.

Instructions: The maintenance manual is for professionals. When the equipment fails, you must consult the instructions and repair them according to the instructions.

### Check the safety valve

It is located above the rear portion of the device. To prevent the safety valve from being blocked, release the steam pressure through it every two months in normal use.

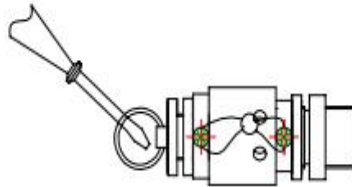
1) Size according to the manual.

2) When the pressure P1 in the sterilization container reaches 100kPa, pull the safety valve and pull the ring to make it open for about 2 seconds, with steam ejected, indicating the safety of the evaporator

The valve works normally, otherwise the safety valve needs to be checked or replaced.



**NOTICE** Pull the pull ring on the safety valve, there will be steam spray, when pulling the pull ring, screwdriver and other tools are best to use, do not directly use fingers to pull, the operator should also try as far away, to prevent burns.



## Replace the safety valve

Instructions: These maintenance methods are only available to professionals. Unless you are a professional person, otherwise in order to avoid electric shock, equipment failure, you must refer to the manual, and repair according to the requirements of the instructions, and the manual has provided maintenance methods to professionals as far as possible.

- 1) Located above the rear part of the equipment.
- 2) Before removing the safety valve, ensure that the evaporator pressure is zero, and the rear cover need not be removed. Fixed the pagoda joint under the safety valve with a wrench, and remove the safety valve with another wrench. During disassembly, ensure that the pagoda joint is not active.
- 3) Replace it with a qualified safety valve. Test for the sterilization process.

## Cleaning of filters

The filter is located at the bottom of the equipment chamber, it is used to filter out impurities, to ensure the smooth pipeline and the solenoid valve sealing, to ensure that the sterilization chamber is fully cooling, the bottom of the sterilization chamber will unscrew the filter nut, take out the filter element, clean the filter core. Wash it up about once a month.



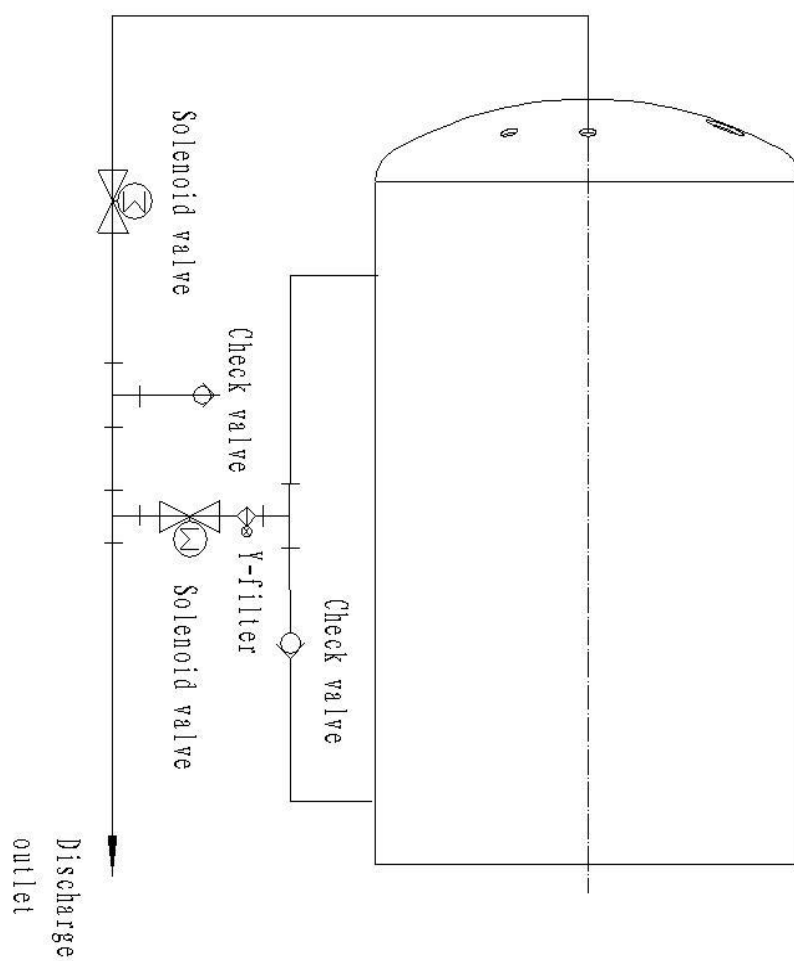
## Solenoid valve cleaning step

- 1) Remove the top nut of the solenoid valve with a wrench.
- 2) Remove the solenoid valve coil.
- 3) Open the valve body with a wrench.
- 4) Flush out the debris on the valve core with clean water.
- 5) Reinstall the solenoid valve.

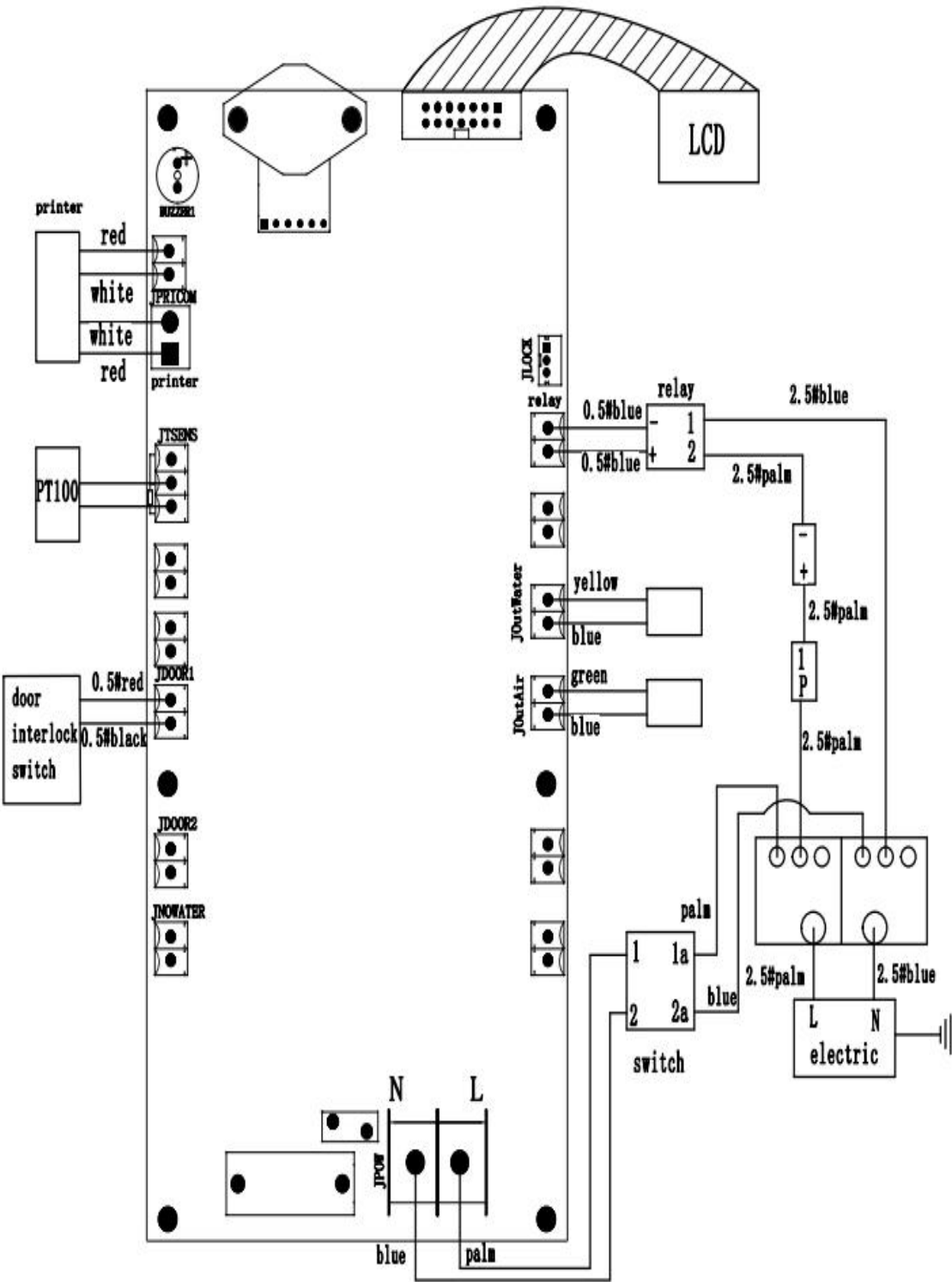


## Circuit and pipeline schematic diagram

### Schematic diagram of pipeline



Circuit diagram



## Warranty

Dear customer: any product has the possibility of failure, please monitor the operation of the equipment in real time in the process of use, if there is any abnormality, please first control the instructions, if it can not solve, should inform the company service center in time, so as not to cause losses to you.

After-sales service matters

1. The equipment shall be guaranteed for one year from the date of sale (subject to the invoice). The whole machine is free and shall enjoy lifetime service.

2. Warranty certificate: When you need normal consultation or maintenance, please contact the local after-sales service center of our company with the warranty certificate and the purchase invoice and keep the warranty certificate properly.

Note: The maintenance of the fuse should be carried out by professional personnel, and non professional personnel should not replace the fuse by themselves.

## Packing list

No	Name	Quantity	Remarks
1	Equipment main body	1	
2	instructions	1	
3	certificate	1	
4	Tray	3	
5	Pallet rack	1	
6	Accessory bag	1	tray clamp, drain pipe, sealing ring, 2 fuses (Φ5*20 (10A) )

## **BIOBASE DISINFECTION(SHANDONG) CO., LTD.**

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