OPERATING MANUAL

CLASS II BIOSAFETY CABINET

BER1BM3

CE ISO9001 CERTIFIED

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INDEX

1. Safety Warning Before Operate

 Must prohibit items

The following items could cause serious injury or death:

1. Read the product instruction manual before using this product.
2. Do not put volatile, flammable and explosive stuff in the machine, otherwise could cause explosion or fire.
3. Do not place the device in a place exposed to rain, moisture, or splashing, as this may result in electrical leakage, short circuit, or electric shock.
4. Non-professional technicians must not disassemble, repair or modify the equipment, otherwise it may cause fire or electric shock to personnel due to improper operation.
5. Do not damage the power plug or the power cord. If it is damaged, the power cord must be replaced. Otherwise, it may cause fire or electric shock.

 Must conform items

The following items may cause personal injury, equipment damage and related property damage.

1. This equipment should install on the firm ground, otherwise could cause staff injury
2. because of drop down of the equipment.
3. Please use the special power supply that indicated one the nameplate. This equipment must install on the ground, otherwise could cause electric shock and fire because of electric leakage.
4. Do not touch the power plug with wet hands, otherwise there is a risk of electric shock
5. Before any repair or maintenance is carried out, the power must be disconnected to prevent electric shock or injury.
6. Please wear gloves when repair and maintain the equipment in case of injury.
7. Do not to damage the power cord or use the non - specified power cord, do not connect the power cord in the middle section and use long soft wire, otherwise it may lead to electric shock or fire.
8. Do not remove the power plug during the operation, do not pull the power cord by pulling the power cord.
9. If you find that the equipment is running abnormally, unplug the power plug immediately and stop the equipment.

2. Product Main Features

Color 7.0 inch touch screen controller
Standard with high precision thermal wind sensor
With reservation timing sterilization function, three-level authority management function,high efficiency filter,sterilization lamp service life display, built-in socket instrument controllable switch function, front window status display function, can set three position interlock function, cumulative work timing function.

3. Technical Parameters

Model	BER1BM3
	A2:30% efflux, 70% internal circulation
Cleanliness	Class 100
Collection Efficiency	0.3um partical ≥99.995%
Colony count	≤0.5/vessel(petri dish is φ 90mm)
Noise Level	≤67db
Vibration Semi-peak Value	≤5um
Downflow Velocity	0.33±0.025m/s
Inflow Velocity	0.53±0.025m/s
Illumination	Average Illuminance≥650 lx, the measured value of each illuminance≥ 430 lx。
Total air exhaust of system	500m3/h
Work surface	SUS304 Stainless steel plate
Outer Shell	Cold rolling steel electrostatic spraying exterior
Operation Door	Tempered Glass
HEPA filter(mm)	920*420*69/ 1380*470*69 one of each
Fluorescent Lamp Power	16W*2(LED)
UV Light Power	40W*1
Fan	734W one piece
Rated Power	1800W
Working height of front window	200mm
Maximum height of front window	440mm
Display	Full color 7.0-inch touch screen

Additional Function	Reservation timing sterilization function, three-level authority management function, high efficiency filter, sterilization lamp service life display, built-in socket controller to control switch function, front window status display function, three position interlock function, cumulative work timing function
Operating Area Size(W*L*H)	1350x600x600mm
Exterior Size(W*L*H)	1500*750*2250mm
Packing Size(W*L*H)mm	1630x880x2380
Max Power of Universal Socket	Single socket: 800W
NW/GW kg	320/400

Table 1

4. Interface and Operation

4.1 Monitor interface

Figure 1

At the [monitor] users can view the data to be controlled, the time progress of the fan operation, the status of the front window, the percentage of life of the filter, sterilizing lamp, control the output and closing operation of the socket, lighting, sterilization and fan, and view the operation log.

4.1.1 Key Description

icon	Name	Description
Set	[Set]	Click to enter the password interface;
Log	[Log]	Click to enter the operation log interface, you can view the nearest 7000 operation records;
Lock	[Lock]	Click to enter the lock screen interface;
Steri	[Sterilization]	Click to enter the sterilization setup interface;

	[Socket]	Click to open or close the socket, after opening the button display bright;
	[Light]	Click to turn on or off the light and the button turns on (note: only when the sterilizing lamp is closed can the lighting be turned on)
	[Fan]	Click to open or close the fan, after opening the button to display bright (note: the front window state is working area to open the fan)
	[Real time]	Click to enter the real-time modification interface;

Table 2

4.1.2 Sterilization interface

Figure 2

In the [sterilization] interface, users can view sterilization timing time, set sterilization setting time and reservation function;

1. Appointment for sterilization

Users can open a key to make an appointment for sterilization, set the sterilization reservation time, click on the sterilization reservation switch, will pop up into the sterilization reservation status prompt box, click on the system will enter the sterilization reservation state;

2. Opening of sterilization

Users can directly open sterilization, click on the sterilization switch, will pop up into the sterilization state prompt box, click on the system will enter the sterilization state; note: in the front window is closed and lighting and fan closed state can open sterilization;

3. Operational log

Users can view 7000 operating records of recent operations and manually delete all records;

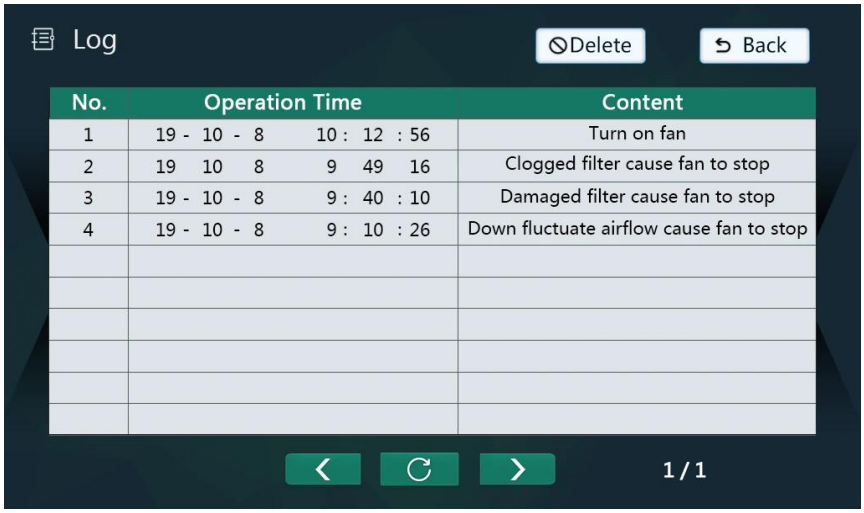
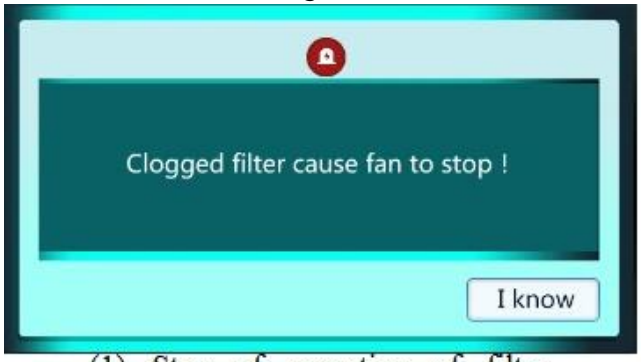


Figure 3

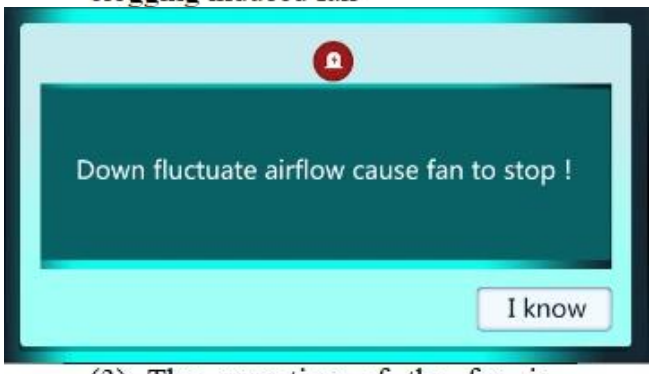
4. Prompt box

When the system enters the abnormal state from the normal state or when sterilization is completed, there will be corresponding prompt information, and the user will be prompted in the form of a pop-up frame in the monitoring interface;

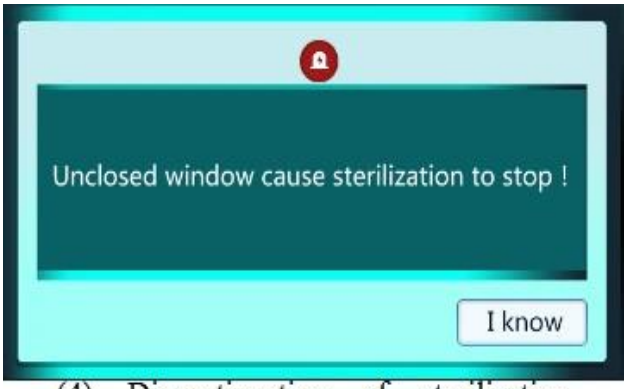


(1) Stop of operation of filter clogging induced fan

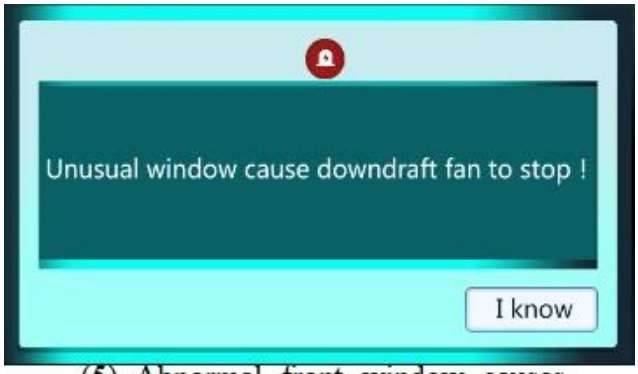
(2) The failure of the filter causes the fan to stop running



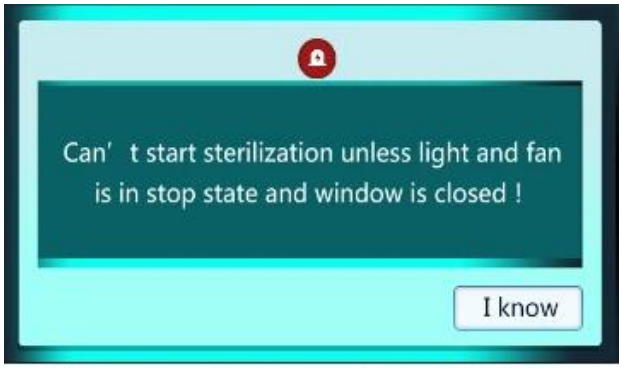
(3) The operation of the fan is stopped due to the fluctuation of the descending airflow



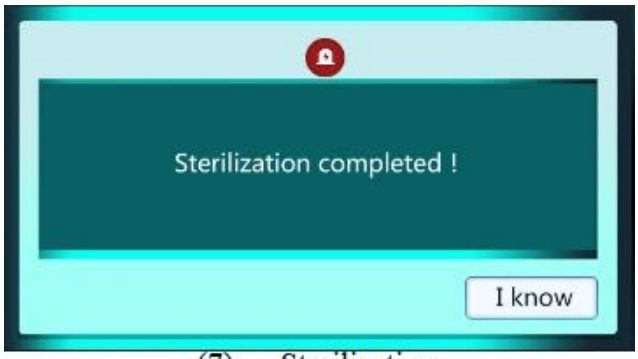
(4) Discontinuation of sterilization operation due to abnormal front window



(5) Abnormal front window causes the blower to stop running



(6) Sterilization time arrived but not accessible



(7) Sterilization completed

(1) Stop the operation of the filter clogging induced fan: when the fan is in operation, if the current pressure difference measurement value is greater than the "pressure upper limit value" for 10 seconds, the fan operation stops, the buzzer calls, and the corresponding prompt box pops up when entering the monitoring interface;
(2) When the fan is in operation, if the current pressure difference measurement value is less than the "pressure limit value" for 10 seconds, the fan operation stops, the buzzer calls, and the corresponding prompt box pops up when entering the monitoring interface;
(3) Stop the operation of the fan caused by the fluctuation of the descending airflow: when the falling fan is in operation, if the current falling wind speed measurement value continuously "alarm delay" time exceeds the ±20% of the "set falling wind speed ", the fan stops running and the buzzer calls. When entering the monitoring interface, the corresponding prompt box will pop up;
(4) The abnormal sterilization operation of the front window stops: when the sterilization is in the open state, the front window is in the non-closed area, the sterilization operation stops, the buzzer calls, and the corresponding prompt box pops up when entering the monitoring interface;
(5) When the fan is in the running state, the front window is in the non-working area, the falling fan stops running, the buzzer calls, and the corresponding prompt box pops up when entering the monitoring interface;
(6) The sterilization time arrives but can not enter the sterilization: the user has opened the reservation sterilization, and the current time has reached the sterilization reservation time, but the system can not enter the sterilization state because the front window is not closed or the lighting, the fan is open, the buzzer calls and the corresponding prompt box pops up when entering the monitoring interface;
(7) Sterilization completion: when sterilization is completed, the buzzer calls 6 times, and the corresponding prompt box pops up when entering the monitoring interface;
Note :1~5 buzzer continuous call 60 seconds after closing ;6,7 buzzer intermittent call 6 after closing; users can also click on the confirmation key to close buzzer call;

5. User set

Enter [user settings], you need to enter password 3 to enter, otherwise pop up error prompt dialog box;

5.1 Wind speed control

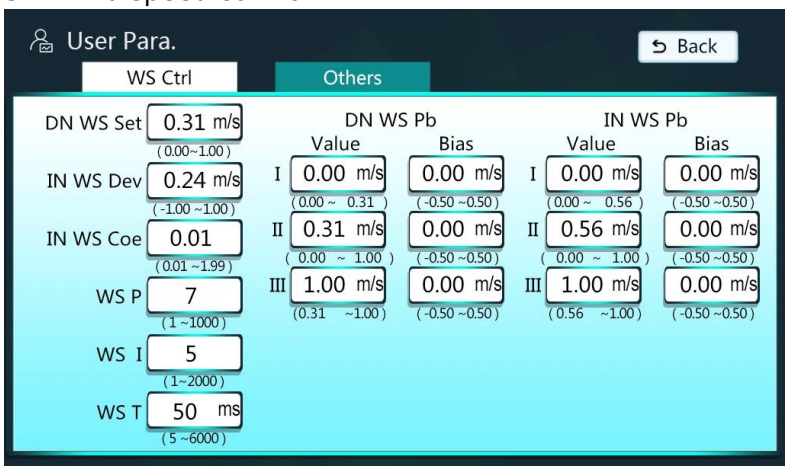


Figure 4

5.1.1 Wind speed control parameters

Name	Function	Initial value (set range)
Set down wind speed	Set value of falling air speed	0.31m/s (0.00~1.00)
Flow velocity deviation	When the calculation mode of the inflow fan in [system set] chooses the descending wind speed, the measured value of the inflow wind speed = sets the descending wind speed + the deviation of the inflow wind speed (the measured value of the descending wind speed-set the descending wind speed)* the inflow wind speed coefficient	0.24m/s (-1.00~1.00)
Flow wind speed factor		0.01(0.01~1.99)
P wind	Adjustment of Time Proportion	7(1~100)
I wind	Regulation of Integration	5(1~2000)
T wind	Calculation period of wind speed control	50m/s (5~6000)

Table 3

5.1.2 Fall Wind Error Correction

In order to facilitate the user to correct the sensor, the system adopts the function of three-point correction, that is, the user can correct the deviation at any three measuring points, and the system automatically corrects the other measuring points linearly.

Such as: speed at 0.10 m/s,0.31m/s,1.00m/s three measuring points to correct, when the instrument measured speed value of 0.10 m/s,0.31m/s,1.00m/s three points, using anemometer to measure the speed of 0.00 m/s,0.15m/s,0.87m/s, the correction mode is as follows:

Name	Function	Initial value (set range)
Correction point 1	You should enter 0.10 m/s, or 0.10 m/s as the first correction point in this example	0.10 m/s (0.00~ correction point 2)
Correction point 2	Type 0.31 m/s, or 0.31 m/s as the second correction point in this example	0.31 m/s (correction point 1~ correction point 3)

Correction point 3	You should enter 1.00 m/s, or 1.00 m/s as the third correction point in this example	1.00 m/s (correction point 2~1.00)
Calibration deviation 1	For this example, enter m/s ,-0.10, the value of the anemometer at the first corrected velocity point - the system measurements	-0.10 m/s (-0.50~0.50)
Calibration deviation 2	For this example, enter -0.16 m/s, the value of the anemometer at the second corrected velocity point - the system measurements	-0.16 m/s (-0.50~0.50)
Calibration deviation 3	For this example, enter -0.13 m/s, the value of the anemometer at the third corrected velocity point - system measurements	-0.13 m/s (-0.50~0.50)

Table 4

5.1.3 inflow wind error correction

When the calculation mode of inflow wind speed is chosen as inflow wind speed sensor in system setting, the user corrects the error of inflow wind speed by correcting the descending wind speed.

5.2 Other parameters

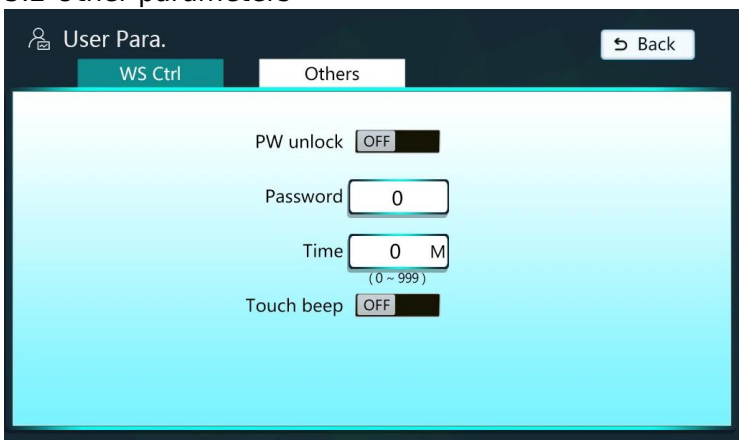


Figure 5

Name	Function	Initial value (set range)
Password unlock	When this function is turned off, the lock screen interface click unlock key to enter the monitoring interface directly; when this function is turned on, click unlock key to enter the password to enter the monitoring interface	Customs
Unlock Password	Password to enter the monitoring interface from the lock screen interface	0
Lock time	Automatic lock time, no automatic lock screen at 0	0 minutes (0~999 minutes)
Touch beep	Does the touch screen beep	Customs

Table 5

6. System set

Enter [system set], you need to enter password 9 to enter, otherwise pop up error prompt dialog box;

6.1 Wind speed & sterilization

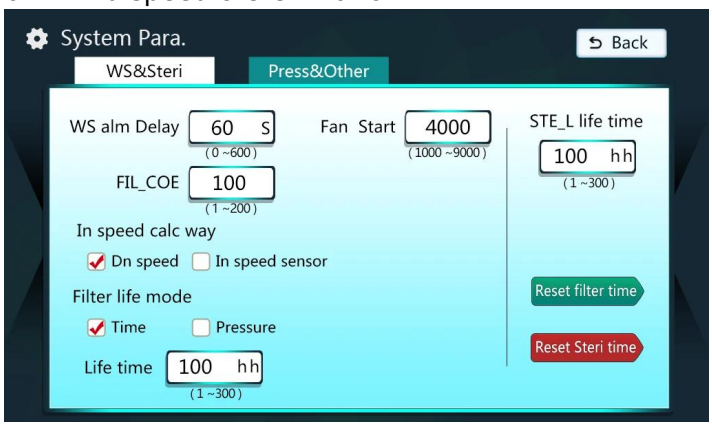


Figure 6

Name	Function	Initial value (set range)
Password unlock	When this function is turned off, the lock screen interface click unlock key to enter the monitoring interface directly; when this function is turned on, click unlock key to enter the password to enter the monitoring interface	Customs
Unlock Password	Password to enter the monitoring interface from the lock screen interface	0
Lock time	Automatic lock time, no automatic lock screen at 0	0 minutes (0~999 minutes)
Touch beep	Does the touch screen beep	Customs

Table 6

Name	Function	Initial value (set range)
Wind speed alarm delay	If the falling wind speed exceeds 20% of the set wind speed for X second in a row, the air flow fluctuation alarm is generated, the fan operation stops and the buzzer calls; when it is 0, there is no wind speed fluctuation alarm;	60 seconds (0~600)
First-order inertial filtering	Speed filter coefficient	100(1~200)
Calculation of inflow wind speed	Falling wind speed: the measured value of inflow wind speed is calculated by the measured value of falling wind speed according to the relevant proportion; Inflow wind speed sensor: the measured value of inflow wind speed is obtained by inflow wind speed sensor;	Decreasing wind
Filter life mode	Percentage of filter life calculated based on life time or pressure change	Life time
Filter life time	Total filter life time set	100 hours (1~300)

Fan start-up value	According to different fan settings, the greater the value, the higher the fan start-up voltage;	5000(1000~9000)
Life time of sterilizing lamp	Total sterilization lamp life time set	100 hours (1~300)
Filter Time Zero	Time to clear filters	
Sterilization time cleared	Time to clear the sterilization lamp	

Table 7

6.2 Pressure & other

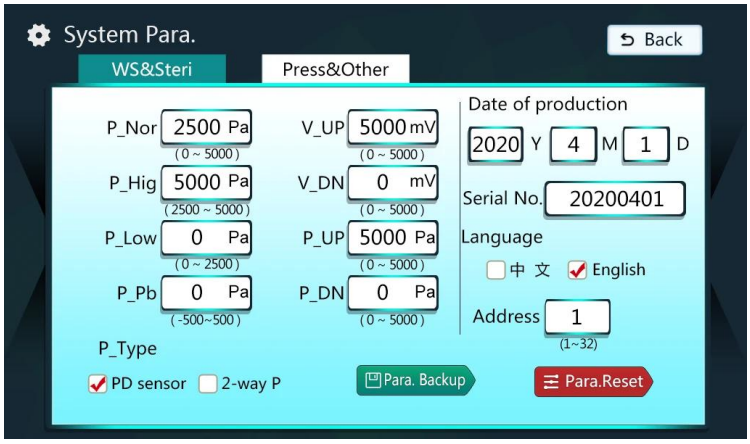


Figure 7

Name	Function	Initial value (set range)
Normal pressure	The percentage of fan life is calculated by comparing the pressure measured value with these three values. During the operation of the fan, if the pressure difference is continuously lower than the pressure limit for 10 seconds, there is a filter breakage alarm and the fan stops; if the pressure difference is higher than the pressure limit for 10 seconds, there is a filter clogging alarm and the fan stops;	2500Pa(pressure limit ~ pressure limit)
Pressure upper limit		Normal 5000Pa(pressure ~ upper limit)
Pressure lower limit		0Pa(shows lower limit ~ normal pressure)
Pressure deviation correction	Pressure deviation correction	0Pa(-500~5 0Pa(-500~0Pa(-500~)
Voltage upper limit	Maximum output voltage signal of pressure sensor	5000 mV(0~5000)
Voltage limit	Minimum output voltage signal of pressure sensor	0 mV(0~5000)
Display upper limit	Maximum displayed by pressure sensor	5000Pa(0~5000)
Display lower limit	Minimum value of pressure sensor display	0Pa(0~5 0Pa(0~0Pa(0~0Pa(0~)
Date of departure	Setting the date of departure	
Factory Number	Factory Number	
Display language	Choose Chinese or English	Chinese

Address	Address of 485 Communications	1(1~32)
Save factory parameters	Save the currently set parameters for "Restore Factory Parameters" recovery	
Recovery of factory parameters	Can be restored to "save factory parameters" when the save parameters;	

Table 8

5. Wiring Diagram

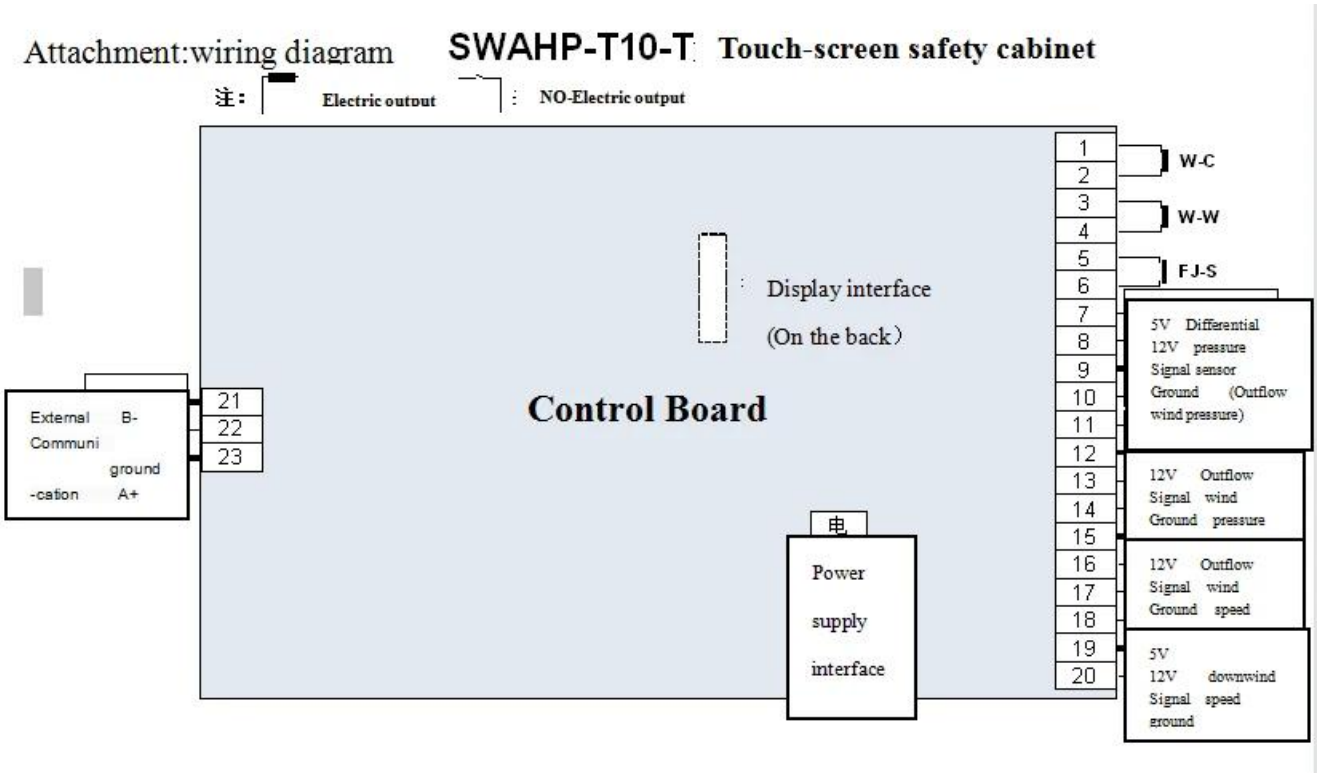


Figure 8

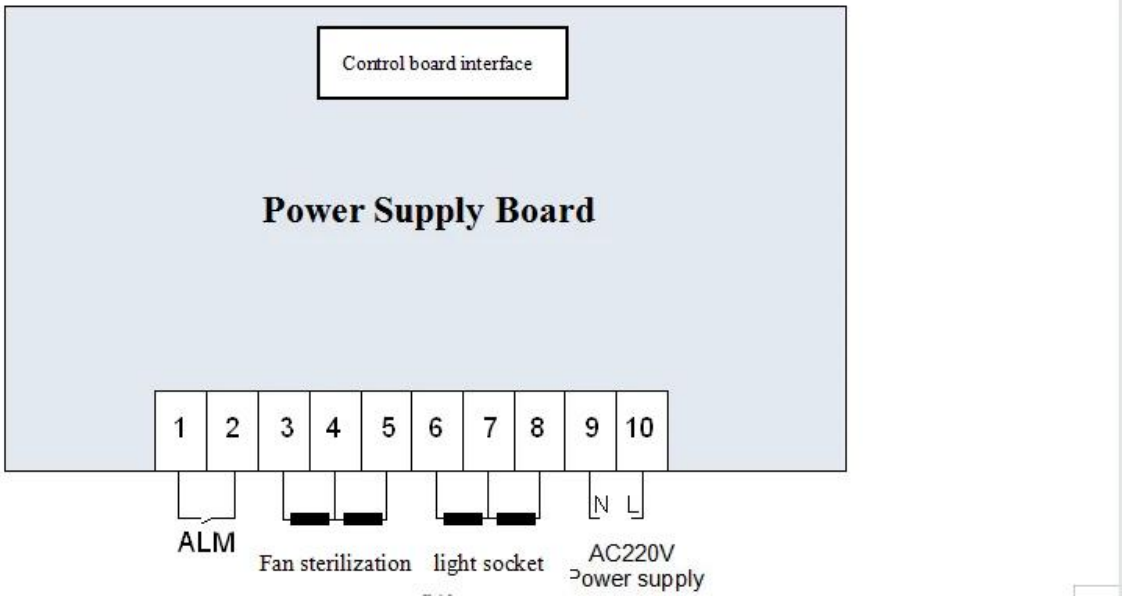


Figure 9

6. General fault and troubleshooting

Failure phenomenon	Fault analysis	Troubleshooting
No display when turned on	Power failure	Check the power outlet for voltage
	The power plug is not properly plugged in	Check the reliable contact between the power plug and the socket
	The power switch is not on	Turn on the power switch on the right side of the instrument
	The fuse of the cabinet is damaged	Replace the power fuse of the same specifications
The measured temperature is higher than the set temperature or the instrument enters the high temperature alarm state	The door of the cabinet was not closed tightly	Close the door
	The instrument has not yet entered the constant temperature state	Wait a while and observe again
The temperature is not displayed after startup, and the temperature is not heated	The power cord is not plugged in	Plug in the power cord
	Sensor fault	Notify the factory to repair
	Heater fault	Notify the factory to repair

Table 9

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