



Incubator Shaker

User Manual

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Chapter 1 Please do abide by the safety precautions

To pretend yourself or others from being injured or financial damage, please do pay attention to the safety matters.

- Prohibited items

1. Do not damage the power line
2. Non-professional serviceman is not allowed to open the power supply unit door of the equipment
3. Do not put your fingers or objects into the air hole
4. Do not leave the equipment on the furnace or under the sun
5. It is prohibited to leave the living animals inside the incubator
6. Do not touch the attaching plug with wet hands
7. Please use independent power supply; do not use the power beyond the limit, all-purpose socket or connecting service in case the power line overheating

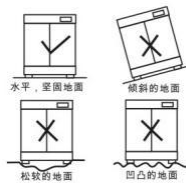
- Matters and attention

1. Before using the product, please do read carefully the operating instruction
2. Please read carefully the safety tips, matters and attention of the operating instruction
3. Before starting the equipment, please do install the two footings of the equipment in line with the instructions of the operating instruction
4. Please abide by the operations below for the sake of protecting the compressor to work under normal conditions
 - 4.1 The inclination angle should be less than 45 degree when moving the machine
 - 4.2 After moving the machine of full temperature function, please shut down the machine and close refrigeration, or leave it be for 24 hours before starting the equipment again.
 - 4.3 When setting temperature (indoor temperature plus 10 degree) closing and starting the equipment, make sure the interval time of the two times' setting temperature and starting time more than ten minutes
5. The equipment must be grounded firmly. Without installing grounding device, inductive static might be caused on the metal case
6. Before using, please confirm the local supply voltage
7. Under the following cases, the attaching plug must be plucked off
 - 7.1 When starting the power box door of the equipment and draft damper
 - 7.2 When changing the fuse
 - 7.3 When malfunction occurs, and it cannot be used
 - 7.4 When the equipment has not been used for long time
 - 7.5 When moving the equipment
8. The equipment should be placed on firm and steady surface, and make sure it on level condition
9. There must be 40cm interspace around the equipment
10. if there is refrigeration function and need continuous refrigeration, one time of heating eliminating damp process every ten days
11. If there is refrigeration function, one time of cleaning the dusts on the condenser beside the compressor every half a year
12. If the experimental vessels are broken, take down the wobble place immediately, and clean up the liquid and residual glass
13. If experimental samples flow into the controlling panel, it also can cause the circuit abnormal

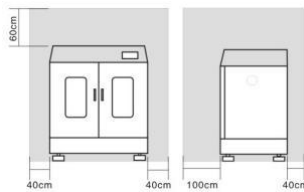
14. Examinations should be made often of the flask clamp to fix the screws in case the falling off of the clamps
 15. Do not open the equipment at will, or it will affect the constant temperature effects
 16. It is forbidden for the coating of the equipment case to meet with gas, banana oil and other volatile chemicals
 17. If the power line is damaged, special accessories of the company shall be used only
 18. Keep it clean inside and outside the box; always clean up sundries and stains
 19. Starting forcedly, closing on and off the equipment door is easily to cause the damage of the equipment
 20. Before starting the equipment door, confirm if the rocker is under idle state
 21. When plugging the attaching plug of the power supply, do not pull the power line directly
- The installation before using

Position of the instrument

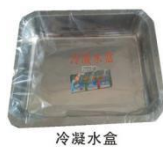
1 The instrument should be placed on firm surface, as is shown under the left picture



2. Leave a certain space around the equipment, as shown below



- The use of water box of the refrigerator before using
- The water box is just as shown in the picture



Condensate water box



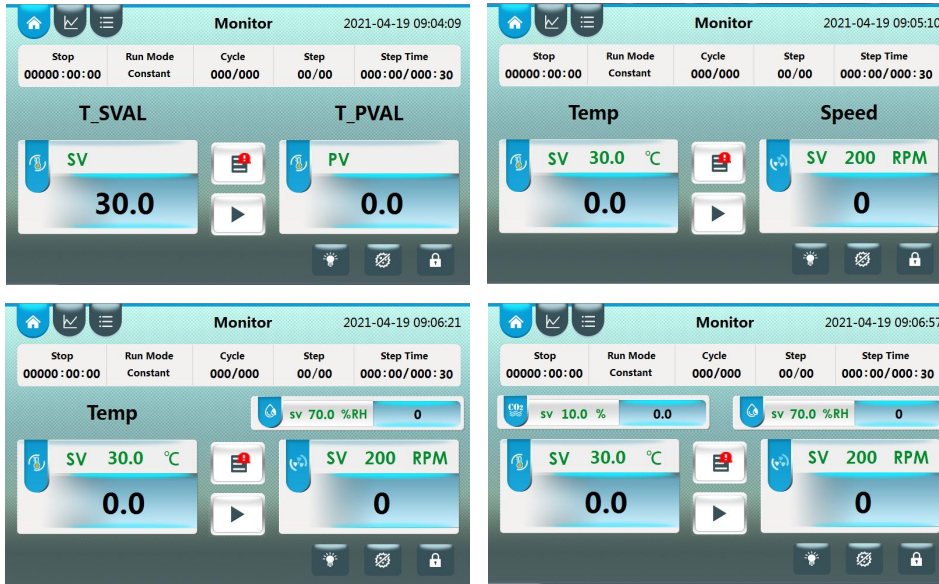
machine condensate water exit

Installation position: condensation box is placed right under the mark of condensate water exit, and place the pipe in the condensation box

Please clean the water box regularly in case the water overflow from the box.

Chapter 2 Interface and Operation

1. Main interface



1.1. User login

After the system starts up, the above [main interface] will appear. Unlogged users need to click on the screen to log in, as shown in the following figure:



Administrator: the initial password is honour, with the highest operating rights, with all permissions except system settings;

Experimenter: initially no password, can set or select basic parameters; can choose fixed value mode or program mode, fixed value mode can set temperature, speed, humidity, concentration, illumination target value and timing time; program mode can only select program number, no editing authority;

Operator: initial no password, only start and stop system;

Note: Testers and operators can view real-time curves, work logs, historical data & curves, but can not perform any operations such as deletion, export, etc.

2. Menu interface








After the user logs in to the login interface, click the upper left label to enter the corresponding interface. Users can enter the user settings, history data, mode settings, system settings interface in the directory interface;

3. Main interface (display)










In the [main interface] users can view the data to be controlled, the time progress of the operation, the control output state of the system, the operation of the control system, heating, humidification, aeration, refrigeration, defrosting, pressure relief, fan output state, gating state, and control lighting and sterilization output and shutdown operation, view alarm records.



3.1. Key Description

Icon	Name	Description
	[Alarm]	Enter the alarm list interface, you can view the detailed alarm content icon for red to indicate that there is an alarm
	[Start/stop]	Click the pop-up dialog box to make the system run or stop;
	[Lighting]	Click to turn on or off the light and the button turns blue after opening (this feature is optional)
	[Sterilization]	Click to turn on or off the sterilizing lamp, and then the button displays blue (this function is optional)
	[Lock]	White is unlocked; blue is locked.

3.2. Icon description

Name	Icon	Name	Icon	Name	Icon
Heating		Refrigeration output		Refrigeration delay	
Frosting		Air inflation		Humidification	
Add water		Door open		Alarm	

3.3. State description

In the upper left corner of the main interface, the five running states of the system are displayed, namely [stop],[reservation waiting], [running], [timing] and [self-tuning];

[Stop]: Stop state to close heating, humidification, inflation, compressor, fan output;

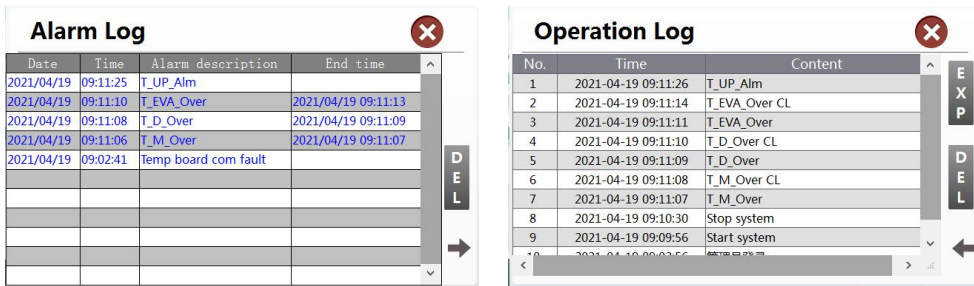
[Reservation waiting]: If the reservation time is greater than the current time, then after running, the system enters the reservation state, after reaching the reservation time, enters the running state;

[Running]: Running state, entering various numerical controls;

[in the timing]: timing time, the system automatically into the stop state;

[Auto-tuning]: PID self-tuning, operating in the user-set interface.

3.4. Alarm and Operation Log

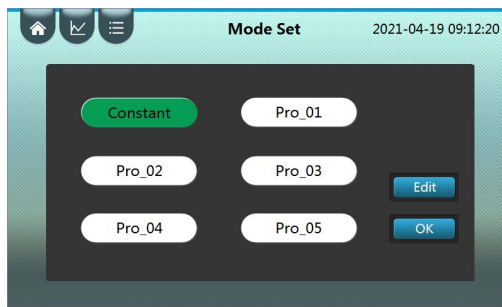


When the alarm occurs in the system, the buzzer calls and prompts, the alarm record in the main interface has the red exclamation mark prompt, click can enter the alarm list interface, view the specific alarm content, click on the right arrow to view the operation log;

Alarm type	Alarm description
Main temperature overflow	May be the main temperature sensor failure or wiring error.
Door temperature overflow	It may be a door temperature sensor failure or wiring error.
Evaporator temperature overflow	May be evaporator temperature sensor failure or wiring error.
Concentration spill	It may be a concentration sensor failure or wiring error.
Humidity overflow	It may be a humidity sensor failure or wiring error.
Over temperature alarm	Main temperature > set temperature + temperature deviation, produce overtemperature alarm.
Under-temperature alarm	Main temperature < set temperature-temperature deviation, resulting in undertemperature alarm.
Over concentration Alarm	The concentration > sets the concentration + the concentration deviation, produces the super concentration alarm.

Un concentration Alarm	Concentration < set concentration-concentration deviation, resulting in underconcentration alarm.
Super humidity alarm	Humidity > set humidity + humidity deviation, resulting in humidity alarm.
Open door alarm	In operation, the door opens continuously certain (may set) time, produces the door alarm.
Water shortage alarm	Lack of more than 1 minute, resulting in water shortage alarm.
Motor communication fault	There is no communication between the control board and the motor drive board.
Electrical IPM failures	Power module failure
Motor blocking fault	Motor blocking fault
Motor Hall fault	Motor Hall fault
Failure of motor	Bus voltage undervoltage fault
Failure of motor overload	Bus voltage overvoltage fault
Electronic expansion valve module communication failure	There is no communication between the control board and the electronic expansion valve module.

4. Mode set



The system has fixed value mode, Pro_01, Pro_02, Pro_03, Pro_04, Pro_05 6 operation control modes; Users can set their own run cycles (0~999), segments (1~30), and time (0~999:59), temperature, speed, humidity, concentration and illumination;

4.1. Fixed value mode

The setting mode only sets a temperature control point; according to the choice of timing mode in [user setting] and whether the time setting value is 0, the following working mode can be realized:

Time set value	Timing	Description
0	—	Timing time is always 0, continuous operation does not stop;
Not 0	Running time	Click on the running system to start timing, timing time to set time, stop running;

	Constant temperature timing	Click on the operating system to control the temperature, after reaching the constant temperature timing range to start the timing, timing time to the set time after the stop operation;
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4.2. Programmatic mode

In program mode, multiple temperature control steps and the control time of each step can be set, and the running period of the mode can be set; if the period is set to 0, the reciprocating operation from the first to the last segment will not stop;

Time set value	Timing	Description
0	Running time	Step time is not timed, the system directly jump to the next set value to continue running, if the last paragraph, jump to the first paragraph, if also the last cycle, the operation stops;
	Constant temperature timing	Step time is not timed, the system controls the temperature, after reaching the constant temperature timing range, jump to the next set value to continue to run, if the last paragraph, jump to the first paragraph, if also the last cycle, the operation stops;
Not 0	Running time	Click run, step time start timing, step time to set time, jump to the next set value to continue running, step time to start the timing again, if the last paragraph, jump to the first paragraph, if also the last cycle, the run stops;
	Constant temperature timing	Click run, the system controls the temperature, after reaching the constant temperature timing range, the step time begins to time, after the step time reaches the set time, jump to the next set value to continue running, the temperature still needs to reach the constant temperature timing range, the step time starts again, if the last paragraph, jump to the first paragraph, if the last cycle, the operation stops;

4.3. Operation instance

Fixed value mode



Set temperature 30.0°C, set speed 200 RPM, set concentration 10.0, set humidity 70.0, run 30

minutes to stop, set operation flow as follows: then select [fixed mode] in [mode setting] interface, click edit button, Enter the set edit interface, as shown above;

No.	Content	Description
1	Time setting	Click the Time Textbox (Time: Points) to set 0:30
2	Temperature setting	Click on the Temperature Textbox and set to 30.0
3	Speed setting	Click on the Speed text box to set to 200
4	Humidity setting	Click the Humidity Textbox to set to 70.0
5	Concentration setting	Click on the concentration text box to set to 10.0

Programmatic pattern

For example: setting Pro_01, When the temperature rises to 30.0±0.5°C, Speed control 200 RPM, Humidity control 70.0%, Concentration control 10.0%, 60.0°C 1 hour ,25 minutes, 0 RPM, speed setting Humidity control 50.0%, Concentration control 15.0%, The cycle runs once, the cycle is 1, Set as follows:

Number	Set time	Set temperature	Set speed	Set humidity	Set concentration
Paragraph 01	0:30(0 hours and 30 minutes)	30°C.0	200RPM	70.0%	10.0%
Paragraph 02	1:25(1 hour and 25 minutes)	60°C.0	0RPM	50.0%	15.0%

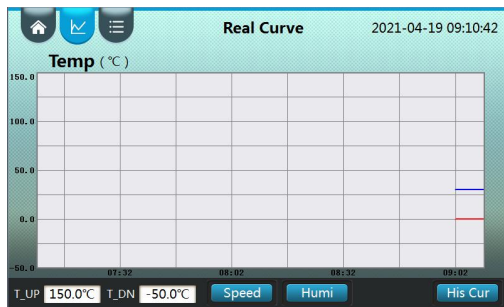
The operation flow is as follows: determine the timing mode in [user setting] select [constant temperature]; select Pro_01, click the edit button to enter the Pro_01 set editing interface, as shown in figure



Number	Content	Description
1	Cycle set	Click on the periodic text box, pop up the numeric keyboard, set to 1
2	Step set	Click on the text box, pop up the numeric keyboard, set to 2
3	Time set	Click 01 and 02 time text boxes respectively to set to 30 and 1:25
4	Temperature set	Click on section 01 and section 02 temperature text boxes to set to 30.0 and 60.0, respectively
5	Speed set	Click on the 01 and 02 speed text boxes to set to 200 and 0, respectively
6	Humidity setting	Click on section 01 and section 02 concentration text box to set to 70.0 and 50.0, respectively
7	Concentration setting	Click on section 01 and section 02 concentration text boxes to set to 10.0 and 15.0, respectively

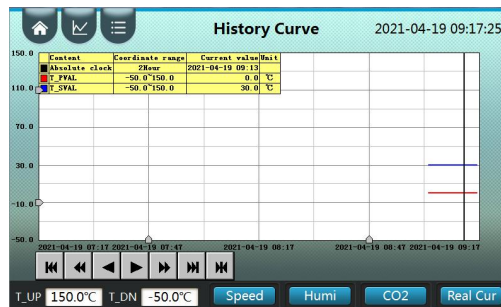
5. Curve interface

In the real-time curve interface, the user can view the temperature, speed, humidity and concentration curves in the last 2 hours, where blue is the set value curve and red is the measured value curve;



5.1. History curve

In the history curve interface, the user can view the trend of the history data curve for a period of time, which corresponds to the data stored in the history data, and the upper and lower limits displayed in the history curve are consistent with the real-time curve setting. Users can also set the time period to query;



6. History data

6.1. Interface Description

No.	Time	T_PVAL	T_SVAL	S_PVAL	S_SVAL	H_PVAL
1	2021-04-19 09:16:33	0.0	30.0	0	200	0.0
2	2021-04-19 09:15:33	0.0	30.0	0	200	0.0
3	2021-04-19 09:14:33	0.0	30.0	0	200	0.0
4	2021-04-19 09:13:33	0.0	30.0	0	200	0.0
5	2021-04-19 09:12:33	0.0	30.0	0	200	0.0
6	2021-04-19 09:11:33	0.0	30.0	0	200	0.0
7	2021-04-19 09:10:33	0.0	30.0	0	200	0.0
8	2021-04-19 09:09:33	0.0	30.0	0	200	0.0
9	2021-04-19 09:08:33	0.0	30.0	0	200	0.0
10	2021-04-19 09:07:33	0.0	30.0	0	200	0.0
11	2021-04-19 09:06:33	0.0	30.0	0	200	0.0

The user enters the [historical data] interface, can view the system automatically saved temperature measurement, set value, speed measurement value, set value, humidity measurement value, set value, concentration measurement value, set value, illumination measurement value, set value and operation, alarm state history data, save interval time can be set;

6.1.1. Export data

Users need to export historical data with U disk, confirm that the U disk has been inserted, avoid system errors, click the export button, pop-up to confirm whether to export dialog box, the user should click OK to complete the data export; Export files are stored in the root directory of the U disk. pdf", data format is pdf file;

7. User set

Enter [user set], need "administrator group" permission," experimenter group "and" operator group "can not enter;

Name	Function	Initial value (set range)
Temperature deviation	When measuring temperature > setting temperature + upper deviation value, heating is disconnected and overtemperature alarm is provided	10.0°C (0.0 ~ 50.0)
Temperature deviation	When measuring temperature < setting temperature + deviation value, there is undertemperature alarm, when set to 0, there is no undertemperature alarm.	0.0°C (-50.0 ~ 0.0)

Temperature ceiling	Measure temperature > temperature upper limit, upper limit alarm (this function is not available)	150.0°C (lower temperature limit ~150.0)
Lower temperature	Measure temperature < temperature upper limit, upper limit alarm (this function is not available)	-50.0°C (50.0~ upper temperature limit)
Deviation from humidity	When measuring temperature > setting temperature + upper deviation value, add wet break and have super-wet alarm	RH 10.0 per cent (0.0 ~ 20.0)
Deviation under humidity	When measuring the temperature < setting the deviation value under the temperature +, there is a wet alarm, and when set to 0, there is no undertemperature alarm.	0.0% RH (-20.0 ~ 0.0)
Concentration deviation	When measuring temperature > setting temperature + deviation value, the inflation is disconnected and alarm is overconcentration	20.0% (0.0 ~ 20.0)
Deviation in concentration	When measuring temperature < setting temperature + deviation value, there is underconcentration alarm, when set to 0, there is no undertemperature alarm.	0.0% (-20.0 ~ 0.0)
Power-down memory	After the ON: is powered on, restore the running state before the power is off After OFF: power on, the state stops	OFF (ON ~OFF)
Printing function	ON: turn on the print feature OFF: Off Print Function	OFF (ON ~OFF)
Print interval	Interval of each data print	10 minutes (1~9999)
Button	Buzzer ON: touch operation OFF: buzzer does not	OFF (ON ~OFF)

Manual defrost	<p>ON: turn on the manual defrost function, if the defrost time interval is set to 0, only manual defrost can be used</p> <p>OFF: turn off manual defrosting function</p>	OFF (ON ~OFF)
Timing	Run time: start time after run Constant temperature timing: after running, the temperature enters the constant temperature range and starts the timing	Running time
Timing deviation	If the measured temperature is within \pm range of the set temperature and timing deviation, it is determined to enter the constant temperature range	0.5 (0.0 ~ 5.0)
Lighting time	After lighting is opened, the delay time is automatically closed, the lighting is closed when the door is opened and the time is recalculated	1 minute (0 ~ 9999)
auto-tuning	Click to enter the self-tuning box to select temperature or concentration self-tuning	OFF (ON ~OFF)
Motor steering	Only positive rotation; only reverse; positive and negative alternation	Positive turn
Positive turn time	Motor duration positive rotation	1 minute (0~9999)
Inversion time	Motor duration reversal time	1 minute (0~9999)
Time off	Stop duration of alternating motor	1 minute (0~9999)
Booking time	If the reservation time is greater than the current time, the system enters the reservation state after running, and after reaching the reservation time, it enters the running state	01 May 2020 00.00 hrs
Real-time time	System time real time time	Current time

8. System set

Enter system Settings to enter password 9, otherwise the error prompt dialog box pops up. System settings,[sampling debugging] need to enter an internal password to operate;



8.1.Backup and recovery parameters

8.1.1.Backup factory parameters

Users according to their own needs, after all parameters are set, can click on the [backup parameters] button in [system settings], the current all parameter values backup, this operation will cover the original backup of the factory value, need careful operation;

8.1.2.Backup factory parameters

When there is an error in the system parameters, the user can click the [recovery parameter] button in [system settings] to restore all the current parameter values to the previously backed up parameter values. This operation will cover all the current parameter values and need to be carefully operated;

8.2. Temperature parameters

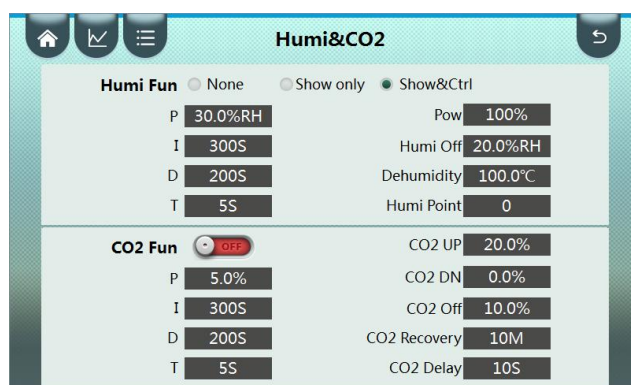


Name	Function	Initial value (set range)
Temperature setting ceiling	Upper limit for temperature setting	150.0°C (lower temperature setting ~150.0)
Lower limit for temperature setting	Lower limit of temperature setting	-50.0°C (-50.0~ Temperature ceiling)
Heating proportional belt	Regulation of proportion	30.0 (0.1 ~ 150.0)
Heating integral time	Regulation of Integration	300 seconds (1~3500)
Heating differential time	Regulation of differential action	200 seconds (0~3500)

Heating power	Percentage of heating power	100% (0~100)
Heating control cycle	Heating control cycle	5 seconds (1~60)
Heating Turnoff Deviation	When measuring temperature > setting temperature + turn-off difference, heating disconnects	-50.0°C (-50.0 ~ 50.0)
Refrigeration function	ON: turn on refrigeration function (with compressor) OFF: off refrigeration function (no compressor)	OFF (ON ~OFF)
Refrigeration deviation	When the refrigeration mode is manual intermittent, the compressor opens when measuring the temperature > setting the temperature + the upper deviation value of the refrigeration	5.0°C (-50.0 ~ 50.0)
Deviation under refrigeration	When the refrigeration mode is manual intermittent, the compressor closes when measuring the temperature < setting the temperature + the deviation value under the refrigeration	-5.0°C (-50.0 ~ 50.0)
Refrigeration options	No electronic expansion valve function: High temperature type: set value change hours to open a compressor, other cases compressor does not open; Balance: Fixed value \geq refrigeration dividing point, compressor often closed; Fixed value < refrigeration dividing point, compressor often open; Manual Intermittent Type: Control Compressor Based on Up and Down Deviation of Refrigeration	Balance (0 ~ 50.0)

Refrigeration output delay	Compressor distance from previous run interval	180 seconds (0~9999)
Refrigeration Protection Point	Compressor does not start when measuring temperature > refrigeration protection point	100.0°C (0.0 ~ 150.0)
Refrigeration demarcation points	When the electronic expansion valve function opens, Set value \geq refrigeration boundary point, compressor is often closed, if the operation reduces the set value, compressor open once know the measurement temperature \leq set temperature +2.0°C; Fixed value < refrigeration dividing point, compressor often open;	50.0°C (0.0 ~ 150.0)
Door Temperature Function	ON: Open Door Temperature Control OFF: Close Door Temperature Control	OFF (ON ~OFF)
Door temperature setting deviation	Setting value of door temperature = setting value of main temperature + setting deviation of door temperature	0.0°C (0.0 ~ 150.0)
Door heating ratio belt	Regulation of proportion	30.0 (0.1 ~ 150.0)
Door heating integral time	Regulation of Integration	300 seconds (1~3500)
Gate heating differential time	Regulation of differential action	200 seconds (0~3500)
Gate heating power	Percentage of heating power	100% (0~100)
Door heating control cycle	Heating control cycle	5 seconds (1~60)
Gate heating shutoff deviation	When measuring temperature > setting temperature + door temperature setting deviation and closing difference, door heating is disconnected	-50.0°C (-50.0 ~ 50.0)

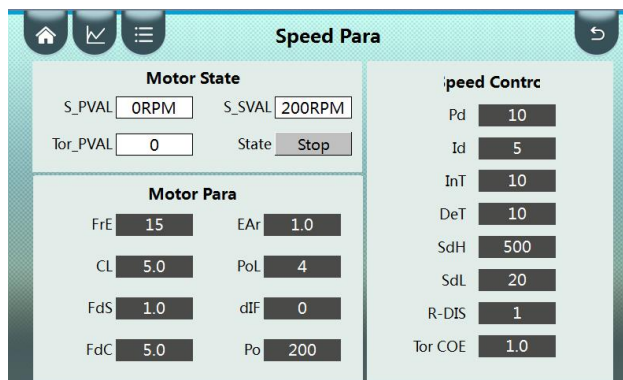
8.3. Humidity concentration parameters



Name	Function	Initial value (set range)
Humidity function	No: Turn off humidity function Display only: humidity not controlled Display & Control: Control humidity	Display & Control
Humidification proportional zone	Regulation of proportion	30.0 (0.1 ~ 100.0)
Humidification integration time	Regulation of Integration	300 seconds (1~3500)
Humidification differential time	Regulation of differential action	200 seconds (0~3500)
Humidification control cycle	Humidification control cycle	5 seconds (1~60)
Humidification power	Percentage of humidification power	100% (0~100)
Humidification Turnoff Deviation	When measuring humidity > setting humidity + turn off difference, humidification disconnects	-50.0°C (-50.0 ~ 50.0)
Temperature not wet point	Disconnect humidification output when measuring temperature > non-wetting point	100.0°C (-50.0 ~ 150.0)
Humidity	Humidity measurement shows decimal point selection	1 (0 ~ 1)
Concentration function	ON: turn on concentration control OFF: Closed Concentration Control	OFF (ON ~OFF)

Concentration proportional zone	Regulation of proportion	30.0 (0.1 ~ 100.0)
Concentration integration time	Regulation of Integration	300 seconds (1~3500)
Concentration differential time	Regulation of differential action	200 seconds (0~3500)
Concentration control cycle	Concentration control cycle	5 seconds (1~60)
Concentration ceiling	Maximum concentration set	20.0% (concentration setting ~20.0)
Lower limit for concentration setting	Lower limit of concentration setting	0.0% (0.0~ concentration ceiling)
Inflatable Turnoff	When the measured concentration > set the + turn-off difference, the inflation disconnects	10.0% (-20.0 ~ 20.0)
Concentration recovery time	When in the state of underconcentration alarm, every interval alarm recovery time, automatically cancel the alarm state, if the judgment still meets the underconcentration alarm, then alarm again	10 minutes (5~60 minutes)
Concentration start-up delay	After running or closing, delay the time to restart concentration control	10 seconds (0~600)

8.4. Speed parameters



Name	Function	Initial value (set range)
Expansion valve function	ON: Open Electronic Expansion Valve Function OFF: closure of electronic expansion valve function	OFF (ON ~OFF)
Maximum effective opening	Maximum opening of electronic expansion valve	350 (0 ~ 5000)
Refrigerating proportional belt	Refrigeration proportional band adjustment	20.0°C (0.1 ~ 150.0)
Refrigeration integration time	Refrigeration integration time adjustment	600 (1 ~ 3500)
Dehumidification ratio	Dehumidification proportional zone adjustment	RH 80.0 per cent (0.1 ~ 150.0)
Dehumidification integration time	Dehumidification integral time adjustment	300 (1 ~ 3500)
Defrost function	ON: turn on defrosting function OFF: Off Frosting Function	OFF (ON ~OFF)
Defrost temperature 1	At setting temperature \leq defrosting temperature 1, the system defrosts according to defrosting interval 1 and defrosting time 1	8.5. 9.0°C (-20.0 ~ 120.0)
Defrost temperature 2	When defrosting temperature 1 \leq set temperature \leq defrosting temperature 2, the system defrosting according to defrosting interval 2 and defrosting time 2	18.0°C (-20.0 ~ 120.0)

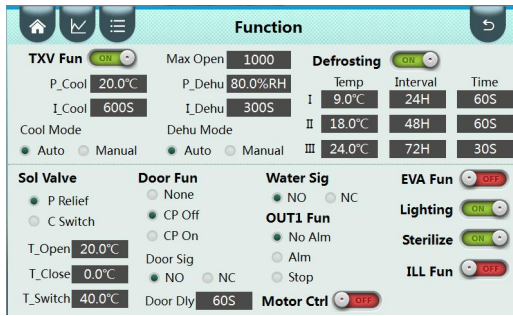
Defrost temperature 3	When defrosting temperature $2 \leq$ set temperature \leq defrosting temperature 3, the system defrosting according to defrosting interval 3 and defrosting time 3(set temperature > defrosting temperature, no defrosting function)	24.0°C (-20.0 ~ 120.0)
Defrost interval 1	At setting temperature \leq defrosting temperature 1, the system defrosts at intervals of 1	24 hours (0 ~ 9999)
Defrost interval 2	When the defrosting temperature is $1 \leq$ the setting temperature \leq the defrosting temperature is 2, the system defrosts every time after defrosting interval 2	48 hours (0 ~ 9999)
Defrost interval 3	When the defrosting temperature is $2 \leq$ the setting temperature \leq the defrosting temperature is 3, the system defrosts once every defrosting interval 3	72 hours (0 ~ 9999)
Defrost time 1	At setting temperature \leq defrosting temperature 1, the defrosting duration of the system is defrosting output time 1(set to 0, no defrosting function)	60 seconds (0 ~ 999)
Defrost time 2	When defrosting temperature $1 \leq$ set temperature \leq defrosting temperature 2, the defrosting duration of the system is defrosting output time 2(set to 0, no defrosting function)	60 seconds (0 ~ 999)
Defrost time 3	When defrosting temperature $2 \leq$ set temperature \leq defrosting temperature 3, the defrosting duration of the system is defrosting output time 3(set to 0, no defrosting function)	30 seconds (0 ~ 999)
Solenoid valve function	When the expansion valve function is closed, the solenoid valve function can be selected	Pressure relief

Pressure relief opening value	solenoid valve opens when the temperature setting value > the open value	20.0°C (-20.0 ~ 120.0)
Pressure relief shutdown	(c) When the temperature setting value <= the open value: Temperature measurement value > open value + closed value, solenoid valve open; Temperature measurement value <= open value + closed value, solenoid valve closed;	0.0°C (-50.0 ~ 50.0)
Refrigeration switching point	A solenoid valve closes when the temperature setting value > the switching point; Temperature setting value <= switching point, solenoid valve open;	40.0°C (-20.0 ~ 120.0)
Gated function	No: No gating Shut compressor: door open close all output Do not close compressor: door open or not close compressor, close other output	Shut down compressor
Gated signal	The input signal is normally closed	Regular
Water level signal	The input signal is normally closed	Regular
Open door delay	Open door time more than delay time trigger door alarm	60 seconds (0 ~ 600)
OUT1 function	No alarm closure: temperature deviation alarm disconnected Alarm closed: disconnected when no alarm End of run closure: run break open	No alarm closed
Motor control	ON: turn on motor function OFF: turn off motor function	OFF (ON ~OFF)
Evaporator function	Select whether to display evaporator temperature	OFF (ON ~OFF)
Lighting function	Lighting function selection	OFF (ON ~OFF)

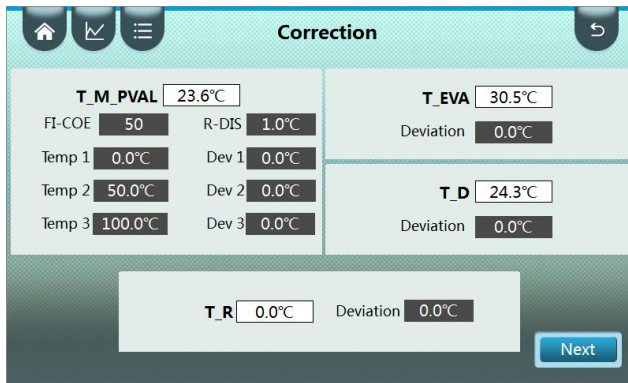
Sterilization function	Selection of sterilization function	OFF (ON ~OFF)
Illuminance function	Illumination output	OFF (ON ~OFF)

Name	Function	Initial value (set range)
Carrier frequency	Brushless Motor Carrier Modulation Frequency	15 (5~ 15)
Overflow multiple	Allow rated current multiples for motor overcurrent protection	5.0 (1.0 ~ 10.0)
Speed feedback	Velocity feedback coefficient	1.0 (0.1 ~ 10.0)
Current feedback	Current feedback coefficient	0.5 (0.1 ~ 10.0)
Gear ratio	Large gear diameter / pinion diameter	1.0 (0.1 ~ 10.0)
Polar logarithm	Electric pole logarithm	4 (1~ 32)
Direction of rotation	Direction of rotation	0 (0 ~ 1)
Motor power	Brushless Motor Power	250 (1 ~ 400)
Proportional gain	Adjustment of velocity ratio	10 (1 ~ 100)
Integral Time	Adjustment of velocity integration	5 (1 ~ 100)
Acceleration time	Motor acceleration time	10 (1 ~ 60)
Reduction time	Motor deceleration time	10 (1 ~ 60)
Set ceiling	Maximum speed setting	500(set lower limit ~6000)
Set limits	Lower limit for speed setting	20(20~ cap)
Unresponsive area	speed display insensitive zone	1 (1 ~ 100)
Torque coefficient	Motor torque proportional coefficient	1.0 (0.1 ~ 10.0)

8.5. Functional selection

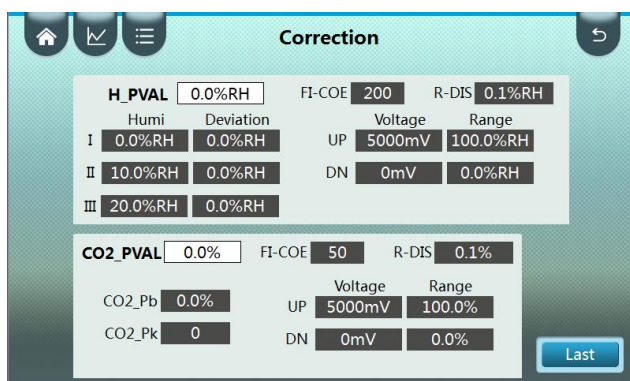


8.6. Error correction



Name	Function	Initial value (set range)
Filter coefficient	First order inertial filtering coefficient of main temperature, the larger the value, the smaller the filtering	50 (0 ~ 200)
Insensitive area	Main Temperature Display Insensitive Zone	0.1°C (-5.0 ~ 5.0)
Calibration temperature 1	First correction point	0.0°C (-50.0~ Calibration temperature 2)
Calibration temperature 2	Second correction point	30.0°C (Calibration Temperature 1~ Calibration Temperature 3)
Calibration temperature 3	Third correction point	60.0°C (Calibration temperature 2~150.0)
Calibration deviation 1	At the first corrected temperature point, the "thermometer-system measurements"	0.0°C (-50.0 ~ 50.0)

Calibration deviation 2	At the second corrected temperature point, the "thermometer - system measurements"	0.0°C (-50.0 ~ 50.0)
Calibration deviation 3	At the third corrected temperature point, the "thermometer-system measurements"	0.0°C (-50.0 ~ 50.0)
Calibration deviation of evaporator temperature	Evaporator Temperature Correction	0.0°C (-50.0 ~ 50.0)
Door temperature Calibration deviation	Door temperature correction	0.0°C (-50.0 ~ 50.0)
Ambient temperature Calibration deviation	Ambient temperature correction	0.0°C (-50.0 ~ 50.0)

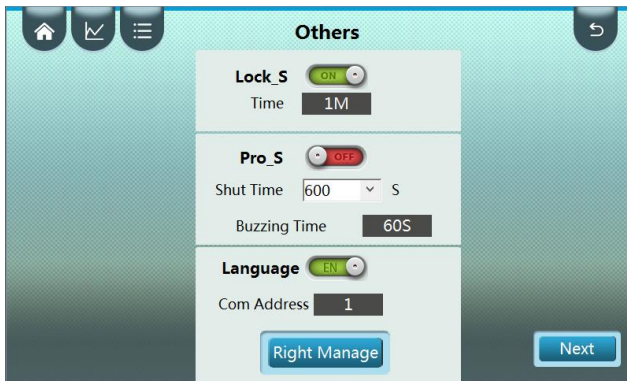


Name	Function	Initial value (set range)
Correctional humidity 1	First correction point	30.0 RH (0.0~ corrected humidity 2)
Correctional humidity 2	Second correction point	RH 60.0 per cent (corrected humidity 1~ corrected humidity 3)
Correctional humidity 3	Third correction point	90.0 RH (corrected humidity 2~100.0)

Calibration deviation 1	at the first correction humidity point "hygrometer value - system measurements"	0.0% RH (-50.0 ~ 50.0)
Calibration deviation 2	at the second correction humidity point "hygrometer value - system measurements"	0.0% RH (-50.0 ~ 50.0)
Calibration deviation 3	at the third correction humidity point "hygrometer value - system measurements"	0.0% RH (-50.0 ~ 50.0)
Humidity filter coefficient	First order inertial filtering coefficient of wet temperature, the larger the value, the smaller the filtering	200 (0 ~ 200)
Unresponsive humidity zone	Unresponsive humidity display area	0.1% (-5.0 ~ 5.0)
Lower limit of signal voltage	Minimum output voltage signal of humidity sensor	0 mV(0~5000)
Signal voltage upper limit	Maximum output voltage signal of humidity sensor	3000 mV(0~5000)
Display lower limits	Humidity value corresponding to the minimum voltage output by the humidity sensor	0.0% RH (0.0 ~ 100.0)
Display range ceiling	Humidity value corresponding to the maximum output voltage of the humidity sensor	100.0 per RH (0.0 ~ 100.0)
Concentration filter coefficient	Concentration first order inertial filter coefficient, the larger the value, the smaller the filter	200 (0 ~ 200)
Insensitive concentration zone	Concentration shows insensitivity	0.1% (-5.0 ~ 5.0)
Deviation correction	Meter display value = unamended value + deviation correction	0.0% (-10.0 ~ 10.0)
Slope modification	Instrument display value = (1000 + slope correction) * unmodified value / 1000	0(-1000 ~ 1000)

Lower limit of signal voltage	Minimum output voltage signal of concentration sensor	0 mV(0~5000)
Signal voltage upper limit	Maximum output voltage signal of concentration sensor	3000 mV(0~5000)
Display lower limits	Concentration value corresponding to the minimum voltage output by the concentration sensor	0.0% (0.0 ~ 100.0)
Display range ceiling	Concentration value corresponding to the maximum output voltage of the concentration sensor	100.0% (0.0 ~ 100.0)

8.7.Other settings



8.7.1 Automatic lock screen

Automatic lock screen refers to the user does not operate the touch screen for a long time, the system automatically jump out of the system [main interface], in [main interface], can only view the necessary data, can not operate, if you need to operate can click on the lower right corner of the screen unlock sign;

8.7.2.Screen saver

Screen saver function means that the user does not operate the touch screen for a long time, and the system automatically turns off the backlight to reduce the aging loss of the touch screen;

8.7.3.Buzzer Tip

After the end of the running time automatically stop, the buzzer will stop calling for a certain time, the end of the buzzer prompt time, the set value is 0, for the end of the buzzer does not prompt, the set value is 9999, The buzzer calls until the user clicks the touch screen to cancel the call;

8.7.4. Language options

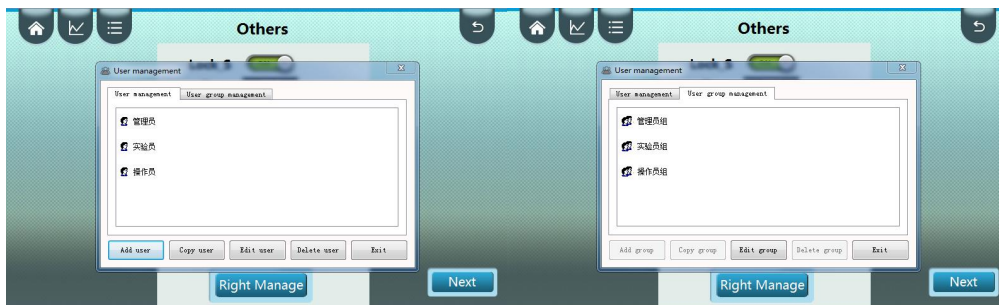
Chinese and English language switching;

8.7.5.Address

Upper computer 485 communication address, using Modbus communication protocol, address range of 1~32;

8.7.6.User Rights Management (Admin Group Only)

Click on user rights management, enter user management, can add, delete, modify users and other operations, the interface is as follows:



8.7.6.1 New users

Click "New User" to add new users, set password and membership group;

8.7.6.2 Reproduction users

Click "Copy User" to quickly add new users, new users and selected users belong to the same group;

8.7.6.3 Modification of users

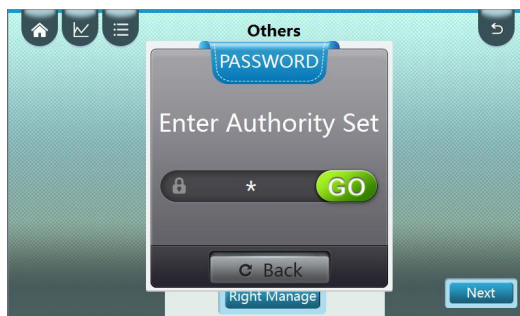
Click on "modify user" to modify the password of existing users, membership group;

8.7.6.4 Delete users

Click Delete User to delete the selected user member

8.7.7. Authorization set

Click on the next page of the other settings interface, enter password 103 to enter the authorization settings interface, as shown below:



After entering [authorization setting], according to the corresponding prompt, the manufacturer can set the phased password permission function by using the "device merchant U package" provided. The manufacturer can set the time of each stage and the corresponding password.