Laboratory Equipment Pty Ltd

INSTRUCTION MANUAL FOR LABORATORY PLANT GROWTH CHAMBER

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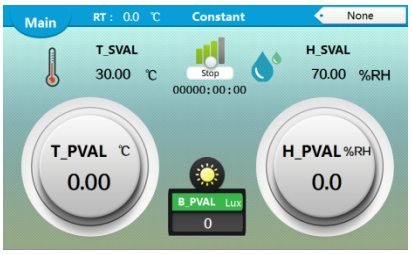
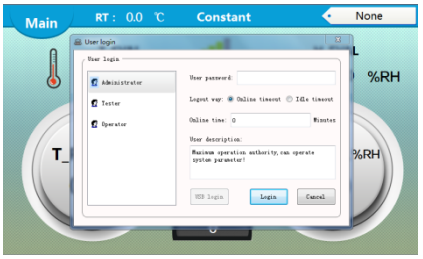
Chapter II. Interface and Operation

1. Main interface



1.1 User login

After the system starts up, the above【main interface】will appear, then the user Clicks any position on the screen to pop up the user login prompt box, as shown in the following figure:



Administrator: the initial password is 6, with the highest operating rights, which can operate【user settings】and【system settings】;

Experimenter: the initial password is 0, equipment debugging personnel, which can operate【user settings】;

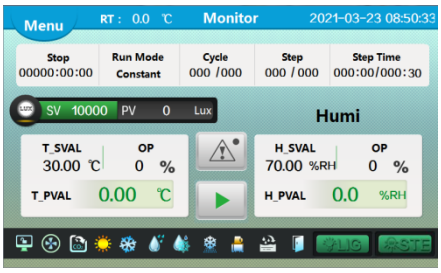
Operator: initial password is 0, for end user, it is not allowed to operate【user settings】and【system settings】;

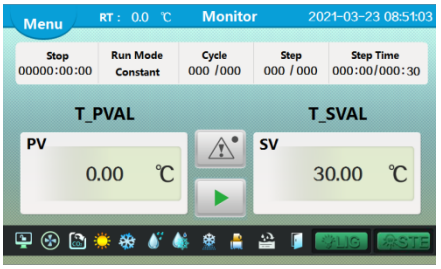
2. Menu interface

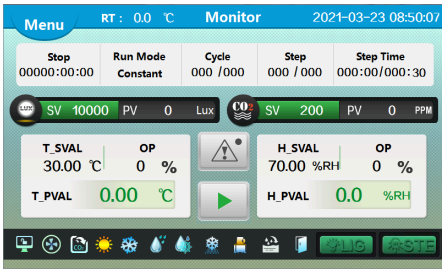
After the user logs in in the login interface, click 〖catalog〗 in any interface to enter the catalog interface. In the catalog interface, the user can enter the【monitor interface】,【curve interface】,【Historical data】,【mode setting】,【user setting】and【system setting 】interface; you can view the version number of upper and lower computers (version: 03.01, PLC version: 03, PC version: 01) in the lower left corner.

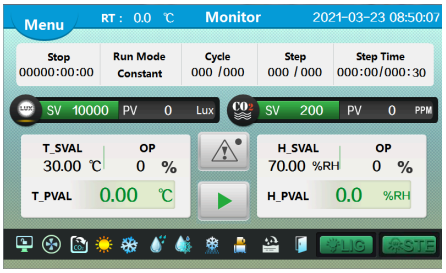
3. Monitor interface

In the【monitor interface】, the user can view the data to be controlled, the time progress of operation, the control output status of the system, the operation of the control system, the switch operation of lighting and sterilization, and the alarm record.

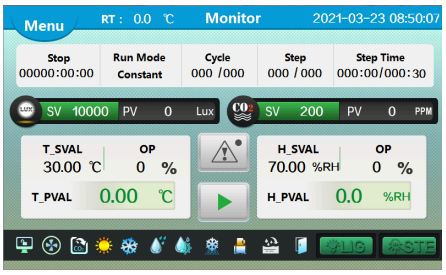








P T Y P H -T 7 1 0 1(- T)



P T C Q H -T 7 1 0 1(- T)

3.1. Icon description

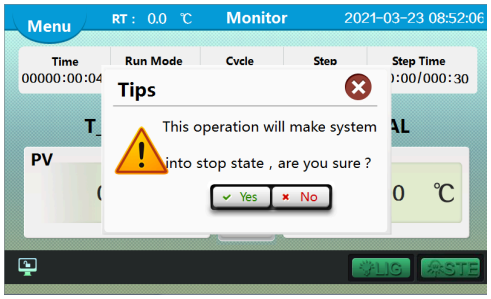
Name	Icon	Name	Icon	Name	Icon
Heating		Refrigeration output		Refrigeration delay	
Humidification		Dehumidification		Dehumidification delay	
Frosting		Pressure relief		Ventilation	
C O 2		Water scarcity		Door open	
Add water		Alarm			

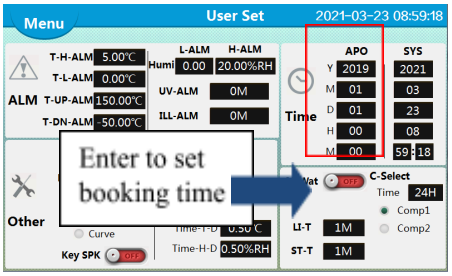
3.2. Key description

Key icon	Description
目 录	Return to【catalog Interface】
	Enter the alarm list interface to view the detailed alarm content
	The system into operation or stop
	Click to return the【Main Interface】
照明	Press the lighting button to turn on or off the lighting
杀菌	Press the sterilization button and click to turn on or off sterilization

3.3. Operational status

Display the four running states of the system in the upper left corner of the【monitor Interface】, which are【Run Stop】,【Booking Waiting】,【 Running】,【Timing】;

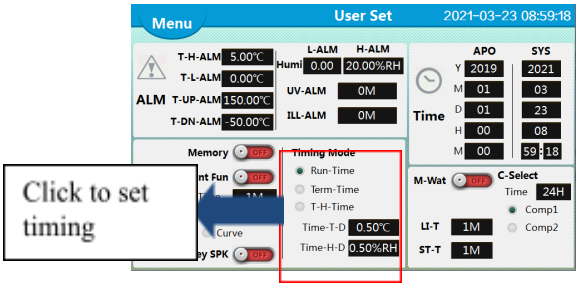




3.3.1 Reservation waiting

In the【User setting】interface, the user can set the reservation time. If the reservation time is more than the current time, click the【Run】in the【monitor Interface】, and the system first enters the【Reservation Waiting】state. When the system time reaches the reservation time, the system automatically enters the【Running】state;

3.3.2 Running



When the system time reaches the reservation setting time, the system enters the【Running】state from the【Reservation Waiting】state, if the user does not set the reservation time, click the【Run】,the system will directly enter the【Running】state. At this time, the system will judge the【Timing selection】.The user can set the【Timing Selection】in the【User Setting】interface, see user setting;

- Running timing: the system directly skipped the【Running】state and entered the【Timing】state directly;
- Constant temperature timing: when **"set temperature-therm timing deviation value < temperature measurement value < set temperature + constant temperature timing deviation value "**, the system changes from【Running】state, into【Timing】state;
- Temperature and humidity timing: when **"set temperature-temperature timing deviation value ≤ temperature measurement value ≤ set temperature + temperature timing deviation value"** and **"set humidity-humidity timing deviation value ≤ humidity measurement value ≤ set humidity + humidity timing deviation value "**, the system from the【Running】state, into the【Timing】state;

3.3.3 Timing

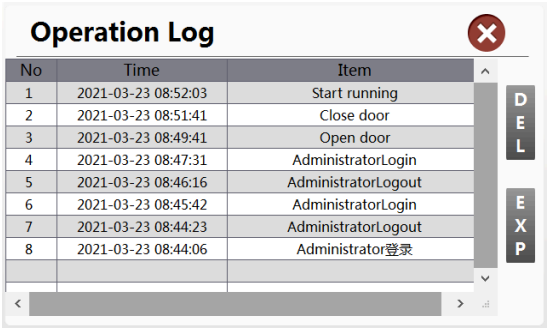
When the condition of timing judgment is met, the system will enter the status of【Timing】from【Running】, and the timing time will start to change. According to different control modes and mode conditions (refer to mode setting), the system will automatically enter the status of【Running】and【Timing】. When the operation stop condition is met, the system will enter the【Operation Stop】state;

3.3.4 Operation Stop

After the running time is over, the system closes all outputs and enters the【running stop】state;

3.4. Alarm function

When an alarm occurs in the system, the buzzer calls and prompts, and the【Alarm】button surface in the【monitor interface】is red; click any position of the screen to cancel the buzzer,and click on the alarm list interface to view the specific alarm content;



3.4.1. Temperature alarm

Refer to user settings for alarm value setting

Alarm Type	Alarm Description
High temperature alarm	When **"temperature measurement value ≥ temperature upper limit alarm value "**, there is a temperature upper limit alarm, the operation automatically stops
Low temperature alarm	When **"temperature measurement value ≤ temperature lower limit alarm value "**, there is a temperature lower limit alarm, the operation automatically stops
Temperature overflow	When the main temperature sensor fails, there is a temperature overflow alarm and the operation stops automatically
Environment temperature overflow	When the environment temperature sensor fails, there is an environment temperature overflow alarm and the operation stops automatically
Temperature deviation alarm	When **"temperature measurement value > temperature setting value + temperature deviation alarm value "**, there is temperature deviation alarm,Closed output of temperature alarm relay

Temperature deviation report

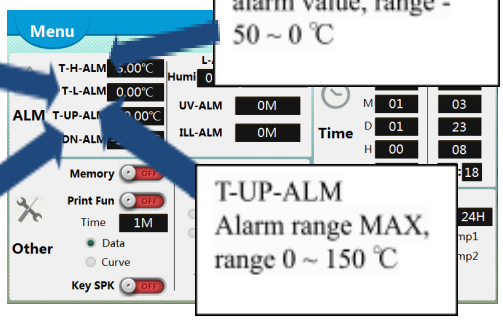
Police

When **"temperature measurement value < temperature setting value + temperature deviation alarm value "**, there is temperature deviation alarm,

Temperature alarm relay closed output, temperature deviation alarm value set to 0 for no lower deviation alarm.

T-L-ALM
Input lower deviation alarm value, range - 50 ~ 0 ℃

T-H-ALM
Input upper deviation alarm value, range - 50 ~ 0 ℃



T-UP-ALM
Alarm range MAX, range 0 ~ 150 ℃

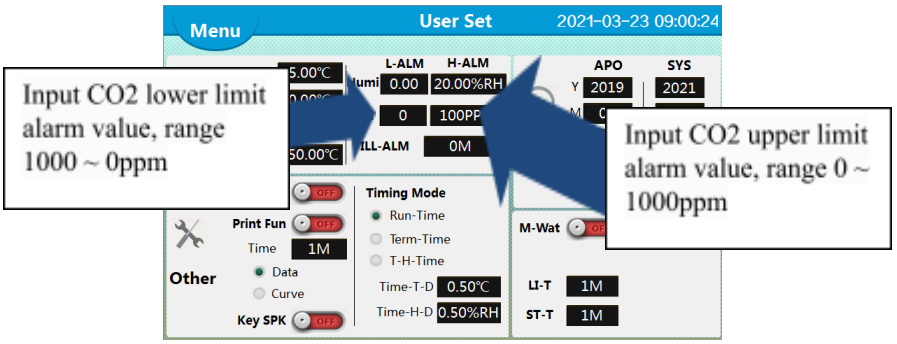
T-DN-ALM
Alarm range MIN, range - 50 ~ 0 ℃

3.4.2. Humidity alarm - F-FLI Models without humidity control.

3.4.3. Concentration alarm

PTCQH-T7101(- T) has this function, alarm value settings are detailed in【User Setting】

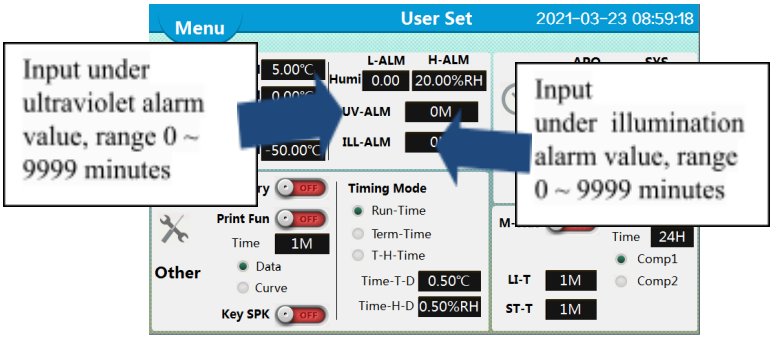
Alarm Type	Alarm Description
CO2 upper deviation	When **"CO2 measurement value >CO2 set value +CO2 deviation value alarm value "**,there is CO2 upper deviation alarm
CO2 lower deviation	When **"CO2 measurement value <CO2 set value +CO2 deviation value alarm value "**,there is CO2 upper deviation alarm



3.4.4 Illuminance and UV Alarm

Alarm value settings are detailed in【User Setting】.

Alarm Type	Alarm Description
Under-Illuminance Alarm	If **"under-illuminance time > illumination alarm "**, there is unde-illuminance alarm
Under-UV Alarm	If **"under-UV time > UV alarm "**, there is under UV alarm

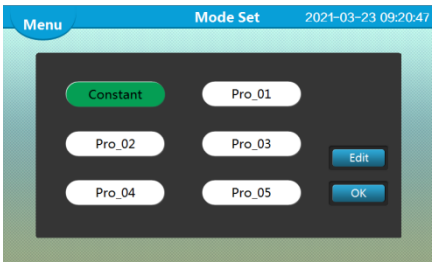


3.4.5. Other Alarms

Alarm value settings are detailed in【System Setting】-【Function Selection】

Alarm type	Alarm note
Water shortage alarm	When there is a water shortage signal, and more than the delay time of water shortage alarm, there is a water shortage alarm;
Open door alarm	When there is a door signal, and more than the door alarm delay time, there is a door alarm;

4. Mode setting



The system has 6 operation control modes: fixed value mode, program mode 01, program mode 02, program mode 03, program mode 04 and program mode 05. The user can set and edit the operation cycle (0 ~ 99), number of segments (1 ~ 100) and time (0 ~ 9 9:59) of each operation mode, temperature (the setting range is determined according to the "upper and lower limits of temperature setting" in【System Setting】【Temperature parameters】), humidity (0.0 ~ 99.99% RH), concentration (0 ~ 5000 ppm), illumination (0 ~ 6 level, 0 ~ 10 level or 0 ~ 20000 Lux), UV (0.0 ~ 200.0 / ㎡ or μ W / c ㎡);

4.1. Fixed value mode

The setting mode only sets one temperature control point; according to the timing mode selection in【User Setting】and whether the time setting value is 0, the following working modes can be realized:

Time	Timing	Description
0	——	Timing time is always 0, continuous operation without stopping;
Not 0	Running time	Click on the running system to start timing, timing time to set time, stop running;
	Constant temperature timing	Click the operation system to control the temperature. When it reaches the constant temperature timing range, it will start timing, and the timing time will arrive.After setting the time, stop running;
	Constant temperature Timing	Click the operation system to control the temperature. When it reaches the constant temperature timing range, it starts timing. When the timing time reaches the set time, it stops running;

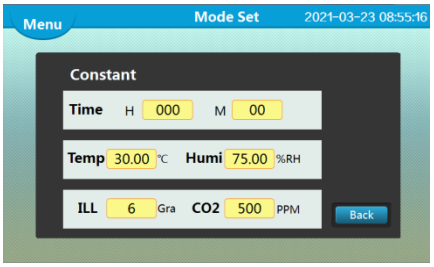
4. 2. Programme mode

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

Time	Timing	Description
0	Running Timing	If the step time is not timed, the system will jump to the next set value and continue to run, such as the last one, If it is also the last cycle, the operation will stop;
	Constant temperature timing	When the step time is not timed, the system controls the temperature. When it reaches the constant temperature timing range, it jumps to the next set value and continues to run. If it is the last section, it jumps to the first section. If it is also the last cycle, it stops running;
	Constant temperature humidity timing	When the step time is not timed, the system controls the temperature and humidity. When it reaches the constant temperature and humidity timing range, it jumps to the next set value and continues to run. If it is the last period, it jumps to the first period. If it is also the last period, it stops running;
Not 0	Running timing	Click Run to start timing step time. When the step time reaches the set time, it jumps to the next set value to continue running. The step time starts timing again. If it is the last period, it jumps to the first period. If it is also the last period, it stops running;
Not 0	Constant temperature timing	Click run, the system controls the temperature, after reaching the constant temperature range, the step time starts to count. After reaching the set time, jump to the next set value to continue running, the temperature still needs to reach the constant temperature timing After the range, the step time starts again. If it is the last period, it jumps to the first period. If it is also the last period, it stops running;
	Constant temperature and humidity Timing	Click to run, the system controls temperature and humidity, after reaching the range of constant temperature and humidity, step time start count When the step time reaches the set time, jump to the next set value to continue running, temperature and humidity. It is still necessary to reach the constant temperature and humidity range after the step time starts again, if the last paragraph, jump Go to the first paragraph and, in the case of the last period , the run stops;

4.3. Operational examples

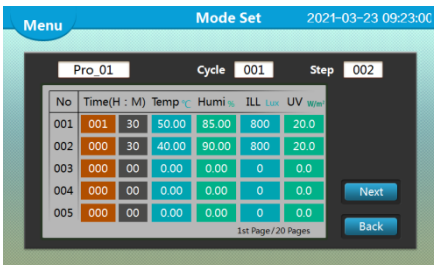
4.3.1 Fixed Value Mode



For example: Set a temperature of 30℃, humidity 75%, Illumination 6(【System Setting】Illumination 10 levels LED), concentration 500. Keep running without stopping.Set the operation flow as follows: click【Fixed value mode】in【Mode Setting】, then click edit to enter the value setting interface, as shown in figure:

Number	Content	Description
1	Time setting	Click on the Time text box to set 0:0 for running
2	Temperature setting	Click on the Temperature text box to set to 30.0
3	Humidity setting	Click on the Speed text box to set to 75.0
4	Illumination setting	Click on the Illuminance text box to set to 6
5	Concentration setting	Click on the concentration text box to set to 500

4.3.2 procedure model



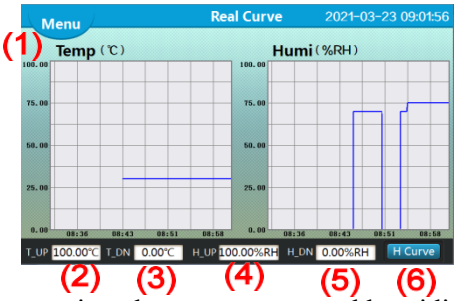
For example:set program mode 1 when the temperature rises to 50.0±1 hour and 30 minutes, then rise to 40.0℃ for 30 minutes, illumination is 800 Lux (【System Settings】Illumination Selecting the Light), UV 20.0 W /㎡ Cycle run once or cycle is 1, set as follows:

Number of steps	Setting time	Set temperature	Setting humidity	Set illumination	Set UV
Paragraph 01	1.30(1 hour 30 minutes)	50 .0 ℃	85. 00%	800Lux	W /㎡ 20.0
Paragraph 02	0:30(0 hours and 30 minutes)	40 .0 ℃	90. 00%	800Lux	W /㎡ 20.0

In【User Setting】, select 〖constant temperature timing〗; in【Mode selection】, select program mode 1, and click 〖Edit〗 to enter the【 Program mode 1】setting and editing interface.

Number	Content	Description
1	Period setting	Click on the periodic text box, pop up the numeric keyboard, set to 1
2	Step setting	Click on the text box, pop up the numeric keyboard, set to 2
3	Time setting	Click 01 and 02 time text boxes to set 1:30 and 0:30, respectively
4	Temperature setting	Click on section 01 and section 02 temperature text boxes to set to 50.0 and 40.0, respectively
5	Humidity setting	Click on the 01 and 02 speed text boxes to set to 85 and 90, respectively
6	Illumination setting	Click on the 01 and 02 concentration text boxes to set to 800 and 800, respectively
7	UV setting	Click 01 and 02 illuminance text boxes to set to 20.0 and 20.0, respectively

5. Curve interface



5.1. Real-time curves

5.1.1 interface description

In the real-time temperature curve interface, users can view the temperature and humidity curves in the last 30 minutes, in which blue is the set value curve and red

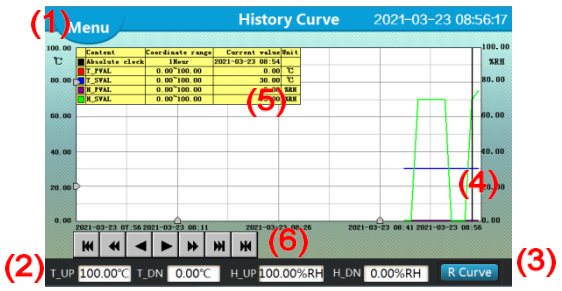
is the measured value curve;

5.1.2 Key Description

Number	Content	Description
1	【Catalog】Key	Return to the catalog interface
2	Upper Temperature Limit	Click to set the upper limit of the temperature curve, set the range: temperature lower limit ~℃160.00
3	Lower Temperature Limit	Click to set the lower limit of the temperature curve, set the range :-100.00℃~ the upper limit of the temperature
4	Upper Humidity Limit	Click to set the upper limit of the humidity curve, set the range: humidity limit ~100.00% RH; and
5	Lower Humidity Limit	Click to set the lower limit of the humidity curve, setting the range :0.00% RH~ the upper limit of humidity

6		Click to switch to the history curve interface

5.2. Historical curves



5.2.1. interface description

In the【History Curve】interface, users can view the trend of historical data curve, curve and Corresponding to the data stored in【Historical Data】, the user can set the upper and lower limits of temperature and humidity display, and can scale the vertical coordinates of the curve;

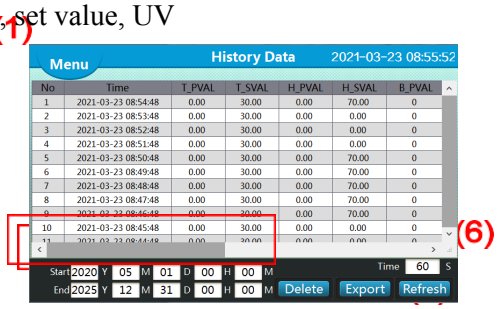
5.2.2. Key Description

Number	Content	Description
1	【Catalog】Key	Click to enter the catalog interface
2	Upper and lower temperature limit Upper and lower humidity limit	Click on the corresponding text box, set the upper and lower limits of temperature and humidity, can scale the Curve coordinates
3	[real-time curve] keys	Click switch to Temperature Real-Time Curve Interface
4	Historical Curve Line	Click on the history curve to display a black cursor
5	cursor correspondence point Data values	The temperature measurement value corresponding to the historical curve line, temperature setting value, humidity measurement value, humidity setting value
6	Curve page turning operation	Click on the corresponding button to achieve the curve page turning operation and etc.

6. Historical data

6.1. Interface description

After entering the【historical data】interface, the user can view the temperature measurement, set value, humidity measurement, set value and illumination measurement automatically saved by the system value, set value, concentration measurement value, set value, UV measurement value, set value and running, alarm state history data, and the saving interval can be modified;

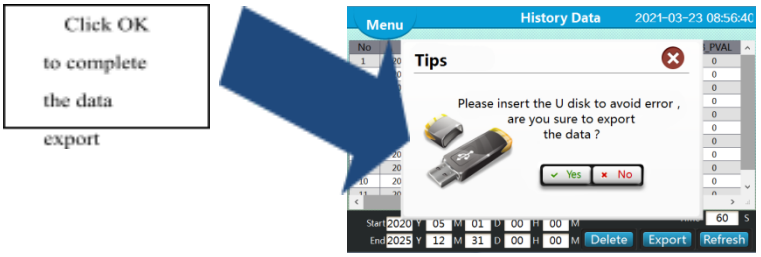


6.2. Key Description

Number	Content	Description
1	【Catalog】 Key	Click to return to【Catalog】Interface
2	Time Settings	Click the appropriate text box to set the start time and history data you want to view Closing time
3	【Delete】key	Click the pop-up Clear Data OKation dialog box; click Yes to delete the data
4	【Export】Key	Click on the pop-up U disk export OKation dialog box;
5	Press button	Click Refresh to view historical data
6	Sampling interval	Click to set the sampling interval for historical data

6. 3. Data export

If the user needs to export the【historical data】to the U disk, he needs to create a new historical data file in the U disk.Click the【export】button to pop up the dialog box to OK whether to export. The user should click OK to complete the data export.Click OK to complete the data export.【historical data】saved in the U disk root directory.In the folder, the file name is "constant temperature and humidity. csv", and the data format is csv file, which can be opened and edited with Excel;



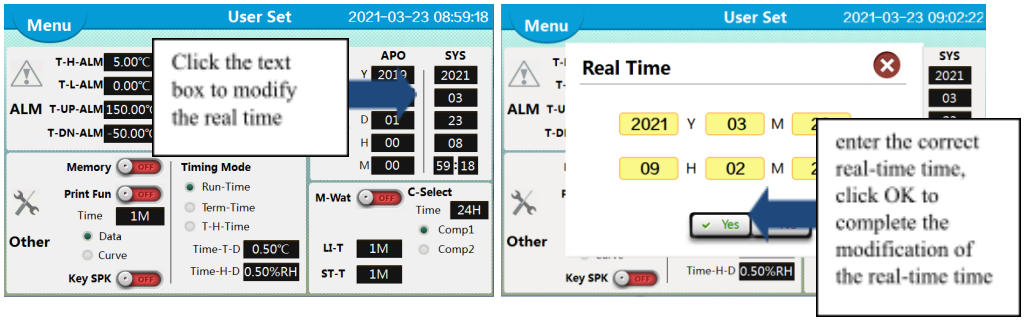
7. User set

Enter【user sett】, need "experimenter" or "administrator" permission ," operator "can not enter;

7.1. Alarm set

user can modify the system temperature, humidity, CO 2 concentration, illumination and ultraviolet alarm parameters in【User Set】, see 3.4 alarm function for details;

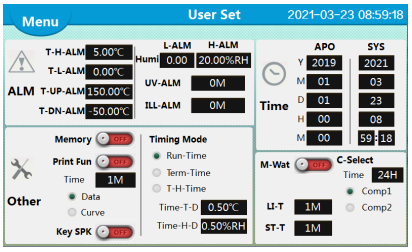
7.2. Timing set



Users can modify the real-time time of the system in【User Setting】, click on the real-time time will pop up real-time time modification box, after the modification click OK;

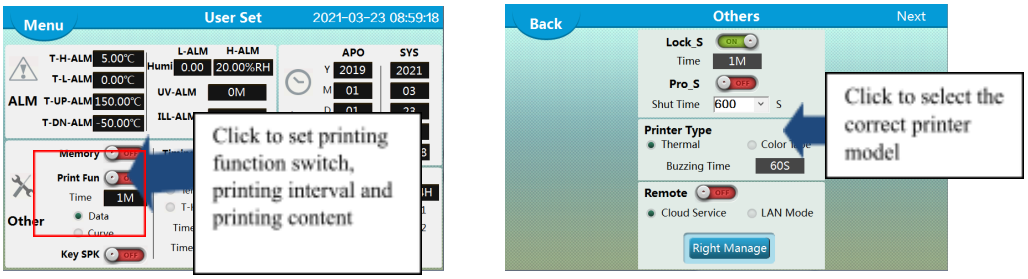
7.3. Power-down memory

When the system is running, the power off occurs. After the system is rebooted, the user can select the system to continue to run from the running state before power off. The user can set it in the【User Set】;



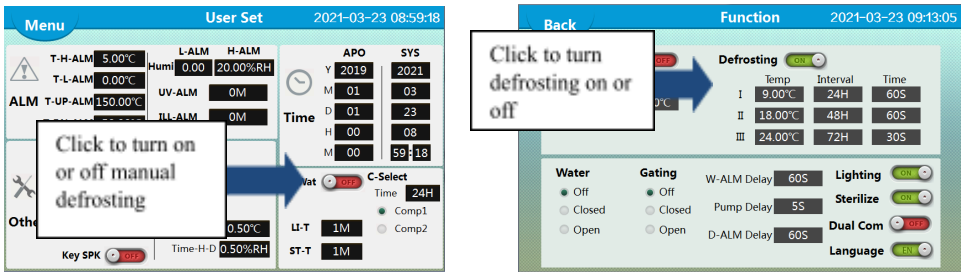
7.4. Printing function

The system can be connected to a micro printer to print the temperature measurement value and setting value in real time, or print the temperature and humidity curve, which can be set in【User Set】, note: the user needs to select the correct printer model in【system set】>【other set】.



7.5. Manual defrosting function

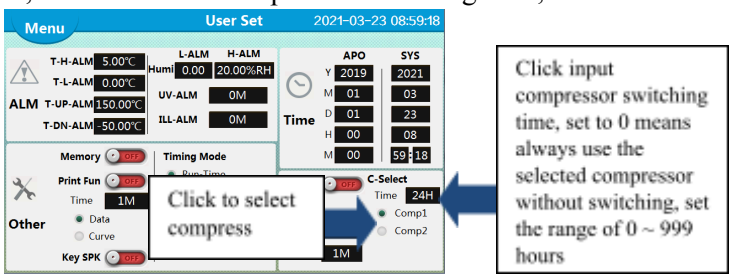
Users can manually turn on the defrosting output in the【User Set】interface, as follows:



If the defrosting function is turned off in the function selection interface of system settings, the manual defrosting function will not be displayed;

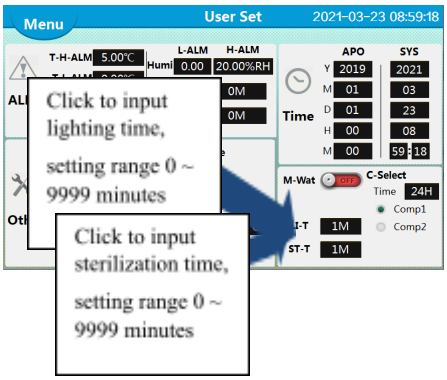
7.6. Compressor switching function

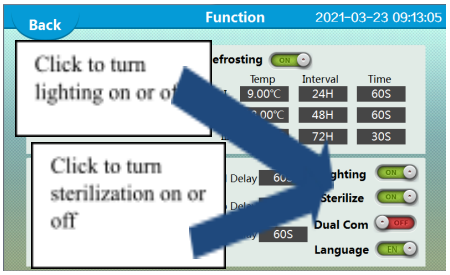
PTYPH -T7101(- T), the system has the control function of double compressor, the user can select the compressor in the【User Set】interface, and can set the compressor switching time;



7.7. Lighting and sterilization

After the lighting and sterilization output are turned on, the system can automatically turn off the output, and the automatic closing time can be set in the【User Set】interface. The operation is as follows:

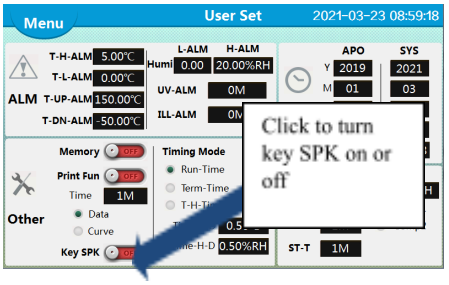




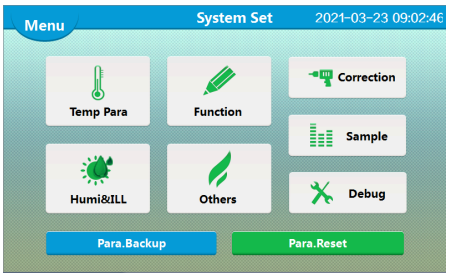
Users can also set whether to turn on lighting and sterilization functions in the【function selection】interface of【system settings】. If the function is turned off, there is no related operation content in【User Setting】and【monitoring interface】;

7. 8. Key SPK

In the【User Setting】interface, you can turn on or off the Key SPK;



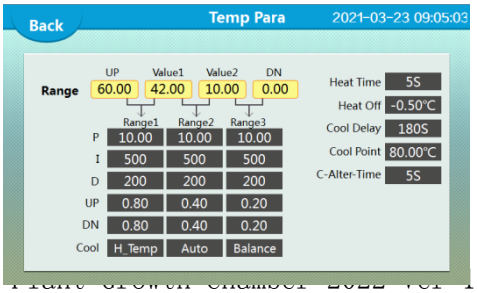
8. System Set



Enter【System Set】, need "administrator" permission ," operator "and" experimenter "can not enter;

8.1. Temperature parameters

8.1.1 set interval



The temperature control range of the system is divided into three sections by four values in the section,and each section corresponds to a set of temperature control parameters. The system controls the temperature according to the temperature control parameters in the section where the set temperature is located; the set section from left to right is the set upper limit value, Section 1, Section 1 2、Set the lower limit value. See the following table for details:

Name	Function	Initial value (set range)
Set Upper Limit	Upper limit for temperature setting	60. 0 ℃ (Interval values 1~160.0)
Section Ⅰ	The first interval limit should not be greater than the control upper limit.When the **control upper limit > set the temperature > interval value 1**, the system control the temperature according to the parameters of interval value 1	42. 0 ℃ (Interval value 2~ control upper limit)
Section II	The second interval limit value should not be greater than the interval value 1. When **the interval value 1> setting temperature > interval value 2**, the system control the temperature according to the parameters of interval value 2	10. 0 ℃ (Control lower limit ~ interval value 1)
Set limits	The lower limit of temperature setting value should not be greater than interval value 2. When **interval value 2 > setting temperature > control lower limit**, the system controls the temperature according to the parameters of interval 3	0. 0 ℃ (-500~ interval value 2).

8. 1. 2. Interval parameters

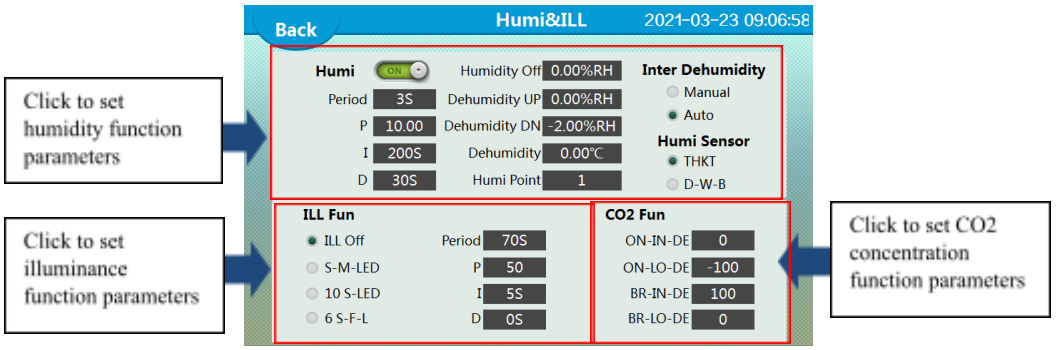
Name	Function	Initial value (set range)
Proportional band	Adjustment of Time Proportion	10.0 （0.10 ～ 50.00 ）
Integral Time	Regulation of Integration	500 seconds (1~2000)
Differential Time	Regulation of differential action	200 seconds (0~2000)
Upper deviation value	When the **measured temperature > the set temperature + the upper deviation value**, the compressor starts (only if the compressor mode is selected as【manual intermittent type】, it is effective)	0.80 ℃（-10 . 00 ～ 10 . 00 ）
Lower deviation value	When the **measured temperature < the set temperature + the lower deviation value**, the compressor starts (only if the compressor mode is selected as【manual intermittent type】, it is effective)	0.80 ℃（-10 . 00 ～ 10 . 00 ）

Options	Compressor control mode selection 0: high temperature type (compressor does not participate in temperature control) 1: Balanced type 2: Manual type (the system controls the compressor refrigeration on and off according to the upper and lower deviation value of refrigeration) 3: Automatic (the system automatically calculates the opening and closing points of compressor refrigeration)	Different temperature with different interval control methods

8.1.3 Control parameters

Name	Function	Initial value (set range)
Period	Heating control cycle	5 seconds (1~60)
Heating off deviation	Avoid temperature impact during low temperature control	-0.50（-50.00~50. 00）
Refrigeration output delay	Minimum interval between compressor closure and opening	180 seconds (0~600)
Refrigeration Protection Point	When the measured temperature is higher than the refrigeration protection point, the compressor will not start	80.0℃（0. 0～150）
Alternate compressor time	When the two compressors switch, the two compressors simultaneously Open, this parameter is available when model PTYPH-T7001(-T) only	5 seconds (0~60)

8.2. Humidity, illumination, concentration and UV parameters

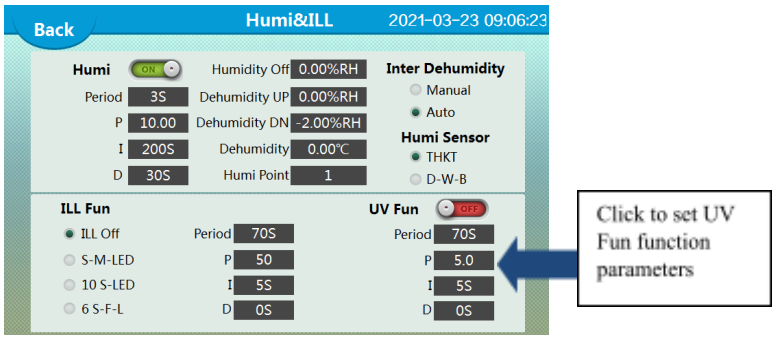


8.2.1. Humidity parameters

Name	Function	Initial value (set range)
Upper ventilation deviation	When CO2" measurement ≥ set value +CO2 upper deviation Bad ". Open CO2 output.	100PPM （-2000～2000）
Upper ventilation deviation	CO2" measurement value ≤ set value +CO2 lower deviation.Close the CO 2 output.	-100PPM （-2000～2000）

8.2.4. UV parameters

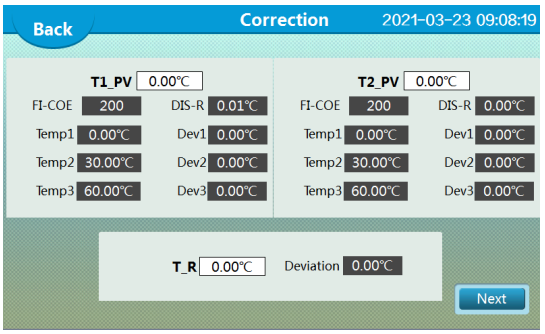
PTYPH -T7101(- T) is valid



Name	Function	Initial value (set range)
UV Functional Switch	Turn on or off UV functionality	Closed
UV Period	UV control cycle	70（0～600）
UV proportional band	Adjustment of Time Proportion	5.0（0～200.0）
UV integration time	Regulation of Integration	5（1～9999）
UV differential time	Regulation of differential action	0（0～9999）

8.3. Parameter correction

8.3.1. Measurement temperature correction



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

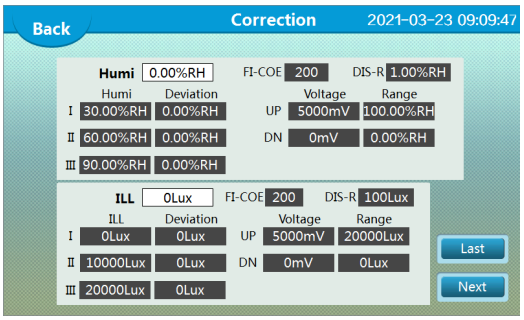
For example, the temperature is corrected at three measuring points of 0.00 ℃, 30.00 ℃ and 60.00 ℃. The user controls the temperature at these three points respectively. When the measuring temperature is stable, the mercury thermometer is used to measure the temperature in the box, which is - 0.2 ℃, 30.3 ℃ and 59.9 ℃ respectively. The correction method is shown in the table below ：

Name	Function	Initial value (set range)
Calibration temperature 1	Enter 0.0℃ in this example, 0.0℃, is the first correction point	0.00 ℃ (-50.00~ Calibration temperature 2)
Calibration temperature 2	Enter 30.0℃ in this example, 30.0℃, is the second correction point	30.00 ℃ (Calibration Temperature 1~ Calibration Temperature 3)
Calibration temperature 3	Enter 60.0℃ in this example,, or 6 0.0℃,is the third correction point	60.00 ℃ (Calibration temperature 2~1 50.00)
Calibration deviation 1	In this example -0.2 ℃ should be input, that is, the mercury thermometer value of the first correction temperature point - the system measurement value	0. 00 ℃ （ - 50.0 0 ～ 50 . 00 ）
Calibration deviation 2	In this example, -0.3 ℃ should be input, that is, the mercury thermometer value of the second correction temperature point - the system measurement value	0. 00 ℃ （ - 50. 00 ～ 50 . 00 ）
Calibration deviation 3	In this example, -0.1 ℃ should be input, that is, the mercury thermometer value of the second correction temperature point - the system measurement value	0.00 ℃ （ - 50. 00 ～ 50. 00 ）
Filter coefficient	Temperature filter coefficient, the larger the number, the more sensitive the response	200（ 0 ~ 200 ）
Display Range	Display insensitive area	0. 01 ℃（ 0.00 ~ 50. 00 ）

8.3.2. Environmental temperature correction

In the "automatic intermittent" control of refrigeration, the ambient temperature is the basis of control calculation. In order to make the temperature control more accurate, users need to correct the ambient temperature to make it basically the same as the ambient temperature of the box.

Name	Function	Initial value (set range)
Calibration deviation	Calibration deviation = indoor temperature - environment temperature display	0 ℃（- 50 . 0 ～ 50 . 0）



8.3.3. Measurement of humidity correction

Name	Function	Initial value (set range)
Correctional humidity 1	First correction point	30.00% RH (0.00~ Correction humidity 2)
Correctional humidity 2	Second correction point	60.00%R H (corrected humidity 1~ corrected humidity 3)
Correctional humidity 3	Third correction point	90.00% R H (corrected humidity 2~100.0 0)

Calibration deviation 1	The "hygrometer" at the first correction point - System measurements "	0.0 RH (-500.00~50.00)
Calibration deviation 2	The "hygrometer" at the second correction point - System measurements "	0.0 RH (-500.00~50.00)
Calibration deviation 3	The "hygrometer" at the third correction point - System measurements "	0.0 RH (-500.00~50.00)
Lower limit of signal voltage	Minimum output voltage signal of humidity sensor	0 m V (0~ upper signal voltage)
Signal voltage upper limit	Maximum output voltage signal of humidity sensor	5000 m V (lower signal voltage limit ~ 5000)
Display lower limits	Humidity value corresponding to the minimum output voltage of humidity sensor	0.0% R H (0.00~ Display upper range (limit)
Display upper limit	Humidity value corresponding to the maximum output voltage of humidity sensor	100.0% R H (Display lower limit ~ range 100 . 00)
Filter coefficient	Temperature filter coefficient, the larger the number, the more sensitive the response	200（ 0 ~ 200 ）
Display interval	Display insensitive area	1.00 R H (0.0~50.00)

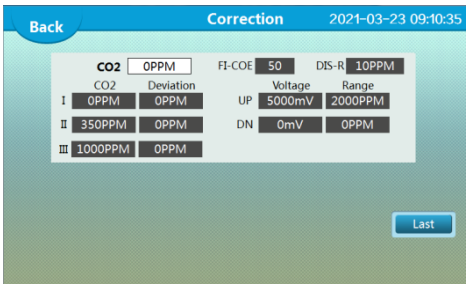
8.3.4. Measurement of illumination correction

The calibration method is the same as that of temperature;

Name	Function	Initial value (set range)
Correctional Illumination 1	First correction point	0L u x (0~ corrected illumination 2)
Correctional Illuminance 2	Second correction point	10000L u x (corrected illuminance 1~ corrected illuminance 3)
Correctional Illuminance 3	Third correction point	20000L u x (corrected illuminance 2~2 0 000)
Calibration deviation 1	Illuminance at the first corrected **"illuminance point - system measurement"**	0L u x （ - 5000 ～ 5000 ）
Calibration deviation 2	Illuminance at the second corrected **"illuminance point - system measurement"**	0L u x （ - 5000 ～ 5000 ）
Calibration deviation 3	Illuminance at the third corrected **"illuminance point - system measurement"**	0L u x （ - 5000 ～ 5000 ）
Lower limit of signal voltage	Minimum value of output voltage signal of concentration sensor	m V 0 (0~ Signal voltage ceiling)
Signal voltage upper limit	Maximum value of output voltage signal of concentration sensor	500 m V 0 (5% lower limit ~ signal voltage 5000)
Display lower limit	The illumination value corresponding to the output minimum voltage of the illumination sensor	0L u x (0~ upper limit of display range)
Display upper limit	The illumination value corresponding to the output maximum voltage of the illumination sensor values	20000L u x (Display lower limit ~20000)

8.3.5. Calibration of measured concentrations

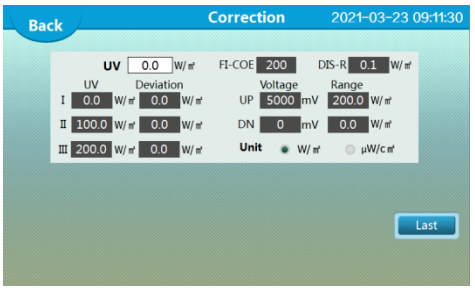
The calibration method is the same as temperature;



Name	Function	Initial value (set range)
Calibration concentration 1	First correction point	0PPM (0~ correction concentration 2)
Correctional concentration 2	Second correction point	350PPM (corrected concentration 1~ corrected concentration 3)
Calibration concentration 3	Third correction point	1000PPM (corrected concentration 2~5000)
Calibration deviation 1	At the first corrected concentration point "concentration gauge - system measurements"	0PPM (-1000~1 0PPM (-1000~0PPM (-1000~0PPM (-1000~)
Calibration deviation 2	At the second corrected concentration point ," Concentration - System Measurements "	0PPM (-1000~1 0PPM (-1000~0PPM (-1000~0PPM (-1000~)
Calibration deviation 3	At the third corrected concentration point ," Concentration - System Measurements "	0PPM (-1000~1 0PPM (-1000~0PPM (-1000~0PPM (-1000~)
Lower limit of signal voltage	Minimum output voltage signal of concentration sensor	0 m V (0~5000)

8.3.6. UV calibration

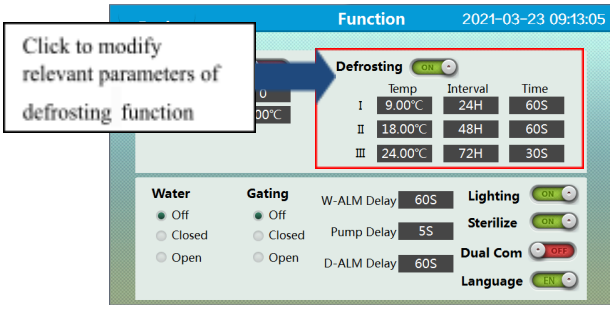
The calibration method is the same as temperature;



Name	Function	Initial value (set range)
Correctional Illumination 1	First correction point	0.0W/㎡(0~ correction concentration 2)
Correctional Illuminance 2	Second correction point	100.0 W/㎡ (corrected concentration 1~ corrected concentration 3)
Correctional Illuminance 3	Third correction point	W/㎡200.0 (corrected concentration 2~200.0)
Calibration deviation 1	At the first corrected concentration point **"UV meter value - system measurement value"**	0.0W/㎡(-2 0000W/㎡2 00). .
Calibration deviation 2	At the second corrected concentration point **"UV meter value - system measurement value"**	.0.0W/㎡(-2 0000W/㎡2 00). .
Calibration deviation 3	At the third corrected concentration point **"UV meter value - system measurement value"**	. 00W/㎡(-2 0000W/㎡2 00). .
Lower limit of signal voltage	Minimum output voltage signal of UV sensor	0 mV (0~ Signal voltage ceiling)
Signal voltage upper limit	Maximum output voltage signal of UV sensor	m V 5000 ~5000)
Display lower limits	The UV value corresponding to the output minimum voltage of the UV sensor	0.0W/㎡(0~ upper range limit)
Display upper limit	The UV value corresponding to the output maximum voltage of the UV sensor	W/㎡200.0(showing lower limit ~ range 200 .0)
Unit selection	Unit of UV	W/㎡

8.4. Function selection

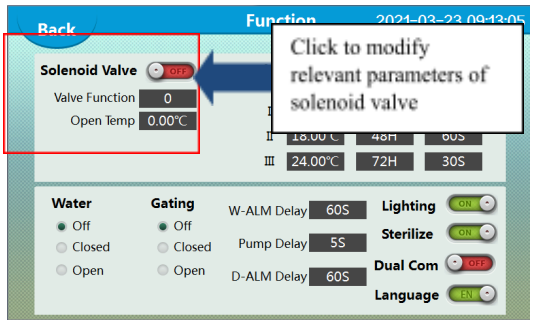
8.4.1. Defrosting function



Name	Function	Initial value (set range)
Defrosting temperature 1	As the setting temperature ≤ defrosting temperature is 1, the system is based on defrosting Interval 1 and defrosting time 1	9.0 ℃ (0.0~ defrosting temperature 2)
Defrosting temperature 2	When defrosting temperature is 1≤ set temperature ≤ defrosting temperature is 2 According to defrosting interval 2 and defrosting time 2	18. 0 ℃ (defrosting temperature 1~ defrosting temperature 3)
Defrosting temperature 3	When defrosting temperature 2≤ set temperature ≤ defrosting temperature 3 According to defrosting interval 3 and defrosting time 3	24. 0 ℃ (defrosting temperature 2~500).
Defrosting interval 1	Each time the system passes through ≤ set temperature and defrosting temperature 1 Frost interval 1, defrost once	24 hours （0～ 9999）
Defrosting interval 2	When defrosting temperature is 1≤ set temperature ≤ defrosting temperature is 2 One defrosting per defrosting interval 2	48 hours （0～ 9999）
Defrosting interval 3	When defrosting temperature 2≤ set temperature ≤ defrosting temperature 3 Frosting at 3 intervals	72 hours （0～ 9999）
Defrosting time 1	As the setting temperature ≤ defrosting temperature 1, the defrosting system continues Time to defrost output time 1	60 seconds （0～ 999）
Defrosting time 2	When defrosting temperature is 1≤ set temperature ≤ defrosting temperature is 2 Frosting duration 2	60 seconds （0～ 999）
Defrosting time 3	When defrosting temperature 2≤ set temperature ≤ defrosting temperature 3 Frosting duration 3	30 seconds （0～ 999）

Note: if the user wants to turn on defrosting before the defrosting interval is reached, the defrosting function can be turned on manually in the user settings interface. If the defrosting interval is set to 0, it means that there is no automatic defrosting and only manual defrosting can be used; if the defrosting time is set to 0, the defrosting function can be turned on manually The defrosting function is invalid; when the setting temperature is > defrosting temperature 3, the defrosting function is invalid.

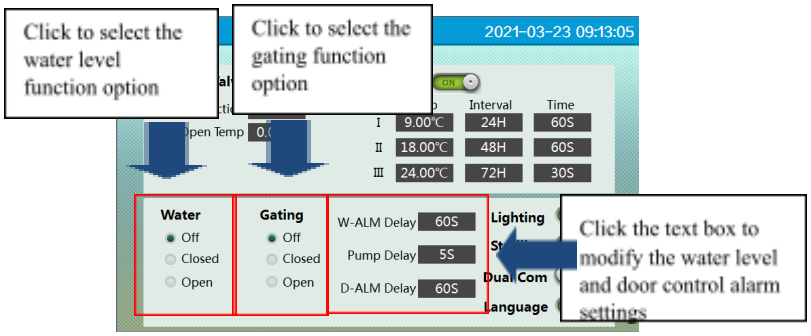
8.4.2. solenoid valve Valve function



Name	Function	Initial value (set range)
solenoid valve Functional selection	-1: when the compressor needs to be started, if the start-up delay time is up, open the solenoid valve first, and then start the compressor after 10 seconds; 0: normally open solenoid valve mode; 1. 2: see the【opening temperature of solenoid valve】for details.	0 （-1～2）
solenoid valve Opening temperature	If the function is set to 0, when "temperature measured value ＜ temperature set value - Open temperature".When "temperature measurement value > temperature setting value + opening temperature", the solenoid valve is closed; If the function is set to 1, the solenoid valve will open when the "temperature setting value ≥ opening temperature" is selected; when the "temperature setting value < opening temperature", the solenoid valve will close. If the function is set to 2, when "temperature measurement value > temperature setting value + opening temperature", the solenoid valve will be opened; otherwise, the solenoid valve will be closed.	0 .00 ℃ （-20. 00~50. 00）

8.4.3. Water level, gating function

In【system settings】【function selection】, you can select whether the water level and gate control function are effective, and you can select the open or closed state;

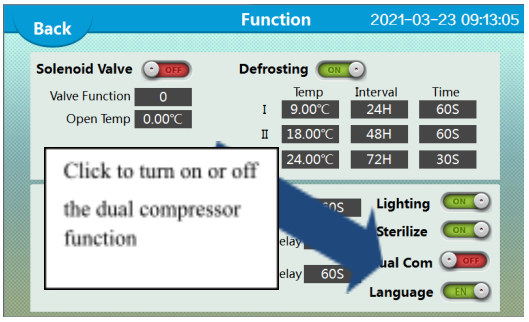


Name	Function	Initial value (set range)
Water level function	Select the situation under which there is water level alarm	Water level closure
Gated function	Select the situation under which there is gated alarm	Gated closure
Water shortage alarm delay	When there is a water shortage signal, the system will give an alarm after delaying the parameter time and turn off the output of the water pump	60 seconds (0~9999)

Pump shutdown delay	When it is a positive value, it means that the water pump will be shut down after reaching the normal water level, and when it is a negative value, it means that the continuous water shortage time reaches this time Turn on the water pump after operation	5 seconds (-999~9999)
Open door alarm delay	When the door is opened and the time reaches the parameter time, the system will give an alarm	60 seconds (0~9999)

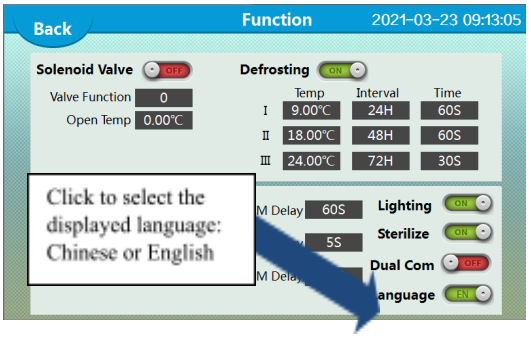
8.4.4. Dual compressor functions

In【system settings】->【function selection】;the dual compressor function can be turned.



8.4.5. Language selection function

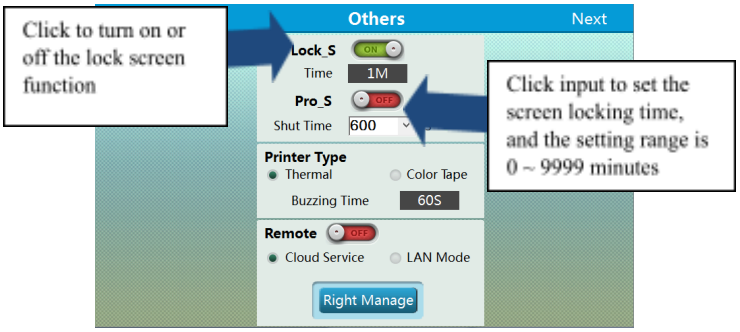
In【system settings】->【function selection】, you can select a language;



8.5 Other settings

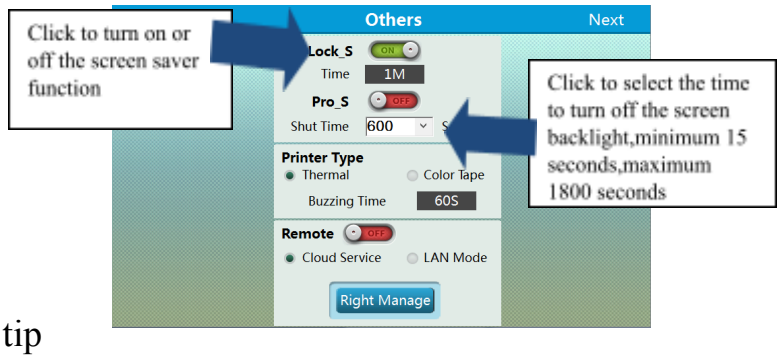
8.5.1. Lock screen function

Automatic screen locking means that if the user does not operate the touch screen for a long time, the system will automatically jump out of the【main】interface of the system. In the【main】interface, only the necessary data can be viewed, but no operation can be carried out. If you need to operate, you can click any position of the touch screen to directly enter the【monitoring】interface in【other settings】of【system settings】, set the【lock screen】function as shown in the following figure:



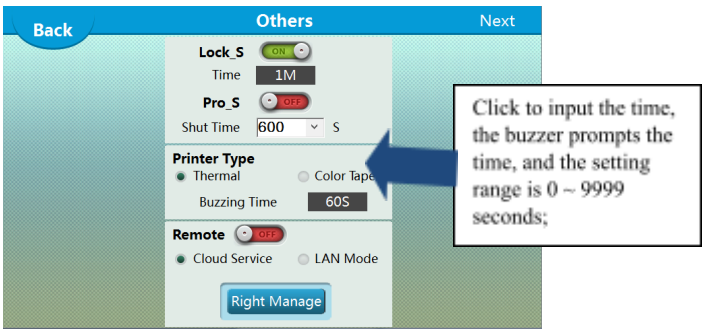
8.5.2. Screen saver

The Screen saver function means that if the user does not operate the touch screen for a long time, the system will automatically turn off the backlight to reduce the aging loss of the touch screen. The user can set the【screen saver】in the【other settings】of the【system function】as shown in figure:



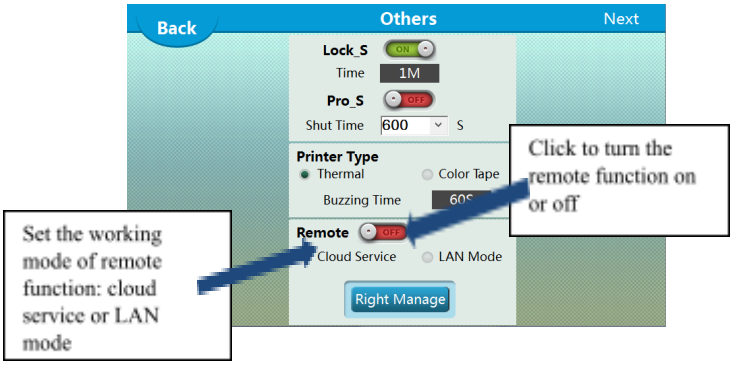
8.5.3. Buzzer tip

When the system finishes timing and enters the stop running state, the buzzer automatically after a period of time. The user can set it in【other settings1】of【system settings】to finish timing. When the time is set to 0, the buzzer will finish timing.When the setting value is 9999, the buzzer will beep until the user clicks the touch screen to cancel the beep;



8.5.4. Ex-factory parameters

Users can set up the remote operation network equipment through the computer remote monitoring system (only the product with (- T) has this function).Please refer to the touch screen remote monitoring settings manual. Users can set this function in【system Settings】->【other settings】, as shown in the following figure:

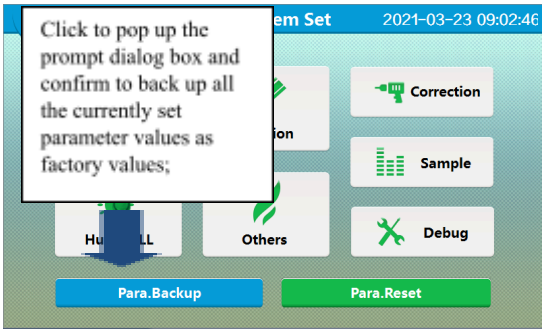


8.6. Ex-factory parameters

In order to avoid parameter confusion caused by no operation or other factors, the system provides backup and recovery functions for all set parameters;

8.6.1. Backup of factory parameters

When the user sets all parameters according to his own needs, he can click the【factory parameter backup】in the【system settings】to back up all the current parameter values. This operation will cover the original factory values, which needs careful operation, as shown in the figure;



8.6.2. Restoration of factory parameters

When there is an error in the system parameters, the user can click the【factory parameter recovery】 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. Operation as shown in figure;