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THT-A101T TEMPERATURE AND HUMIDITY TESTER OPERATIONAL MANUAL

Foreword

Safety Precautions

- Installation and operation of the machine personnel must observe the following safety precautions described in.
- To install and use the machine as described below, the contents of the stage must read.
- After installation, testing machine before the need to ensure that everything works.
- Please keep this manual for reference.

Getting started

- Prohibited the use of flammable and explosive, and explosive and flammable ingredients containing material for testing in order to prevent an explosion
- The machine is strictly prohibited the use of flammable gases, there are objects and can be life-corrosion stainless steel, resin and silicone rubber material for testing.
- Installation environment should be the same as air-conditioned rooms. The ambient air is not allowed organic solvents, plastic acidic materials, alkali metals and other chemicals, or coating machine parts and exterior coatings are liable to destruction, and then to machine failure.
- Machine and heat away from flammable and explosive substances, in order to prevent fire.
- Can generate electromagnetic waves of medical equipment, normal operation of the machine will have an undesirable effect, it placed the device, machine, radio and the equipment can emit electromagnetic wave is best to keep distance of 3 meters or more.

Symbol explanation

⚠ **Warning**

Said that if the operation of improper use can cause serious consequences, and even harmful to the operator's life.

⚠ **Attention**

That if used improperly will hurt the operation of the operator, or other things.

⦸ Indicated that prohibited items
❗ Saying that mandatory items
❗ Saying that mandatory items

Confirm compliance with the safety precautions

- This note is divided into a ⚠ warning and ⚠ attention.⚠ Warning that if improper operation would have serious consequences and may even be harmful to the operator's life .⚠ attention that, as the case will have serious accidents. In any event must comply with the safety precautions.
- Save this manual for reference.

Installation and Power Engineering

⚠ **warning**

- Requested by professional engineers to install the machine. If the installation is defective, may lead to leakage, electric shock or fire, as accidents. ❗
- Floor must be able to withstand the weight of the machine. If the floor is not enough strong or installed defective machine may have been damaged due to dumping. ❗
- Machine installation, refer to Chapter IV of this manual to install. If the installation is defective machine may occur leakage, electric shock or fire, as accidents may have been damaged due to dumping. ❗
- Ground installation. Ground can not be connected to the gas pipe or water pipe, lightning rod or telephone ground lines. Defective ground will lead to risk of electric shock must be a qualified electrician to the construction. ⏚
- Electrical engineering installation must comply with Chapter IV of this manual in the related regulations. Make sure the power cable to the machine to normal power supply. Leakage power line or install a defective lead to electric shock or fire. ❗
- Ouble-check the door button is fastened. If the lock loose will result in heat leakage, fire or electric shock danger. ❗
- Open the maintenance front, we must cut off the power. Otherwise, risk of electric shock will occur. ⦸
- Do not change the safety protection device settings, otherwise an explosion or fire. ⦸
- Please use the designated Freon, Freon ban on the use of any other, if mixed with other Freon cooling system, its refrigeration system the pressure will rise, rupture, explosion. ⦸

⚠ **Attention**

- Prohibited machine installed in a place where flammable gas leaks, the gas will be gathered around the fire machine.
- Please keep good ventilation, even if the Freon leak, it will not happen hypoxia.

During operation

⚠ **Warning**

- Prohibited the use of flammable and explosive substances for the experiments, and contain explosive and flammable material ingredients carefully explosion.
- When the test box temperature (humidity) of more than 60°C, please do not open the door to avoid being inside spilled scalding hot gas or inside the door.
- Do not use your fingers or other objects into the outlet and out of contact with outlet to prevent the rapid operation will be within the fan blades scratch.
- Machine operation, non-touch control box electronic control devices to prevent electric shocks.
- If the Freon leak, or can not stop the normal operation of machine, please complete the total power supply cut off, please Email ; prevent any electric shock, fire or explosion.
- If the protection device function keys, switches can not be used, please completely cut off the power. The reason may be ground fault or current is too large, which could lead to electric shock, fire or explosion.
- The machine uses Freon is non-toxic, odorless, nonflammable, but once exposed to the fire source of leakage, it will produce toxic gases. Freon is heavier than air due to deposition on the ground will lead to hypoxia. If the event of Freon leak, immediately turn off around the fire source, for ventilation, cleaning the ground, please Email to us.
- The occurrence of certain anomalies (if you smell something burning smell), immediately stop machine operation, cut off the power. If the machine continues to run may malfunction, electric shock or fire, so it happened please Email to us.

⚠ **Attention**

- Can not be sprayed near the machine sprays containing flammable gases and flammable substances, or gates or switches Department sparks caused a fire.

Repair & re-install

⚠ **Warning**

- Unless you are a qualified technician, or prohibiting the demolition, repair or modify the machine. If the demolition, repair or modify defective, then the machine can not function properly, will result in injury, electric shock or fire.
- Maintenance to ensure a smooth machine stand, or may be due to tilt, pour off the injuries.
- To move the machine, please contact the service department or consult a qualified technician, defective installation will lead to water leakage, electric shock or fire.

Other relevant considerations

⚠ **Warning**

- If the spark occurs, please immediately and completely shut off power. Otherwise, electric shock or fire will occur.
- Please use gas or electrical equipment suitable for fire extinguishers fire.

⚠ **Attention**

- Before start cleaning or repair the machine, completely cut off the power, otherwise vulnerable to shock.
- Cleaning machine, the ban on direct hand contact with the condenser to avoid being cut.
- Regular checks on the ground whether there is damage, if damaged, sinking machine may have been shattered.
- Prohibiting step on machines placed on the platform or in the above things: to prevent the machine was damaged.
- Prohibition of touch in hand, under wet conditions without electric components such as fuse switch or power switch, to avoid being electric shocks.
- Prohibit touching hot parts, such as compressors, condensers, copper and so the surface temperature can reach 100°C or higher in order to prevent burns!

□ ForewordChapter I Precautions during use

This chapter describes the use of the machine considerations. Please be sure to carefully read and follow the instructions in this chapter in case you, other people, test samples or machine itself cause harm.

The material can not be placed in test box

Forbidden experimental material

Forbidden to use the machine testing of explosive or flammable substances, as well as the material composition containing the following things:

(Please do not use this machine to test the flow of carbon and objects of life.)

Explosive material:

- Nitrification glycol, nitroglycerine, nitrocellulose and other material easy to explosive nitrates.
- Trinitrobenzene, trinitrotoluene, 3-nitro-phenol, other vulnerable explosive nitro compounds;

Combustible material:

- Lithium, metallic potassium, metallic sodium, phosphorus, phosphorus sulfide, red phosphorus, Se Lulu, carbide, phosphide carbon, magnesium powder, aluminum powder, other metal powder, sodium sulfite.
- Oxide

1. Potassium chlorate, sodium chloride, ammonium perchlorate, chlorate other classes;
2. Over potassium hydroxide, peroxide of potassium, ammonium peroxide and other inorganic peroxides;
3. Potassium nitrate, sodium nitrate, ammonium nitrate and other nitrates;
4. Sodium chlorite, chlorate to other sub-categories;

- Flammable materials

1. Ether, gasoline, acetaldehyde, propylene oxide, carbon disulfide, and other burning material is less than -30°C;
2. General ethane, ethylene oxide, carbon disulfide, and other ignition is greater than -30°C lower than 0°C substances;
3. Methanol, ethanol, xylene, amyl acetate, and other ignition is greater than 0°C lower than 30°C substances;

4. Kerosene, light oil, turpentine, isoamyl alcohol, and other burning more than 30°C lower than 65°C substances.

- Combustible Gas
- Hydrogen, acetylene, methane, ethane, propane, butane, and other temperature at 15°C and 1 atm under the conditions of combustible gases.

Note:This Information taken from the Industrial Safety and Health Act to enforce regulations.

Apart from the above listed substances, the material described below can not be used to test:

- To corrosion of stainless steel, resin, silicone rubber and aluminum material;
- Will produce water and gases;
- Living material;
- The material will produce a lot of heat will lead to test the temperature inside can not maintain the set temperature.

(If the above requirements, should be pre-production machine instructions)

Use matters needing attention

- Machines running around the environment temperature range: 20 ~ 30°C
- Temperature and cooling rate (no-load)

1.Cooling rate: about every minute 1°C;
2.Heating rate: about every minute 3°C;
3.Program settings : Buffer time to 1 minute.

Attention:

a.If the program set the buffer period of time "more than" its own heating and cooling machine (wet) degrees to the time required, the time will be set in accordance with the program.

b.If the program set a buffer period of "less than" their own heating and cooling machine (wet) degrees to the time required, then the controller will wait for warm (wet) degrees to reach only to the next program setting.

c.Openings and closings

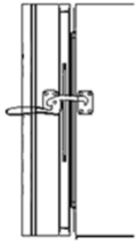
1) In the high temperature (humidity) 60°C and above, please do not open the door

Very dangerous, there will be hot air overflow

Touch dangerous, hot inside chamber.

Dramatic changes in ambient temperature may lead to deformation of the door can not close the test box, make sure the temperature is below 60°C and then open the door.

2) Machine is running at below 0 °C, we should try to avoid opening the container. When doing low-temperature, open the door easy to cause internal evaporator and other part's ice-bound phenomenon, especially among the lower the temperature the more serious the situation, if you must open, you should try to shorten the opening hours.



Door did not properly closed

The door is closed good(Vertical vie)

- Run under the high temperature humidity condition (except for temperature test chamber)

In the run under high and humid condition, the steam may be from the test tank pressure relief holes on the exhaust, this is normal.

- Cryogenic state run: After a long time's run or maintain low temperature, the moisture forms the ice dregs will appear in the door and sealing strip. But this will not affect the machine and its performance.
- Constant temperature and humidity test machine running under high temperature Points to Note (over 100°C).

1.Takes out the wet bulb gauze (except for temperature test chamber): Wet bulb gauze high temperature limit for 100°C below, therefore please take out the gauze tests the box.

2.Surface temperature rise: Under high temperature operation, the machine surface temperature will rise (especially in the door).

Attention: The door window glass and door temperature will be higher.

- Test the temperature boxes below 0°C under the state long-term operation, temperature and humidity control may not work or the compressor may be frozen. If this situation occurs, please warming to about 60°C and maintained for 30 minutes (for the evaporator and compressor thawing). And then re-start tests.
- Water cleaning (except for temperature test chamber):

Open the drain valve, with a clean water rinse. Check whether the clean water inside and then recharge.

- Test fever material needing attention:

If the trip during dynamic testing machine, it is due to the temperature rise test box. Make sure machine safety protection device, when the machine stops running, the current control switch to cut off the power of the test sample.

Safety protection device

⚠ **Forbidden**

According to the test conditions and the type of sample to set the security device.

Unless the settings are completely correct, otherwise the test may fail and cause damage to test samples.

The Department of machine protection devices through software and hardware together generating function, for the protection of machine and users

- Safety protection device

Safety Device	Set	Function	Fault Display
Water over-temperature protection device (EGO / TEMP. PROT) (Except for temperature test chamber)	Temperature Settings: 1.Over-temperature protection: should be set at the location of 125 ℃ TEMP. PROT : Should be located in the location of 130 ℃.	To prevents to add the wet barrel anhydrous to create the temperature excess temperature.	Controller Display WET HEAT
Temperature over-temperature protection device (TEMP. PROT)	Temperature Settings: generally the experiment set temperature plus 25 ℃ for protection.	To prevents inside the temperature excess temperature.	Controller Display DRY HEAT
Power shortage protection device	The machine are the three-phase power.	To prevents the three-phase power shortage	Controller Display WATER PRE
Overload Protection Device	According to the different models, the current that is different, so over-current has been set, Please do not begin	To prevent the compressor current is too large, more than rated current.	Controller Display PEF

Safety Device	Set	Function	Fault Display
Pressure protection device	Compressor pressure set : 25 kg / cm^2G	To prevent the compressor pressure is too high, than the rated pressure	Controller Display PEF
Non-fused switch		Prevents the main circuit to have the short circuit	
Control Loop Protectors （FUSE）		Prevents the control loop, to have the short circuitcircuit	
Power circuit protector (FUSE)		Prevents the heater, the humidifier to have the short circuit	

Other matters needing attention

- Used in the machine where the Freon is not flammable. However, if the leak and caught fire, it would produce toxic gases. Because Freon is heavier than air, so if leakage, then there could be deposited in the ground caused by hypoxia.

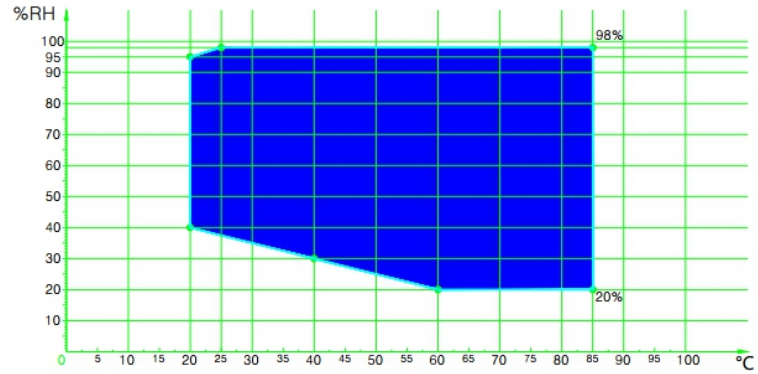
If the Freon leak, or you feel eye or throat discomfort, please stop machine operation, good ventilation.

- if you have movement control inside the lid into the machine for maintenance, make sure to cut off the power. (Otherwise would be shock or damage to moving parts)
- To discard machine, please rows away from Freon.

□ Chapter II Overvie

The chapter describes the summary of temperature and humidity tests, as well as machine operating mode in a variety of temperature and humidity control, and principle of work.

Temperature and humidity control (Except for temperature test chamber)



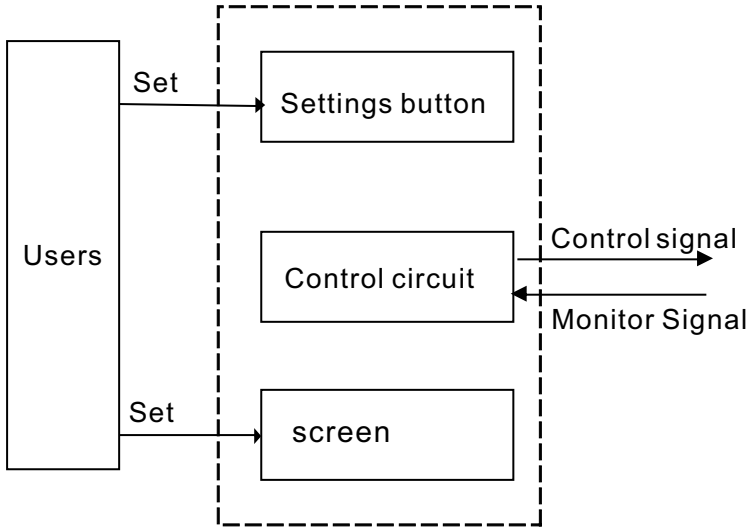
vertical constant temperature and humidity control of temperature

For "temperature and humidity control," map, temperature and humidity within the scope of the conditions corresponding to the control of the machine can reach, in the outside temperature and humidity conditions corresponding to the control of the machine may not be achieved.

Control System

- Constant temperature and humidity test machine temperature / humidity control principle of the narrative:

Constant temperature and humidity testing machine series of control is by setting the controller to achieve the required temperature and humidity. Controller controls the heater or the condenser to increase or decrease the temperature of test box in order to meet the requirements set value, and to maintain the status settings. State conditions is displayed in the controller.



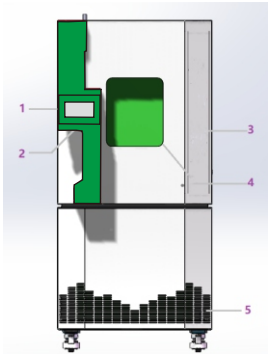
Principle of work

Test test sample placed inside the compartment shelves, air heating systems (heating) / refrigeration system (cooling) to provide the temperature testing box, drum humidifier humidification system (humidifier) / Compressor Systems (Dehumidification) to provide tests the humidity box. Controller based on the user to set the temperature and humidity to control the operation of various systems. Circulating fan motor running the test inside the air return, and the uniformity of temperature and humidity. When the inside temperature and humidity reaches the set value, and humidification / heating / refrigeration systems are usually maintained in a state.

Chapter III Various part of names and function

Described in this chapter on the machine body, control panel, electric control boxes and other parts of the name of their role. The name and location of the various parts is not clear when you read this chapter

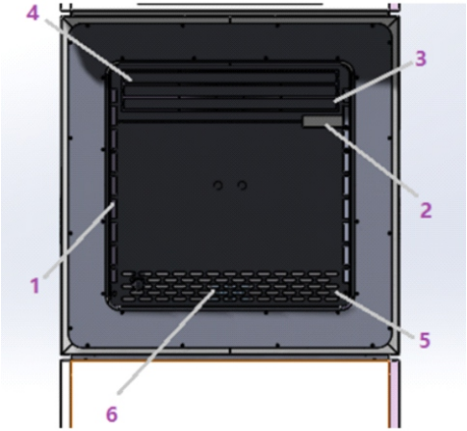
Operation panel explanation



Operation panel explanation

No.	Parts Name	Function/use
(1)	Humiture controller holder	（PUSH-button）This table will show you the screen to open the power, we are set according to test requirements.
(2)	USB	
(3)	Doorknob	
(4)	Vacuum glass window	
(5)	Room cooling fan	For room cooling

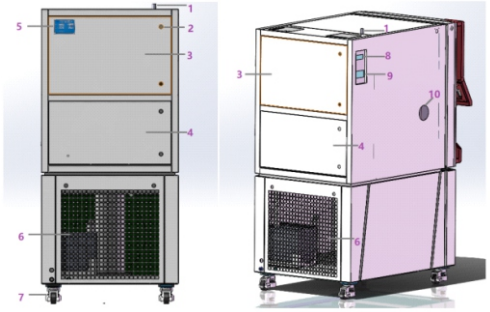
◆ Test Area



Machine test area component

No.	Parts Name	Function/use
(1)	Bracket foot seat	Support Shelves foot seat
(2)	Wet- bulb gauze tank （Except for temperature test chamber）	Provide the water for the wet-bulb gauze
(3)	Wet-bulb sensor（Except for temperature test chamber）	Tests inside chamber wet bulb temperature
(4)	Air outlet	Exhaust hot / cold air
(5)	Air inlet	Inhales the hot/cold air
(6)	Built-in humidifier	Humidify the air

◆ Rear view, Vertical type



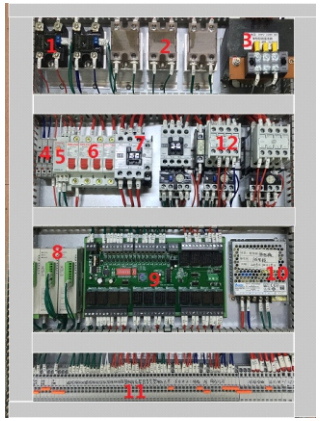
Vertical Rear View

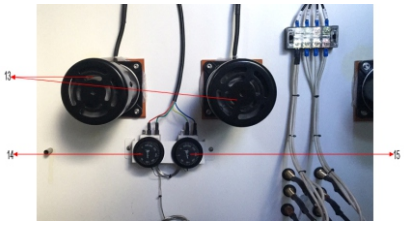
Machine rear components

No.	Parts Name	Function/use
(1)	pressure balance port	Balance the pressure inside the tank
(2)	Door lock of distribution cabinet	
(3)	Power distribution cabinet (electric control cabinet)	
(4)	Refrigeration accessories cabinet	
(5)	Nameplate	
(6)	Room cooling fan	For room cooling
(7)	Casters and foot cups	
(8)	Overtemperature protection	
(9)	No fuse switch of power	Power short circuit leakage protection
(10)	Testing hole	

Electric cabinet

◆ Electric cabinet, vertical type





Electric cabinet Components

No.	Parts Name	Function/use
(1)	Solid state relay	Refrigeration output on and off, cold end switchswitch
(2)	Solid state relay	Heating and humidifying electric wire on and off control
(3)	Transformer	24V ac transformer is used for desweat heating wire
(4)	The fuse	Circuit overload and short circuit protection
(5)	Open phase protection	Provide an alarm signal when the power supply is out of phase
(6)	Miniature circuit breaker	Disconnects the load
(7)	Ac contactor	Isolation control strong load
(8)	Temperature control module	Collect temperature data

No.	Parts Name	Function/use
(9)	I/O board module	Point action output control
(10)	Switching power supply	24V switching power supply, power supply in weak part
(11)	External terminal row	External sensor, solenoid valve and other input and output signal line load line transfer
(12)	Auxiliary contactor	Auxiliary contact
(13)	Loop motor	Air supply circulating motor in the box
(14)	Humidifying (heating) overtemperature protector	The humidity protection in the independent box can be set
(15)	Heat (humidify) the overtemperature protector(humidify) the overtemperature protector	Independent box temperature protection, can be set

Chapter IV Installation

This chapter for the proper installation of the machine and carry out test preparations. When you are to install the machine or move machines, please follow it.

Installation

- Unpacking :
  External use wooden packaging the machine, bottom four corners plus shock pad, in order to reduce machine vibration by transport, reduce machine damage.
- Program:
  Open the cover before and after the machine
  Cut thin rope around Compressor
  Removal away between compressor's filling material.
  Sealed cover with the screws before and after the machine.
- The machines by the wheels and the level regulator support (except for desktop machine)

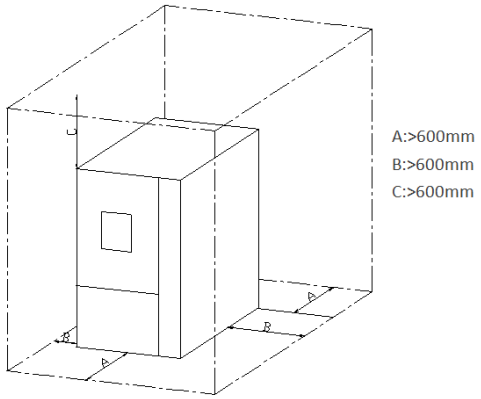
- Note: The machine moves, the level of regulator required to leave the ground, with wheels supporting the machine moving.

Installation space

Set machine installed in the space meet the following requirements:

- Machine on both sides must reserve space for easy maintenance.In addition, the front side of the space must be opened to facilitate.
- To obtain the best performance, choose the surrounding temperature can be maintained between 20°C to 30°C. Machine work to the ambient air cooling. If the space is small, the surrounding temperature rises, the machine may lead to bad trip. please provide a good ventilation environment.

- If we can maintain a good ventilation environment, even if the refrigerant leaks would not have happened hypoxia.
- Dramatic changes in the ambient temperature is strictly prohibited. (If dramatic changes in surrounding temperature, temperature and humidity control may become invalid.)
- Formation of a solid place.
- If the machine didn't keep level ,wet-bulb and wet gauze tank barrels of humidity control failure would result in water shortages, or overflow of water caused the water consumption of large quantities.
- Well-ventilated and avoid direct sunlight place.
- The surrounding non-flammable and explosive substances and generate substantial heat substances.
- Close to the power supply and drainage areas.
- Place less dust.
- If the machine is installed in can generate electromagnetic waves in the vicinity of medical equipment, please note: Electromagnetic transmitter can not be directly facing the machine;Request that this machine installed at a distance of electromagnetic wave transmitter at least 3 meters.
- Premises should be installed using the air-conditioning. Around there should be no organic solvents, plastics, acids, alkali metals and other chemicals, or devices and Coating machine be destroyed.



Drainage facility project

Drainage facilities (all models to vertical as an example)

- Drain receiving machine connector on the rear of the drainage, because of gravity, the water will naturally drain near where they turned out.
- Note: as far as possible to shorten the length of drainage pipe to facilitate natural drainage.

Drainage facilities

Power Supply Facilities Project

- The main input power requirements:
  For 50Hz/60Hz (to be determined according to different regions)

Power (kW)		No fuse switch	Control circuit fuse	Power cord minimum cross-sectional area (mm^2)	Maximum grounding resistance
380 AC *3	220V AC				
10				4line	10KΩ

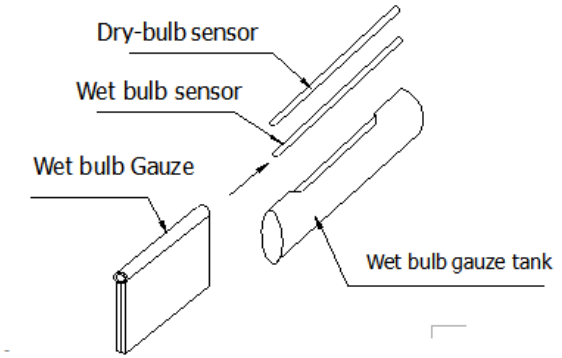
- Ground:
  Ground one end of the line machine control box connected to the ground terminal and the other end connected to the ground or a ground connector.

Before use confirmation

- Machine environment --- to confirm the space around the machine to meet the requirements.
- Damage---check the machine's internal and external in the transportation and installation process is damaged or not.

- Wires connected firm --- Recognized in the transport machine and run the process, screws and wire connectors to connect is good contact. If the loose change of re-locking. Carefully check the screw connections and cable connector contacts.
- Drains --- Confirmed that the drain connected to the machine behind the drainage connector.
- Input power --- make sure that the input supply line machine requirements, and the phase sequence is correct.
- Connect power and ground lines --- Make sure the power cable is connected correctly, install the appropriate grounding wire. Before the test, install or re-installation, to confirm the correct power supply phase sequence.
- Inspection and open the non-fuse switch --- to ensure that there is input power, and open the non-fuse switch (breaker), so that it is in "ON" ("OFF" for the power cut off).
- Operation called for by pure water supply (except for temperature test chamber) --- Run-time machine through the inlet to supply water. When the water level below the set level, the machine automatically fast replenishment. If the auto-replenishment system failure, the controller display will show shortage of water supply failures, and automatically shut down.
- Place and check wet bulb gauze (except for temperature test chamber) --- according to Figure to place wet gauze ball, machine running for some time, if the wet-bulb gauze tank with water, but the gauze is dry, replace the new one .

Note:
Confirmed that there is contact with gauze wet bulb sensor.
If the gauze and exposed to dry-bulb sensors, temperature and humidity will not display correctly, but will display an error message.
Wet-bulb gauze placed Chart

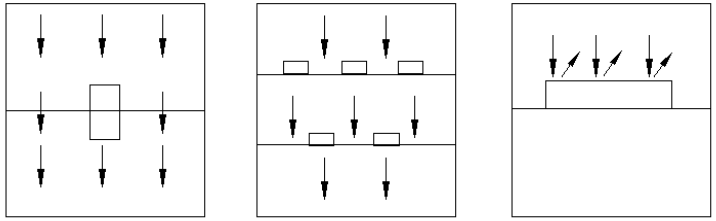


Chapter V Runing Of The Machine

This chapter describes the run-time necessary to prepare and confirm the matter, run the start and end, and some constant temperature and humidity testing machine / temperature test chamber convenience features.
Be sure to follow the operations described in this chapter.

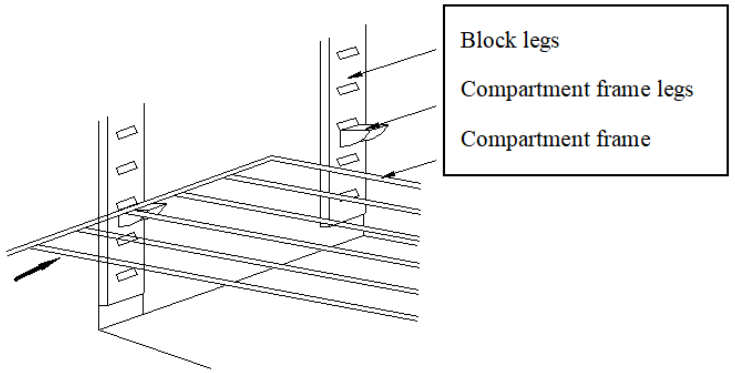
Test preparation

◆ Load requirement :
test sample can be selected electrical, electronics and other products, components and insulation materials ;
The total mass of test sample = (50 ~ 80) kg/m3 × test box volume ;
The total volume of the test sample ≤ 1 / 5 × test box volume ;
The total volume of the test sample ≤ 1 / 5 × test box volume ;
the test sample of the total area ≤ 1 / 3 × test case in the dominant wind direction perpendicular to the arbitrary cross-sectional area。
◆ Placement test sample :
In order to maintain good ventilation inside test, each test sample should be placed between the interval to be set up (see Figure).
Once inside the ventilation state is broken, it is possible to make the temperature inside (wet) degree of uniformity deteriorated, resulting in increased error of test results



Correct placement method　Correct placement method　Incorrect placement method

Box compartment frame legs of the location of the test sample based on the size and number of changes to freedom of。
Box compartment frame refer to the appropriate location to be set up inside the ventilation。
step:
1.The height is set at an appropriate compartment frame legs
2. Install insulation layer frame, set the frame along the interlayer insulation layer frame legs can be pushed into the level of.

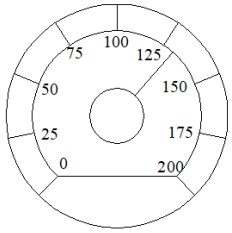
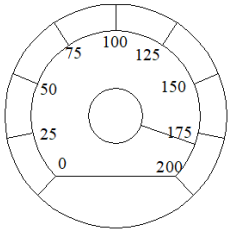


Feet and the interlayer insulation layer rack shelf placement method

Test sample protective device settings

Temperature protection device settings and change, Rotary temperature protection device to set the value of the scale (test temperature plus 30℃). Scale and factory settings, See the table below.

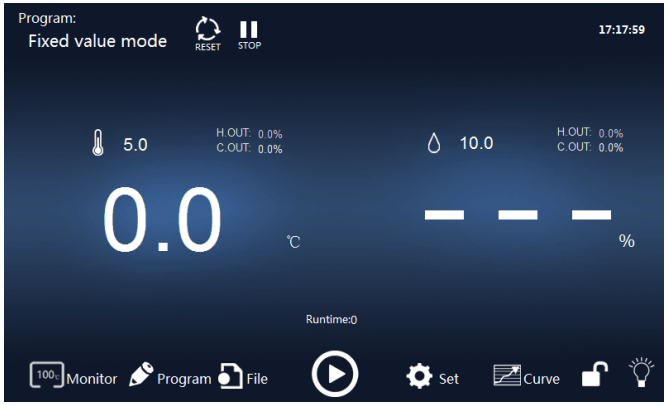
Temperature protection device settings

type	100℃	150℃
scale		
factory settings	130℃	180℃

Test Start

Open the rear of the machine no fuse switch ;
Open the control panel power switch ;
You will see the start screen controller ;
Controller, please refer to the attached instructions of the operating instructions

Main Screen



Main interface icon description:

RESET This flag shows that the current power on mode is hot start mode, can switch in the settings,There are three modes, namely, reset, cold Boot, and Warm Boot.

STOP This flag shows whether the two states are currently running and stopping.

ERR This flag appears, indicates that there is a failure or alarm in the system, click on this icon to pop up an alarm prompt box.

LOW This flag appears, indicates that there is a failure or alarm in the system, click on this icon to pop up an alarm prompt box.

This flag is the lock key, which is used to prevent misoperation during operation, click the icon to lock/unlock.

This flag is a lighting sign, click on the sign to open /close the lighting inside the box.

TW This sign is the temperature standby sign.
HW This sign is the humidity standby sign.
↑↓≡ This sign is the ascending / descending / keeping mark.

5.0 Temperature setting area, Fixed value runtime clickable operation.

10.0 Humidity setting area, Fixed value runtime clickable operation.

Main interface button description

Click this button to pop up the hardware input and output monitoring. screen.

This button is to open the process editing window button, edit process related operations.

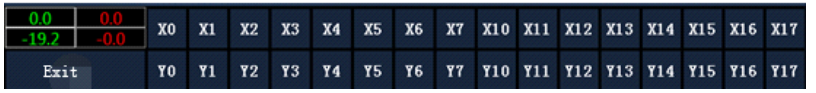
This button opens a file editing window to view alarm log information.

This button opens the system settings window, setting the system basic information.

This button opens the curve monitoring screen to export curve data related operations, see 7.

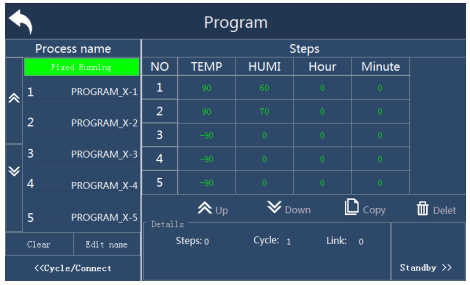
Run, stop button, run program / value, A prompt box pops up for the user to confirm, See the prompt screen.

Supervisory Control



This interface is used to monitor the performance of the input and output points of the PLC, The corresponding redness indicates that the point has an input or output signal. Green and red display numbers are internal calculation parameters of the system, This parameter is the parameter that the technician of our company can use to observe when debugging the machine, the user does not need to pay attention to it.

Technology



Process editing interface description:
Selected fixed value run, Click again after selection will switch back to the program to run, The green box option appears in the craftsmanship list.

Note: When a fixed value has been selected, Clicking on a craft entry doesn't work. There are 50 technology, 50 paragraphs per item.

This button is the top / bottom page of the process list,Useful only when the program is running in mode.

Edit name Selection technology,Click the button pop-up box to modify the process name

Clear This button clears all data for the currently selected technology, The temperature defaults to -90.

Cycle / Connect Selection technology, Click this button to modify the number of loops / connection process numbers in the pop-up box See figure

NO	TEMP	HUMI	Hour	Min

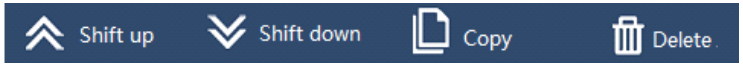
NO Section number of process, Click the corresponding ordinal to select the corresponding segment for replication / deletion.

TEMP Section temperature setting, Click on the corresponding cell, can set the temperature data that the user needs.

HUMI Section humidity setting, Click on the corresponding cell, can set the humidity data that the user needs.

Hour Time hour setting value, Click on the corresponding cell,can set the time data that the user needs.

Min Time minute set value, Click on the corresponding cell,can set the time data that the user needs.



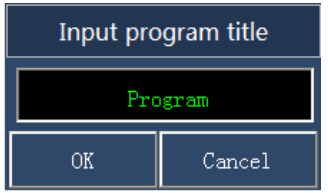
Shift up Click the button, turn the page up in the editing technology.

Shift down Click the button, It turns down in the editing technology.

Copy After selecting the corresponding segment, Click copy, The paragraph is copied to the next paragraph, Subsequent segment downward shift.

Delete After selecting the corresponding segment, Click delete, The paragraph will be deleted, Subsequent segment upward shift.

Standby set >> Click the button, Will pop up the standby temperature / humidity setting box



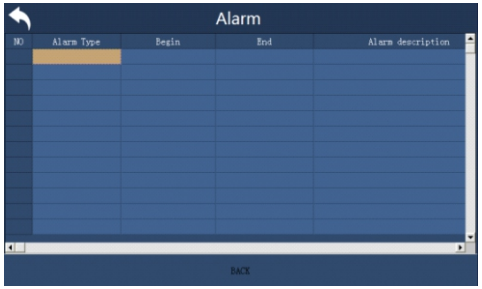
This box is an input process name window, Clicking on the black area pops up the keyboard, Chinese and English can be input. Please refer to appendix for keyboard entry operation.

This box is a process loop / connection setting, Loop default 1, connection number 1-50.

This box is the standby temperature/ humidity setting interface, Click on the box, Enter the required standby value, default 1.

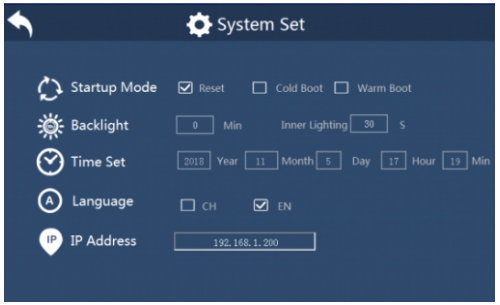
Document

There's only an alert record in the File Management menu, Click details>> to go to the lower menu.



This interface mainly displays the alarm information list, Including alarm name, Alarm start time, End time, alarm description, This information mainly records the alarm information that occurs during the operation of the machine, To be used by technicians as the basis for diagnostic machines.

Setting



Setting interface instructions:

This interface mainly includes general settings: Power off mode, backlight time, lighting off time.

◆ Reset, Cold boot, Warm boot

Power failure mode, When there's a power outage, call again. The system will not run automatically if you choose to stop, Elected to cold boot, Will start automatically, Running from the beginning of the program, Elected to heat up Will start automatically, Running down from power outage.

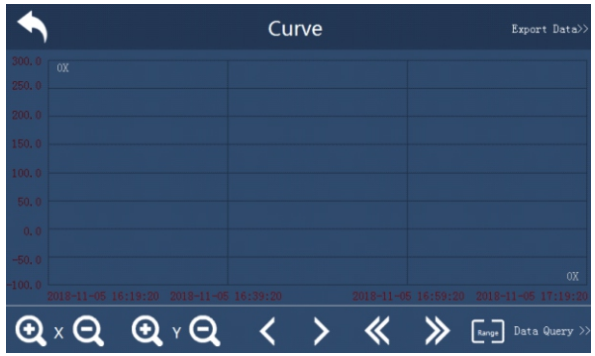
◆ Backlight time

The screen turns off backlight after waiting for a set time without operation

◆ Lighting off time

Box lighting after lighting,If you forget to close,The system will automatically turn off the lights at this time to protect the life of the lights

Curve



Curve interface description:

X-axis coordinate amplification, Click this button, X axis coordinates magnified twice, X-fold in lower right corner. X-axis coordinate reduction, Click this button, X-axis coordinate is doubled, X-fold in lower right corner.

Y-axis coordinate amplification, Click this button, y axis coordinates magnified twice, x-fold in upper left corner. Y-axis coordinate reduction, Click this button, y-axis coordinate is doubled, X-fold in upper left corner.

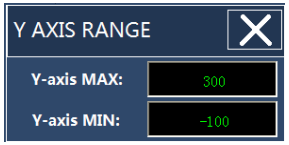
Move to the left, click this button, move the curve forward by one unit,
Move to the right, click this button, move the curve backward by one unit.

Page up to the left, click this button to turn the curve forward.
Page up to the right, click this button to turn the curve backward.

Area line Y-axis display range setting button

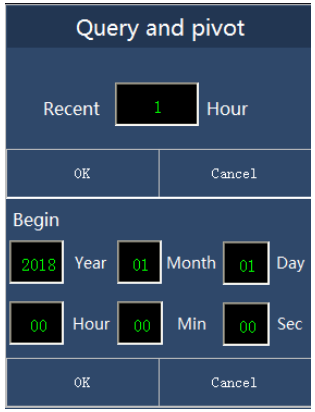
Curve data query, positioning button

Export the curve data to the Udisk button

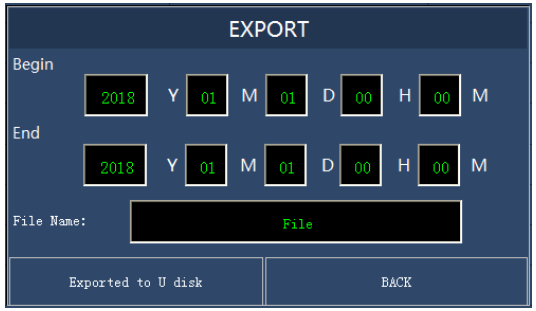


Y-axis coordinate range setting window.

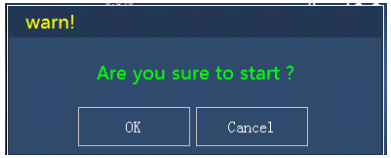
Query and pivot.



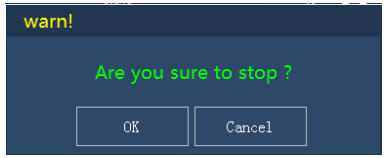
Export history data to U disk, insert U disk before exporting.



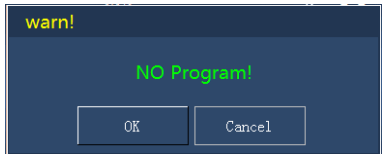
screen:
Start screen



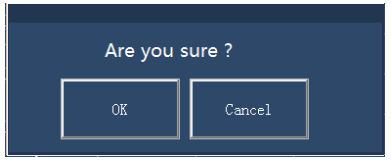
Stop screen



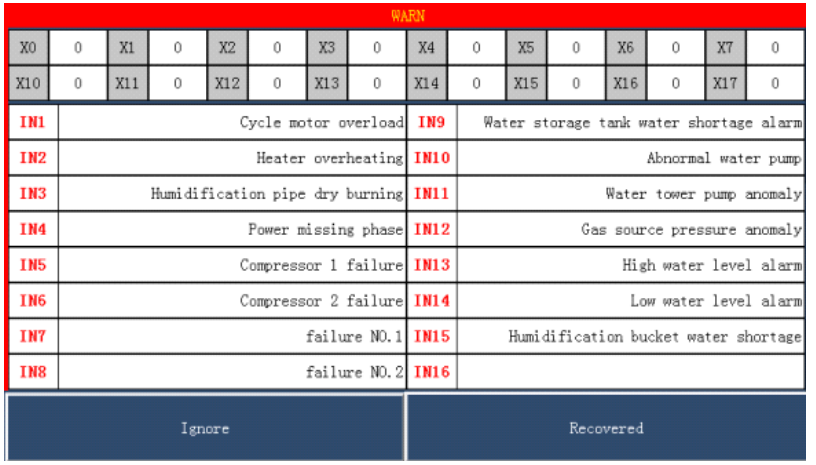
No set screen process parameter
Note: When the program's parameter time is set to 0,This picture will come out.



Jump pop-up screen



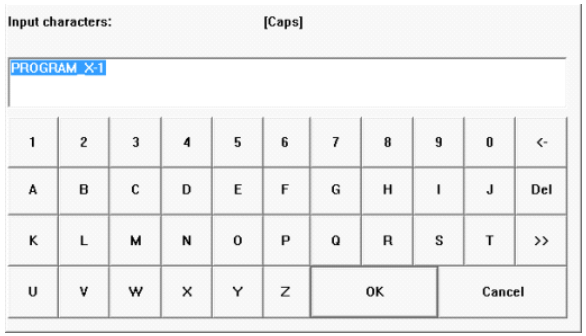
The jump button is only visible when the program is running under the details of the process interface.



Appendix:
Numeric input keyboard

Items	Details
1	<- Return key
2	CE Delete key
3	-- Negative sign of negative number

Number and letter keyboards



Items	Details
1	<- backspace key
2	Del Delete key
3	>> More function keys can be switched to uppercase, lowercase, symbol, and pinyin input.

□Chapter VI Inspection and maintenance

This chapter describes how to maintain a good machine operation and general maintenance and repair of the steps.

Machine pre-inspections

Before the machine starts, Please check the following order.

◆ Waterways of the inspection (except for temperature test chamber)

Check wet gauze ball sink, upper and lower water tanks, barrels and cups humidification whether there was any water;

Check the wet-bulb of absorbent gauze;

Check humidifier bucket water level

◆ Check the machine chamber

The chamber clean.

Power supply and ground connections

Make sure the power cable is connected correctly, install the appropriate grounding wire.

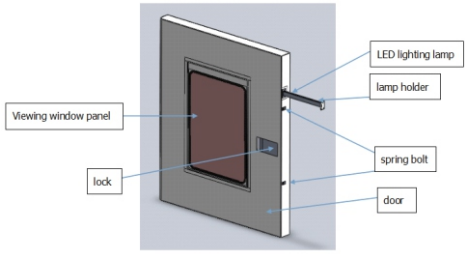
Inspection and open non-fuse switch

Ensure that there is input power, open the non-fuse switch (Breaker), it is in "ON" position ("OFF" for power off position)

Machine lights, wet bulb gauze, fuse replacement

Replacement of lighting inside,Steps:

◆ Turn off power switch on the control panel.
◆ no fuse switch off input power (Breaker).
◆ Loosen screws, then take off lamp holder.
◆ Remove the bad lamp.
◆ Replaced with a new lamp (DC12V 5W) and connect cable.
◆ Installation of Windows panels.
◆ Fixed four screws.
◆ Turns on the power source starting.



machine lighting replacement

replacing wet bulb gauze (except for temperature test chamber),
Steps:

- Remove the sensor from the wet-bulb old gauze;
- Soaks the new gauze((a test-specific)) with the pure water;
- According to Figure sets new gauze on the wet-bulb sensor. (Below that sensor)
- Sagging part of the gauze placed on the sink;
- Closes the machine door, turns on the power source starting.

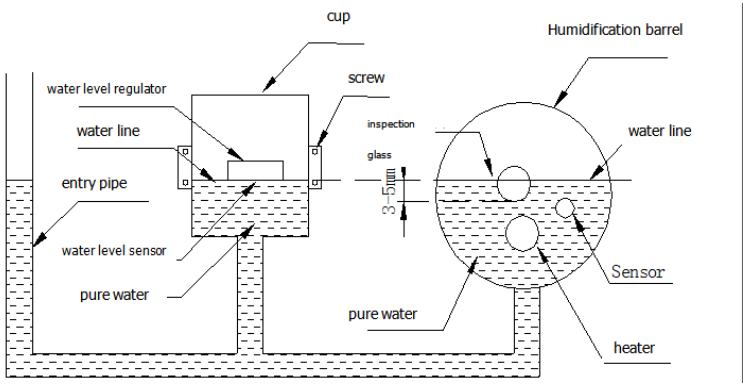
Humidification barrel water level check and adjustment (except for temperature test chamber)

- Check water level

Humidification barrel water level should be from the Humidification barrel glass window at the bottom of a barrel upward 3 ~ 5mm. Heater must be completely submerged in water.

- Water level regulation

Loosen the water level regulator screws up and down the regulator for the mobilization.



humidification barrel of water level regulation

Draining water

humidification barrel drainage (except for temperature test chamber)

When the machine moves or a long time not in use, please exclusion clean the water from the humidification barrel.
Steps:

- No fuse switch off input power (Breaker);

- Open the electrical control box door;
- Open the humidification barrel drainage valve;
- After ensuring the water removes cleanly completely, and then closed humidification barrel's drain valve;
- Closes the electrical control box door.

Drainage lower tank(except for temperature test chamber)
Steps:

- No fuse switch off input power (Breaker);
- Open the electrical control box door;
- Open the drain valve
- After draining the water, then close the drain valve;
- Close the electric control box door.

Chambers, Drain the water before basin

Regular inspection and maintenance

- If use the machine, please according to table for regular inspections

the list of regular inspection project

Inspection Project	Inspection Requirements	Inspection Time
Ambient temperature	Normal temperature: 20 ~ 30 ℃	Daily
Noise	Normal working conditions, from compressors, fans, noise enclosure should be normal.	Daily
Vibration	Normal working conditions, should not feel the machine vibration.	Daily
Indicator	Normal working conditions, should be light.	Daily
Humidification barrels and the cup water levels confirmed (except for temperature test chamber)	Along the humidification barrel, the bottom of the window glass upward 3 ~ 5mm.	Each month one time Moves,reference to Figure the water level regulation

Inspection Project	Inspection Requirements	Inspection Time
Temperature over-temperature protection device movements inspection (TEMP. PROT)	Normal working conditions, more than set temperature should have the protection movement.	1.Before long time continuous running. 2.Before running unattended.
Water over-temperature protection switch (except for temperature test chamber)	Normal working conditions, Humidification barrel's temperature more than set temperature, should have the protection movement.	1.Before long time continuous running. 2.Before running unattended.
Power shortage protection device (H-TH-3, 4)	Normal circumstances, the two lights are bright.	Inspected once a week
Compressor pressure below -40℃ series Indicator	unary: High pressure: 15~19 kg / cm^2G Low pressure: 0~1.2 kg / cm^2 G	once a week When the machine has to run and maintain a constant temperature to low temperature. Daily
	binary: High pressure: 10~15 kg/cm^2G Low pressure: -0.2~0.5 kg/cm^2 G	

Note: If above the inspection's steps can not normal operation, please follow the Chapter 7 trouble shooting methods to exclude, if still unresolved, please contact with the company's customer service department.

◆ If use the machine, please according to the table for regular maintenance.

the list of regular inspection project

Maintenance Project	Maintenance method	Maintenance time
Cleaning Condenser	Suction clean the dust with the vacuum cleaner.	Once every three months
Cleaning the chamber	Wipe with a clean cloth.	Before each time starts the movement.

Maintenance Project	Maintenance method	Maintenance time
Cleaning electric control box	Wipe with a clean cloth.	Once every three months
Cleaning upper tank (except for temperature test chamber	Open the drain valve, with clean pure water rinse.	Once every three months
Cleaning lower tank (except for temperature test chamber)	Wipe with a clean cloth.	Once every three months
Cleaning up wet-bulb tank (except for temperature test chamber)	Wipe with a clean cloth.	Once every three months
Wet-bulb gauze water trough cup(except for temperature test chamber)	Wipe with a clean cloth.	Once every three months
Humidification barrel cup (except for temperature test chamber)	Wipe with a clean cloth.	Once every three months
Humidification barrel (except for temperature test chamber)	Open the drain valve, with clean pure water rinse.	Once every three months
Cleaning water supply water pipe. (except for temperature test chamber)	Open the drain valve, with clean pure water rinse.	Once every three months
Drainage pipe cleaning	With clean pure water rinse.	Once every three months

Annual inspection and maintenance

Usually once a year an annual inspection and maintenance (or machine every running 6000 hours). If you and company or dealer to enter into service agreements, company or dealer will be on a regular basis to provide services for you.

Constant temperature and humidity testing machine periodic inspection and maintenance form

Customer Name		Phone		Tester	
Address				Dealer	
Product Type		Product serial number		Agents	
Installation site		Date of Installation		Test date	

I、Installation Conditions		VI、Safety Device
1.Ambient temperature	℃	Water over-temperature protection switch (Except for temperature test chamber)
2.Air-conditioning	Yes、No	2.Temperature Over Temperature Protection
3. Water Supply (Except for temperature test chamber)	Running water•Pure water•Other	3、Overload protection switch
II、Inside and outside chamber		4.Owes the protection switch
1.Are there dirty outside	good / fair / poor	5.Pressure protection device
2. Water supply, drainage whether there is leakage.		6.No fuse switch (Breaker)
3. Are there dirty refrigeration system (condenser)		7.Control Loop Protectors (FUSE)
4. Seal is good (cold / hot air whether there is leakage)		8. Main circuit fuse (FUSE)
III、Electric Vehicles		Performance testing:

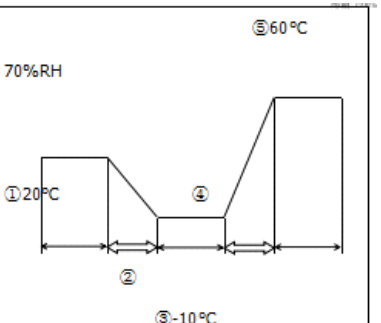
1. Whether there is loose connection terminals			
2. The relay works whether good			
3.Supply Voltage	RS V	ST V	RT V
4.Operating Voltage	V	V	V
5.Operating Current	A	A	A
6.Air Heater Insulation Resistance	MΩ		
7. Humidification heater insulation resistance	MΩ		
8. Compressor insulation resistance	NO.1 MΩ		NO.2 MΩ

IV、Fan

1. Whether abnormal noise	
2. Fan blades is whether normal	
3. Condenser fins is whether good	

V. (Humidification barrel and wet bulb sensor (except for temperature test chamber)

1.Cleaning up wet-bulb sink	
2、Regulating humidification barrels and cups of water level altitude.	
3.Replacement wet bulb gauze	
4. Regulate the wet-bulb cup's water level altitude.	



As shown above, the program heating and cooling time measurement.

①Initial settings 20℃	※show ℃
② Cooling time	min.
③Settings -10℃	※show ℃
④ Heating time	min.
⑤ Setttings 60℃ 70%RH	※show ℃ %RH

When the machine temperature is stable tests the humiture again, and will the results fill in the "Show" column.

Customer confirmation signature

The results expresses this machine's condition :

Good □ Adjustment □ Repair □

Note: This table from the company's customer service engineers to make regular inspections and maintenance, constant temperature and humidity testing machine (high-low temperature testing machine) to use

□ Chapter VII Trouble shooting

This chapter describes the failure of this machine and its removal method.
Once the self-diagnostic function to detect faults, the display will show fault content. Not self-diagnose the fault and easy to confuse the operation of the error please read the "7.2 Other failures" section. This chapter also includes the choice of content.

Self-diagnosis Fault

Controller Display Fault:

- the controller display screen failures (machine stop working), according to the Table Troubleshooting
  Controller in the boot or run state, such as the self-test to the fault signal, immediately stop, and display point of failure problem.
- the controller window failures were shown as:
  DI2 DRY HEAT DI3 WET HEAT
  DI4 FAN MOTOR DI5 REF ERR1
  DI6 REF ERR2 DI7 WATER PRE DI8 NO WATER
- If the machine fails the screen, press the table after the action check and correct the faults.

shows controller troubleshooting

NO.	fault	checking and troubleshooting steps
1	(DRY) (WET).	Check the over-temperature protection device on the panel whether it is the implementation of temperature plus 25 degrees or more settings. If not, please immediately corrected. Check the over-temperature protection device is ON indicator light. Check whether the heater has been output state. Check whether the sensor fault. Check the wiring pins whether this circuit conditions. Check the over-temperature protection device is open.
2	(PRE).	Check phase protection device whether the above are all the red and green light. If not, check whether the lack of the power phase, if one does not, then replace the power supply wiring of any adjacent two. If lights do not , need to replace the whole phase protection device.or more settings. If not, please immediately corrected. Check the over-temperature protection device is ON indicator light. Check whether the heater has been output state. Check whether the sensor fault. Check the wiring pins whether this circuit conditions. Check the over-temperature protection device is open.

NO.	fault	checking and troubleshooting steps
3	(FAN)	Check whether the ambient temperature below 35 ℃. If not, please place a well-ventilated office. Check whether the machine around the wall or deposits, to keep the ventilation machine 600mm around the room. Check the condenser surface too dirty. Check the condenser air inlet is blocked; fan is functioning. Such as water-cooled equipment. Check the water pressure and water loop are normal.
4	(WATER)	Check the pipe determines the flow of replenishment is smooth, to ensure that the first non-blocking copper cone. By waterway system to check the upper and lower part of the tank water, as lower water shortages, please add; as upper water shortages, check the motor to draw water. And then check the upper and lower water tank float, float under the water tanks should be conduction, such as the short-circuit is broken float.
5	(REF)	Check whether the ambient temperature below 35 ℃. If not, please place a well-ventilated office. Check time delay relay is set 5min. Check the thermal relay switch replacement "R" button, pressing a few times to re-boot, and then normal operation.

Other faults

Common Troubleshooting
In the machine run time, some devices are not directly self-test to the controller, when these devices undesirable occurs when the machine may be running less than a customer needs the condition, please refer to the following table to check and correct.

Common Troubleshooting

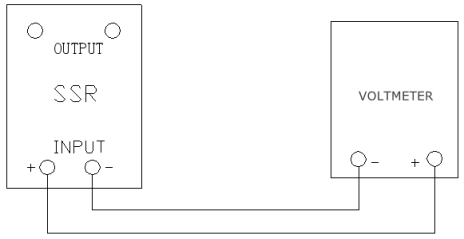
NO.	Display Fault	checking and troubleshooting steps
1	Humidity PV presented 100%RH	1. Check box wet-bulb gauze tank test whether there is water. Without water, please check the correct part of waterways, check the cup and the wet-bulb Gauze tank replenishment pipeline, excluding air lock, guarantee copper head dripping water smoothly, adjust the water level in the last cup to wet-bulb gauze tank with 80%. 2. If the tank where there is water, check whether the wet-bulb absorbent gauze poor, if necessary, then replaced with new gauze. 3. Check whether the humidification SSR short-circuit, to be replaced.
2	Can not do high humidity test	1. Check humidification of the SSR, light is blinking. If not bright, then check the （H+ H-）availability of a work contact signal, if the signal while the SSR was open circuit phenomenon, please replace the SSR. 2. If the SSR have output, check the humidification drum heater is working. Boiling water, or touch the heater insulating paint section, there is fever, it is working correctly. Otherwise, the humidifier heater short-circuit.
3	Can not do high temperature test	1. Check air heaters, SSR light is flashing, if not bright, then check（H+ H-）availability of a work contact signal, if the signal, then SSR has been bad. 2. If the SSR have output, check whether the air heater heating (open the door of the workplace and feel whether the blow was hot), if not heated, then the air heater has been bad.
4	Can not do low temperature test	1. Check compressor is working, such as the compressor does not work then check whether the compressor contactor are good ones, such as the coil there is the signal, but the contactor did not pull-in is to be replaced. 2. Compressor stop working, checking the refrigeration system high and low pressure is zero, and if so, then the refrigerant leak.

NO.	Display Fault	checking and troubleshooting steps
5	Temperature and humidity can not be displayed	When the boot showed no temperature signal and prompts missed sensors, check the sensor wiring is good, such as the PT-100 wiring to normal temperature and humidity sensors disconnected.
6	Can not do low humidity test	When the temperature and humidity controller is running, the temperature and humidity can not be reached to SV, please contact with our company as soon as possible.
7	Instability in temperature and humidity	When the temperature and humidity controller is running, the temperature and humidity reaches the SV after the fluctuation is too large: the temperature is greater than ± 1 ℃, humidity of more than +2/-3%RH, please contact with our company as soon as possible.

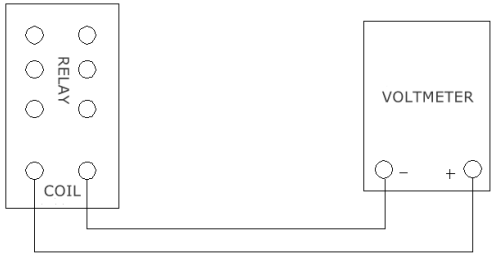
Note: If there is failure by the above steps do not rule out , please contact with our company as soon as possible.

Judging by the fault signal terminal

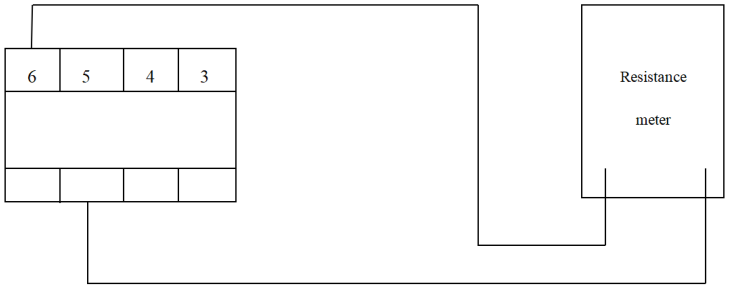
- When checking control circuit, check the input signals can be without SSR reference is shown below. When working in the SSR signal, the quantity of its INPUT with the voltmeter, and must have the voltage, without voltage value, SSR.



- Relay signals in the circuit inspection work, with meter relay measurement, should coil relay voltage and indicator. Communication relay, dc relay that communication 220V dc 12V display.



- Over temperature protection regulation to 130°c, the light is bright, the "ON", "light" PW. The machine running wiring "eight" and "6", with resistance between the table should be open, working normally.



□ Appendix

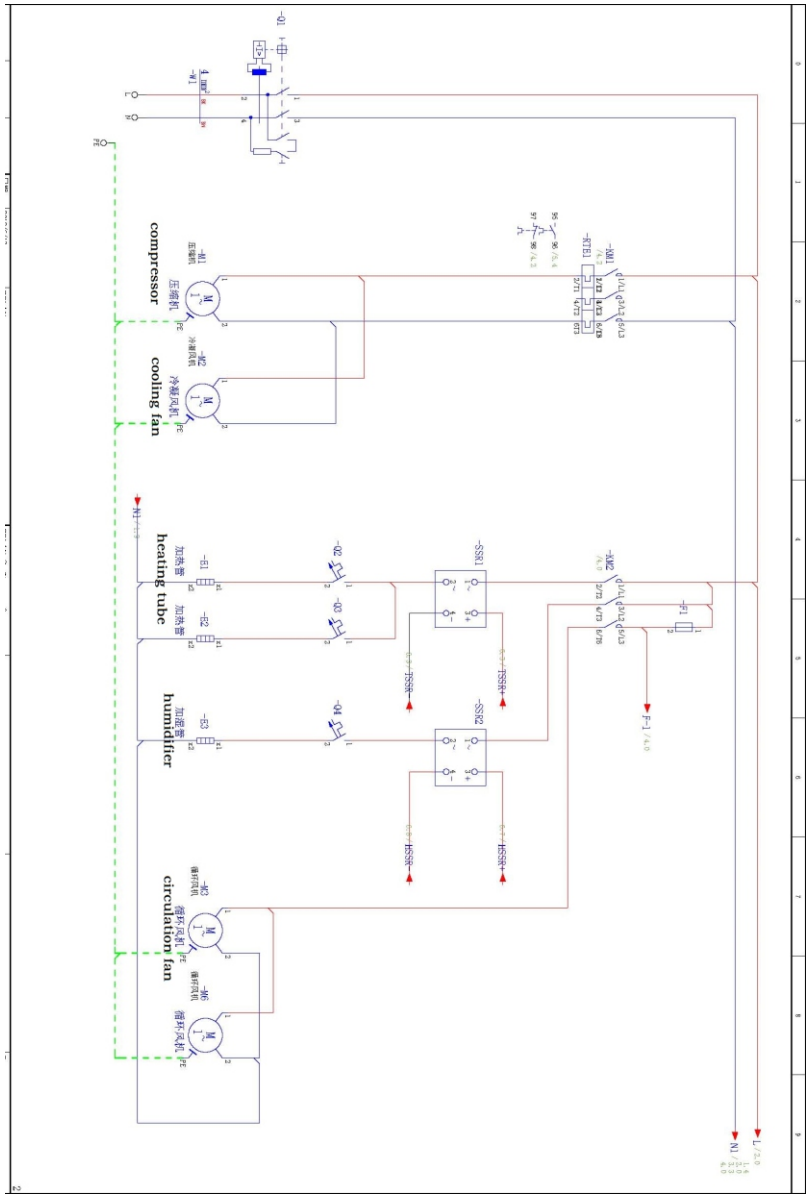
Consumption of components and replacement cycle
In order to maintain functionality and the performance, must replace the following primary device regularly, in assigns in the time replaces these primary devices promptly.
The remaining components and services can contact the dealer or contact us.

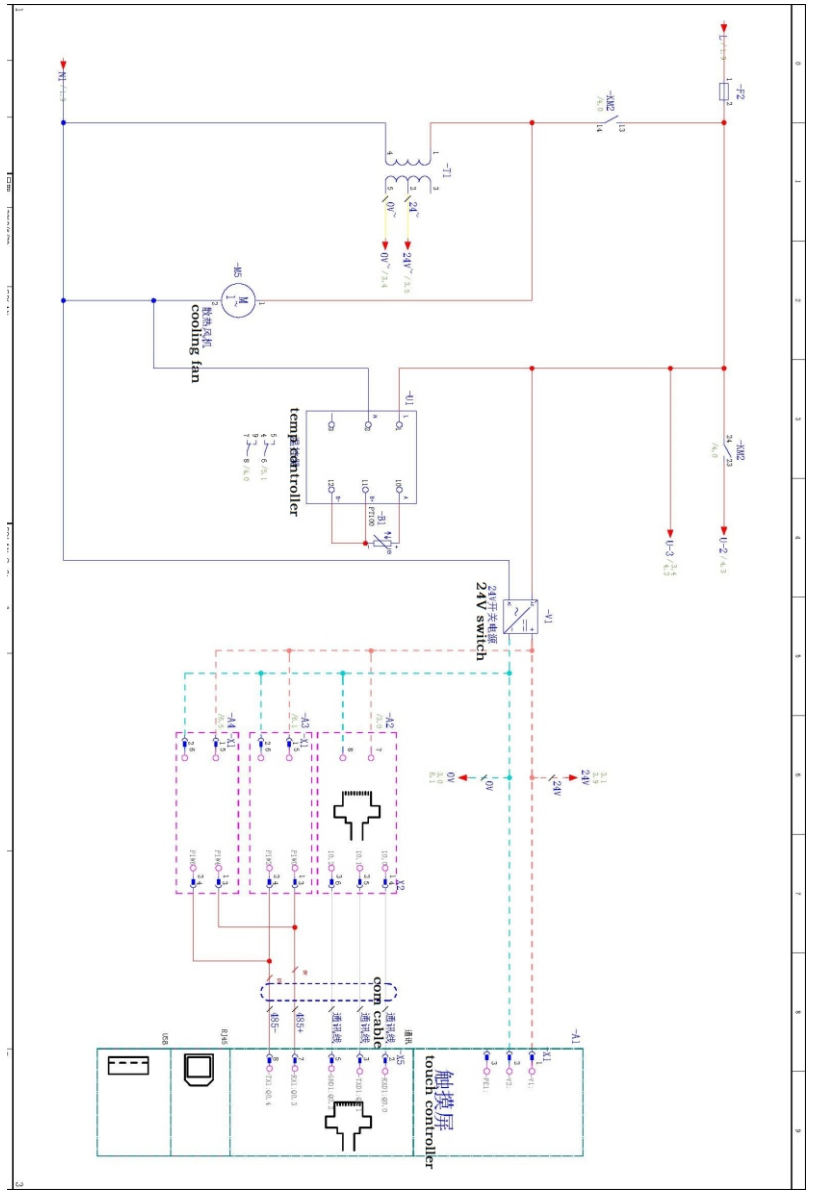
consumption of components and replacement cycle

Component Name	Recommended replacement cycle / run time (hours)	Request condition
Wet bulb Gauze	Every three months or the gauze has dried	Doing high and low temperature tests, please remove the gauze
Pump motor	1, 200H	
Float magnetism valve	Contact number of 10, 000	
Temperature and humidity controller for backlight lamp	30, 000H	Testing, please set the lights Time 10 minutes
Lighting inside the box	6, 000H	
Main Electromagnetic Contactor	1,000,000 times	
Circulating fan motor	9, 000 H	
Compressor	25, 000 H	Time interval between two consecutive start more than 3 minutes
Air Heater	15, 000 H	

Component Name	Recommended replacement cycle / run time (hours)	Request condition
Humidification drum heater	12, 000 H	Open the drain valve every three months, with a clean water rinse barrels humidification.
Non-fused switch	15, 000 H	

Attention: The above is the recommended replacement cycle, there is no precise explanation time to be replaced. Replacement cycle based on the actual conditions of use decision. In the routine inspection or maintenance were found to have abnormal, please replace these components.


compressor
cooling fan
heating tube
humidifier
circulation fan


cooling fan
temperature controller
24V switch
com cable
touch controller

冷端切换
cold side switch
门框加热
door frame heating
外玻璃加热
outside glass heating
内玻璃加热
inside glass heating
排水关
drain out off
排水开
drain out on
加湿补水
humidification water filling
纱布补水
gauze water filling
水泵
pump
陶瓷水排

运行
Running
照明
light
R404压缩机
R404 compressor
R404弱制冷
R404 weak cooling
R404强制冷
R404 strong cooling
R404热气
R404 hot air
R404旁通
R404 by pass
整流器
rectifier
照明灯
light

temp module
温度模块
humidity module
湿度模块
DTC1000
24V
0V
Pt100
TSSR+
TSSR-
HSSR+
HSSR-

water tank short water
加湿桶缺水
Humidifying barrel
short water
humidify
float
R404 high pressure
R404压缩机高压
compressor over load
R404压缩机过载
humidify tube dry
加湿管干烧
heating tube over temp
加热管超温
motor over load
马达过载
chamber over-temp
风轮室超温
temp Liquid
expansion valve
water
tank float
pressure
switch
COM:0V