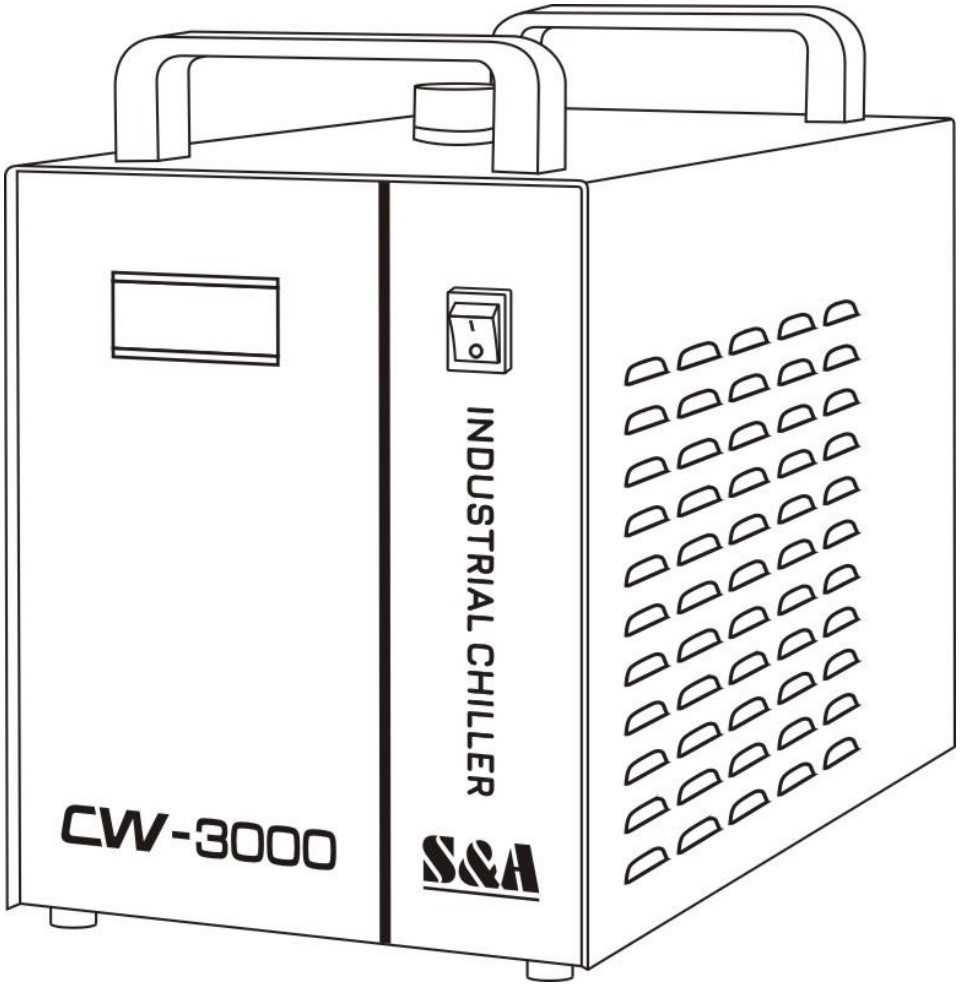
# CW-3000
# Industrial Chiller
# User Manual



# FOREWORD

Thanks for your purchase of our product. Please read this manual carefully before using and keep it properly so that you can refer to it whenever you need information.

This manual is not a quality guarantee. Our company reserves the right to the interpretation of the correction of misprint and improperly described information and product improvement. The revised content will be edited into the reprinted user manual without prior notice.

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## Notice

In order to ensure your personal safety and avoid property loss, you must pay attention to this manual, but not limited to the following warning notices. General electric knowledge and safety standards should also be followed.

DANGER Failure to take safety measures will result in death or serious personal injury.

| Notice | | Operation Guideline |
|---|---|---|
|  Must-do | The Operation should be carried out by professional technicians | Handling, installation of pipes, electrical, operation, maintenance, overhaul and other operations must be carried out by personnel with professional knowledge. |
|  Forbidden | It is forbidden to be used beyond the range of specification | It is forbidden to use the equipment beyond the range of manual specifications in order to avoid equipment damage, injury, fire, electric shock and other major accidents. |
|  Forbidden | It is forbidden to be used in the explosive environment | It cannot be installed in dangerous places with flammable gas. |
|  Must-do | Electrical connection | a) The power supply must conform to the standard indicated in the nameplate or the manual;<br>b) Use the standard cable, and select the standard wire diameter;<br>c) The grounding wire must be installed and the connection must be reliable; otherwise, it will cause an electric shock or fire. |
|  | It is forbidden to operate the equipment without a cover | There are live parts inside the machine. It is forbidden to operate without a cover, as there is a risk of electric shock. |
|  | Water-proof | Do not allow the equipment to be drenched or immersed in water, otherwise there may be a risk of short circuit and electric shock. |
|  Must-do | Maintenance and repair | The operation must be carried out after 3 minutes of cutting off the power supply, because the high-voltage charging part in the equipment is not discharged within 3 minutes. Working in a live state or working immediately after shutdown will cause the risk of electric shock. |
|  | Danger<br>High Voltage | Contact with live parts can cause serious personal injury or death. |
|  | Danger<br>Hot Surface | The human body or the heat-labile articles must keep away from this high temperature area. Otherwise, it will cause personal injury or property loss. |

DANGER Failure to take safety measures will result in death or serious personal injury.

| Notice | | Operation Guideline |
|---|---|---|
| Must-do | Transport and installation | The equipment must be firmly fixed during transport and installation. Otherwise, there will be a danger of tipping or falling. |
| Must-do | Electrical protection | The power cable terminal must be equipped with the electric leakage and overload protection device according to the rated current indicated on the equipment nameplate. |
| Must-do | Stop running in abnormal state | When the equipment is abnormal, as long as the cause is not clear, it is forbidden to start. Otherwise, there is a danger of damage, electric shock, fire, and injury. |
| Forbidden | Do not put fingers or other things into the gap of the equipment | There are rotating parts inside the device. Do not put fingers or other things into the gap of the equipment. Otherwise, it will cause personal injury. |
| Must-do | Refrigerant leakage | a) When the refrigerant leaks, please make sure that the ventilation is available. Otherwise, it may cause anesthesia and suffocation if a large amount of refrigerant fills the enclosed space;<br>b) Avoid contacting with skin, or it will cause frostbite. |

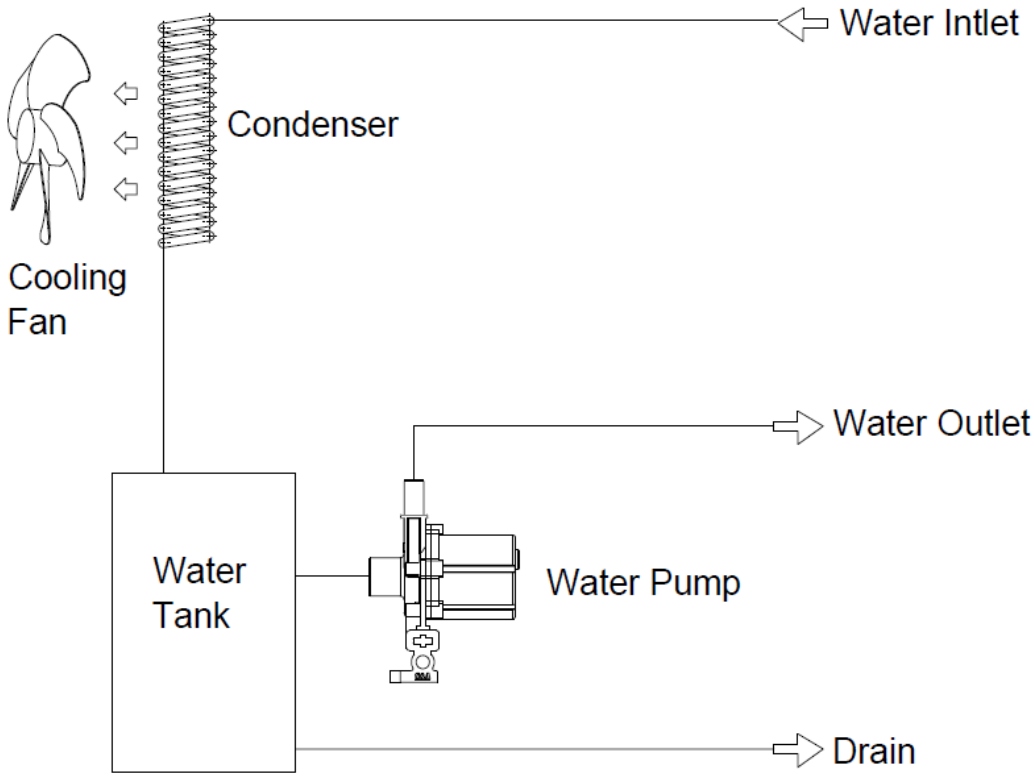
DANGER Failure to take safety measures will result in minor personal injury or property damage.

| Notice | | Operation Guideline |
|---|---|---|
| Forbidden | Transportation with liquid is prohibited | The equipment is not allowed to be transported with liquid to prevent internal pipeline leakage. |
| Must-do | Transport | a) The equipment should be fixed firmly before transportation to prevent the equipment from moving due to vibration and external forces. If there is excessive vibration and external force, the internal equipment may be damaged.<br>b) Tilt angle should be ≤45°.Otherwise, the refrigeration system will fail. |
| Forbidden | Operating environment | a) It is forbidden to use in special environments such as high temperature, humidity, strong electromagnetic interference, etc.<br>b) The equipment must be installed in a place where there is no direct sunlight and away from the fire sources. |
| Must-do | Installation | a) The equipment must be installed on a horizontal surface. Otherwise, the refrigeration system will fail;<br>b) It is forbidden to place objects within 1 meters around the |

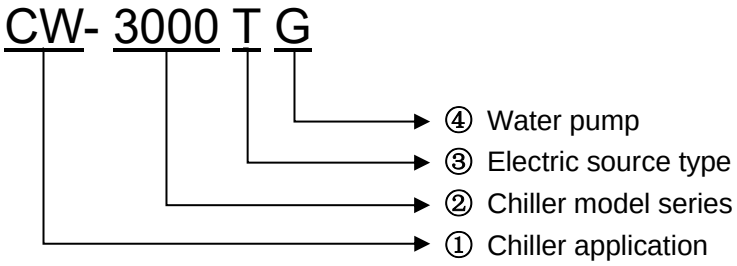
| | | |
|---|---|---|
| | | air inlet and 1.5 meters around the air outlet. If the air inlet and the air outlet are blocked, the cooling ability that the equipment should have cannot be realized. |
|  Must-do | Before commissioning | a) Make sure that the water supply pipe of equipment is not blocked;<br>b) It is necessary to check the water pipe and the water pump to confirm that there is a proper amount of water entering the water pump and exhaust it through the water pump exhaust valve, otherwise it will cause damage to the water pump;<br>c) Confirm that the state of the equipment is normal and safe, otherwise there may be injury and damage. |
|  Forbidden | The equipment is forbidden to be trampled on | Please do not step on or sit on the equipment. Otherwise, it may cause injury accidents such as falling or overturning |
|  Must-do | Equipment surface cleaning | a) Please use cleaning agents that are non-corrosive to metals and plastics;<br>b) Please keep the cleaning agent properly after cleaning to prevent liquid leakage;<br>c) The container for storing the cleaning agent must be sealed completely to avoid danger. |
|  Must-do | Anti-freezing | a) When the ambient temperature is lower than 0℃ and the machine is shut down for a long time, it is necessary to drain the liquid and blow the water away in the system with compressed air, otherwise there is a danger of freezing and cracking the components and pipelines.<br>b) When room temperature is lower than 0 ℃, it is recommended to use antifreeze with a concentration of not more than 30% containing ethylene glycol or propylene glycol. |

## I. Overview

CW-3000 Series is professional cooling machine referring to international advanced thermolysis cooling system design, suitable for small water-cooled cooling devices requested machinery.

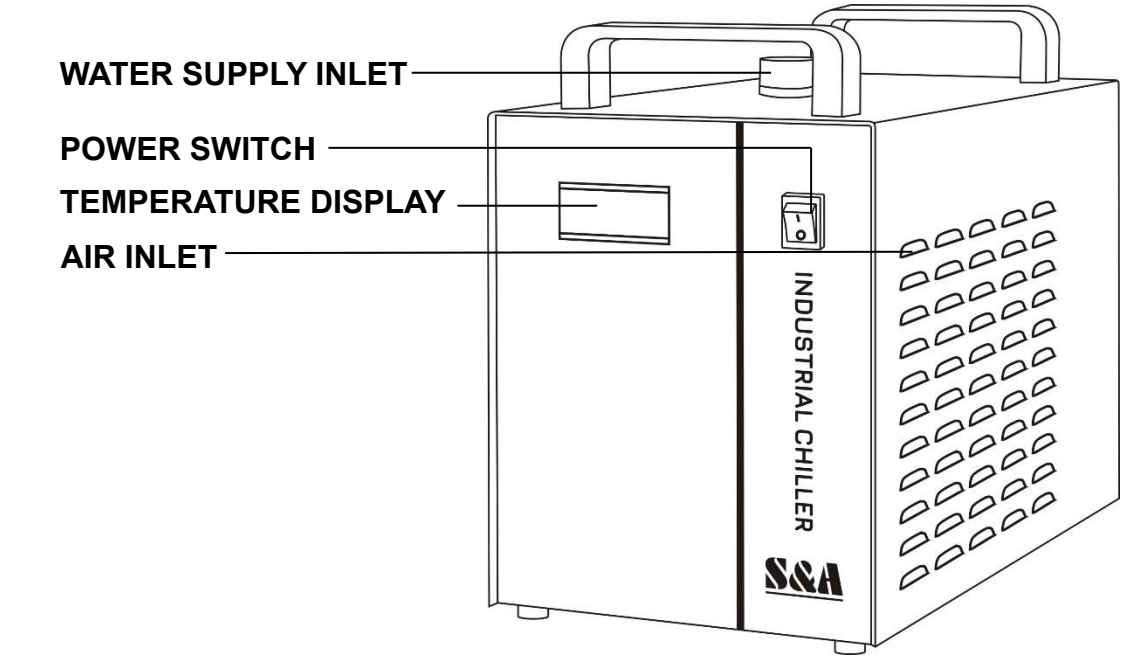


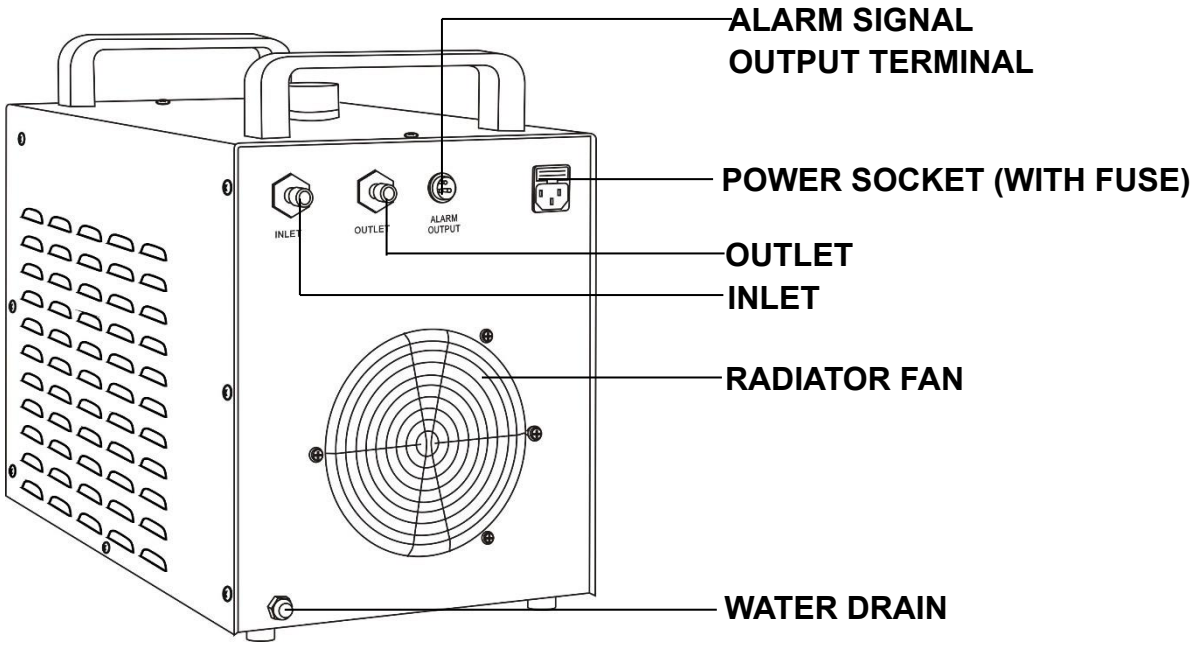

## II. Model Illustration




**Note: This model description only contains the description of the company's main product codes, not all of them are listed. Please confirm with our company before ordering the specific model, our company has the final interpretation right about it.**

## III. Product Outlines & Parts




**Note: The above-mentioned product outlines and part names are only for one of the models, and they will be slightly different in different models.**

# IV. Installation

**1. Open the package and check whether the machine is in good condition and whether the accessories are complete.**

**2. Please ensure that the working voltage of the chiller is stable and normal.**

Because the refrigeration compressor is sensitive to the power supply voltage, the normal working voltage of our company's standard products is 210~240V (110V model is 100~120V). If wider operating voltage range is necessary, customization is available.

**3. Equipment installation conditions and requirements.**

(1) It must be installed on a horizontal surface and not tilted.

(2)The air outlet of the chiller should be at least 1.5m away from the obstacle, and the air inlet must be at least 1m away from the obstacle (See below diagram).

(3) Do not install in harsh environments such as corrosive, flammable gas, dust, oil mist, conductive dust, high temperature and humidity, strong magnetic field, direct sunlight, etc.

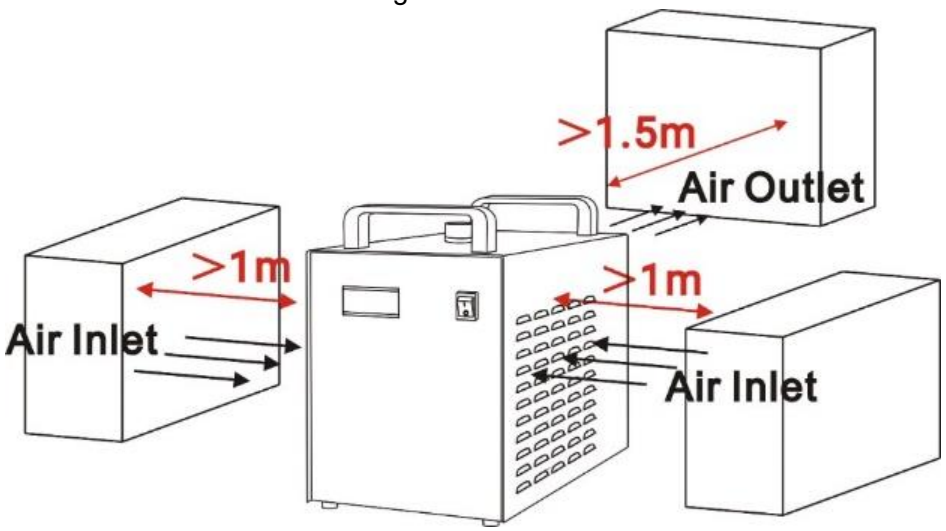
(4) Operating Environment

| Ambient Temperature | Ambient Humidity | Altitude |
|---|---|---|
| 0~40℃ | ≤90%RH | ≤3,000m |

(5) Medium Requirements

Cooling medium allowed by the chiller includes purified water, distilled water, high-purity water and other softened water. It is forbidden to use oily liquids, liquids containing solid particles, corrosive liquids, etc. Clean the filter element and replace the cooling water regularly (about three months is recommended) to ensure the normal operation of the chiller.

When the chiller is stored with water at room temperature lower than 2℃, it is necessary to add anti-freezer in the chiller water tank. It is recommended to use antifreeze with a concentration of not more than 30% containing ethylene glycol or propylene glycol. After the temperature warms up, change to purified water, distilled water or other suggested cooling media, let the chiller run for 30 minutes to remove the residual antifreezer and drain it, and then refill with unused circulating water.




**4. Determine the direction of the pipeline layout according to the water inlet and outlet of the chiller, and ensure that the waterway is clean and free of impurities, so as to prevent impurities from entering the waterway and causing blockage or pump failure.**

## 5. Plug in the power cord and turn on the power switch (It is forbidden to start without water).

(1) After turning on the power switch, the circulating pump of the chiller starts to work. When the new machine is turned on for the first time, there will be more air bubbles in the pipeline, which will cause the machine to alarm occasionally, and it will return to normal after a few minutes of operation.

(2) After starting the machine for the first time, check if the water pipes leaks immediately.

(3) After turning on the power, if the water temperature is lower than the set temperature, it is normal that the cooling fan and other devices of the machine do not work. The temperature controller will automatically control the working status of compressors, solenoid valves, cooling fans and other components according to the set parameters.

(4) As it takes a longer time to start over the compressor and other components, according to different conditions, the time is range from seconds to minutes, so do not turn off the power and again on frequently.

## 6.Electrical connection.

(1) Please select the cable based on the max. rated current indicated on the label of the chiller.

(2) Recommended reference standard for power cord diameter selection.

| Rated current/ A | ≤5 | ≤10 | ≤15 | ≤25 | ≤35 | ≤50 |
|---|---|---|---|---|---|---|
| Wire diameter (copper wire)/ mm² | 1.0 | 1.5 | 2.5 | 4.0 | 6.0 | 10.0 |

**Note: This data is provided according to IEC 60204-1 standard and only for reference. Standard cables must be used in the power cord.**

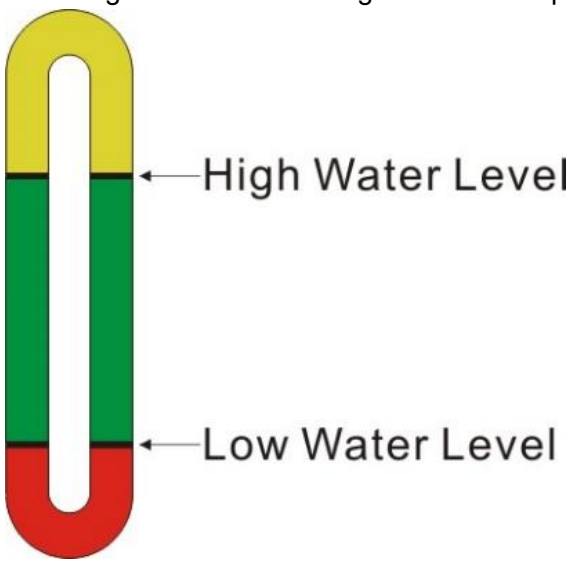
(3) The main circuit of the power supply must be equipped with appropriate electric leakage and overload protection devices, and the chiller must be well grounded.

(4) Less than ±10% of power supply voltage fluctuation and less than ±1Hz of frequency fluctuation are allowed, and keep away from electromagnetic interference sources.

## 7. Fill Water & Exhaust Air.

(1) Fill Water

After the new machine is turned on, the air in the water pipe is emptied, and the water level of the water tank will drop slightly. In order to keep the water level in the green area, you can add water again. Observe and write down the current water level. After the chiller has been running for a period of time, observe the water level gauge again. If the water level drops significantly, check again if there is leakage in the water pipes.



(2) Exhaust Air

After adding water for the first time or replacing water, exhaust the air in the water pump to start use, otherwise the equipment will be damaged. The exhaust method is as follows：

Method 1: Under the state of shutting down, after adding water, remove the water outlet and connect the water pipe, drain for 2 minutes, and then install it firmly.

Method 2：Open the water supply inlet, after starting the machine (water flows), repeatedly press and fold the water pipe several times to drain the air from the pipe.

### 8.Test-run Check.

(1)Check whether the pipeline connection is correct, and there must be no bubbling or w ater leakage;

(2) Check the liquid level of the water tank;

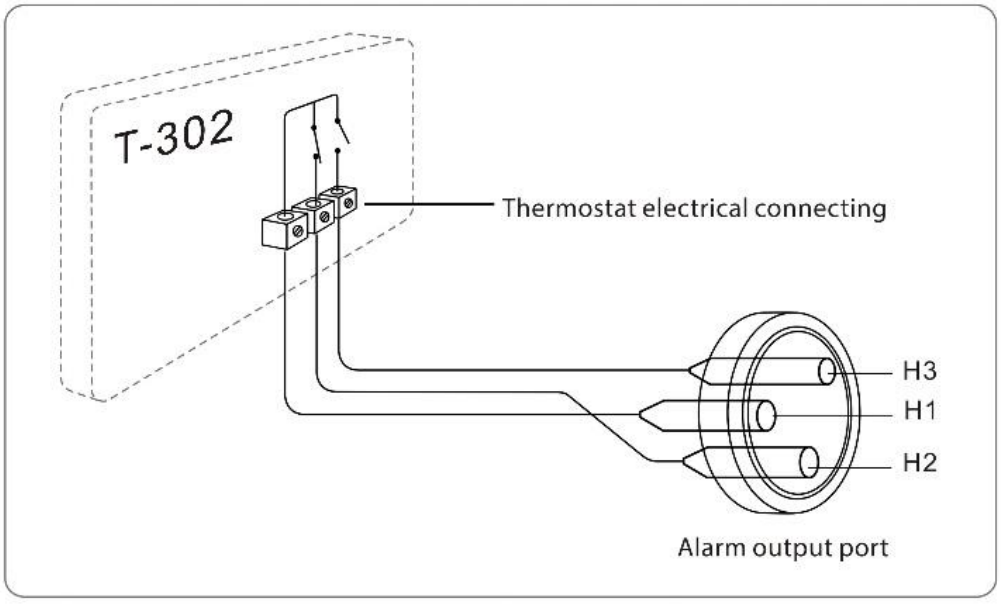
(3) Confirm that the electrical wiring of the equipment is connected correctly;

(4) Confirm whether the equipment is grounded.

## V. Alarm & Output Terminal

In order to guarantee the equipment will not be affected while abnormal situation happens to the chillers, the chillers are designed with alarm protection function.

### 1.Alarm output terminals and wiring diagram




**Note: The alarm output port is connected with a set of normally open and normally closed contacts of the relay inside the machine. The working current should be smaller than 3A while the working voltage should be smaller than 300V.**

### 2. Alarm function

| | |
|---|---|
| **E0** | Water flow alarm input |
| **E1** | Ultrahigh water temperature |
| **HH** | Short circuit of water temperature sensor |
| **LL** | Water temperature sensor open circurt |

### 3.Alarm causes and working status table

| Display / Condition | Alarm code | Buzzer | OUT H1、H2 | OUT H1、H3 |
|---|---|---|---|---|
| Circulating pump works properly | | | DISCONNECTION | BREAKOVER |
| Ultrahigh room temp | E1 | Sounds | BREAKOVER | DISCONNECTION |
| Ultrahigh water temp | E2 | Sounds | BREAKOVER | DISCONNECTION |
| Ultralow water temp | E3 | Sounds | BREAKOVER | DISCONNECTION |
| Faulted room temp sensor | E4 | Sounds | BREAKOVER | DISCONNECTION |
| Faulted water temp sensor | E5 | Sounds | BREAKOVER | DISCONNECTION |
| Flow rate 1 alarm | E6 | Sounds | BREAKOVER | DISCONNECTION |
| Flow rate 1 alarm | E7 | Sounds | BREAKOVER | DISCONNECTION |
| Chiller power failure | | | BREAKOVER | DISCONNECTION |

## VI. Simple Troubleshooting

| Failure | Fault cause | Approach |
|---|---|---|
| Machine turned on but unelectrified | Power cord is not plugged in place | Plug the power cord in place |
| | fuse burnt-out | Replace the fuse inside the power interface which is in the back of machine |
| Flow alarm, with water pipe directly connect to the outlet, inlet, there is no water flow | Water level in water tank is too low | Feed water and check the pipe leakage |
| When used with the device, flow alarm, but a direct connection with the pipe outlet and inlet, there is water flowing but not alarming | Blockage in circulating water pipeline | Check circulating water pipeline |
| Ultra-high temperature | Chiller of poor ventilation | To improve the ventilation |
| | Excessive heat load | Reduce the heat load or to use other models |
| A normal boot, but the fan does not work | The water temperature below 20 degrees | A normal phenomenon, no processing |
| Switch on with alarming after adding water or changing water | Water drop in electric circuit | Natural drying or drying off cap |
| | Damaged pumps dry transfer | To replace or repair water pumps, prohibited anhydrous boot |
| Slow outfall drainage | The injection port is not open | Open the injection port |