CAIROX

R-AQUA®

290

Air Source Heat Pump

Installation & Operation Manual

Model: R-AQUA CHP-050TC3

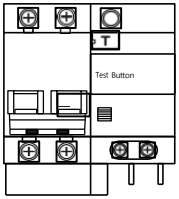
Note

1. In order to install the heat pump (chiller) unit correctly, please read this manual carefully.
2. The heat pump (chiller) unit must be installed by professional technicians.
3. When installing the products of our company, we must operate strictly according to this manual.
4. Due to the ever-changing products of the company, the content of this manual is subject to change without prior notice.
5. If the unit is installed in a place that is prone to lightning strikes, lightning protection measures must be taken; if the unit is not used in winter, please be sure to drain the water in the grid system to prevent the water from freezing and expanding in winter, causing damage to the system.

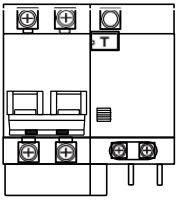
Contents

User Information

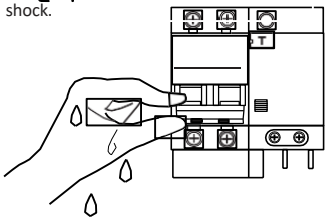
1. Please use an electrical leakage switch, otherwise, there may be electric shock, fire, etc.



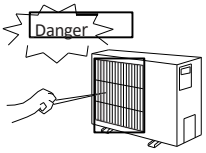
2. Make sure that the leakage protection switch is securely connected. If the wiring is not secure, it may cause electric shock, heat, or fire.



3. Do not operate with a wet hand, otherwise, there may cause electric shock.



4. Do not insert your fingers or any stick into the inside of the ventilation area, otherwise, harm will be caused.



1. Precautions

Please make sure that you have read this manual before using our air source heat pump. In the “User Information” chapter, “User Information” provides essential safety information. Please be sure to follow the instruction strictly.

Warning	Wrong operations are likely to cause serious consequences such as death, serious injury, or major accidents
Note	Improper operation may result in a safety accident, damage to the machine, or affect the function of the machine.

Please read the labels on the machine carefully. If abnormal conditions such as abnormal noise, odor, smoke, temperature rise, electric leakage, fire, etc. are found during use, please cut off the power immediately and contact our local customer service center or dealer in time to repair it. Contact the local fire and emergency department immediately if necessary.

Warning

1) The machine must not be installed by the user, but must be installed by an agent or a professional installation company authorized by the company, otherwise it may cause safety accidents and affect the use effect.
2) Except for professional guidance, non-professionals are not allowed to disassemble the machine, otherwise accidents or damage to the machine may occur.
3) Do not use or store flammable items such as hairspray, paint, gasoline, alcohol, etc. around the machine, otherwise there is a possibility of fire.
4) The main power switch of the unit should be placed out of the reach of children to prevent children from playing with the power switch and causing danger.
5) Do not sprinkle water or other liquids on the machine, otherwise it may be dangerous.
6) Do not touch the machine with wet hands, otherwise it may cause electric shock.
7) In thunderstorm weather, please turn off the main power switch of the machine, otherwise lightning may cause danger or damage the machine.
8) The unit needs to use an independent power switch to avoid sharing the same circuit with other electrical appliances, and use a power cord with a specified cross-sectional area to provide power for the unit, and match a circuit breaker of corresponding specifications (with leakage protection function).
9) The unit must be equipped with a grounding wire with a specified cross-sectional area. Do not connect the grounding wire with the gas pipeline, water pipe, lightning conductor or telephone grounding wire. At the same time, it must be reliably grounded to avoid electric shock accidents.
10) Do not forcibly cut off the power supply when the unit is running to avoid accidents.
11) When the machine is not used for a long time, please turn off the main power switch to avoid accidents.
12) If the ambient temperature is below 0°C, it is strictly forbidden to cut off the power supply. If there is an accidental power failure under this condition, please drain the water in the pipeline.

Note

1) Do not put hands or foreign objects into the air outlet of the unit, otherwise the high-speed fan may endanger your safety.
2) Do not remove the air guide grille of the outdoor unit, otherwise the high-speed fan may cause injury to you or others.
3) Lightning and other electromagnetic radiation sources may have an impact on the machine. If it does, please cut off the power supply, and then restart the power supply.
4) Pay attention to the water supply of tap water when using it.
5) Do not switch the unit frequently, otherwise it may cause damage to the unit.
6) The operating parameters of the unit and the setting values of the protection devices have been set when the machine leaves the factory. Users please do not change the set value at will, and do

not short-circuit the circuit of the protection device of the unit, otherwise the unit may be damaged due to improper protection.

7) The specific gravity of the refrigerant used by the unit is larger than that of air, and it will diffuse on the ground when it leaks. Therefore, when the unit is assembled in a room, it must be well ventilated to avoid severe suffocation when the refrigerant leaks.
8) In case of refrigerant leakage, stop the operation of the unit immediately, and contact the maintenance personnel in time. There must be no open flames on site, because the refrigerant and open flame will burn, produce harmful gases, and cause serious accidents.
9) In order to avoid freezing damage to the water system pipeline, when the unit is shut down in an environment below 0°C, please keep the unit in a standby state. If the unit is shut down for a long time, it is recommended that the user drain the water in the water system and cut off the power supply.
10) Please perform regular maintenance on the unit according to the requirements of the manual to ensure that the unit is in good condition.

2. Other Safety Considerations

1) Before operating the unit, please read all "Safety Precautions" in detail.
2) "Safety Precautions" lists various important matters related to safety, please strictly abide by them.
3) The unit must use a fuse with a specified capacity, and iron wire or copper wire cannot be used instead.
4) The working environment of the unit should be far away from potential fire hazards. If the line problem causes a fire, the main power switch should be turned off immediately, and the fire should be extinguished with a dry powder fire extinguisher.
5) The power supply must be cut off before the maintenance of the unit.
6) The sharp edges and the surface of the fins are harmful and should be avoided as much as possible.
7) Please do not touch the rotating fan blades with your hands or other objects, so as not to cause equipment damage and casualties.
8) It is forbidden to place objects on the top of the unit, so as to avoid accidents caused by objects falling when the machine is running.
9) The fixed line connected to the equipment must be equipped with an all-pole disconnecting device with a contact spacing of at least 3mm.
10) The equipment should be installed in accordance with the national wiring rules.

Notice

1. The outdoor ambient temperature of the cooling operation: 16-46°C, the outlet water temperature of the unit side: 7-25°C.
2. The outdoor ambient temperature of heating operation: -36 ~ 30℃, the outlet water temperature of the unit side: 20 ~ 55℃.

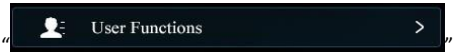
Operation Instruction

1. Control Panel

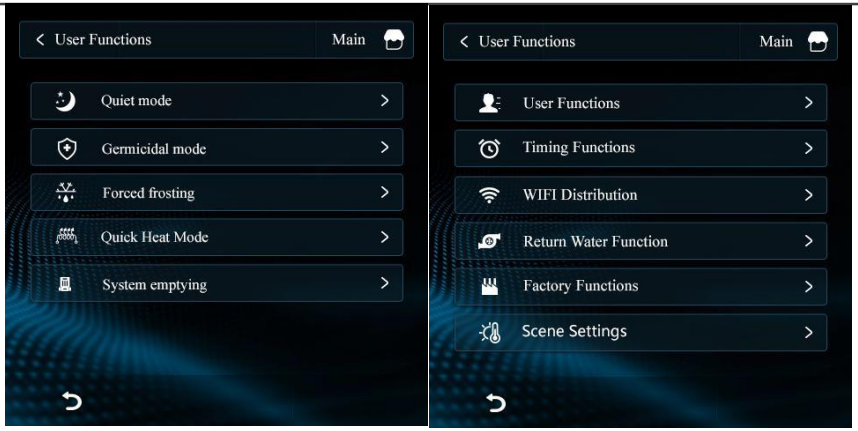
1) **Single mode** (heating, cooling, floor heating, hot water)，can click“+”“-”Adjust the setting temperature of the current mode Or the slider can also set the setting temperature of the current mode Or click Set temperature value Enter the setting temperature on the keyboard that pops presenter” “Enter “ to modify；

2) **In combination mode** Click Set temperature value Enter set temperature press on the keyboard that pops up “Enter” to modify；

Rapid heating, silence, forced frost, system emptying, high temperature sterilization function：

In the bright screen in the main interface click“  ”enter the function selection pate and then click “ 

”Enter the user command operation From the top to down is silent mode, high temperature sterilization, Forced frost, Manual rapid heating, System emptying. Click the corresponding button to start/close the corresponding function.



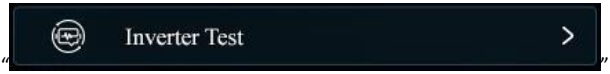
1.Test mode：

On the bright screen click“  ”to go to the function selection page and then click“ 

”

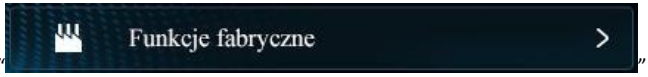
Type on the keyboard that pops up“1122”，

Press “Enter” Enter to factory function and then

click “ 

” to enter Factory test interface. On this screen, you can manually control the running status of the compressor, fan, EEV, and EVI, and enter the IPLV test mode.

2. Refrigerant recovery function：

On the bright screen Click“  ” to enter function Selection page and then click“ 

”，

Type on the keyboard that pops up“1122”，

Press “Enter” enter to factory function and then long press more than 3S

“ 

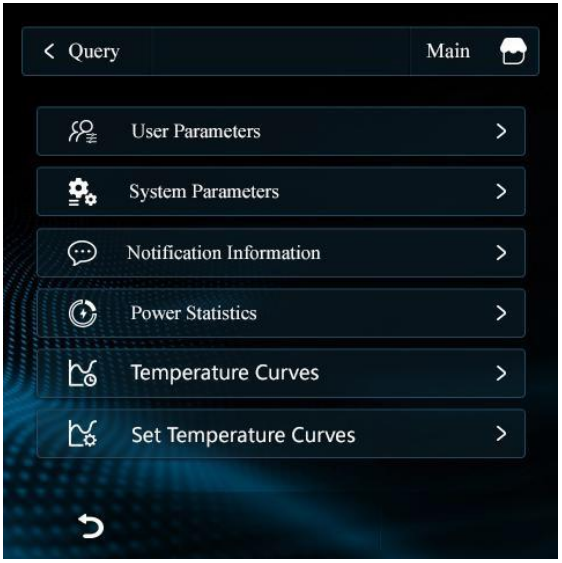
”Enter refrigerant recovery.

3. Querying Running Parameters

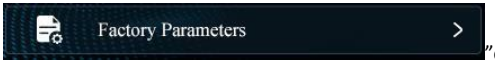
On the bright screen press“  ” to enter the Query Page， and then click“ 

”into viewing the Temperature Status. When the network is running， press“ 

”Enter the number selection. Click the corresponding online unit number to enter the temperature status query of the corresponding unit. Units in gray are not online.



4. Parameter setting

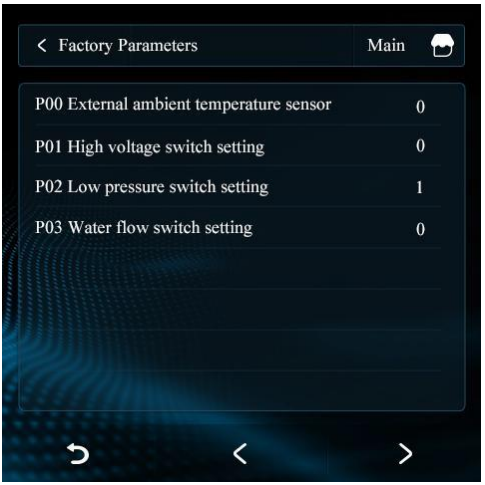
On the bright screen press“  ”enter the setting page, click“ 

”enter parameter setting page when the network is running， 

press“” Enter the group number selection.

Click the corresponding online unit number to enter the parameter setting of the corresponding unit.

Units in gray are not online.

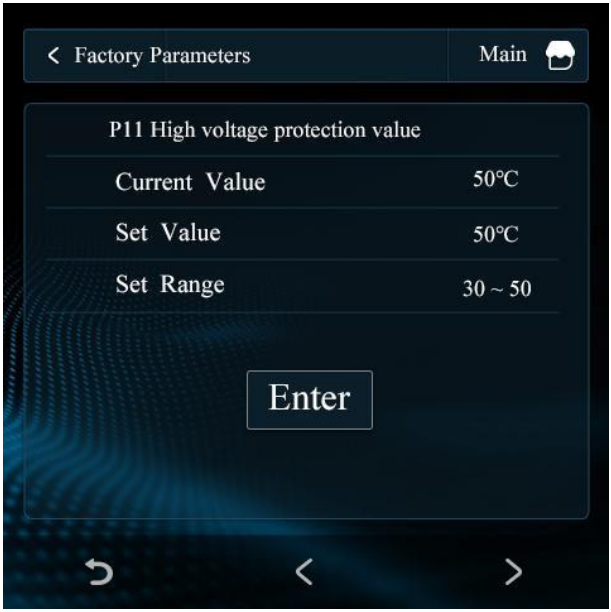


At this time can press“ > ”“ < ” check the value of each parameter，

Click the parameter to be modified. The page for modifying parameters is displayed. In this page can be realistic parameter number, Current Parameter Values, set value, setting range Click the parameter value on the keyboard that pops up to enter the set value by pressing “Enter”.

Click again on the following page “Enter” Save the parameters.

Click on this page“ > ”“ < ”switch next parameter.



5.Display fault

When the unit has errors, "  " icon is blinking on the display. When the fault is cleared the icon disappears. Click the icon to go to the fault query page. A maximum of 20 faults and 50 historical faults can be displayed. 00E03 : 00 means master unit, 02.03 means slave unit, E03 means Error code

Click" 

"Check Historical Faults,

Click" 

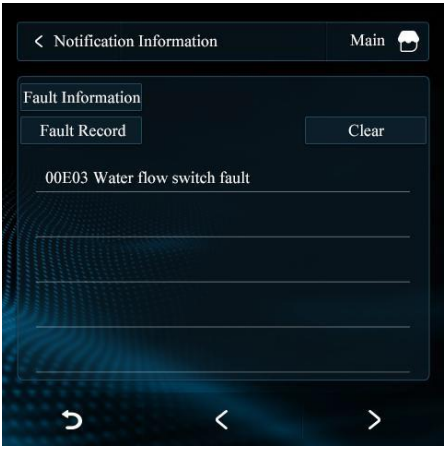
"Check the Current Fault,

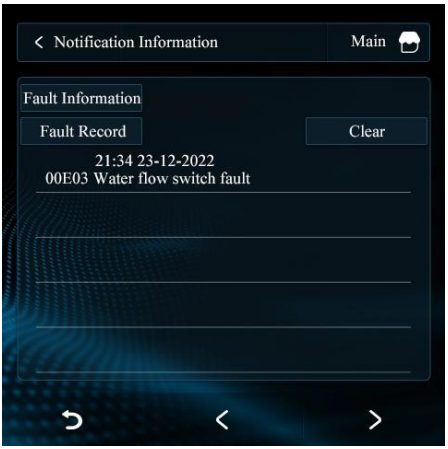
Chick" 

"Clearing Historical Faults;

On the bright screen press"  "Enter the query page, and click "

"enter fault query





6. Clock setting

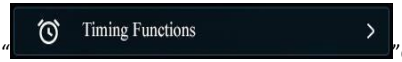
On the bright screen press“  ”Enter the setting page and click“ 

”enter the time setting page，

Click the corresponding year, month and day to enter the value on the keyboard finally press “Enter” save time；

7. Set the on/off timing control

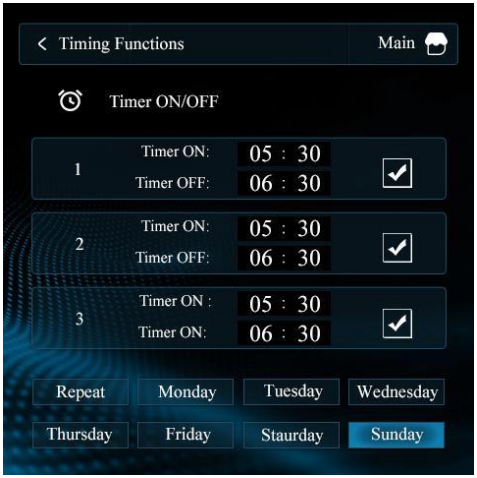
On the bright screen click“  ” to enter the function selection page and then

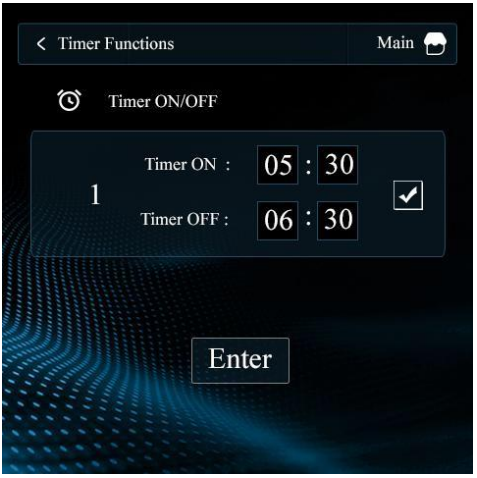
click “ 

”enter on/off timing check page If you need to enable weekly timing. Click any button from Monday to Sunday to start the weekly timing.

Click the time period to enter the time setting of the time period from the keyboard to input the time.

Click the enable button“  ”You can enable or disable this segment timing. Press “Enter” to save the Settings；





8. Return water temperature setting

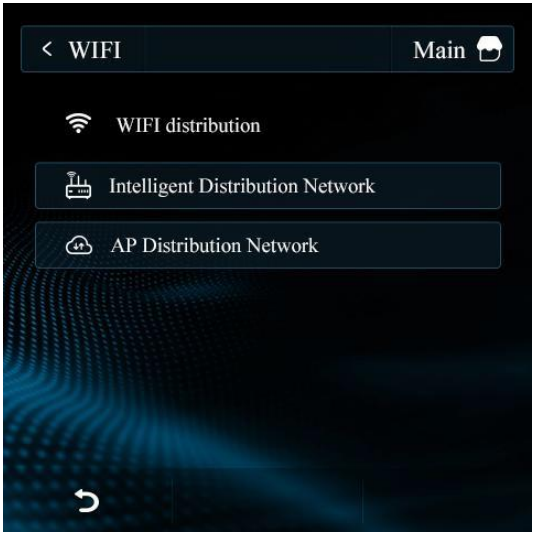
On the bright screen click“  ” to enter the function selection page and then click“ 

”to enter backwater timing check setting page.

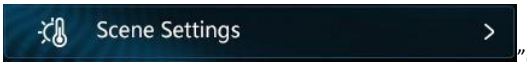
9.WIFI distribution network

On the bright screen click“  ”to enter the the function selection page and then click“ 

”to enter WIFI operation interface. Press and hold the button for more than 3S to enter the corresponding WIFi distribution mode. WIFI with 3min，Timeout exit



10. Scene setting

On the bright screen click“  ” to enter function selection page and click“ 

”enter Scene Setting Screen： A total of 6 scenes are set every day. Can be set daily or weekly cycle timing.

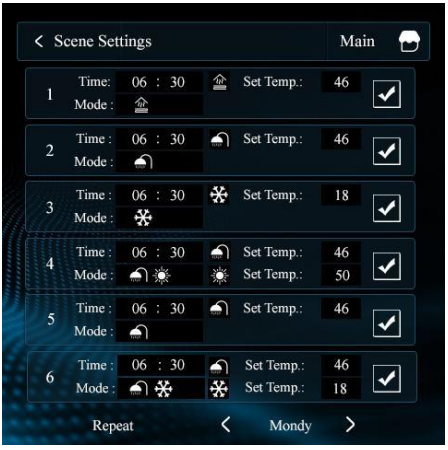
Click “  “to enable or disable this scenario setting.

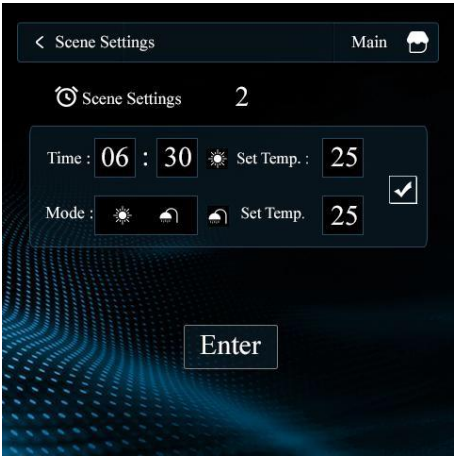
Click the scene segment to be modified to modify the scene，

Click on the pattern area“  ”can change the mode，

Click the corresponding value to modify it by keyboard input， click“  ”You can enable or disable this scenario. Press on “Enter” to save the settings.

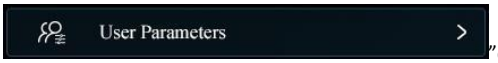
Scene running: When the time reaches the set time, the setting temperature automatically switches to the value set in the scenario, but it does not change the switch unit state.





11. Modifying User Parameters

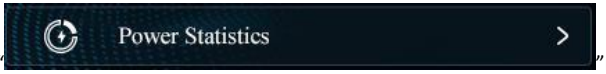
Set temperature, return difference, return water temperature, kill virus

On the bright screen press“  ”enter the Query Page，and click“ 

”enter user parameter list，

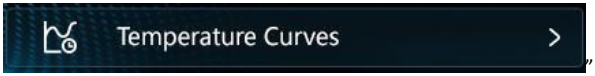
For details, see Factory Parameter Settings.

12. Parameter Query of Power module (optional)

When the unit is equipped with a battery module，On the bright screen，press“  ”enter the Query Page，and click“ 

”Enter the unit electricity information query，You can query the total power consumption, current power, voltage, and current parameters.

13. Curve of the query

On the bright screen，press“  ”enter the Query Page，and click“ 

”Enter curve Query，

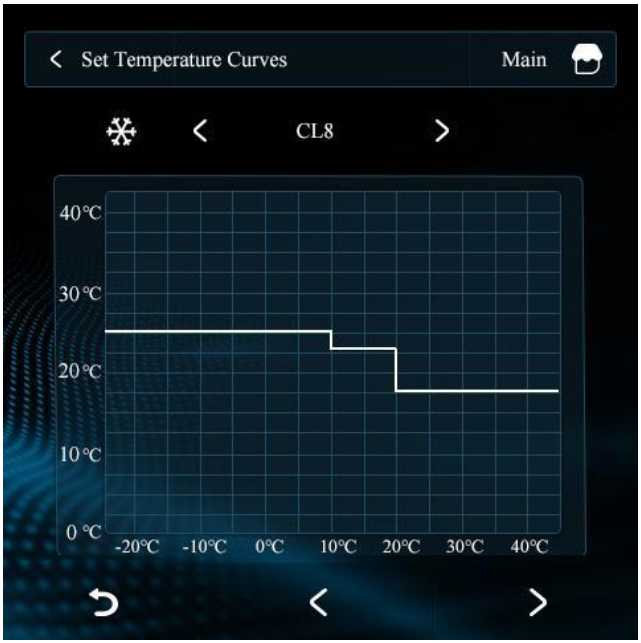
Records the curves of the inlet water, outlet water, compressor frequency, and ambient temperature within 24 hours

14.Curve setting

On the bright screen， press“  ”enter the Query Page， and click“ 

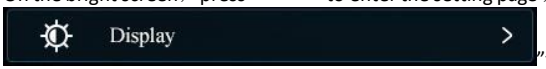
”Enter curve setting, click“  ”“  ”switch to difference mode curve setting：click“ 

”Select different curve controls. In the curve area, the parameters of the current curve are displayed.

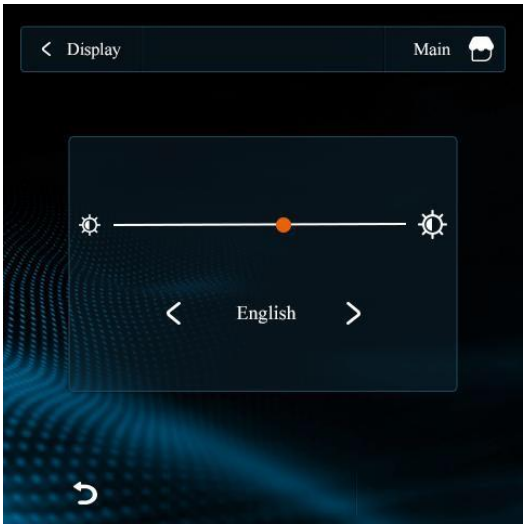


15. Brightness Settings

On the bright screen， press“  ” to enter the setting page ， and click“



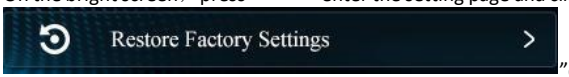
”to enter the brightness Settings page，



Slide the slider to set different brightness；Click“  ”“  ”Switch different languages, Chinese, English, Polish.

16. Restore factory setting

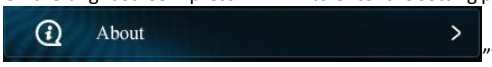
On the bright screen， press“  ”enter the setting page and click“



”enter the restore factory setting page, and click“  ”It can restore factory Settings.

16. Check Program version

On the bright screen press“  ”to enter the setting page ， and click“



”You can view the program version numbers of the display and mainboard.

Operation Parameter Query

Query Code	Description	Range
1	Compressor Running Frequency	0 ~ 150 Hz
2	Fan Motor Running Frequency	0 ~ 999 Hz
3	Electronic expansion valve steps	0 ~ 480 P
4	EVI valve steps	0 ~ 480 P
5	AC Input Voltage	0 ~ 500 V
6	AC Input Current	0 ~ 50 A
7	Compressor Phase Current	0 ~ 50 A
8	IPM temperature of the compressor	-40 ~ 140 ℃
9	High-pressure saturation temperature	-50 ~ 200 ℃
10	Low-pressure saturation temperature	-50 ~ 200 ℃
11	External ambient temperature T1	-40 ~ 140 ℃
12	Outer coil (fin) T2	-40 ~ 140 ℃
13	Internal coil (plate heat exchanger) T3	-40 ~ 140 ℃
14	Gas Suction Temperature T4	-40 ~ 140 ℃
15	Gas Exhaust Temperature T5	0 ~ 150 ℃
16	Water Inlet Temperature T6	-40 ~ 140 ℃
17	Water Outlet Temperature T7	-40 ~ 140 ℃
18	Economizer Inlet Temperature T8	-40 ~ 140 ℃
19	Economizer Outlet Temperature T9	-40 ~ 140 ℃
20	Machine Tooling No.	0 ~ 120
21	Water tank temperature	-40 ~ 140 ℃
22	Fluorine plate heat exchanger out temperature	-40 ~ 140 ℃
23	Driver manufacturers	0 ~ 10
24	Water pump speed PWM	0 ~ 100%
25	Water flow	3 ~ 100 L/min
26	Return water temperature	-40 ~ 140 ℃
27	Unit input voltage	0 ~ 500 V
28	Unit input current	0A ~ 99.99A
29	Unit input power	0 ~ 99.99KW
30	Total electricity consumption of the unit	0 ~ 9999 Kw.h

Display Fault: When the machine has a fault, the fault is flashing in the timing area and the fault code is displayed cyclically; when the fault is eliminated, the standard display is restored.

Dimensions

CHP-050TC3 Unit: (mm)

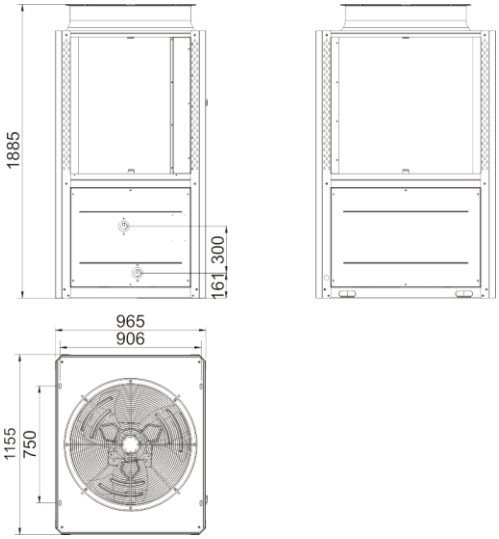


Figure 1

Installation

1. Installation Preparation

1.1 Install The Required Tools (Self-Provided)

Number	Tool	Number	Tool
1	Level	10	Saw
2	Electric Hammer	11	Flat Blade Screwdriver
3	Adjustable Wrench	12	Cross Screwdriver
4	Needle-nose Plier	13	Copper Tube Knife
5	Impulse Drill	14	PP-R Tube Knife
6	Ruler	15	PP-R Tube Heat Melting Device
7	Torque Wrench	16	Compound Gauge
8	Hexagonal Wrench	17	Vacuum Pump
9	Hammer	18	Electronic Balance

1.2 Connecting Wires, Insulation Materials, PP-R Pipe, And Connector

a) The material and thickness of the insulation pipe meet the specified requirements. Otherwise, heat loss and condensation will be caused.

b) Please refer to this manual's “Electrical Installation” description section for wire size selection.

1.3 Other Installation Materials

a) Fix the pipe bracket and pipe clamp of the connecting pipe

b) Wire threading pipe and pipe clamp

c) Insulting tape, raw tape

d) Expansion bolt

e) Mounting bracket

2. Installation location

2.1 The machine installation space meets the following schematic requirements to ensure regular air circulation and maintenance;

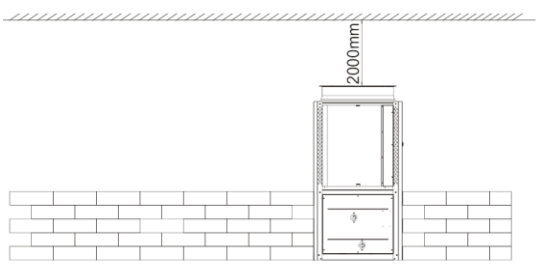
2.2 The location of the machine should be kept away from heat, steam, or flammable gases;

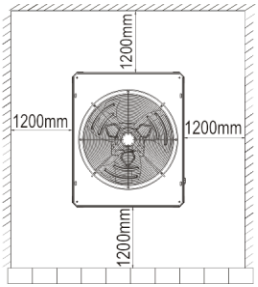
2.3 Do not install the machine in places with strong wind or dust;

2.4 Do not install the machine where it is often passed through the air suction side and air exhaust side;

2.5 The installation position of the machine should be adequately drained to the nearby sewer.

Installation Figure for CHP-050TC3 (Unit: mm)





Note

Installation In The Following Locations May Cause The Machine To Malfunction:

1. A place with more oil;
2. Wet place
3. Seaside saline-alkali area;
4. Special environmental conditions;
5. High-frequency facilities such as wireless equipment, welding machines, and medical equipment.

3. Outdoor Unit Specific Installation Steps

3.1 Install the unit on a solid surface such as concrete materials, and the load-bearing surface or mounting bracket must meet the strength requirements.
3.2 Fasten the outdoor unit to the mounting bracket with bolts and nuts and keep it level.
3.3 If installed on the wall or roof, the bracket must be firmly fixed to prevent damage caused by earthquakes or strong winds.
3.4 The positioning dimensions of the outdoor unit installation base are required to install 4 positioning foot bolts with a diameter of 10mm according to the outline drawing.

Installation Precautions

1. The unit should be installed so that the inclination of any vertical surface does not exceed 5 degrees;
2. Do not install the outdoor unit directly on the ground;

3. The strength of the ordinary air-conditioning bracket may not apply to the unit. Please design or select the frame according to the weight of the team;
4. If the mainframe is installed and fixed on the open balcony and the roof, it is necessary to lift the unit. Pay attention to the following points when lifting:
   - 4.1 Please use more than 4 soft slings to hoist the handling unit.
   - 4.2 In order to avoid scratches and deformation on the surface of the unit, please add a protective plate on the surface of the unit when hoisting and transporting.
   - 4.3 Before the final hoisting and installation, it is necessary to check whether the foundation is correct again to prevent errors with the real thing.

4. User Water System Installation

4.1 The Installation Of The Water System Must Meet The Following Principles:

- 4.1.1 Pipe length is as short as possible;
- 4.1.2 Pipe diameter must meet the requirements of the unit;
- 4.1.3 The elbows on the waterway are as few as possible, and the elbow radius is as large as possible;
- 4.1.4 The thickness of the water pipe insulation layer meets the specified requirements;
- 4.1.5 Dust and debris should not enter the pipeline system as much as possible;
- 4.1.6 The unit must be fixed before the piping system can be installed.

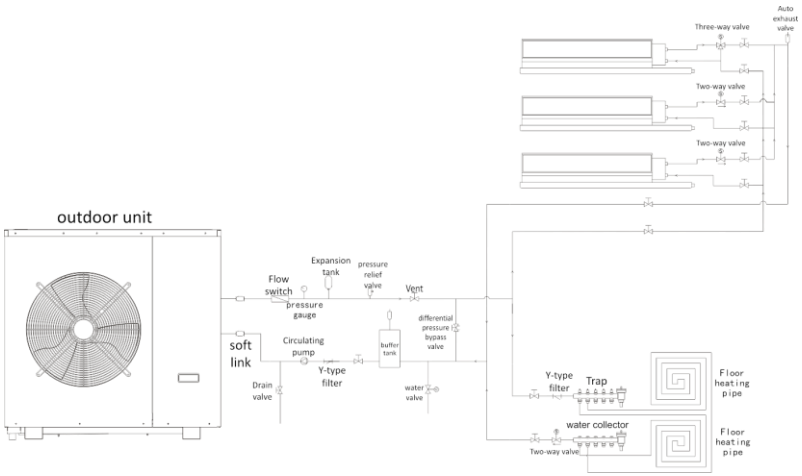
4.2 Water pipe selection

Model	Unit inlet/outlet pipe diameter
CHP-05T0C3	DN40 (Male threaded fittings)

Remark

1. Hydraulic calculation must be carried out after the primary water pipe selection is completed. If the waterside pipeline resistance is more excellent than the selected pump lift, the larger water pump must be re-selected, or the water pipe must be increased in size;
2. When multiple units are connected in parallel, the primary and circulating water pumps must be selected as appropriate according to the hydraulic calculation requirements.

4.3 Water system installation diagram



Remark

1. The same piping design is allowed to distribute the water evenly.
2. The system must be equipped with an automatic water supply valve, and the highest point of the water system must be equipped with an automatic pressure relief valve;
3. The drain valve shall be installed at the bottom of the pipeline to facilitate drainage;
4. The pressure relief valve is installed at the highest point of the system pipeline, and the terminal of the water pipe must have an expansion diameter;
5. Normal working water capacity can ensure normal defrosting in winter (ensure that the water capacity per kW exceeds 10L);
6. The machine has been equipped with a water flow switch; users do not need to install one more;
7. To facilitate the maintenance of the machine, a pressure gauge is required to be installed for the outlet pipe of the device;
8. If the compartment controls the floor heating, and the number of the manifolds in the smallest area is less than or equal to 2, please install the differential pressure bypass valve according to the schematic diagram;
9. If the unit does not operate in winter, the water inside the system must be drained to prevent freezing of pipelines or components.

4.4 Water Quality Requirements By The Machine

4.4.1 When water quality is not good, it will produce some scale and sediment such as sand. Therefore, the water used must be filtered and softened with soft water equipment before it flows into the heat pump water system;

4.4.2 Please analyze the water quality before using the machine, such as PH value, conductivity, chloride ion concentration, sulfur ion concentration, etc.

PH	Water Hardness	Conductivity	S	Cl	Nh4
7~8.5	<50ppm	<200vV/cm(25℃)	N/A	<500ppm	N/A
So4	Si	Iron content	Na	Ca<	
<50ppm	<30ppm	<0.3ppm	N/A	<50ppm	

4.5 Water Pipeline Installation Instructions

4.5.1 Install all water pipelines;

4.5.2 Check if any water leaks in the pressurized pipelines;

4.5.3 Clean the water pipelines.

4.6 Water Pipeline Feed-Water And Pipeline Emptying Steps:

4.6.1 Open the pressure relief valve on the water distributor and all valves;

4.6.2 Feed the water at the pipe filling port;

4.6.3 During the feed-water process, it is necessary to observe if the pressure relief valve or the drain valve has water overflow, and if there is water overflow, it means that the water in the system has been filled;

4.6.4 Close the pressure relief valve, and then look at the water pressure gauge. If the pressure value is more than 0.15Mpa, please close the feed-water valve and complete the water drain.

5. Selection and Installation of Water System Accessories

5.1 Selection Of Circulating Pump

5.1.1 The unit must be installed with a circulating pump before it can be used. The unit provides a power port (single-phase power supply) for the circulating pump. For wiring, please refer to the circuit diagram of the unit for wiring. The maximum power of the pump is not allowed to exceed 600W.

5.1.2 Please select the circulating pump according to the actual lift required, and the flow must be guaranteed to meet the requirements of the machine nameplate.

5.2 Selection Of Auxiliary Electric Heater

5.2.1 The user can select the auxiliary electric heater if needed; however, the machine only provides the port connected with a signal wire to control the auxiliary electric heater.

5.2.2 Professionals must install the installation of an auxiliary electric heater.

5.3 Selection Of Water Flow Switch: The machine has a built-in flow switch, so it does not require one more water flow switch.

5.4 Other Optional Accessories Recommended

Accessories	Description	Remark
Buffer Tank	60L or bigger	
Expansion Tank	5 L	Only Pressurized System
Pressure Gauge	1.5 Mpa	<0.3ppm
Safety Valve	0.6 Mpa	Only Pressurized System

6. Electrical Installation

All wiring and grounding must comply with local electrical codes.

Note

1. The electrical parameters on the nameplate of the unit should be carefully checked to ensure that the wiring meets the specified requirements, and the wiring is correctly connected according to the wiring diagram.
2. The outdoor unit and auxiliary electric heating are equipped with independent power supplies with current circuit breakers and leakage protectors.
3. The power supply of the unit must meet the requirements of the unit, and must be connected reliably and effectively.
4. The wires should not be in contact with copper pipes, compressors, motors or other moving parts.
5. Do not change the internal wiring of the unit without permission, the manufacturer will not be responsible for it.
6. Before the electrical wiring is completed, do not send power to avoid personal injury.
7. The power supply voltage should vary within ±10% of the standard value.

Electrical Specifications

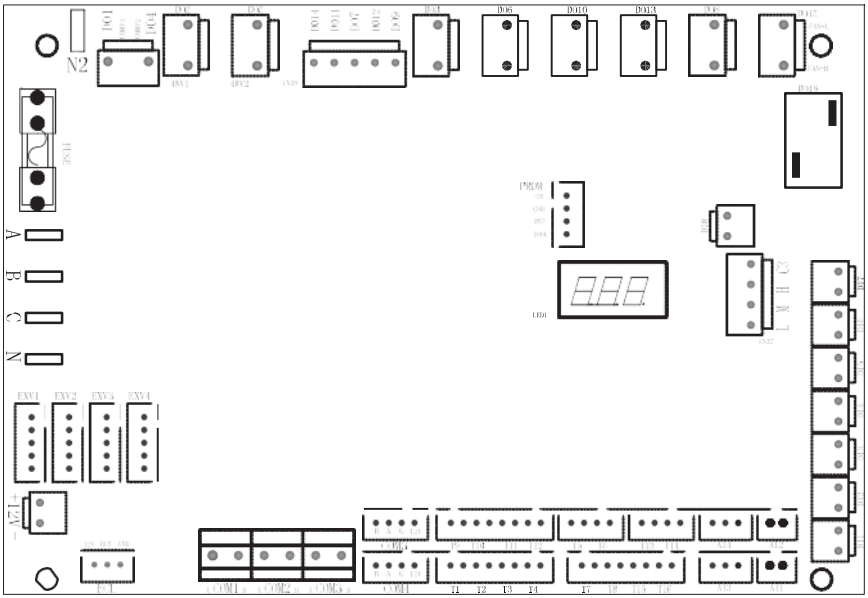
(The model is an abbreviation, please refer to the attached table for the complete model)

model	power supply	Unit maximum current (A)	Recommended Fuse Size (A)	Recommended Leakage Protector Specifications (mA)	Minimum specification of copper core wire diameter of power cord
CHP-050T1C3	380V/50Hz	30	40	50	10

Power Cable And Signal Wire Connection Instruction

1. Remove the machine's front cover and connect the wire to the corresponding terminal block according to the electrical wiring diagram to confirm that the connection is secure.
2. Secure the cable with the wire clamp and install the service plate.
3. Do not connect the wrong line. Otherwise, it will cause electrical failure or even damage the machine.
4. The type and rating of the fuse are based on the specifications of the corresponding controller or fuse cover.
5. The power cable must be selected and installed by a professional installer. For specific power cable specifications, see the electrical specifications.
6. If the user's power distribution capacity is insufficient or the power cord (copper core wire) is not configured as required, the machine cannot be started or operated normally. The seller will not take any responsibility.

Electrical schematic diagram of outdoor unit

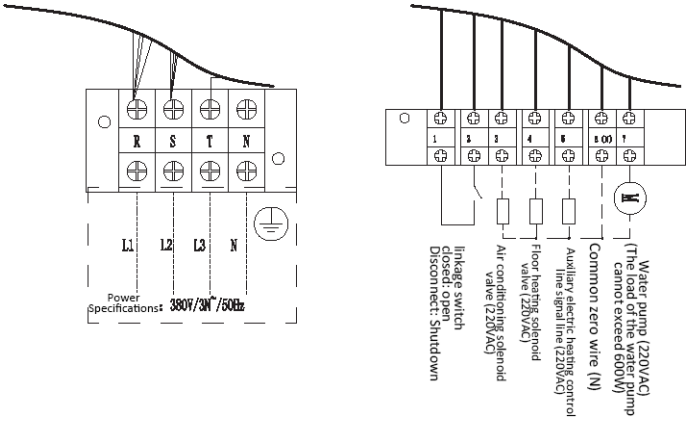


Seq.	Port	Description	Seq.	Port	Description
1	D01	reserve	34	AI4	High Pressure Sensor/Low Pressure 2 Sensor
2	D02	System 1 four-way valve	35	AI3	Low pressure 1 sensor
3	D03	System 1 Liquid Injection Valve	36	T1	Outdoor coil 1 temperature
4	D04	reserve	37	T2	Return air 1 temperature
5	D05	System 2 four-way valve	38	T3	Exhaust 1 temperature
6	D06	System 2 Liquid Injection Valve	39	T4	Cooling 1 coil temperature
7	D07	crankshaft heating	40	T5	Economizer inlet 1 temperature
8	D08	chassis heating	41	T6	Economizer outlet 1 temperature
9	D09	Electric heating	42	T7	outdoor ambient temperature
10	D010	Throttle bypass valve 1&2	43	T8	Inlet water temperature
11	D011	Floor heating valve (cooling and heating)	44	T9	Outdoor coil 2 temperature
12	D012	Air conditioning valve (cooling and heating)	45	T10	Return air 2 temperature
13	D013	Enthalpy increasing valve 2	46	T11	Exhaust 2 temperature
14	D014	Enthalpy increasing valve 1	47	T12	Cooling 2 coil temperature
15	D015	Low Wind (AC) / Cooling	48	T13	Economizer inlet 2 temperature

		Fan			
16	D016	High wind (AC)	49	T14	Economizer outlet 2 temperature/antifreeze temperature
17	D017	Circulating pump	50	T15	water temperature
18	C2	public port 1	51	T16	Tank temperature/antifreeze sensor
19	C1	Common 2	52	COM3	driver module
20	D18	Medium voltage switch 1	53	COM4	LCD wire controller
21	D17	Medium voltage switch 2	54	COM3	reserve
22	D16	linkage switch	55	COM2	Host computer monitoring
23	D15	System 2 Low Voltage Switch	56	COM1	module cascading
24	D14	System 2 High Voltage Switch	57	ECL	extension module
25	D13	Flow switch	58	12V	DC 12V power supply
26	D12	System 1 Low Voltage Switch	59	EXV1	System 1 main valve
27	D11	System 1 High Voltage Switch	60	EXV2	System 1 auxiliary valve
28	C3	reserve	61	EXV3	System 2 main valve
29	H	reserve	62	EXV4	System 2 auxiliary valve
30	M	reserve	63	N	Power input zero line
31	L	reserve	64	C	Power input T phase
32	A12	reserve	65	B	Power input S phase
33	A11	reserve	66	A	Power input R phase

Due to product upgrades, there may be inconsistencies in the actual wiring, please refer to the internal wiring diagram on the side panel of the unit.

Wire Diagram



Due to product upgrades, there may be inconsistencies in the actual wiring, please refer to the internal wiring diagram on the side panel of the unit.

Commissioning and Maintenance

1. Precautions Before Commissioning

1.1 Is the machine adequately installed?
1.2 Is the wiring and pipe correct?
1.3 Whether the water pipelines are empty or not?
1.4 Whether the heat insulation has been perfected?
1.5 Is the ground wire connected reliably?
1.6 Whether the power supply voltage matches the rated voltage of the machine?
1.7 Is there any obstacle in the air inlet and outlet of the machine?
1.8 Is the safety valve installed correctly?
1.9 Whether the leakage protector can operate effectively?
1.10 The system water pressure is not less than 0.15 MPa, and the maximum pressure cannot exceed 0.5 MPa;
1.11 In winter, the machine needs to be energized at least 24 hours before the operation, as the compressor needs to be preheated.

2. Commissioning

Use the controller to control the machine and check the following items according to the instruction manual: (If there is any fault, please find out the faults and reasons described in the manual and eliminate them)

2.1 Is the controller regular?
2.2 Is the function key of the controller regular?
2.3 Is the drainage normal?
2.4 Test whether the heating mode and cooling mode are working correctly;
2.5 Is the outlet water temperature average?
2.6 Whether there is vibration and abnormal sound during operation?
2.7 Does the generated wind, noise, and condensation affect neighbors?
2.8 Is there a refrigerant leakage?

3. Operation and Debugging

3.1 About 3mins of protection
Due to the self-protection of the compressor, the machine cannot be restarted again within 3 mins.
3.2 Feature of heating operation
If the ambient temperature is too high during operation, the outdoor motor may run low or stop.
3.3 In the case of heating operation, when the unit has frost formation, the defrosting procedure (about 2-8 minutes) is automatically performed to improve the heating effect. The outdoor motor stops running during the “defrost” operation.
3.4 Power Outage
If there is a power outage during operation, the machine will stop running. Before the power outage, the controller automatically memories the ON/OFF status of the device. After re-

powering, the controller will send an ON/OFF signal to the device according to the state of memory before the power outage to ensure that the device recovers from the previous status from abnormal power failure.

3.5 Heating Capacity

Because the heat pump absorbs heat from the outside, the heating capacity will be reduced once the outdoor temperature is lowered.

3.6 Electric Leakage Protector

After the unit has been running for some time (usually one month), the leakage protector needs to press the test button under the closed energized state to check whether the performance of the leakage protector is regular and reliable (the leakage protector should be disconnected once every time the test button is pressed). If the accident is not found, the test can be sent once. If it is not working, the cause should be found, and if necessary, the action characteristic test should be carried out. After checking, it is confirmed that the leakage protector itself has failed. It should be replaced or repaired in time.

3.7 Working Temperature Range

In order to use the unit correctly, please run it under the following conditions, outdoor ambient temperature: -36°C ~ 46°C.

3.8 Antifreeze in the winter

When the ambient temperature is below 0 ℃, it is strictly forbidden to cut off the power. If there is an unexpected power failure under this condition, please drain the water from the heat.

4. Maintenance

1. Please check whether the grounding wire is connected reliably before use. If there is any abnormality, please replace it in time.
2. Please check the air inlet and outlet of the outdoor unit regularly for blockage.
3. Professionals must clean the outdoor unit heat exchanger, casing, and water circulation piping. It is recommended to clean the filter of the waterside filter regularly (cleaning is usually done once a year, depending on the actual situation).
4. Regularly check that the safety valve is working correctly, and ensure that the drain can be drained normally by manually turning the red knob (usually once every three months, depending on the actual situation).
5. Regularly (usually once a year, but depending on the actual situation) check whether the water pipe joint and the refrigerant connection pipe are leaking or leaking refrigerant (there are oil leakage marks). If there is any leak, please contact the seller.
6. The machine can only be serviced by a professional. The device must be cut off before contacting the wiring part.
7. Once the machine will not be used for a long time, please cut off the power, drain the water in the pipeline, and close each valve.

Warning

When the finned heat exchanger is cleaned with a cleaning agent (acid or alkaline), it must be done by a professional company. Corresponding protective measures should be taken during operation, such as goggles, masks, protective gloves, protective shoes, protective clothing, etc. In order to protect the safety of personnel, please follow the relevant instructions on the use of chemical agents, otherwise it will damage the unit and cause serious personal injury.

Error Analysis

Error code	Fault Description	Failure Causes
E01	Wrong-Phase Protection	Power supply phase sequence error
E02	Power Supply Lack Of Phase	The power supply is out of phase
E03	Water flow switch failure	1. Circulating pump failed, or water system blocked 2. Water flow switch failed, or opposite installed direction 3. The lift of the circulating pump is not enough 4. Circulating pump has opposite installed direction
E04	Abnormal Communication Between The Main Control Board And Remote Module	Check the communication connection
E05	High-Pressure Switch One Fault	1. High-pressure switch failed 2. Excessive refrigerant 3. Fan doesn't work typically, or water circulated abnormally 4. Air or other objects mixed into the refrigeration system 5. Too much scale in the water heat exchanger
E06	Low-Pressure Switch One Fault	1. Low-pressure switch fault 2. Lack of refrigerant 3. Fan doesn't work normally 4. Block exists in refrigeration system
E07	High-Pressure Switch Two Fault	Same as E05
E08	Low-Pressure Switch Two Fault	Same as E06
E09	Communication Failure	The controller is not connected
E11	Limited Time Protection	The free trial period has expired, enter the power-on password
E12	Exhaust Gas Temperature One Too High Fault	Lack of refrigerant in the fluorine circuit system or sensor damage
E13	Exhaust Gas Temperature Two Too High Fault	Lack of refrigerant in the fluorine circuit system or sensor damage
E14	Hot Water Tank Temperature Failure	Damaged motherboard or sensor
E15	Water Inlet Temperature Sensor Failure	Damaged motherboard or sensor
E16	Coil Sensor One Failure	Damaged motherboard or sensor
E17	Coil Sensor Two Failure	Damaged motherboard or sensor
E18	Exhaust Gas Sensor One Fault	Damaged motherboard or sensor
E19	Exhaust Gas Sensor Two Fault	Damaged motherboard or sensor
E20	Indoor Temperature Sensor Failure	Damaged motherboard or sensor
E21	Environmental Sensor Failure	Damaged motherboard or sensor
E22	User Return Water Sensor Failure	Damaged motherboard or sensor
E23	Cooling Subcooling Protection	Normal anti-freeze protection

E24	Board Change Out Temperature Fault	Damaged motherboard or sensor
E25	Water Level Switch Malfunction	Damage to the mainboard or water level sensor
E26	Anti-Freeze Sensor Malfunction	Damaged motherboard or sensor
E27	Water Outlet Sensor Failure	Damaged motherboard or sensor
E28	Reservation	Reservation
E29	Return Air Sensor One Fault	Damage to the mainboard or water level sensor
E30	Return Air Sensor Two Fault	Damage to the mainboard or water level sensor
E31	Water Pressure Switch Failure	Water pressure switch failure
E32	Excessive Water Temperature Protection	Insufficient water flow or a damaged sensor
E33	High Pressure One Sensor Fault	Damaged motherboard or sensor
E34	Low Pressure One Sensor Fault	Damaged motherboard or sensor
E35	Reservation	Reservation
E36	Reservation	Reservation
E37	The Excessive Temperature Difference Between Inlet And Outlet Water Protection	Insufficient water flow
E38	DC Fan One Failure	Fan drive board or motor damage
E39	DC Fan Two Failure	Fan drive board or motor damage
E40	DC Fan Three Failure	Fan drive board or motor damage
E41	DC Fan Four Failure	Fan drive board or motor damage
E42	Cooling Coil Sensor One Fault	Damaged motherboard or sensor
E43	Cooling Coil Sensor Two Fault	Damaged motherboard or sensor
E44	Low Ambient Temperature Protection	It is a standard protection
E45	High Pressure Two Sensor Failure	Damaged motherboard or sensor
E46	Low Pressure Two Sensor Failure	Damaged motherboard or sensor
E47	Economizer Inlet Sensor One Failure	Damaged motherboard or sensor
E48	Economizer Inlet Sensor Two Failure	Damaged motherboard or sensor
E49	Economizer Outlet Sensor One Failure	Damaged motherboard or sensor
E50	Economizer Outlet Sensor Two Failure	Damaged motherboard or sensor
E51	High Pressure One Overvoltage Protection	Same as E05
E52	Low-Pressure One Undervoltage Protection	Same as E06
E53	High-Pressure Two Overvoltage Protection	Same as E05
E54	High Pressure Two Undervoltage Protection	Same as E06
E55	Expansion Board Communication Exception	Poor or broken signal cable contact
E80	Power Supply Error	Single-phase power unit detects a three-phase electrical signal.
E88	Inverter Module 1 Protection	Compressor or compressor driver board damaged
E89	Inverter Module 2 Protection	Compressor or compressor driver board damaged

E94	Water Pump Feedback Failure	Damaged DC pump or poor signal line contact
E96	Abnormal Communication between Compressor One Driver and Main Control Board	Poor or broken signal cable contact
E97	Abnormal Communication between Compressor Two Driver and Main Control Board	Poor or broken signal cable contact
E98	Abnormal Communication between Fan Motor One Driver and Main Control Board	Poor or broken signal cable contact
E99	Abnormal Communication between Fan Motor Two Driver and Main Control Board	Poor or broken signal cable contact
EA1	Multi-module networking model error	Inconsistent network models
EA4	Heating side buffer water tank sensor failure	Damaged motherboard or sensor
EA5	The total water outlet sensor failure (the master and slave machines are valid)	Damaged motherboard or sensor

Attached table: Compressor drive fault code table

P1	Bit0: IPM overcurrent/IPM module protection
P2	Bit1: Compressor drive failure/software control abnormality/compressor out of step
P3	Bit2: Compressor overcurrent
P4	Bit3: Input voltage is out of phase (single phase is invalid)
P5	Bit4: IPM current sampling fault
P6	Bit5: Overheating shutdown of power components
P7	Bit6: Pre-charge failure
P8	Bit7: DC bus over-voltage
P9	Bit8: DC bus undervoltage
P10	Bit9: AC input undervoltage
P11	Bit10: AC input overcurrent
P12	Bit11: Input voltage sampling fault
P13	Bit12: DSP and PFC communication failure
P14	Bit13: Radiator temperature sensor failure
P15	Bit14: DSP and communication board communication failure
P16	Bit15: Abnormal communication with main control board
P17	Bit0: Compressor overcurrent alarm
P18	Bit1: Compressor weak magnetic protection alarm
P19	Bit2: PIM overheat alarm
P20	Bit3: PFC overheat alarm
P21	Bit4: AC input overcurrent alarm
P22	Bit5: EEPROM failure alarm (Applicable to EE models that do not store system parameters)
P23	Bit6:NA
P24	Bit7: EEPROM flush complete (can only be removed after reboot).

P25	Bit8: Temperature sensing fault limit frequency.
P26	Bit9:AC under-voltage frequency limit protection alarm.
P27	Bit10~Bit15:NA
P28	
P29	
P30	
P31	
P32	
P33	Bit0: IPM module overheating shutdown
P34	Bit1: Compressor is out of phase
P35	Bit2: Compressor overload
P36	Bit3: Input current sampling fault
P37	Bit4: PIM supply voltage failure
P38	Bit5: Pre-charge circuit voltage failure
P39	Bit6: EEPROM failure (for EE models with system parameters stored)
P40	Bit7: AC input overvoltage fault
P41	Bit8: Microelectronic Failure
P42	Bit9: Compressor type code failure
P43	Bit10: Current sampling signal overcurrent (hardware overcurrent) Bit11~Bit15: NA

Note: The wire controller flashes and displays E88/E89 and above codes in a cycle.

Specification

Model			CHP-050TC3
Power Supply		V/Ph/Hz	380~415/3/50
Nominal Heating (Max)(A7/6°C,W30/35°C)	Heating Capacity	kW	17.56~55
	Power Input	kW	2.61~14.17
	Current Input	A	5.46~18.8
Отопление (Max)(A7/6°C,W47/55°C)	Heating Capacity	kW	17.95~54
	Power Input	kW	3.48~18.92
	Current Input	A	7.78~26.8
Охлаждане (Max) (A35/24°C,W12/7°C)	Cooling Capacity	kW	10~35
	Power Input	kW	3.84~14.50
	Current Input	A	6.42~20.56
ERP Level (Outlet water temperature at 35°C)		/	A++
Max. input power		kW	19.84
Max. input current		A	30.30
Refrigetant / GWP		/	R290/3
Rated water flow		m^3/h	8.60
Fan quantity		/	1
Fan motor type		/	DC inverter
Compressor		/	DC inverter
IP Class		/	IPX4
Sound pressure at 1 m distance		dB (A)	65
Max. outlet water temperature		°C	75
Water piping connections		/	DN 40 (G 1-1/2")
Water pressure drop (Max.)		kPa	65
Operating temperature range (Heating mode)		◦C	-25~45
Operating temperature range (Cooling mode)		◦C	16~45
Unpacked dimensions (L×D×H)		mm	1155x990x1880
Packed dimensions (L×D×H)		mm	1238x1058x2033
Net weight		kg	500
Packed weight		kg	540

After-sale Service

Relevant state regulations carry out the after-sales service of our products. Within the scope of the warranty period, If the machine is not working correctly under reasonable use, please contact the seller. The user must designate a person to manage and use the unit reasonably and correctly by our company's "Instructions for Use." Accidents caused by improper use are not covered by our company's warranty, and the repair costs and repair costs beyond the warranty period must be taken care of by the user.

1. After-sale Service

The seller or the specified professional installer should perform maintenance and repair. Improper maintenance or repair may result in water leakage, electric shock, and fire.

1.1 Please contact the seller when the machine has to be moved or reinstalled. Improper installation may result in water leakage, electric shock, and fire.

1.2 When you need after-sales service, please contact the seller and provide the following details:

1) Model No.
2) Serial Number and Manufacture Date
3) Detailed Description of the fault
4) Your name, Address, and Contact Number

If the warranty period is expired or the malfunction is caused by improper use, the company will charge a certain service fee if you need after-sales service.

2. Maintenance

After a period of use, the heat pump's performance will be reduced due to the accumulation of dust inside the machine, so maintenance is required.

1) You should regularly check the water supply system to avoid the air entering the water system and the occurrence of low water flow, which would reduce the performance and reliability of the heat pump.
2) Clean your filtration system regularly to avoid unit damage because of a dirty or clogged filter.
3) Discharge the water from the bottom of the water pump if the heat pump will stop running for a long time (especially in winter)
4) At any other moment, check the water flow to confirm enough water before the unit starts to run again.
5) After the unit is conditioned in winter, it is preferred to cover the team with a unique winter heat pump cover.

Warning

1. It is forbidden to cut off the power: if you want to stop using the unit temporarily, please shut down the operation through the control panel, and it is strictly forbidden to cut off the power supply of the equipment.

2. Pay attention to antifreeze: In case of sudden power failure, please take antifreeze measures. If

antifreeze is not used when installing the water circuit of the equipment, be sure to drain the water circuit on the host side before power failure, and then drain the water pump, etc., and warm up for more than 2 hours before starting the machine after power on. If the unit is not used for a long time in winter, be sure to drain the water in the unit before turning off the power to prevent the water system from freezing and expanding to damage the equipment and pipelines.

If the above 1. and 2. are not dealt with in time in winter, causing the equipment to freeze and damage, it is not within the scope of the warranty, and the user is requested to attach great importance to it.

Manufacturer: JIANGSU SUNRAIN SOLAR ENERGY CO.,LTD.
Country of origin: China
Distributor: CAIROX BULGARIA LTD.
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Website: www.cairox.bg