SICC-A-R2

CFC-free Refrigerant Air-cooled Central Water Chiller

Date: Sep., 2024

Version: Ver.D

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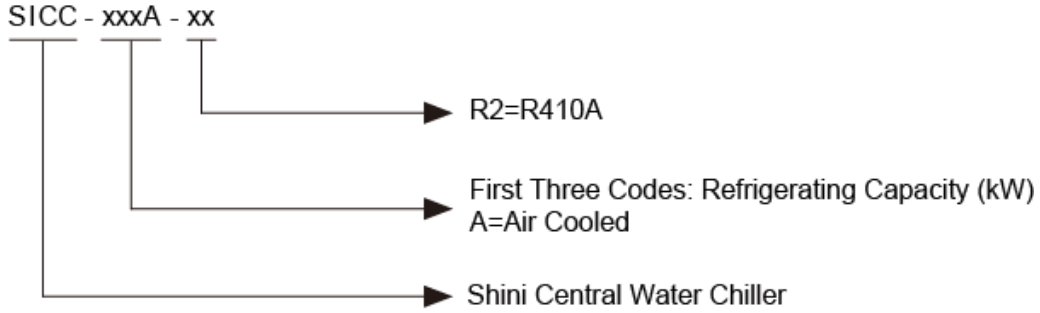
1. General Description

Read this manual carefully before operation to prevent damage of the machine or personal injuries.

SICC-A-R2 series is applicable for cooling moulds to reduce product's moulding cycle. They can also be used for equipment cooling in order to maintain a normal temperature as well as other industrial cooling.

Model 1-1: SICC-90A-R2

1.1 Coding Principle



1.2 Feature

Standard configuration

- Modularized design makes it easier to combine module units 1 to 15. Cooling capacity can be enlarged by increasing the number of modules or choose appropriate modules to connect to existing system.
- The water route of the modules can be linked by one module connecting to the inlet/outlet water tube. No need to install the inlet/outlet water tube for each module alone. The rubber soft pipe is used to connect the modules for convenient construction.
- Adopts imported components like scroll compressor, expansion valve which ensure stable performance. The whole unit will not stop due to one module failure.
- Adopt the electronic expansion valve to control the compressor's exhaust
  temperature to prevent the adverse impact on the system performance due to exhaust temperature rise.
- When the whole unit is running, the microcomputer will auto adjust the performance of each module or open / shut respective module unit according to system load. The module unit adopts double compressors and its power adjustable range is enlarged after combination to save up power whenever possible.
- Wired control system enables the main unit and its controller to be separated from each other.
- Protection grade: IP54

Accessory option

- Optional RS485 communication realizes the remote monitoring and network function.

All service work should be carried out by a person with technical training or corresponding professional experience. The manual contains instructions for both handling and servicing. Chapter 6, which contains service instructions intended for service engineers. Other chapters contain instructions for the daily operator.

Any modifications of the machine must be approved by SHINI in order to avoid personal injury and damage to machine. We shall not be liable for any damage caused by unauthorized change of the machine.

Our company provides excellent after-sales service. Should you have any problem during using the machine, please contact the company or the local vendor.

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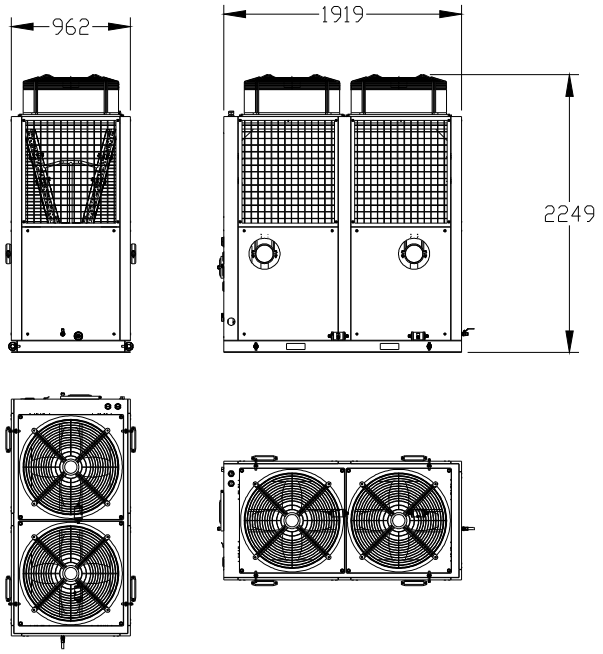
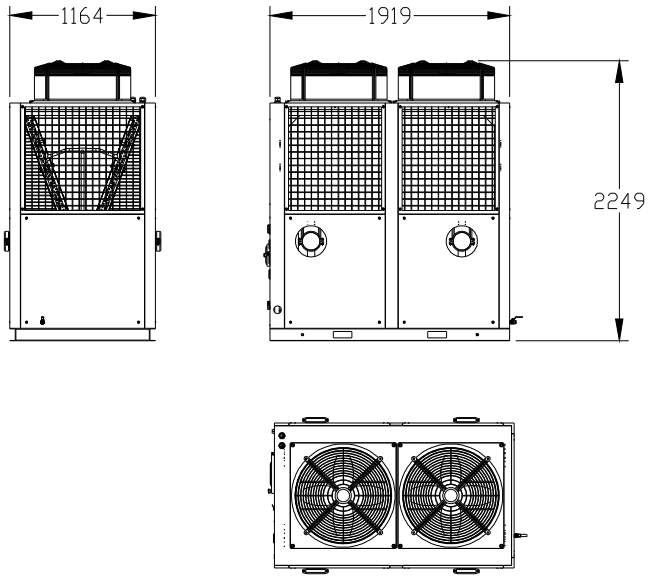
+86 (0)23 6431 0898

1.3 Technical Specifications

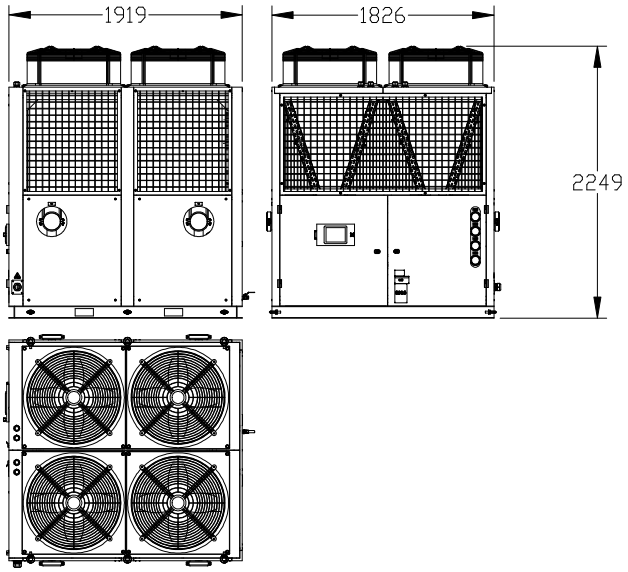
1.3.1 SICC-A-R2 Series Outline Dimensions



SICC-60A-R2



SICC-90A-R2



SICC-120A-R2

Picture 1-2: Outline Dimensions

1.3.2 Technical Specification

Table 1-1: Technical Specification

Item \ Model			SICC-60A-R2	SICC-90A-R2	SICC-120A-R2
Refrigeration Capacity		kW	60	90	120
		Kcal/hr	51,600	77,400	103,200
Power		---	3Φ 400VAC 50Hz		
Total Power		kW	19	28	37
Running Current		A	35	50	65
Startup Current		A	140	175	230
Compressure	Type		Scroll		
	Power	kW	8.6×2	12.5×2	17× 2
	Crank Case Heater	kW	0.08×2	0.08×2	0.056×2
Refrigeratnt	Type	---	R410A		
	Filling Quantity	kg	15	17	26
Evaporator	Type	---	Tube-in-shell Evaporator		
	Cooling flow Flow	m^3/h	10.3	15.5	20.6

	Pressure loss	kPa	27	39.2	49
	Pipe Coupler	inch	5	5	5
Condenser	Type	---	Fin Style Air-cooled Condenser		
	Blower power	kW	1.68	2.2	3.36
	Air quantity	m^3/h	26,000	39,000	52,000
Material dimension	Length	mm	1920	1920	1920
	Width	mm	970	1170	1,825
	Highly	mm	2,250	2,250	2,250
Weight	Befor packing Packing	kg	710	840	1,200
	After packed	kg	780	900	1,330
Noise Level		dB(A)	78	80	85
Measures Exchange		1kW=860 kcal/hr 1RT=3,024kcal/hr 10,000Btu/hr=2,520kcal/hr			

Notes: Refrigeration capacity is measured based on the flow (0.172 m^3 / h.k W) and the outlet temperature (15℃/59 ℉) of chilled water under the environment temperature of 35℃/95 ℉.

1.4 Safety Regulations

Strictly abide by the following safety regulations to prevent damage of the machine or personal injuries.

1.4.1 Notice for Safe Operation

Read the following regulations before installation or using under the consideration of safety.

1) Do not drop water in the electrical part to avoid insulation damage.
2) Put device connect to ground according to electrician operating regulation to avoid creepage.
3) Any tubes or electrical device mount on air conditioner must be installed by professional technicians.
4) Please install units in flat and ventilative place and keep suitable distances.
5) Keep away from fire source, such as water heater, gas and electric stove.
6) Avoid being exposed to weather.
7) Construct according to installation instructions and notice.
8) This type of air-conditioner is designed for adults. Keep children away from it.
9) Any deeds trying to change its specification are dangerous.
10) Don't use evaporable solvents, oil or toluene to avoid accidents.
11) Ensure this machine not to press on the electrical wires to avoid creepage and burning.

12) Do not touch the machine with wet hands in case of accident.
13) Under no circumstances should you try to repair the water chiller. Because of the unqualified person may cause greater damages or failures. Please inquire local service agents.
14) Do not pour water or detergent on the surface of machine when cleaning it. Please wipe it with cloth or neutral detergent.
15) Do not place things on the upper surface of the water chiller inorder to avoid danger during running.
16) Connect the water chiller to special electricity supply. It is forbidden to share circuit with other devices.
17) Do not change or repair the electrical wires without authority.
18) Do not insert anything into air outlet of the water chiller to avoid damage or danger.

1.4.2 Safety Signs and Labels

Attention!

The installation of electrical devices should be conducted by professional electricians.

During repairing and maintenance, must turn off the main switch and control switch.

Warning!

High Voltage danger!

Put up this symbol in the shell of the electric cabinet.

Warning!

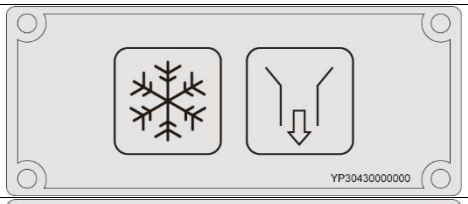
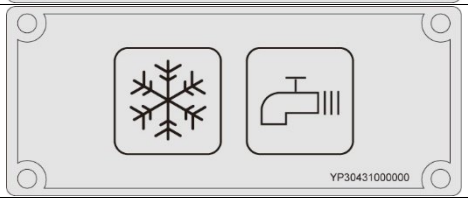
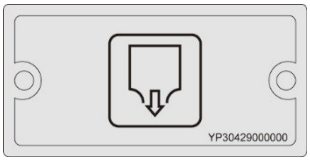
Be careful!

This symbol should take more careful hereby!

Attention!

No need for regular inspection because all the electrical parts in the control unit are fixed tightly!

1.4.3 Signs and Labels

	This is for indicating motor rotating direction. When phase reversal happens, the alarm sounds and indicator on control panel will indicate. Please exchange the place of the two electrical wires to solve this problem.
	Water outlet: drainage outlet/ cooling water outlet.
	Water inlet: replenish water for machine/ cooling water inlet.
	Drainage port: water outlet of water system.

1.5 Exemption Clause

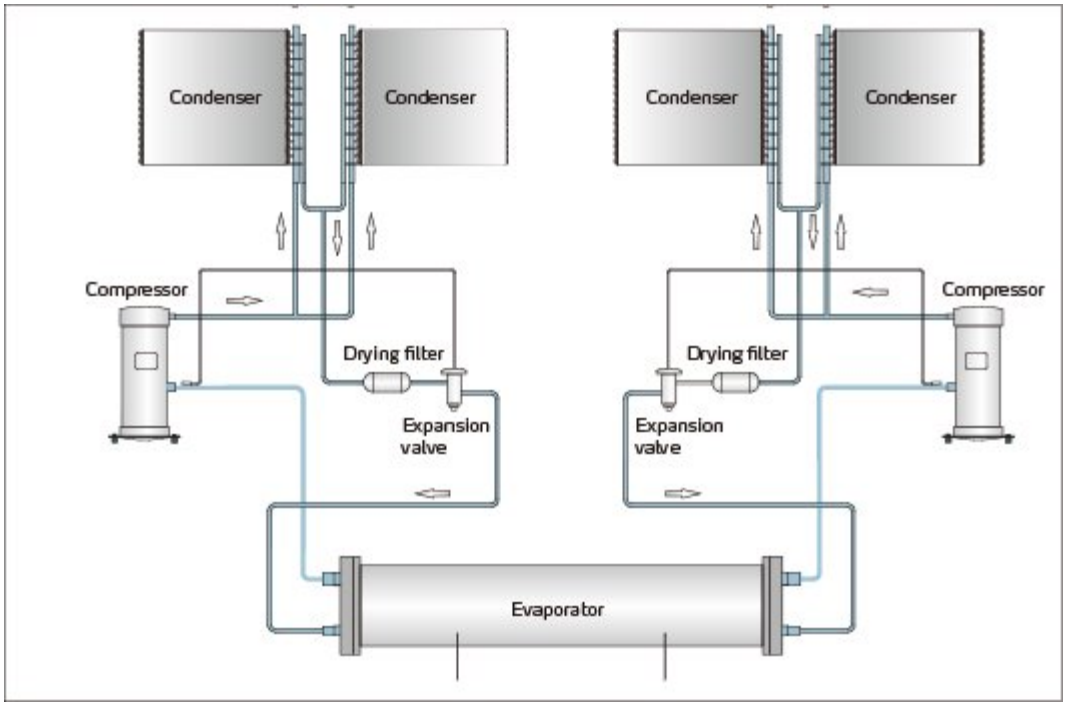
The following statements clarified the responsibilities and regulations born by any buyer or user who purchases products and accessories from Shini (including employees and agents).

Shini is exempted from liability for any costs, fees, claims and losses caused by reasons below:

1. Any careless or man-made installations, operation and maintenances upon machines without referring to the Manual prior to machine using.
2. Any incidents beyond human reasonable controls, which include man-made vicious or deliberate damages or abnormal power, and machine faults caused by irresistible natural disasters including fire, flood, storm and earthquake.
3. Any operational actions that are not authorized by Shini upon machine, including adding or replacing accessories, dismantling, delivering or repairing.
4. Employing consumables or oil media that are not appointed by Shini.

2. Structure Characteristics and Working Principle

2.1 Working Principle



Picture 2-1: Working Principle

2.1.1 Working Flow Instruction

Cooling circulation: the high temp. high pressure air from compressor's high pressure spraying outlet comes into fin-type-air side heat exchanger, which works as a condenser to cool down the air into liquid. Then it comes into expansion valve after filtration. There, after a pressure downfall, it comes into shell -tube evaporator. The low temp. low pressure and saturated refrigerant absorbs the heat from cooling water to low down its temp.. The shell -tube evaporator's refrigerant outlet is low temp.low pressure air state. It then comes to air and liquid separator for separation. Therefore, the air returns the compressor's low-pressure air suction inlet to get compressed. The high pressure spraying outlet (compressor)→condenser (air side heat exchanger)→filter expansion valve→evaporator (water side heat exchanger)→air and liquid separator→the low pressure air suction inlet.

3. Installation and Debugging

Note：Before installation, please read this chapter carefully and install according to the procedures as follows!

Install the water chiller near windows or places with good air flowing because air-cooled central water chiller needs a good heat-releasing condition. If the water chiller is installed inside the factory, then the surrounding temperature should not be higher than 35 ℃ and there must have fans to make airflow flow fluently or air tube piping the hot air produced by water chiller outside. If the water chiller is installed outdoor, a veil is needed to cover the top of the chiller.

3.1 Installation Notice

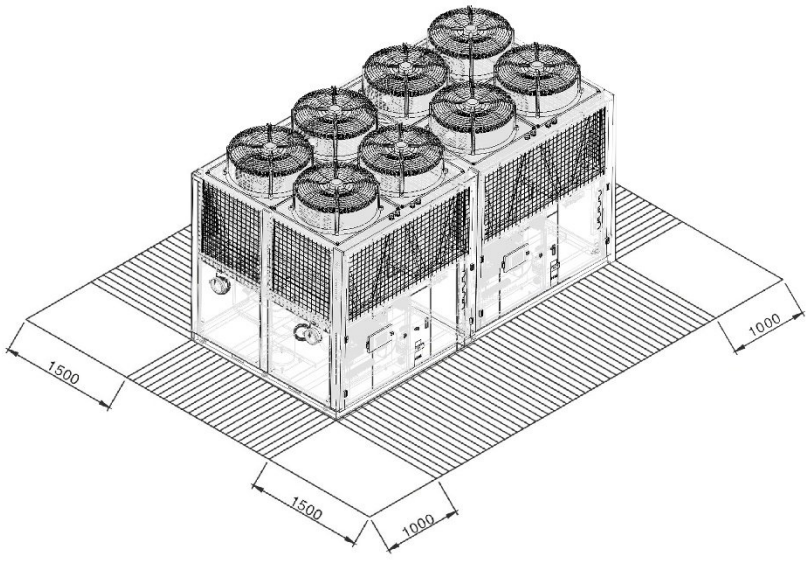
1) Make sure that voltage of electricity matches with the nameplate.
2) Connect the electricity wire and earth wire according to local regulations.
3) Use independent electricity wire and power switch .The diameter of the wire should not be less than that of electric cabinet's wire.
4) The end of the electricity wire should be safe and firm.
5) There-phase electricity and five wires are utilized. Connect the power to live wire, (N) to zero wire and (G) to ground wire.
6) Electric power distribution demand.
   Main power voltage: ±5%
   Main power frequency: ±2%.
7) Install pipe work system according to scheme of wiring. Protect water chilling pipes with hear-insulating materials.
8) Make sure that the diameter of the recycling pump pipeline not less than that of condenser's connection tube. (Install the inlet or outlet pipeline system according to the drawing of the assembly line)Large-diameter tube should be used to connect to cooling water for long-range transmission.
9) The very top of the cooling water recycling circuit system must be configured with self-discharging valve, the lowest with drain valve.
10) Install filter in the cooling water recycing circuit due to bad water quality in the water source and wash the filter at certain times.
11) Test if the pipeline leaks after installation. Wrap insulating layer onto the cooling water recycling pipe to aviod loss of refrigeration capacity and pipeline leakage.

Note: Power connection must be conducted by professional electricians!

Do not change the circuit of the water chiller without our company's authority. If the machine is damaged by unauthorized change we are not responsible for this.

3.2 Select Installation Site

1) No heat source existence nearby to acoid efficiency reduction due to absorbing hot air.
2) No impact imposed by high temperature, vapor or oil stain.
3) Avoid being spattered by water vapor when choosing installation site near cooling water tower, so to avoid any short ciruit or creepage.
4) Proper ventilation without hindrance for air inhaled exhaled.
5) No existence of inflammable substance.
6) When using concrete bearing platform, the platform must be firm and flat. Install shockprooof mat in the bolt of bearing platform if necessary.
7) Set apart some service space.Space ranges are recommended as shown in figure 3-1.

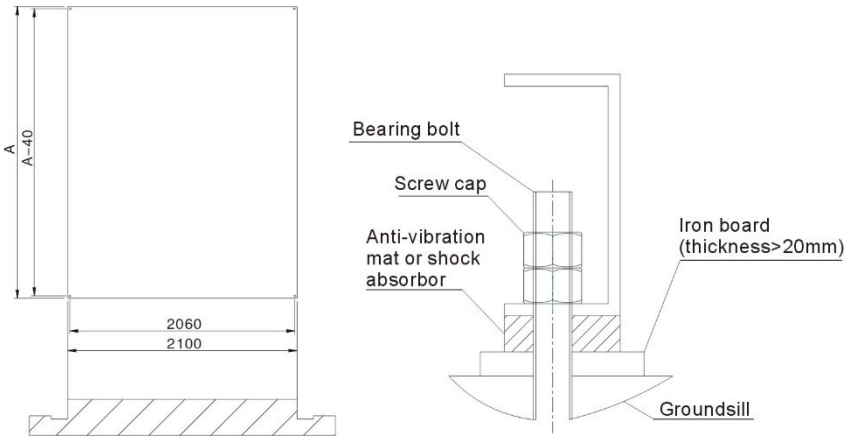


Length unit: mm

Picture 3-1: Installation Space

3.3 Bearing Platform

1) The unit should be installed on concrete or steel structure bearing platform that is firm and the surface of the baring platform should be smooth and flat. The in tensity of the platform should hold the whole unit, if the intensity is not strong enough, it is easy to cause vibration and noise.
2) The surface of the concrete base platform normally has compo as horizontal ornament and with waterproof treatment，the surrounding of it should have drainage sink placed, and the slope angle should be no less than 0.5%，and the slope should lead to drainage outlet.
3) Inorder to maintain quiet operation and prevent the vibration and noise transmission from interfering the under floors，the absorber should be laid between the unit base and base platform. Please maintain horizontal when install the unit and mount anti vibration pad when it is necessary.
4) Inorder to keep connection pipe from being twisted to crack by earthquake, typhoon, or by long time running caused movement. The fixation method should be taken into consideration, refers to following examples for platform installation and fixation:



Picture 3-2: Platform Installation

Note :

1) Photo 3-2 the platform size is for module unit, pay special attention to the real location and size of installation holes.

2) When adopts photo 3-3 showed fixation way, keep bearing bolt holes for platform and its absorber as photo 3-2 showed installation hole location.

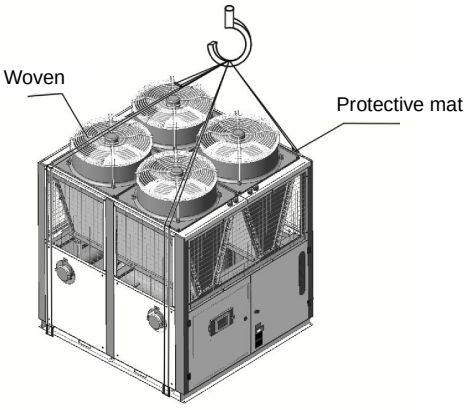
3.4 Hanging and Transporting of the Unit

1) Propose plans of hanging and transporting before practise, including entering date for each unit, dimensions of appearance, weight, path, reserved holes, hanging and transporting device as well. Figure 3-1 shows the details.

Table 3-1: Notice for Lifting Matters

Items		Check points
Transporting	Path	1. Check aisle, stair gate and transporting path. 2. Check roof, base room and hanging path.
	Unload	1. Check the weight of the unit. 2. Prepare unload devices. 3. Check the temporary laying place and keep the unit clean.
	Transporting	1. If the large-scale machine can be decomposed, then decompose it and transport each part respectively and then combine them finally. 2. If the large-scale machine cannot be decomposed, then dig hole in the wall or earth to transport it.
Path adjustment		Adjust with the wall, floor to facilitate transporting.
Others		Arrangenent of labor and hanging device; problems of woker and unit safety.

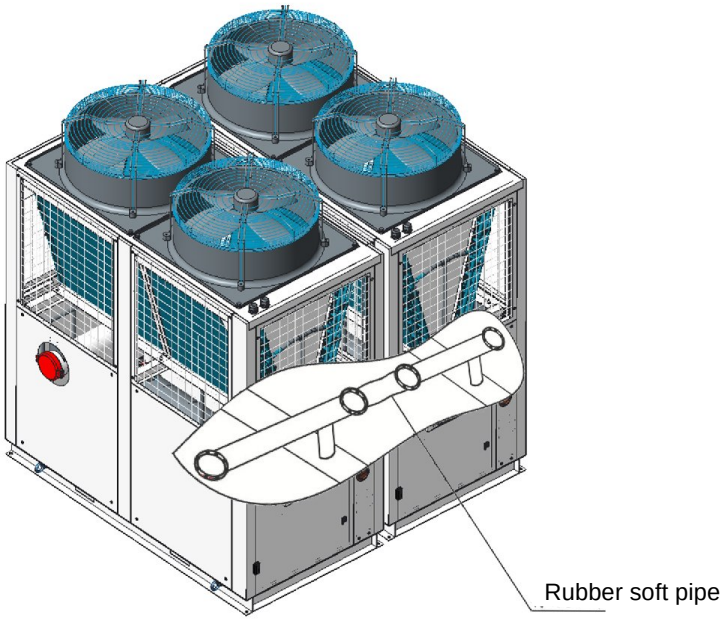
2) According to safety command, when hanging and transporting units, assign special person to direct and there must be warning and precaution measures to ensure safety of people and machines.
3) Consider the weight of the unit. Take woven belt as hanging device and add bearing articles to avoid damage to metal board.Keep horizontal or vertical state. It is forbidden the unit inclined by over 30 degrees.
4) Protect the unit from being cut or deformation.Place protective mat or wood poles in the contact places between woven belt and the unit.



Picture 3-3: Hanging and Transporting of the Unit

3.5 Combined Installation of Modules

1) Disassembly the sideplates around the machine, calibrate the cooling water inlet to combine the modules. Use rubber soft pipe to connect the module's chilling water pipe.
2) The non-exist end of the cooling water pipe should be fixed by flange.
3) Refers to wiring diagram to tandem the communication line to next submodule, the communication line of which tandems to next submodule thereby.



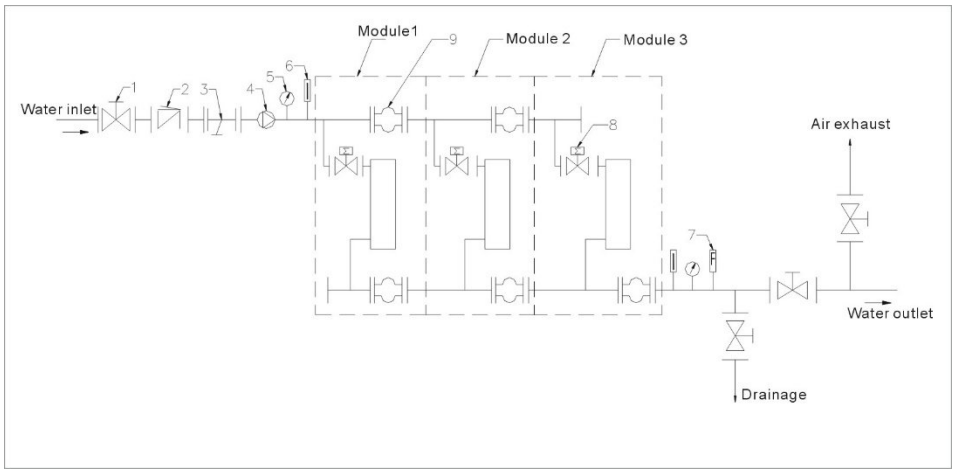
Picture 3-4: Combined Installation of Modules

3.6 Water System Tubing

1) The inlet /outlet pipes and valves of the unit should have itselves insulated. The outside parts should have protective veil to prevent the thermo lost and dewfall happen and this brings no impact on building structure and anti-freezing when it is in winter.
2) To ensure that there is enough water in the water-side exchanger and pipeline system so to avoid its internal icy water comes to freeze up, over low pressure and bad oil return rate within system when refrigerating, there after lead to the failure of the compressor and burn down to the worse.

So water flow switch should be mounted at the water outlet side and was controlled chainly with compressor.

3) If closed circuit type water distribution pipelines are used, an inflated water tank should be placed higher by at least 1m than top of the whole set of water distribution pipelines to buffer the water volume's expansion or contraction and the isolated backup water pressure to water distribution pipelines' influence. Check valve should not be mounted at the outlet of inflated water tank so to avoid pipe leakage or crack.
4) The pump of the unit should be mounted at the water inlet of the main module machine.
5) Avoid air left in the water system, Install automatic exhaust steam dischanging valve in the highest position of all the water distribution pipes. The horizontal pipe of the water distribution system must be laid with an inclination of 1/250.
6) There should have flexible joint, flange joint and break valve for later maintenance.
7) There mameter and pressure meter should be set in the inlet and outlet of the unit to facilitate daily check.
8) There are same directions way and opposite direction way to install the water pipe of the module unit.

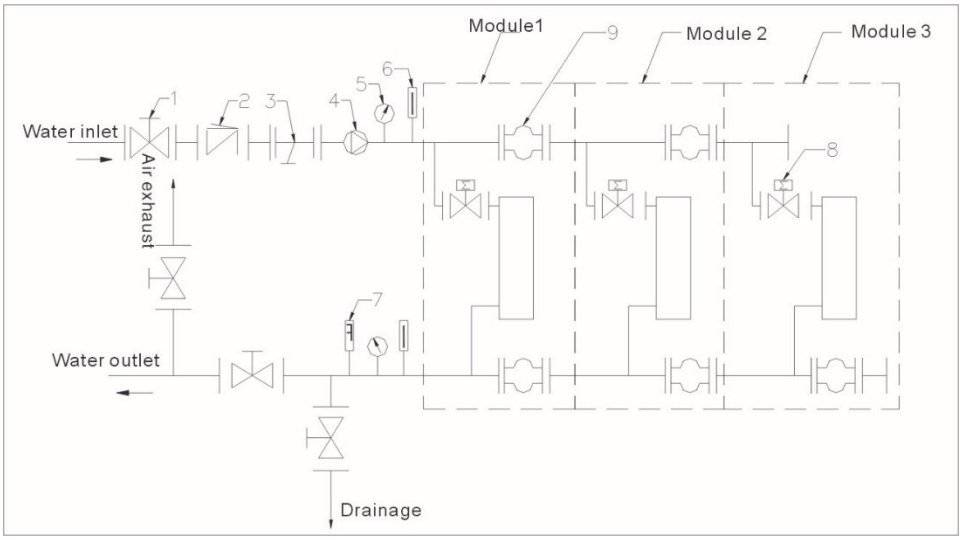


Names of Parts:

1. Stop valve	2. One way valve	3. Y type filtration valve
4. Pump	5. Pressure gauge	6. Thermometer

7. Flowmeter 8. Solenoid valve 9. Rubber soft pipe

Picture 3-5: Same Direction Way 1



Names of Parts:

1. Stop valve 2. One Way valve 3. Y type Filtration valve
4. Pump 5. Pressure gause 6. Thermometer
7. Flowmeter 8. Solenoid valve 9. Rubber soft pipe

Picture 3-6: Same Direction Way 2

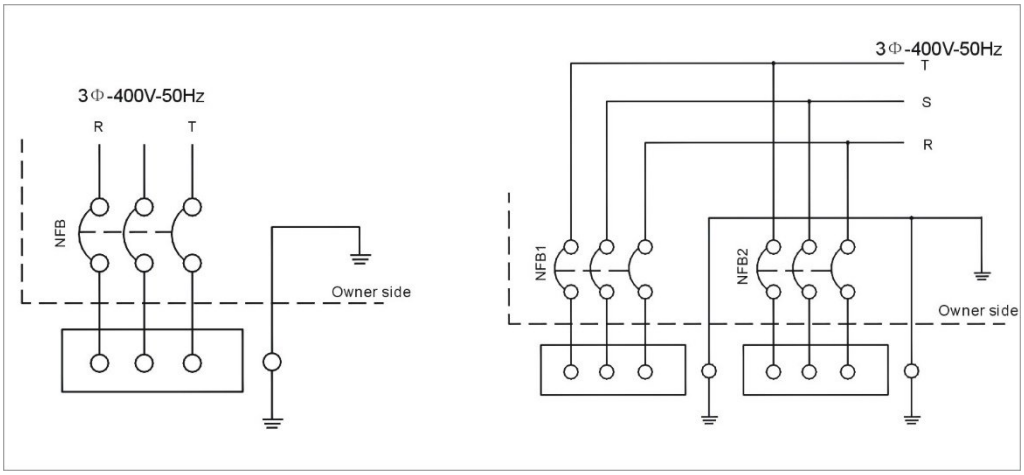
3.7 Essentials for Electric Wiring

1) The electricity supply should use special branch circuit.
2) Wiring work should be conducted according to relevant national electric standards and grounding.
3) Refer to wiring diagram to conduct wiring work. Lock up every contact screws, do not let them loosen.
4) The voltage has to be stable when in operation, take all the voltage down fall into consideration, the unit working voltage should maintain at±5% within rated voltage. Over high or over low voltage will bring bad effect to the unit.
5) The length of the power cable must ensure the voltage gap value between the head and tail of cable be less than ±2% within rated voltage, if the length can not be shorter. Then enlarge the diameter of the cable.
6) The wiring connection between power and unit should be conducted according to electrical regulations with good insulation, after the unit being

connected to the power; the terminals of the electrical components resistance should be at least more than 3MΩ.

7) Inorder to avoid the damage to those electrical devices such as transformer or wiring due to short circuit, and helps to separately control the start/stop of every compressor, every incoming cable needs to equip proper amount of non-fuse breaker. Showed in the following photo:
8) Inorder to ensure personal safety, to avoid electric shock due to creepage the housing of the unit needs to have a good grounding protective device to avoid electric shock, all the work should be carried out by strictly follow the electrical regulations.
9) Specific power supply specifications please refer to the schematic model.

Note: Make sure the power switch is off before power cable connection.



Picture 3-7: Essentials for Electric Wiring

3.8 Communication Connection

This series machine adopts modular structure, and signals between modules are communicated based on CPP bus. So the controller of each module should have the only address.

Note: Please refer to Chapter 4 for the function of each press key on the displayer.

3.8.1 Setting the Controller Address of the Host Machine

The Water Chiller with displayer has been set as the host machine defore delivery.

The default of the controller address is 1 (If it isn't 1, modify it to 1, please refer to controller address setting of the slave machine), which doesn't need additional settings.

3.8.2 Controller Address Setting of the Slave Machine

The Water Chiller without displayer has been set as the salve machine before delivery.

The controller of slave machine requires the slave machine to connect with the 220V power cable, which can't use the shielded cable. The common two-core cable is available to connect between the slave machines.

The default of the slave machine's controller address is 1, which requires modification according to actual situation on site. The method is as following:

1) Dismental the displayer from the host machine and connect it to the control board of the salve machine.

   Note: Make sure the communication between the host machine and salve machine is disconnected, and the controller must be powered off when disconnecting the communication.

2) Water Chiller Start
3) Press the <Up key>, <Down key> and <Confirm key> , the screen displays the display address, and use the <Up key> or <Down key> to modify the address. If it needs to use the displayer to set the controller address of the Water Chiller, the displayer address must be set as 00 at first.
4) Restart the Water Chiller
5) When the displayer shows Self test and please wait, continuously press the <alarm key> and <Up key> till the screen displays plan address, and use the <Up key> or <Down key> to modify the address to 2 or other value (it is set according to actual demand on site. For machine No.3, set it as 3).
6) Set the controller address of each machine in turn according to this method.

3.8.3 Displayer Reset

1) After setting the controller address of all the Water Chillers, install the displayer back to the host.

2) Start the mainframe of Water Chiller

3) Press the <Up key>, <Down key> and <Confirm key> at the same time, and the screen shows display address; use <Up key> or <Down key> to modify the address. If it needs to use Water Chillers of displayer control, it must ensure the displayer address is set as 32.

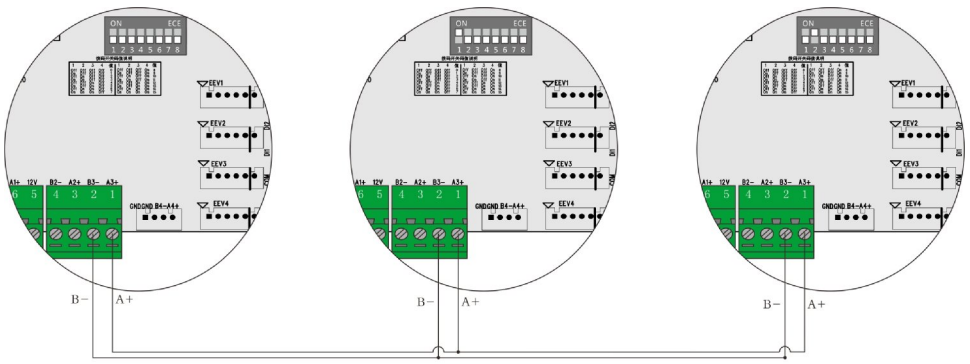
3.8.4 Communication Connection

1) Specificaiton of Communication Connection

If the control cable needs to be crossed with the power cable, the angle of cross point must be ensured around the 90 degrees as much as possible, and the control cable can't be parallel to the power cable.

If it needs to be connected parallelly, please refer to the national standard (***Integrated Wiring System Project Acceptance Specification of Architectural and Architectural Complex*** GB／T50312-2000) and keep enough wire distance (> 130mm unshielded communication line, > 70mm shielded communication line);

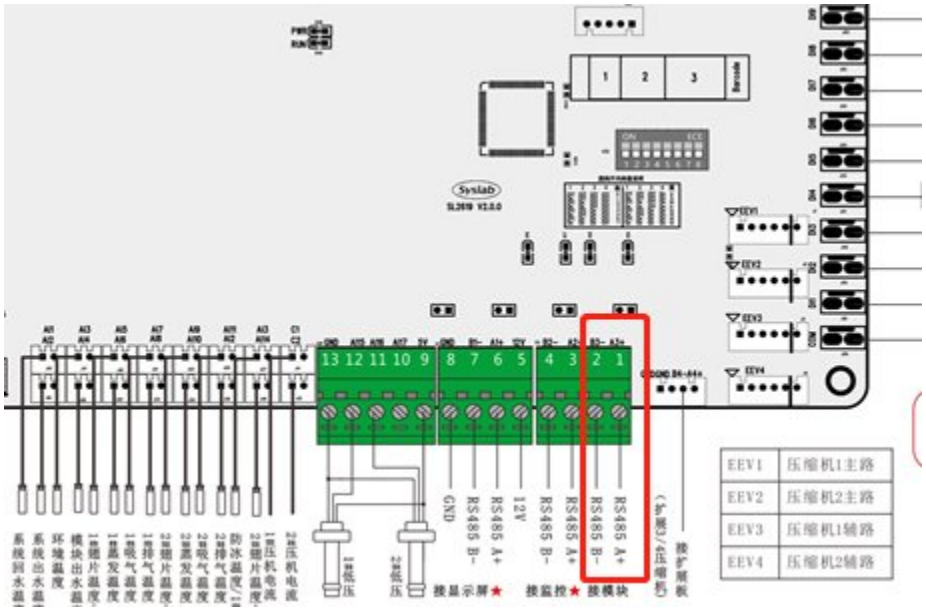
The distance of wire connection and heating pipeline in National standard (GB／T50312-2000) is specified as below: parallel net distance > 500mm (unsealed heating pipe) or parallel net distance > 300mm (sealed heating pipe).



Main modular　　Slave modular 1　　Slave modular 2

Picture 3-8: Communication Line Connection

2) Communication Interface



Picture 3-9: Communication Interface Diagram

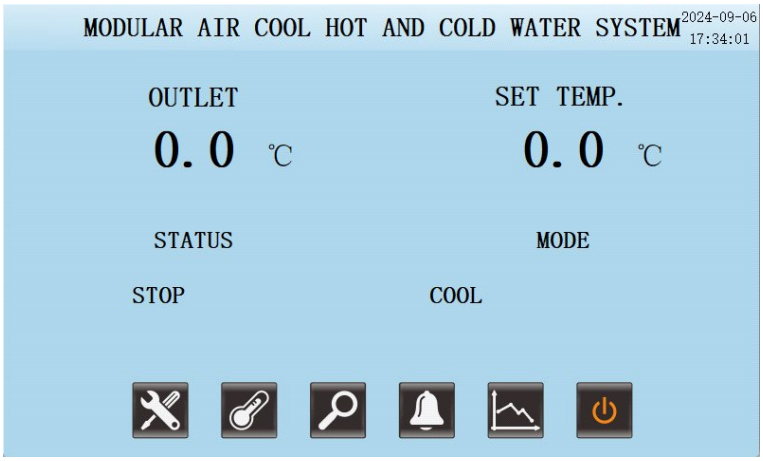
Note: The communication cable plug-in and plug-out must be carried out when the controller is powered off. Otherwise, the communication interface would be damaged easily.

Note: The communication cable must be connected according to the specification. Otherwise the communication may be abnormal.

4. Operation Guide

4.1 Main Screen

The main screen displays the current "return water temp.", "outlet water temp." or "hot water temp." detected. It displays current “set temp.”, the adjustable range of which is limited by upper and lower limits of system parameters;It also can enter the temp. curve screen, user setting screen, output and input screen, fault query and fault reset; There’s the “power on/off" button.



4.2 Instruction of Key Buttons

Buttons	Meaning	Function Description
	Alarm	It flashes when there’s a fault alarm, no display when there’s no fault.
	Setting	Enter setting screen
	Input quiry	Enter the analog input and digital input inquiry screen
	Output quiry	Enter the analog output and digital output inquiry screen
	Alarm	Enter the current fault and historical fault alarm inquiry screen
	Data record	Enter temp. curve and temp. historical data inquiry screen
	On/Off	Unit power on/off

4.3 Swtich On/Off

Press the "Power On" on the main page, and it will pop up the page as below:

If it has to confirm the startup, click the “power on” button of pop-up window, the system will enter the running state, and the unit displays will change to “running” from “shutdown” on the main screen. If it has to power off, click the “power off”key to stop the system and the system will be turned off as per the logic. Click “Cancel” button to close the window directly and stop any related operations.

4.4 User Login

The screen has three-level password protection, namely "user", "engineer", and "manufacturer", which has different setting functions according to different permissions. Only when the password is entered correctly can the user enter corresponding settings. Otherwise, it can’t enter the settings.

4.5 User Parameter Settings

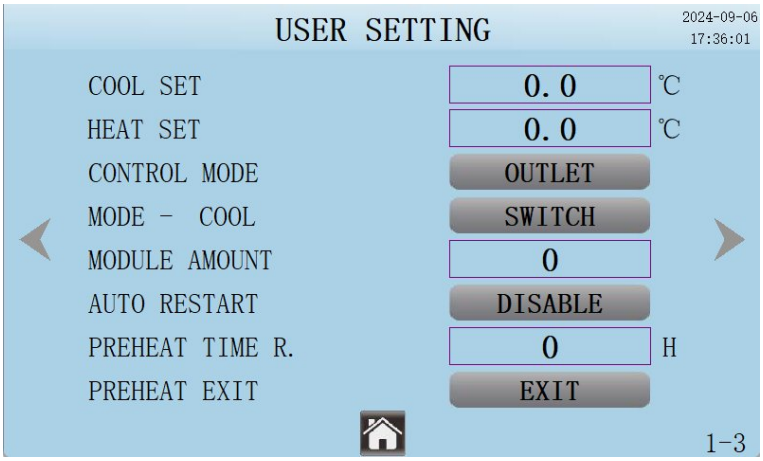
Select “User” on the user login page, and enter the correct password (default is 123456) to enter the user settings screen and set the temperature and running mode etc.

Click “ USER SETTING ” to enter the “engineer setting” screen.

Notice!

If the password is incorrect, it will not pop up the "User Settings" screen; After exiting the "User Settings" screen, the password will become invalid. To re-enter the "User Settings" screen, enter the password again. Please change the user password as soon as possible after entering the settings and keep it safely.

4.5.1 User Parameter Setting



Name	Value	Unit	Default	Function Description

Cooling setting	-15.0 ~ 32.0	℃	15.0	Cooling mode, water control temp. ; water output control default 7.0, return water control default is 15.0
Heating setting/hot water setting	10.0 ~ 70.0	℃	40.0	Heating mode, water temp. control temp.; The outlet water control default is 45.0, and return water control default is 40.0.Hot water mode, water temp. control temp., and the default is 50.0.
Temp. control	water output /return water/ water tank	--	return water	Choose the temp. control mode for the unit. When using the hot water model, the fixed display is the "water tank" temp. control mode.
Mode switch	cooling /heating/ hot water		heating	Switch operating mode in shutdown state; When using the hot water model, the fixed display is the "hot water" mode.
the number of modules	1 ~ 16	pcs	1	Set the total number of modules in the system
Start after powering on	Disable /enable	--	enable	Enable=power-on self-starting, disable=no self-starting when powering on;
Module forced defrosting	0 ~ 16	--	0	When heating with a heat pump, it will not consider the time interval, and only consider the fin temp., the module is forced to enter the defrost program. 0 is disabled.
Auxiliary heat open-loop ambient temp.	-30.0 ~ 50.0	℃	7.0	
Auxiliary heat open water temp.	5.0 ~ 70.0	℃	30.0	
Auxiliary heat deviation	1.0 ~ 20.0	℃	5.0	
Preheating remaining time	--	H	--	Check the remaining time of preheating.

Exit preheating	--	--	--	After the preheating function starts, it can cancel the preheating function on this page.
Segmented setting	--	--	--	--
Timer setting	--	--	--	--
HMI setting	--	--	--	

Notce!

If it exceeds the set range, the setting is unavalible, and it has to input again;

Only after parameter settings is complete for 5 seconds can the power be turned off, otherwise the data cannot be saved.

4.5.2 Segmented Setting

For example: When enabling the segmented function, if the segmented start time is set to 8:00, and the segmented end time is set to 18:00, it will enable the segmented temp.1 during the 08:00~18:00 period every day. For the time beyond this period, it will enable the segmented temp.2. If the segmented enabling setting is prohibitted, above functions are disabled.

When enabling the segmented function,the cooling/heating set temp. value on the user setting page shall be consistent with the segmented temp.1 or temp.2. When changing the cooling /heating set temp. value, the segmented temp. 1 or temp. 2 will change accordingly; When changing the segmented temp. 1 or temp. 2, the cooling / heating set value will change accordingly.

Name	Value	Unit	Default	Function Description
segmented start time	0~23	——	08	The time is the whole hour, and the restriction: segmented start time < the segment ending time
segmented ending time	0~23	——	18	
Segmented temp. 1	-15.0 ~ 70.0	℃	40.0/15.0	The heating default is 40.0, and the cooling default is 15.0.
Segmented temp. 2	-15.0 ~ 70.0	℃	45.0/20.0	The heating default is 45.0, and the cooling default is 20.0.

Segmented enabling	Disable /enable	——	enable	

4.5.3 Timer Setting

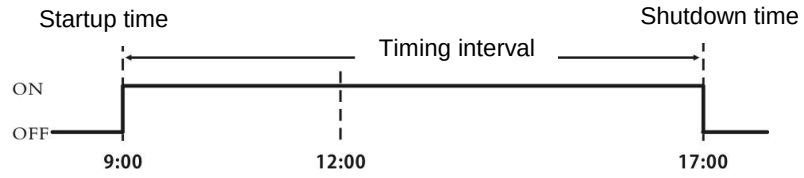
Enter the “user setting screen” and press the “⇩” page to turn to the "Timing Setting" menu page;

1) The timer supports weekly timing, with up to three switch times set per day, and can be used independently;
2) upport inter-day timing function.
3) Setting method:

Click on the time of "power-on time" or "power-off time", it will pop up a numeric keypad, and enter the time to set the "power-on time" or "power-off time". Only three switch times can be set per day; It can also enable only one or two switch times.If the hour and minute of the timing period are set to 0:0, it means that the period timer is not enabled.

After setting the power on/off time, click on the day timer enable/disable button on the right to enable the timer function for the day.  is to enable,  is to disable. After setting the power on/off time and current day enabling, please click the "Timer Setting" button at the right bottom corner to switch between "ON" and "OFF". “  ” indicates that the timer function is enabled. Once enabled, the set timer on/off time will be effective; “  ” indicates disabling the timer

function; After disabling, the set timer on/off time becomes invalid. For example 1: Set the startup time to 9:00 and the shutdown time to 17:00;



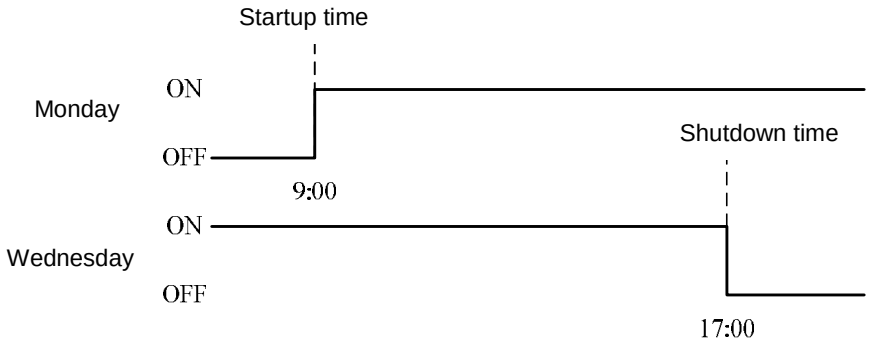
When the unit is powered on, the time is out of the timer interval, the system maintains current status; When the time reaches the startup time (9:00), the system performs startup order, and the unit starts normally; During the timed interval, press the "shutdown" button to manually stop or the system will automatically stop after the "shutdown time" is up;

For example: realize power on at 9:00 on Monday and power off at 17:00 on Wednesday.

Set as: Monday time period, power on is set to 9:00, other time periods are set to 0:0 (0:0 means no performing at this period), Monday is set as enabled;

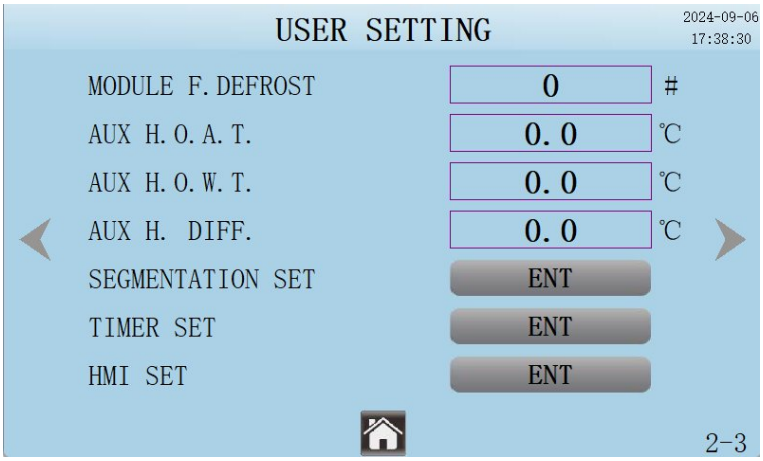
Set it as disabled on Tuesday, Thursday, Friday, Saturday, and Sunday.

Time period on Wednesday, set the shutdown time to 17:00 and other periods to 0:0;



4.5.4 Module Forced Defrosting

Module forced defrosting, for example:



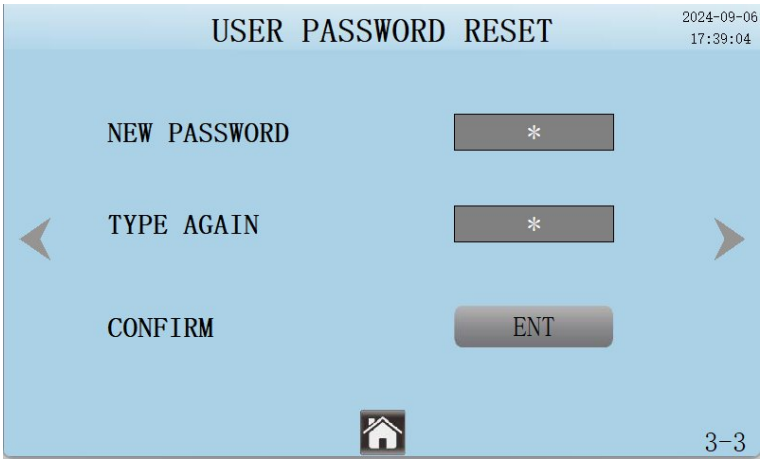
After setting the forced defrost module, themodule enters the forced defrost program.

4.5.5 User Password Management

Press the next page on the user settings page to enter the “User Password Change” page, click the press button after clicking the “input new passwor”. It will pop up a numeric keyboard, input the new passowrd and press “confirm” button to confirm. Enter the new password again using the same method. Finally, press the "OK" button after the "Press OK to Complete" option to change the password, and it will prompt "Enter correct, the change is successful"; If the two passwords are not the same, it will prompt "input error, please input it again”; If the passwords are all set to 0, the system will prompt “Please don’t enter 0 or no enter”.

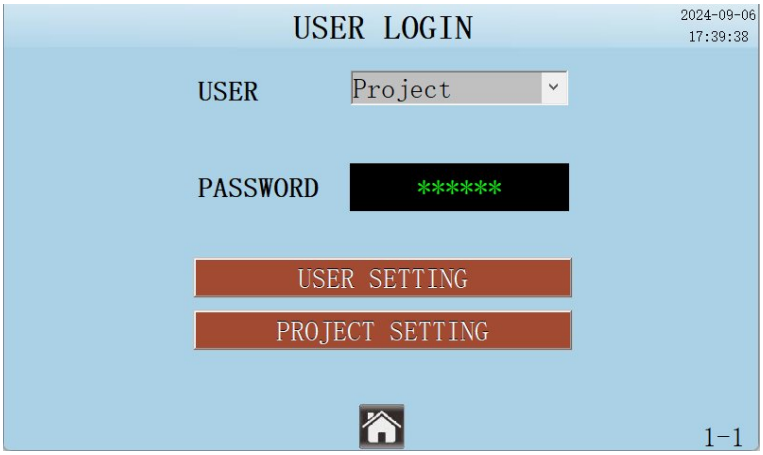
Notice!

After time and password reset, don’t cut off the power of touch screen within one minute.



4.6 Engineer Settings

The engineer settings are not open to users, so the system has the password protection function. Only when the password is entered correctly can it be set. Otherwise, the "Engineer Settings" are unavalible. On the user login page, select "Engineer" and enter the correct password (default is 111111) to enter the engineer settings screen.



4.6.1 System Parameter Setting

Name	Setting Range	Unit	Default Value				Function Description
			Parameter 1	Parameter 2	Parameter 3	Parameter 4	
Model parameter selection	parameter 1 /parameter 2 /parameter 3 /parameter 4	--	parameter 1				
Model setting	heaing pump/only cooling	--	heaing pump	heaing pump	heaing pump	heaing pump	Model setting: Heating pump: it has cooling and heating modes, and the

	/only heating/ hot water						temp. control method is system return water or system outlet water temp.; Only cooling mode, and the temp. control method is system return water or system outlet water temp.;Only heating mode: it only has heaing mode, and the temperature control method is system return water or system outlet water temp..Hot water: it only has hot water mode, and the temp. control method is hot water tank temp., and the blower has special logic.
Refrigerant model	R22/R410A	--	R410A	R410A	R410A	R410A	
Onboard phase-sequence protection	disable/ enable		disable	disable	disable	disable	When it is disabled, there's no phase sequence protection function;
4-way valve opening mode	cooling /heating	--	heating	heating	heating	heating	Select the four way opening mode.
Pump standby mode	running /stop/ intermittent on	--	running	running	running	running	See pump control logic for details.
Air duct selection	independent air duct /double air duct/ single air duct	--	single air duct	Independent air duct	double air duct	independent air duct	This parameter is valid for any model.
Blower type	double speed/ single speed	--	single speed	single speed	single speed	single speed	This parameter is only valid when the "hot water model" and blower is controlled at high and low speeds: When selecting "single speed" for the【blower type】, the blower 1 outputs the low speed, and the blower 1 and blower 2 output the high speed. When selecting "double speed" for the【blower type】, the blower 1 outputs the low speed, and the blower 2 outputs the high speed.
Current transformer	SL1808TC/SL1628TC/ SL75TC	--	SL1628TC	SL75TC	SL1628TC	SL75TC	
Module water flow switch	disable/ enable	--	enable	enable	enable	enable	When it is disabled, it only detects the flow switch fault of the main module. When

							enabled, it detects the flow switch fault of both the master and slave modules.
Module ambient temp. enabling	disable/ enable	--	enable	disable	disable	disable	When it is enabled, AI3 is the ambient temperature of the slave module; When disabled, the slave module uses the ambient temp. of the main module.
The number of fin temperatures	1 ~ 2	pcs	1	1	2	2	When the number is set to 2, the anti-freezing temp. function will become invalid automatically.
Outlet water overheat 1	30.0 ~ 70.0	℃	53.0	45.0	70.0	60.0	When the ambient temperature is ⩽ [the upper limit of heating ambient temp. 1], the alarm point for high outlet water temp..
Outlet water overheat 2	30.0 ~ 70.0	℃	57.0	55.0	70.0	65.0	When the【heating ambient temp. upper limit 1】＜when the ambient temp. ≤ 【heating ambient temp. upper limit 2】, the alarm point for high outlet water temp..
Outlet water overheat 3	30.0 ~ 70.0	℃	61.0	58.0	70.0	70.0	When the【heating ambient temp. upper limit 2】＜when the ambient temp. ≤ 【heating ambient temp. upper limit 3】, the alarm point for high outlet water temp.
Outlet water overheat 4	30.0 ~ 70.0	℃	65.0	60.0	70.0	65.0	When the ambient temp. ＞【heating ambient temp. upper limit 3】, the alarm point for high outlet water temp.
Too low water outlet temp.	-15.0 ~ 10.0	℃	3.0	3.0	3.0	3.0	Low outlet water temp.alarm point (both system and module are detected).
Compressor Over-current							
Synchronous parameter over-current	Full sync/ independent settings	--	independent setting	Full sync.	Full sync.	Full sync.	See the setting instructions of ***Compressor Overflow*** for details
Compressor over-current	0.0 ~ 75.0	--	16.0	56.0	24.0	50.0	
Blower high speed ambient temp.	-30.0 ~ 50.0	℃	25.0	25.0	25.0	25.0	This parameter is only valid when in "hot water model" and the blower is effective when it is controlled at high or low speed.
Cooling open blower	0.0 ~ 80.0	℃	0.0	0.0	0.0	0.0	When the fin temp. is higher than this value during cooling, turn on the condenser blower, and it is closed when the

							ambient temp. and outlet air temp. difference is 10℃. When set to 0, the condenser blower is linked to the compressor.
Heating open blower	-20.0 ~ 20.0	℃	0.0	0.0	0.0	0.0	When the fin temp. is lower than this value during heating, turn on the condenser blower, and it is closed when the ambient temp. and outlet air temp. difference is 7℃. When set to 0, the condenser blower is linked to the compressor.
Ambient temp. and outlet air temp. difference of cooling closed blower	3.0 ~ 15.0	℃	10.0	10.0	10.0	10.0	The setting of ambient temp. and outlet air temp. difference of condensor cooling closed blower
Ambient temp. and outlet air temp. difference of heating closed blower	3.0 ~ 15.0	℃	7.0	7.0	7.0	7.0	The setting of ambient temp. and outlet air temp. difference of condensor heating closed blower
Overload deviation 1	0.0 ~ 9.9	℃	2.0	2.0	2.0	3.0	Deviation value of loading area 1, and refer to the chapter of logic for details.
Overload deviation 2	0.0 ~ 9.9	℃	4.0	3.0	3.0	4.0	Deviation value of loading area 2, and refer to the chapter of logic for details.
Unloading deviation 1	0.0 ~ 9.9	℃	0.0	1.0	1.0	0.0	Deviation value of unloading area 1, and refer to the chapter of logic for details.
Unloading deviation 2	0.0 ~ 9.9	℃	1.0	2.0	2.0	1.0	Deviation value of unloading area 2, and refer to the chapter of logic for details.
Loading cycle 1	2 ~ 255	S	60	60	60	60	Energy regulation period of loading area 1, and refer to the chapter of logic for details.
Loading cycle 2	2 ~ 255	S	6	6	6	6	Energy regulation period of loading area 2, and refer to the chapter of logic for details.
Unloading cycle 1	2 ~ 255	S	30	30	30	60	Energy regulation period of unloading area 1, and refer to the chapter of logic for details.
Unloading cycle 2	2 ~ 255	S	6	6	6	6	Energy regulation period of unloading area 2, and refer to the chapter of logic for details.

Cooling return water lower limit	-10.0 ~ 15.0	℃	10.0	10.0	10.0	10.0	Lower limit of set temp. in cooling mode under the return water control.
Cooling outlet water lower limit	-15.0 ~ 10.0	℃	5.0	5.0	7.0	7.0	Lower limit of set temp. in cooling mode under the return water control.
Heating ambient temp. upper limit 1	-50.0 ~ 60.0	℃	-20.0	-25.0	-20.0	-15.0	During heating or heating water mode, the upper limit of water temperature limits the ambient temp. set value of segmenting function.
Heating ambient temp. upper limit 2	-50.0 ~ 60.0	℃	-12.0	-15.0	-12.0	-5.0	
Heating ambient temp. upper limit 3	-50.0 ~ 60.0	℃	0.0	0.0	0.0	20.0	
Heating return water upper limit 1	30.0 ~ 70.0	℃	43.0	37.0	45.0	40.0	When the ambient temp. ≤【heating ambient upper limit 1】, set temp. upper limit of heating mode under return water control. When the ambient temp. range changes, if the return water set temp. is higher than this value, the return water set temp. will automatically change to this value.
Heating return water upper limit 2	30.0 ~ 70.0	℃	47.0	45.0	50.0	45.0	【Heaing ambient temp. upper limit1】＜when the ambient temp.≤ 【Heaing ambient temp. upper limit2】, the set temp. upper limit of heating mode under return water control. When the ambient temp. range changes, if the return water set temp. is higher than this value, the return water set temp. will automatically change to this value.
Heating return water upper limit 3	30.0 ~ 70.0	℃	51.0	50.0	56.0	50.0	【Heaing ambient temp. upper limit 2】＜when the ambient temp.≤ 【Heaing ambient temp. upper limit 3】, the set temp. upper limit of heating mode under return water control. When the ambient temp. range changes, if the return water set temp. is higher than this value, the return water set temp. will automatically change to this value.

Heating return water upper limit 4	30.0 ~ 70.0	℃	55.0	53.0	56.0	40.0	When the ambient temp. > 【Heaing ambient temp. upper limit 3】, the set temp. upper limit of heating mode under return water control.
Heating outlet water upper limit 1	30.0 ~ 70.0	℃	48.0	40.0	48.0	45.0	When the ambient temp. ≤ 【 heaing ambient temp. upper limit 1】, the set temp. upper limit of heating mode under outlet water control. When the ambient temp. range changes, if the outlet water set temp. is higher than this value, the outlet water set temp. will automatically change to this value.
Heating outlet water upper limit 2	30.0 ~ 70.0	℃	52.0	50.0	55.0	50.0	【heaing ambient temp. upper limit 1】< when ambient temp. ≤ 【heaing ambient temp. upper limit 2】, the set temp. upper limit of heating mode under outlet water control. When the ambient temp. range changes, if the outlet water set temp. is higher than this value, the outlet water set temp. will automatically change to this value.
Heating outlet water upper limit 3	30.0 ~ 70.0	℃	56.0	55.0	60.0	55.0	【heaing ambient temp. upper limit 2】< when ambient temp. ≤ 【heaing ambient temp. upper limit 3】, the set temp. upper limit of heating mode under outlet water control. When the ambient temp. range changes, if the outlet water set temp. is higher than this value, the outlet water set temp. will automatically change to this value.
Heating outlet water upper limit 4	30.0 ~ 70.0	℃	60.0	58.0	60.0	45.0	When the ambient temp.> 【heaing ambient temp. upper limit 3】, the set temp. upper limit of heating mode under outlet water control.
Enthalpy increasing valve open air exhaust	60.0 ~ 150.0	℃	115.0	65.0	65.0	65.0	The exhaust air temp. is higher than this value and the valve will open when the delay time is up.
Enthalpy increasing	-30.0 ~ 50.0	℃	15.0	15.0	10.0	10.0	One of the enthalpy increasing valve opening conditions

valve opening ambient temp.							
Enthalpy increasing valve close return temp. difference	4.0 ~ 85.0	℃	10.0	5.0	5.0	5.0	The exhaust air temp. return difference of the closed valve.
Exhaust temp. overheat	90.0 ~ 150.0	℃	125.0	125.0	125.0	125.0	If the exhaust air temp. exceeds this value, an alarm will be triggered to stop the compressor.
Exhaust overheat recovery	80.0 ~ 150.0	℃	90.0	90.0	90.0	90.0	When the exhaust air temp. is below this value, the exhaust air high temp. alarm will be restored.
Cooling water temp. difference protection	0.0 ~ 20.0	℃	9.0	10.0	10.0	10.0	Water flow protection, when the system return water temp. – module outlet water temp. difference is greater than this value, protection will be activated; When the return difference is 3℃, the fault will be recovered. This function is disabled when the value is 0.
Heating water temp. difference protection	0.0 ~ 20.0	℃	9.0	10.0	10.0	10.0	Water flow protection, when the system return water temp. – module outlet water temp. difference is greater than this value, protection will be activated; When the return difference is 3℃, the fault will be recovered. This function is disabled when the value is 0.
Crankshaft heating temp. 1	-40.0 ~ 40.0	℃	0.0	0.0	0.0	0.0	
Crankshaft heating temp. 2	-40.0 ~ 40.0	℃	8.0	8.0	8.0	8.0	

Compressor disabled ambient temp.	-50.0 ~ 20.0	℃	-30.0	-30.0	-30.0	-30.0	When the ambient temp. is ⩽ [Compressor ambient temp. disabled] and maintained for 120S, the compressor won't adjust the energy, and the compressor won't start for anti-freezing. When the ambient temp. is ⩾ [Compressor ambient temp. disabled]+2 and maintained for 120S, the compressor will return to normal conditions.
Heating ambient temp. upper limit	20.0 ~ 60.0	℃	26.0	26.0	26.0	26.0	
Low pressure range	0.1 ~ 50.0	bar	20.0	20.0	20.0	20.0	The measurement range of user set pressure sensor
Low pressure protective value	0.1 ~ 10.0	bar	0.3	0.3	0.5	0.5	
Pressure transmission enabling	Disable /enable	--	disable	disable	disable	disable	When it is enabled, the default of EEV overheat control is the pressure control mode.
Baseplate heating method	Normally open / defrost ON / Turn ON in advance	--	Turn ON in advance	Turn ON in advance	Turn ON in advance	Turn ON in advance	
Baseplate heating ON ratio	0 ~ 100	%	80	80	80	80	
Baseplate heating OFF delay	5 ~ 30	M	10	10	10	10	
Preheat temp.	-10.0 ~ 20.0	℃	5.0	5.0	5.0	5.0	
Solenoid valve setting	Enthalpy increasing valve /bypass valve	--	bypass valve	bypass valve	bypass valve	bypass valve	Shutdown setting, startup setting is invalid.
Ambient temp. open bypss	-10.0 ~ 50.0	℃	15.0	15.0	15.0	15.0	Bypass valve control parameter
Bypass close return difference	0.1 ~ 15.0	℃	2.0	2.0	2.0	2.0	
Networking address	1 ~ 32	--	1	1	1	1	Set the network comm. address

Restore factory settings	--	--	--	--	--	--	All parameters are restored to factory default values.
Clear run time	--	--	--	--	--	--	Clear the run time of all modules.
Password modification	--	--	--	--	--	--	Modify the manufacturer's password.

4.6.2 Compressor Enablingh/Disabling Setting

Especially used for monitoring platform, no display on the screen.

Name	Setting Range	Unit	Default Value				Remarks
			Para.1	Para.2	Para.3	Para.4	
1-1 compressor enabling	Disable /enable	--	enable	enable	enable	enable	The display screen will not be updated, only increase the address. The functions are the same as the dial switches 5, 6, 7, and 8. Notice: Compressor enabling address and dial switch, disable the priority. (The compressor is enabled only when the address and dial code are both enabled, otherwise the compressor is disabled.) All factory settings are set to enabled by default. When the compressor is disabled remotely, there's no need to power it on again, and the system automatically blocks compressor related faults. And reset current fault of the system. 3.When restoring factory settings. The compressor enabling address will be restored to the default value.
1-2 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
1-3 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
1-4 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
2-1 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
2-2 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
2-3 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
2-4 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
3-1 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
3-2 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
3-3 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
3-4 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
4-1 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
4-2 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
4-3 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
4-4 compressor enabling	Disable /enable	--	enable	enable	enable	enable	

5-1 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
5-2 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
5-3 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
5-4 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
6-1 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
6-2 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
6-3 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
6-4 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
7-1 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
7-2 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
7-3 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
7-4 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
8-1 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
8-2 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
8-3 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
8-4 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
9-1 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
9-2 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
9-3 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
9-4 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
10-1 compressor enabling	Disable /enable	--	enable	enable	enable	enable	

10-2 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
10-3 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
10-4 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
11-1 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
11-2 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
11-3 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
11-4 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
12-1 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
12-2 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
12-3 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
12-4 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
13-1 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
13-2 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
13-3 compressor enabling	Disable /enable	--	enable	enable	enable	enable	

13-4 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
14-1 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
14-2 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
14-3 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
14-4 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
15-1 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
15-2 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
15-3 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
15-4 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
16-1 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
16-2 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
16-3 compressor enabling	Disable /enable	--	enable	enable	enable	enable	
16-4 compressor enabling	Disable /enable	--	enable	enable	enable	enable	

4.6.3 Probe Calibration

Name	Setting Range	Unit	Default Value				Remarks
			Para. 1	Para. 2	Para. 3	Para. 4	

System return water temp.	-20.0 ~ 20.0	℃	0.0	0.0	0.0	0.0	
System return water temp.	-20.0 ~ 20.0	℃	0.0	0.0	0.0	0.0	
System ambient temp.	-20.0 ~ 20.0	℃	0.0	0.0	0.0	0.0	
Module outlet temp.	-20.0 ~ 20.0	℃	0.0	0.0	0.0	0.0	
1# fin temp.	-20.0 ~ 20.0	℃	0.0	0.0	0.0	0.0	
1# evaporator temp.	-20.0 ~ 20.0	℃	0.0	0.0	0.0	0.0	
1# suction temp.	-20.0 ~ 20.0	℃	0.0	0.0	0.0	0.0	
1# exhaust air temp.	-20.0 ~ 20.0	℃	0.0	0.0	0.0	0.0	
2# fin temp.	-20.0 ~ 20.0	℃	0.0	0.0	0.0	0.0	
2# evaporation temp.	-20.0 ~ 20.0	℃	0.0	0.0	0.0	0.0	
2# suction temp.	-20.0 ~ 20.0	℃	0.0	0.0	0.0	0.0	
2# exhaust air temp.	-20.0 ~ 20.0	℃	0.0	0.0	0.0	0.0	
3# fin temp.	-20.0 ~ 20.0	℃	0.0	0.0	0.0	0.0	
4# evaporation temp.	-20.0 ~ 20.0	℃	0.0	0.0	0.0	0.0	
3# suction temp.	-20.0 ~ 20.0	℃	0.0	0.0	0.0	0.0	
3# exhaust air temp.	-20.0 ~ 20.0	℃	0.0	0.0	0.0	0.0	
4# fin temp.	-20.0 ~ 20.0	℃	0.0	0.0	0.0	0.0	
4# evaporation temp.	-20.0 ~ 20.0	℃	0.0	0.0	0.0	0.0	
4# suction temp.	-20.0 ~ 20.0	℃	0.0	0.0	0.0	0.0	
4# exhaust air temp.	-20.0 ~ 20.0	℃	0.0	0.0	0.0	0.0	
Anti-freezing temp.	-20.0 ~ 20.0	℃	0.0	0.0	0.0	0.0	
1# Low pressure Value	-10.0 ~ 10.0	bar	0.0	0.0	0.0	0.0	
2#Low pressure Value	-10.0 ~ 10.0	bar	0.0	0.0	0.0	0.0	
3# Low pressure Value	-10.0 ~ 10.0	bar	0.0	0.0	0.0	0.0	
4# Low pressure Value	-10.0 ~ 10.0	bar	0.0	0.0	0.0	0.0	

4.6.4 Anti-freezing Setting

Name	Setting Range	Unit	Default Value				
			Para.1	Para.2	Para.3	Para.4	
Anti-freezing ambient temp.	-15.0 ~ 25.0	℃	0.0	0.0	0.0	0.0	See anti-freezing logic for details.
Anti-freezing ON water pump	-15.0 ~ 25.0	℃	8.0	6.0	6.0	6.0	Start the pump if the anti-freezing temp. is lower than this value.

Anti-freezing OFF water pump	-15.0 ~ 25.0	℃	10.0	8.0	8.0	8.0	Stop the pump if the anti-freezing temp. is higher than this value.
Anti-freezing enabling	disable/ enable	--	enable	enable	enable	enable	Whether to enable this function.
Anti-freezing ON compressor	-15.0 ~ 25.0	℃	6.0	3.0	3.0	3.0	Start the compressor if the anti-freezing temp. is lower than this value.
Anti-freezing OFF compressor	-15.0 ~ 25.0	℃	15.0	15.0	15.0	15.0	Stop the compressor if the anti-freezing temp. is higher than this value.
Anti-freezing ON heater	-15.0 ~ 25.0	℃	2.0	4.0	4.0	4.0	Start the heater if the anti-freezing temp. is lower than this value.
Anti-freezing OFF heater	-15.0 ~ 25.0	℃	6.0	5.0	5.0	5.0	Stop the heater if the anti-freezing temp. is higher than this value.
Anti-freezing overload cycle	0 ~ 600	S	180	180	180	180	Compressor loading cycle during anti-freezing.
Min. runnig of water pump	10 ~ 250	S	60	60	60	60	After the pump is started during anti-freezing, delay this time and re-judge the anti-freezing level.
Water pump running timeout	2 ~ 250	M	10	10	10	10	During anti-freezing, if the water pump runs over this time, start the compressor and anti-freeze.
Anti-freezing protective temp.	-10.0 ~ 10.0	℃	-5.0	-5.0	-5.0	-5.0	Anti-freezing protection inlet temp.;
Anti-freezing protective temp.	0 ~ 360	S	60	60	60	60	Anti-freezing protection inlet temp.;
Exit the anti-freezing temp. difference	0.0 ~ 20.0	℃	5.0	5.0	5.0	5.0	Exit the anti-freezing protective temp. difference

Anti-freezing temp. enabling	Disable /enable	--	disable	disable	disable	disable	When it is disabled, don't detect the anti-freezing temp. When it is enabled, the system detects the anti-freezing temp. Refer to below instructions of anti-freezing logic for details;

4.6.5 Defrosting Setting

Name	Setting Range	Unit	Default Value				Remarks
			Para.1	Para.2	Para.3	Para.4	
Defrosting percentage	1 ~ 100	%	50	50	50	50	The number of defrosting compressors allowed simultaneously during defrosting= the total number of all compressor modules × 【defrosting percentage】
Defrosting entering temp.	-10.0 ~ 10.0	℃	-1.0	-2.0	-2.0	-2.0	A condition for entering defrosting is that the defrosting temp.must be below this value before entering defrosting, and the defrosting countdown starts
Start detection time	10 ~ 999	S	60	60	60	60	After the compressor runs for this time, it starts to calculate the frost accumulation time.
First defrosting interval	1 ~ 255	M	3	10	10	10	Defrosting interval when the compressor is first turned on
Compressor min. Running	1 ~ 60	M	1	3	3	3	The compressor must run for at least this time before the defrosting begins; 【Compressor minimium run】time is reset when defrosting is completed or the compressor is restarted.
Defrosting end temp.	0.0 ~ 50.0	℃	15.0	20.0	20.0	25.0	Exit defrosting fin temp.

Max. defrosting time	60 ~ 600	S	600	600	240	360	After entering defrosting, the longest defrosting time. If it exceeds this time, regardless of whether the temperature meets the conditions, defrosting will be exited.
Four-way valve delay change direction	1 ~ 255	S	5	5	5	5	Four-way valve delay open time when the deforsting complete
Defrosting compressor status	Maintain start/ Stop first then start	--	Stop first then start	Maintain start	Maintain start	Maintain start	Where there's any action to stop the compressor during the defrosting; Keep it on, the compressor will operate normally during the process; If it has to defrost first, stop the compressor before defrosting, and delay the compressor defrosting. When exiting, stop the compressor first and then delay the compressor startup; Detailed defrosting instructions.
Low pressure defrosting delay	0 ~ 60	M	5	5	5	5	When selecting low-pressure defrosting, judge the defrosting after a delay in low-pressure defrosting detection;
Low pressure defrosting interval	0 ~ 60	M	15	15	15	15	
Low pressure defrosting fin temp.	-30.0 ~ 0.0	℃	-8.0	-8.0	-8.0	-8.0	
Low pressure defrosting enabling	disable/enable	--	disable	disable	disable	disable	
Ambient temp.1	-30.0 ~ 30.0	℃	9.0	4.0	4.0	4.0	One of the defrosting condition parameters, used in defrosting mode 1
Ambient temp.2	-30.0 ~ 30.0	℃	3.0	-4.0	-4.0	-4.0	

Ambient temp.3	-30.0 ~ 30.0	℃	-7.0	-10.0	-10.0	-10.0	
Ambient temp.4	-30.0 ~ 30.0	℃	-13.0	-15.0	-15.0	-15.0	
Defrosting temp. difference 1	0.0 ~ 99.0	℃	12.0	7.0	7.0	7.0	One of the defrosting condition parameters, used in defrosting mode 1
Defrosting temp. difference 2	0.0 ~ 99.0	℃	12.0	7.0	7.0	7.0	
Defrosting temp. difference 3	0.0 ~ 99.0	℃	12.0	7.0	7.0	7.0	
Defrosting temp. difference 4	0.0 ~ 99.0	℃	12.0	7.0	7.0	7.0	
Defrosting temp. difference 5	0.0 ~ 99.0	℃	12.0	7.0	7.0	7.0	
Defrosting interval 1	1 ~ 255	M	40	60	60	45	One of the defrosting condition parameters, used in defrosting mode 1
Defrosting interval 2	1 ~ 255	M	30	60	50	40	
Defrosting interval 3	1 ~ 255	M	30	60	45	40	
Defrosting interval 4	1 ~ 255	M	40	60	50	40	
Defrosting interval 5	1 ~ 255	M	40	60	50	40	

4.6.6 EEV Parameter Setting

Name	Setting Range	Unit	Default Value				Remark
			Para.1	Para.2	Para.3	Para.4	
EEV parameter synchronization	All sync / independent settings	--	independent settings	All sync.	All sync.	All sync.	Select whether the EEV parameters of the master and slave modules are synchronized. Refer to ***EEV Parameter Synchronous Function*** for details.
EEV total step	200 ~ 3000	step	500	500	500	500	Please set the max. steps of EEV according to actual valve.

Excitation mode	four-phase-eight-pat/ four-phase-eight-pat	--	four-phase-eight-pat	four-phase-eight-pat	four-phase-eight-pat	four-phase-eight-pat	
Excitation frequency	31/62/83/ 100PPS	--	31	31	31	31	Max. steps of each S running.
EEV changing direction	Foreward run/ reverse run	--	forewar d run	forewar d run	forewar d run	forewar d run	Please set according to actual valve
Power on reset opening	100 ~ 200	%	140	120	120	120	Example value=120: steps to reset after powered on=[Total motor steps] * 120%
Main circuit EEV enabling	disable/c ooling+ heating/h eating/co oling	--	cooling + heating	cooling + heating	cooling + heating	cooling + heating	0=main circuit disabled, 1= cooling+heating enabled, 2= heating enabled, cooling disabled, 3= heating disabled, cooling enabled;When the main circuit is disabled, the auxiliary circuit doesn’t excute logic of low ambient temp. and high output water temp.
Auxiliary circuit EEV enabling	Disable /enable	--	enable	enable	enable	enable	Enable: The auxiliary circuit related logic is valid. Disable: The auxilary circuit related logic is invalid, and it doesn’t display auxiliary circuit related parameter settings.

Main valve Cycle	1 ~ 100	S	15	30	15	15	This parameter is effective for both cooling and heating when selecting "Mode 1" in 【PID mode】, and only for cooling when selecting "Mode 2".
Auxiliary valve cycle	1 ~ 100	S	10	15	10	10	The valve performs actions according to this cycle.
PID exceeds the limit difference	0.5 ~ 10.0	℃	5.0	5.0	8.0	8.0	PID overlimit processing. Overheating for main circuit and auxiliary circuit, and effective for auxiliary air exhaust.
Over limit adjustment steps	1 ~ 50	step	1	1	2	2	Adjusting steps during over limit processing
Main Circuit EEV Setting							
PID Method	method 1/ method 2	--	method 2	method 2	method 1	method 2	Selections of different PID adjusting methods
Main circuit standby opening degree	0 ~ 500	step	200	200	200	200	
Main circuit defrosting opening degree	0 ~ 500	step	500	500	500	500	Valve opening during defrosting
Main circuit early opening	0 ~ 120	S	30	60	30	30	Set the main circuit EEV to start earlier when the compressor is started.
Main circuit initial time	0 ~ 900	S	90	180	90	90	Example value=90: After the compressor is started, it maintains the initial opening for 90 secs.before entering overheat adjustment.
Cooling initial coefficient	0.1 ~ 3.0	--	1.0	1.0	1.0	0.9	Please refer to the initial opening calculation of the ***Main Circuit Electronic***
Heating initial coefficient 1	0.1 ~ 3.0	--	1.0	1.3	0.7	1.2	

Heating initial coefficient 2	0.1 ~ 3.0	--	0.9	0.9	0.5	1.1	***Expansion Valve Control*** for details.
Low water temp. Initial coefficient	0.1 ~ 3.0	--	1.1	1.1	1.1	1.1	When the module outlet temp. ≤30℃, multiply the coefficient to get corresponding main valve initial opening based on the initial opening of amibient calculation.
High water temp. Initial coefficient	0.1 ~ 3.0	--	0.8	0.8	0.8	0.8	When the module outlet temp. ≥45℃, multiply the coefficient to get corresponding main valve initial opening based on the initial opening of amibient calculation.
Cooling overheat degree 1	-10.0 ~ 50.0	℃	5.0	4.0	3.0	1.0	Refer to the ***Main Circuit Electronic Expansion Valve Control*** for cooling overheat segmentation.
Cooling overheat degree 2	-10.0 ~ 50.0	℃	5.0	4.0	3.0	1.0	
Cooling overheat degree 3	-10.0 ~ 50.0	℃	5.0	4.0	3.0	1.0	
Heating overheat drgree 1	-10.0 ~ 50.0	℃	3.0	4.0	1.0	1.0	Refer to the ***Main Circuit Electronic Expansion Valve Control*** for heating overheat segmentation.
Heating overheat drgree 2	-10.0 ~ 50.0	℃	5.0	4.0	0.0	0.5	
Heating overheat drgree 3	-10.0 ~ 50.0	℃	5.0	4.0	0.0	0.5	

Heating overheat drgree 4	-10.0 ~ 50.0	℃	5.0	3.0	0.0	0.5	
Heating overheat drgree 5	-10.0 ~ 50.0	℃	5.0	3.0	0.0	0.5	
Heating overheat drgree 6	-10.0 ~ 50.0	℃	2.0	2.5	-1.0	0.5	
Heating overheat drgree 7	-10.0 ~ 50.0	℃	6.0	5.0	0.0	0.0	
Heating overheat drgree 8	-10.0 ~ 50.0	℃	6.0	5.0	0.0	0.0	
Heating overheat drgree 9	-10.0 ~ 50.0	℃	3.5	4.0	0.0	0.0	
Main circuit water temp.1	0 ~ 50.0	℃	15.0	15.0	25.0	15.0	One of the main circuit EEV segmentation parameters
Main circuit water temp.2	0 ~ 50.0	℃	20.0	25.0	25.0	25.0	
Main circuit water temp.3	0 ~ 50.0	℃	25.0	35.0	35.0	35.0	
Main circuit high water temp.	30.0 ~ 70.0	℃	56.0	56.0	56.0	60.0	
High water temp. exhaust enabling	Disable /enable	--	enable	Disable	Disable	Disable	
Main circuit air exhaust temp. difference	0.0 ~ 50.0	℃	37.0	40.0	40.0	40.0	
Main circuit air exhaust ambient temp.	-50.0 ~ 50.0	℃	-10.0	-14.0	-14.0	-14.0	
Main circuit forced opening enabling	Disable /enable	--	Disable	Disable	Disable	Disable	When enabled, the main circuit forced opening logic is effective.
Main circuit forced opening exhaust temp.	70.0 ~ 150.0	℃	100.0	100.0	100.0	100.0	
Main circuit forced opening difference	1.0 ~ 20.0	℃	5.0	5.0	5.0	5.0	
Main ciruit forced opening cycle	1 ~ 50	S	15	15	15	15	

Main ciruit forced opening step length	0 ~ 50	step	8	8	8	8	
Cooling overheat dergee P	1 ~ 999	--	20	20	20	20	In cooling mode, the PID algorithm parameter of the main circuit EEV, and it is valid when selecting "Mode 1" or "Mode 2" in the【PID mode】
Cooling overheat dergee I	0 ~ 999	S	10	10	10	10	
Cooling overheat dergee D	0 ~ 999	S	3	3	3	3	
Heating overheat dergee P	1 ~ 999	--	6	4	4	4	In heating mode, the PID algorithm parameter of the main circuit EEV, and this parameter is only valid when selecting "Mode 1" in the【PID mode】
Heating overheat dergee I	0 ~ 999	S	8	10	10	10	
Heating overheat dergee D	0 ~ 999	S	3	3	3	3	
Heating overheat dergee P1	1 ~ 999	--	5	10	10	5	In heating mode, the PID algorithm parameter of the ambient temp. ＜-3.0℃, the PID algorithm parameter of the main circuit EEV, and this parameter is only valid when selecting "Mode 2" in the【PID mode】
Heating overheat dergee I1	0 ~ 999	S	30	20	20	10	
Heating overheat dergee T1	0 ~ 999	S	20	20	20	20	
Heating overheat dergee P2	1 ~ 999	--	5	20	20	5	In heating mode, the PID algorithm parameter of the ambient temp. ≥-3.0℃,
Heating overheat dergee I2	0 ~ 999	S	20	10	10	10	

Heating overheat dergee T2	0 ~ 999	S	15	15	15	20	the PID algorithm parameter of the main circuit EEV, and this parameter is only valid when selecting "Mode 2" in the【PID mode】
Min. Opening setting	--	--	--	--	--	--	When the parameter 【pressure transmission enable】 is set to disabled, the EEV overheat control is in the "temp. control" mode, below EEV minimum opening parameters are valid, otherwise, it displays “standby”.
Cooling min. opening 1	0 ~ 500	step	300	300	150	350	**Cooling**: **ambient temp.** ≥37.0℃
Cooling min. opening 2	0 ~ 500	step	280	280	100	300	**Cooling**: 27.0℃≤ ambient temp. < 37.0℃
Cooling min. opening 3	0 ~ 500	step	250	250	100	250	**Cooling**: **ambient temp.** < 27.0℃
Heating min. opening 1	0 ~ 500	step	168	300	220	220	**Heating**: **ambient temp.** ≥15.0℃
Heating min. opening 2	0 ~ 500	step	154	250	200	200	**Heating**: 7.0℃ ≤**ambient temp.** < 15.0℃
Heating min. opening 3	0 ~ 500	step	144	180	160	160	**Heating**: 0.0℃ ≤**ambient temp.** < 7.0℃
Heating min. opening 4	0 ~ 500	step	130	140	100	100	**Heating**:-6.0℃≤ ambient temp. < 0.0℃
Heating min. opening 5	0 ~ 500	step	125	100	100	100	**Heating**:-12.0℃≤ ambient temp. < -6.0℃

Heating min. opening 6	0 ~ 500	step	80	80	100	100	**Heating: ambient temp.** ＜-12.0℃
Auxiliary Circuit EEV Parameter							
Auxiliary circuit initial opening	0 ~ 500	step	60	100	100	100	
Auxiliary circuit exhaust high temp.	90.0 ~ 150.0	℃	115.0	110.0	120.0	120.0	When the auxiliary circuit EEV is fully opened, if the exhaust temp. is less than the 【auxiliary circuit exhaust return difference】, it will return to normal control;
Auxiliary circuit exhaust return difference	1.0 ~ 30.0	℃	5.0	5.0	5.0	5.0	After the auxiliary circuit exhaust high temp. is fully open, if it is less than this value, the return difference will back to normal control.
High exhaust opening	0 ~ 500	step	500	500	500	500	
Cooling auxiliary circuit enabling	Disable /enable	--	disable	disable	disable	disable	Whether it enables the auxiliary circuit EEV and enthalpy increasing valve or not during cooling mode setting.
Heating exhaust adjustment	60.0 ~ 150.0	℃	65.0	65.0	105.0	65.0	Heating: After the auxiliary circuit EEV starts and adjusts the exhaust temp. , when the exhaust temp. is greater than this value, it starts the auxiliary EEV;
Heating exhaust targe	50.0 ~ 150.0	℃	70.0	75.0	110.0	70.0	Heating: one of the auxiliary circuit EEV adjusting parameters

Cooling exhaust adjustment	65.0 ~ 150.0	℃	75.0	75.0	75.0	75.0	Cooling: auxiliary circuit EEV starts and adjusts the exhaust temp. , when the exhaust temp. is greater than this value, it starts the auxiliary EEV;
Cooling exhaust target	50.0 ~ 150.0	℃	80.0	80.0	80.0	80.0	Cooling: one of the auxiliary circuit EEV adjusting parameters
Auxiliary circuit opening circuit temp.	-20.0 ~ 50.0	℃	10.0	10.0	0.0	15.0	
Auxiliary circuit closing return difference	0.0 ~ 90.0	℃	25.0	25.0	20.0	70.0	When the exhaust temp. is less than the exhaust target value - when there's return difference, close the auxiliary EEV.
Cooling temp. difference	20.0 ~ 50.0	℃	30.0	35.0	35.0	35.0	One of the auxiliary circuit EEV control parameters
Auxiliary circuit min. opening	0 ~ 500	step	60	60	60	60	
Auxiliary circuit fixed opening degree	0 ~ 500	step	350	300	200	200	
Auxiliary circuit exhaust P	1 ~ 999	--	20	20	20	20	PID algorithm parameters for auxiliary circuit EEV opening and exhaust air adjustment.
Auxiliary circuit exhaust I	0 ~ 999	S	10	10	10	10	
Auxiliary circuit exhaust D	0 ~ 999	S	3	3	3	3	
Low temp. upper limit difference	0 ~ 500	step	300	500	500	500	
Auxiliary circuit early opening	0 ~ 30	S	0	5	0	0	
Auxiliary circuit initial time	0 ~ 120	S	20	120	20	60	
Auxiliary circuit initial time 1	0 ~ 500	step	60	0	60	100	

Auxiliary circuit initial time 2	0 ~ 500	step	80	0	80	250	
Auxiliary circuit initial time 3	0 ~ 500	step	130	0	130	300	
Auxiliary circuit initial time 4	0 ~ 500	step	150	0	150	350	
Auxiliary circuit initial time 5	0 ~ 500	step	60	0	60	150	
Auxiliary circuit initial time 6	0 ~ 500	step	100	100	100	300	
Auxiliary circuit initial time 7	0 ~ 500	step	180	180	180	350	
Auxiliary circuit initial time 8	0 ~ 500	step	200	200	200	400	
Auxiliary circuit initial time 9	0 ~ 500	step	70	0	70	200	
Auxiliary circuit initial time 10	0 ~ 500	step	120	140	120	350	
Auxiliary circuit initial time 11	0 ~ 500	step	220	200	220	400	
Auxiliary circuit initial time 12	0 ~ 500	step	250	250	250	450	
Auxiliary circuit initial time 13	0 ~ 500	step	80	0	80	250	
Auxiliary circuit initial time 14	0 ~ 500	step	160	160	160	400	
Auxiliary circuit initial time 15	0 ~ 500	step	250	250	250	450	
Auxiliary circuit initial time 16	0 ~ 500	step	300	300	300	500	
Auxiliary circuit initial time 17	0 ~ 500	step	100	0	100	300	
Auxiliary circuit initial time 18	0 ~ 500	step	180	180	180	400	
Auxiliary circuit initial time 19	0 ~ 500	step	250	250	250	450	
Auxiliary circuit initial time 20	0 ~ 500	step	350	350	350	500	
Auxiliary circuit initial time 21	0 ~ 500	step	150	0	150	350	
Auxiliary circuit initial time 22	0 ~ 500	step	240	240	240	450	

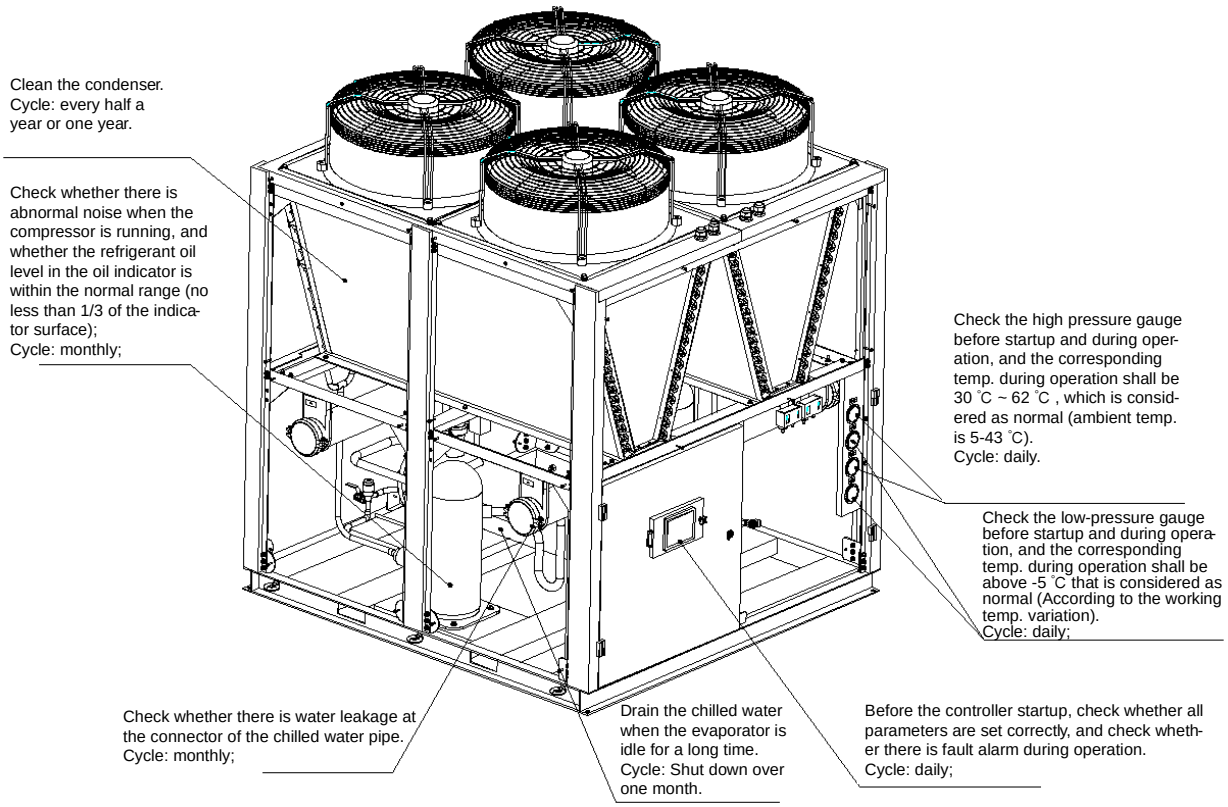
Auxiliary circuit initial time 23	0 ~ 500	step	300	300	300	500	
Auxiliary circuit initial time 24	0 ~ 500	step	400	400	400	500	
Heating temp. difference1	20.0 ~ 50.0	℃	35.0	38.0	35.0	35.0	
Heating temp. difference 2	20.0 ~ 50.0	℃	35.0	35.0	35.0	35.0	
Heating temp. Difference 3	20.0 ~ 50.0	℃	35.0	40.0	35.0	35.0	
Heating temp. Difference 4	20.0 ~ 50.0	℃	35.0	45.0	35.0	35.0	
Heating temp. Difference 5	20.0 ~ 50.0	℃	35.0	38.0	35.0	35.0	
Heating temp. Difference 6	20.0 ~ 50.0	℃	35.0	35.0	35.0	35.0	
Heating temp. Difference 7	20.0 ~ 50.0	℃	35.0	40.0	35.0	35.0	
Heating temp. Difference 8	20.0 ~ 50.0	℃	35.0	45.0	35.0	35.0	
Heating temp. difference 9	20.0 ~ 50.0	℃	35.0	38.0	35.0	35.0	
Heating temp. difference 10	20.0 ~ 50.0	℃	35.0	40.0	35.0	35.0	
Heating temp. difference 11	20.0 ~ 50.0	℃	35.0	45.0	35.0	35.0	
Heating temp. difference 12	20.0 ~ 50.0	℃	35.0	45.0	35.0	35.0	
Heating temp. difference 13	20.0 ~ 50.0	℃	35.0	38.0	35.0	35.0	
Heating temp. difference 14	20.0 ~ 50.0	℃	35.0	40.0	35.0	35.0	
Heating temp. difference 15	20.0 ~ 50.0	℃	35.0	45.0	35.0	35.0	
Heating temp. difference 16	20.0 ~ 50.0	℃	35.0	45.0	35.0	35.0	
Heating temp. difference 17	20.0 ~ 50.0	℃	35.0	38.0	35.0	35.0	
Heating temp. difference 18	20.0 ~ 50.0	℃	35.0	40.0	35.0	35.0	
Heating temp. difference 19	20.0 ~ 50.0	℃	35.0	45.0	35.0	35.0	

Heating temp. difference 20	20.0 ~ 50.0	℃	35.0	45.0	35.0	35.0	
Heating temp. difference 21	20.0 ~ 50.0	℃	35.0	38.0	35.0	35.0	
Heating temp. difference 22	20.0 ~ 50.0	℃	35.0	40.0	35.0	35.0	
Heating temp. difference 23	20.0 ~ 50.0	℃	35.0	45.0	35.0	35.0	
Heating temp. difference 24	20.0 ~ 50.0	℃	35.0	45.0	35.0	35.0	
Main circuit EEV 1	0 ~ 500	step	0	0	0	0	The opening of forced setting EEV: When set to 0, exit the forced opening state and restore normal control.
Main circuit EEV 2	0 ~ 500	step	0	0	0	0	
Main circuit EEV 3	0 ~ 500	step	0	0	0	0	
Main circuit EEV 4	0 ~ 500	step	0	0	0	0	
Auxiliary circuit EEV 1	0 ~ 500	step	0	0	0	0	
Auxiliary circuit EEV 2	0 ~ 500	step	0	0	0	0	
Auxiliary circuit EEV 3	0 ~ 500	step	0	0	0	0	
Auxiliary circuit EEV 4	0 ~ 500	step	0	0	0	0	

5. Trouble-shooting

Failures	Possible reasons	Solutions
Fan, pump and compressor can not start up	1. NO power 2. Power switch jumps 3. Power fuse is burnt. 4. Pump overloads.	1. Wait for power recovery 2. Check the power and make it normal 3. Change power fuse 4. Check and reset or repair the failure.
Pump runs but compressor can not start.	1. The setup value for temperature switch is too high. 2. Failure in temperature switch. 3. Compressor overloads. 4. The setup temperature for compressor is too low (for heat flow) 5. No restore after the protective switch jumps.	1. Edit the value. 2. Check or change. 3. Check and reset. 4. Edit the value (for heat flow) 5. Check and reset.
Compressor stops immediately after it starts.	1. Air inlet or outlet gets hindered. 2. Condenser is dirty. 3. Bad ventilation due to bad landform. 4. Fan fails. 5. The cooling water valve has not been opened. 6. Overlow cooling water quantity. 7. Cooling medium leaks. 8. Compressor overloads.	1. Remove the hindering articles. 2. Wash and clean. 3. Improve by client. 4. Check and repair. 5. Open the valve. 6. Check the pump to remove the tube air. 7. Repair the leak spot. 8. Edit setup value.
Big lnlet/outlet water temperature difference and over low low-pressure (when cooling flow runs).	1. Pipeline blocks due to wrong pipeline switching 2. Too much gas in the pipeline.	1. Check the valve of the pipeline and attachments. 2. Exhaust the air in the pipeline.

6. Maintenance and Repair



Note!

All repairing work must be conducted by professional person to avoid personal injury and damage of machine.

Matters require attention when do machine maintenance are as follows:

1) Do not stop the machine via cut the power supply unless emergncyoccurs.
2) When failure occurs and machine stops, press the main power switch (alarm light will go out). Check the failure and do not start the machine before trouble-shooting.
3) Check the system periodically to expand the system's lifespan and avoid safety accident.
4) Dispose the water because of water with high PH will accelerate the rust to

the copper tube and decrease the heat exchanger's lifespan. Keep the water PH in the scale of 7.0~8.5.

5) Keep the unit dry, clean and ventilative.
6) The daily operation, unit management, maintenance and repair must be conducted by professional technicians.

Note:

Danger exists when dissembling and checking the unit, please take care!

6.1 Daily Repair and Check Items

1) Operation, startup, stop, maintenance and repair works must be conducted by professional technicians to expand the unit's lifespan.
2) Daily check includes recording indoor/outdoor temperature, cooled water temperature, voltage, current for further reference, such as adjustment and maintenance.
3) Clean the appearance of the unit.

6.2 Monthly Periodical Checking Items

1) Check if the screws loosen.
2) Clean indoor air conditioner box or filter of cool air blower.
3) Check if the joint of the pipelines leaks.
4) Check the wire to see if there is any damage, the connection is firm and whether contact points are burnt.
5) Check the compressor oil level (notice there is no-oil-indicating window).
6) Check the cooling water system to see if it is air proof. If there is air, please exhaust it.
7) Check the cooling medium pressure.
8) Clean the dirt of the condenser.
9) Check the inflated tank to see if the supplementary feed water is normal.

6.3 Yearly Periodical Checking Items

1) Check according to yearly check items.
2) Check the insulation resistance of the compressor to see if it is above 10MΩ.
3) Check high voltage switch and low voltage switch to see if there the trip-off values are normal.

6.4 Maintenance Schedule

6.4.1 About the Machine

Model _____ SN _____ Manufacture date _____

Voltage_____Φ_____V Frequency _____ Hz Power _____ kW

6.4.2 Installation & Inspection

☐Check if the pipe are connected correctly.

☐Check if the pipe has any leakage.

☐Check if the sealed joint has any crack.

Electrical component installation

☐Voltage: _____ V _____ Hz

☐Fuse melting current: 1 Phase _____A 3 Phase _____A

☐Power phase sequence check

6.4.3 Daily Checking

☐Check the function of switches.

☐Check all wires of the machine.

☐Check whether pressure gauges are accurate.

☐Check whether compressor temperature is normal.

☐Check whether cooling water circulation is normal.

6.4.4 Weekly Check

☐Check if the joint point is loose.

☐Check chiller's protective alarming function.

☐Check whether set point of high-low pressure switch is normal.

6.4.5 Monthly Check

☐Check the circulated pipe to seeif there is any leakage.

☐Check whether there are bubbles in liquid indicator.

☐Check whether there is abnormal sound in pump.

☐Check whether there is scale formation in tank.

6.4.6 Trimonthly Checking

☐Check whether condenser is under blockage.

6.4.7 Check Half-yearly

☐Check and clean filter and expansion valve.

☐Check the whole machine condition.

☐Clean condenser.

6.4.8 Yearly Checking

☐Check whether the contactor is normal.

6.4.9 3 year Checking

☐PC board replacement.

☐No fuse breaker replacement.