SICC-A-R2

CFC-free Refrigerant Air-cooled

Central Water Chiller

Date: Nov, 2017

Version: Ver.B (English)

SHINI

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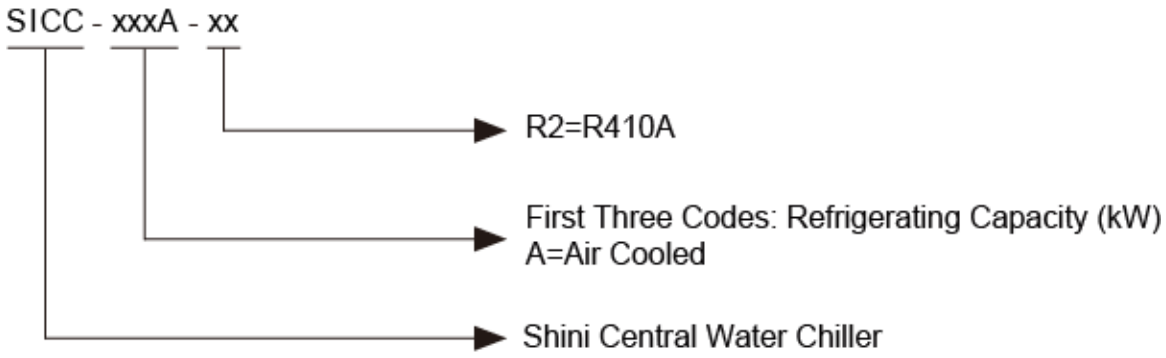
1. General Description

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 molding cycle. They can also be used for equipment cooling in order to maintain a normal temperature as well as other industrial cooling.

Model: 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.
- 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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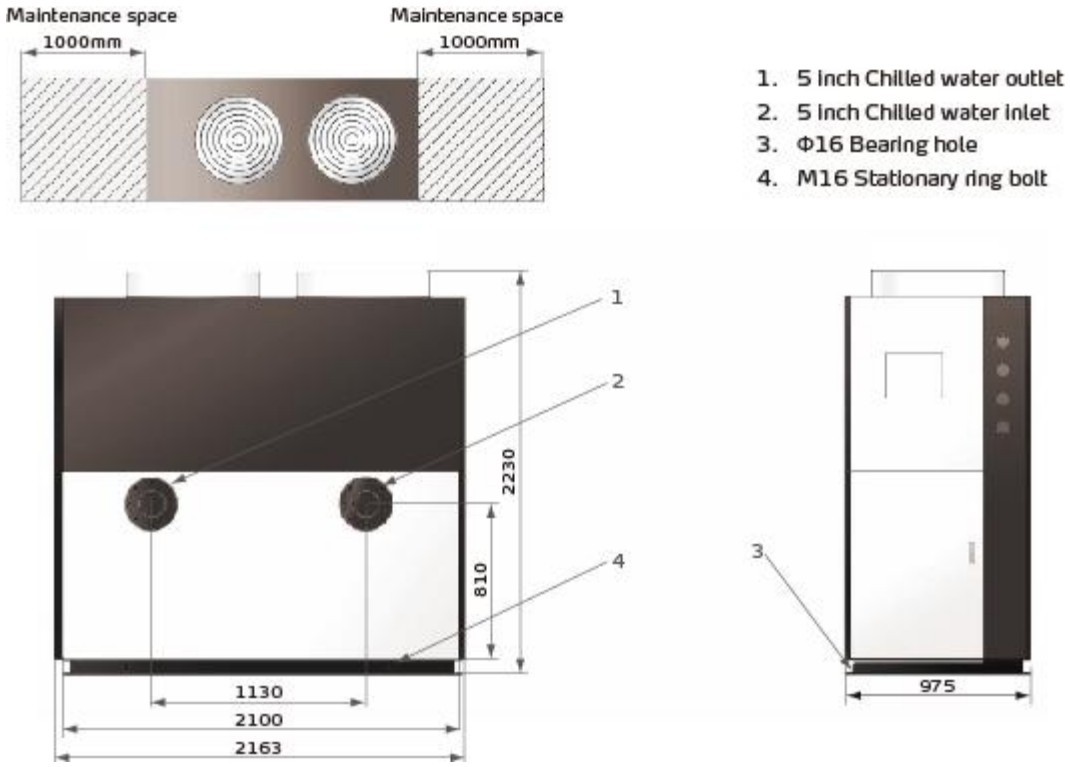
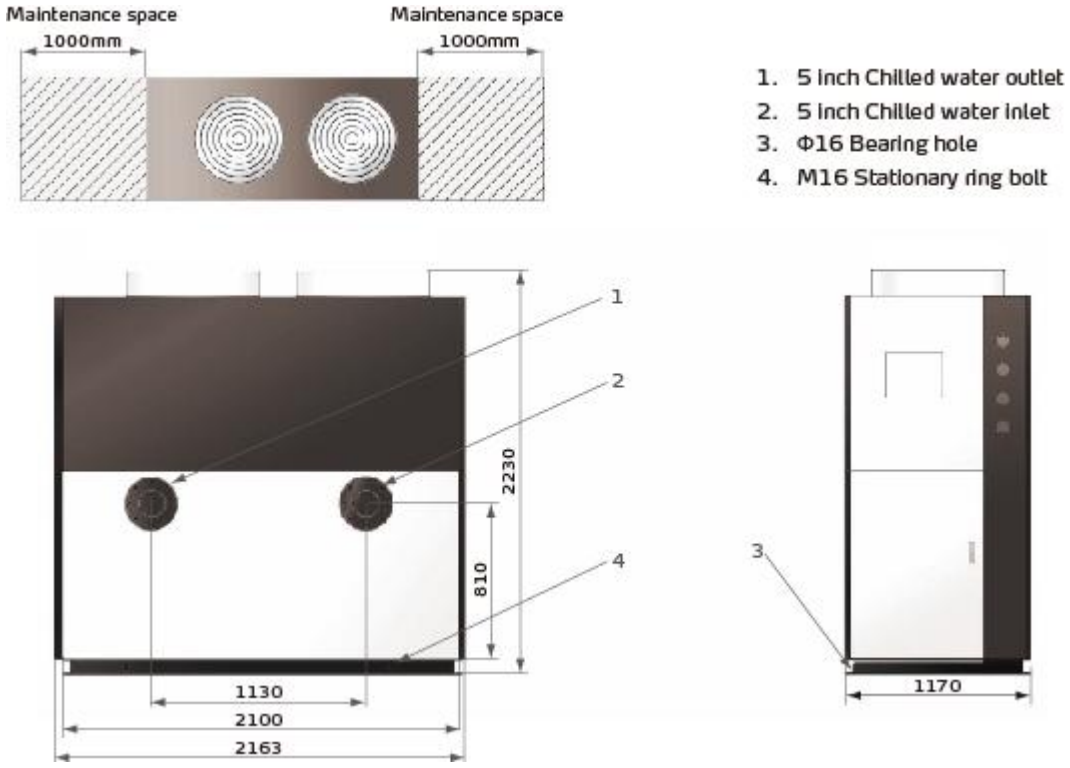
1.3 Technical Specifications

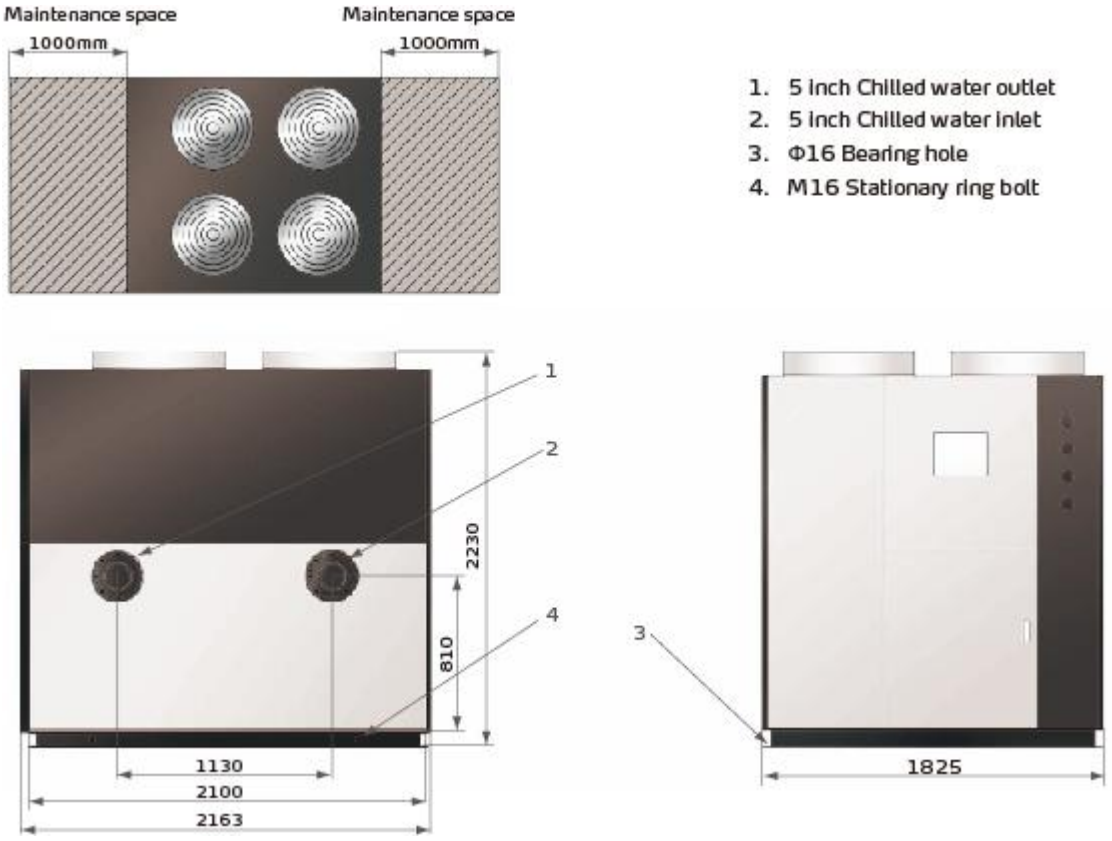
1.3.1 SICC-A-R2 Series Outline Dimensions



Picture 1-1: Outline Dimensions (SICC-60A-R2)

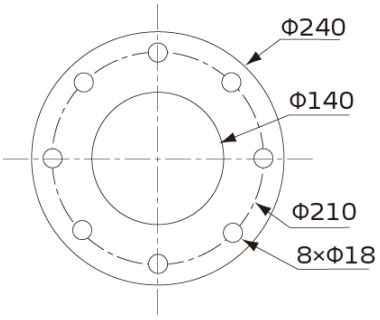


Picture 1-2: Outline Dimensions (SICC-90A-R2)



Picture 1-3: Outline Dimensions (SICC-120A-R2)

1.3.2 Flange

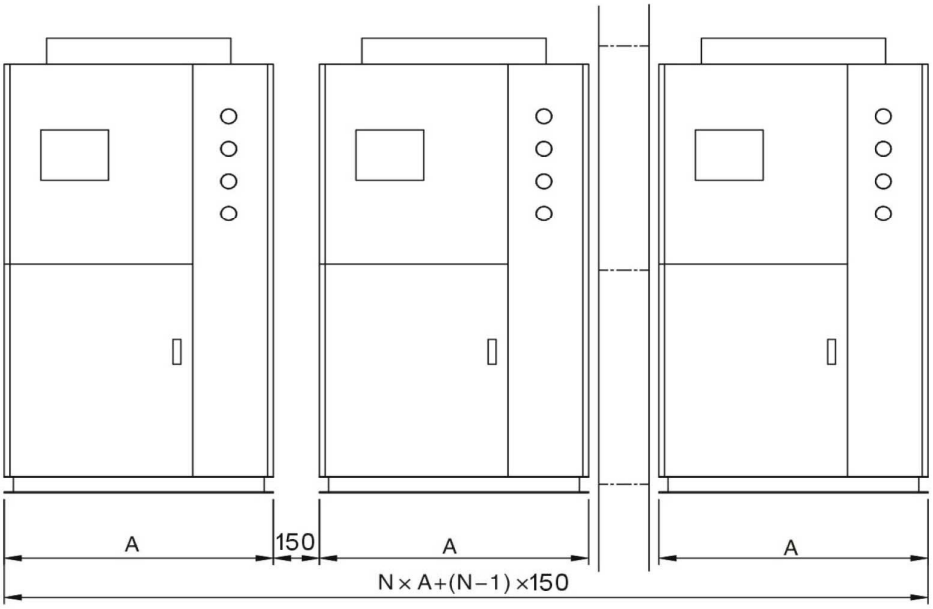


1.3.3 The Illustrative Drawing of SICC-A-R2 Modules Grouping

The illustrative drawing of SICC-A-R2 modules grouping

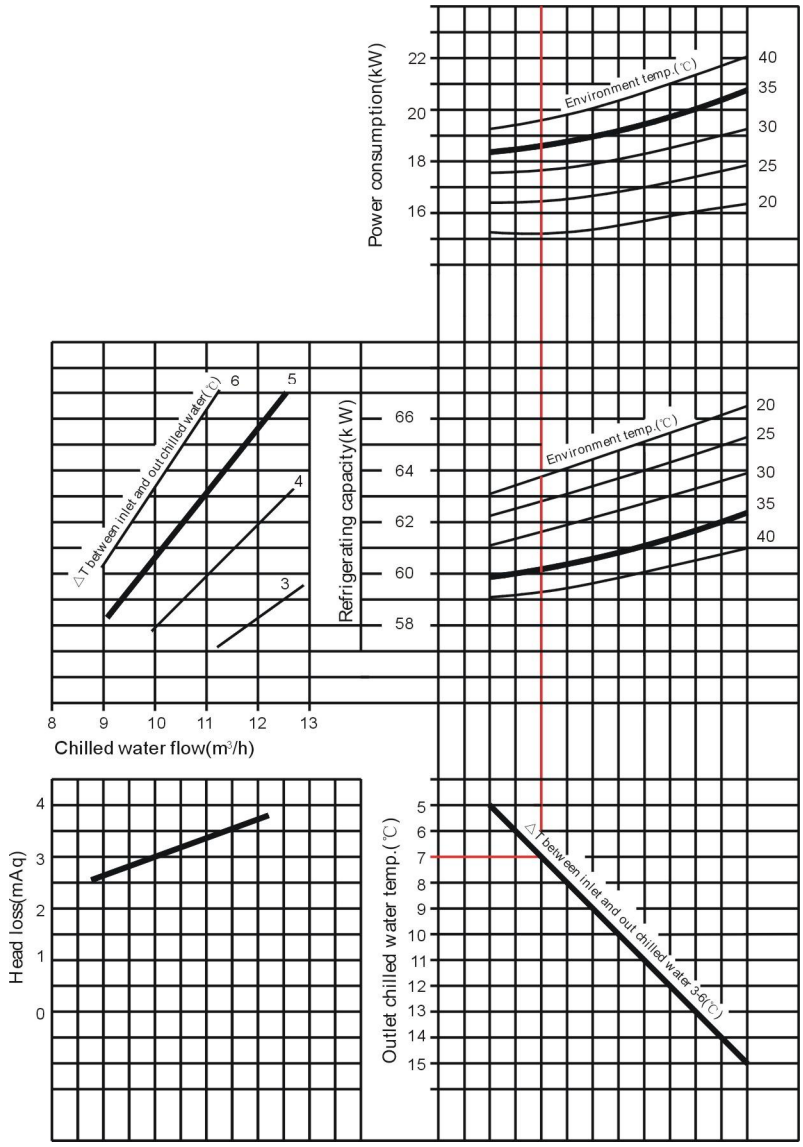
Unitage: mm

Type	Model	Unit size(A)	Combination size
Module machine	SICC-60A-R2	975	N × A+(N-1) × 150
	SICC-90A-R2	1170	
	SICC-120A-R2	1825	

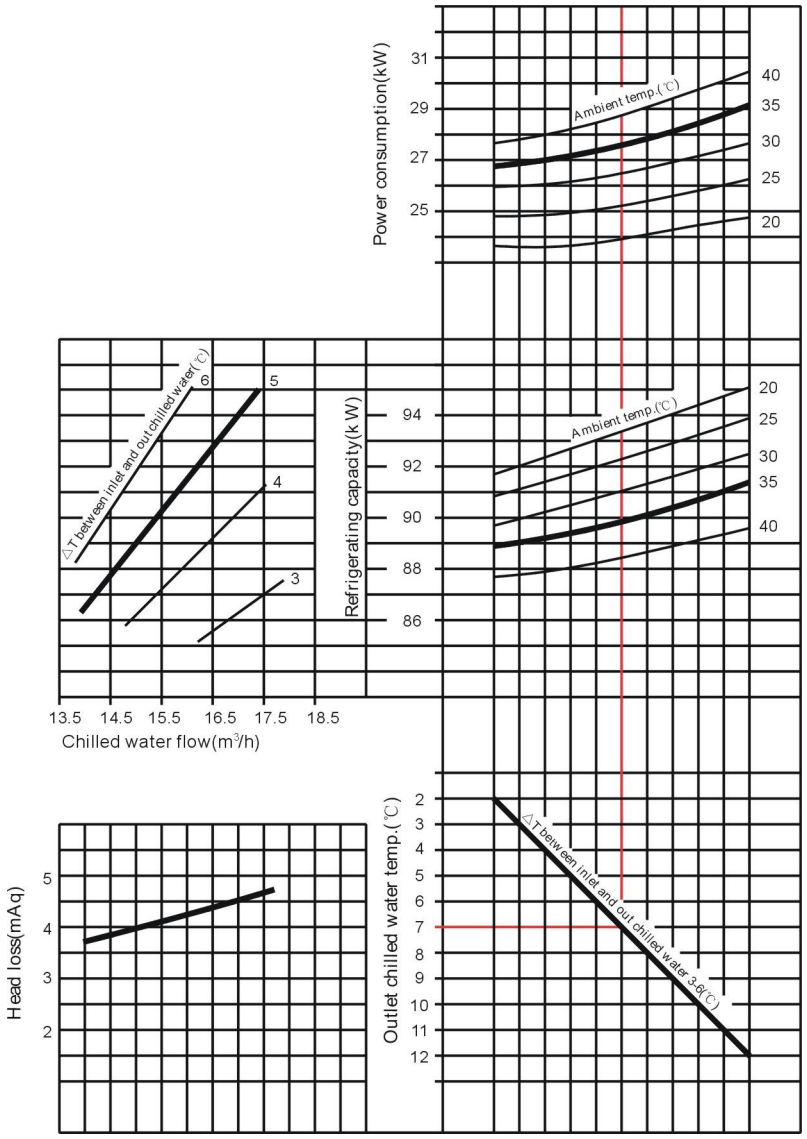


Note: The space of module unit installation should be 150 mm. For air ventilation and effect cooling. Refer to figure guidance.

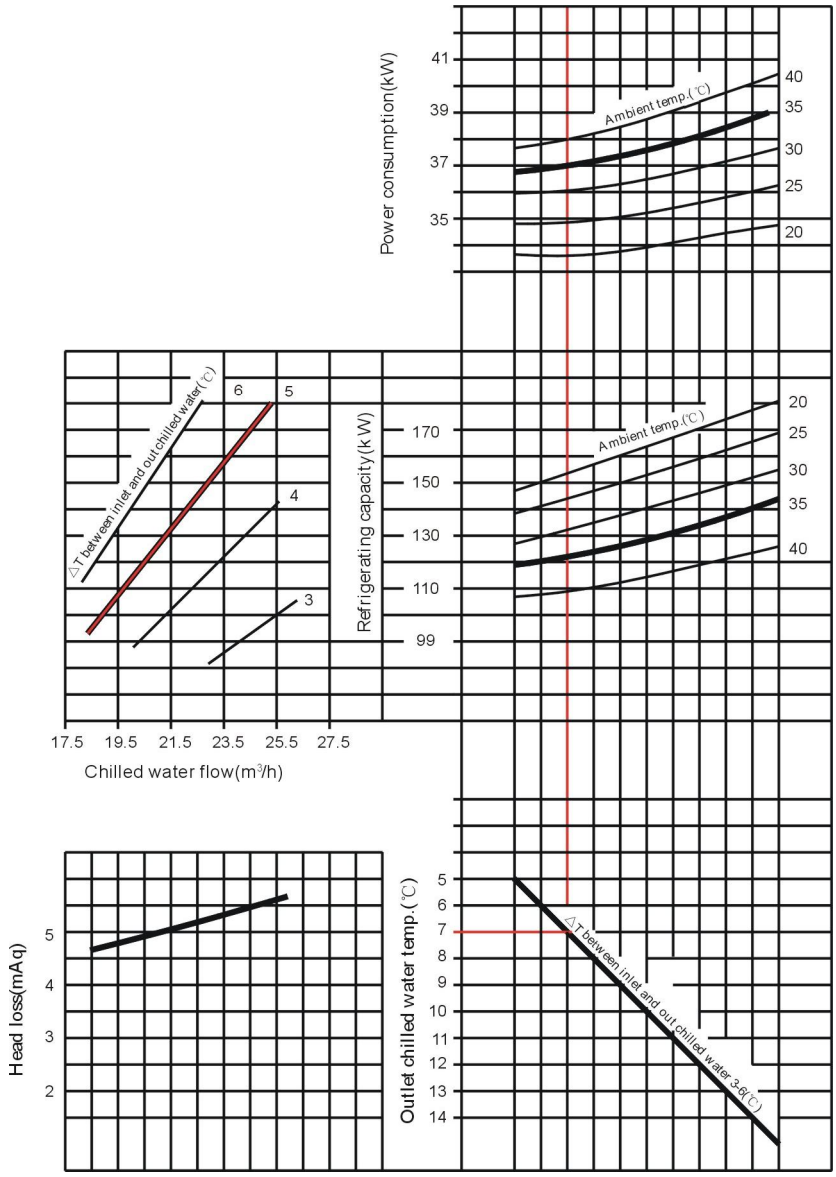
Picture 1-4: The Illustrative Drawing of SICC-A-R2 Modules Grouping



Picture 1-5: SICC-60A-R2 Refrigerating Performance Curves



Picture 1-6: SICC-90A-R2 Refrigerating Performance Curves



Picture 1-7: SICC-120A-R2 Refrigerating Performance Curves

1.3.4 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	2,163	2,163	2,163
	Width	mm	9,75	1,170	1,825
	Highly	mm	2,230	2,230	2,230
Weight	Befor packing Packing	kg	810	940	1,300
	After packed	kg	850	1,000	1,370
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 m3 / 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!

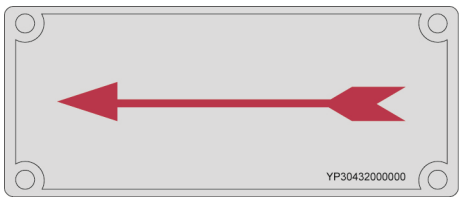
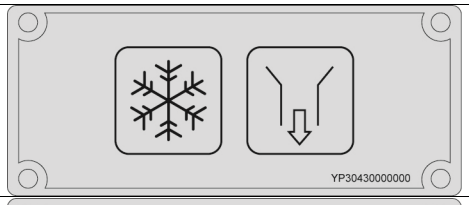
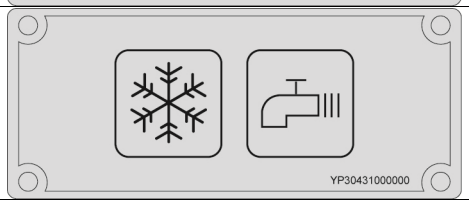
Be careful!

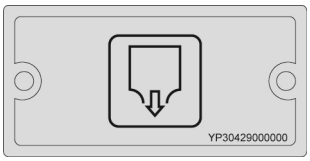
This symbol should take more careful hereby!

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

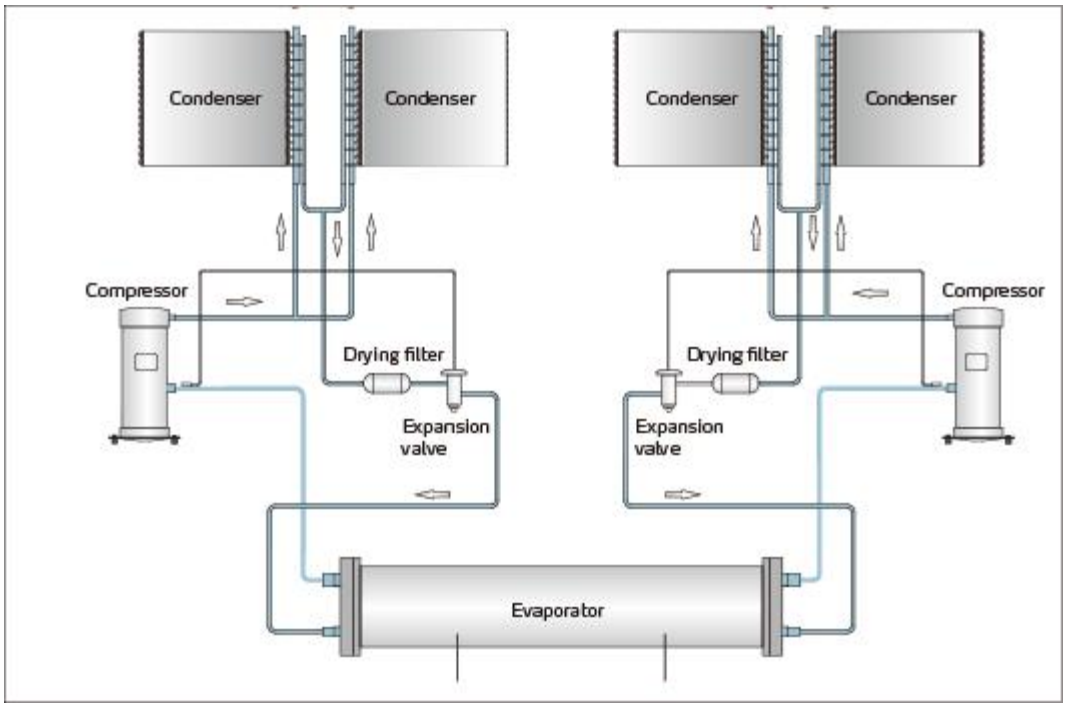
The following statements clarified the responsibilities and regulations born by any buyer or user who purchases products and accessories from Shini (including employees and agents).

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

2.1.1 Working Principle

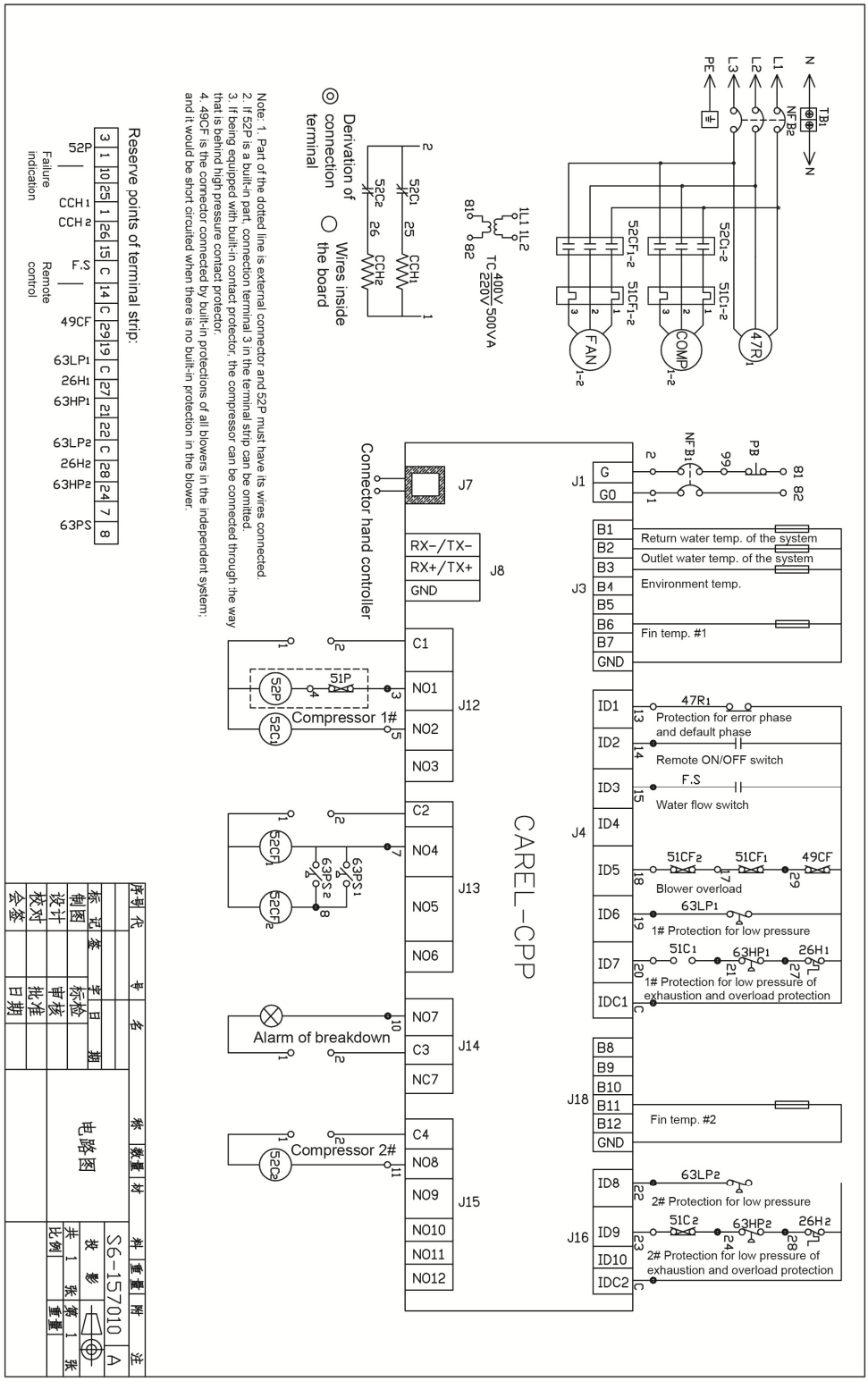


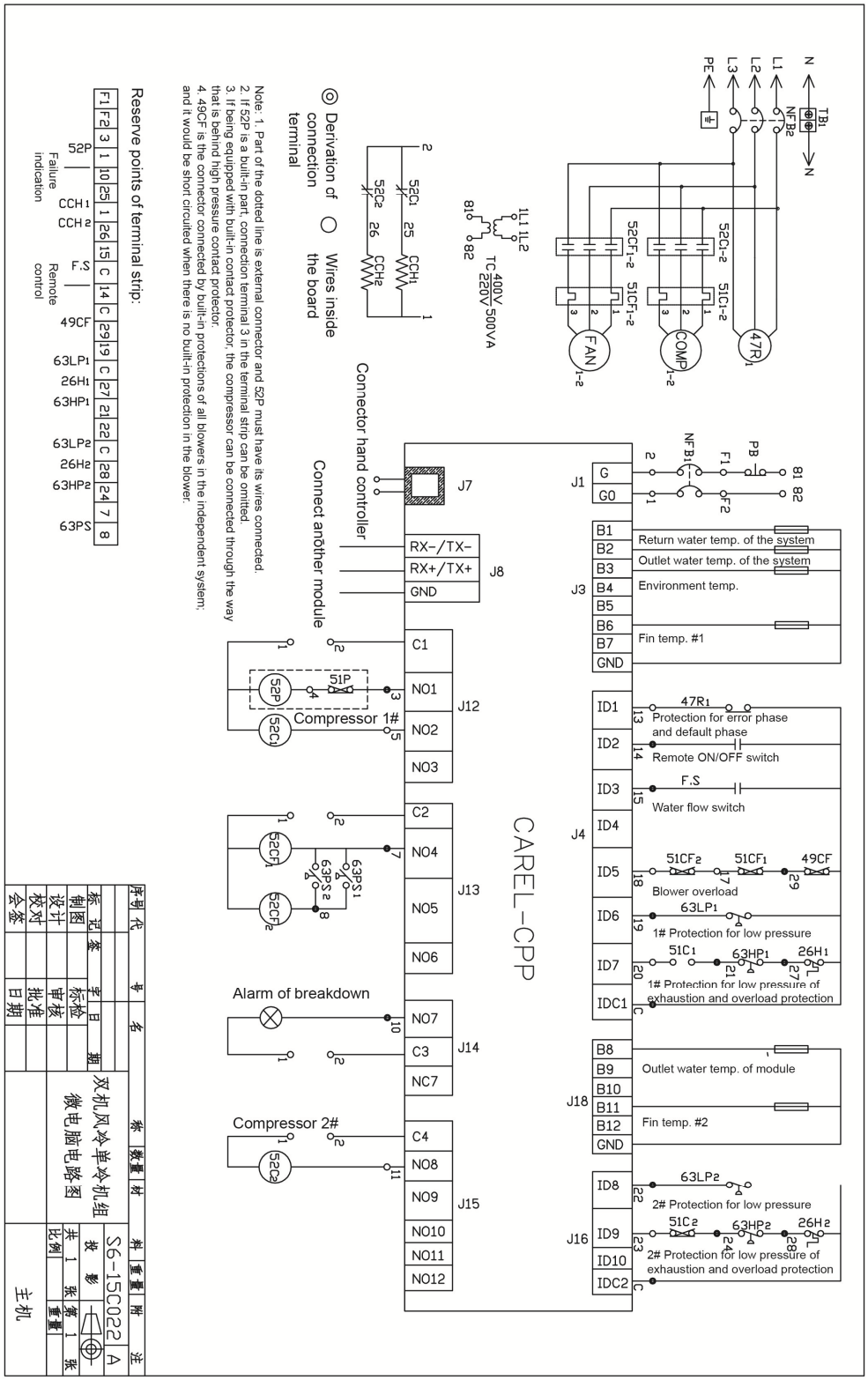
Picture 2-1: Working Principle

2.1.2 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.

2.2 Electrical Diagram




N
L1
L2
L3
PE
TB1
NFB2
52C1-2
51C1-2
52CF1-2
51CF1-2
FAN 1-2
COMP 1-2
47R1
1L1 1L2
81 82
TC 400V 220V 500VA
52C1 25 CCH1
52C2 26 CCH2
Derivation of connection terminal
Wires inside the board
Connector hand controller
Connect another module
J7
RX-/TX-
RX+/TX+
GND
J8
C1
NO1
NO2
NO3
J12
Compressor 1#
52P
51P
52C1
C2
NO4
NO5
NO6
J13
52CF1
63PS1
63PS2
52C2
Alarm of breakdown
NO7
C3
NC7
J14
Compressor 2#
C4
NO8
NO9
NO10
NO11
NO12
J15
CAREL-CPP
J1
G
G0
NFB1
F1
F2
PB
81 82
J3
B1 Return water temp. of the system
B2 Outlet water temp. of the system
B3
B4 Environment temp.
B5
B6
B7 Fin temp. #1
GND
J4
ID1 47R1 Protection for error phase and default phase
ID2 Remote ON/OFF switch
ID3 F.S Water flow switch
ID4
ID5 51CF2 51CF1 49CF Blower overload
ID6 63LP1 1# Protection for low pressure
ID7 51C1 63HP1 26H1 1# Protection for low pressure of exhaustion and overload protection
IDC1
J18
B8
B9 Outlet water temp. of module
B10
B11
B12 Fin temp. #2
GND
J16
ID8 63LP2 2# Protection for low pressure
ID9 51C2 63HP2 26H2 2# Protection for low pressure of exhaustion and overload protection
ID10
IDC2
Note: 1. Part of the dotted line is external connector and 52P must have its wires connected.
2. If 52P is a built-in part, connection terminal 3 in the terminal strip can be omitted.
3. If being equipped with built-in contact protector, the compressor can be connected through the way that is behind high pressure contact protector.
4. 49CF is the connector connected by built-in protections of all blowers in the independent system; and it would be short circuited when there is no built-in protection in the blower.
Reserve points of terminal strip:
F1 F2 3 1 10 25 1 26 15 C 14 C 29 19 C 27 21 22 C 28 24 7 8
52P CCH1 CCH2 F.S 49CF 63LP1 26H1 63HP1 63LP2 26H2 63HP2 63PS
Failure indication
Remote control
序号 代号 名称 数量 材料 重量 附注
设计 校对 审核 批准 日期
标记 处数 分区 更改文件号 签名 年月日
双机风冷单冷机组
微电脑电路图
S6-15C022 A
比例 共 1 张 第 1 张
主机

3. Installation and Debugging

Attention !

Please read this chapter carefully before installation, and you must install the machine according to the following procedures!

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: ±10%
   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 loop system must be configured with self-discharging valve, the lowest with drain valve.
10) Install filter in the cooling water recycing loop due to bad water quality in the water source and wash the filter at certain times.

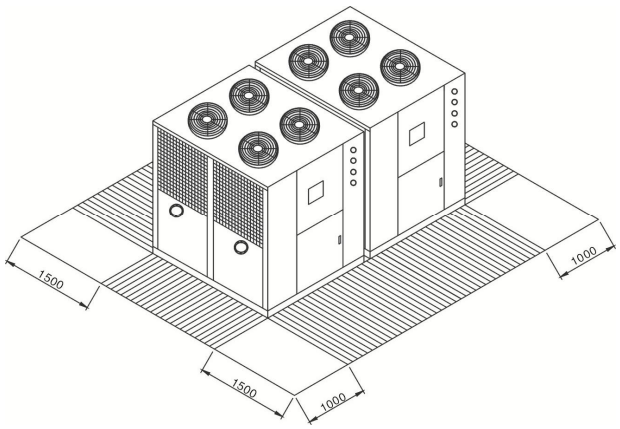
11) Test if the pipeline leaks after installation. Wrap insulating layer onto the cooling water recycling pipe to aviod loss of refrigeration capacity and pipeline leakage.

Attention !

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.

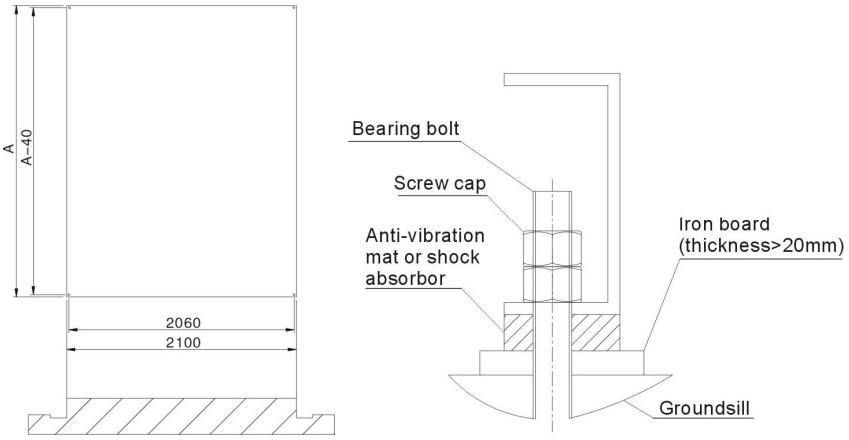


Length unit: mm

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

Attention !

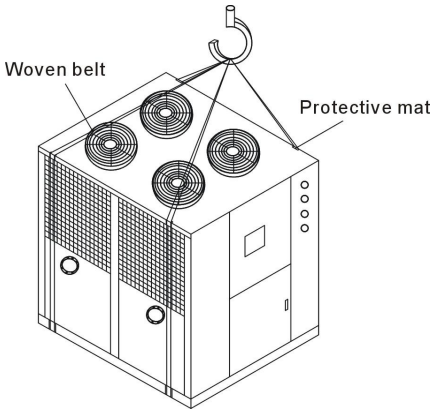
1) Photo 3-2 the platform size is for module unit, pay special attention to the real location and size of installation holes.
2) When adopts photo 3-3 showed fixation way, keep bearing bolt holes for platform and its absorber as photo 3-2 showed installation hole location.

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.

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.

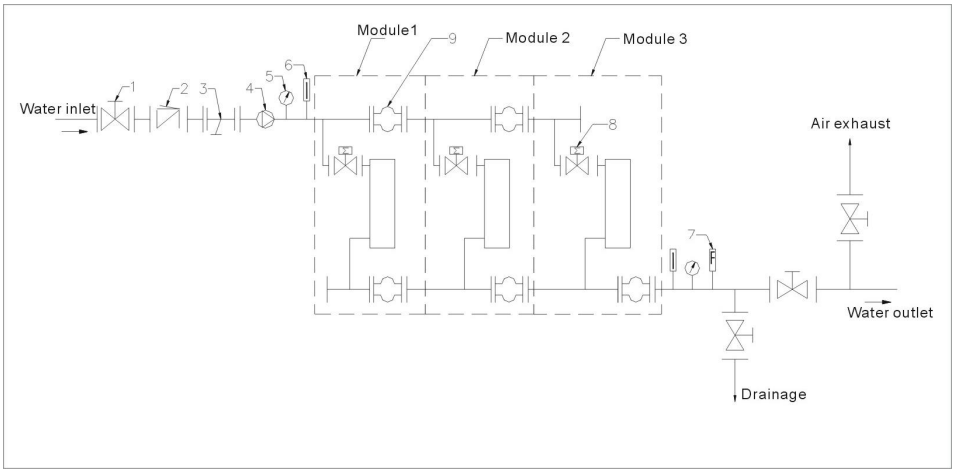
2) According to safety command, when hanging and transporting units, assign special person to direct and there must be warning and precaution measures to ensure safety of people and machines.
3) Consider the weight of the unit. Take woven belt as hanging device and add bearing articles to avoid damage 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 Water System Tubing

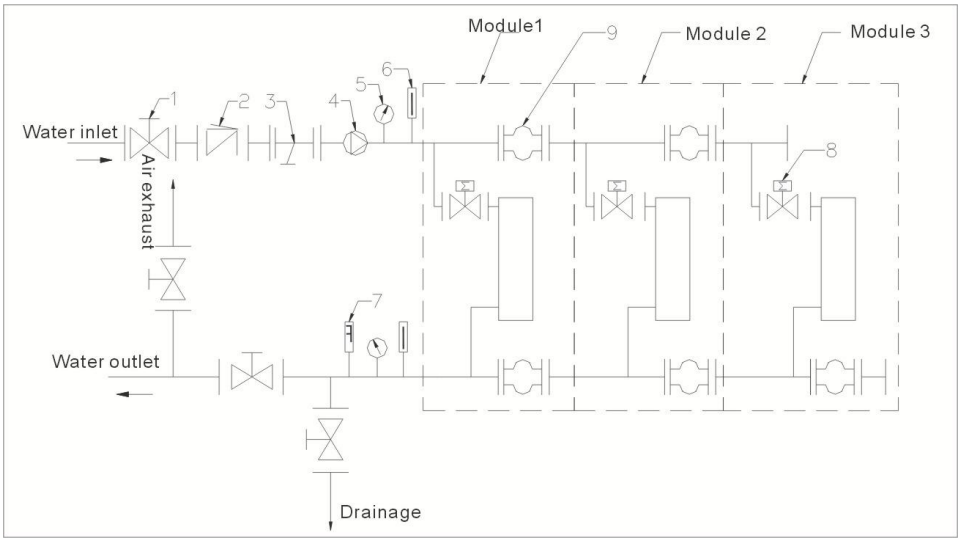
1) The inlet /outlet pipes and valves of the unit should have itselves insulated. The outside parts should have protective veil to prevent the thermo lost and dewfall happen and this brings no impact on building structure and anti-freezing when it is in winter.
2) To ensure that there is enough water 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 3-4: Same Direction Way 1



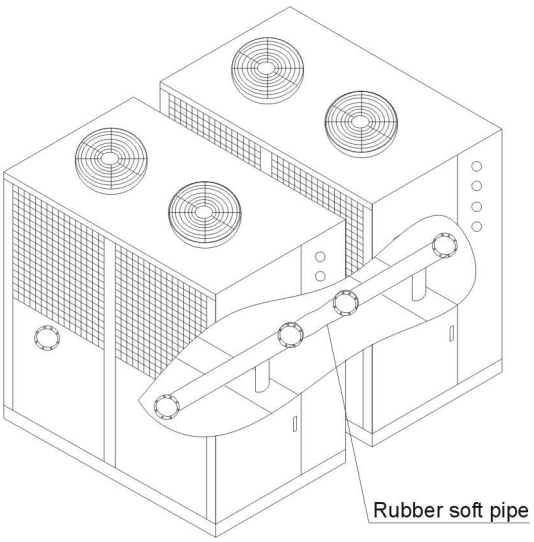
Names of Parts:

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 3-5: Same Direction Way 2

3.6 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.



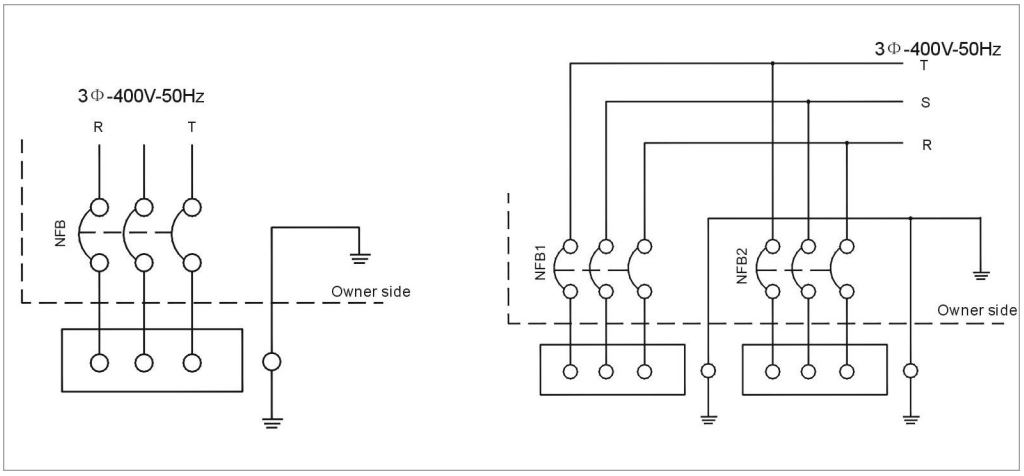
Picture 3-6: Combined Installation of Modules

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±10% 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.



Picture 3-7: Essentials for Electric Wiring

Attention!

Ensure the power switch's shut-off condition befor being connected to power wire.

4. Operation Guide

4.1 Introduction of Operation Menu

Picture 4-1: Operation Menu

Table 4-1: Instruction of Keys

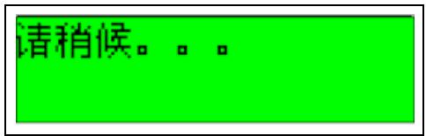
Keys	Function
-Alarm	Display the alarm list of operations or manual resetting of faults
Prg	Enter the main menu tree
Esc	Return to the last screen
-Up	Turn the list up or increase the value on the displayer
-Down	Turn the list down or decrease the value on the displayer
-Enter	Enter the selected sub-menu, or confirm the set value

4.2 Interface Operation

4.2.1 Initial Interface

"Initial interface" first appears after the controller is electrified for 40 seconds. If the preheat time of oil has been set, countdown of oil heating would also be shown.

Interface display: If the preheat time of oil has not been set, the interface would automatically skip to "main interface" after 20 seconds.



Interface display: the preheat time of oil has been set, and the interface would automatically skip to "main interface" after oil heating.

4.2.2 Main Interface

Display the inlet/outlet water temp of the system

Display the "on" and "off" state of the unit

Display the operation state of the unit: refrigeration/ heating

Display the "on" and "off" state of water pump, compressor and blower

4.2.3 Interface of "on" and "off"

There are three kinds of startup and shutdown of the unit: keyboard startup and shutdown, timed startup and shutdown as well as startup and shutdown with remote- control digital value.

The unit can be activated when it meets the following conditions:

1) The input function of remote-control digital value has not been activated, or the digital value is in "on" state when the function is running.
2) Timing switch is not activated or the current time is in the period of "on".

3) There is no severe alarm.

4) The unit has been activated by keyboard.

5) The main machine unit has been activated (this function only works in the subordinate machine).

Note: If any of the above conditions is not met, the unit will be shut down and its state will show the cause. The priority of keyboard startup and shutdown is higher than that of other models, so the system state will first show the keyboard shutdown when there are several causes resulting in the system shutdown.

1. Interface of Keyboard Startup and Shutdown

Under the main interface, you can enter the “keyboard startup interface” after pressing the key of↵. And keyboard startup can be achieved after ↵ is pressed again, under the condition that the unit is in “off” state and both timed and remote-control startup as well as shutdown are not activated.

This is the “keyboard startup interface”. When neither timed startup and shutdown nor remote-control one is not activated, the key of ↵ can be pressed to turn on the machine. At that time, the keyboard of the unit is in “on” state.

When the unit is in “on” state, press the key of "ENTER" under the main menu, and then “keyboard shutdown interface” appears. Under this interface, the key of "ENTER" can be pressed to turn the keyboard off.

This is the “keyboard shutdown interface”, in which the key of "ENTER" is pressed to turn the keyboard off.

Keyboard startup and shutdown consists of two ways: startup and shutdown of the whole network and that of subordinate machine.

1) Startup and shutdown of whole network: when the unit gains access to the Internet, the whole network unit is managed by the main machine. Once the main machine is turned on, all subordinate machines will be forced to start. And when the main machine is in “off” state, all subordinate machines will be turned off.

2) Startup and shutdown of subordinate machine: provided that the unit has access to the Internet, the subordinate machine can be turned on and off only when the main machine is in “on” state.

Note: when “U: 01” is displayed on the upper right corner of “interface of keyboard startup and shutdown” and data setter shows the state of main machine, keyboard startup and shutdown means the startup and shutdown of whole network. When any value from “U: 02” to “U: 16” is displayed and data setter shows the state of subordinate machine, keyboard startup and shutdown refers to the startup and shutdown of subordinate machine.

2. Interface of Timed Startup and Shutdown

Users can set different periods of time to turn on and turn off the unit in a day or a week. Timed startup and shutdown consists of 4 time zones, which expand from F1 to F4. The interface setting is illustrated in detail in the menu interface instruction [B04] and [B05].

F1: F1 is divided into two zones, in which timed startup and shutdown can be set.

F2: F2 has only one zone, where timed startup and shutdown can be set.

F3: always “on” F4: always “off”

l above:

Take “F2” for example, the switch unit of a day is presented above:

In a week, one can choose any one from F1 to F4 when setting timed startup and shutdown, and the interface setting is illustrated in detail in the menu interface instruction [B06].

Provided the settings are: F1 8:00-12:00 and 14:00-17:00; F2 8:00-17:00, and the followings are set in the interface [B06]: F1 for Monday, F2 Tuesday, F3 Wednesday and F4 Thursday.

Thus, on Monday, the unit is “on” in the periods of 8:00-12:00 and 14:00-17:00, and is “off” in the rest of time. On Tuesday, the unit is “on” in 8:00-17:00 and “off” in the rest of time. Besides, the unit is always open on Wednesday and always closed on Thursday.

Note: timed startup and shutdown only works when keyboard is in the state of “on” and long-distance startup and shutdown is not used.

3. Interface of Startup and Shutdown with Remote- control Digital Value.
Users can turn on and turn off the unit remotely with “on” and “off” signals of digital value, and the interface setting is illustrated in detail in the menu interface instruction [B07].

Note: long-distance startup and shutdown only works when keyboard is in the state of “on” and timed startup and shutdown is not adopted.

4.2.4 Current Fault Checking and Resetting

When there is something wrong with the unit, 🔔 will light up, and if you press this key, you can enter the “interface of fault checking”.
Display the unit code that has fault
Display the cause of fault

When the external alarm signal of current fault becomes free, the key of 🔔 under the “interface of fault checking” can be pressed to give a reset alarm, and then the unit will start again and the screen will automatically skip to the “main interface”.
If there are many faults, keys of ↑ and ↓ can be pressed to check other alarms of them.

Note: under the “interface of fault checking”, can only be pressed to reset the fault of current selected unit. If you want to reset the fault of other units, you must firstly switch to the target unit and then repeat the operation.

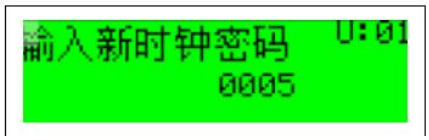
4.2.5 Password Input and Change

Enter the interface of password input, and the cursor blinks after ↵ is pressed. At that time, keys of ↑ and ↓ can be pressed to change the value. When you are sure the displayed number is correct, press the key of↵. If the password is correct, the interface would automatically skip to the next one; if the password is not the right one, you would be prompted to input the password again.

Password error:

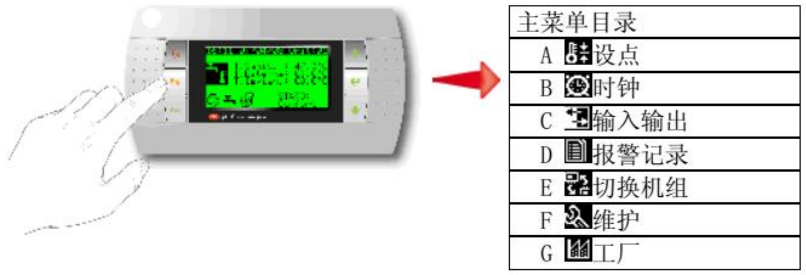
Enter the interface of password input, and the cursor blinks after ↵ is pressed. At that time, keys of ↑ and ↓ can be pressed to change the value. When you are sure the displayed number is correct, press the key of↵, and the password can be changed.

Change the value into 5 after pressing the key of ↵, and press this key again to affirm the current clock password.



4.3 Instruction of Menu Interface

Press “Prg” in any interface of function tree to enter the main menu.



In the main menu, press the keys of ↑ and ↓ to select a submenu of the first stage with cursor, and then press ↵ to enter this submenu, in which ↑ and ↓ are pressed to page up and down. If there is also a second submenu, the previous step can be repeated to enter this submenu. The followings are the detailed interface instruction of all submenus:

4.3.1 Menu Instruction of "A Setting"

In the "main menu", select the "A set point" with cursor and then enter its submenu by pressing↵. Keys of↑ and ↓ can be pressed to page up and down in this submenu.

	Description of Displayer	Default	Unit	Description of Function
A01	Current set point	12	℃	Display the target temp of control, and select the set point according to winter/summer and water outlet/inlet
A02	Set point of controlled water inlet in summer	12	℃	Alter the target temp of water inlet control in summer, and the temp is only displayed when water inlet is controlled
	Set point of controlled water inlet in winter	40	℃	Alter the target temp of water inlet control in winter, and the temp is only displayed when water inlet is controlled
A02	Set point of controlled water outlet in summer	7	℃	Alter the target temp of water outlet control in summer, and the temp is only displayed when water outlet is controlled.
	Set point of controlled water outlet in winter	45	℃	Alter the target temp of water outlet control in winter, and the temp is only displayed when water outlet is controlled.
A03	Control return difference	2	℃	Alter the control range, i.e. control the deviation value of target temp
A04	Water inlet resetting in summer	10	℃	Only when water outlet temp is in loading zone and water inlet temp is higher than the reset temp can the compressor be turned up. The temp is only displayed when water outlet is controlled.
	Water inlet resetting in winter	42	℃	Only when water outlet temp is in loading zone and water inlet temp is lower than the reset temp can the compressor be turned up. The temp is only displayed when water outlet is controlled.

4.3.2 Menu Instruction of “B Clock”

In the “main menu”, select “B clock” with the cursor, and then press ↵ to enter the submenu of “input and output”, where keys of ↑ and ↓ can be pressed to page up and down.

Interface Index	Description of Displayer	Default	Unit	Description of Function
B01	Clock	-	-	Alter the current time
B02	Input the password of clock	0	-	Enter after inputting the correct password. Factory default password: 0000.
B03	Turn on and turn off the unit at fixed time	Yes	-	If “Yes”, startup and shutdown of the unit will be in accordance with the time.
	Change the set point at fixed time	No	-	It can’t be set
B04	F1 fixed opening time 1	0	-	The unit will be open in these two periods of time, and be closed in the rest of time.
	F1 fixed ending time 1	0	-	
	F1 fixed opening time 2	0	-	
	F1 fixed ending time 2	0		
B05	F2 fixed opening time	0	-	The unit will be open in this period of time, and be closed in the rest of time.
	F2 fixed ending time	0	-	
	F3 always on	0	-	The unit will be open within a day.
	F4 always off	0	-	The unit will be closed within a day.
B06	Weekly fixed time setting	F1	-	Set the way of timed startup and shutdown in a week, with F1-F4 all being available.
B07	Long-distance control	No	-	If “Yes”, startup and shutdown of the unit will be in accordance with the long-distance digital value
B08	Input a new alarm password	0	-	Press the key of ↵ after inputting the new password, so the clock password can be changed.

4.3.3 Menu Instruction of “C input and output”

In the “main menu”, select “C input and output” with the cursor, and then press ↵ to enter the submenu of “input and output”, where keys of ↑ and ↓ can be pressed to page up and down and to look up the input and output state of the current unit.

4.3.4 Menu Instruction of “D alarm record”

In the “main menu”, select “D alarm record” with the cursor, and then press ↵ to enter the submenu of “alarm record”, where keys of ↑ and ↓ can be pressed to page up and down and to look up the alarm record of the current unit.

4.3.5 Menu Instruction of “E Unit Switch”

In the “main menu”, select “E Unit Switch” with the cursor, and then press ↵

to enter the submenu of “unit switch”, where keys of ↑ and ↓ can be pressed to page up and down. Address 1: is the main machine, and address 2-16: is the subordinate one. Data setter can be shared by controller, so one displayer can be shared by 16 controllers. That is to say, datum of 16 controllers can be viewed in one displayer.

When the controller has access to the Internet, unit switch can be made, which is divided into automatic switch and manual one. Condition of automatic switch: when some controller gives an alarm, it will be automatically connected to the displayer. For example, the displayer is connected to the No.1 controller, while it will be automatically connected to the No.2 controller when the latter sounds an alarm. Condition of manual switch: enter the interface of unit switch, and change the value of switching to unit into the one of connecting to controller. Detailed instruction is given in the following table:

Interface Index	Description of Displayer	Default	Unit	Description of Function
E01	Unit address	1	-	Address of the current unit is displayed.
	Switch to the unit	1	-	The displayer switches to the address of another unit.
E02	State of units 1-8	-	-	Display the Internet connection state of module units 1-8. “Yes” means Internet is available.
E03	State of units 9-16	-	-	Display the Internet connection state of module units 9-16. “Yes” means Internet is available.

4.3.6 Menu Instruction of “F Maintenance”

In the “main menu”, select “F Maintenance” with cursor and then press ↵ to enter the submenu of “maintenance”, where there is a submenu of the second stage. Press the keys of ↑ and ↓, select the submenu of the second stage, and then enter it by pressing the keys again. Here is a detailed instruction of all submenus:

Interface Index	Description of Displayer	Default	Unit	Description of Function
Fa Language switch				
Fa01	Current language	Chinese	-	Press “Enter” to switch between Chinese and English.
Fa02	Forbidden language when startup	Yes	-	The interface of language switch doesn’t appear when startup.
	Countdown	20	Second	Countdown to the appearance of language switch interface.

Fb System Information				
Fb01	Version	-	-	Display the version of current program and hardware
Fc Summer/ Winter				
Fc01	State	Summer	-	Press “Enter” to switch between summer and winter
Fd Operation Time				
Fd01	Pump operation	0	-	Display the pump’s operation time in the current module unit
	Compressor 1 running	0	-	Display the running time of compressor 1 in machine unit of current module
Fd02	Compressor 2 running	0		Display the running time of compressor 2 in machine unit of current module
Fe Monitoring configuration (used for debugging of manufacturer, so users needn’t to set)				
Ff Repair setting (used for debugging of manufacturer, so users needn’t to set)				
Fg Manual operation (used for debugging of manufacturer, so users needn’t to set)				

1. Summer/Winter

Only in the state of shutdown can the refrigeration and heating operation of the unit be changed, and the change can only be made in the main engine. We can choose refrigeration or heating by the input signal of remote-control digital value and keyboard (1= the top priority)

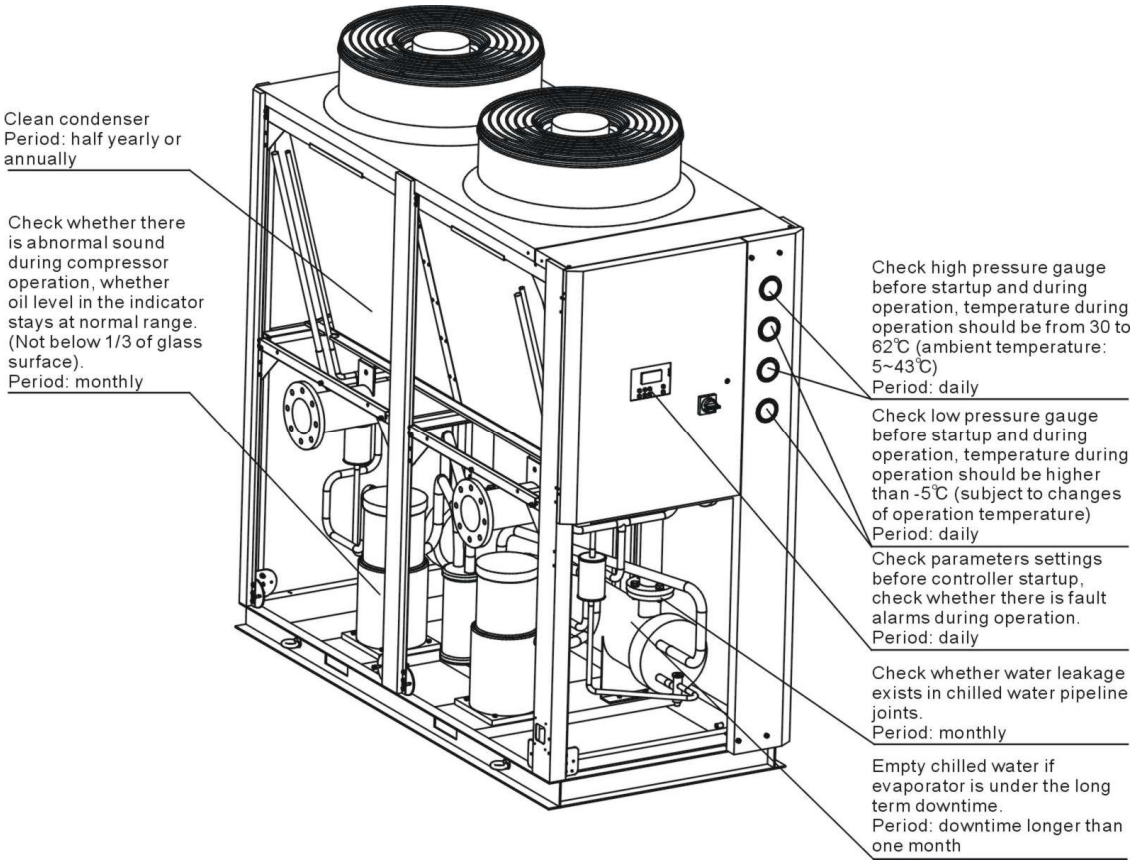
1) Switch between refrigeration and heating: remote control is activated, and the model is chosen through the input signal of digital value.

2) Keyboard switch: choose either refrigeration or heating by the menu maintenance parameter, which is presented in the interface [FC01] in detail. No matter which model is chosen, it takes effect only in the state of shutdown.

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 Inlet/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. (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.