

High Efficiency And Energy Saving Series

- - - Full Inverter Air-Cooled Chiller Unit



The Withair System

www.withair.cn

Withair offers a wide range of quality products and solutions to meet the needs of your projects



Ongoing innovation with cutting-edge products



Over 30 years of production experience



Key parts are come from international first-class brands



Guaranteed support and spare parts



Support in design



Documentation for incentives



Five-year guarantee



Free training course

The Withair System

Withair is the premium manufacturer in sustainable energy solutions supplying HVACR products & services for heating, cooling, hot water, indoor air quality, industrial refrigeration, and heat recovery that reflect today's demand for sustainable construction, comfortable indoor climate and industrial cooling & heating process application.

Withair specialises in innovative custom highly-configurable products designed to meet the your needs. We insure products are designed for long life by using highest quality materials, for all controls, safety, and components we only use top world-wide recognized brands. All products are rigorously tested before leaving us, going through many stages of quality control before being shipped.

Withair® has highly effective professional team to service customers

Known for their professionalism and personal integrity, Withair's highly skilled engineers, technicians, electricians, stable manufacturing workers, strict quality controller, and quick-reaction & professional after-service staff utilize their multi-disciplinary expertise in the creation and production of every solution.

Close cooperation among Withair's design, production and service teams - who are located under one roof and linked by advanced computerized systems - enables the Company to supply the widest possible range of products - from single units to very large quantities - while assuring rapid delivery and competitive pricing.



Low energy consumption systems
Use of clean energy
Use of environmentally-friendly cooling gases
ZERO direct CO2 emissions in the environment



The **Withair** System

你的家 你的生活

Your home, your life style!





SIMPLY THE BEST SOLUTION AND QUALITY PRODUCT

— HVACR SYSTEMS

A low-angle, upward-looking photograph of several modern skyscrapers with glass facades, set against a bright blue sky with scattered white clouds. The buildings converge towards the top center of the frame, creating a sense of height and scale.

*We've a lot of solutions
to care "Construction"*

A photograph of a modern operating room with teal walls, surgical lights, and medical equipment. A semi-transparent teal banner is overlaid at the bottom.

*We've a lot of solutions
to care "Hospitals"*



*We've a lot of solutions
to care "Industries"*

A green circular graphic containing text, overlaid on a background of industrial HVAC ductwork.

The Withair System

*Cooling
Heating
Fresh air
Purification
Humidification*

A solid green horizontal banner at the bottom of the image.

*We've a lot of solutions
for "Air Quality"*



HEAT PUMPS - CREATING A MORE COMFORTABLE & SUSTAINABLE BUILDING ENVIRONMENT

By installing a Withair heat pump, you can reduce your energy consumption costs by up to 86% compared to direct electricity. Here we are using the nature's free and renewable energy sources, such as: outdoor air, geothermal energy, solar energy, that minimises your CO2 emissions and pollution free. You can also enjoy an environmentally friendly, renewable and free energy source. The high level of efficiency means that an investment in a heat pump pays for itself quickly and gives you a secure supply of heat, cool and hot water, suitable for different climate all over the world.

Withair the W01R series heat pumps involve a range of 282 models, with heating and cooling capacity among 2.6kW and 3,200kW, which allow to create "customized" solution, matching the different installations requests.



CHILLERS - MINIMIZE YOUR OPERATING COSTS

Withair chillers were developed based on decades of knowledge and rich experience, includes air-cooled chillers and water-cooled chillers, ranging in capacities from 2 to 3,000+ tons. Withair chillers are relied upon for both comfort and special process cooling applications in every corner of the world.

Withair chiller plays a critical role in creating the right environment to ensure the health, comfort and industrial production. Withair chillers not only serve HVACR systems and industry-type process cooling at factories that deliver the right temperature for the space, but they also help minimize operating costs with superior energy efficiency levels, low sound levels and with minimal environmental impact.



AIR SIDE PRODUCTS - MAXIMIZING HVACR SYSTEM PERFORMANCE

The Withair portfolio of fan coil unit, ventilation unit and air handling unit, air cooler solutions is designed to make installations faster and easier, offers temperature and humidity control, heat recovery, deodorization, air purification, and heat treatment, and to maximize HVACR system performance. Using advanced technology, such as: EC motor, single-zone, four-pipes, these systems quietly, temperature stability, reliably and efficiently deliver the comfort your building occupants need.



Withair offers a full range of air side products and systems to meet your performance requirements. From 200CFM to the highly flexible 60,000CFM with numerous custom options, to a completely custom, energy efficient, environmentally responsible system, Withair has the optimal solution for commercial, industrial and process applications.



INNOVATIVE PRODUCTS - THE MOST EFFICIENCY SOLUTION

Withair has developed different innovative products, e.g. Fresh Air Heat Pumps, Rooftop HVAC Unit(RTU), Make Up Air Unit(MUA), 100% Outdoor Air Unit(OAU), Clean Air Conditioning, Ultra-high Temperature Heat Pump, Hybrid Heat Pump, ..., these products meet the needs of different applications for heating & cooling and indoor air quality.

Whether you want to replace an existing air conditioning or heat pump – or reduce your energy costs with a Hybrid Heating and Cooling Solution – our products could be the creative solution you’re looking for. By combining multiple types of energy into a single unit that sits outside your home, the only thing left inside is improved comfort.

Withair® devote to a variety of energy comprehensive utilization, optimize configuration of all kinds energy, complementary advantages, offer hybrid energy system integration solutions, and maximizes efficiency and energy savings.



Inverter Air Cooled Water Chiller & Heat Pump



—— Product Description ——

Withair Full inverter chiller is a very intelligent heat pump system with flexible capacity output. It could adjust heating capacity output automatically according to requirements. It is much more energy-saving with a long lifespan.

Withair® inverter multifunction air cooled heat pump & chiller provides energy-efficient room heating and cooling for residential and small commercial application. Using free renewable energy from the air, the units are highly efficient with low running costs, low carbon emission and are able to be integrated with energy systems such as solar heater and boiler.

Each unit is verified for total unit performance before shipping to insure quality standards are inherent in every unit.

Withair series of inverter air cooled chiller & heat pump is one of the leading products of Withair. It is high efficiency and energy saving product of new generation. This kind of products could be widely used for heating, cooling and hot water supply for different kinds of building, such as: hotels, shopping malls, office buildings, exhibition hall, airport, stadium and other public facilities are comfortable central air-conditioning system, and also can meet the electronics, pharmaceutical, biotechnology, textile, chemical industry, metallurgy, electric power, etc different requirements of the technology of air conditioning system.

Unit adopts modular design, relatively independent modules units can be any combination and through microcomputer for centralized control, unit according to the change of load start-stop corresponding number of module unit to adjust the supply of cold (heat) capacity, to achieve the goal of high efficiency and energy saving. Units can effectively under the climatic conditions of heating at -27°C and heat unit during normal operation the system is 3 times more than ordinary electric heater, winter climate is relatively low and no boiler or other heating conditions particularly applicable areas. With FCU, VAV and AHU and fresh air units, semi-central air conditioning system has the flexible layout, beautiful shape, saving space, convenient adjustment, low running noise, etc.

— The Key Advantages Include —

- ECO friendly refrigerant R410a, R407c.
- Flexible configurations with top or side piping and front or side control box.
- Large panels for accessibility to compressor and controls sections
- Plate type, coaxial tube-in-tube heat exchanger for high performance, reliability, and resistance to freezing.
- Multi-function: provide cooling only, cooling with hot water, heating only and heating with hot water, hot water, total heat recovery, partial heat recovery for domestic hot water heating (55°C).
- Unit choose efficient rotary or scroll compressor, the use of high efficient heat exchanger technology processing, condensation temperature greatly reduced.
- When multiple units were combined into a system, because each unit can be individually ON/OFF; wide range of system energy regulation and running costs fell by more 40%.
- Unique compressor anti-vibration technology (patent ZL 2020 2 0246589.1) and sound attenuation material ensure ultra-quiet performance.
- Advanced microcomputer automatic control system, with protection of high and low pressure, overload, low voltage, phase lack, and low temperature etc., with terminal for the external pumps, and displays and alarms malfunction.
- Running ambient range from -27°C to 50°C.
- DC inverter technology to sure heating capacity “0” loss when ambient temperature.>-15°C.
- 10~120rps inverter technology to fast higher water temp. as room load (accordingly suddenly cold weather).

—— The Key Advantages Include ——

- Multi-system design and wear-and-tear management technology reduces electric impulse and extend service life.
- Modular network function: unit control system is equipped with the network communication, the user can control operating units quantity according to the actual use load, make user side water system utilities, to realize the automatic device management automation and energy management.
- Smart microchip control and large LCD user interface, capable of one-key startup.
- Automatic intelligent reset. Unit shall automatically restart 5 minutes after shutdown if the fault has cleared. Should a fault occur 3 times sequentially, then lockout will occur.
- Humanized design, widened application scope: the unit's temperature settings for room, hot water, water intake/outlet, freeze protection, and compressor exhaust can be adjusted on-site according to environmental conditions.
- Communication adapter connection the unit to BMS(Building Management System) is an optional accessory, please get in touch with us or our distributor if required.
- Unit with multi-protection to guarantee the unit running stability and security, such as: high/low voltage, low oil level protection, exhaust temperature, antifreeze, power lack/reverse phase, water system cut off. operating condition with small change range stable operation, safe, reliable and long service life.
- Easy installation, simple water piping system configuration, you can make design partition and divide second installation.

—— **The Key Advantages Include** ——

● **Quality components selection**

Compressors and refrigeration accessories (such as dry filter, thermal expansion valve, liquid supply solenoid, liquid level mirror, high/low pressure control devices) all chosen world-renowned brand products to ensure that the unit reached an excellent level of performance. Using the most advanced DAE / DAC efficient heat transfer pipe, heat transfer surface with internal ribbed tube makes the heat transfer coefficient substantially increased; the heat exchanger unique structural design, the best way of copper tube layout and precision of refrigerant control technology, greatly improved the efficiency of heat transfer.

● **Perfect control**

- 1) Computerized control with standby manual operation system
- 2) Compressor Operation timing
- 3) Compressor automatic start-up sequence,
- 4) Alarm signals
- 5) Alarm reset
- 6) Water temperature control
- 7) Manual reset high pressure switch, Automatic reset low pressure switch

● **Equipped self-diagnosis function, and automatically eliminate software problem**

—— **The Key Advantages Include** ——

● Protections that ensure its safe and stable operation:

- 1) Reverse phase
- 2) Lack phase
- 3) High/low pressure
- 4) Gas discharge
- 5) Outlet water temperature too low (high)
- 6) Water stopped
- 7) Antifreeze
- 8) Compressor overheat etc.

● All the components covered with casing, keeps damages to cooling and electrical system away.

● Small size, light weight, easy for installation, transfer and maintenance, can be put into use just make water pipes and the power supply cable be connected at the site.

● EVI compressor as option. EVI compressor-enhanced vapor injection, Vapor-injected method can effectively improve heat capacity, prevent higher discharge temperature of compressor and guarantee operating stability of unit at low temperature).

Features

● STRUCTURE

Panels and frame are made from galvanized steel protected with polyester powder painting to ensure total resistance to atmospheric agents.

● HERMETIC SCROLL COMPRESSORS

Single phase type and 3-phase scroll type compressors, with built-in thermal overload cut-out and crankcase heater, mounted on rubber vibration dampers.

● EVAPORATOR & CONDENSER

High efficiency plate type heat exchanger, tube in tube heat exchanger, shell and tube heat exchanger, factory-insulated with flexible close cell material.

● REFRIGERANT CIRCUIT

Copper tube connection with charge valves, filter, thermostatic expansion valve, gas-liquid separator, high pressure switch and low pressure switch. The heat pump units are complete also with 4-way valve and one way valve.

● HYDRAULIC CIRCUIT

No build in water circuit as standard.

● ELECTRIC PANEL

Consists of: Compressor contactor, Compressor protection breaker, Microprocessor with function display.

● OPTIONAL PARTS

Source side water flow switch, source side water pump, & user side water flow switch, user side water pump, hot water pump

BMS (building automation system)

Expansion tank

Metallic filter for the water circuit

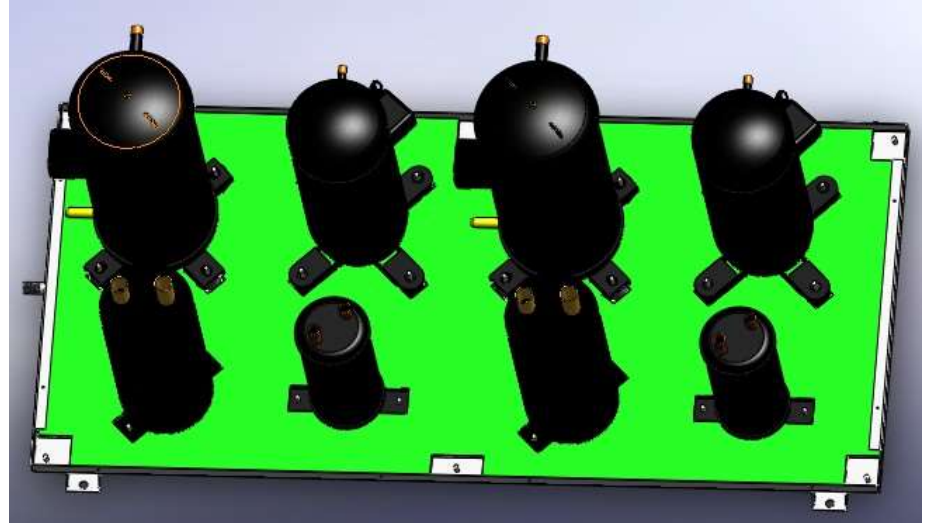
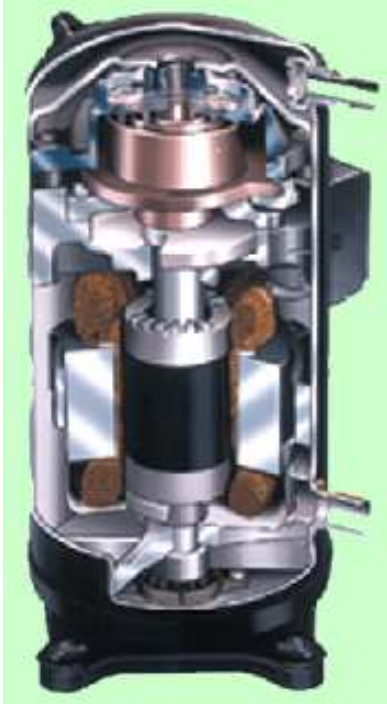
Build in water circuit

Modular type

Heat recovery for domestic hot water (55°C)

High efficiency inverter compressor

The most advanced enclosed inverter scroll compressor, high efficiency, low noise, low tremble and high coefficient.



Multi-system and Modular combination of compressors maximally reduce energy consumption

High efficiency condenser

- *High-efficiency Seamless inner groove copper tube.*
- *Mechanically expanded onto the die formed aluminum fin.*



Units adopt “V” type lateral heat exchanger and unique patent protection(Patent No. ZL 2010 2 0243062.2) technology of heat exchanger, realize high heat transfer efficiency and the whole heat exchange rate is higher than common heat exchanger by 30%.

High efficiency condenser

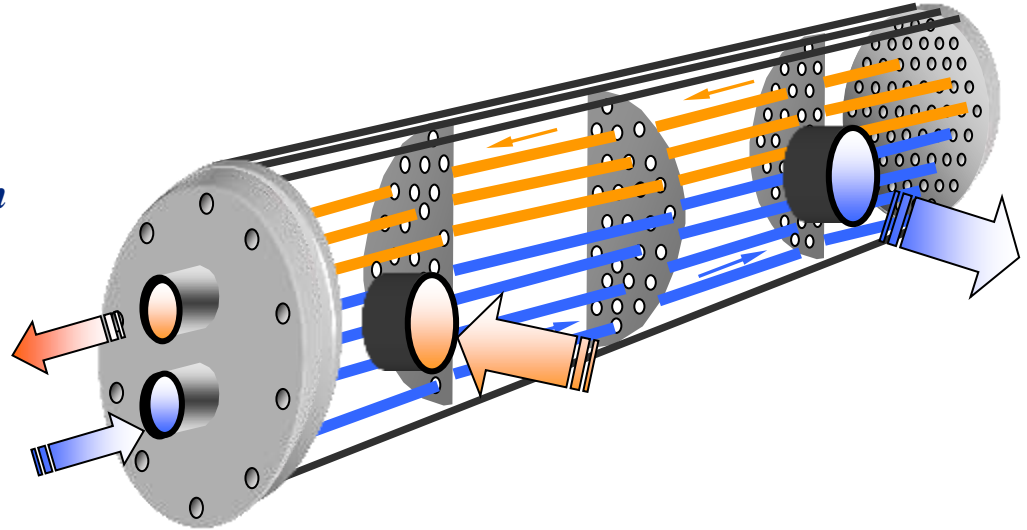


Units adopt hydrophilic and antiseptic aluminum foil, could adapt wicked weather conditions.

High Efficiency Evaporator

Water side heat-exchanger

- Shell and tube type, copper tube
- DX without any oil return problem
- Internally-finned copper tubes
- 20 mm insulation cotton



Fan Motor

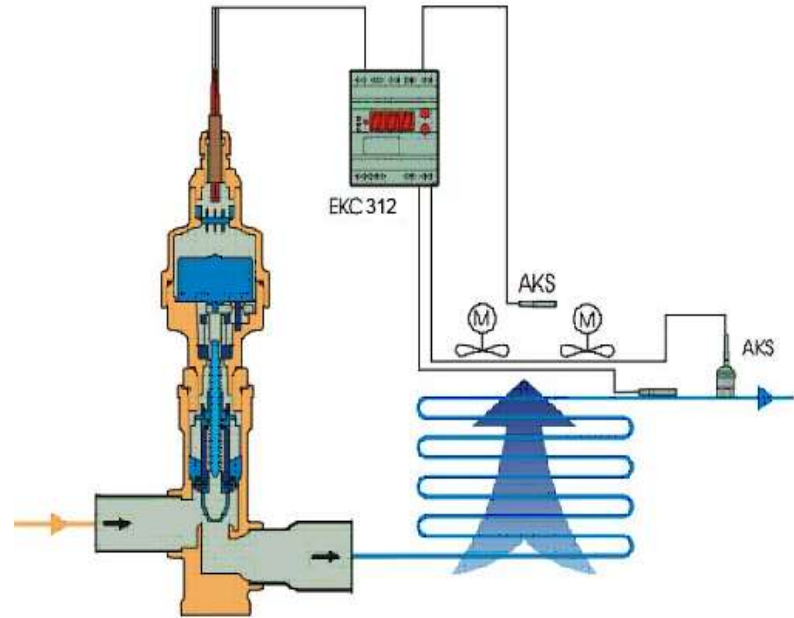


- *Big airflow and static pressure.*
- *Static and dynamic balanced fan with low noise and vibration.*
- *High efficiency fan motor. Direct drive type, 6-pole, 3-phase, Class-“F” insulation and IP54 protection.*

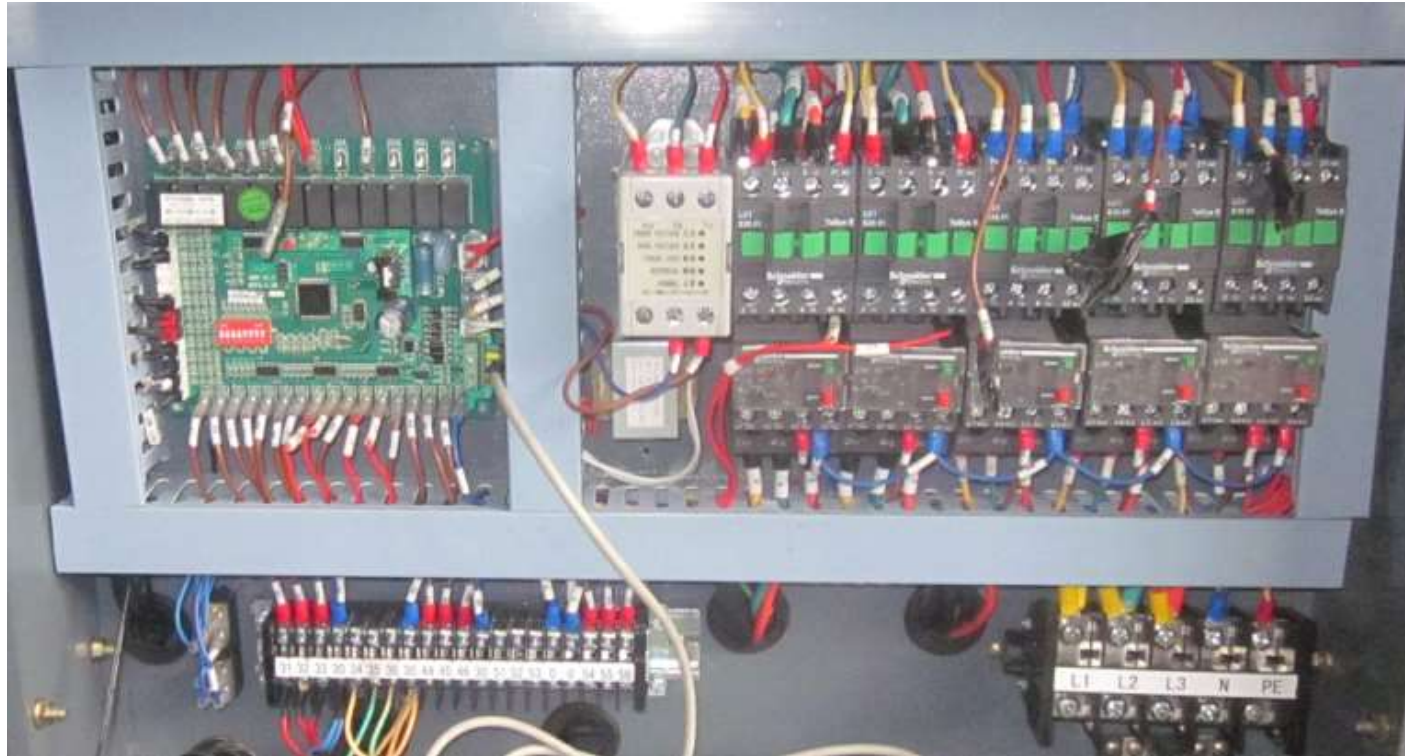
Refrigerant flow control

- *Electronic-expansion valve*
- *High precise control*
- *Real PID modulation*

(PID Means Proportion Integration Differentiation)

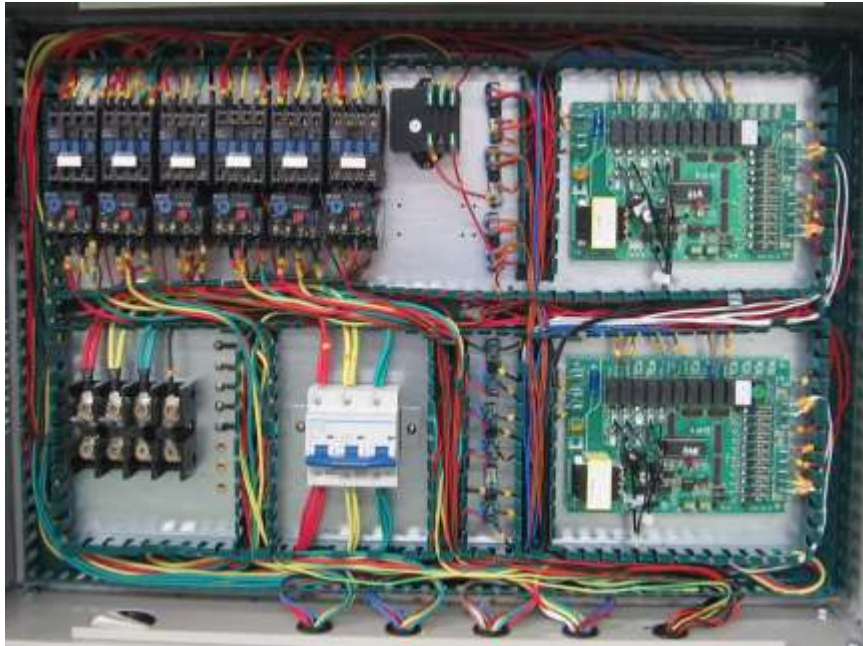


Electrical control system



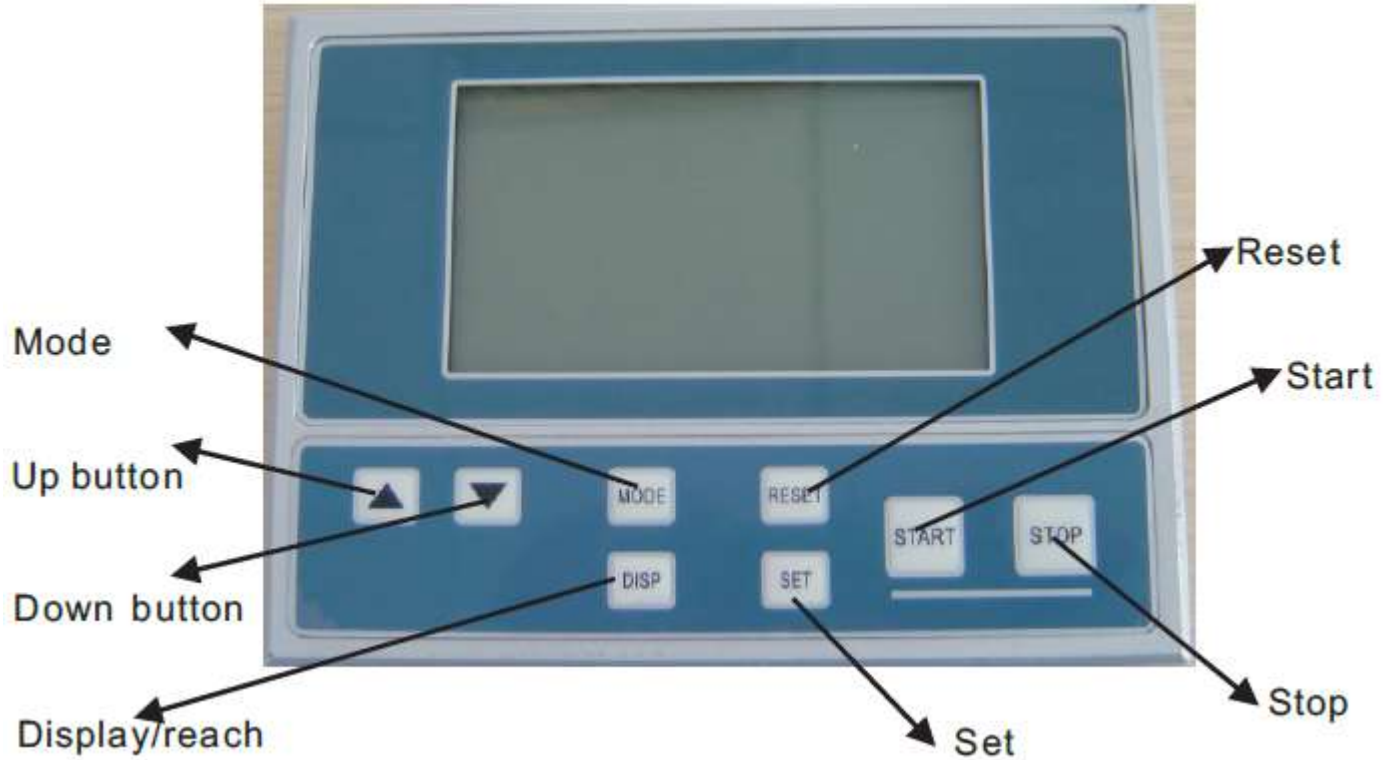
Units adopt microcomputer automatic control, LCD working platform, more convenient and reliable operation.

Electrical control system

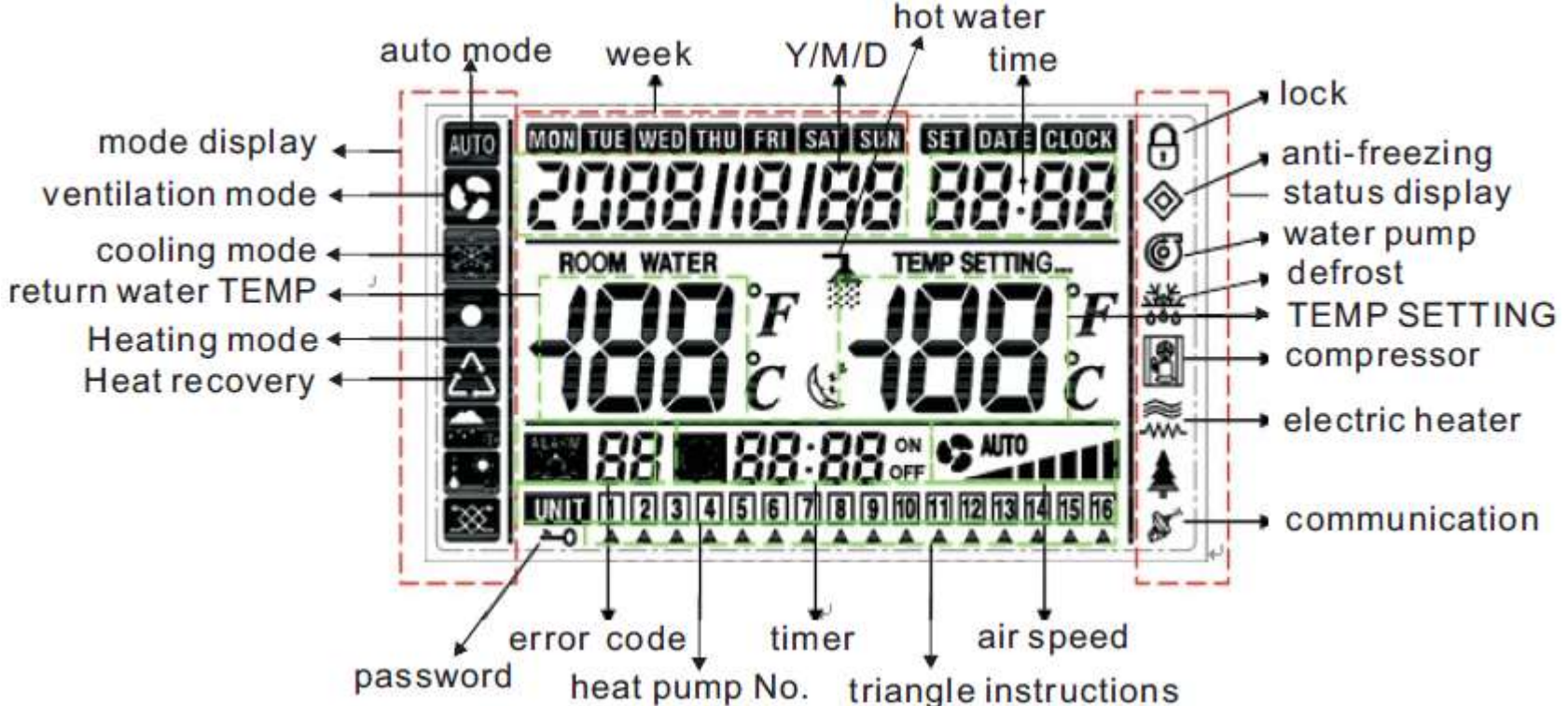


Units adopt microcomputer automatic control, LCD working platform, more convenient and reliable operation.

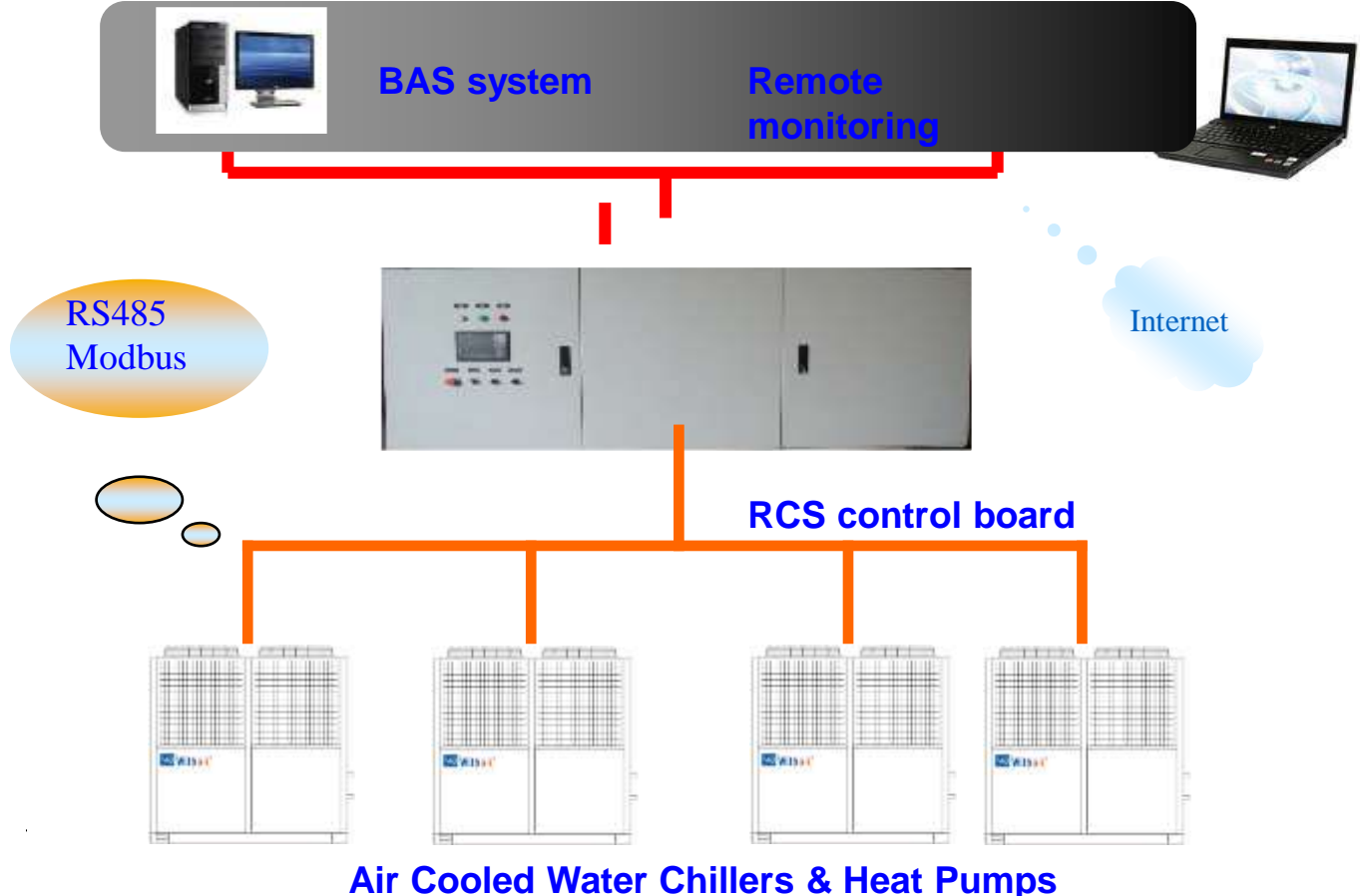
— LCD Controller Display —



— LCD Controller Display —



Remote Monitoring



— Modular Networking —



Units adopt modular networking technology, modular units could be increased or decreased according to practical load, convenient and fast for combination.

— Independent Refrigerant System —



Each refrigeration system of the units is independent from each other, we could respectively test and repair one modular unit, or one system in it without impacting performance of the whole units, convenient to repair and maintain.

— Heat Recovery —



Units have heat recovery function, could freely supply hot water use.

— Protection Items —

<i>Water flow cutout</i>	<i>Power Fault protection</i>
<i>Anti-freeze protection</i>	<i>Contactors Fault protection</i>
<i>High-pressure alarm</i>	<i>Discharge temperature too high</i>
<i>Low-pressure alarm</i>	<i>Fin temperature too high</i>
<i>Compressor Inside Protection</i>	<i>Water Inlet/outlet temperature sensor</i>
<i>Oil level protection</i>	<i>Ambient temperature sensor open/short circuit</i>
<i>Oil pressure differential protection</i>	<i>Coil temperature sensor open/short circuit</i>
<i>Compressor overload protection</i>	<i>Discharge temperature sensor open/short circuit</i>
<i>Fan overload protection</i>	<i>- - -</i>

— Main Components —

The main components of Withair's products are all selected famous brand products with excellent performance, so that the performance and reliability of the whole units are strongly guaranteed.

Some main components is as follows:

1. Compressors

Strong cooperation and creating high quality



2. Refrigerant accessories



3. Electric parts



Technical Data



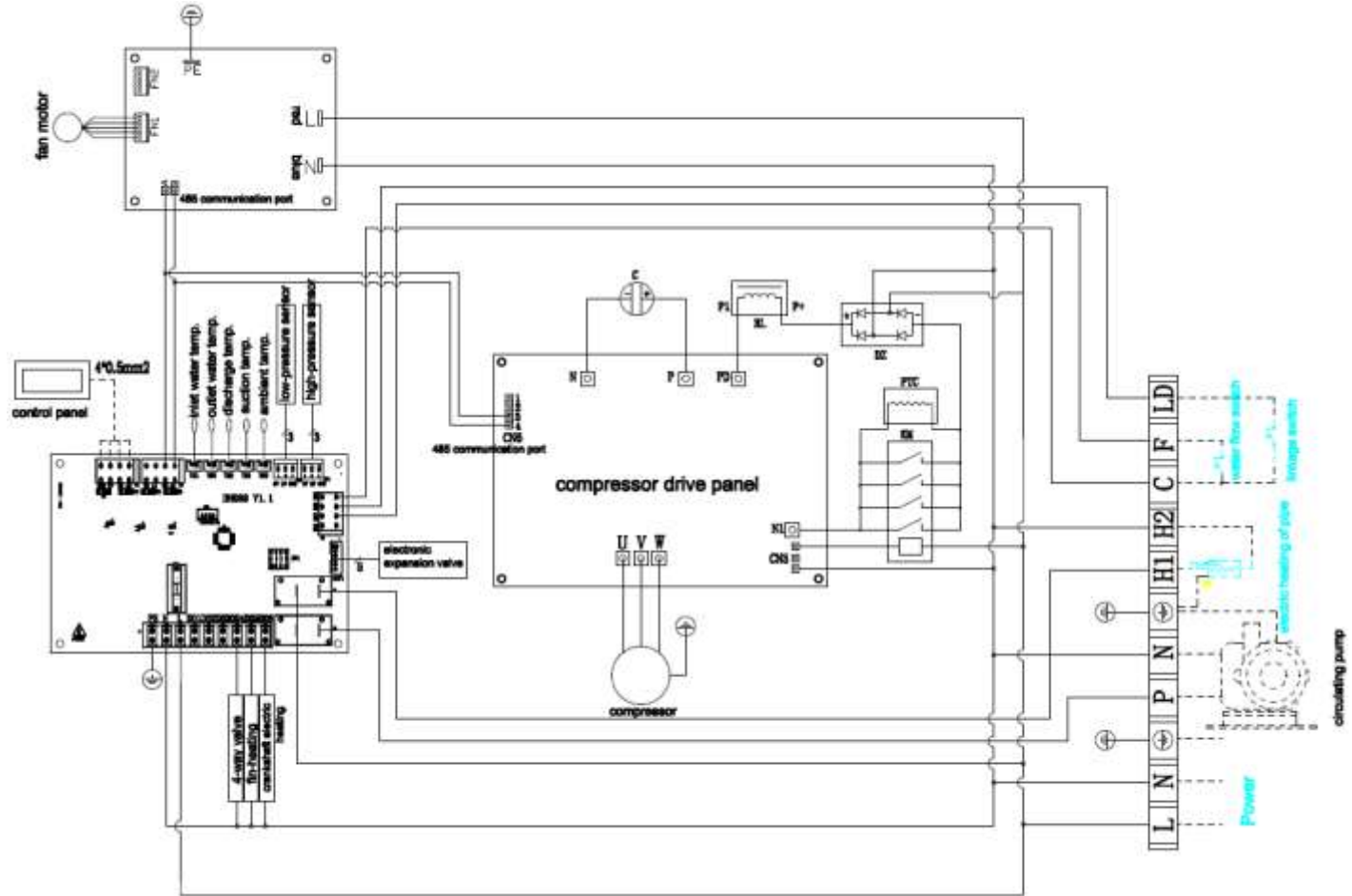
Model No.			W01R1-8I	W01R1-12I	W01R1-18I	W01R1-20I	W01R1-28I	W01R1-35I	W01R1-72I	W01R-140I	
Cooling condition	Rated cooling capacity	kW	8.2	12.4	18.1	21.6	28.0	35.0	72.3	140.7	
		US.RT	2.3	3.5	5.1	6.1	8.0	10.0	20.6	40.0	
	Rated cooling input power	kW	2.4	3.6	5.2	6.2	8.1	10.1	21.2	41.50	
	Rated current	A	13.0	19.0	23.7	10.4	14.0	16.8	37.5	51.6	
	Rated EER	W/W	3.42	3.44	3.48	3.48	3.46	3.47	3.41	3.39	
	Cooling capacity range	kW	3.5~11	6.0~16.0	7.0~20.0	9.0~24.0	11.0~32.0	13~38	37~82	36~158	
	Input power range	kW	1.0~4.0	1.6~6.0	1.8~6.5	2.4~9.2	3.0~11.5	3.6~13.8	8.5~25.2	12.6~59	
EER range	W/W	2.0~4.1	2.0~4.1	2.3~4.2	2.2~4.2	2.2~4.2	2.2~4.2	2.2~4.2	2.3~4.3		
Cold water temperature range in cooling	°C	5°C~20°C									
Working ambient temperature	°C	-26°C~50°C									
Power supply	V/Ph/Hz	208~230V/1Ph/50Hz(60Hz as option)				380~415V/3P/50Hz (208V380V/460V/575V/3Ph/60Hz as option)					
Refrigerant		R410A									
Compressor		DC inverter compressor (enhanced vapor injection (EVI) inverter compressor as option)									
Controller system		Inverter controller									
Throttle way		Electronic expansion valve									
Fan motor		AC Motor (EC motor as option)									
Pressure device		Built-in high and low pressure sensor									
Electronic component		AC contactor									
Safe protection device		High/low pressure switch, overload protection, counter clockwise and short phase protection (power phases sequence protection),lack water(water-flow switch),anti-freezing protection, etc.									
Noise level	dB(A)	49	52	53	55	57	59	62	68		
Connecting pipe size	Inch	Rc1"	Rc1"	Rc1"	Rc1-1/4"	Rc1-1/4"	Rc1-1/2"	R2"	Rc2-1/2"		
Water flow rate	m³/h	1.55	2.32	2.75	3.56	4.55	5.76	11.91	12.72		
Dimension	Length	mm	1050	1050	1050	1100	1350	1350	2400	2400	
	Width	mm	430	430	430	430	800	800	1150	2250	
	Height	mm	900	1400	1500	1600	1850	1850	2300	2300	
Net weight	kg	96	110	136	175	280	315	1210	1880		

- Notes:
- Standard cooling work condition: entering chilled water temperature 12°C, leaving temperature 7°C; dry bulb temperature 35°C, wet bulb temperature 24°C.
 - These parameter were tested according to pure water, not include anti-freezing liquid and water pump power.
 - Sound pressure measured at a distance of 1 m and a height of 1.5 m above the ground in a dear field.
 - Units can realize 1~24 unit's modular connection and control energy-regulation automatically.
 - Water side maximum bearing pressure:1.0Mpa
 - All models, sizes, dimensions, and specifications are subject to change without prior notice, please refer to nameplates for the most accurate specifications.

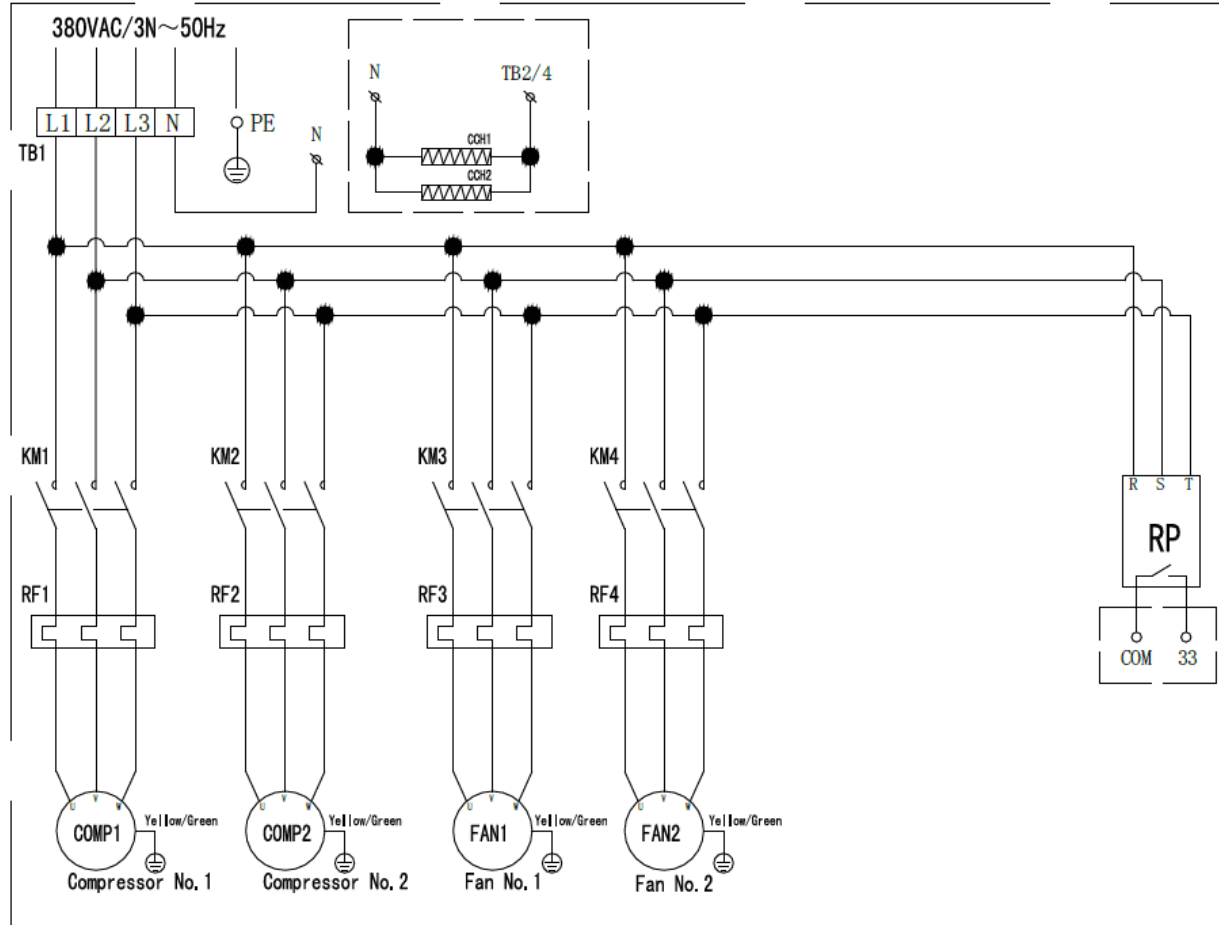
Working Conditions

Conditions	Water side				Air side	
	Nominal working condition		Working range		Nominal working condition	Working range
	EWT (°C)	LWT (°C)	EWT (°C)	LWT (°C)	Dry bulb temperature (°C)	Dry bulb temperature of outdoor (°C)
Cooling	12	7	5 ~ 15	2.5 ~ 8	35	18 ~ 50
Note: LWT - leaving water temperature, EWT - entering water temperature						

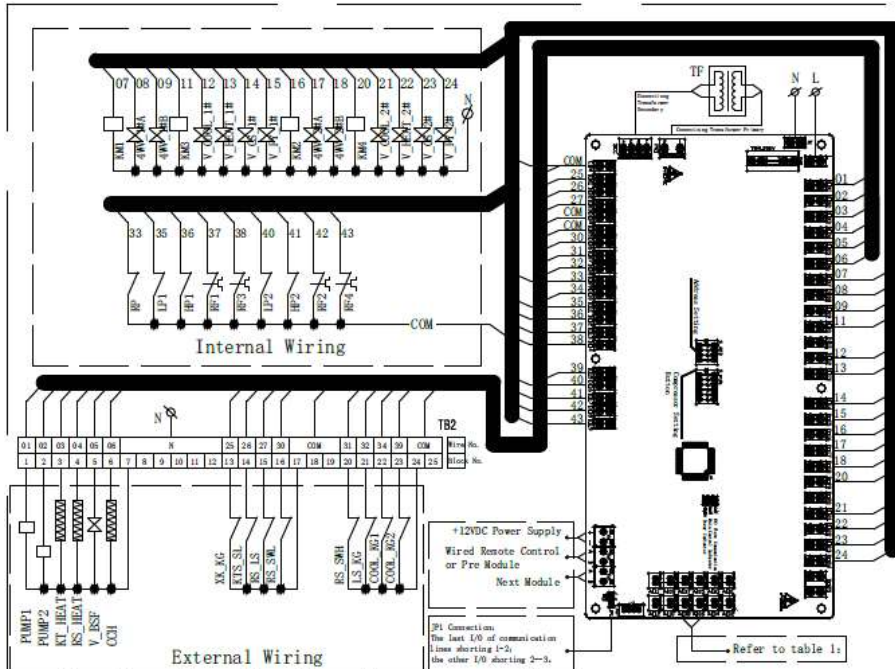
Electric Diagram



Electric Diagram



Electric Diagram



Mark Detail								
No.	Mark	Detail	No.	Mark	Detail	No.	Mark	Detail
01	TB	Terminal Blocks	09	FAN	Fan	17	RS_HEAT	Hot Water Electric Heater
02	PE	Earthing	10	RP	Power Protection	18	V_BSF	Replacement Solenoid Valve
03	KM	AC Contactor	11	TF	Transformer	19	XX_KG	Wired Control Switch
04	RF	Thermal Relay	12	COM	Common Single	20	KTS_SL	Using Side Water Flow Switch
05	CCH	Crankshaft Heater	13	HP	High-voltage Switchgear	21	RS_LS	Hot Water Switch
06	COMP	Compressor	14	LP	Low-voltage Switchgear	22	RS_SNL	Low Water Level of Hot Water Tank
07	PUMP1	Using Side Pump	15	4WV	Four-way Valve	23	RS_SNH	Rising Water Level of Hot Water Tank
08	PUMP2	Hot Water Pump	16	KT_HEAT	Using Side Electric Heater	24	LS_KG	Remote Control Switch
25	COOL_KG	Antifreeze Switch	26	V_COOL	Cooling Solenoid Valve	27	V_HEAT	Heating Solenoid Valve
28	V_CS	Defrost Solenoid Valve	29	V_PY	Liquid Ejection Solenoid Valve	30		
31			31			31		
32			32			32		

Table 1: Sensor Installation

Block	Sensor Location
AI01	1# Fin Temp. Sensor
AI02	2# Fin Temp. Sensor
AI03	1# Exhaust Temp. Sensor
AI04	2# Exhaust Temp. Sensor
AI05	1# Using Side Outlet Water Temp.
AI06	2# Using Side Outlet Water Temp.
AI07	1# Outlet How Water Temp.
AI08	2# Outlet How Water Temp.
AI09	Using Side Inlet Water Temp.
AI10	Outdoor Ambient Temp.
AI11	Temp. Sensor of How Water Tank

Notes:
 1、2# Using side outlet temp. 2# outlet hot water temp.
 are available only to double circle system;

S-ADD Button Setting

SET State				Module No.
1	2	3	4	
OFF	OFF	OFF	OFF	1# Main Module
ON	OFF	OFF	OFF	2# Sub-module
OFF	ON	OFF	OFF	3# Sub-module
ON	ON	OFF	OFF	4# Sub-module
OFF	OFF	ON	OFF	5# Sub-module
ON	OFF	ON	OFF	6# Sub-module
OFF	ON	ON	OFF	7# Sub-module
ON	ON	ON	OFF	8# Sub-module
OFF	OFF	OFF	ON	9# Sub-module
ON	OFF	OFF	ON	10# Sub-module
OFF	ON	OFF	ON	11# Sub-module
ON	ON	OFF	ON	12# Sub-module

S-FUN 按钮功能设置

No.	State	Function	Detail
1	OFF	Unit Type	Setting Unit Type
	ON	Hot Water	Hot. Para 2#
2	OFF	Hot Water	No
	ON	Hot Water Only	Yes
3	OFF	Hot Water	No
	ON	Water Circle Type	Circle Mode
4	OFF	Water Circle Type	Circle Mode
	ON	Water Circle Type	Circle Mode
5	OFF	1# system heat recovery type	Heat Rec
	ON	2# system heat recovery type	Heat Rec
6	ON	2# system heat recovery type	Heat Rec

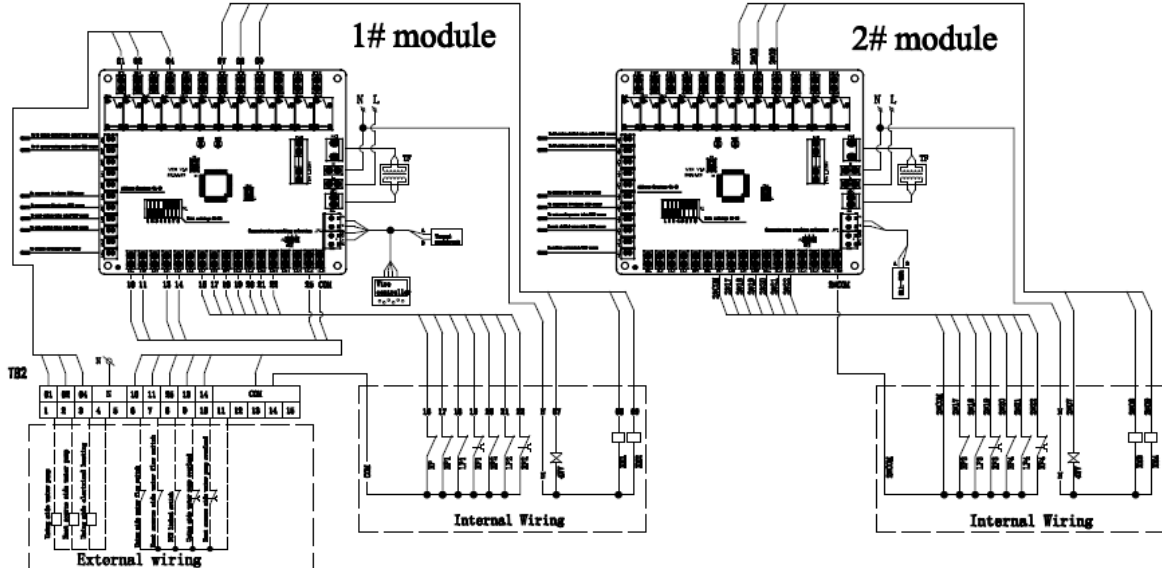
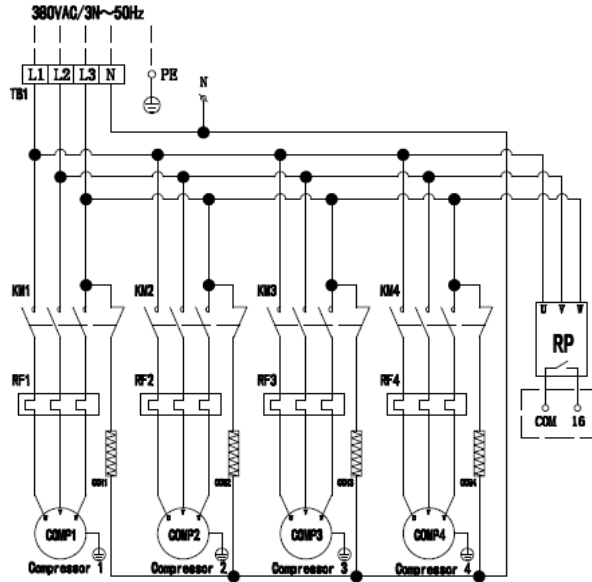
Electric Diagram

Character Note			
No. Character	Note	No. Character	Note
01 TB	Terminal block	09 PMP3	Hot water side water pump
02 PE	Ground	10 RP	Power protection
03 KH	A.O. contactor	11 TF	Transformer
04 RF	Thermal relay	12 COM	Public communication
06 OH	Orank heater band	13 HP	High pressure switch
08 COMP	Compressor	14 LP	Low pressure switch
07 PMP1	Using side water pump	15 4W	Four valve
05 PMP2	Heat source water pump		

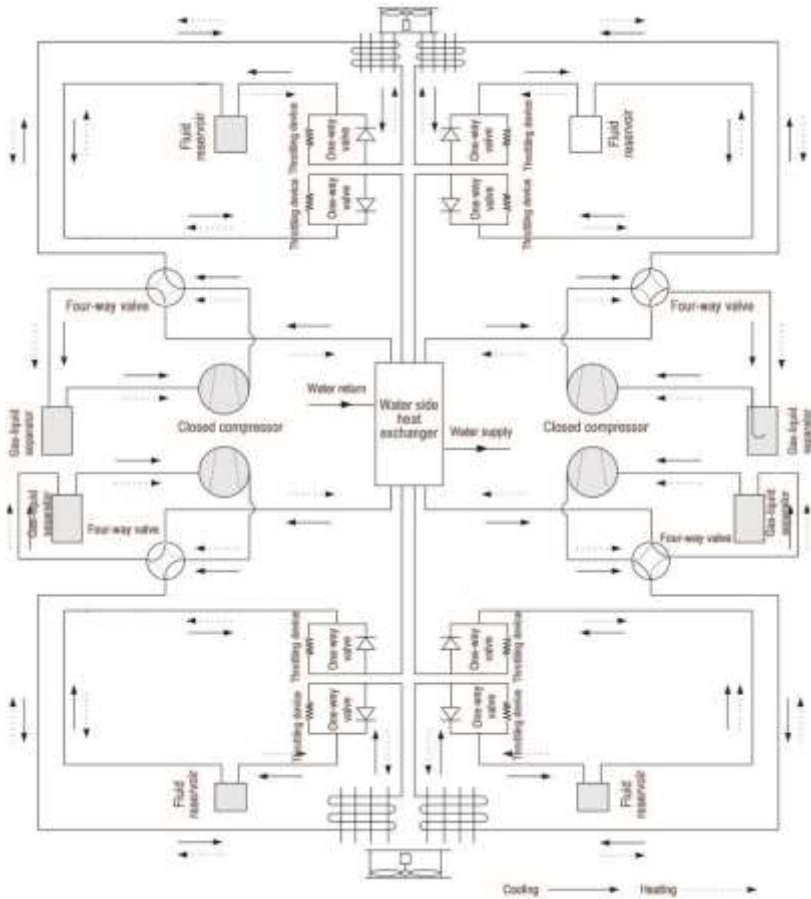
Dial function setting			
Dial	Status	Function	Note
5	OFF	Unit type	Only cooling type
	ON		Cooling and heating type
6	OFF	Water system option	Double water system
	ON		Single water system
7	OFF	Hot water option	No
	ON		Yes
8	OFF	1A,2B compressor option	No
	ON		Yes

Module dial switch set					Module dial switch set				
HECT first 4 Alpha status				Module No.	HECT first 4 Alpha status				Module No.
1	2	3	4		1	2	3	4	
OFF	OFF	OFF	OFF	16 module	OFF	OFF	OFF	OFF	78 module
ON	OFF	OFF	OFF	26 module	ON	OFF	OFF	OFF	88 module
OFF	ON	OFF	OFF	36 module	OFF	ON	OFF	OFF	98 module
ON	ON	OFF	OFF	46 module	ON	ON	OFF	OFF	108 module
OFF	OFF	ON	OFF	56 module	OFF	OFF	ON	OFF	118 module
ON	OFF	ON	OFF	66 module	ON	OFF	ON	OFF	128 module

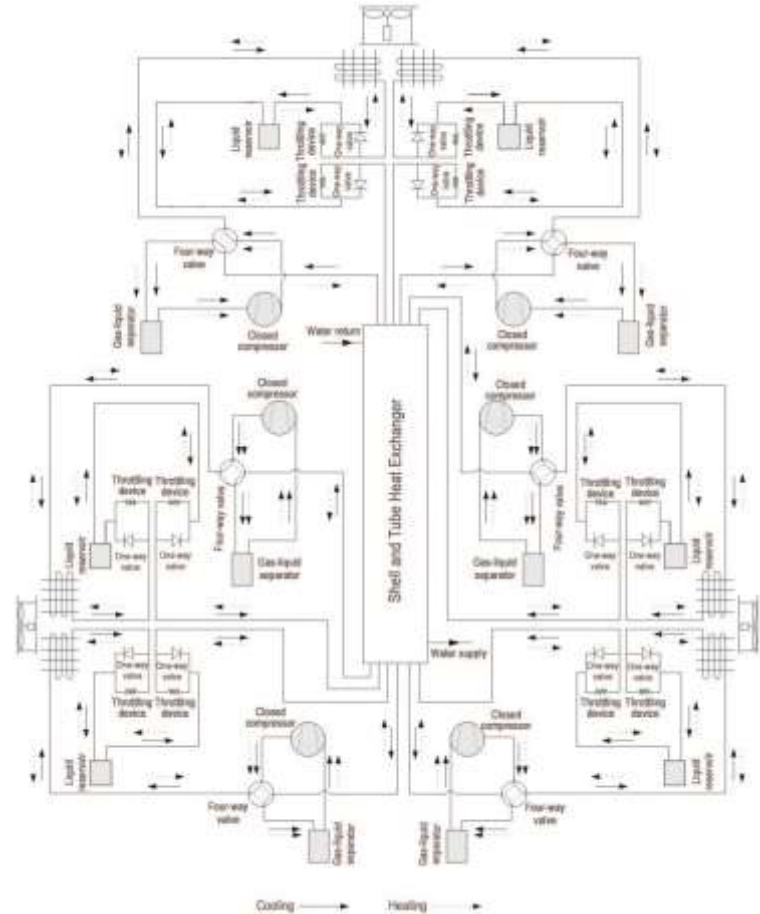
Note: Unit function set dial 5 & dial 7, only main module (#1) available, submodule is not available.



System Schematic Diagram



Four Compressors System



Six Compressors System

Power Connection

- 1) Wire selection and connection should be carried out strictly according to requirement.
- 2) Should have earthing well done, no earthing to gas pipe, water pipe, telephone line, to avoid electric shock caused by improper earthing.
- 3) Ensure the phase sequence is correct, to avoid not running.

Maintenance

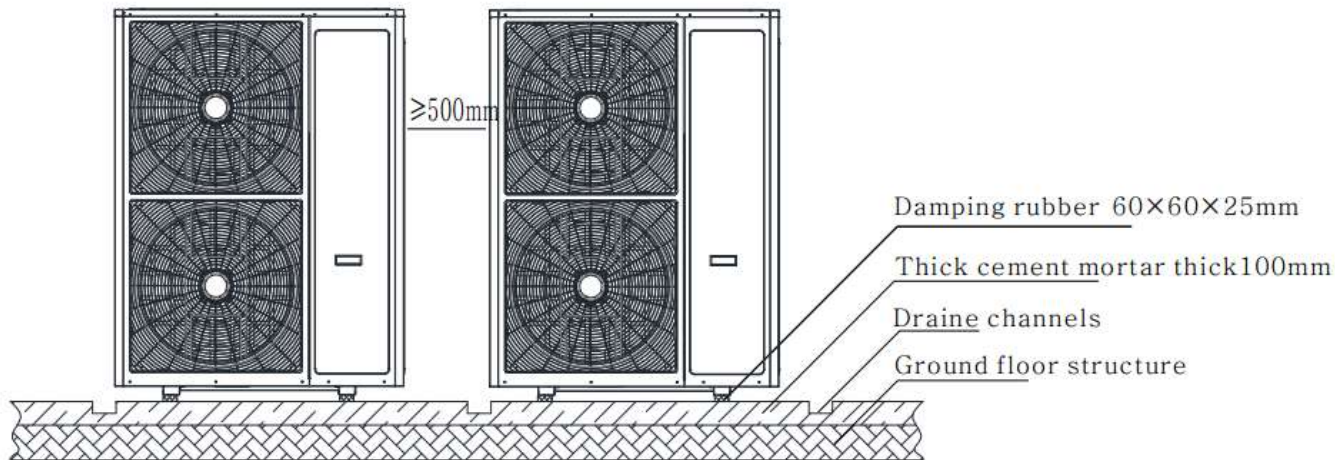
- 1) The qualified technician is required for the maintenance; all the protection devices and controller must be checked before restart.
- 2) Regular and correct maintenance is required for stability and good performance. Chilled and cooling water must be complete drained when long time no use to avoid possible freezing.

7. Notice

- 1) Antifreeze should be added in chilled water if water temperature set below zero or near zero.
- 2) Clean water system regularly.
- 3) Pay attention to antifreeze when ambient temp. is around 0°C in winter.
- 4) Antifreeze or other antifreeze measure must be used in bad ambient(under 0°C outdoor).

Installation Spaces

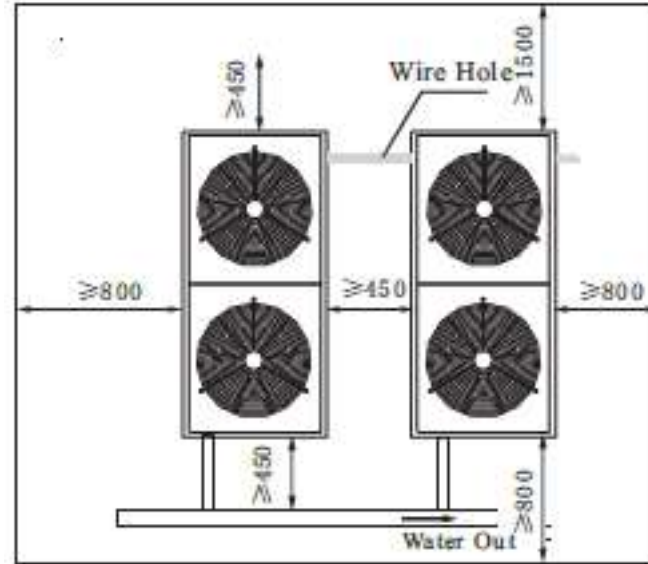
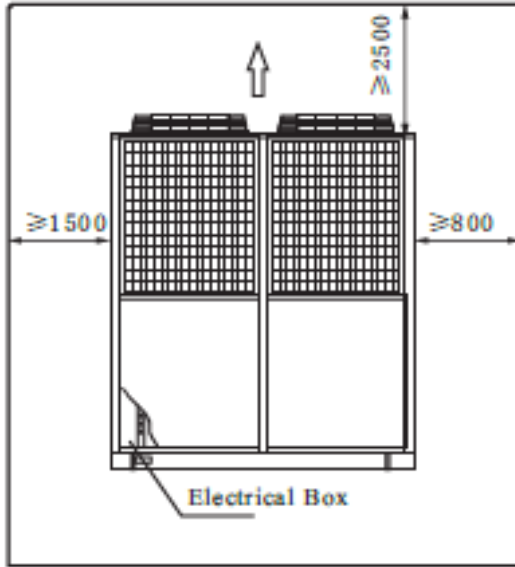
☆ Installation location



- A). Near to in the indoor terminal, reducing water system resistance losses.
- B). Near to the power and convenient for wiring connection.
- C). Near to the water source and convenient for installation.
- D). Strong enough to support unit weight and running vibration.
- E). Enough space in order to install, repair, maintenance.
- F). Water source not near to the dirty and corrosive fluid, keep pure water, water chlorinity does not exceed 25ppm

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Water Piping

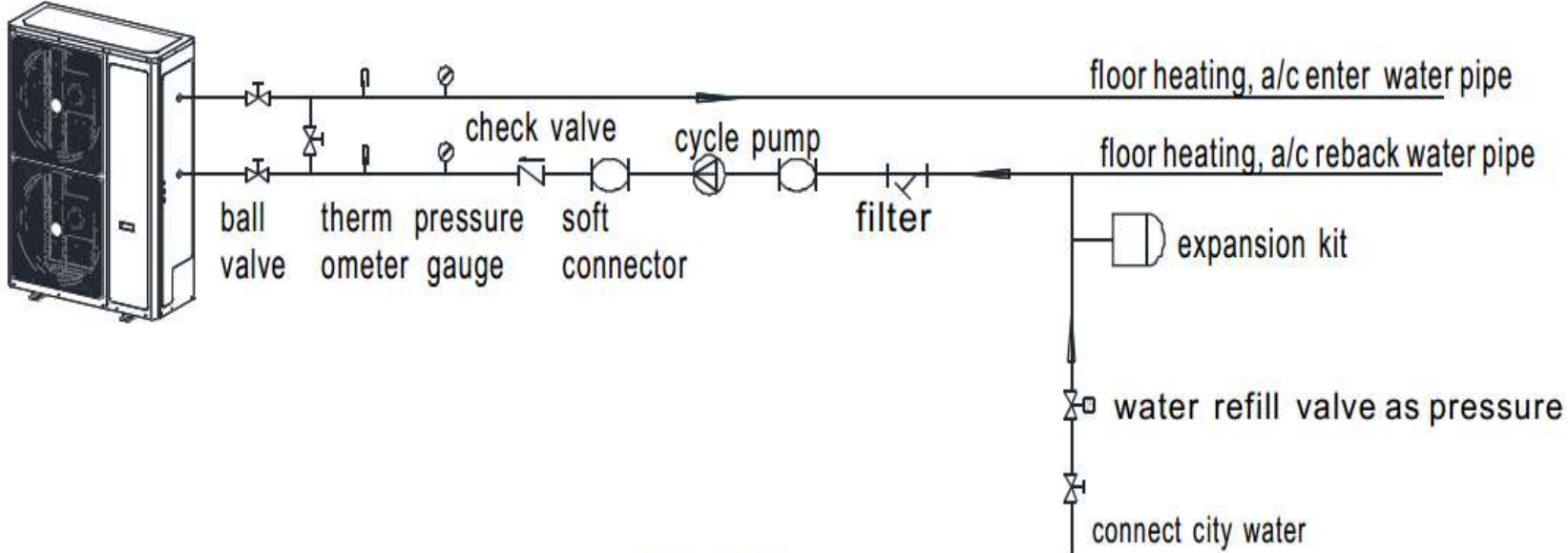


Figure 1

Water Piping

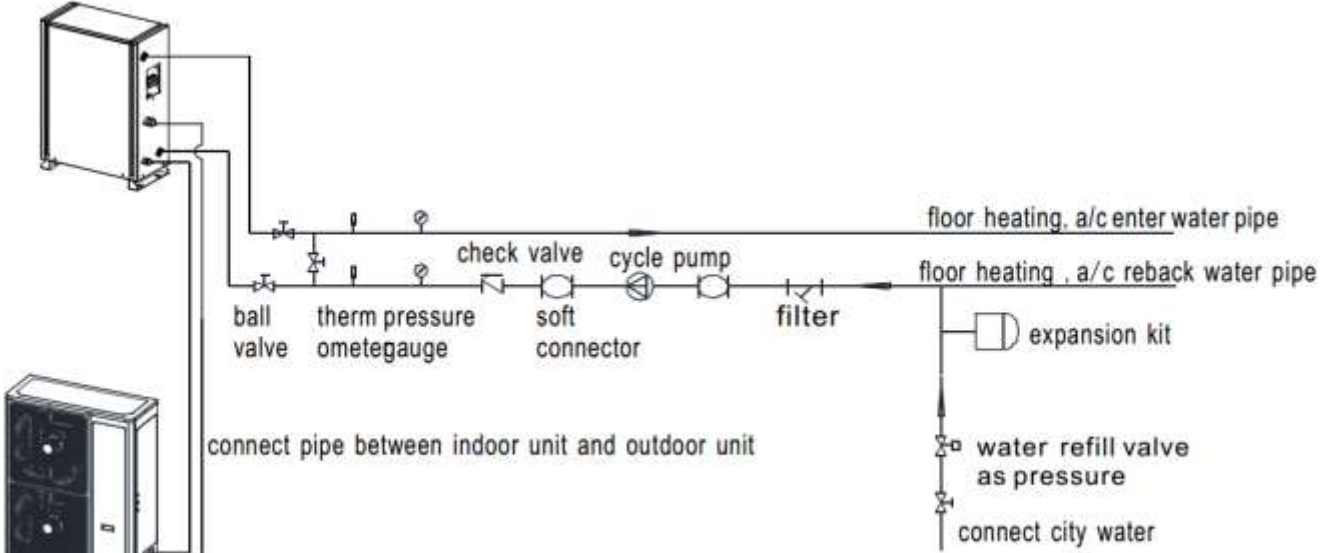


Figure 2

Water Piping

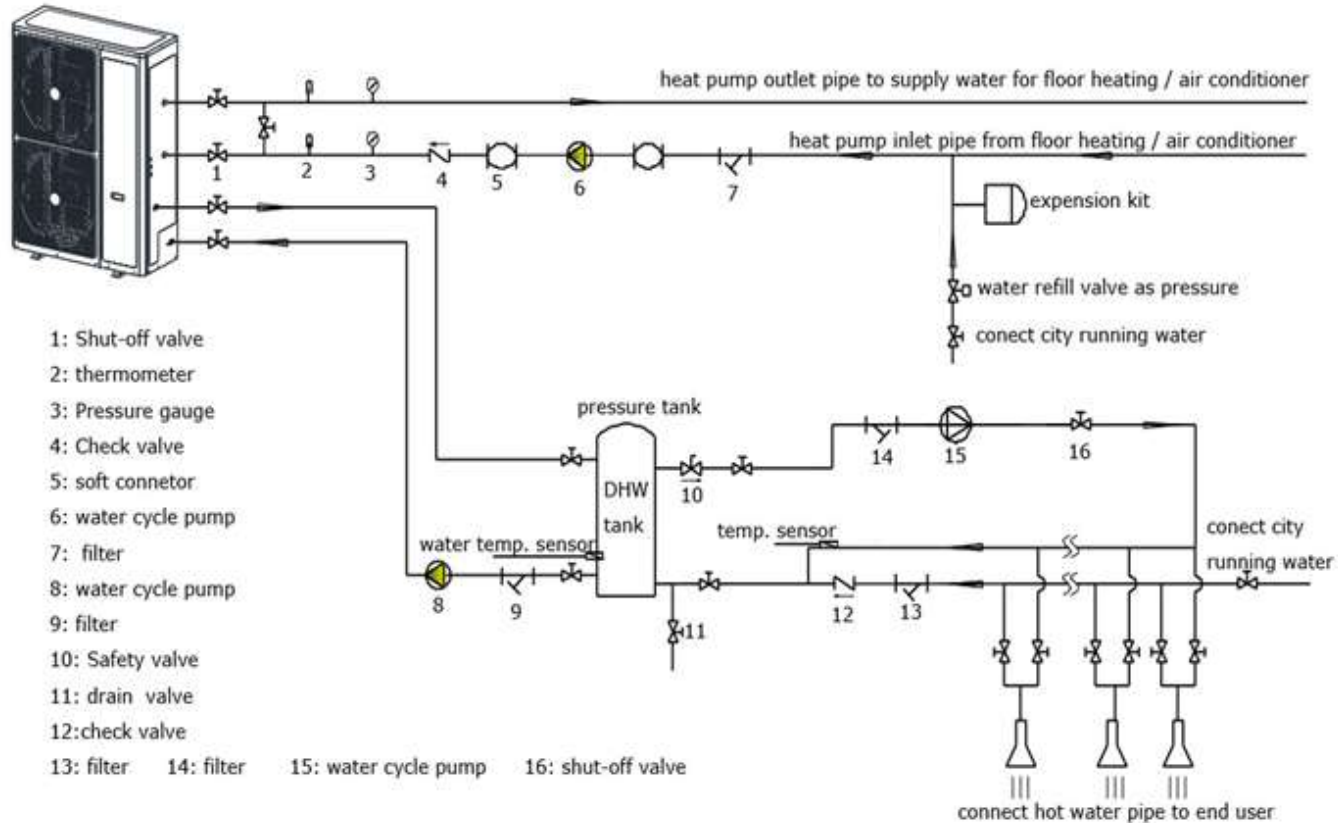
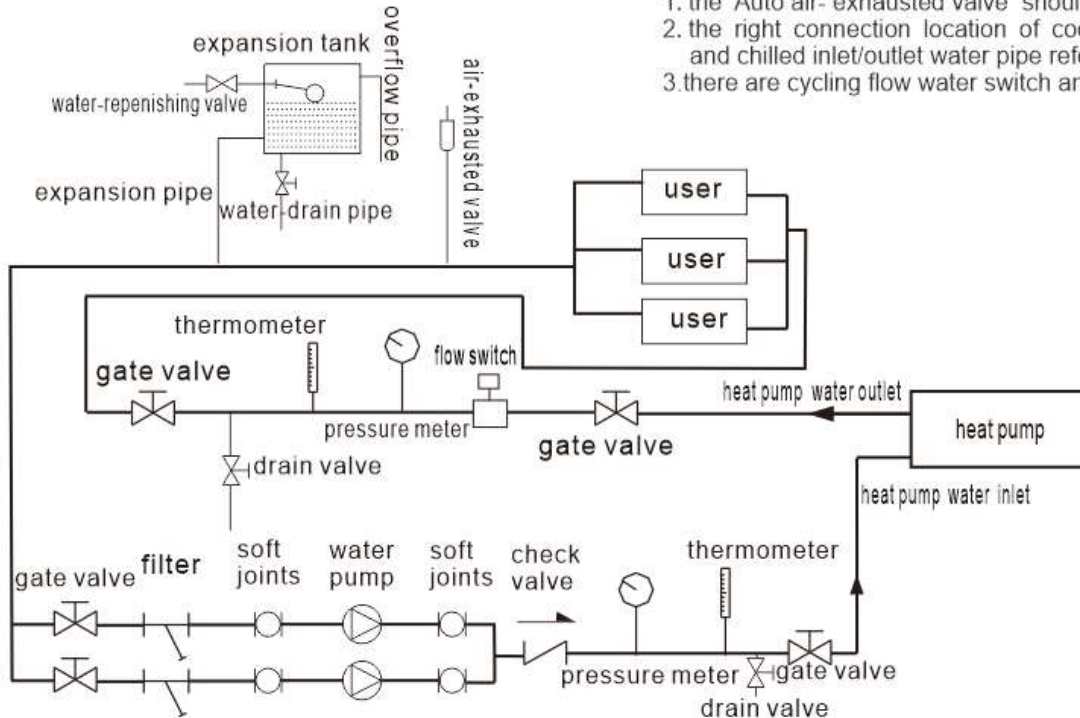


Figure 3

Water System Installation I

☆ Water system illustration for user side

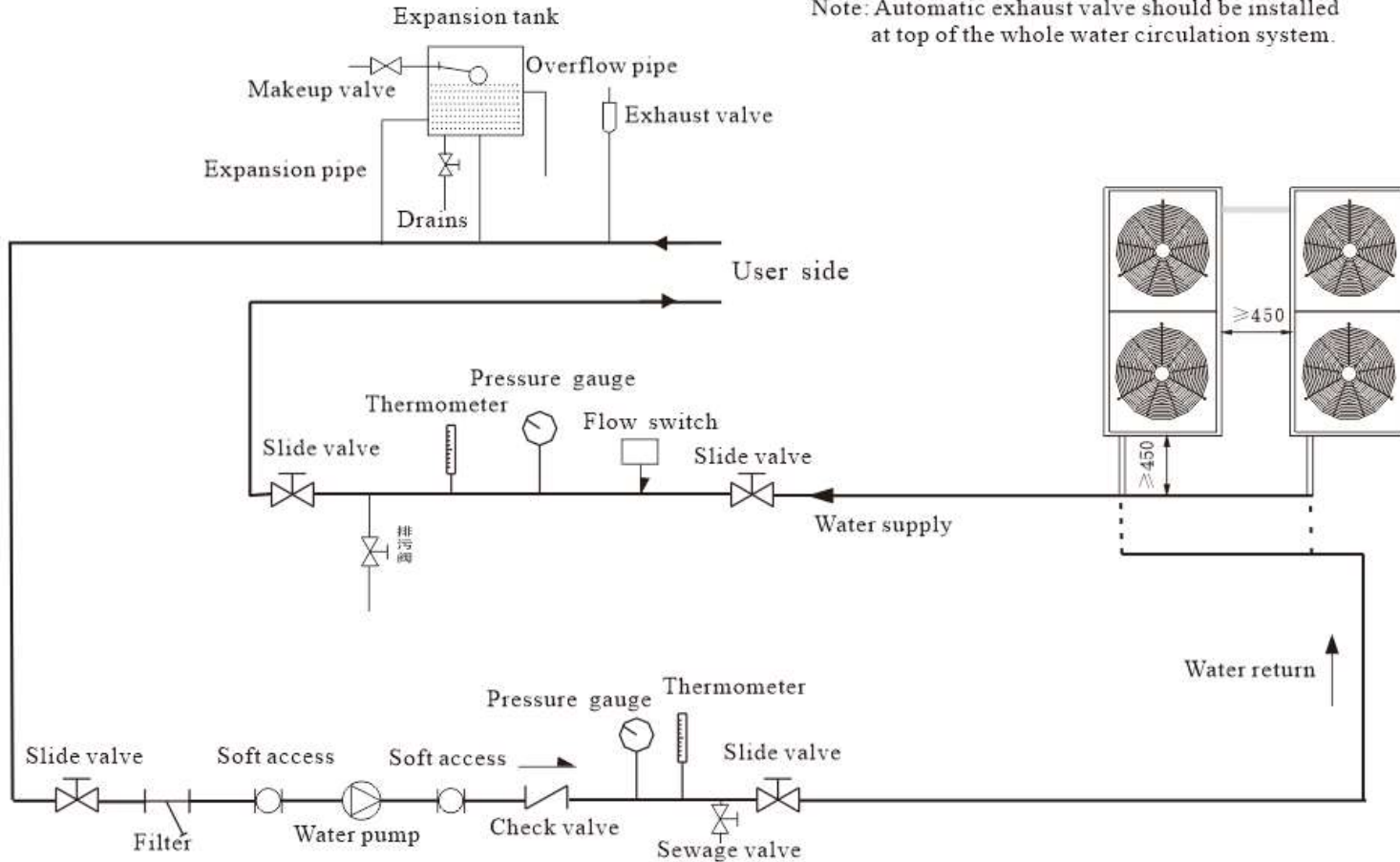


Remark:

1. the Auto air- exhausted valve should install at the top of pipe system.
2. the right connection location of cooling inlet/out water pipe and chilled inlet/outlet water pipe refer to the label of heat pump.
3. there are cycling flow water switch and cooling water flow switch each.

Water System Installation II

Note: Automatic exhaust valve should be installed at top of the whole water circulation system.



— **Engineering Guide** —

Assembly and Test

The unit shall be completely factory assembled, pre-charged and wired. Complete unit must be test operated at factory prior to shipment.

Refrigerant System

Each refrigerant circuit shall include a high-efficiency scroll compressor, high pressure control, low pressure control, TXV, and refrigerant pressure gauge connections.

Electrical

The unit shall have 24-volt electromechanical controls and include compressor contactors, 24-volt transformer, terminal strip, compressor staggered start, fault lockout circuit, compressor anti-short cycle, low pressure switch by-pass timer, LED for compressor ON/OFF and fault status, and the necessary relays for compressor and reversing valve operation.

The reversing valve is energized in the cooling mode.

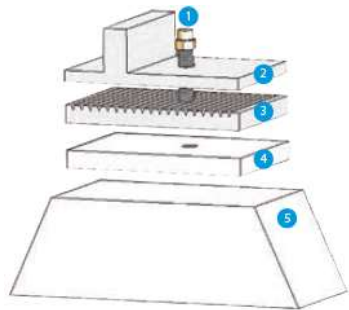
Installation and Maintenance

1. The preparation

- 1) After arriving the installation site, check all the items of the unit carefully according to the packing list if there are damage, lack of parts or damage during transport, notify the sales department.
- 2) The user must provide a rigid nondeforming foundation or concrete footings, based on the size of the unit four positioning hole; the foundation of the unit can also be framework structure, framework should be placed on main beam or column, and be capable of bearing the weight 150% heavier than the unit. The horizontal level should have no slope.
- 3) For easy handling, users should use the crane, the machine should properly protected by soft material on the point of force applied, and also be in balanced status during handling to avoid possible damage.
- 4) Choose the Installation Place
Units can be installed indoor or outdoor, should consider the following factors :
 - a) Installation place should be capable of bearing the weight 150% heavier than the unit. The horizontal level should have no slope.
 - b) Should keep enough space surrounding and on the top of the machine for access of maintenance.
 - c) Should have drain in the surrounding of the machine for release the water for seasonal stop of machine.
- 5) Foundation reference
Note:
 - a) The foundation should be concreted structure or frame of steel, with a plane surface
 - b) 10-20mm isolator for shock absorption should be placed between the unit and foundation.
 - c) Foundation design can based on the machine net weight.
 - d) Fix the unit with $\phi 16$ foundation bolt
 - e) foundation diagram

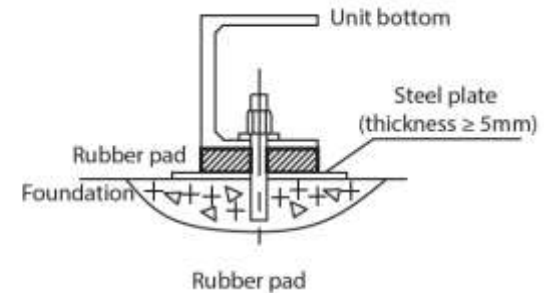
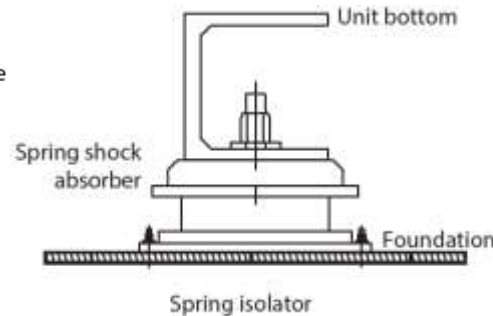
Installation Requirements

- (1) Be sure to take the base preparation and structure into consideration seriously during installation, particularly on rooftop installations in order to avoid noise and vibration. Consulting the building designer before conducting installation is recommended.
- (2) A drainage ditch should surround the base to ensure dewatering occurs
- (3) Anti-vibration pad is to be placed between the base frame and foundation in order to avoid vibrations and unnecessary noise, and make sure the unit is horizontal during installation.
- (4) The maximum altitude difference (levelness) should be within 3mm for the chiller base.
- (5) The base should be raised by 100mm.
- (6) The installation base of the unit must be concrete or steel structure, which can bear the running weight of the machine. The top should be horizontal. It is ideal to prepare a drainage ditch around installation base.
- (7) Put the steel plate and anti-vibration pad in the correct position. Finish the installation of the unit and the foundation bolt before secondary concreting. The foundation bolt should protrude 100mm.
- (8) Spring isolators are specified on the sales order as an option.

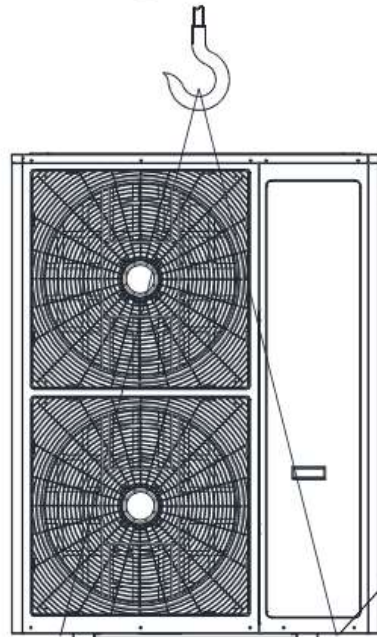


Typical Isolation structure

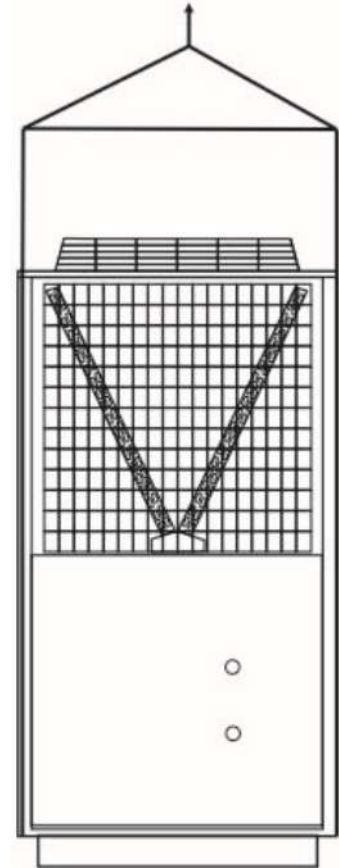
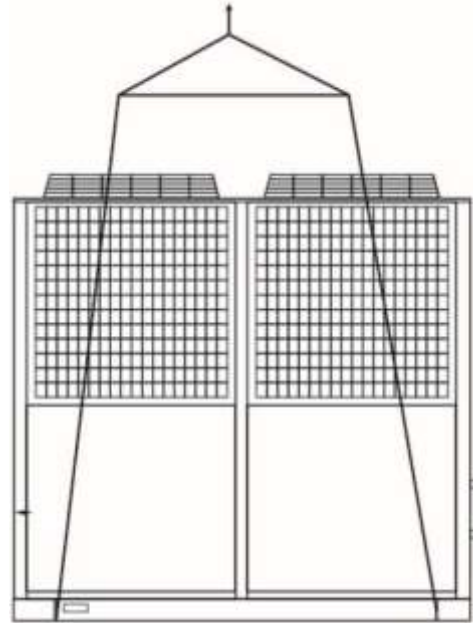
- 1 Anchor Bolt
- 2 Chiller Frame Base
- 3 Rubber Pad
- 4 Steel Base Plate
- 5 Concrete Base



Hoisting



Hoisting schematic



To prevent the unit surface scratches, deformation, it should be at least 50 mm thick mat of wood, cloth or cardboard between the place of unit and Sling contact points. When lifting, do not stand any person under the unit.

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— Some Certificates —



—— Delivery & Packaging ——

- 100% test before delivering products & services.
- Products catalogue, installation & operation manual will be sent together.
- Tracking number will be sent to customer as soon as we ship the products.
- Item shipped in 35~45 working days against payment depends on the quantity.
- Four steps of packages, plastic film, foam, carton and plywood for stable transportation.
- Ocean shipping, railway shipment and air transportation are acceptable according to customer demand.

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