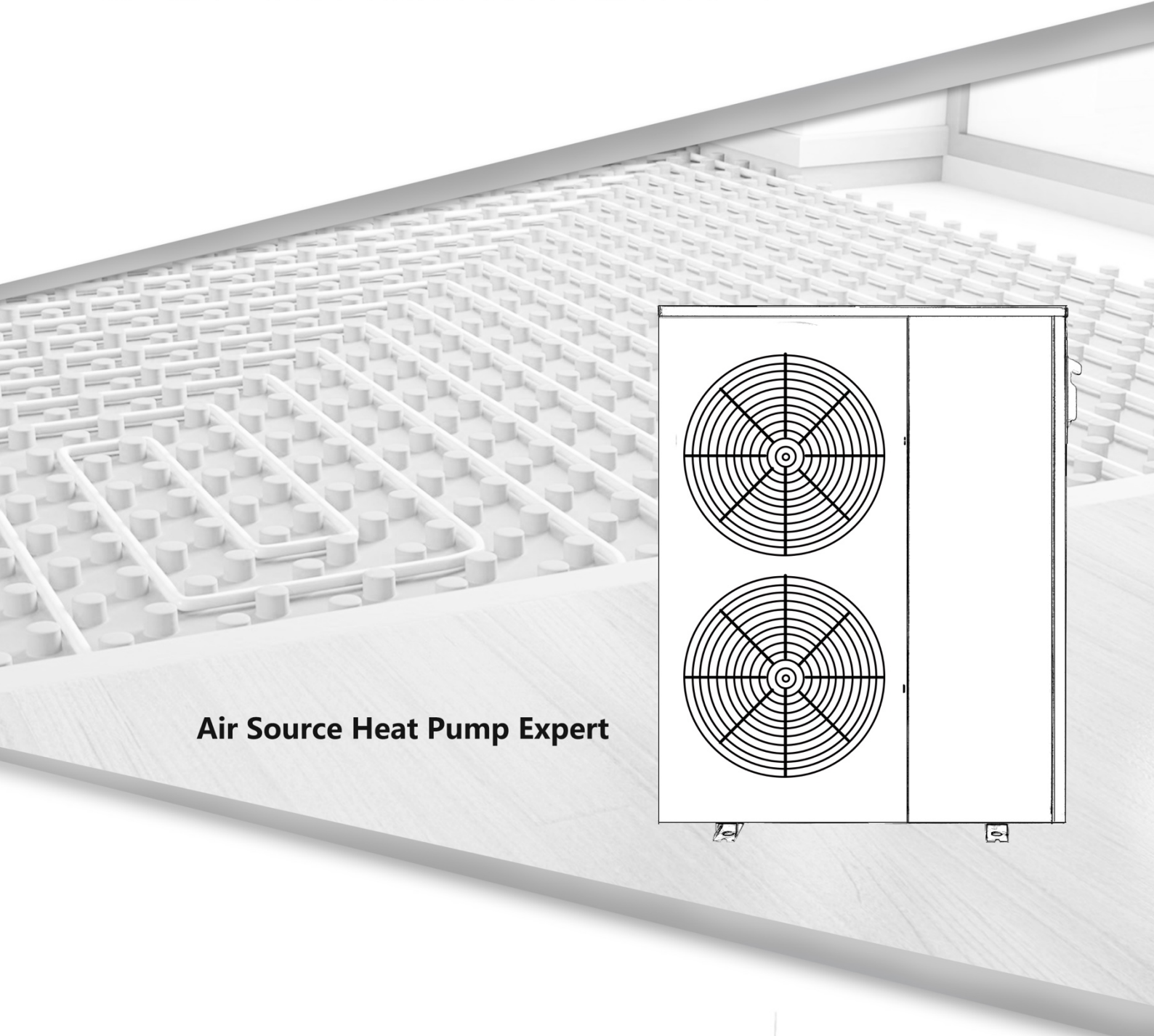
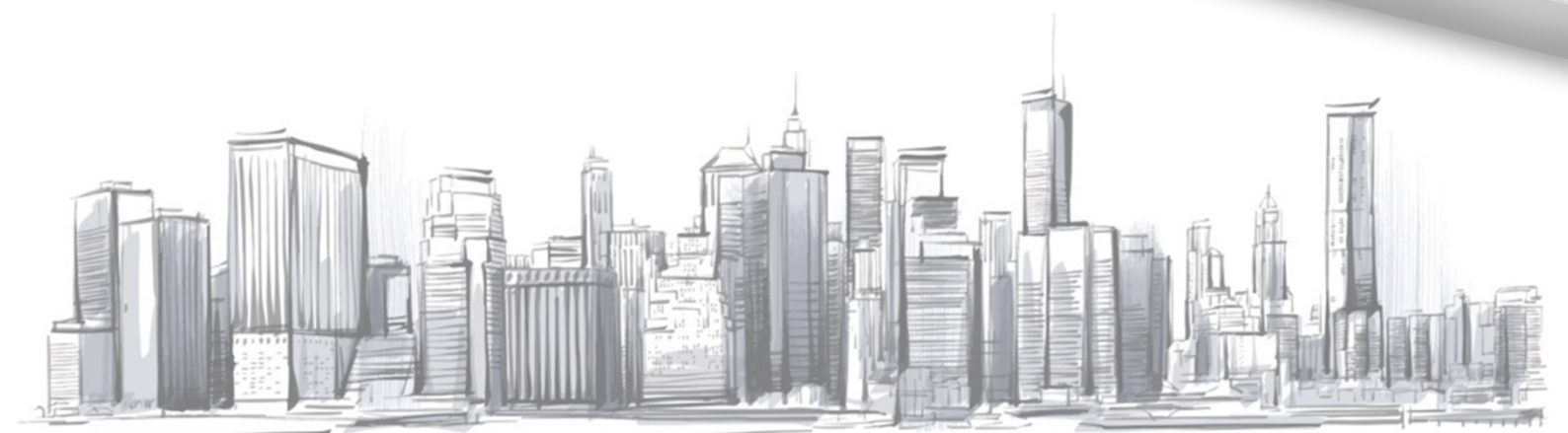
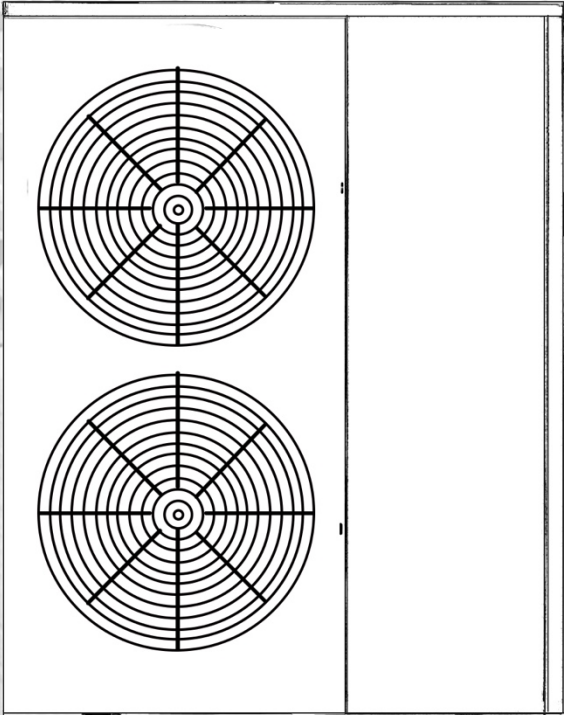


USER MANUAL



Air Source Heat Pump Expert



CONTENT

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II. Main instruction of product	4
III. Installation	9
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Please Read the Manual Carefully before Operation

Please read this manual carefully before installation

- ◆ The heat pump unit must be installed by the professional technician.
- ◆ Please install the heat pump and connect the water pipes in accordance with this manual strictly.
- ◆ For safety consideration, please make sure to re-check that everything before the power on.
- ◆ If the machine with any improvement, the content is subject to change without notification.

I. Prologue

Thanks for choosing our heat pump for your heating cooling or sanitary hot water solutions!

Please read this manual carefully before installation and operation! This manual contains the information about installation, electrical debugging, operation, and maintenance. The following items should be focused:

1. Before installation, please confirm if your local voltage supplying matches with the voltage which showed on the machine's nameplate and if the carrying capacity of the power supply, wires and plug bases are suitable for the range of this machine's input power.
2. Users are not allowed to change the power line or plug base by themselves. All wiring works must be carried out by a qualified electrician, please 100% be sure to connect the earth line correctly. If the earth wiring is not connected correctly, it may cause electric shock accidents.
3. After the completion of the construction of all wiring work, please make sure to recheck that everything is well connected before power on.
4. Installing the machine in the place which the combustible gas may leak is strictly forbidden.
5. Do not put your hands or foreign matters into the air outlet of heat pump unit, otherwise it will be dangerous to the people and equipment nearby.
6. In order to obtain a better energy-saving effect, the unit should be installed in a place with well-ventilated.

ATTENTIONS:

1. Please make sure the water circulation system filled with enough water before the machine starts working.
2. When the machine is under operating, all valves of the water systems must be in the open positions.
3. If without inlet water or with a long time stopped using, when re-boot the machine, please refer to the item of attentions 1.
4. A removable filter must be installed at the water inlet and please clean the valve periodically depend on your locate water quality (every 2 or 3 months).
5. The maximum water temperature is 55°C, at hot water heating mode, please adjust the water temperature to a appropriate temperature (The most comfortable water temperature for shower is 38C~42C , if the water temperature above 50°C , there might be with danger of burning skin!)
6. The maintenance of the machine must be carried out by professional electricians.
7. When the unit get powered off, please discharge all the water inside the water circulation system. Otherwise the heat exchanger might be frozen at cold ambient temperatures.
8. Please confirm the installation location of the main controller. When installing the main controller, be sure to install it in a waterproof place, and the installation must be firm.

9. Please install with leakage protection switch. Check whether a leakage protection switch of suitable power is installed between the unit and the power supply, if the leakage protection switch is not installed, it may cause electric shock or fire.

10. Check the water flow and pressure of the circulating water of the equipment when the equipment is at normal use, it must be ensured to prevent the unit from being protected and running short of water.

11. Do not move the detector freely. The temperature detector must not be separated from the water tank temperature detection blind pipe to avoid overheating of the unit heater and might cause the unit damaged.

12. The unit's maintenance and repairing by non-professional technicians to repair or adjust the advanced factory controlling setting of the unit by themselves are not allowed, please contact the local service providers or distributors for the operation.

13. The fuse selection must match with the unit. It is forbidden to use corresponding fuse which is not suitable. Otherwise it may cause system errors or cause a fire.

14. Prevent the unit from fire. Do not spray flammable spray directly to the unit, otherwise it may cause a fire accident.

15. Please cut off the manual power switch immediately when an abnormality (with burnt smell) occurs, stop any further operation, and contact the local service providers or distributors.

If the abnormal operation continues, it may cause electric shock or fire.

16. Emergency measures after out of water or electricity supplying,

In cold areas, please do not cut off the water and power supply to avoid freezing the heat exchanger and the water circulation system. In the event of a power failure, please drain all the cold water out of the heat exchanger and the whole water circulation system, otherwise the heat exchanger will be damaged by freezing and the unit cannot be used normally.

It is recommended with a condensed water drain pipe installed during engineering installation to prevent a large amount of condensate water from flowing to the ground during drainage and causing large areas of water to accumulate.

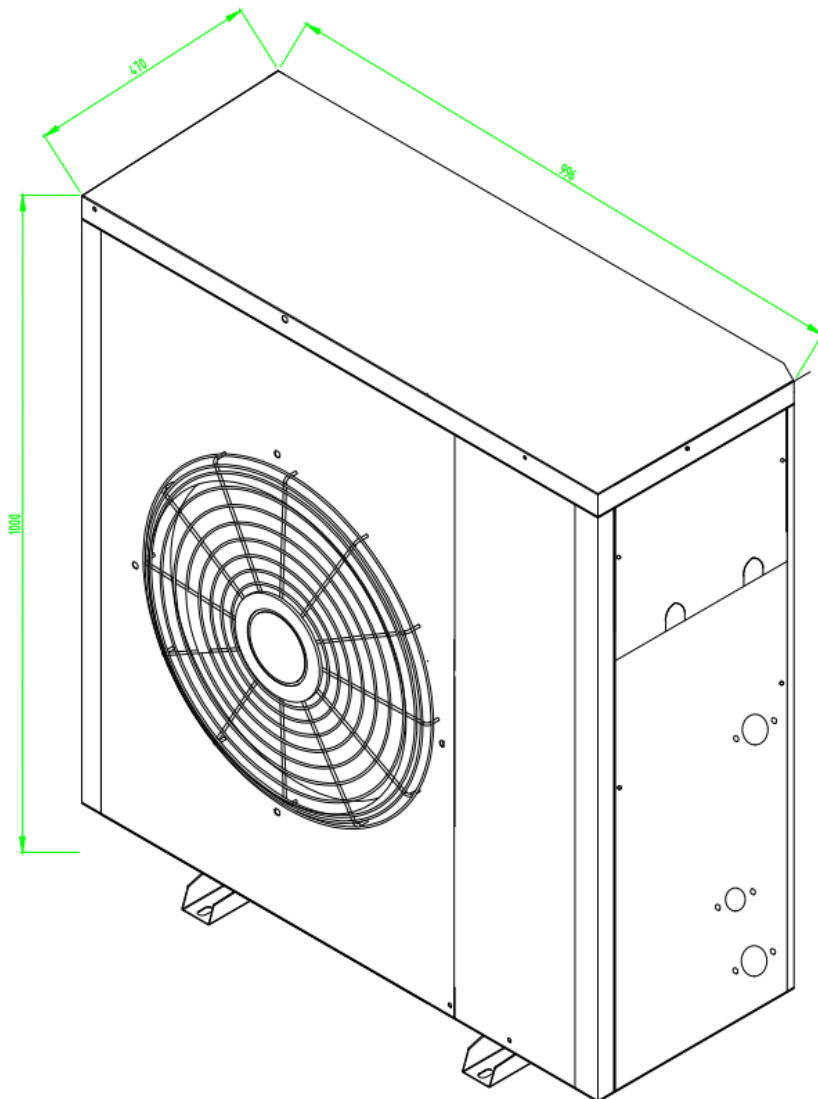
II. Main instruction of product

1. Parameter

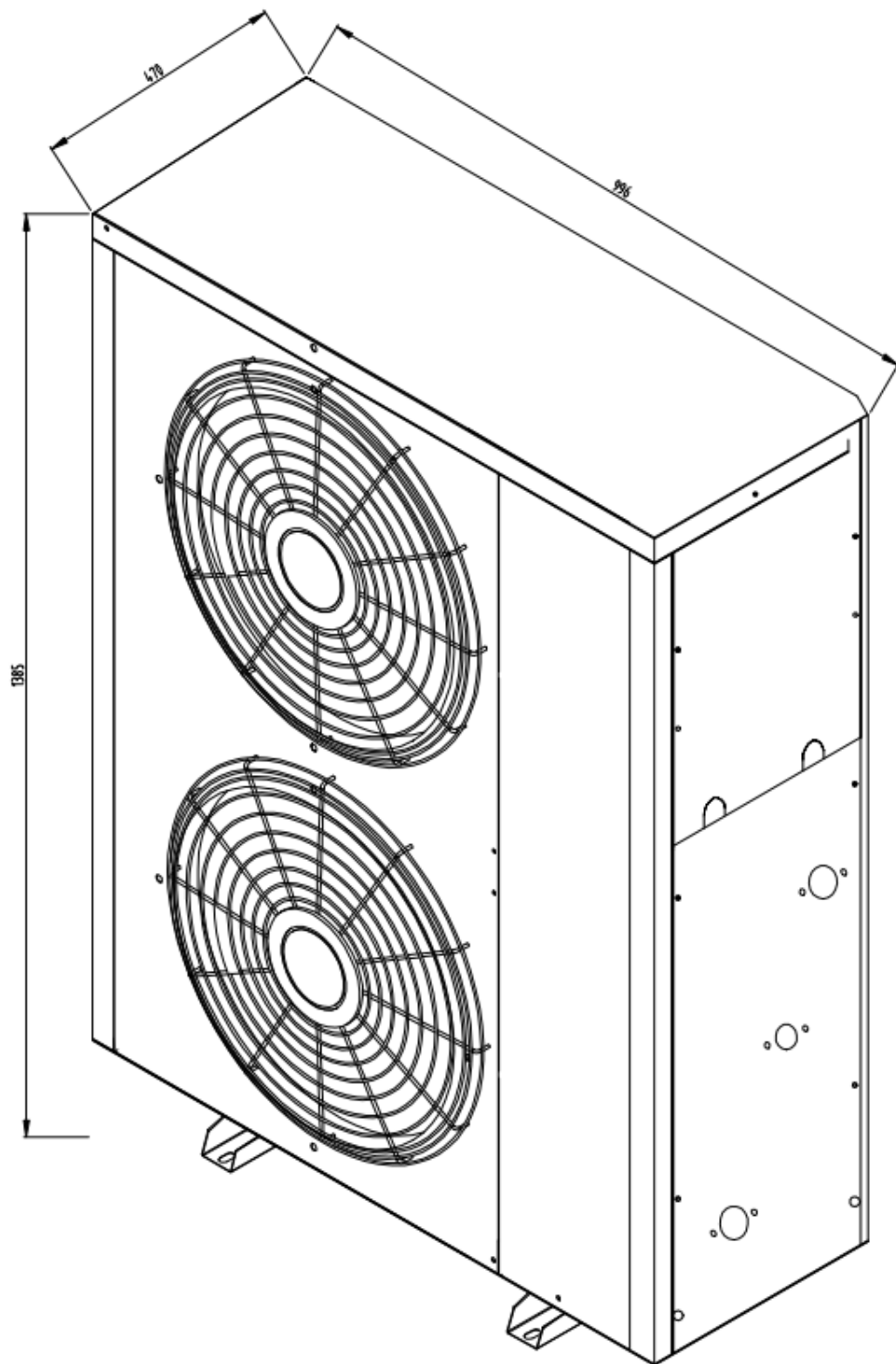
Model	Size(L*W*H mm)	Net Weight(KG)	Power Supply
M30	996x470x1000	100	220V ~ Inverter~1N
M40	996x470x1000	110	380V ~ Inverter~3N
M50	996x470x1385	150	380V ~ Inverter~3N
M60	996x470x1385	155	380V ~ Inverter~3N
M80	1196x568x1386	175	380V ~ Inverter~3N
M100	1196x568x1386	185	380V ~ Inverter~3N

2. Appearance

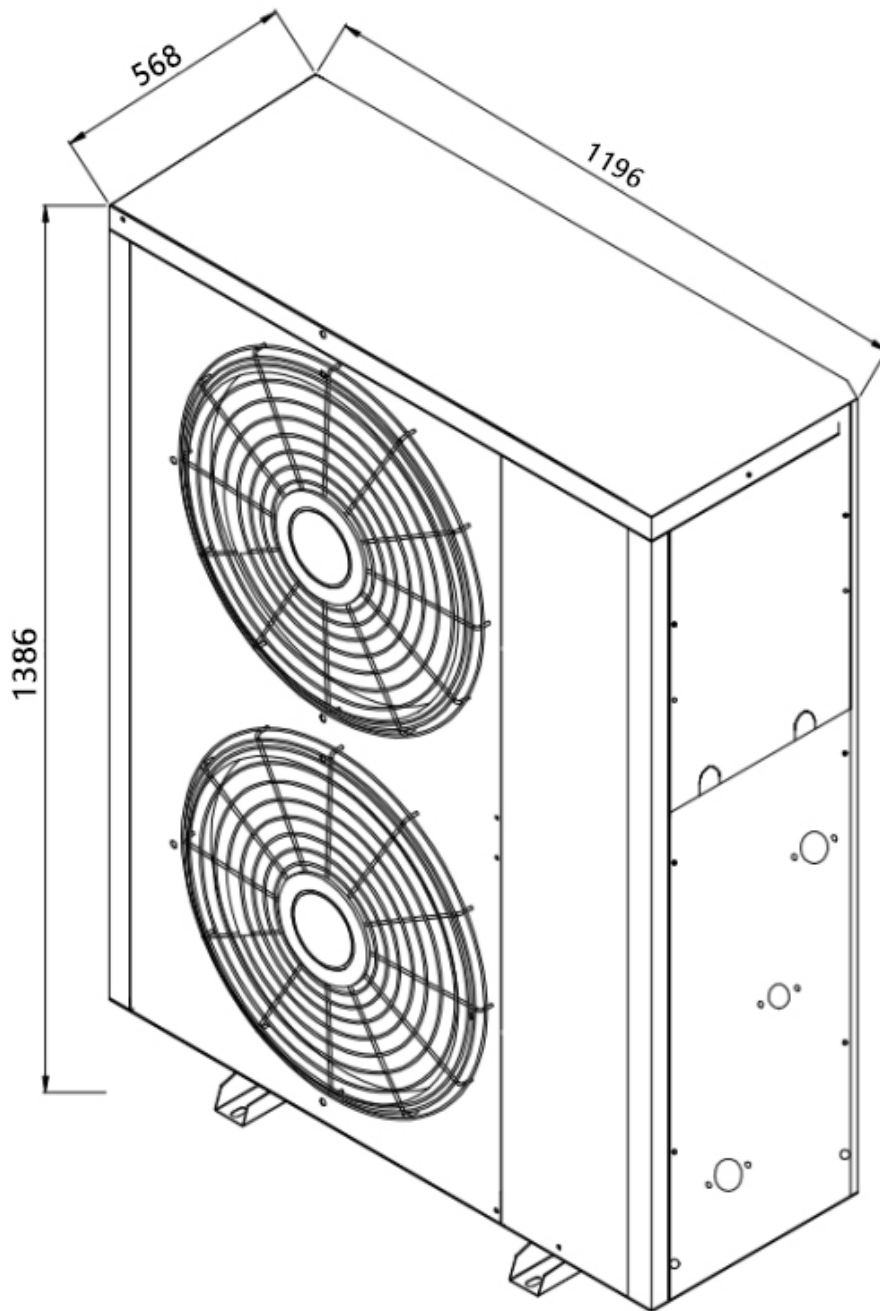
M30 & M40



M50 & M60



M80 & M100



3.Specifications

Unit	DC Inverter Monoblock Heat Pump 3 in 1				
	All In One Type				
Model	M30	M40		M50	
Waterproofing grade	IPX4	IPX4		IPX4	
Leakage protection	I Class	I Class		I Class	
Power source	220V-50Hz-1N	220V-1N/50Hz	380V-3N/50Hz	220V-1N/50Hz	380V-3N/50Hz
Hot water capacity	2500-9500W	3800~15500W		4000-19400W	
Heating capacity	2800-10000W	3500~15000W		4500-20000W	
Cooling capacity	2500-7000W	3800~10000W		4500-14000W	
Heating input power	1000-3000W	1500~4500W		2000-5500W	
Hot water input power	1000-3000W	1500~4500W		2000-5500W	
Cooling input power	1000-3000W	1500~4500W		2000-5500W	
Auxiliary element power	3000W	3000W		3000W	
Auxiliary element current	14A	14A		14A	
Rated input power	2420W	3600W	3600W	4500W	4500W
Rated current	10.8A	14.5A	6.4A	21A	7.8A
Water pump	WILO RS25/8	WILO RS25/8		WILO RS25/8	
Max water pump head	8 meters	8 meters		8 meters	
Expansion tank	2L	2L		5L	
Rated water flow	1.8m ³ /h	2.7m ³ /h		3.5m ³ /h	
Refrigerant	R410A/1800g	R410A/2100g		R410A/3000g	
Net weight	100kg	110kg		150kg	
Noise	≤49dB(A)	≤50dB(A)		≤52dB(A)	
Inlet/outlet gas max working pressure	4.2MPa	4.2MPa		4.2MPa	
High/low pressure max working pressure	4.2MPa	4.2MPa		4.2MPa	
Heat exchanger max working pressure	4.2MPa	4.2MPa		4.2MPa	

Unit	DC Inverter Monoblock Heat Pump 3 in 1 All In One Type		
Model	M60	M80	M100
Waterproofing grade	IPX4	IPX4	IPX4
Leakage protection	I Class	I Class	I Class
Power source	380V-50Hz-3N	380V-50Hz-3N	380V-50Hz-3N
Hot water capacity	5600-22000W	7000-29500W	9000-40000W
Heating capacity	5200-21500W	7200-30000W	8000-39000W
Cooling capacity	5200-15000W	7000-23000W	9000-30000W
Heating input power	2500-6600W	3200-8300W	4000-10000W
Hot water input power	2500-6600W	3200-8300W	4000-10000W
Cooling input power	2500-6600W	3200-8300W	4000-10000W
Auxiliary element power	3000W	/	/
Auxiliary element current	14A	/	/
Rated input power	5000W	6500W	8000W
Rated current	8.8A	12.8A	18A
Water pump	WILO RS25/8	/	/
Max water pump head	8 meters	/	/
Expansion tank	5L	5L	5L
Rated water flow	3.8m ³ /h	4.8m ³ /h	7m ³ /h
Refrigerant	R410A/3200g	R410A/3600g	R410A/3900g
Net weight	155kg	175kg	185kg
Noise	≤52dB(A)	≤58dB(A)	≤59dB(A)

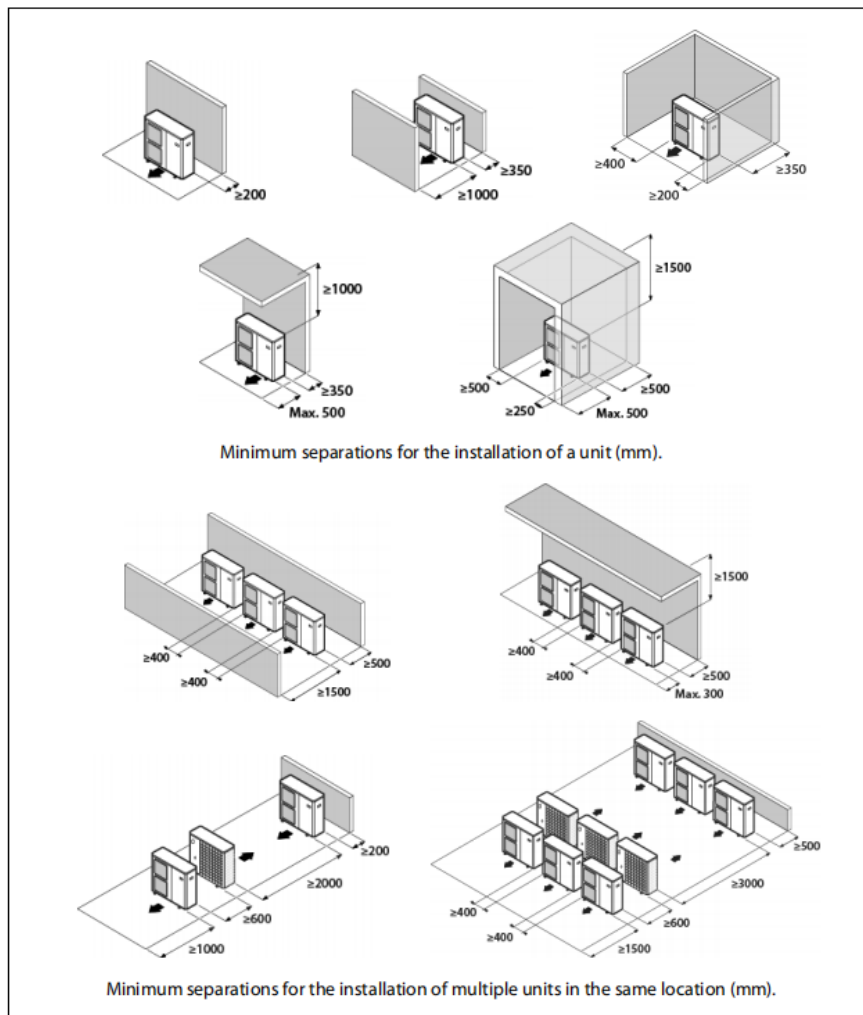
Inlet/outlet gas-max working pressure	4.2MPa	4.2MPa	4.2MPa	4.2MPa
High/low pressure-max working pressure	4.2MPa	4.2MPa	4.2MPa	4.2MPa
Heat exchanger-max working pressure	4.2MPa	4.2MPa	4.2MPa	4.2MPa

III. Installation

1.Heat pump installation

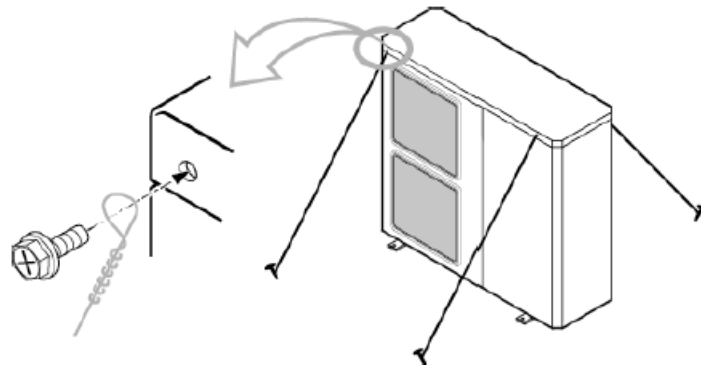
(1) Installation location

◆The heat pump must be installed exclusively outside the home and, where possible, in a completely clear area. If a protection is needed around the appliance, it should have wide openings on the 4 sides and the installation separations indicated in the following figure must be respected. No obstacle should prevent the circulation of air through the evaporator and the fan outlet.



◆Consult with the user before choosing the location of the device. It should not be placed next to sensitive walls, such as on the wall next to a bedroom. Make sure that the location of the heat pump is not disruptive to neighbor (sound level, air currents generated, low temperature of the air blown with risk of freezing plants in the path, etc.).

◆Choose a location that preferably has sunlight and is protected from strong and cold winds. If the heat pump is exposed to gusts of wind that make it possible to overturn it, it should be supported by suitable guys, as indicated in the figure.



◆The device must be sufficiently accessible for subsequent installation and maintenance work. Make sure that the passage of the hydraulic and electrical connections to the interior of the house is possible and comfortable. The spacing measures indicated in the figure above are those strictly necessary to ensure correct operation of the device; however, sometimes, it will be essential to provide more space for maintenance work.

◆The heat pump is a device specially designed for outdoor installation. Nevertheless, avoid installing it in a place where it may be exposed to significant water stains or spills (e.g. under a faulty gutter, near gas outlets, etc.). Move the appliance away from heat sources and flammable products.

◆In areas where abundant and copious snowfalls occur, special care must be taken to protect the heat pump from possible obstructions due to accumulation of snow around it. The obstruction of the air inlet and/or outlet of the machine due to the accumulation of snow may cause malfunction of the unit and possible breakdowns. The heat pump must be raised at least 100 millimeters above the maximum expected snow level. In turn, the roof should be protected from accumulation of snow, by means of a roof projecting from the building or a similar structure.

2. Hydraulic installation

◆The hydraulic installation must be made by qualified personnel.

2.1 Selection circulation pipeline : The water flow velocity inside the water pipe is generally required to be 0.8~1.5m/s. The maximum water flow velocity cannot exceed 2m/s.

Determine the diameter of the water pipe according to the rated water flow of the machine. As shown in the table below :

Water flow (m ³ /h)	≤1	1~2	2~3	3~4	4~5
Recommended pipe diameter(mm) (flow velocity 1.2m/s)	DN20	DN25	DN32	DN40	DN40
Minimum pipe diameter(mm) (flow velocity 1.8m/s)	DN15	DN20	DN25	DN32	DN32

2.2 Calculation of water pipe resistance : $H_{max}=P1+P2$

- ◆ Water pressure drop inside the machine. Can be found on the machine' s nameplate.
- ◆ Water pressure drop in piping system. If the water flow velocity is 1.2m/s, the resistance of the straight pipe is 0.6 Pa/m, and the resistance of each elbow is 2Pa. If the water flow velocity is 1.8m/s, the resistance of the straight pipe is 1.25 Pa/m, and the resistance of each elbow is 4.5Pa.

2.3 Pump selection

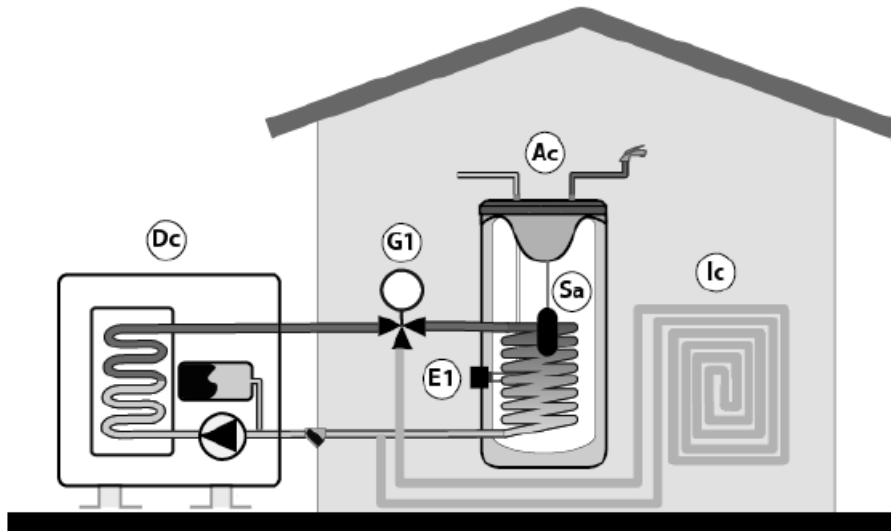
- ◆ According to the rated flow of the machine and the calculated water pressure drop. To decide if you need to install an additional circulating water pump.

2.4 Installation of floor heating

- ◆ The water flow speed in the floor heating pipe is not less than 0.25m/s, and the general design is 0.25~0.5m/s.
- ◆ The distance between the pipes is 150~200mm;
- ◆ The length of each loop does not exceed 80m, and the general designed is about 40~70m. The length difference between different loops does not exceed 10m.

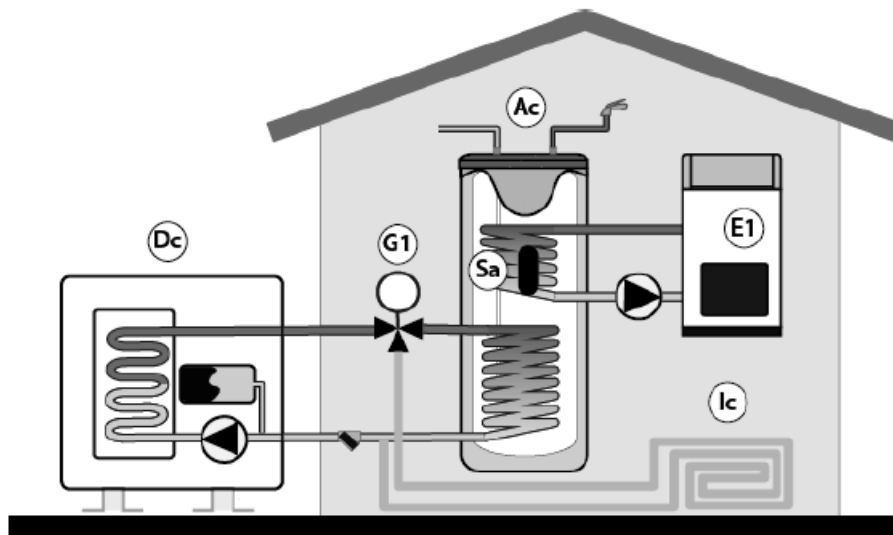
3. Installing a DHW tank

- ◆ The heat pump may include (optionally) in its installation a tank for the production of domestic hot water. The hydraulic installation of the tank must be made by qualified personnel, subject to the applicable installation legislation and attached instructions of the tank.
- ◆ To combine an DHW tank with the heat pump, insert the DHW tank sensor supplied with it into the tank sensor housing. In addition, a 3-way diverter valve (G1) must be installed between the external machine and the DHW + heating/cooling installation, by means of what, the electronic controller diverts the water from the heat pump to the DHW production or to the heating/cooling installation, depending on whether there is demand for DHW.



◆ In addition, optionally, a backup heater (E1) can be installed, by means of which DHW temperatures higher than 50°C can be obtained.

As an alternative to the backup heater, the heat pump optionally allows the connection of a conventional source of energy (as a gas boiler, oil boiler, etc.) as a backup for DHW production, by means of the same electrical connection E1. For it, the DHW tank must be provided with an auxiliary coil exchanger and/or any intermediate system of exchange that allows the hydraulic connection of the above-mentioned backup source of energy.



To perform the electrical installation of the DHW tank sensor, the 3-way valve (G1), and the backup heater or boiler (E1), read the “Electrical Connections” section of this manual carefully.

4. Main components and working principle of water circulation system

4.1 pump: push the water circulate in the water circulation system to realize the heat exchange between

the heat pump and the water terminus.

4.2 Filter: Collect impurities in the water system to prevent impurities from entering the heat pump and the water terminus's heat exchanger to cause blockage.

4.3 Buffer tank: Increase the amount of water in the system, reduce the change rate of water temperature, improve comfort; balance the different temperature difference and flow demand between the heat pump and the water terminus.

4.4 Safety valve: keep the pressure of the water system not exceeding the maximum limit.

4.5 Expansion vessel: balance the pressure of the water system when the volume of water changes.

4.6 vent: remove the air in the water system and ensure that the water cycle is normal.

5. Estimate the heat demand for room heating

$$Q = K \cdot q_n \cdot S$$

- Q Total heat demand for housing
- K Additional factor
- q_n Heat demand per square metre
- S Heating area

5.1 q_n experience values for different houses

Apartment (W/m ²)		Single house (W/m ²)	
Living room	100~130	Living room	120~150
Bedroom	110~140	Bedroom	120~150
Study room	100~120	Study room	110~130

5.2 Additional factor

Ratio of heating area to total room area	>0.55	0.4~0.55	0.25~0.4	<0.25
Additional factor K	1.0	1.25	1.35	1.5

The rated heating capacity of the heat pump must be $\geq Q$.

6. Calculation and selection of buffer tank

6.1 Minimum water volume in the water system

Considering the comfort of heating, it is best not to reduce the temperature of the water supply by more than 5°C during the defrosting in winter. The general defrosting time is about 4 minutes.

$$M_{min} = Q \cdot T \cdot 2 \cdot 1000 / (60 \cdot 5 \cdot 1.163)$$

M_{min} Minimum water volume in the water system (L)

Q The rated heating capacity of the heat pump (KW)

T The defrosting time (minute)

M2 Total volume of other parts in the system except the buffer tank

6.2 The volume of the buffer tank must be $\geq M_{min} - M_2$

6.3 If $M_2 > M_{min}$, It is not necessary to install a buffer tank.

6.4 For the correct operation of the heat pump, a minimum water volume must be ensured in the installation, as well as a minimum flow in the hydraulic circuit of the machine.

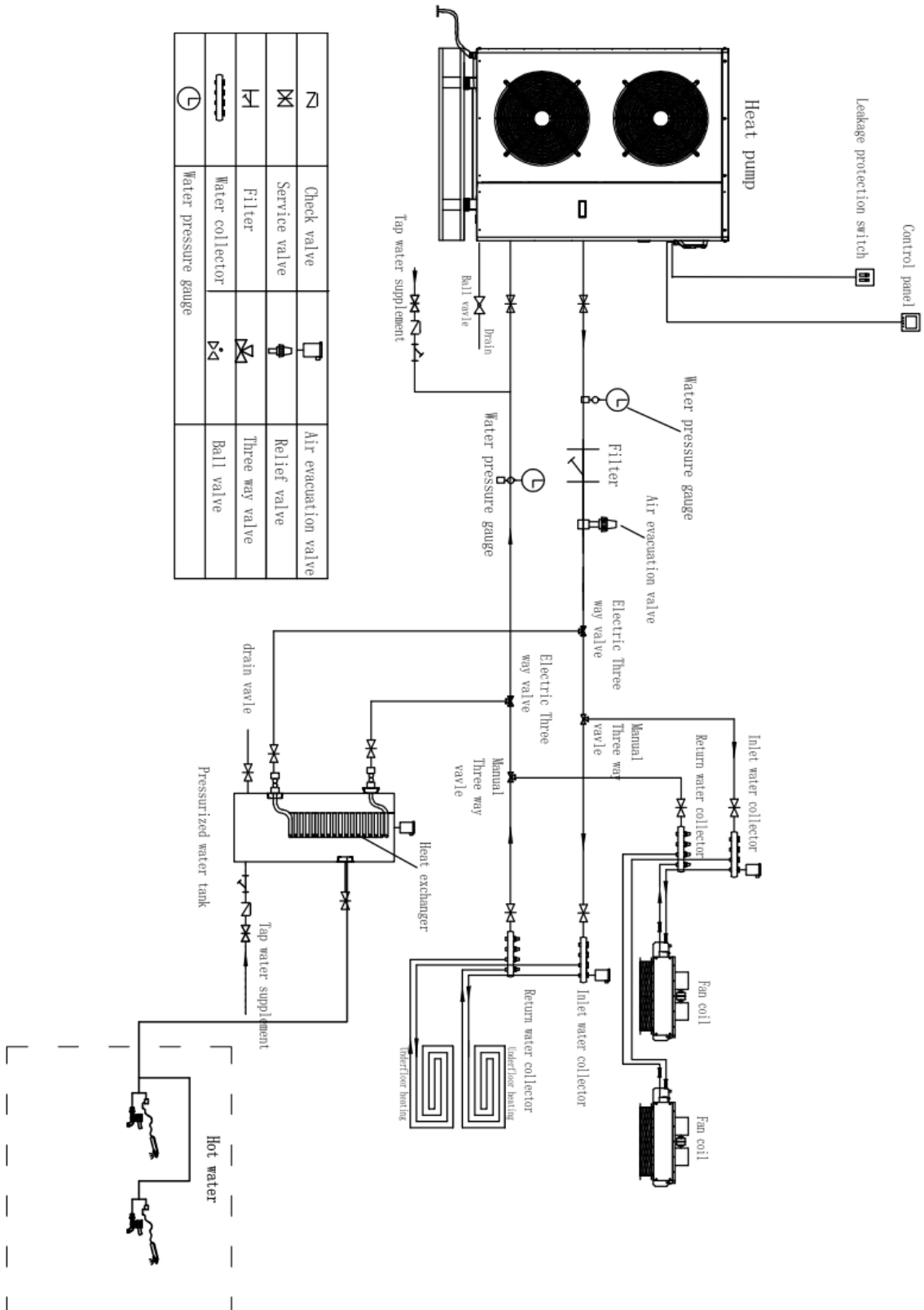
If the minimum circulation flow is not reached by the heat pump, it will be blocked, and an alarm code will be displayed on the controller display. According to the different capacity model installed, these volume will be as below,

	8KW	11KW	16KW
Minimum volume(l)	100	150	200
Minimum flow rate(l/min)	10	15	20

6.5 If the water volume of the installation is lower than this value, install a buffer tank in the heating/cooling circuit. To avoid condensation and premature deterioration of the buffer tank, make sure that all hydraulic fittings and connections are properly insulated, especially when the tank is to be used in Cooling mode.

6.6 In multi-zone installations managed by thermostatic or similar valves, some method must be provided to maintain the minimum flow rates indicated above, even when all zones are closed (bypass valve, etc.).

7.Connection diagram



8. Circuit connection

(1) Attentions

- ◆ Construction wiring must be installed by a professional technician for construction in accordance with the circuit diagram.
- ◆ Appliance installation wiring should be installed in accordance with national wiring rules.
- ◆ Before installation, please confirm whether your local voltage is match with the voltage showed on the machine's nameplate and whether the carrying capacity of the power supply, wires and sockets are suitable for this machine's input power.
- ◆ The power source wire diameter is selected by the nameplate maximum current.
- ◆ The regulation of insurance tube: according to the reality.
- ◆ Users are not allowed to change the power cord, wiring work must be carried out by qualified electricians, and to ensure that the machine metal parts has a good connection with grounding, the machine shall not be allowed to change the grounding method. The electrical connection of the heat pump must be protected by an earth leakage circuit breaker (a high-speed switch of 30 mA (<0.1s)).

- ◆ The power connection must be equipped with the unit matching and at least 3mm contact with the power from the all-pole disconnect device and leakage protection device.
- ◆ If the power soft wire is damaged, it must be replaced by the manufacturer, its service department, or similar professional to avoid danger.
- ◆ Do not insert hands or foreign objects into the outlet of the unit, which will lead to the danger of personnel and equipment.
- ◆ The remote controller is fixed by screw and installed indoor with the height above 1.5M. It is forbidden to install in the environment where the humidity, rain, acidity, corrosivity and light illuminate directly.
- ◆ The water quality of the unit must meet the national standard of domestic water consumption, otherwise it will cause the machine damage, the company does not bear any responsibility.

IMPOTTANT: Before carrying out any work on the electrical installation of the heat pump, always ensure it is disconnected from the mains.

IV. Trial running

1. Trial running must after all the installation completed.

2. Please confirm the following matters before the trial operation, put “√” in the boxes after confirmation

- ▲ Unit is installed correctly
- ▲ Power supply meets unit's rated power source need
- ▲ Piping and wiring are correctly installed
- ▲ Unit air inlet/outlet well-ventilated
- ▲ Drain off water is done well
- ▲ Leakage protective device act effectively
- ▲ Pipe thermal insulation
- ▲ Grounding wire connected correctly

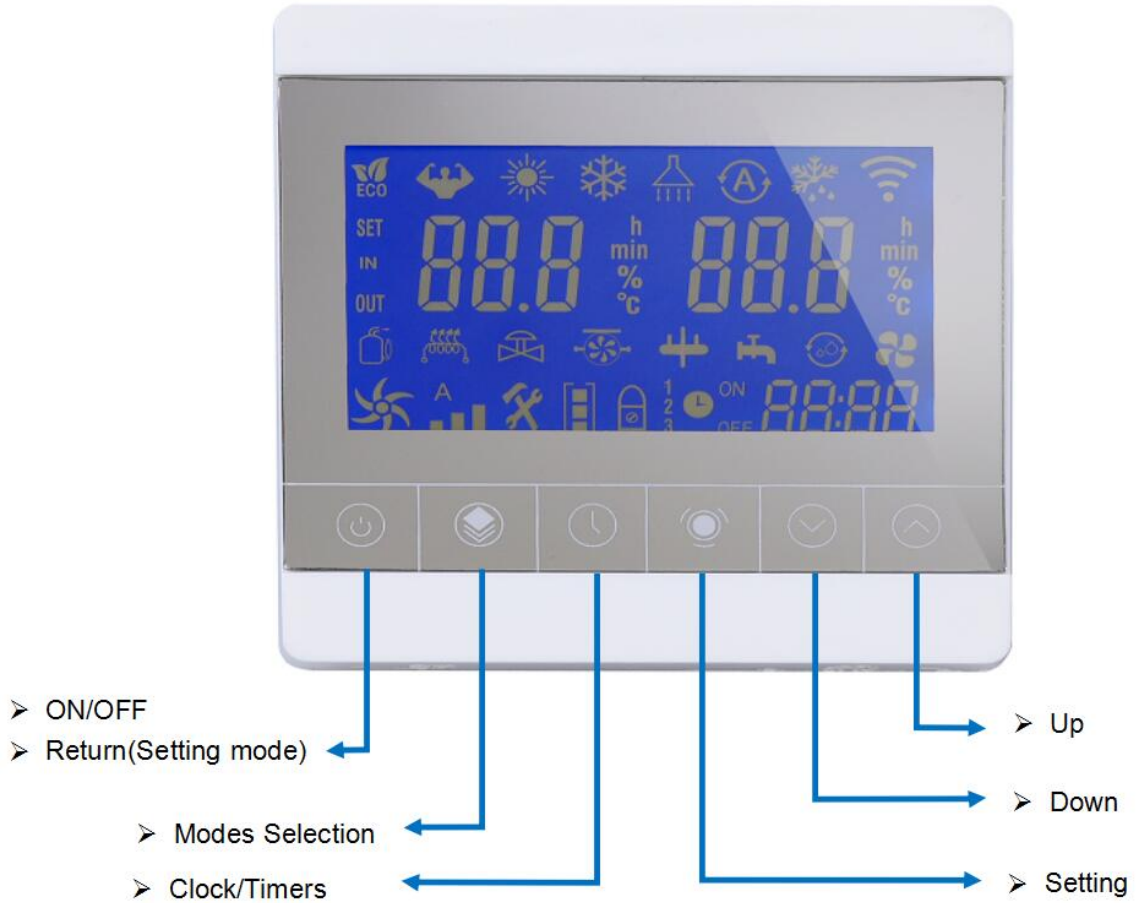
3. After check and ensure correct, then power on. If the control panel display nothing, that should recheck and tight the line of control panel. The control panel should display time, setting temperature and the current temperature.

4. Discharge the air out of the pipelines and then press ON/OFF button, the unit work under the setting temperature, unit's trial running would check the following:

- ▲ First time to run the device, check the current normal or not;
- ▲ The function keys on operation panel are normal or not;
- ▲ The indicator light is normal or not;
- ▲ The whole circulating hot water system has water leakage or not;
- ▲ The condensed water discharge is normal or not;
- ▲ System's pressure is normal or not (according to the high water temperature or low pressure);
- ▲ Whether there is abnormal sound and vibration during operation;
- ▲ The wind, sound and condensate of the unit affect the neighborhood or not;
- ▲ Whether there is leakage of refrigerant.







V. Operation panel instruction

H&T Remote control (with hot water function)

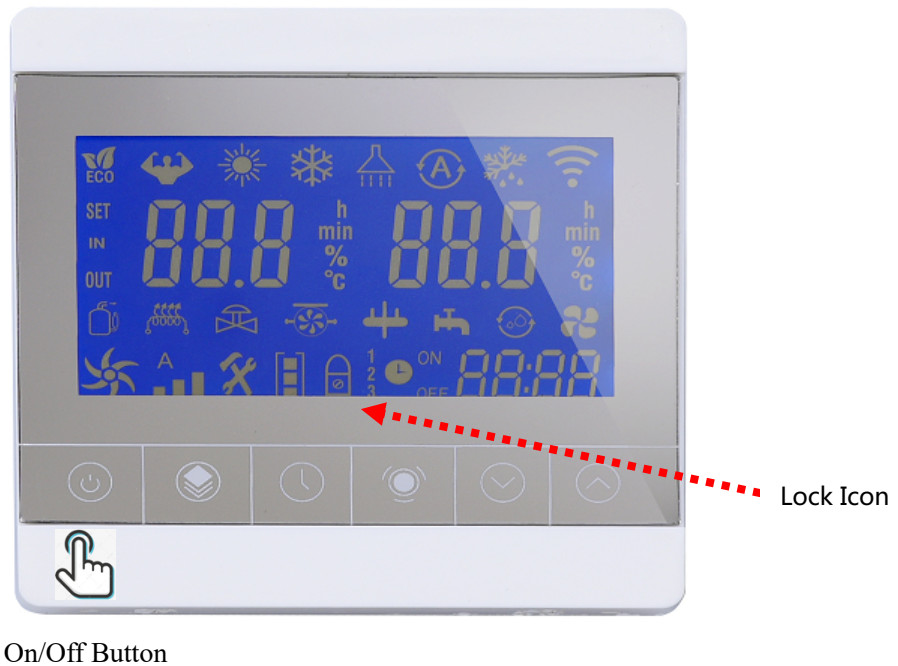


Icon List


1		Energy Conservation Mode	11		Heat Pump Compressor
2		Powerful Working Mode	12		Electric Heater
3		Heating Mode	13		Water Pump
4		Heating Mode	14		4-Way valve
5		Water-Heating Mode	15		Heat Pump FAN
6		Automatic Mode	16		Wind speed steps of FAN
7		Defrosting Mode	17		Lock

8		WIFI connection status	18		Multi-phase Timer
9		Setting	19		Timer ON/OFF
10		Water Inlet	20		Time

1. Power On/Off and Lock Function



1.1 Icon Definition

- ◆  Lock Icon-- the symbol lights up to indicate that the display is locked


1.2 ON/OFF Operation Steps

Step One: Lightly press this button to switch from power on/off;

Step two: In the main interface, tap this key to shut down directly; in other settings interface, tap this key to return to the main interface;

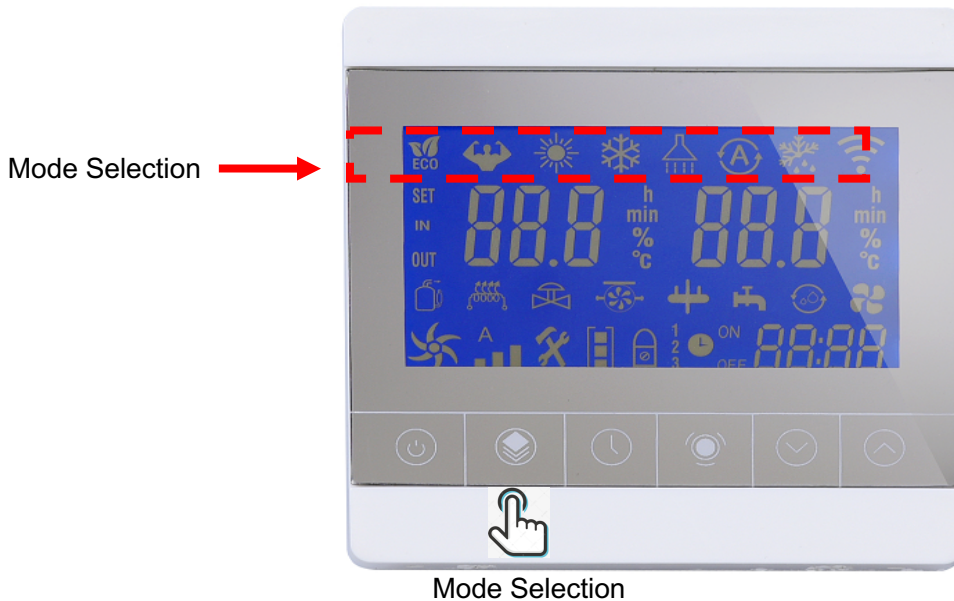
1.3 Unlock Operation Steps

Step 1(Lock): Press and hold the switch button for 5s (or do not operate the wired controller for 60


seconds) to lock the wired controller (to prevent children from playing randomly at home). In the locked state, pressing other buttons is invalid. Lock light, the icon lights  up to indicate that it is locked.

Step 2 (Unlocking): In the locked status, long press this key for 5s to change from the locked state to the unlocked state, and pressing other keys is valid at this time.


2 . Mode Selection



2.1 Icon definition

- ◆  Heating Mode

In this mode, the heat pump continuously heats the water temperature to the set temperature point.

- ◆  Cooling plus hot water(Could be used for triple combination supplying)


- ◆  Heating plus hot water(Could be used for triple combination supplying)

- ◆  Cooling Mode

In this mode, the heat pump uses cooling to lower the water temperature to the set temperature point.

- ◆  Defrosting Mode


The system's automatic or manual defrost mode allows the heat pump to maintain high system efficiency and save energy


- ◆  Hot water mode









This mode is only limited to triple function heat pump models for domestic hot water heating

- ◆  WiFi connection function

2.2 Operation Steps

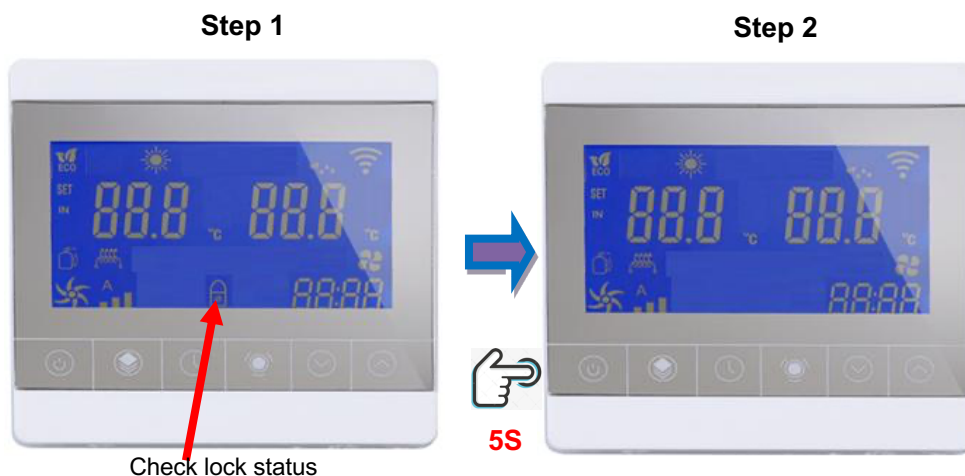
Step 1: Confirm Whether the LCD Screen is unlocked or not , ("  " means locked) ;

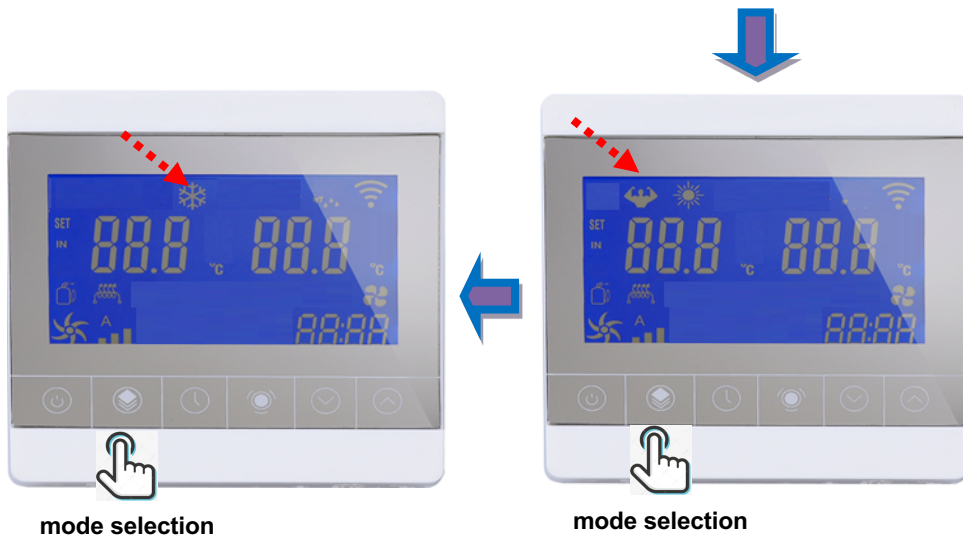
Step 2 : In the locked status, pressing  and holding the button for 5s can change from the locked status to the unlocked state, and pressing other keys is valid at this time;



Step 3: Press  and hold the button for 5 seconds to select different modes, in sequence
 "  heating mode" "  cooling mode" "  hot water mode" "  cooling +  hot water mode"
 heating +  hot water mode

The mode selection is selected according to each model, refer to Chapter 6)

Note: (The display working mode of the wired controller is limited by the model selection (S02). If the single-cooling model is selected, the wired controller will automatically switch to the cooling status, and the heating and automatic modes cannot be switched. If the single-heating model is selected After that, the wired controller automatically switches to the heating status, and the cooling and hot water cannot be switched.)

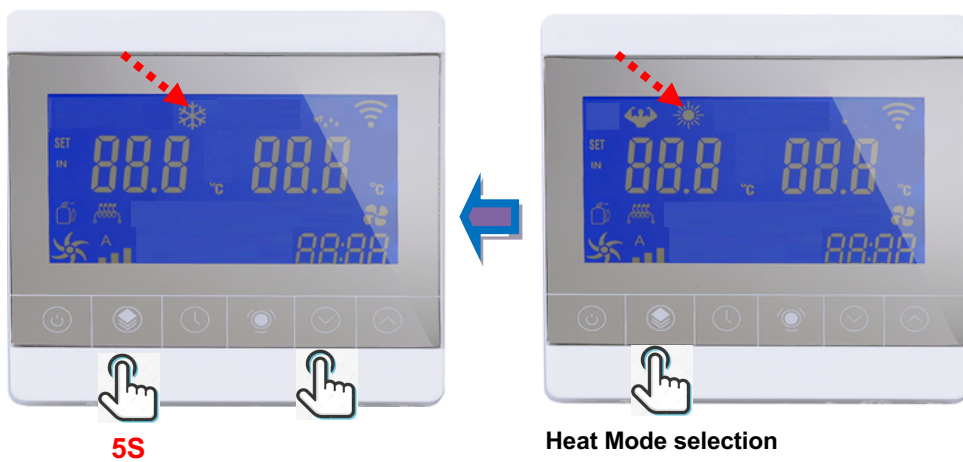




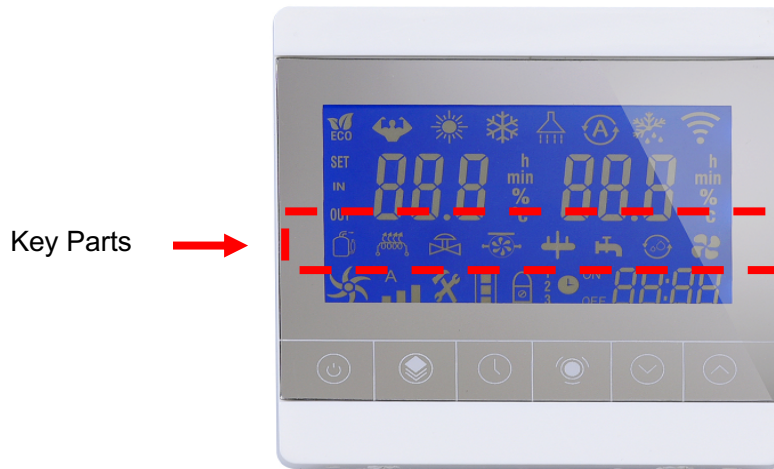
Function 1: In the heating operation, in the unlocked state, press and hold the  key +  key for 5S to enter the manual defrosting mode;










Function 1



3 . Key Parts Working Display

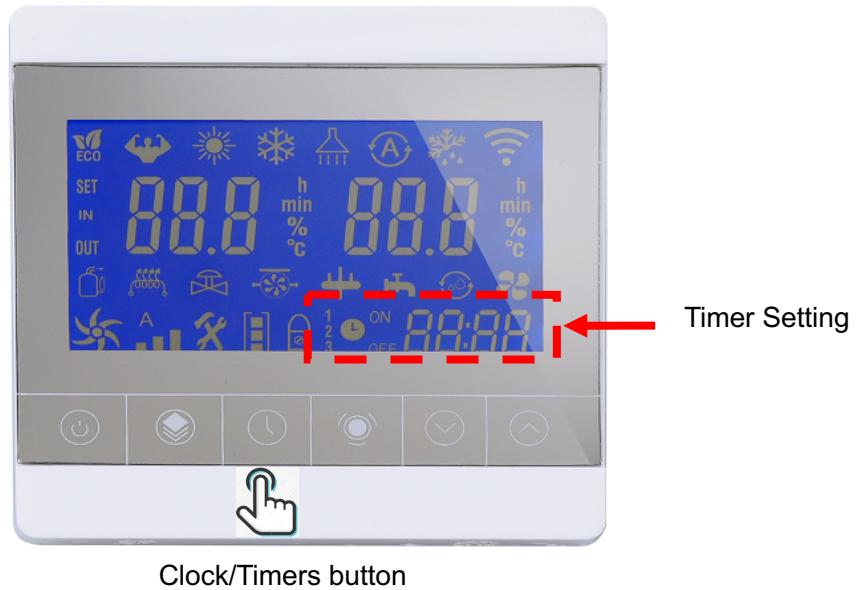


3.1 Icon Definitions












- ◆  Heat Pump Compressor
- ◆  Electric Heater
- ◆  Water Pump(For some models: light on means the water pump is working; flashing on means water flow failure; The original water flow failure reporting E03 code function was replaced by the functions bellow)
- ◆  4-Way valve
- ◆  Water way three-way valve
- ◆  Water Inlet Temperature
- ◆  Heat Pump Fan

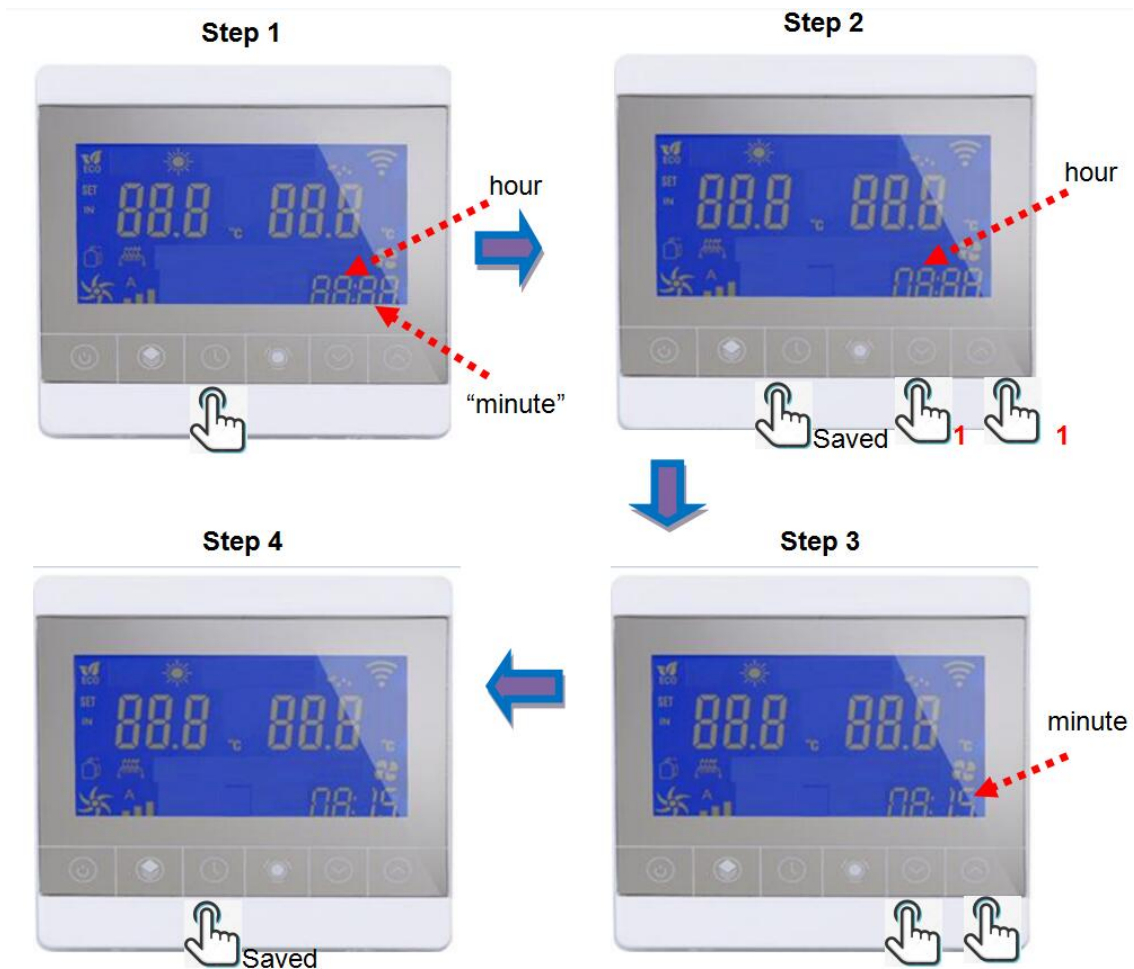
4. Timer Setting













4.1 Icon Definitions

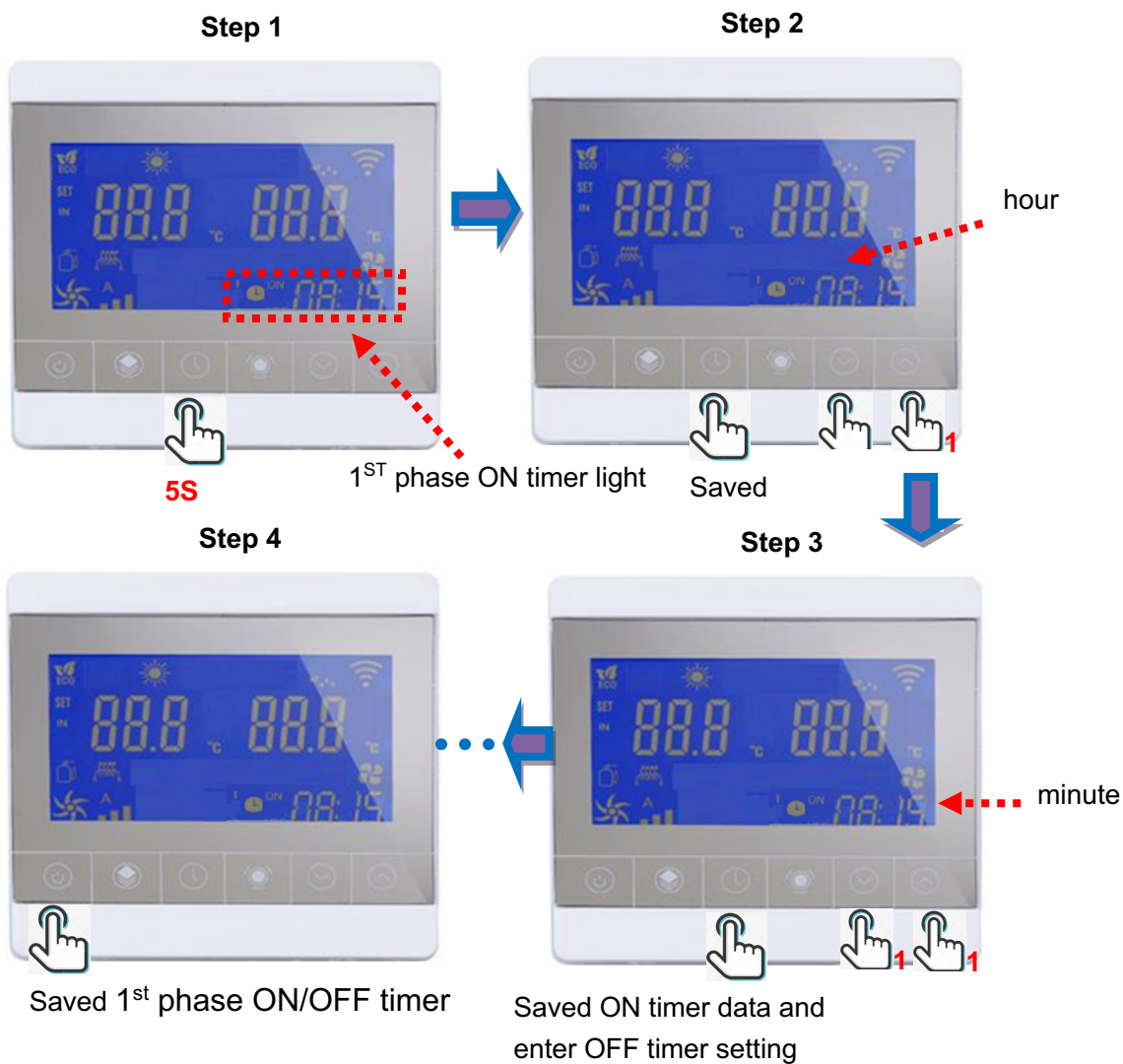
- ◆  : multi-phase timer setting
- ◆  Timer ON/OFF
- ◆  : Time
- ◆ 4.2 Time setting operation steps :
- ◆ Step 1: In the main interface, press the "". It means enter to the Time Setting, the time icon "" will display. When the "hour" digit is flashing, please press "" or "" key to set the "hour" .
- ◆ Step2 : After finishing setting the "hour" digit, press "" once, it means that the setting of "hour" digit has been confirmed.
- ◆ Step 3: At the same time, the position of "minute" will flashing, that means it has entered the setting state of the "minute" . Please press the "" or "" key to set the "minute" digit.
- ◆ Step 4: After finishing setting the "minute" digit, press "" once, it means that the setting of "minute" digit has been confirmed; Till then the time setting operation has been completed and the setting interface has been exited.



4.3 Timer Operation Steps

- ◆ Step 1: Set the first group of timing on/off settings, press and hold the "🕒" button for more than 5 seconds, when you see When the "🕒 ON 88:88" is bright, it means entering the first group of timing power-on setting operations;press and hold the "🕒" button for more than 5 seconds, you will see "🕒 ON 88:88" is flashing . it means entering the first group of timing power-on setting operations;
- ◆ Step 2 :press the "🕒" or "🕒" key to set the "hour" digit and then press "🕒" once to confirm the "hour" digit you set.
- ◆ Step 3:At this time, it enters the "minute" digit setting state of the time, you will see the "minute"position is flashing. At this time, press the "🕒" or "🕒" button to set the "minute" digit, then press "🕒" once to automatically enter the timer shutdown setting operation;

- ◆ Step 4: Enter the timer shutdown setting operation, you will see "  OFF  " display bright. Please press the "" or "" key to set the "hour" digit and then press "" once to confirm the setting. At the same time it has entered the "minute" digit setting state, you will see the "minute" position is flashing, press the "" or "" key to set the "minute". After setting the first group of time, press the "" key to confirm and return to the main interface.
- ◆ For example: Set the timing on at 8:15, the machine will automatically turn on at 8:15 every day. The same operation for the timing off



4.4 Multi-phase Timer Operation Steps

The setting of the second and third groups of timing on/off: after finishing the setting of the first group of timer, do not press the "⏻" key, but then press the "🕒" key once to enter the second group of time setting, At this time, you will see " 2 3 🕒 ON 88:88 " , do the same operation as the setting method of setting the first group of timer on/off (refer to chapter 4.3) to set the second and third groups of timer.

Step 4 from chapter 4.3



4.5 Cancel Timer Function

After starting the timing function, press and hold the "🕒" key more than 3S to cancel the timing function.

5. Browse Function

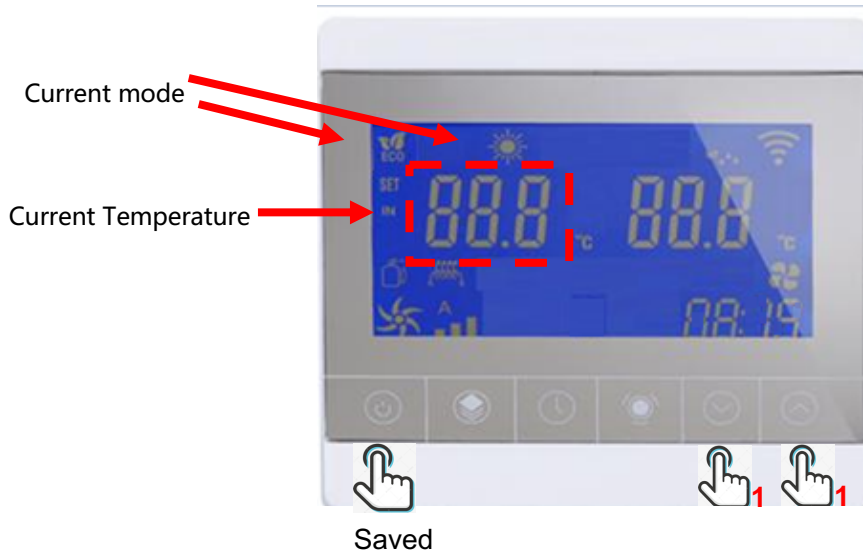
Function 1: Press "📉" or "📈" key to turn pages to browse related parameters;

Function 2: In the main interface of the power-on state, press the "📉" or "📈" key to set the set temperature value in the current mode; after the setting is completed, press the "⏻" key to confirm and return to the main interface

Function 1



Function 2



6.Parameter setting function

WARNING: The "⊙" setting key is an important parameter used to set the machine's operation. It is specially provided for professional after-sales maintenance personnel. Please set it carefully for home users, otherwise there will be a risk of loss of the machine.

Step 1: Short press the setting button "⊙" once to enter the system P parameter setting (the switch state can be set);

Step 2: Press the "⏴" or "⏵" key to turn the page to query the parameters, and then press the setting key "⊙" to select the parameter value;

Step 3: Combine the "⏴" or "⏵" keys to modify the parameter value

Step 4: Then press the setting key "⊙" to confirm, press the on/off key to return to the main interface; if there is no operation for 60s in the parameter setting interface, it will automatically exit and return to the main interface.

Function 1: Press and hold the setting button "⊙" for 3S to enter the S parameter setting, (repeat steps 1~4)

Function 2: Press and hold two keys at the same time for 5S (i.e. power-on key "⏻" + setting key "⊙") to enter F parameter setting, (repeat steps 1~4)

Note: The display working mode of the wired controller is limited by the model selection (S02). If the single-cooling model is selected, the wired controller will automatically switch to the cooling state, and the heating and automatic modes cannot be switched. If the single-heating model is selected, the wire controller automatically switches to the energy-saving heating state, and the cooling and automatic modes cannot be switched.

Function

Display parameter codes



Display parameter value



3S

Function 2



5S

At the same time



5S

7.ON/OFF Device working indicator light

The indicator light is green: the device is on or in standby ;

The indicator light is blue: the device is in normal operation ;

The indicator light is red: device failure ;

When the remote control is unlocked, long press the clock button  +up key “  5S,the light panel display function can be turned on or off

8.Parameter List

8.1 Parameter status query (Parameter Browse , press Mode key to enter)

Code	Description	Settable range	Unit	
c01	Ambient temperature		0.1°C	
c02	Outer coil temperature		0.1°C	
c03	Exhaust gas temperature		0.1°C	
c04	Suction temperature		0.1°C	
c05	Indoor temperature		0.1°C	
c06	Outdoor temperature		0.1°C	
c07	Inner coil temperature temperature(after throttling)		0.1°C	
c08	Return water temperature		0.1°C	
c09	Water outlet temperature		0.1°C	
c10	Temperature before valve		0.1°C	
c11	Temperature after valve		0.1°C	
c12	Evaporator temperature		0.1°C	
c13	Sensor fault bit			
c14	System fault bit			
c15	Drive fault bit			
c16	Device output bits			
c17	Running status bits			
c18	AC voltage		V	

c19	DC voltage		V	
c20	Actual frequency		Hz	
c21	Main valve opening			
c22	Reserved			
c23	Machine current		A	
c24	Compressor current		A	
c25	DC fan 1 feedback		Rpm	
c26	Compressor target frequency		Hz	
c27	DC fan 2 feedback		Rpm	
c28	Main control software version			
c29	Driver software version			
c30	Controller software version			

8.2 Parameter Setting , click " " to enter

Code	Description	default	Scope	Remark
P01	Heating return water temperature setting value	27°C	8~60°C (46.4~140°F)	
P02	Cooling return water temperature setting value	27°C	8~28°C (46.4~95°F)	
P03	Hot water temperature setting value	27°C	8~60°C (46.4~140°F)	
P04	Start temperature difference/°C	1°C	1~18 °C (35~59°F)	
P05	Option for on/off or constant temperature	1	0 or 1	
P06	Fast commodity inspection mode	-17°C	2~-30°C (35~-22°F)	Special controller
P07	Reserve			
P08	Reserve			
P09	The max setting value of P01	40°C	15~60°C (68~140°F)	
P10	Reserve			

P01: Heating return water temperature setting value, can be set (8-60°C, 46.4-140°F), the default value is 27°C (80.6°F);

P02: The set value of the cooling return water temperature, which can be set (8-28°C, 41-95°F), the default value is 27°C (80.6°F);

P03: Hot water -- temperature setting value, can be set (8-60°C, 46.4-140°F);

P04: Starting temperature difference, adjustable from 1-18°C (35-59°F), default is 1°C (41°F);

P05: ON/OFF or constant temperature selection, when 0 is selected, it is ON/OFF (that is, the temperature is stopped), when 1 is selected, it is constant temperature, and the default is 1;

P06: The special wired controller will use this value, so that the compressor can be started after only 30 seconds after the heat pump is powered on. The default value is -17. This value is invalid for user settings and is only used in the commodity inspection process;

P07: Originally used to set the forced start temperature of electric heating, invalid for swimming pool machine;

P08: Originally cooperated with P07 to set the control mode of electric heating, it is invalid for swimming pool machine;

P09: The upper limit of the maximum adjustment value of the P01 parameter can be set. For example, if P09 = 40°C, the adjustable range of P01 is 8~40°C;

P10: The zero point originally used for fine-tuning the return water temperature is not used for the time being, and is invalid for swimming pool machines.

8.3 Function setting (Long press the setting key“ ”for 3 seconds to enter)

Code	Description	Default	Setting range	Remark
S01	Reserved	1	0-1	
S02	Model selection	3	0 single cooling, 1 cooling/heating, 2 single heating, 3 heating+cooling+hot water	
S03	Inlet water temperature correction	0		
S04	Outlet water temperature correction	0		
S05	Defrost enter temperature setting	-6°C	0- (-30) °C	
S06	Defrost exit temperature setting	15°C	2-20°C	
S07	Defrost interval	70min	25-200min	
S08	Defrost process time	12min	2-20min	
S09	Difference between defrost coil and ambient temperature	6°C	0-10°C	
S10	Selection of pump operation mode	0	0 always running ; 1 interval running ; 2 stop after reach temperature	
S11	Auxiliary valve initial opening	80	0~520	
S12	Fixed frequency operation	0	0: automatic operation; 1: fixed frequency operation	
S13	Fixed frequency setting	60	0-120HZ	

S14	Enthalpy valve open ambient temperature	7°C	0-15°C	
S15	Main valve electronic expansion valve adjustment	0	0: automatic operation; 1: constant pulse operation	
S16	Manual main electronic expansion valve pulse opening setting	120	0-520	
S17	Auxiliary valve electronic expansion valve adjustment	0	0 automatic operation; 1 constant pulse operation	
S18	Manual auxiliary electronic expansion valve pulse opening setting	150	0-520	
S19	Model power selection	1		
S20	Optional enthalpy function	0	0 Not available 1 Optional	
S21	Electronic expansion valve adjustment cycle	10S	10-240S	
S22	Linked switch option	1	0 Not available 1 Optional	
S23	Defrost main valve opening	300	0-520	
S24	Auxiliary expansion valve exhaust minimum value	60°C	20-110°C	
S25	Fuzzy defrost ring temperature >4°C Incoming coil temperature	-6°C	-30-150°C	
S26	Fuzzy defrost ring temperature ≤4°C Incoming coil temperature	-8°C	-30-150°C	
S27	Fan motor type selection	3	0 Two-speed AC fan 1 DC fan; 2 single-speed AC fans 3 off-board DC fans	
S28	Electric heater switch control	1	0 off /1 on	
S29	Condensing electric heating switch control	1	0 off /1 on	
S30	Inlet and outlet water temperature difference is too large protection value	13°C	5-20°C adjustable	
S31	Inlet and outlet water temperature difference is too large protection value	16°C	5-20°C adjustable	

S01: Reserved ;

S02: Model selection: 0 single cooling, 1 cooling / heating, 2 single heating, 3 heating/cooling/dhw; default 3; (the display working mode of the wired controller is limited by the model selection (S02), if the single cooling model is selected, the wired controller When switching to cooling state, heating and hot water modes cannot be switched. If the single-heating model is selected, the wired controller switches to heating state, and cooling and hot water modes cannot be switched.)

S03:Reserved ;

S04 : Defrost mode: reserved ;

S05 : Defrost enters the set temperature, -30-0°C, default: -4°C ;

S06 : Defrost exit set temperature, 2-20°C, default is 15°C ;

S07: Defrost interval time(25-200 minutes), default: 40 minutes ;

S08 : Defrost process time (2-20 minutes), default: 12 minutes ;

S09 : Difference between defrost coil and ambient temperature: 0-10°C adjustable, default: 6°C ;

S10 : Water pump operation mode selection, 0 for always running, 1 for interval operation, 2 stop after the setting temperature, the default is 0. Always running means that the water pump keeps running when the water temperature reaches the set temperature; Stop after the setting temperature, it means that the water pump stops after the compressor stops when the water temperature reaches the set temperature;

S11:The initial opening of the auxiliary expansion valve, the default opening is 80;

S12:Fixed frequency operation, 0 automatic operation, 1 fixed frequency operation, the default is 0. When the selection is 1, the compressor runs according to the set value of parameter 13;

S13: Frequency setting, 0-120HZ adjustable, default is 60HZ;

S14: Enthalpy valve opening ambient temperature: adjustable from 0-15°C, the default is 7°C (the valve opens when the actual temperature is lower than the setting);

S15:Main electronic expansion valve adjustment, 0 automatic operation; 1 fixed pulse operation, the default is 0. When 1 is selected, the main valve opening is set according to S16;

S16:The main electronic expansion valve pulse opening setting, 0-520, the default is 120;

S17: Auxiliary valve electronic expansion valve adjustment, the default is 0, 0 automatic operation; 1 fixed pulse operation. Similar to S15 function;

S18:Auxiliary electronic expansion valve pulse opening setting, the default is 0, 0-520, the default is 80;

S19:Model parameter selection, the default is 1, reserved;

S20 : The enthalpy increase function is optional, 0 is not available, 1 is optional, the default is 0;

S21:Electronic expansion valve adjustment cycle: 10-240S adjustable, the default is 30S ;

S22:Linked switch option, 0 is not available, 1 is optional, the default is 1;

S23:Defrost main valve opening: 0-500 adjustable, the default is 300;

S24:The minimum exhaust value of the expansion valve, adjustable from 20 to 110°C, the default is 65°C;

S25:Fuzzy defrosting ring temperature > 4°C Entered coil temperature: -30-150°C adjustable, default: -3°C;

S26 : Fuzzy defrosting ring temperature ≤4°C Entered coil temperature: -30-150°C adjustable, default: -6°C;

S27: Fan motor type selection: 0 two-speed AC fan; 1 DC fan; 2 single-speed AC fan, 3 off-board DC fan; default is 3

S28: Electric heater switch control, the default is 1, 0 off/1 on;

S29:Condensing electric heater switch control, the default is 1, 0 off/1 on;

S30:The protection value of the temperature difference between the inlet and outlet is too large, the default is 14°C, and it can be adjusted from 5-20°C;

8.Error code

Code	Description
E02	Water tank sensor failure
E03	Water flow failure
E04	Reserved
E05	High pressure protection
E06	Low pressure protection
E09	Connection failure between control main Program board and controller
E10	Connection failure between driver and main Program board
E11	After throttle temp sensor failure
E12	Exhaust temperature over
E15	Water inlet sensor failure
E16	Outside coil sensor failure
E18	Exhaust sensor failure
E21	Ambient temperature failure
E22	Vast temperature variations between inlet and outlet
E23	Water outlet temperature lower in Cooling Mode
E27	Water outlet sensor failure
E29	Suction pipe sensor failure
E30	Outdoor ambient temperature is too low protection
E31	Auxiliary electric heating overload protection
E32	Water outlet temperature over in Heat Mode
E33	Outside coil temperature over in Cooling Mode
E34	Compressor drive failure
E35	Compressor current over
E36	Compressor output failure
E37	IPM current failure
E38	Radiator temperature is too high
E39	PFC
E40	DC voltage over
E41	DC voltage lower
E42	inside coil sensor failure
E43	AC voltage lower
E44	AC current over
E45	driver E2 failure
E46	DC FAN failure
E47	(AC voltage over

VI. Maintenance & Repair

● Daily inspection

1. Check whether the key of the controller is sensitive or a fault code displayed
2. Before power on, please check the temperature parameters, switch status, and load output.
 - 2.1 There shouldn't have a big difference between the temperature displayed and the real ambient temperature.
 - 2.2 It is the normal status that the high-voltage and low-voltage switches are often closed, and the water flow switches are often open.
 - 2.3 Load display off
3. Check whether the voltage is normal before operating.
4. After starting up, check whether the water pressure is normal, listen to whether working with abnormal noise. After running smoothly, please check whether the current is in accordance with the nameplate.
5. Check whether the parameters are within the normal range after running.

● Maintenance of the main components.

1. Compressor: open the box, check whether the terminals are fixed tightly without rusty, and check whether the resistance of three-phase winding is the same.
2. Fins: check whether the evaporator fin is blocked, and clean it timely.
3. Heat exchanger: check whether there are scales, and clean the scales timely.
4. The motor has been lubricated and sealed in advance before left the factory, therefore lubrication is not needed during maintenance.
5. After a long time of operation, the heat transfer surface of the waterside heat exchanger will be deposited with calcium oxide and other minerals because of the high-temperature water outlet. If these minerals fouling too much on the heat transfer surface, it will affect heat transfer performance, so please regularly clean it.

● Maintenance of main electrical parts

1. Air switch, AC contactor and relay inspection: whether the terminal is tight, rusty and burnt. Close the switch and check whether the input and output of each phase are connected;
2. Whether the AC contactor and relay coil are sensitive and on-off closed completely.
3. Capacitance: check whether it bulges or leaks oil
4. Motherboard: check whether the power light is on, whether the fuse is burnt out, and whether there are black burnt spots on the board.
5. Transformer: check whether the primary voltage and secondary voltage are consistent with the nameplate
6. Periodically inspect the electrical connection and monitor the operating voltage, operating current, and phase balance. Regularly check the reliability of the electrical components, replace the expired and unreliable parts timely.

● Maintenance of main waterway parts.

1. Water supply device: check whether the water supply pressure is more than 2kg and the check valve is stuck
2. Filter device: check whether the filter is dirty and blocked, and clean it regularly
3. Exhaust device: check whether it can exhaust normally. If it cannot exhaust normally, remove and clean the inside of filter.

4. Water pump device: check whether it runs smoothly, whether the rotation direction is correct.
5. Descaling for DHW, the closed water pipeline is no need of descaling.
6. To supplement pipes must add Y-filter to prevent blocks of condenser or pipeline; Descaling material can be formic acid, citric acid, and acetic acid, etc. acid or fluoride sanitizers can't be used, because they will corrode waterside heat exchanger (material is stainless steel)

- **Refill refrigerant**

Whether need to refill the refrigerant depend on the value of exhaust/suction pressure. The air-tight test should be done. In case of leakage or replacements of the components of the circulate system, in accordance with the following two situations to refill the refrigerant.

- 1. The refrigerant leak completely**

If this happens, you must use 40Kgf/cm² high-pressure nitrogen or a small amount of refrigerant to do leak detection. Before repair welding, the gas in the system must be drained. Before refill the refrigerant, the system must be thoroughly dried and vacuum.

- 1.1 Connecting the vacuuming pipe to the refrigerant injection needle valve of the low-pressure side. Use a vacuum pump to evacuate the system for more than 15 minutes. Then confirm if the vacuum gauge shows at - 1.0×10⁵Pa (- 76cmHg) .

- 1.2 After achieving the required vacuum effect, filling the refrigerant to the system with a refrigerant bottle. On the nameplate and main technical parameters, we have marked the suitable refrigerant. Make sure to fill the refrigerant at the low-pressure side of the system.

- 1.3 The refilling refrigerant quantity subject to the ambient temperature. If you do not meet the required filling quantity and cannot filling longer, you can turn on the machine, then starting filling continuously from the low-pressure side, in the meantime must prevent damage from the liquid refrigerant.

- 2. Refill the Refrigerant**

Connecting the refrigerant bottle at the refrigerant injection needle valve of the low-pressure side and connecting the pressure gauge at the low-pressure side. Then turn on the machine, filling the refrigerant into the system slowly, and inspect the high and low pressure.

▲Warning: When doing leakage hunting and air-tight test, only high-pressure nitrogen and refrigerant is allowed to use. Filling oxygen, acetylene, or other flammable or toxic gases is strictly forbidden.

- **System anti-freezing**

1. After power failure, the unit will not start automatically, then the antifreeze function cannot be started.
2. If it is not needed in a short time, antifreeze can be added into the water system
3. If the machine is not used for a long time, please drain all the water in the system, and then disconnect power supply (Drain water from the lowest position of water pump and heat exchanger)
4. Know clearly how to choose antifreeze and its volume.

- **If the unit has been shut down for a long time, the following preparations should be made when it starts up again.**

1. Thoroughly inspect and clean the unit

2. Clean the water pipe system
3. Check water pump, regulating valve and other equipment of water pipe system etc.
4. Check whether all the wire connections are tight and correct.
5. Please power on and preheat machine for more than 12 hours.
6. Do not add water to the system during preheat. After preheat, let the water pump heat up first, and then start to supplement water.

● **Replacement of spare parts.**

If the spare parts are damaged or need to be replaced. Original spare parts should be used. Any other different replacement is not allowed.

Please contact us to buy original parts(out of warranty)

● **System maintenance**

Malfunction analyze and eliminating

Phenomenon	Reason	Check	Clear	
Machine does not work	Power cut/outage	Measure the voltage of circuitry	Wait for power resume	
	The operation panel has display, but machine can not turn on, key failure	Operation panel lines not connected	Check the circuitry	connect
		Operation panel damaged	Substitution method	Replace operation panel
		disturbed	Check the source of interference	Clear the source of interference
			If the line lengthened by the non-shielded cable	Replace the line(use shielded cable)
		Low voltage	Check the circuitry voltage	Replace the line or increase voltage stabilizer
		PCB damaged	Substitution method	Replace PCB
Machine does not work	operation panel no display	Transformer damaged	Measure with multi-meter	Replace transformer
		Operation panel lines not connected well	Check the circuitry	Welding with soldering iron
		Operation panel damaged	Substitution method	Replace operation panel
		PCB damaged	Substitution method	Replace PCB
		disturbed	Check the source of interference	Clear the source of interference
			If the line lengthened by the non-shielded cable	Replace the line(use shielded cable)

Fan does not work	Fan blade is stuck		Check the fan blade	Clear foreign body
	The sub High pressure(fan uninstal) system' pressure over high	sub high pressure switch damaged	Check the sub high pressure	Replace(short it)
		Too much refrigerant	Check the pressure	Discharge some refrigerant
		Water system dirty	Check if filter is installed	Clean water system and install filter
			Check water system	Clean water system
		Lack of water flow	Check filter	Clean filter
		Water pump damaged	Check water pump	Replace water pump
		Water flow of water pump is small	Measure the water flow of water pump	Change a bigger water pump
	Without power supply	Power cut off	Measure the circuitry voltage	Wait for power supply
		Circuit breaker	Check the circuitry	Connect the circuitry
		PCB damaged (no output)	Measure the output voltage	Replace PCB
		Transformer damaged	Measure the winding and output voltage	Replace transformer
	Capacitor damaged	Capability become smaller	Check the capability of the capacitor	Replace the capacitor
		open circuit	Measure with multi-meter	Replace the capacitor
		short circuit	Measure with multi-meter	Replace the capacitor
	Motor damaged	Motor winding open circuit	measure the winding	Replace the motor
		Motor winding short circuit	measure the winding	measure the winding
		Motor winding grounding	measure the winding	measure the winding
	The compressor does not work	Compressor wiring terminal without power supply(PCB no output)	The machine is power off	Check the operation panel
Setting temperature is lower than water			Check setting temperature	Reset
PCB damaged			Substitution method	Replace PCB
Transformer damaged			Substitution method	Replace transformer
Power cut			Measure the circuitry voltage	Wait for power supply
Compressor does not	Capacitor damaged		Check the capability of the capacitor	Replace the capacitor

work	External overload protector damaged		Measure protector resistance	Replace
	Built-in protector	Too much refrigerant	Measure pressure, current and water temperature	Discharge some refrigerant
	Built-in protector	Too little refrigerant	Measure pressure, current and water temperature parameter	Refill refrigerant
		The voltage is low	Measure voltage	Change the lines or increase voltage regulator
		Compressor cylinder jammed	Measure pressure, current and water parameter water temperature	Shunt capacitor, fill refrigeration oil
		Compressor oil shortage, noisy, excessive	Listen to the noisy and test the compressor	fill refrigeration oil
Not defrosting	Defrosting temperature sensor reinstall after broken	Short circuit	Test the resistance	Replace sensor
		Open circuit	Test the resistance	Replace sensor
		Resistance variation	Test the resistance	Replace sensor
	Defrosting temperature sensor loose		Check the sensor	refit
	No frost at the installation site of the defrosting temperature sensor		Visual inspection	Adjust the installation site
	Defrosting detection time is too long		Check the defrosting time	Reset the time
	Defrosting condition setting inappropriate		Setting defrosting temperature too high	Adjust the temperature
	Four way valve does not work	Four way valve coil damage	Measure the winding	Replace the coil
		Four way valve stuck	Knock the four way valve	Replace four way valve
	Four way valve blowby	Touch and feel for way valve's temp. Measure current and voltage		Replace four way valve
PCB damaged	Force to defrost, check whether PCB have power output.		Replace PCB	

Heat Pump Application Expert



Floor Heating



Radiator



Fan Coil Unit



Shower



Sanitary Hot Water

Constantly innovate and achieve excellent quality!

