AIR-TO-WATER HEAT PUMP
EVIPOWER

Installation & Owner`s manual

Air-to-water heat pump

Models:

CH-HP08UIMPRK
CH-HP12UIMPRM
CH-HP20UIMPRM

Thank you for choosing Cooper&Hunter air-to-water heat pump, please read this installation & owner`s manual carefully before operation and retain it for future reference.

CONTENT

Preface

- In order to provide the customers with high quality, strong reliability and good versatility product, this heat pump is produced by strict design and manufacture standards.
  This manual includes all the necessary information about installation, debugging, discharging and maintenance. Please read this manual carefully before you open or maintain the unit.
  The manufacture of this product will not be held responsible if someone is injured or the unit is damaged, as a result of improper installation, debugging, unnecessary maintenance which is not in line with this manual.
  The unit must be installed by qualified personnel.
- It is vital that the below instructions are adhered to at all times to keep the warranty.
  —The unit can only be opened or repaired by qualified installer or an authorised dealer.
  —Maintenance and operation must be carried out according to the recommended time and frequency, as stated in this manual.
  —Use genuine standard spare parts only.
  Failure to comply with these recommendations will invalidate the warranty.
- Inverter air source water heat pump is a kind of high efficiency, energy saving and environment friendly equipment, which is mainly used for house warming. It can work with any kind of indoor unit such fan coil, radiator, or floor heating pipe, by provide warm or hot water. One unit of monobloc heat pump can also work with several indoor units.
  The air source water heat pump unit is designed to have heat recovery by using super heater which can provide hot water for sanitary purpose.

This series of heat pump unit owns following features:

1 Advanced controlling
  The PC microcomputer based controller is available for the users to review or set the running parameters of the heat pump. Centralized controlling system can control several units by PC.
2 Nice appearance
  The heat pump is designed with beautiful looking. The monobloc one has the water pump included which is very easy for installation.
3 Flexible installation
  The unit has smart structure with compact body, just simple outdoor installation is needed.
4 Quiet running
  High quality and efficient compressor, fan and water pump is used to ensure the low noise level with insulation.
5 Good heat exchange rate
  The heat pump unit use special designed heat exchanger to enhance whole efficiency.
6 Large working range
  This series of heat pump is designed to work under different working conditions as low as -15 degrees for heating.

To prevent the users and others from the harm of this unit, and avoid damage on the unit or other property, and use the heat pump properly, please read this manual carefully and understand the following information correctly.

Mark Notes

Mark	Meaning
 WARNING	A wrong operation may lead to death or heavy injury on people.
 ATTENTION	A wrong operation may lead to harm on people or loss of material.

Icon notes

Icon	Meaning
	Prohibition. What is prohibited will be nearby this icon
	Compulsory implement. The listed action need to be taken.
	**ATTENTION** (include **WARNING**) Please pay attention to what is indicated.

Warning

Installation	Meaning
Professional installer is required.	The heat pump must be installed by qualified personals, to avoid improper installation which can lead to water leakage, electrical shock or fire.
Earthing is required	Please make sure that the unit and power connection have good earthing, otherwise may cause electrical shock.

Operation	Meaning
PROHIBITION	DO NOT put fingers or others into the fans and evaporator of the unit, otherwise harm may be occurred.
Shut off the power	When there is something wrong or strange smell, the power supply need to be shut off to stop the unit. Continue to run may cause electrical short or fire.

Move and repair	Meaning
Entrust	When the heat pump need to be moved or installed again, please entrust dealer or qualified person to carry it out. Improper installation will lead to water leakage, electrical shock, injury or fire.
Entrust	It is prohibited to repair the unit by the user himself, otherwise electrical shock or fire may be occur.
Prohibit	When the heat pump need to be repaired, please entrust dealer or qualified person to carry it out. Improper movement or repair on the unit will lead to water leakage, electrical shock, injury or fire.

Do not use means to accelerate the defrosting process or to clean, Other than those recimmended by the manufacturer.

The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater.)

ATTENTION

Installation	Meaning
 Installation Place	The unit CANNOT be installed near the flammable gas. Once there is any leakage of the gas, fire can be occur.
 Fix the unit	Make sure that the basement of the heat pump is strong enough, to avoid any decline or fall down of the unit
 Need circuit breaker	Make sure that there is circuit breaker for the unit, lack of circuit breaker can lead to electrical shock or fire.

Operation	Meaning
 Check the installation basement	Please check the installation basement in a period (one month), to avoid any decline or damage on the basement, which may hurt people or damage the unit
 Switch off the power	Please switch off the power for clean or maintenance.
 Prohibition	It is prohibited to use copper or iron as fuse. The right fuse must be fixed by electrician for the heat pump.
 Prohibition	It is prohibited to spray the flammable gas to the heat pump, as it may cause fire.

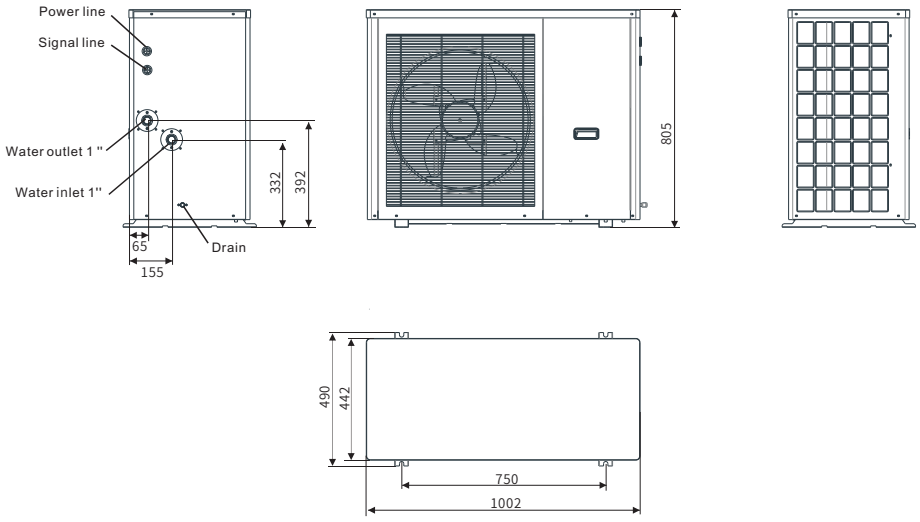
2. The data of units

Model		CH-HP08UIMPRK	CH-HP12UIMPRM	CH-HP20UIMPRM
Heating Condition - Ambient Temp. (DB/WB): 7/6°C, Water Temp. (In/Out): 30/35°C				
Heating Capacity Range	kW	2.29~8.25	4.70~12.5	6.0~20.0
	BTU/h	7814~28150	16037~42652	20472~68240
Heating Power Input Range	kW	0.63~1.81	1.08~3.44	1.5~5.0
Heating Condition - Ambient Temp. (DB/WB): 7/6°C, Water Temp. (In/Out): 50/55°C				
Heating Capacity Range	kW	1.58~7.39	3.58~12.1	5.5~18.0
	BTU/h	5391~25216	3685~41287	18766~61416
Heating Power Input Range	kW	1.04~2.76	1.82~4.13	2.0~7.5
Heating Condition - Ambient Temp. (DB/WB): 2/1°C, Water Temp. (In/Out): 30/35°C				
Heating Capacity Range	kW	1.64~7.04	3.41~8.32	5.5~17.0
	BTU/h	5596~24021	11601~28389	18766~58004
Heating Power Input Range	kW	0.69~1.87	1.07~2.95	1.5~5.0
Heating Condition - Ambient Temp. (DB/WB): 2/1°C, Water Temp. (In/Out): 50/55°C				
Heating Capacity Range	kW	1.15~6.72	2.84~8.04	5.5~15.0
	BTU/h	3924~22930	9690~27434	18766~51180
Heating Power Input Range	kW	0.97~2.73	1.62~4.31	2.2~7.4
Heating Condition - Ambient Temp. (DB/WB): -7/-8°C, Water Temp. (In/Out): 30/35°C				
Heating Capacity Range	kW	2.20~5.62	2.28~8.64	4.6~14.5
	BTU/h	7507~19176	7780~29481	15695~49474
Heating Power Input Range	kW	0.91~1.87	1.06~3.04	1.5~5.0
Heating Condition - Ambient Temp. (DB/WB): -7/-8°C, Water Temp. (In/Out): 50/55°C				
Heating Capacity Range	kW	1.39~5.54	2.24~8.32	4.5~14.0
	BTU/h	4743~18903	7643~28389	15354~47768
Heating Power Input Range	kW	1.26~2.60	1.74~4.25	2.2~7.3
Cooling Condition - Ambient Temp. (DB/WB): 35/24°C, Water Temp. (In/Out): 12/7°C				
Cooling Capacity Range	kW	1.98～6.1	3.22~11.30	4.2~14.0
	BTU/h	6756~20814	10987~38557	14330~47768
Cooling Power Input Range	kW	0.7~2.22	1.27~3.44	1.8~7..5
Frequency	Hz	30~90	30~90	30~90
ErP Level (35°C)	/	A+++	A++	A++
ErP Level (55°C)	/	A++	A+	A++
Power Supply	/	230V~/30-90Hz	380V/3 ~/30-90Hz	380V/3 ~/30-90Hz
Electric Heater	kW	/	/	/
Max. Running Current	A	13.0	7.5	13.5
Refrigerant Type	/	R32		
Refrigerant Volume	g	1300	1600	2000
Compressor Brand	/	Panasonic	Panasonic	Panasonic
Water Pump Brand	/	GRUNDFOS	GRUNDFOS	GRUNDFOS
Water Connection	Inch	1.0	1.0	1.2
Water Flow	m^3/h	1.0	1.7	2.15
Water Pressure Drop	kPa	32	22	45
Water Pump Head	m	5.5	5.5	4
DC Fan Quantity	/	1	1	2
DC Fan Power Input (max)	W	75	70	130
DC Fan Power Input (min)	W	27	27	45
DC Fan Speed (max)	RPM	850	850	850
DC Fan Speed (min)	RPM	300	300	300
Noise	dB(A)	37~54	42~55	44~58
Net Weight	kg	90	100	155
Gross Weight	kg	102	123	175
Net Dimension (L/W/H)	mm	1052×490×805	1000×470×915	1000×395×1315
Shipping Dimension (L/W/H)	mm	1060×500×825	1040×490×920	1080×445×1480
Operation Ambient Temp.	°C	-25~43	-25~43	-25~43
Max. Outlet Water Temp.	°C	60	60	60

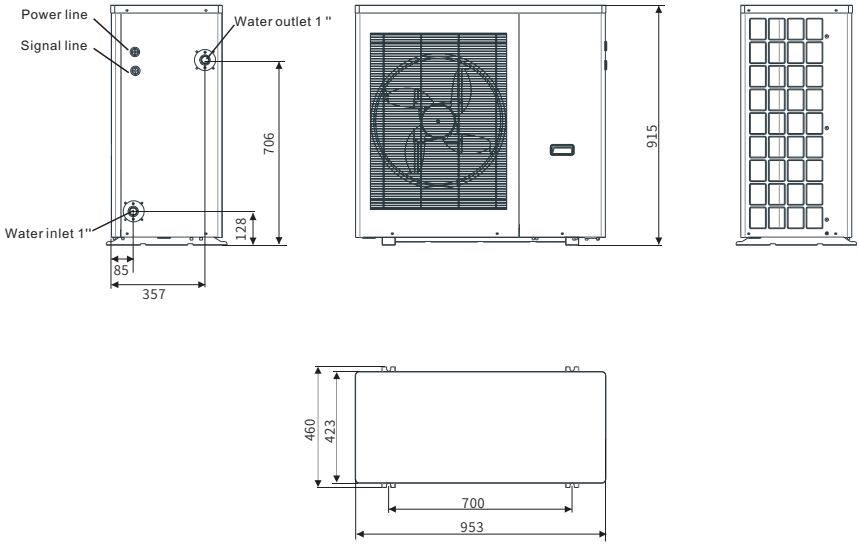


3. Unit dimension

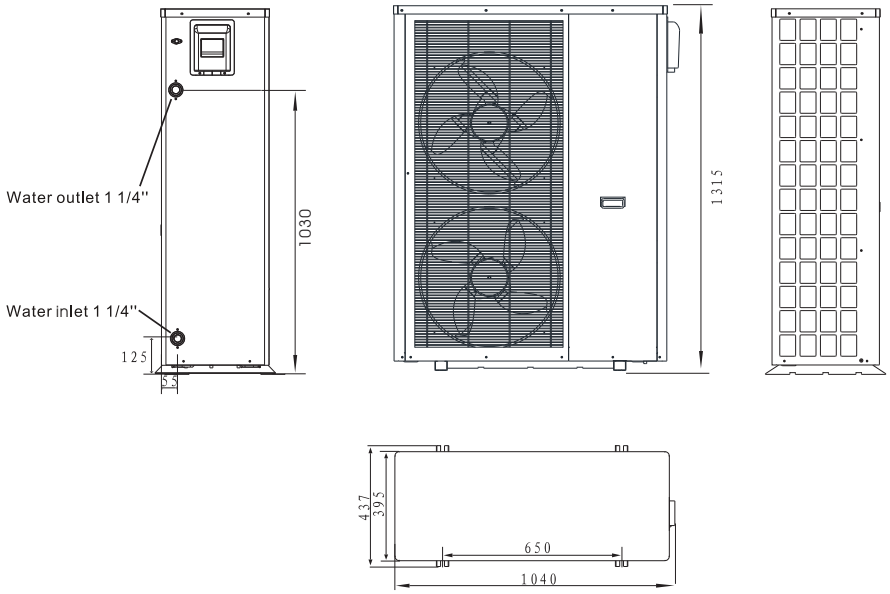
Model:CH-HP08UIMPRK



Model:CH-HP12UIMPRM



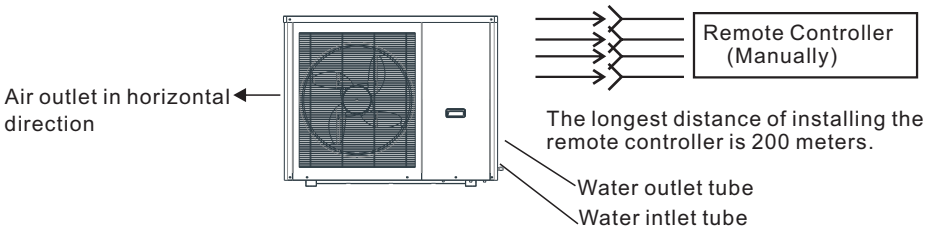
Model:CH-HP20UIMPRM



Specification

1. Appearance and structure of the heat pump

Model:CH-HP08UIMPRK



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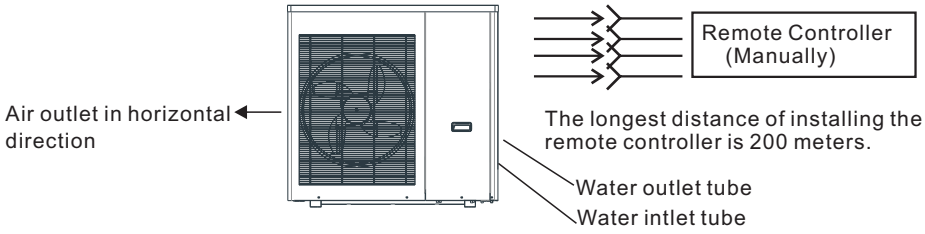
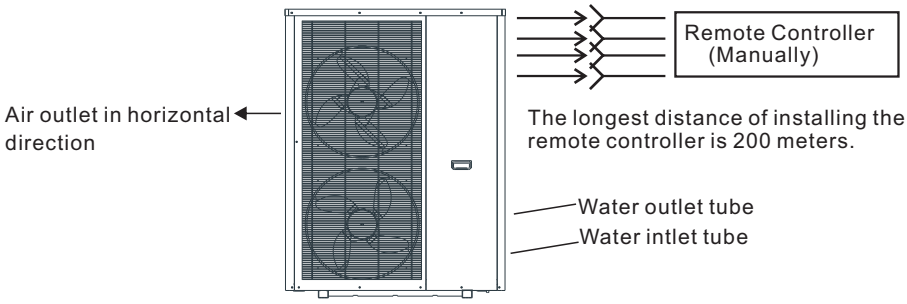


Model:CH-HP20UIMPRM



Unit features

1. Plate heat exchanger

   Use the SWEP efficient heat exchanger with small size and high efficiency.

2.Environmentally friendly refrigerant

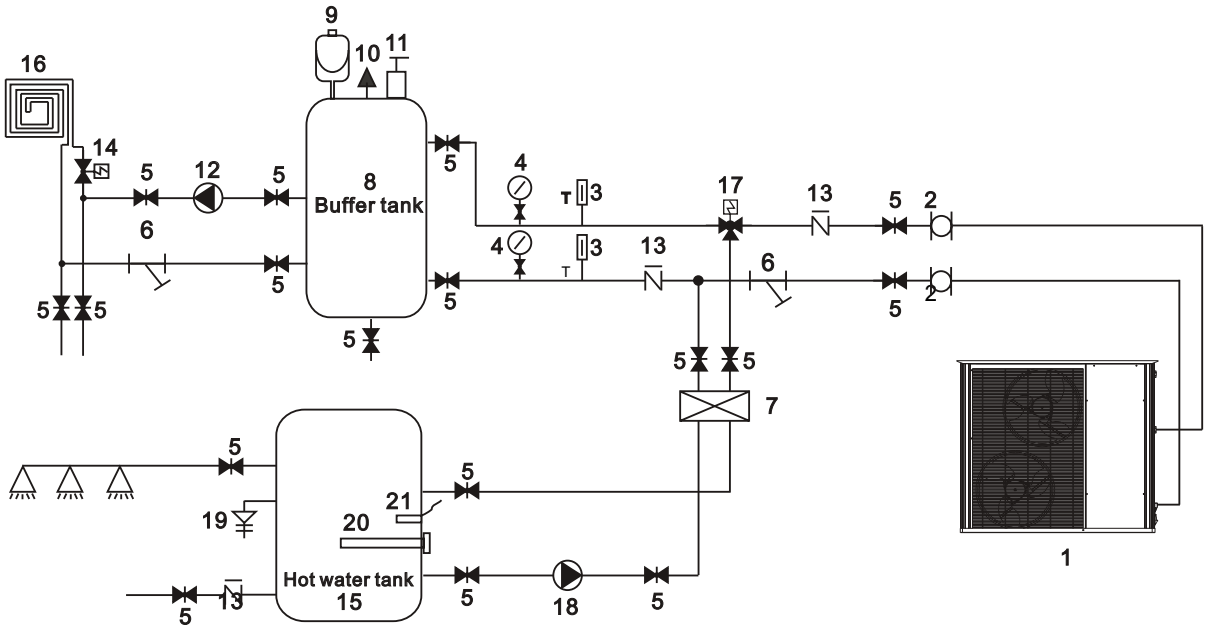
   Use the new generation of environmentally friendly refrigerant R32, which is harmless to the ozone sphere.

3. Heating in frigid environment.

   Optimized designed unit can achieve the heating function normally even when the ambient temperature is -25℃.

1 Application of heat pump

1.1 Only for air-con



1	Heat pump	10	Relief valve	19	PT valve
2	Flexible pipe	11	Air vent valve	20	Electrical heater
3	Thermometer	12	Water pump for floor heating	21	Hot water sensor
4	Manometer	13	Check valve		
5	Shut-off valve	14	Floor heating valve		
6	Y type water filter	15	Hot water tank		
7	Plate heat exchanger	16	Floor heating pipe/fan coil unit		
8	Buffer tank	17	Hot water valve		
9	Expansion tank	18	Hot water pump		

Remark:Item 17, 18, 20, 21 can be connected with heat pump.

2 Choose a right heat pump unit

2.1 Based on the local climate condition, construction features and insulation level, calculate the required cooling(heating) capacity per square meter.

2.2 Conclude the total capacity which will be needed by the construction.

2.3 According to the total capacity needed, choose the right model by consulting the heat. pump features as below:

Heat pump features

- Cooling only unit： chilled water outlet temp. at 5-15℃, maximum ambient temp. at 43℃. Heating and Cooling unit： for cooling chilled water outlet temp. at 5-15℃,maximum ambient temp. at 43℃. For heating, warm water inlet temp. at 40-50℃, minimum ambient temp. at -10℃.
- Unit application

  Inverter air source water heat pump is used for house, office, hotel, and so forth, which need heating or cooling separately, with each area need to be controlled.

3 Installation place

- The unit can be installed on any place outdoor which can carry heavy machine such as terrace, housetop, ground and so on.
- The location must have good ventilation.
- The place is free from heat radiation and other fire flame.
- A pall is needed in winter to protect the heat pump from snow.
- There must be not obstacles near the air inlet and outlet of the heat pump.
- A place which is free from strong air blowing.
- There must be water channel around the heat pump to drain the condensing water .
- There must be enough space around the unit for maintenance.

4 Installation method

The heat pump can be installed onto the concrete basement by expansion screws, or onto a steel frame with rubber feet which can be placed on the ground or housetop. Make sure that the unit is placed horizontally.

5 Water loop connection

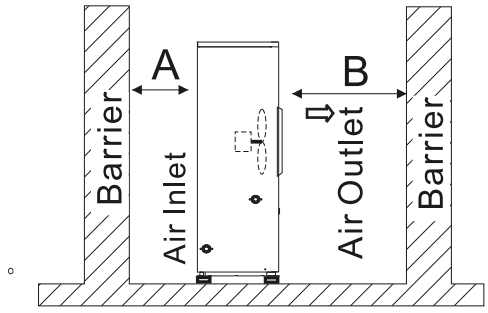
Please pay attention to below matters when the water pipe is connected:

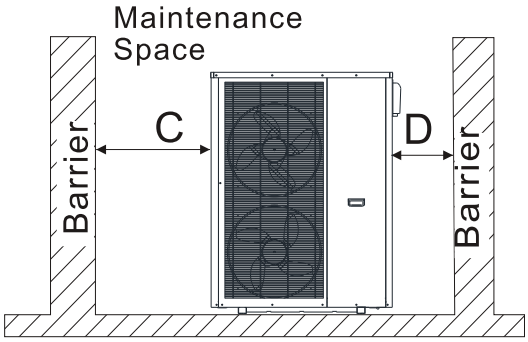
- Try to reduce the resistance to the water from the piping.
- The piping must be clear and free from dirty and blocks. Water leakage test must be carried out to ensure there is no water leaking. And then the insulation can be made.
- Attention that the pipe must be tested by pressure separately. DO NOT test it together with the heat pump.
- The flow switch is installed inside of the heat pump, check to ensure that the wiring and action of the switch is normal and controlled by the controller.
- Try to avoid air stayed inside of the water pipe, and there must be air vent on the top point of the water loop.
- There must be thermometer and pressure meter at the water inlet and outlet, for easy inspection during running.
- There must be expansion tank on the top point of the water loop, and the water level in the tank must be at least 0.5 meter higher than the top point of the water loop.

6 Power supply connection

- Open the front panel, and open the power supply access.
- The power supply must go through the wire access and be connected to the power supply terminals in the controlling box. Then connect the 3-signal wire plugs of the wire controller and main controller.
- If the outside water pump is needed, please insert the power supply wire into the wire access also and connect to the water pump terminals.
- If an additional auxiliary heater is need to be controlled by the heat pump controller, the relay (or power) of the aux-heater must be connected to the relevant output of the controller.

7 Location of the unit





The picture shows the location of horizontal air outlet unit.

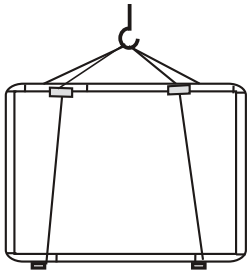
Attention

Requirements
A>500mm ; B>1500mm ;
C>1000mm ; D>500mm

The minimum ventilation distance in diagram 1.

8 Transit

When the unit need to be hung up during installation, a 8 meters cable is needed, and there must be soft material between the cable and the unit to prevent damage to the heat pump cabinet. (See picture 1)



Picture 1

WARNING

DO NOT touch the heat exchanger of the heat pump with fingers or other objects!

9 Trial Running

Inspection before trial running

- Check the indoor unit, and make sure that the pipe connection is right and the relevant valves are open .
- Check the water loop, to ensure that the water inside of the expansion tank is enough, the water supply is good, the water loop is full of water and without any air. Also make sure there is good insulation for the water pipe.
- Check the electrical wiring. Make sure that the power voltage is normal, the screws are fastened, the wiring is made in line with the diagram, and the earthing is connected.
- Check the heat pump unit including all of the screws and parts of the heat pump to see if they are in good order. When power on, review the indicator on the controller to see if there is any failure indication. The gas gauge can be connected to the check valve to see the high pressure(or low pressure) of the system during trial running.

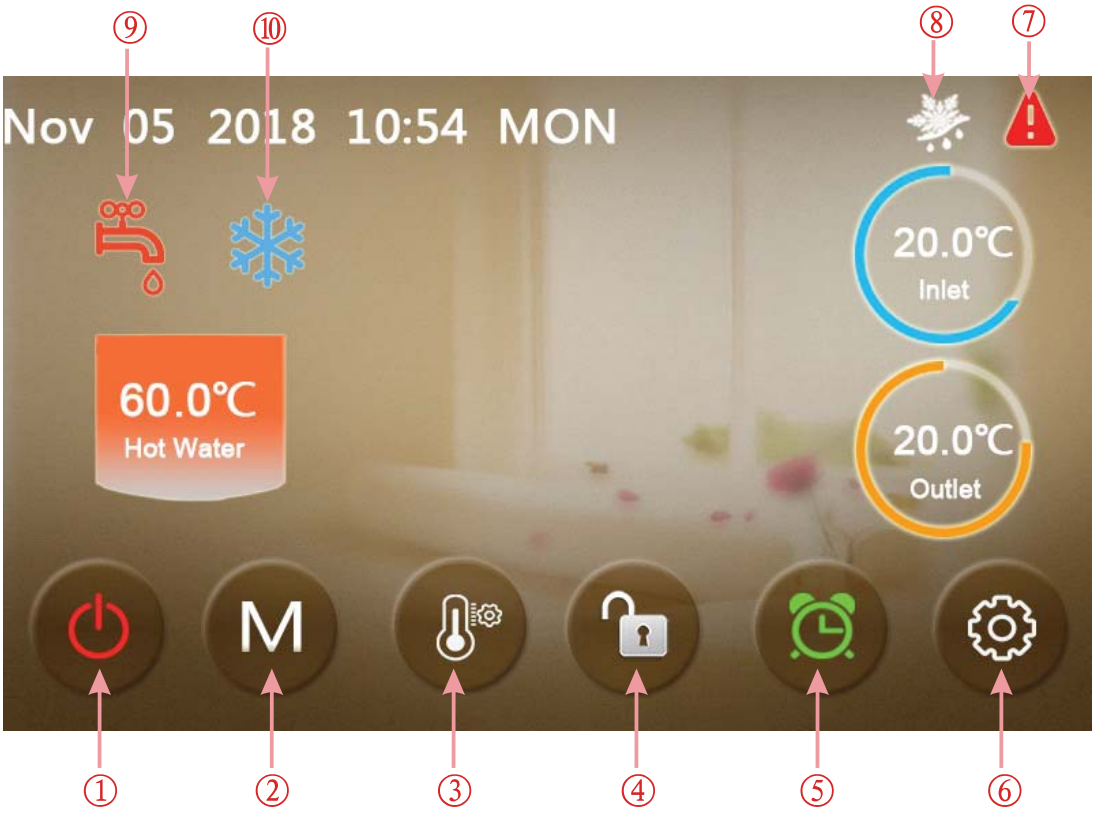
Trial running

- Start the heat pump by press " " key on the controller. Check whether the water pump is running, if it runs normally there will be 0.2 MPa on the water pressure meter.
- When the water pump runs for 1 minutes, the compressor will start. Hear whether there is strange sound from the compressor. If abnormal sound occurs please stop the unit and check the compressor. If the compressor runs well please look for the pressure meter of the refrigerant.
- Then check whether the power input and running current is in line with the manual. If not please stop and check.
- Adjust the valves on the water loop, to make sure that the hot(cool) water supply to each door is good and meet the requirement of heating(or cooling).
- Review whether the outlet water temperature is stable.
- The parameters of the controller are set by the factory, it is not allowed to change then by user himself.

1.Main interface display and function

(1) Power on interface

(2) Starting up interface



Key function

Key number	Key name	Key function
①	On and off	Click this key to switch ON or OFF Red represents ON, while grey represents OFF
②	Mode key	Hot water mode, heating mode, cooling mode, hot water+heating mode or hot water+cooling mode can be selected by pressing this key.
③	Temperature setting	Click this key to set the target temperature
④	Lock screen	Click this key to lock the screen. White represents not enabled, while green represents enabled
⑤	Timer setting	Click this key to set the timer. White represents not enabled, while green represents enabled
⑥	Setup key	Click this key to check the unit status, time, factory parameter, temperature curve, timer setting and Mute setting
⑦	Fault icon	This Icon will flash when there is an error shown up, then the display will enter Failure record interface after tapping this icon.

Note:

⑧ is defrosting icon, the machine is in defrosting mode when this icon is shown;

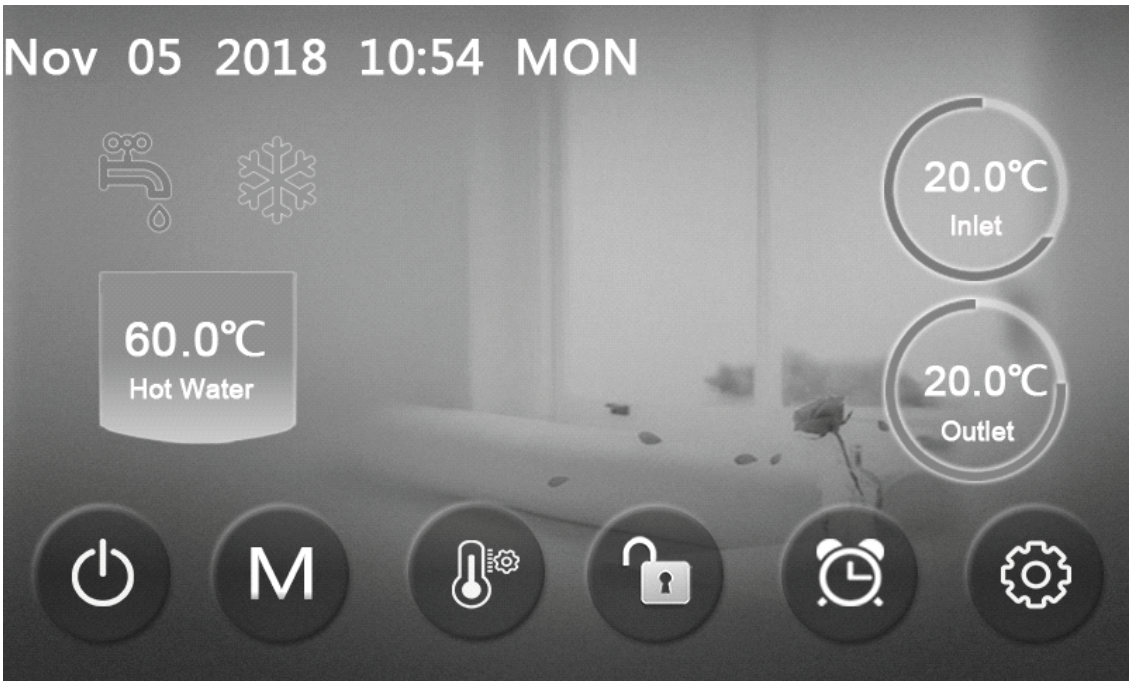
⑨ is hot water mode icon, the machine is in hot water mode when this icon is shown;

⑩ is cooling mode icon, the machine is in cooling mode when this icon is shown.

1.1 On and off

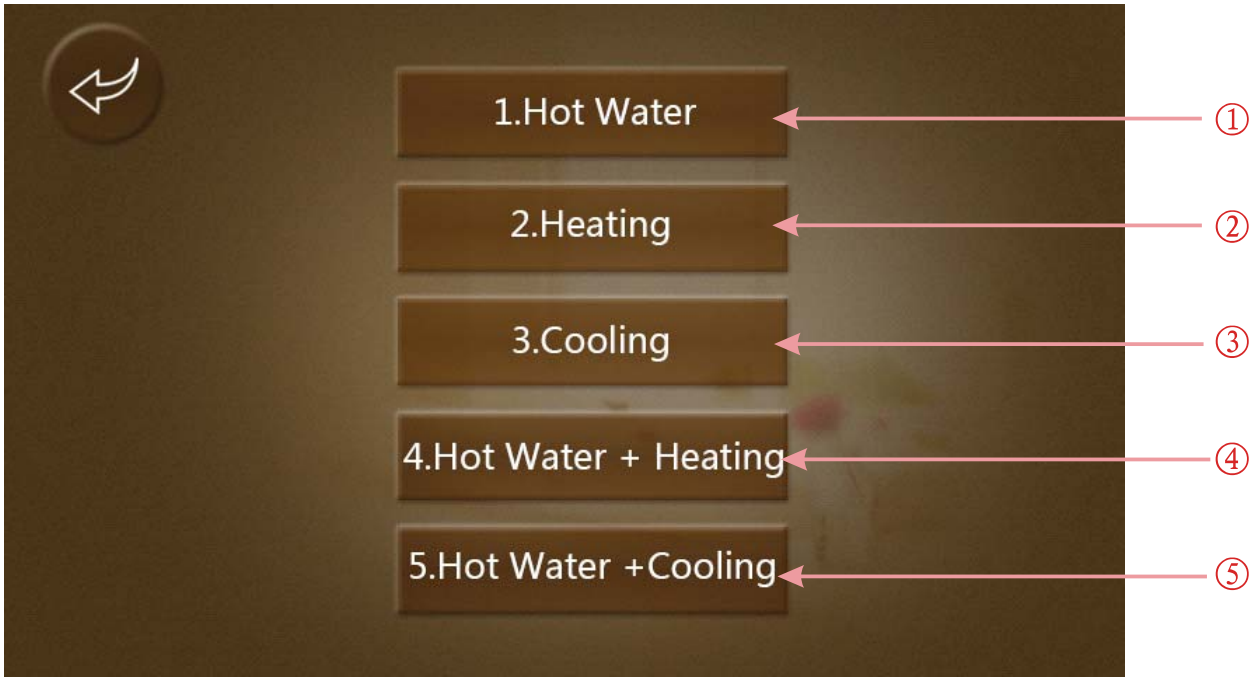
As the main interface shows

（1）.In shutting down interface (on/off key is in gray status), press on/off key can start up the machine.



（2）Note: In starting up interface (on/off key is in red status), press on/off key can shut down the machine.

1.2Mode switch



In the main interface, there are five modes can be selected after tapping the mode key.

(1) tapping hot water mode icon ①, then the display will change to this mode interface;

(2) tapping heating mode icon ②, then the display will enter this mode interface;

(3) tapping cooling mode icon ③,then the display will switch to this mode interface;

(4) tapping hot water+heating mode icon ④, then the display will go into hot water+heating mode interface;

(5) tapping hot water+cooling mode icon ⑤, then the display will come to hot water+cooling mode interface;

Note: If what you have purchased is a heating-only model (without cooling function), the "cooling" will not be shown on the interface.

1.3 Setting of target temperature

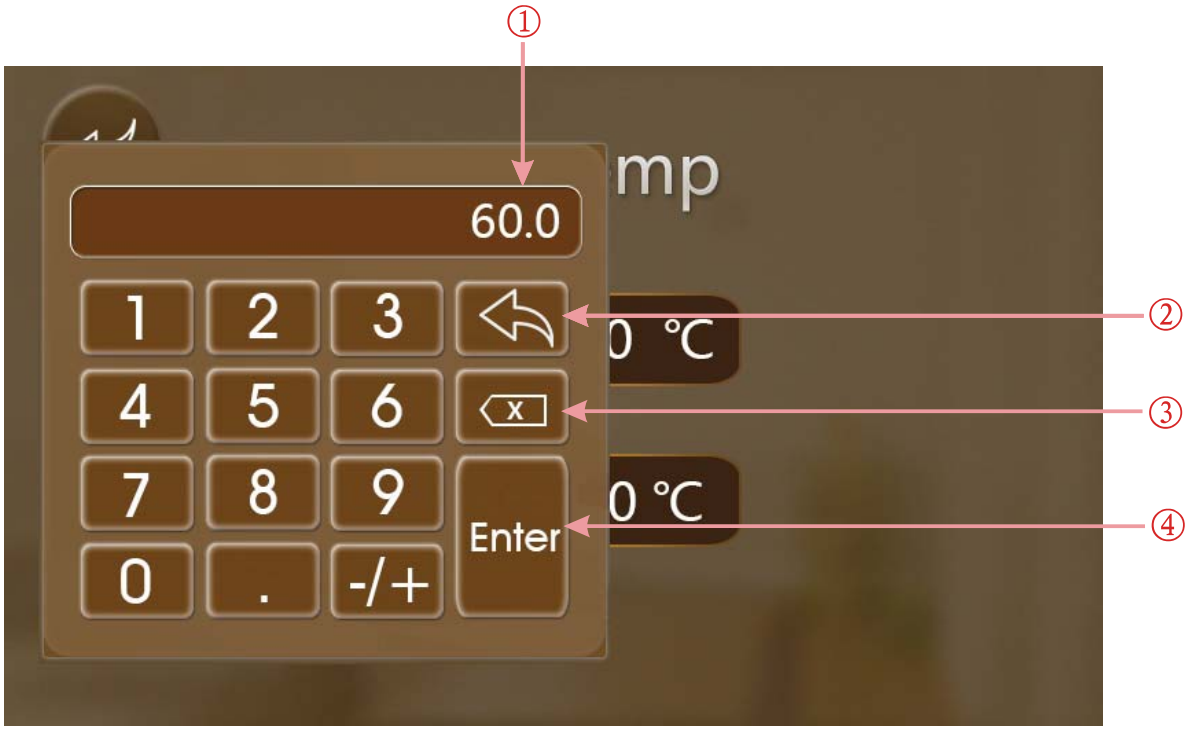
Take hot water + cooling mode for example:

Tapping ①, the wire controller back to main interface;

Tapping ②, the target temp of hot water can be set by pop-up keyboard;

Tapping ③, the target temp of cooling mode can be set by pop-up keyboard.

1.4 When the target temp is being set, pop-up keyboard is shown as following:

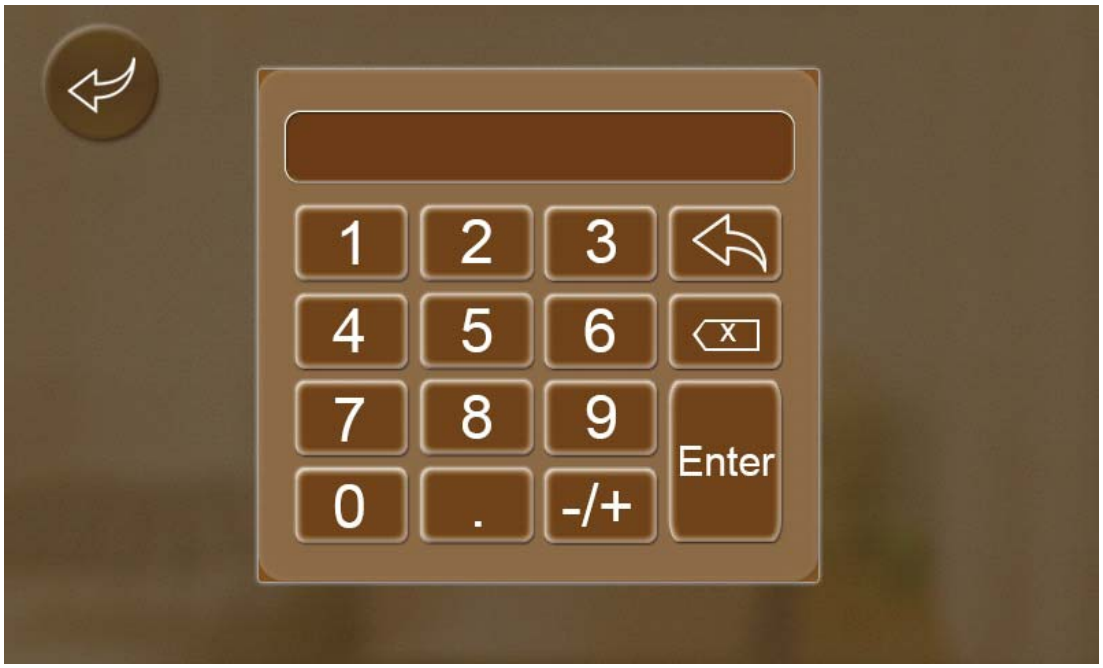


Key number	Key name	Key function
②	Return key	Tapping this key can back to the main interface.
③	Delete key	Tapping this key to undo the last action.
④	Enter key	Tapping this key can save you action and back to the main interface.

Note: ①means the new target temp under current setting

1.5 Unlock screen

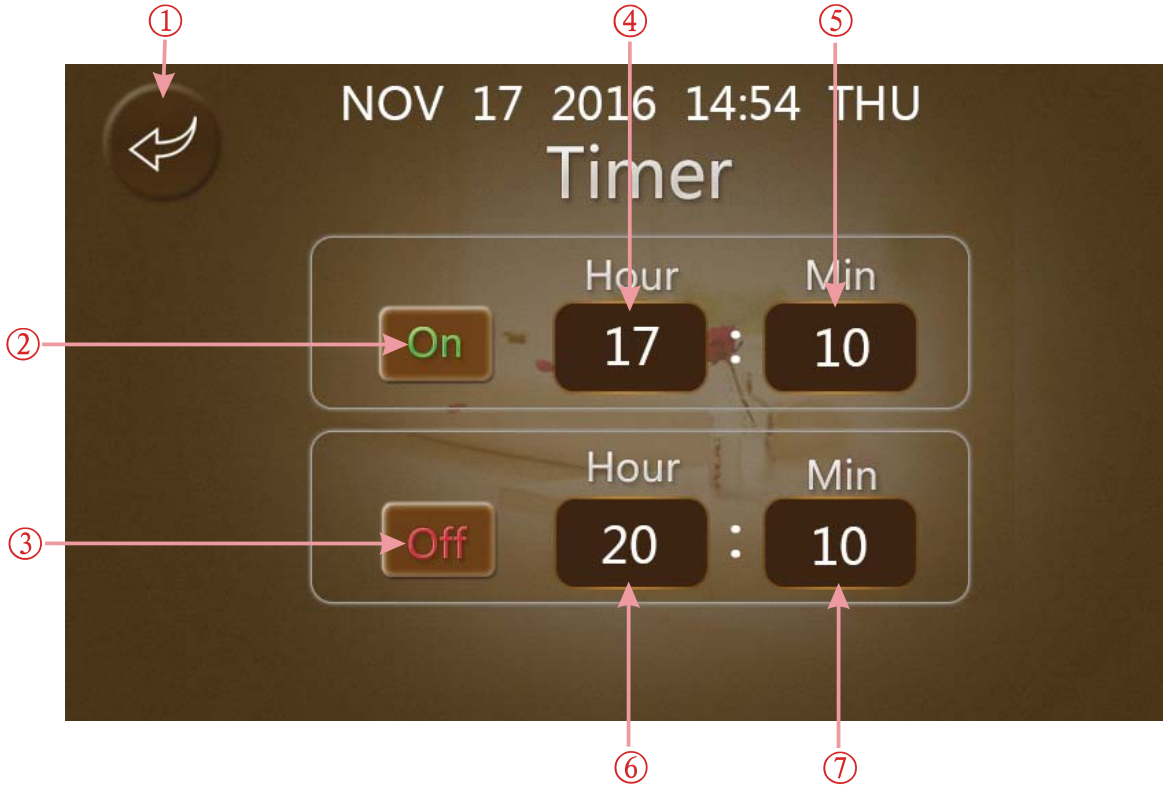
Click the lock screen key again while the screen has been locked, pop-up keyboard is shown as following:



Note: Input the password of 22or 022, click theenter key and the screenwill be unlocked.

1.6 Timersetting

Click the timersetting key toenter the timersetting and theinterface display isas follows:

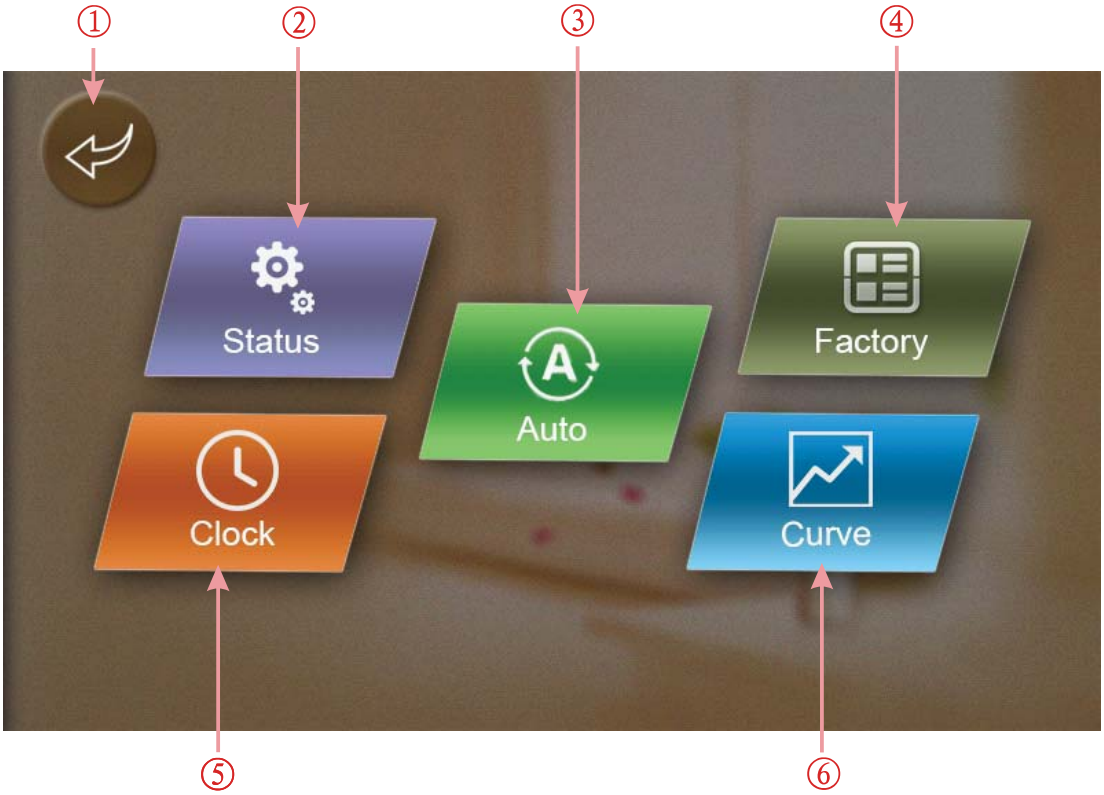


Key number	Key name	Key color	Key function
①	Return key		Click this key to return to the main interface.
②	Enable the timer on	Enable: Green ON Disable: Gray OFF	Click this key to start or turn off the timed start-up function
③	Enable the timer off	Enable: Red ON Disable: Gray OFF	Click this key to start or turn off the timed shutdown function
④	Hour of timer on		Hour of Timer on is shown
⑤	Minute of timer on		Minute of Timer on is shown
⑥	Hour of timer off		Hour of Timer off is shown
⑦	Minute of timer off		Minute of Timer off is shown

Such as the above figure: Under the state of unmanned operation, it will start the timed start-up at 17:10 and will be timed shutdown when running to 20:10.

1.7 Setup

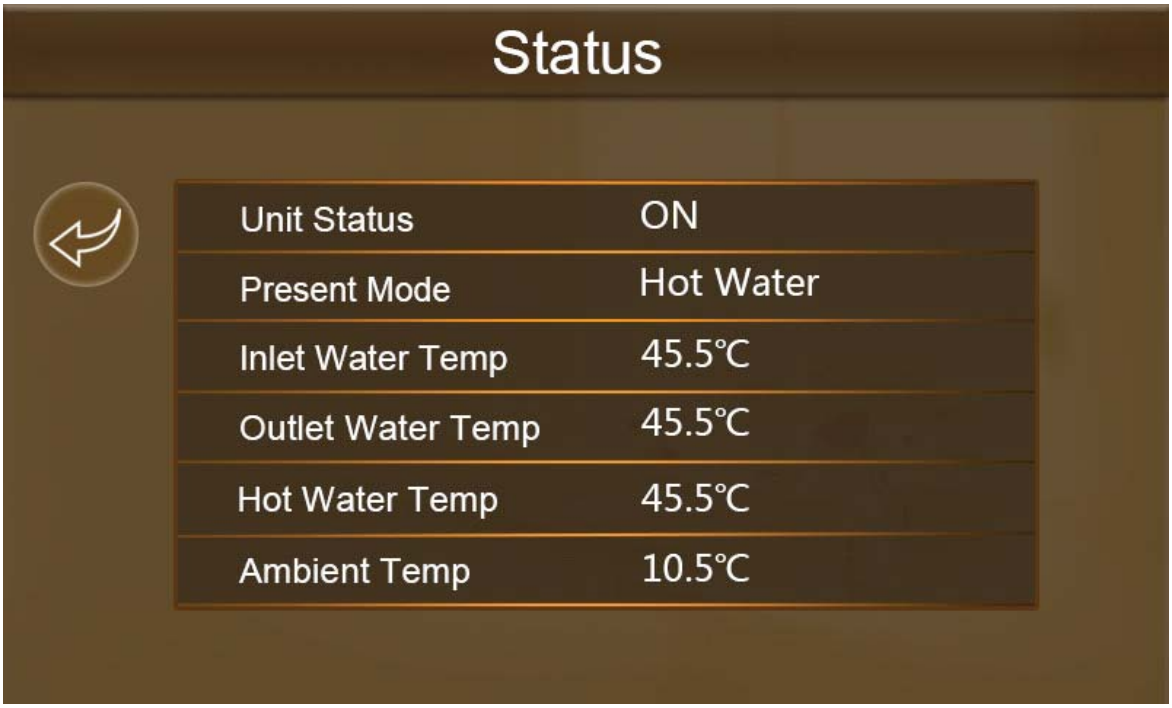
Click the setup key to enter the setup and the interface display is shown as follows:



Key number	Key name	Key function
①	Return key	Click this key to return to the main interface.
②	Operating mode	Click this key to view the current operating parameters of the unit.
③	Mute setting	Click this key to set the unit mute function mode.
④	Factory parameter	Click the key and enter the password to enter the factory parameter settings and status parameters interface.
⑤	System time setting	Click this key to set the system time.
⑥	Curve key	Click this key to view the temperature curve.

In the setup interface:

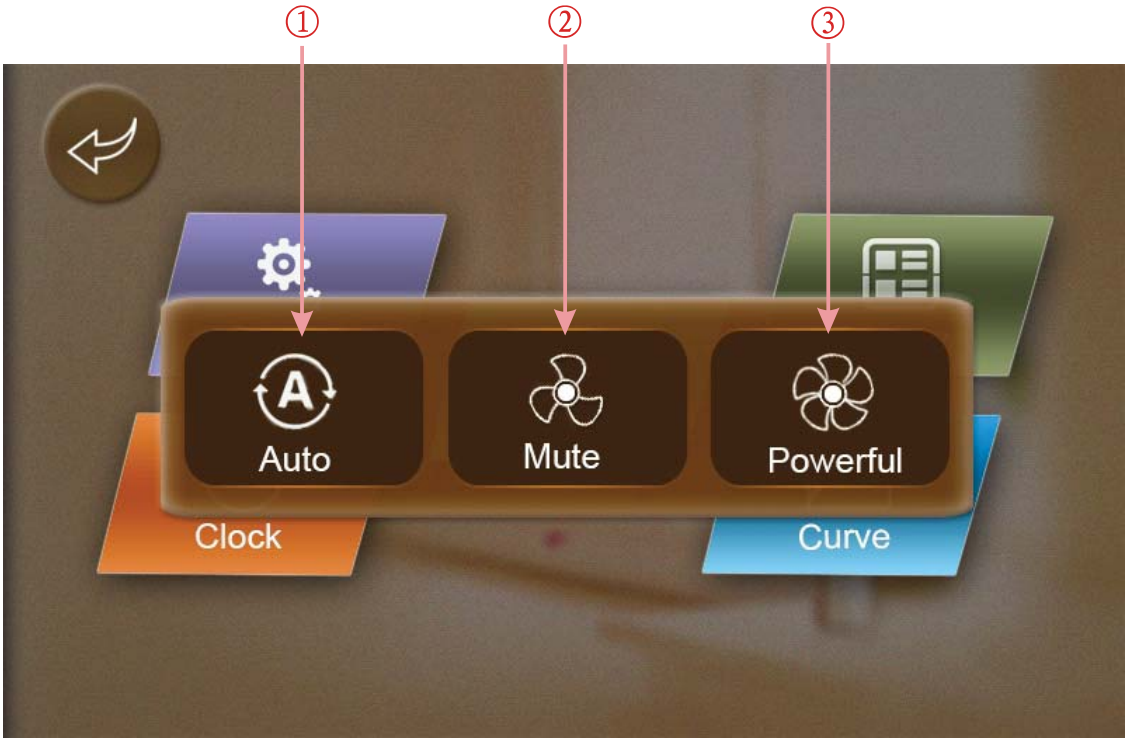
(1)Tapping operating mode button②, then the interface display is shown as follows:



(2)Tapping system time setting button⑤, then the interface display is shown as follows:

Key number	Key name	Key function
①	Return key	Click this key to return to the setup interface.
②	Up key	Click this key to increase the value.
③	Down key	Click this key to decrease the value.
④	Cannel key	Click this key to cancel the current settings and return to the settings page.
⑤	Enter key	Click this key to cancel the current settings .

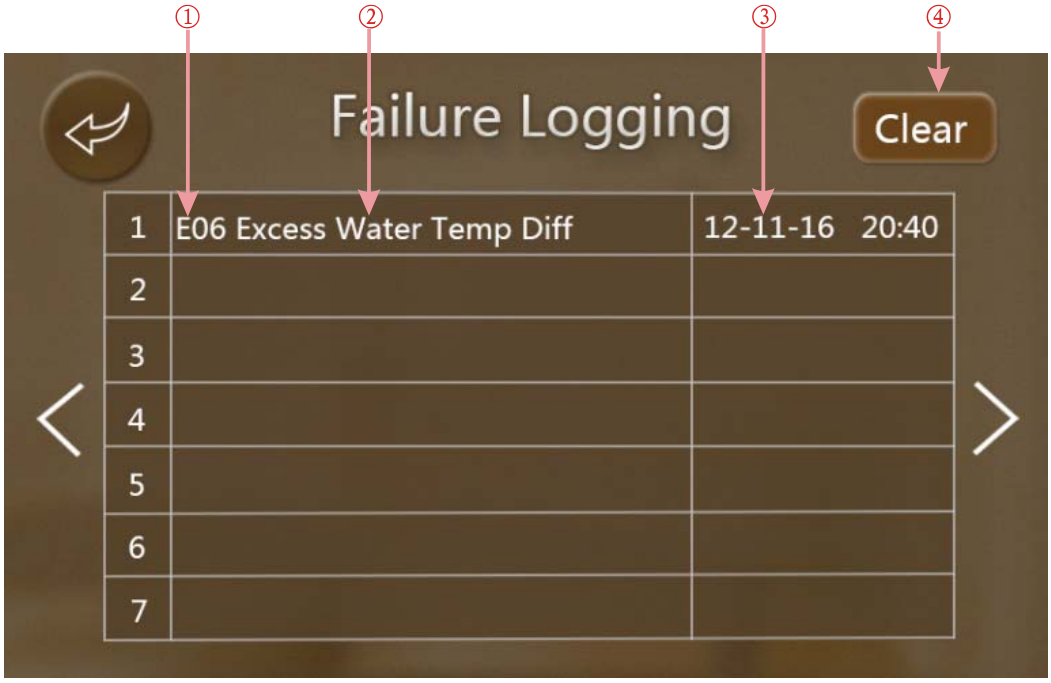
(3)Tapping Mute setting button③, then the interface display is shown as follows:



Note:
When the unit starts the automatic mode, the icon is displayed as ①;
When the unit is enabled to activate the mute function, the icon is displayed as ②;
When the unit is enabled to activate the powerful function, the icon is displayed as ③.

1.7 Fault interface

Click the fault icon on the main interface and the interface display is as follows:



Note:

①:Fault code

②:Fault name

③:Occurrence time of the fault, Day, month and year hour: minute

④:Click this key to clear all fault records

1.8 Color Display Calibration

Keep click quickly at the blank area on any interface till you hear a long beep. Then you will enter the calibration interface. Click "+" to start calibration.
When you hear the beep again, you will finish calibration and exit

2.Parameter list and breakdown table

2.1 Electronic control fault table

Can be judged according to the remote controller failure code and troubleshooting

Protect/fault	Fault display	Reason	Elimination methods
Standby	Non		
Normal boot	Non		
Inlet TempSensor Fault	P01	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Outlet TempSensor Fault	P02	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Hotwater TempSensor Fault	P032	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
AT SensorFault	P04	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Coil temp Sensor Fault	P153	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Suction temp Sensor Fault	P17	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Exhaust temp Sensor Fault	P181	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Exhaust Overtemp Fault	P182	The compressor is overload	Check whether the system of the compressor running normally
Exhaust Pressure Sensor Fault	PP1	The pressure Sensor is broken or short circuit	Check or change the pressure Sensor or pressure
Suction Pressure Sensor Fault	PP2	The pressure Sensor is broken or short circuit	Check or change the pressure Sensor or pressure
EVI Inlet Temp Sensor Fault	P001	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
EVI Outlet Temp Sensor Fault	P002	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Low ATProtection	TP	The ambient temp. is low	
Flow Switch Protection	E032	No water/little water in water system	Check the pipe waterflow and water pump
Electric Overheat Protection	E04	The electric-heater protection switch is broken	Check to see whether the electric heater has been running under the temperature over 150℃ for a long time
Compressor Overcurrent Shutdown Fault	E051	The compressor is overload	Check whether the system of the compressor running normally
Communication Fault	E08	Communicat ion failure between wire controller and mainboard	Check the wire connection between remote wire controller and mainboard
Communication Fault(Fan)	E081	Speed control module and main board communication fail	Check the communication connection
HP Protection	E11	The high-pressure switch is broken	Check the pressure switch and cold circuit
LP Protection	E12	The low-pressure switch is broken	Check the pressure switch and cold circuit
Anti-freezing Prot	E171	Use side water system temp. is low	1. Check the water temp. or change the temp. Sensor 2.Check the pipewater flowand whether watersystem is jammedor not
Prim Anti-freezing Prot	E19	The ambient temp. is low	
Secondary Anti-freezing Prot	E29	The ambient temp. is low	
DC Fan Motor 1Failure	F031	1. Motor is in locked-rotor state 2.The wire connection between DC-fan motor module and fan motor is in bad contact	1.Change a new fan motor 2.Check the wire connection and make sure they are in good contact
DC Fan Motor 2Failure	F032	1. Motor is in locked-rotor state 2.The wire connection between DC-fan motor module and fan motor is in bad contact	1.Change a new fan motor 2.Check the wire connection and make sure they are in good contact

Frequency conversion board fault table:

Protect/fault	Fault display	Reason	Elimination methods
IPM Overcurrent Shutdown Fault	F00	IPM Input current is large	Check and adjust the current measurement
Compressor Activation Failure	F01	Lack of phase, step or drive hardware damage	Check the measuring voltage check requency conversion board hardware
PFC Fault	F03	The PFC circuit protection	Check the PFC switch tube short circuit or not
DC Bus Overload	F05	DC bus voltage>Dc bus over-voltage protection value	Check the input voltage measurement
DC Bus Underload	F06	DC bus voltage<Dc bus over-voltage protection value	Check the input voltage measurement
AC Input Underload	F07	The input voltage is low, causing the inputcurrent is low	Check the input voltage measurement
AC Input Overload	F08	The input voltage is too high, more than outage protection current RMS	Check the input voltage measurement
Input voltage Sample Fault	F09	The input voltage sampling fault	Check and adjust the current measurement
Communication Failure between DSP and PFC	F10	DSP and PFC connect fault	Check the communication connection
Communication Fault (DSP)	F11	DSP and main board communication failure	Check the communication connection
Communication Fault (Inverter Board)	F12	Frequency conversion board and main board communication failure	Check the communication connection
IPM Overheat Stop	F13	The IPM module is overheat	Check and adjust the current measurement
Weak Magnetism Alarm	F14	Compressor magnetic force is not enough	
Input voltage Lacking Phase	F15	The input voltage lost phase	Check and measure the voltage adjustment
IPM Current Sample Fault	F16	IPM sampling electricity is fault	Check and adjust the current measurement
Sensor Fault of Module/ Radiator	F17	The temp. Sensor is broken or short circuit	
IGBT Power Device Overheat Alarm	F20	The IGBT is overheat	Check and adjust the current measurement
Overload Alarm	F21	Compressor electricity is large	The compressor over-current protection
AC Input OverCurrent Alarm	F22	Compressor electricity is large	The compressor over-current protection
EEPROM Fault Alarm	F23	MCU error	Check whether the chip is damaged Replace the chip
Destroyed EEPROM Activation Ban Alarm	F24	MCU error	Check whether the chip is damaged Replace the chip
LP 15V Underload Fault	F25	The V15V is overload or undervoltage	Check the V15V input voltage in range 13.5v~16.5v or not
IGBT Power Device Overheat Fault	F26	The IGBT is overheat	Check and adjust the current measurement

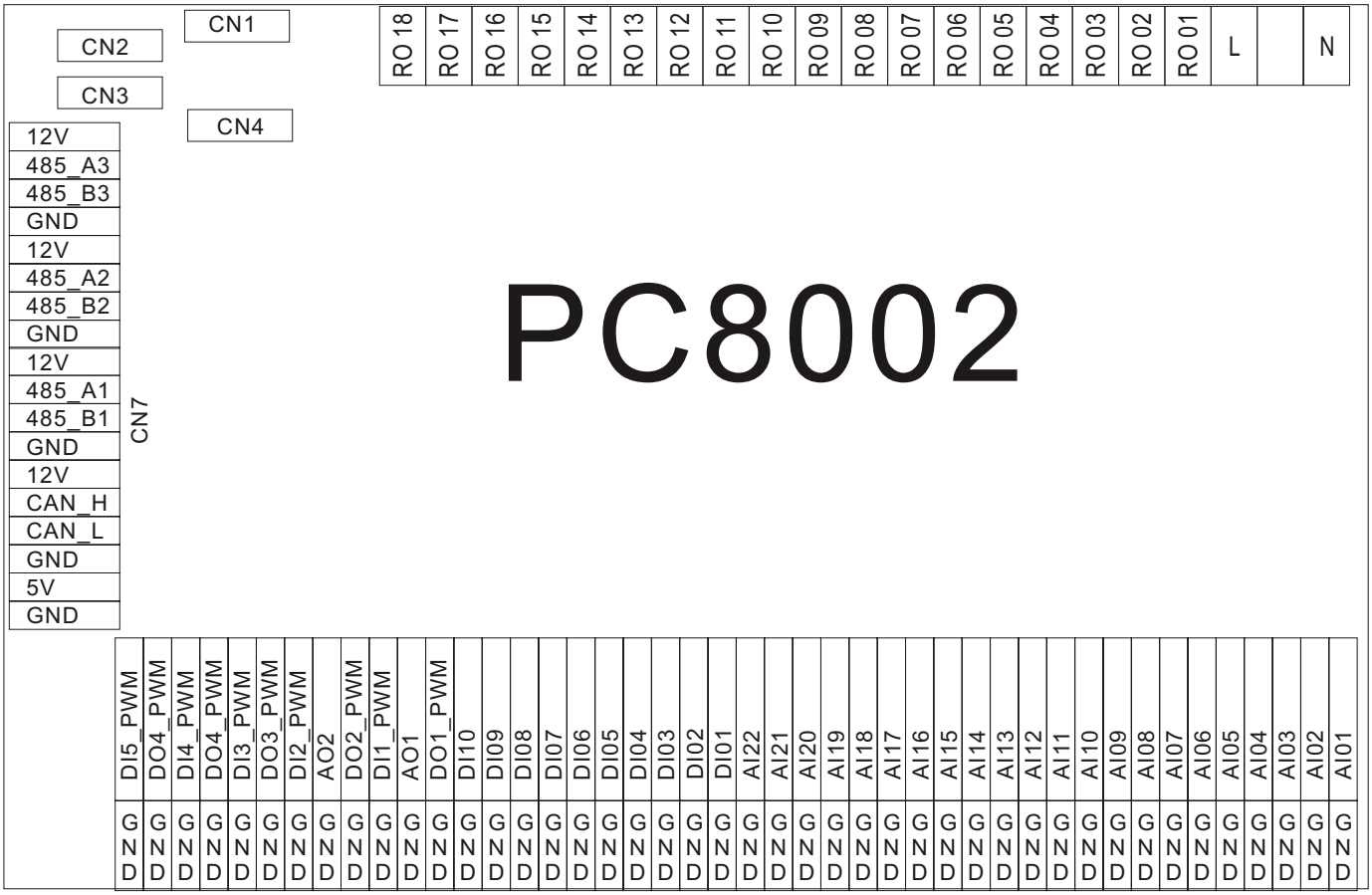
Meaning	Default	Remarks
Cooling target temperature set point	12℃	Adjustable
Heating the target temperature set point	40℃	Adjustable
Hot water target temerature set point	40℃	Adjustable

3. Interface diagram

3.1 Wire control interface diagram and definition

Sign	Meaning
V	12V (power +)
R	No use
T	No use
A	485A
B	485B
G	GND(power-)

3.2 Controller interface diagram and definition



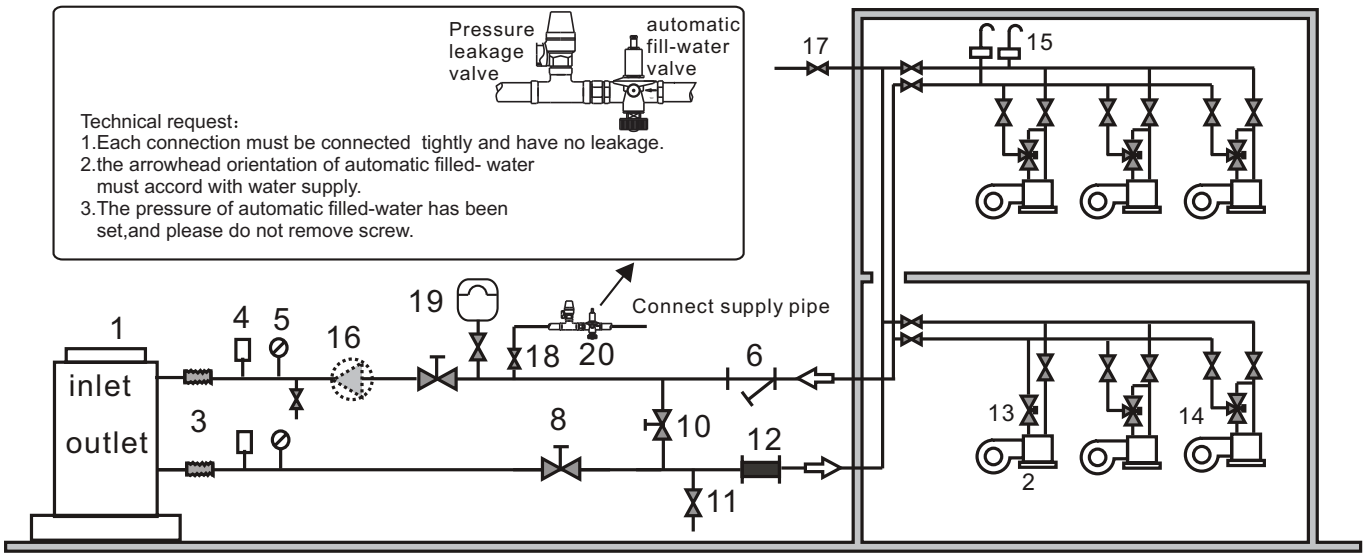
Main board of the input and output interface instructions below

Number	Sign	Meaning
01	AI01	Inlet water temperature
02	AI02	Outlet water temperature
03	AI03	Exhaust temperature
04	AI04	No use
05	AI05	Ambient temperature
06	AI06	Antifreeze Temperature/
07	AI07	Suction temperature
08	AI08	Coil temperature
09	AI09	No use
10	AI10	Temperature of the EVI inlet
11	AI11	Temperature of the EVI outlet
12	AI12	Hotwater temperature
13	AI13	No use
14	AI14	No use
15	AI15	No use
16	AI16	No use
17	AI17	No use
18	AI18	No use
19	AI19	No use
20	AI20	No use
21	AI21	No use
22	AI22	No use
23	DI01	The high-preesure switch
24	DI02	The low-preesure switch
25	DI03	Water flow protection switch
26	DI04	Romore/emergency input switch
27	DI05	Mode switch
28	DI06	No use
29	DI07	Overload switch of electric heater
30	DI08	No use
31	DI09	No use
32	DI10	No use
33	DO1_PWM	Mode signal output
34	AO1	No use
35	DI1_PWM	No use
36	DO2_PWM	Emergency switch output
37	AO2	No use
38	DI2_PWM	No use
39	DO3_PWM	No use
40	DI3_PWM	No use

41	DO4_PWM	Inlet water temperature
42	DI4_PWM	Outlet water temperature
43	DO5_PWM	Exhaust temperature
44	DI5_PWM	No use
45	CN1	Electronic expansion valve
46	CN2	Electronic expansion valve ofEVI
47	CN3	No use
48	CN4	No use
49	CN7(485-1)	Wire controller/thermostat
50	CN7(485-2)	Driver board
51	CN7(485-3)	DTU
52	RO18	No use
53	RO17	No use
54	RO16	Alarm output
55	RO15	Secondary pump
56	RO14	No use
57	RO13	No use
58	RO12	Hot water three-way valve
59	RO11	No use
60	RO10	No use
61	RO09	Auxiliary heating belt
62	RO08	Spray valve
63	RO07	Crankshaft heating belt
64	RO06	Antifreeze heating belt
65	RO05	Fan 2 /Fan low speed
66	RO04	Fan 1 /Fan high speed
67	RO03	4-way valve
68	RO02	Water pump
69	RO01	Compressor

Appendix 1 Install sketch map

- Especial installation（ expandable water tank）



Remark

1 main unit
2 fan coil
3 rubber flexible connection
4 thermometer
5 manometer
6 Y type filter
8 ball valve
10 bypass valve
11 drain valve
12 filter
13 two-way valve
14 three-way valve
15 automatic ventilation
16 water pump
17 ball valve
18 ball valve
19 expandable water tank
20 automatically filled-water

Installation request:

1 The factory only offers main unit (1)in the legend, and the other modules which are indispensable fittings, are provided by users or installation company.

2 The unit which of code contains the letter "B" ,has water pump inside and need not install water pump outside （16）

3 Automatic ventilation（15）is installed on the top point of the water system。

4 The quantity proportion of two-way valve（13）and three-way valve（14）is referred to the technical regulation, and there is three-way valve installed on the farthest place of water system.

5 The ball valve (17) is used when it is swashed, filled water in the water system and so on.

Appendix 2:

The installation explanation of automatic filled-water

1 When automatic filled-water valve is installed,the arrowhead orientation of inlet water must accord with the orientation of valve ;

2 Automatic filled-water has been adjusted in advance to 1.5bar;

3 If readjust the pressure of inlet water,please operate as follows:

* open the screw cap（C）;

* If reduce the pressure of water supply, please unscrew the pressure to adjust the ; screw(B)

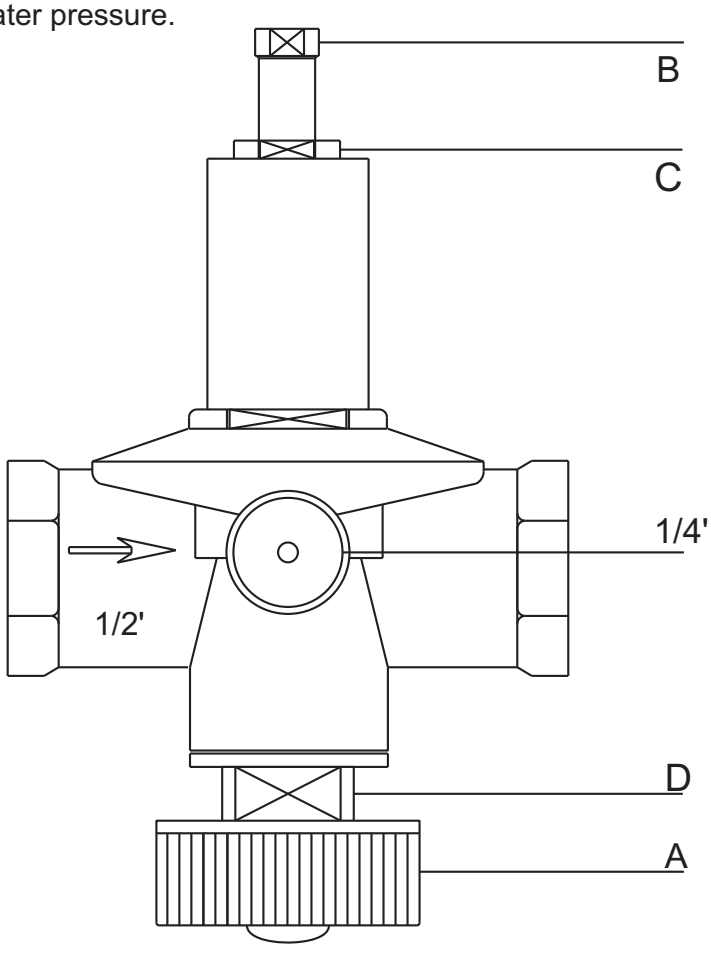
* If increese the pressure of waer supply,please screw down the pressure to adjust the screw (B)

4 When the system need fill water at first,wrest the handle(A) of filled-water.Then the handle(A) can return(close) when the system is full of water.

5 Automatic filled-water Valve need clean in a periodic time and then you must close the tap, unscrew the plug(D),remove the inside filter net. Please assemble them again after cleaning.

:

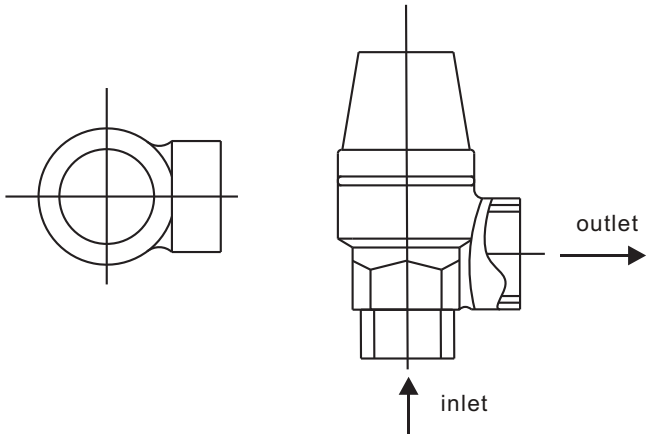
NOTICE There are two connections for water pressure meter in the central section of automatic filled-water,where the water pressure meter can be connected directly and display the set pressure.The screw cap(C) must be tweaked after adjusting the filled-water pressure.



Appendix 3:

The installation explanation of the leakage pressure valve.

1 The action pressure of leakage pressure valve 'is more than 3bar(valve is open) , but the pressure can not be adjusted.
2 The valve will open automatically to make sure that the water loop of air-con system is safe when the water pressure in the backwater side is higher than the set pressure.

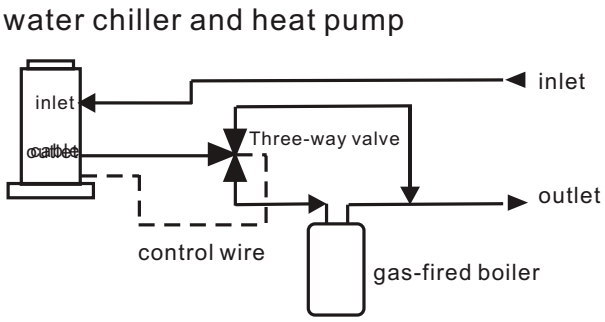


Appendix 4:

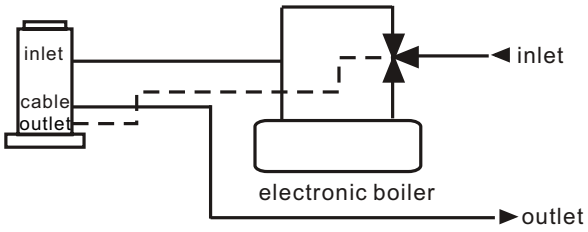
The way of assistant heat source connection

Unit provides the connection of assistant heat source which can not be only for gas-fired boiler,but also for electronic boiler or warm-net pipe for city accordingly.
The way to the connection is as follows:

1）water chiller and heat pump+assistant gas-fired boiler



2）water chiller and heat pump+assistant electronic boiler



Appendix 5、Caution & Warning

1. The unit can only be repaired by qualified installer centre personnel or an authorised dealer.（for Europe market）
2. This appliance is not intended for use by persons (including children) with reduced physical sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.（for Europe market）
   Children should be supervised to ensure that they do not play with the appliance.
3. Please make sure that the unit and power connection have good earthing, otherwise may cause electrical shock.
4. If the supply cord is damaged, it must be replaced by the manufacturer or our service agent or similarly qualified person in order to avoid a hazard.
5. Directive 2002/96/EC (WEEE):
   The symbol depicting a crossed-out waste bin that is underneath the appliance indicates that this product, at the end of its useful life, must be handled separately from domestic waste, must be taken to a recycling centre for electric and electronic devices or handed back to the dealer when purchasing an equivalent appliance.
6. Directive 2002/95/EC (RoHs): This product is compliant with directive 2002/95/EC (RoHs) concerning restrictions for the use of harmful substances in electric and electronic devices.
7. The unit CANNOT be installed near the flammable gas. Once there is any leakage of the gas , fire can be occur.
8. Make sure that there is circuit breaker for the unit, lack of circuit breaker can lead to electrical shock or fire.
9. The heat pump located inside the unit is equipped with an over-load protection system. It does not allow for the unit to start for at least 3 minutes from a previous stoppage.
10. The unit can only be repaired by the qualified personnel of an installer center or an authorized dealer.（for North America market）
11. Installation must be performed in accordance with the NEC/CEC by authorized person only.（for North America market）
12. USE SUPPLY WIRES SUITABLE FOR 75℃.
13. Caution: Single wall heat exchanger, not suitable for potable water connection.

Appendix 6、Cable specification

1. Single phase unit

Nameplate maximum current	Phase line	Earth line	MCB	Creepage protector	Signal line
No more than 10A	2×1.5mm^2	1.5mm^2	20A	30mA less than 0.1 sec	n×0.5mm^2
10~16A	2×2.5mm^2	2.5mm^2	32A	30mA less than 0.1 sec	
16~25A	2×4mm^2	4mm^2	40A	30mA less than 0.1 sec	
25~32A	2×6mm^2	6mm^2	40A	30mA less than 0.1 sec	
32~40A	2×10mm^2	10mm^2	63A	30mA less than 0.1 sec	
40~63A	2×16mm^2	16mm^2	80A	30mA less than 0.1 sec	
63~75A	2×25mm^2	25mm^2	100A	30mA less than 0.1 sec	
75~101A	2×25mm^2	25mm^2	125A	30mA less than 0.1 sec	
101~123A	2×35mm^2	35mm^2	160A	30mA less than 0.1 sec	
123~148A	2×50mm^2	50mm^2	225A	30mA less than 0.1 sec	
148~186A	2×70mm^2	70mm^2	250A	30mA less than 0.1 sec	
186~224A	2×95mm^2	95mm^2	280A	30mA less than 0.1 sec	

2. Three phase unit

Nameplate maximum current	Phase line	Earth line	MCB	Creepage protector	Signal line
No more than 10A	3×1.5mm^2	1.5mm^2	20A	30mA less than 0.1 sec	n×0.5mm^2
10~16A	3×2.5mm^2	2.5mm^2	32A	30mA less than 0.1 sec	
16~25A	3×4mm^2	4mm^2	40A	30mA less than 0.1 sec	
25~32A	3×6mm^2	6mm^2	40A	30mA less than 0.1 sec	
32~40A	3×10mm^2	10mm^2	63A	30mA less than 0.1 sec	
40~63A	3×16mm^2	16mm^2	80A	30mA less than 0.1 sec	
63~75A	3×25mm^2	25mm^2	100A	30mA less than 0.1 sec	
75~101A	3×25mm^2	25mm^2	125A	30mA less than 0.1 sec	
101~123A	3×35mm^2	35mm^2	160A	30mA less than 0.1 sec	
123~148A	3×50mm^2	50mm^2	225A	30mA less than 0.1 sec	
148~186A	3×70mm^2	70mm^2	250A	30mA less than 0.1 sec	
186~224A	3×95mm^2	95mm^2	280A	30mA less than 0.1 sec	

When the unit will be installed at outdoor, please use the cable which can against UV.

Appendix 7 Capacity correction table

CH-HP20UIMPRM

Heating Capacity (kW)

Water outlet Temp. (℃)	Ambient Temperature(℃)																
	-30	-25	-20	-15	-12	-7	-5	0	2	5	7	10	15	20	25	30	35
35	10.70	11.61	12.53	13.04	14.08	15.05	16.07	17.15	19.16	20.81	21.82	22.61	23.78	24.85	25.81	26.67	27.44
41	10.54	11.44	12.34	12.84	13.88	14.83	15.83	16.90	18.87	20.50	21.50	22.28	23.43	24.48	25.43	26.28	27.03
45	10.02	10.88	11.74	12.21	13.20	14.11	15.06	16.07	17.95	19.50	20.45	21.19	22.28	23.28	24.18	24.99	25.71
50	9.92	10.77	11.62	12.09	13.06	13.96	14.91	15.91	17.77	19.30	20.24	20.98	22.06	23.05	23.94	24.74	25.45
55	9.87	10.72	11.56	12.03	13.00	13.89	14.83	15.83	17.68	19.20	20.14	20.87	21.95	22.93	23.82	24.62	25.32
60			11.54	12.01	12.97	13.87	14.80	15.80	17.64	19.17	20.10	20.83	21.90	22.89	23.77	24.57	25.27

Power Input (kW)

Water outlet Temp. (℃)	Ambient Temperature(℃)																
	-30	-25	-20	-15	-12	-7	-5	0	2	5	7	10	15	20	25	30	35
35	5.47	5.54	5.62	5.70	5.74	5.87	5.91	6.13	6.16	6.22	6.26	6.31	6.37	6.42	6.48	6.53	6.59
41	6.28	6.37	6.46	6.55	6.60	6.75	6.79	7.05	7.08	7.16	7.20	7.26	7.32	7.38	7.45	7.51	7.57
45	6.75	6.85	6.94	7.03	7.09	7.25	7.30	7.57	7.61	7.69	7.73	7.80	7.87	7.94	8.00	8.07	8.14
50	7.50	7.60	7.70	7.81	7.87	8.05	8.10	8.41	8.45	8.54	8.58	8.66	8.73	8.81	8.88	8.96	9.03
55	8.28	8.39	8.51	8.62	8.69	8.89	8.94	9.28	9.32	9.42	9.48	9.56	9.64	9.72	9.81	9.89	9.97
60			8.73	8.85	8.92	9.12	9.17	9.52	9.57	9.67	9.72	9.81	9.89	9.98	10.06	10.15	10.23

COP

Water outlet Temp. (℃)	Ambient Temperature(℃)																
	-30	-25	-20	-15	-12	-7	-5	0	2	5	7	10	15	20	25	30	35
35	1.96	2.10	2.23	2.29	2.45	2.56	2.72	2.80	3.11	3.34	3.49	3.58	3.73	3.87	3.98	4.08	4.16
41	1.68	1.80	1.91	1.96	2.10	2.20	2.33	2.40	2.67	2.87	2.99	3.07	3.20	3.32	3.41	3.50	3.57
45	1.48	1.59	1.69	1.74	1.86	1.94	2.06	2.12	2.36	2.54	2.64	2.72	2.83	2.93	3.02	3.10	3.16
50	1.32	1.42	1.51	1.55	1.66	1.73	1.84	1.89	2.10	2.26	2.36	2.42	2.53	2.62	2.70	2.76	2.82
55	1.19	1.28	1.36	1.40	1.50	1.56	1.66	1.71	1.90	2.04	2.13	2.18	2.28	2.36	2.43	2.49	2.54
60			1.32	1.36	1.45	1.52	1.61	1.66	1.84	1.98	2.07	2.12	2.21	2.29	2.36	2.42	2.47

Model:CH-HP12UIMPRM

Heating Capacity kw

Outlet Water Temp.	Ambient Temperature(℃)																
Water outlet(℃)	-30	-25	-20	-15	-12	-7	-5	0	2	5	7	10	15	20	25	30	35
35	5.72	6.28	6.93	7.80	8.09	8.54	9.17	9.79	10.70	11.61	12.54	12.94	14.20	15.00	15.38	15.69	15.96
41	5.57	6.12	6.76	7.60	7.88	8.33	8.94	9.54	10.43	11.32	12.23	12.61	13.84	14.63	15.00	15.29	15.56
45	5.42	5.95	6.57	7.39	7.67	8.10	8.69	9.28	10.14	11.01	11.89	12.26	13.46	14.22	14.58	14.87	15.13
50	—	5.79	6.39	7.19	7.46	7.88	8.45	9.03	9.87	10.71	11.56	11.93	13.09	13.83	14.18	14.46	14.72
55	—	—	6.21	6.99	7.25	7.65	8.21	8.77	9.59	10.41	11.24	11.59	12.72	13.44	13.78	14.06	14.30
60	—	—	6.02	6.78	7.03	7.42	7.96	8.51	9.30	10.09	10.90	11.24	12.34	13.04	13.37	13.63	13.87

Power Input kw

Outlet Water Temp.	Ambient Temperature(℃)																
Water outlet(℃)	-30	-25	-20	-15	-12	-7	-5	0	2	5	7	10	15	20	25	30	35
35	2.89	2.91	2.96	2.99	3.02	3.04	3.06	3.07	3.09	3.10	3.14	3.19	3.24	3.32	3.40	3.46	3.50
41	3.28	3.30	3.35	3.39	3.42	3.44	3.46	3.48	3.50	3.52	3.55	3.61	3.67	3.76	3.85	3.92	3.96
45	3.66	3.68	3.74	3.78	3.82	3.84	3.87	3.89	3.91	3.93	3.97	4.03	4.09	4.20	4.30	4.38	4.42
50	—	4.07	4.13	4.18	4.23	4.25	4.27	4.29	4.32	4.34	4.39	4.45	4.52	4.64	4.75	4.84	4.89
55	—	—	4.53	4.58	4.63	4.65	4.68	4.70	4.73	4.75	4.80	4.88	4.95	5.08	5.20	5.30	5.35
60	—	—	4.92	4.97	5.03	5.05	5.08	5.11	5.14	5.16	5.22	5.30	5.38	5.52	5.65	5.76	5.82

COP

Outlet Water Temp.	Ambient Temperature(℃)																
Water outlet(℃)	-30	-25	-20	-15	-12	-7	-5	0	2	5	7	10	15	20	25	30	35
35	1.98	2.16	2.34	2.61	2.68	2.81	3.00	3.19	3.46	3.74	4.00	4.06	4.39	4.52	4.53	4.53	4.56
41	1.70	1.86	2.02	2.24	2.30	2.42	2.58	2.74	2.98	3.22	3.44	3.49	3.78	3.89	3.89	3.90	3.93
45	1.48	1.62	1.76	1.95	2.00	2.11	2.25	2.39	2.60	2.80	3.00	3.04	3.29	3.39	3.39	3.39	3.42
50	—	1.42	1.55	1.72	1.76	1.85	1.98	2.10	2.29	2.47	2.64	2.68	2.89	2.98	2.98	2.99	3.01
55	—	—	1.37	1.53	1.57	1.65	1.76	1.87	2.03	2.19	2.34	2.38	2.57	2.65	2.65	2.65	2.67
60	—	—	1.22	1.36	1.40	1.47	1.57	1.67	1.81	1.95	2.09	2.12	2.29	2.36	2.37	2.37	2.39

Model:CH-HP08UIMPRK

Heating Capacity kw																
Outlet Water Temp.		Ambient Temperature(℃)														
Water outlet(℃)	-30	-25	-20	-15	-12	-7	-5	0	2	5	7	10	15	20	25	30	35
35	3.76	4.13	4.56	5.13	5.32	5.62	6.03	6.44	7.04	7.64	8.25	8.51	9.34	9.87	10.12	10.32	10.50
41	3.67	4.03	4.45	5.00	5.19	5.48	5.88	6.28	6.86	7.45	8.04	8.30	9.11	9.62	9.87	10.06	10.24
45	3.56	3.92	4.32	4.86	5.04	5.33	5.72	6.11	6.67	7.24	7.82	8.07	8.85	9.36	9.59	9.78	9.95
50	—	3.81	4.20	4.73	4.91	5.18	5.56	5.94	6.49	7.04	7.61	7.85	8.61	9.10	9.33	9.52	9.68
55	—	—	4.09	4.60	4.77	5.04	5.40	5.77	6.31	6.85	7.39	7.62	8.37	8.84	9.07	9.25	9.41
60	—	—	3.96	4.46	4.62	4.88	5.24	5.60	6.12	6.64	7.17	7.40	8.12	8.58	8.79	8.97	9.12
Power Input kw																	
Outlet Water Temp.		Ambient Temperature(℃)															
Water outlet(℃)	-30	-25	-20	-15	-12	-7	-5	0	2	5	7	10	15	20	25	30	35
35	1.77	1.78	1.81	1.83	1.85	1.86	1.87	1.88	1.89	1.90	1.92	1.95	1.98	2.03	2.08	2.12	2.14
41	2.01	2.02	2.05	2.07	2.10	2.11	2.12	2.13	2.14	2.15	2.18	2.21	2.24	2.30	2.36	2.40	2.42
45	2.24	2.25	2.29	2.31	2.34	2.35	2.37	2.38	2.39	2.40	2.43	2.47	2.50	2.57	2.63	2.68	2.71
50	—	2.49	2.53	2.56	2.59	2.60	2.61	2.63	2.64	2.66	2.68	2.73	2.77	2.84	2.91	2.96	2.99
55	—	—	2.77	2.80	2.83	2.85	2.86	2.88	2.89	2.91	2.94	2.98	3.03	3.11	3.18	3.24	3.27
60	—	—	3.01	3.04	3.08	3.09	3.11	3.13	3.14	3.16	3.19	3.24	3.29	3.38	3.46	3.53	3.56
COP																	
Outlet Water Temp.		Ambient Temperature(℃)															
Water outlet(℃)	-30	-25	-20	-15	-12	-7	-5	0	2	5	7	10	15	20	25	30	35
35	2.12	2.32	2.52	2.80	2.88	3.02	3.22	3.43	3.72	4.02	4.30	4.36	4.72	4.86	4.87	4.87	4.91
41	1.83	2.00	2.17	2.41	2.47	2.60	2.77	2.95	3.21	3.46	3.70	3.76	4.06	4.18	4.19	4.19	4.22
45	1.59	1.74	1.89	2.10	2.16	2.26	2.42	2.57	2.79	3.01	3.22	3.27	3.54	3.64	3.65	3.65	3.68
50	—	1.53	1.66	1.85	1.90	1.99	2.13	2.26	2.46	2.65	2.83	2.88	3.11	3.21	3.21	3.21	3.24
55	—	—	1.48	1.64	1.68	1.77	1.89	2.01	2.18	2.35	2.52	2.56	2.76	2.85	2.85	2.85	2.87
60	—	—	1.32	1.46	1.50	1.58	1.69	1.79	1.95	2.10	2.25	2.28	2.46	2.54	2.54	2.54	2.56