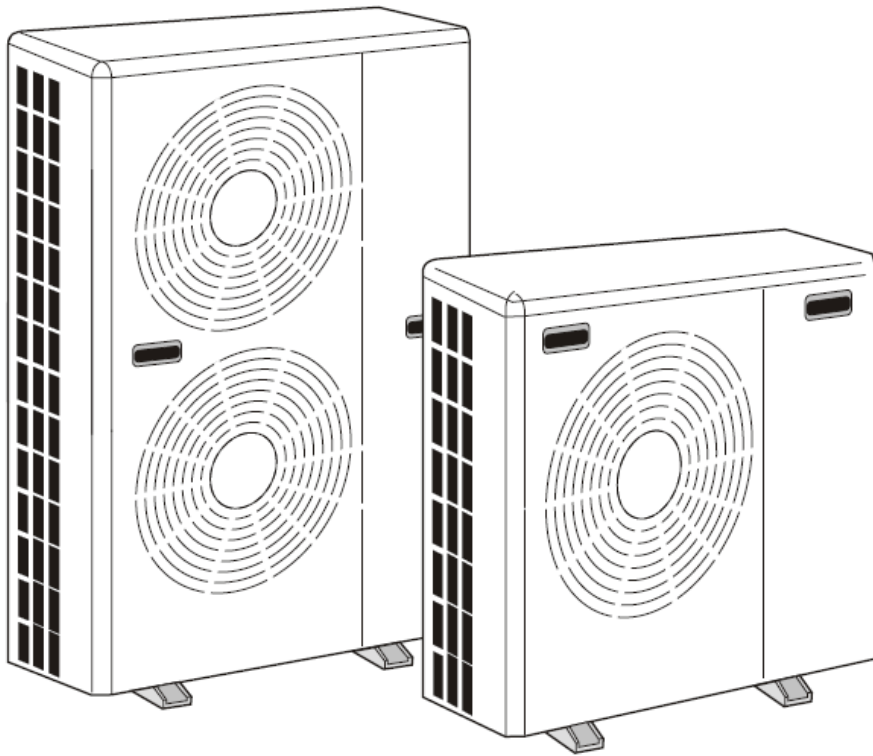


DC INVERTER AIR TO WATER HEAT PUMP R32 Refrigerant User Manual



REV:R32-2020V1

Contents list

1. General -----	3
2. System description -----	3
3. Installation -----	3-10
4. Controller manual-----	11-19
5. Specification -----	19-21
6. Maintenance-----	22
7. How to get the most out of your heat pump-----	23

Safety notice

Never perform any cleaning operations before switching off the external isolator

Do not modify safety or control devices without consultation with the manufacturer

Do not pull, detach or twist the electrical cables coming from the unit

Do not introduce pointed objects through the grill and into the fan.



With flammable R32 Refrigerant

- Please read the user manual carefully.
- This heat pump use enviroment-friendly refrigerant R32. The refrigerant is odorless.
- Please dont burn this unit.
- This unit should be kept away from fire source.
- The space for installation, maintenance and storage should not be less than 55M2.
- Maintenance only by professionals.

To avoid Explosion or Burning

If need to weld the copper pipe for maintenance, must discharge all the R32 refrigerant and vacuum the heat pump from both high pressure valve and low pressure valve at the back of the heat pump. Normal refrigerant discharge cannot discharge all the R32 out from the system.



Important Notice for Antifreeze to Avoid heat pump broken

1. **Water flow switch MUST be installed** during installation for heat pump air conditioning side to ensure proper water flow.
2. **Must check if there is enough water flow after finish installation. You can check the inlet and outlet water temp difference must be about 5C when compressor is working in highest speed in heating mode.**
3. **Water filter MUST be installed before water go into PLATE HEAT EXCHANGER.** The water filter need to be cleaned at least half an year.



4. **Must use enough brine(glycol) in the water system in cold area.** if the air temp is lower than -0 °C, for the safety, you must use brine(glycol) as the fluid in the heat pump water system instead of pure water.
5. **MUST keep the electricity power supply always connected even when you don't use the heat pumps.** Our heat pump has antifreeze function if with electricity connected. So If without enough glycol (antifreeze liquid) and if the electricity is cut off by accident for more than 30 minutes in winter, you need to drain out all the inside water to protect the heat pump to be frozen.

1. GENERAL

This unit is air source heat pump for space heating and sanitary water heater for houses, apartment blocks and small industrial premises. Outdoor air is used as a heat source creating free energy to heat your home.

2. SYSTEM DESCRIPTION

This unit is a monoblock (single unit) air/water heat pump, specially designed for the colder climate. There is no need for bore holes and usually the system can be installed within 1 day.

This unit can both heat hot water effectively at high outdoor temperatures and give a high output to the heating system at low outdoor temperatures. If the outdoor temperature drops to a level lower than minus 0°C (factory setting), the auxiliary heater switches on to ensure the heat pump unit works normally. The unit is also capable of cooling in the summer. The heat pump controller is an intelligent wired system.

THIS UNIT has two different installation options:

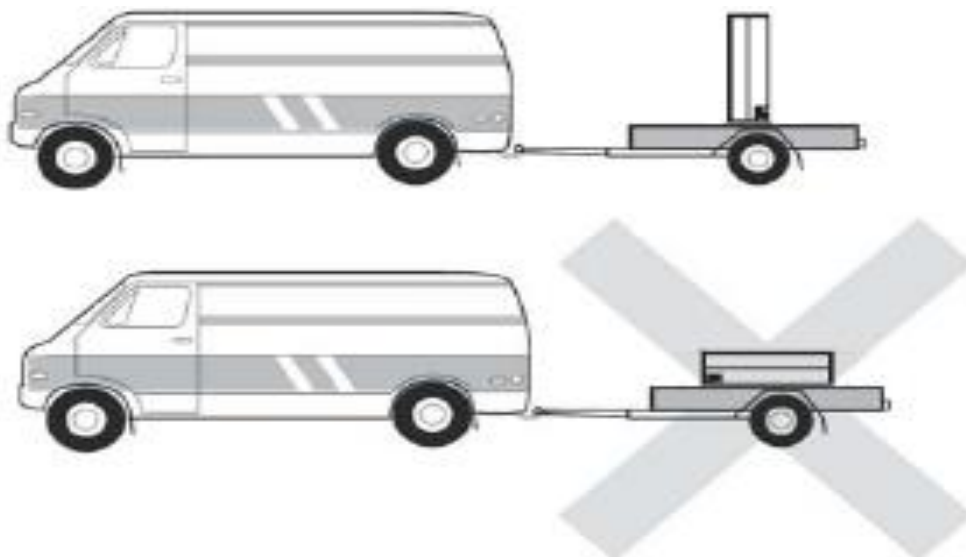
- 1). Space heating/cooling + DHW (Domestic hot water)
- 2). Space heating/cooling only or DHW only

3. INSTALLATION

3.1: General points for installation engineer

3.1-1: Transport and storage

The unit should be transported and stored vertically.



3.1-2: Inspection of the installation

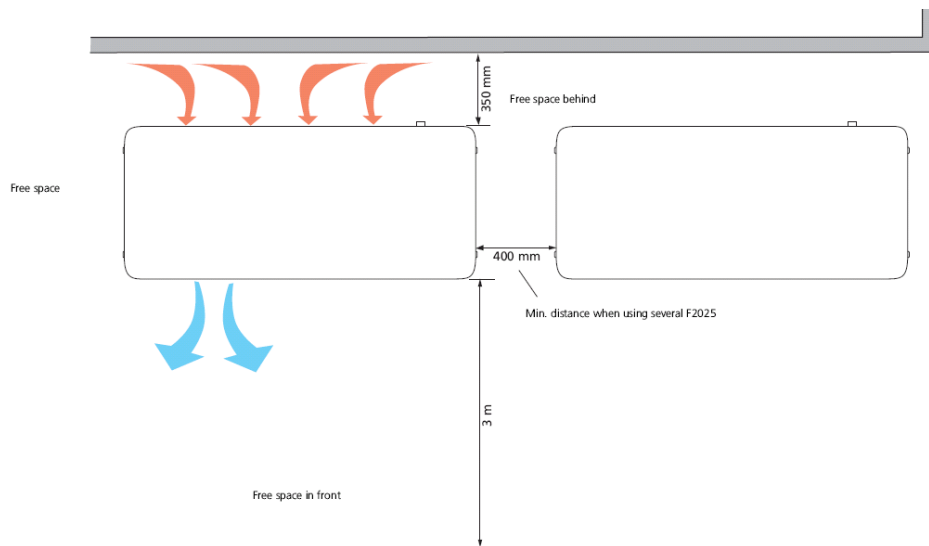
Current regulations require the heating installation to be inspected before it is commissioned . The inspection must be carried out by a suitably qualified person and should be documented. If the heat pump is replaced, the installation must be inspected again. In the event of installation with unvented (closed) heating systems.

3.1-3: Siting the heat pump

The unit is placed (securely fixed) outdoors on a firm base, preferably a concrete foundation. It should not be positioned next to sensitive walls, for example, next to a bedroom. Also ensure that the placement does not inconvenience any neighbors.

Large amounts of condensation water as well as de-icing water from defrosting can be produced. You must provide good drainage at the installation area and make sure the water cannot run out onto paths or the like during periods that ice can form. Ideally, condensation water is led off to a water drain or a suitable soak away. The distance between the unit and the exterior wall must be at least 350 mm. The free space above must be at least one meter. The unit must not be placed in a position so that air can re-circulate thus lowering the COP.

Care must be exercised so that the heat pump is not scratched during installation.



3.1-4: Controller:

This unit is equipped with an external electronic controller that handles all functions necessary for heat pump operations. Defrosting, stop at max/min temperature, connection of the compressor heater as well as enabling the aux electrical heater, monitoring of motor protection and pressure switches are all controlled.

The controller is set during installation and can be used during a service.

Under normal operating conditions the home owner does not need to have access to the controller. This unit has an integrated electronic outlet water temperature sensor that limits the outlet temperature up to 60°C. But without controller, the timers function, Legionella function and auto heating target temp curve function cannot work.

3.2 Installation design

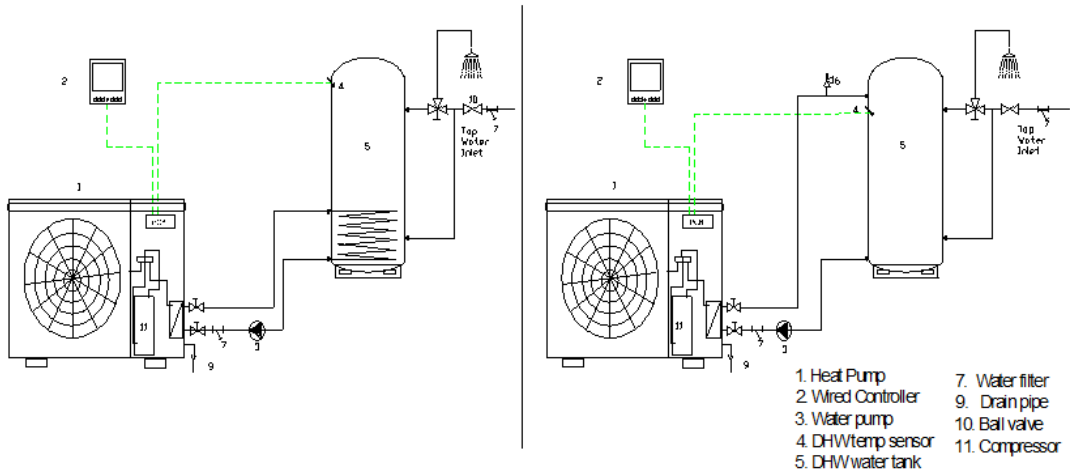
This unit can be installed in several different ways.

The safety equipment must be installed in accordance with current regulations for all installation options.

When connecting with This unit, the total water volume in the heat pump pipe system and buffer tank must be at least 10 liters per KW of output.

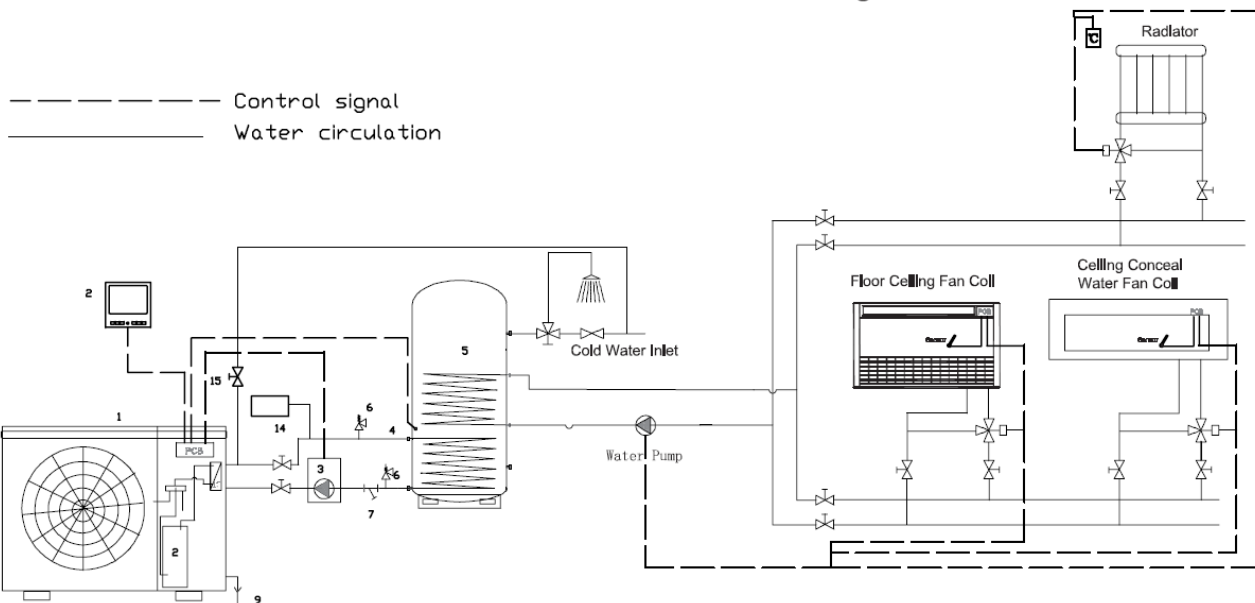
Method 1

Only DHW

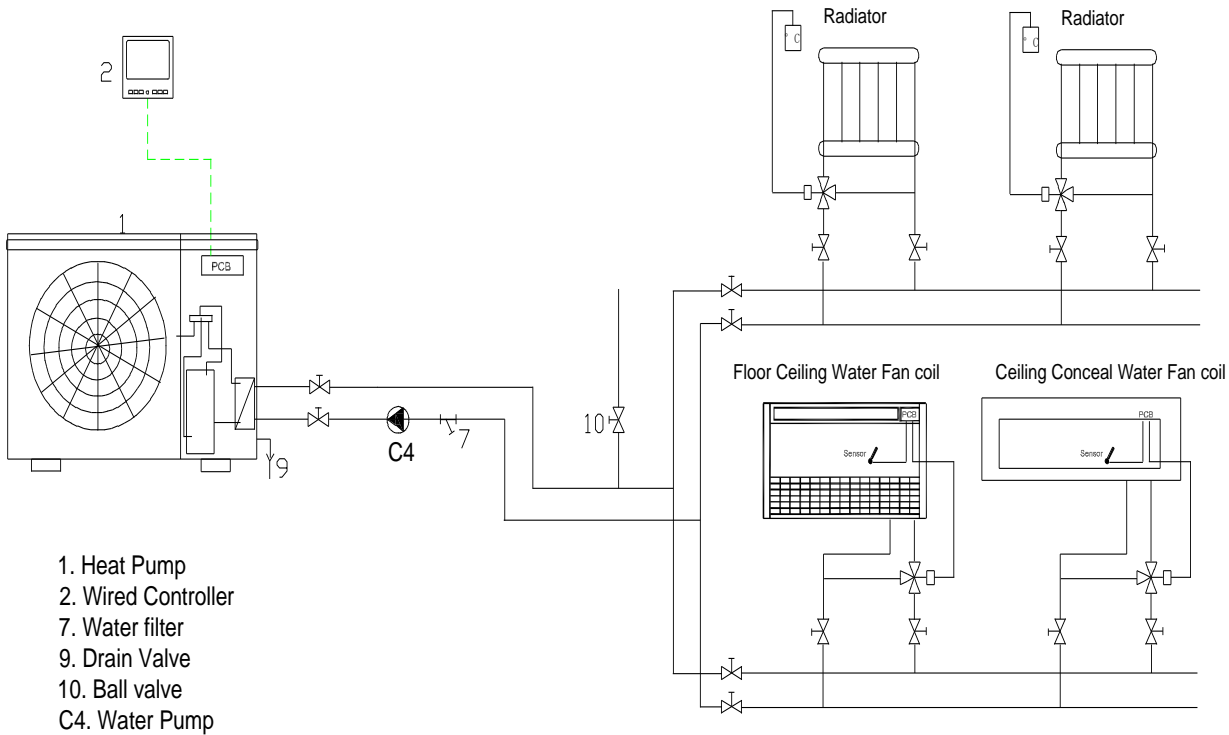


Method 2

DHW with Room Heating

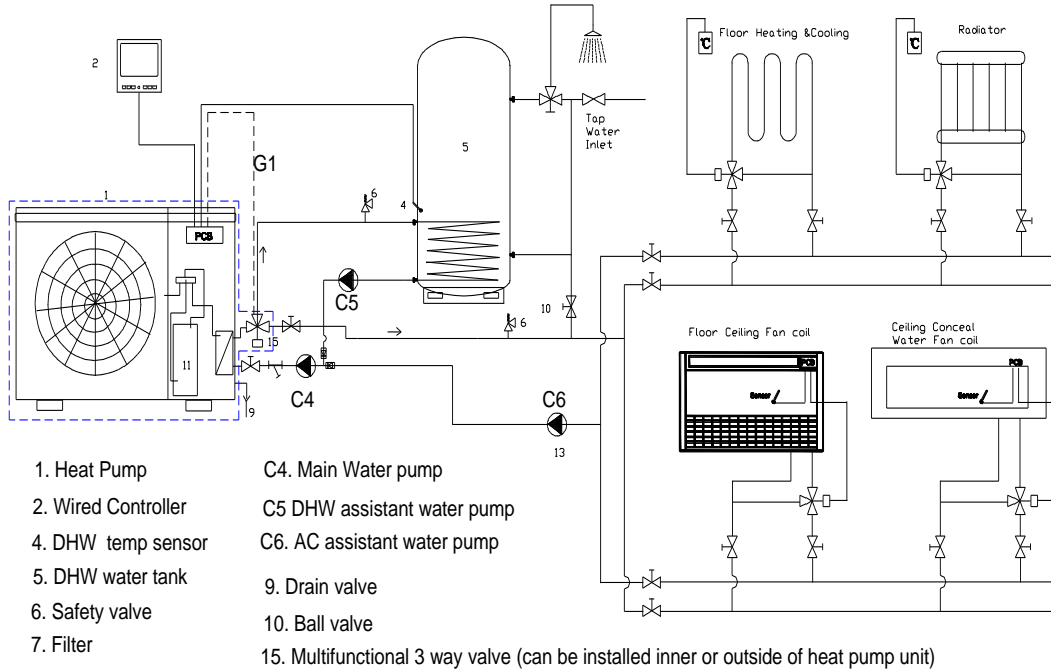


Method 3



Method 4

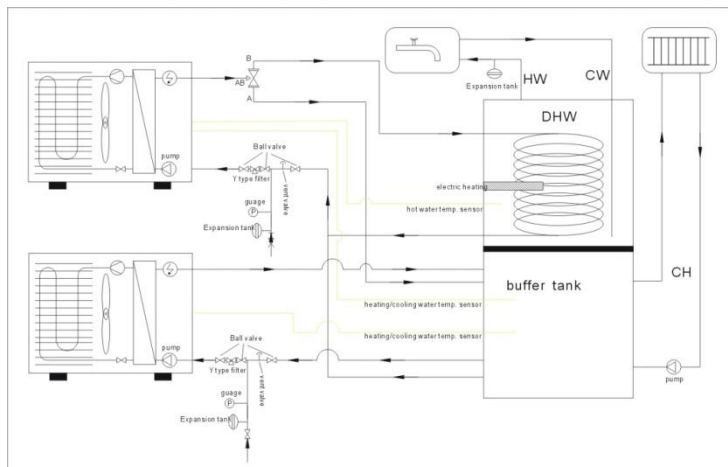
Heating & Cooling & DHW



Note:

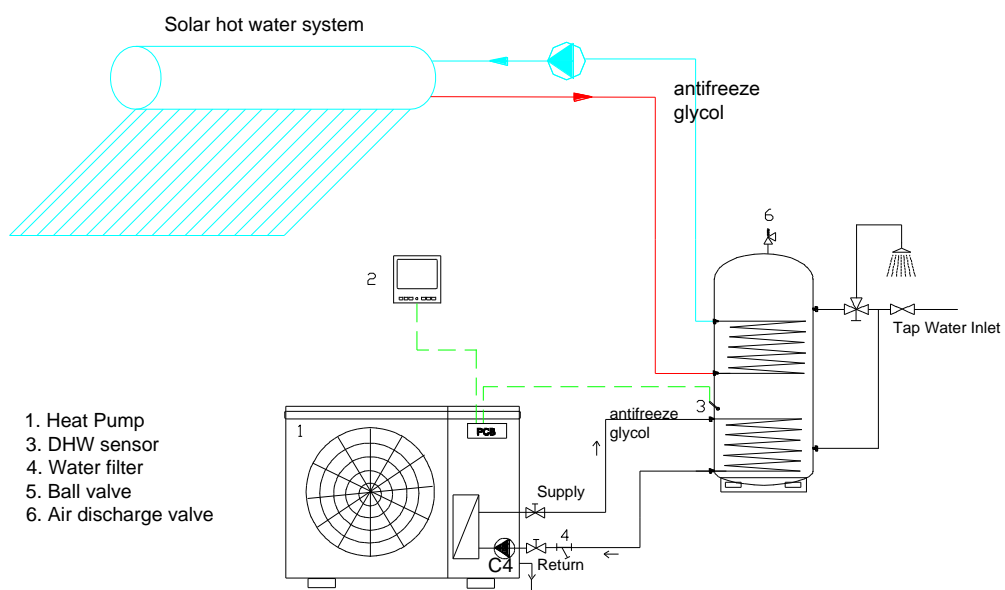
1. C4 water pump is used for both DHW and air conditioning water circulation.
2. Installer should check the actual water resistance and make sure to keep enough minimum water flow volume, if necessary, more water pumps should be added.
3. Safety valve (air discharge valve) should be installed at the top of the water system for easy air discharge.

C) .2 x heat pumps Installation. Space Heating/Cooling + DHW



Solar Application 1

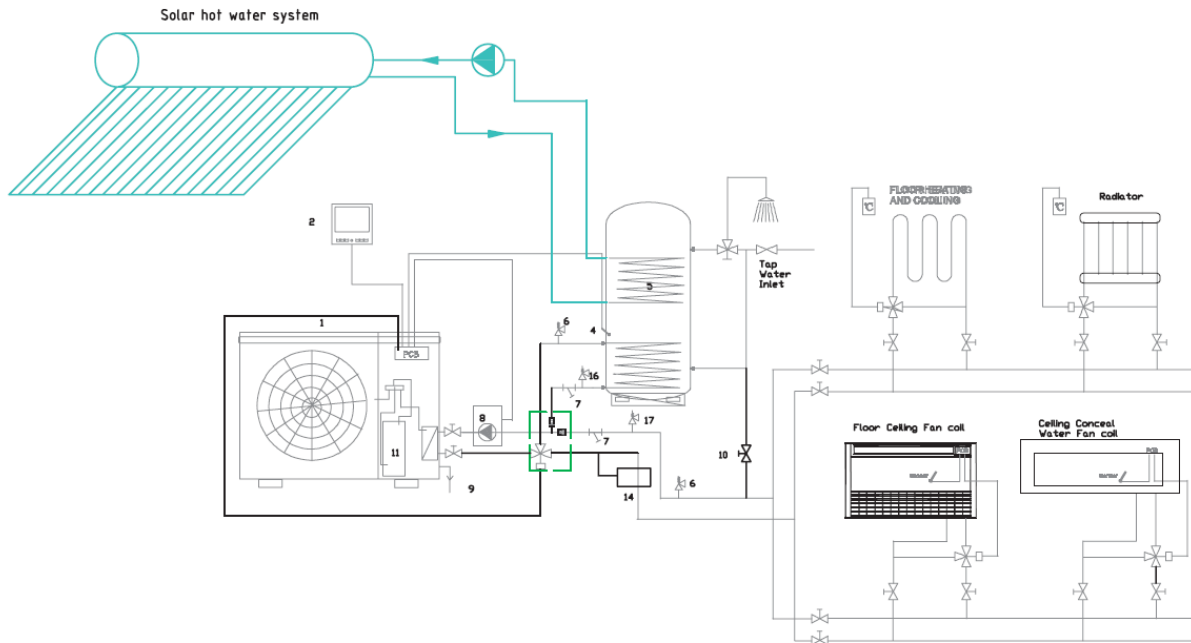
DHW with solar heating



- 1. Heat Pump
- 3. DHW sensor
- 4. Water filter
- 5. Ball valve
- 6. Air discharge valve

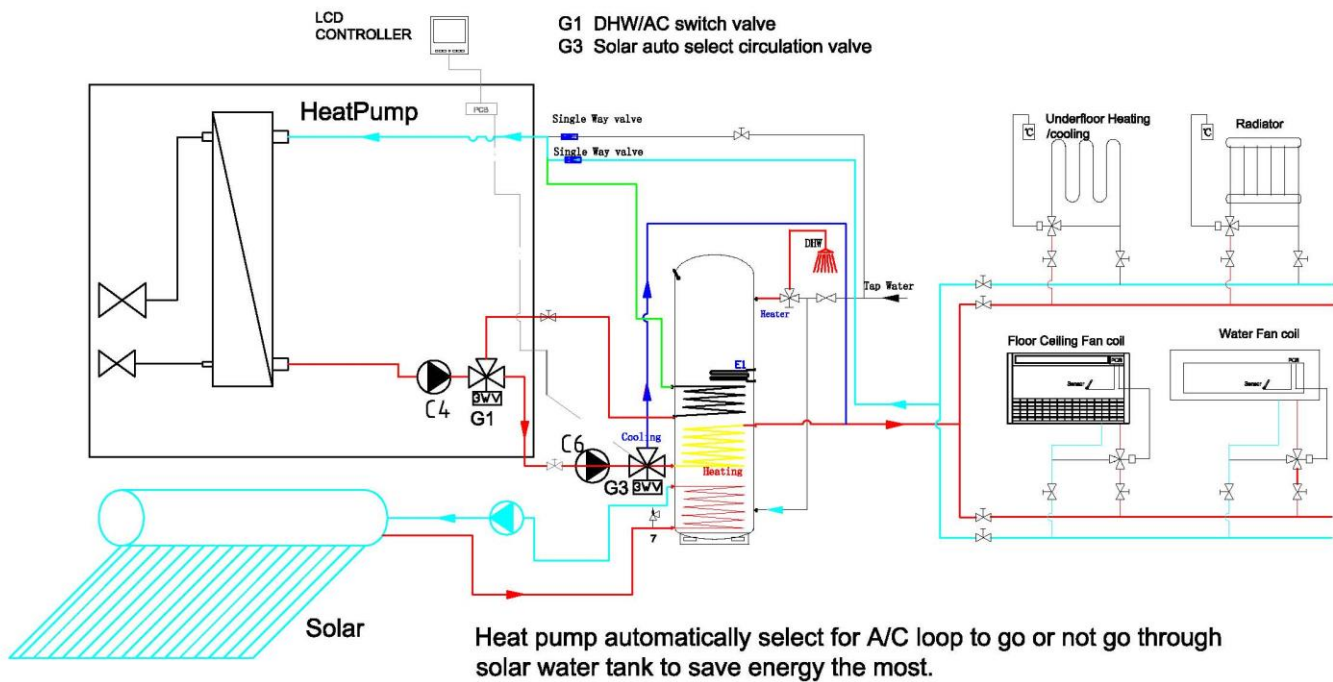
Solar Application 2

Application 2 Multifunctional heat pump with solar assistant DHW

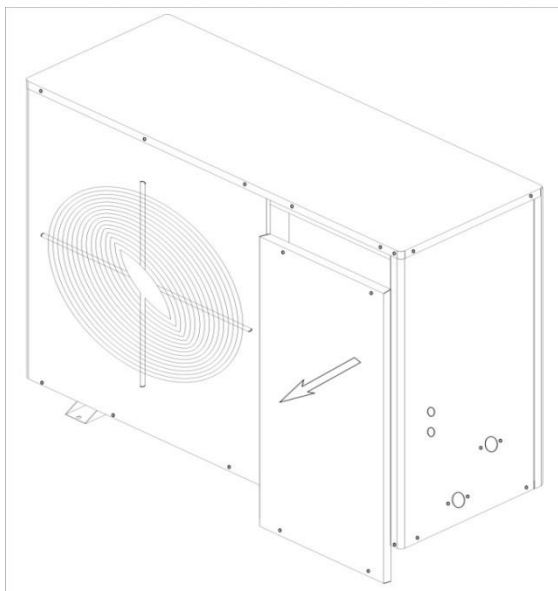
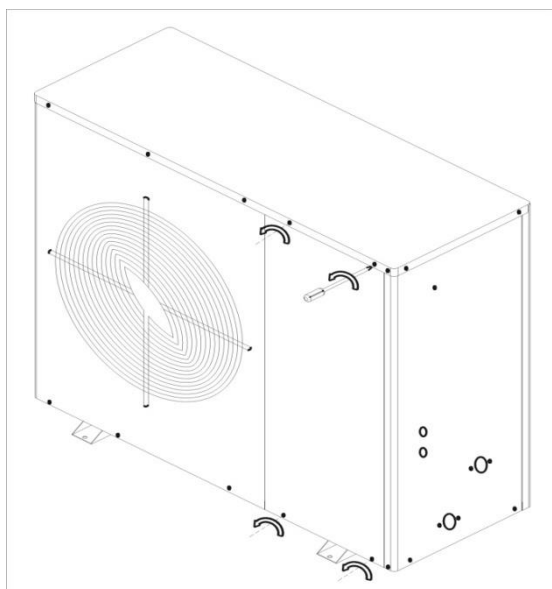


Solar Application 3 (Most saving to use solar for space heating and DHW)

Multifunctional heat pump application for solar assist for room heating and DHW



Important: Even though This unit has anti-freeze protection, if the circulation pump fails or there is a problem with the power supply, there is still a risk of damage due to freezing. During the installation Anti-freeze (Ethylene Glycol) must be used if the lowest air temp is lower than 0c in winter.



3.4.2 Important: You need to install a separate circuit breaker in all installations.

3.4-3: **A Water Flow Switch must be installed to avoid plate heat exchanger broken.**

Some of our units are already with built inside water flow meter switch. If you can see parameter C47 water flow volume, it means that you already have the water flow meter switch inside. Then you don't need to add another water flow switch.

Water Flow Switch



3.4-4: Anti-freeze Function

DHW anti-freeze

When DHW water tank(IN1) temperature $\leq 5^{\circ}\text{C}$, system starts hot water antifreeze, start domestic hot water mode and compressor, When hot water temperature is 20°C or higher, withdraw DHW antifreeze. If the compressor starts over 30 minutes, withdraw DHW antifreeze.

AC anti-freeze

Air conditioning inlet (IN2) or outlet (IN3) water temperature is 4°C or lower, system starts AC antifreeze, water pump C4 and C6 start, check ambient temperature one minute later.

A、Ambient temperature $\leq 15^{\circ}\text{C}$, start compressor for heating

B、Ambient temperature $\geq 15^{\circ}\text{C}$, only turn on water pump C4 and C6

When the input water temperature $\geq 10^{\circ}\text{C}$ or compressor operates over 30 minutes , withdraw AC antifreeze.

When anti-freezing, if water temperature reduced to 1°C or lower, machine will stop and error code

Pd display.

3.5 COMMISSIONING

3.5-1: Preparations

Before commissioning, make sure compressor heater has already pre-heated for 3-10 minutes.

1) Compressor Heater

As mentioned above, if the temperature is lower than 20C, it is important that the compressor heater can heat the compressor before the first start up. In order to ensure this happens, please follow the instructions below:

- a. Disconnect the power connection of compressor, aux electric heater, circulation pump. (Due to anti-freeze protection, the compressor, aux electric heater and circulation pump could start in stand-by status.
- b. Switch on the outside Isolator and power connection of the unit.
- c. After 3-10 minutes, switch off the outside Isolator and re-connect the power connection of compressor, aux electric heater and circulation pump.

2) Filling and Venting

Fill the system slowly ensuring bleed valves are open (if not automatic).

3.5-2: Inspection Before Start up

1) Mechanical Inspection:

- a. Check the cabinet and inside pipe system for possible damage during transportation.
- b. Check that the heating water circuit is filled and well vented. Check the pipe system for leaks.
- c. Check the Fan making sure it can move freely.

2) Electric System Inspection

- a. Check the power supply (voltage/frequency) matches the rating label and specification.
- b. Check all the electrical connections for loose or damaged wires due to transportation.

3) Pipe Inspection

- a. Check all the valves, and water flow directions.
- b. Check for any possible leaks inside or outside of unit.
- c. Check the insulation of all the pipes.

3.5-3: Start up and Commissioning

- a. After the system inspection is finished, startup can begin.
- b. Connect the power supply; switch on the isolator to turn on the heat pump.
- c. The circulation pumps starts immediately. After 30 seconds, the fan motor starts. After another 10 seconds, compressor starts.
- d. Air is initially released from the hot water and venting may be necessary. If bubbling sounds can be heard from the heat pump, the circulation pump or radiators the entire system will require further venting. When the system is stable (correct pressure and all air eliminated) the automatic heating control system can be set as required.
- e. Check heating water inlet/outlet temperature difference after the system is stable.
- f. Check the compressor exhaust and suction temperature.
- g. Adjust the parameters according to different weather conditions and user requirements.

4. CONTROLLER MANUAL

4.1: Electric Parts Control Program working theory

a). Compressor

- After the compressor is shut down, it has a minimum interval of 3 minutes before the next start up
- The initial "power-up" does not require the protection of three minutes;
- During defrost, compress on/off interval is based on the defrost parameters.

b) Start up/Shut down Cycle

- When the heat pump switches on, the water circulation pump and the fan will start 60 seconds before compressor
- When the heat pump switches off, the water circulation pump shuts down 30 seconds after the compressor. The fan switches off 5 seconds after the compressor
- During defrost, the water circulation pump does not stop running;

c) E2 heater function

- When parameter P27= 0, E2 is AC Electric assistant heater control port, if air temp<P10, if compressor work heating more than 15 minutes but cannot reach target water inlet target temp, E2 will start to heat together with compressor.
- When parameter P27 = 1, E2 is 2nd heat source control port,if P27=1 and air temp<P28, compressor will stop only E2 is on.
- when P27=2 or 3, E2 can be connected with gas boiler or electric heater and work together with compressor automatically.

d) Solenoid 3-way Valve G2(It is same function as R410a mode G1)

In DHW mode, the G2 valve = off. In any other mode, G2= on.

f) Solenoid 3-way Valve G3

- If P14 =1: when unit is working with AC heating, it will compare solar water tank temp and AC return temp. When solar water tank temp – AC return water temp $\geq 5^{\circ}\text{C}$, valve G3= ON; when $< 2^{\circ}\text{C}$, valve G3= OFF.
- If P14=0, G3 is seasonal valve, Select AC heating mode, G3= ON; Select AC cooling mode, G3= OFF.

4.2: .Operating Mode Principle

1) Space Cooling Mode

Temperature setting range is 10-25 $^{\circ}\text{C}$, the factory setting is 12 $^{\circ}\text{C}$;

2) Space Heating Mode

Temperature setting range is 10-55 $^{\circ}\text{C}$, the factory setting is 45 $^{\circ}\text{C}$;

3) DHW Mode

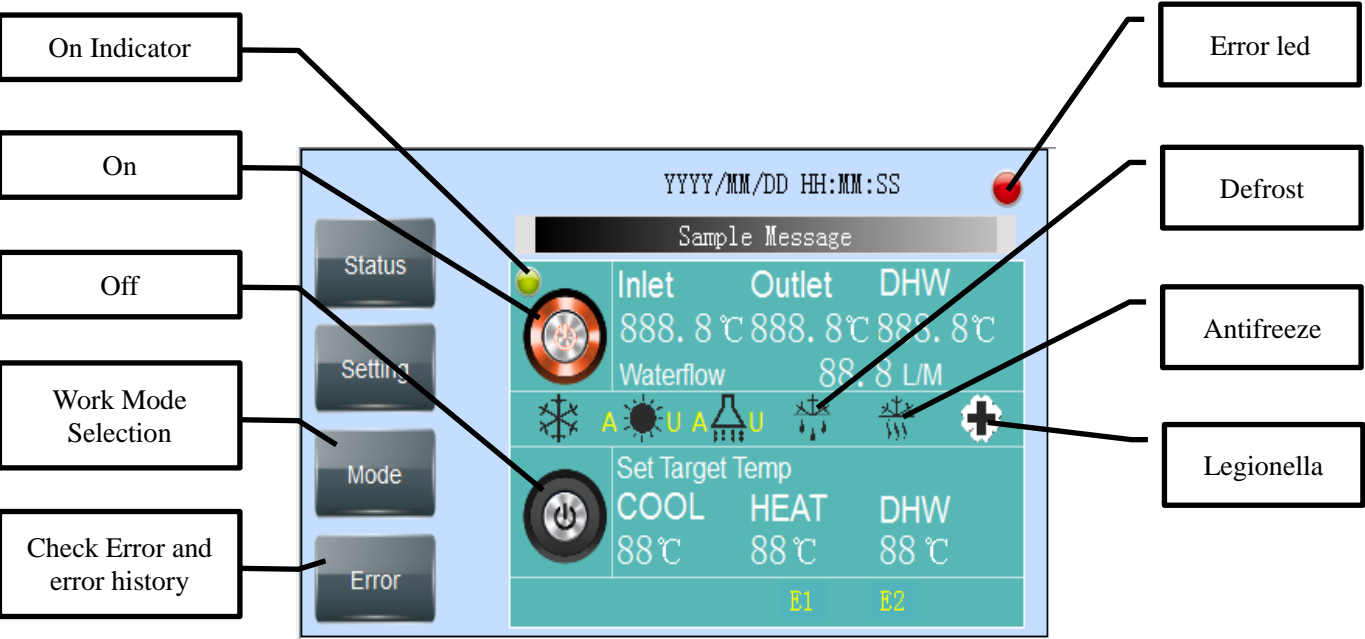
Temperature setting range is 10-60 $^{\circ}\text{C}$ (50~60c is increased by electric heater), the factory setting is 50 $^{\circ}\text{C}$;

4) Defrost Cycle

Auto Defrost mode (normal defrosting)

All heat pumps are fitted with intelligent defrost controls. A number of parameters are taken into account before defrost begins and ends. The parameters should be set as per factory settings or otherwise set out by a engineer. The defrost time will vary depending upon the conditions the heat pump is working in. The length between defrosts will either extend or contract depending upon the parameters set.

4.3.1、 Colorful Touch Screen Wire Controller



4.4、 keys operation

4.4.1 Status

Click "Status" at the home page to enter the C parameter checking page as shown below. Click the arrow ">" button to go to next page.

Item	Value
C00 Coil temp	888.8 °C
C01 Compressor discharge temp(AIN1)	888.8 °C
C02 Ambient temp	888.8 °C
C03 HP AC outlet water temp	888.8 °C
C04 DHW tank temp	888.8 °C

Navigation: Left arrow, 1/15, Right arrow

4.4.2 Setting

After click “SETTING” button at the homepage, you will enter the setting page as shown below







Click “Setting” button, you enter system setting page. Then you select the language, set time and others.

Click “Timer” button, you can set the heat pump on and off timer and select different working mode for different period.

There are total 4 periods(8 points) timers setting.

Click “Administrator” button, you need to enter the password “2222” to enter working parameters setting page as shown below.

			YYYY/MM/DD HH:MM:SS
Item	Value		
P00 Auto restart after power off	1.recovery		
P01 DHW hot water temp hysteresis temp	88 ℃		
P02 AC temp hysteresis temp	88 ℃		
P03 Coil copper pipe temp to active defrost	888 ℃		
P04 Water source side anti freeze temp	888 ℃		
			1/22 

System Adjustable Parameter Table(P parameters)

RS485 Add	LCD No.	English	Meaning	Default	Remark
0	P00	Auto restart after power off	0: invalid; 1: valid	1	
1	P01	DHW hot water temp hysteresis temp	2~15℃, minus hysteresis	2℃	
2	P02	AC temp hysteresis temp	2~15℃, minus hysteresis	2℃	
3	P03	Coil copper pipe temp to active defrost	-20~5℃	0℃	
4	P04	water source side anti freeze temp (for Geo heat pump)	-20~5℃	2℃	
5	P05	Temp2 to active defrost	-20~0℃	-5℃	
6	P06	Coil copper pipe temp to stop defrost	10~35℃	30℃	
7	P07	defrost duration time	15~99 minutes	30	
8	P08	defrost interval time	15~99 minutes	35	
9	P09	ambient temp to activate E1 DHW e-heater	-20~20℃	0℃	
10	P10	ambient temp to activate E2 AC e-heater	-20~20℃	0℃	
11	P11	DHW frequency limitation percentage	2~10 (= highest frequency* 20~100%)	10	
12	P12	compressor discharge air protection temp	100~127℃	100℃	
13	P13	defrost interval multiple times control	0: no defrost; 1~4: defrost interval time multiple rate	1	
14	P14	G3 valve function selection	0: G3 is seasonal switching valve; 1: G3 is solar valve ;	0	
15	P15	cooling target temp	10~25° C	12	
16	P16	heating target temp	(AU) 10~55° C	45	
17	P17	DHW target temp	(AU) 10~55° C	50	
18	P18	Sterilization target temp		70	
19	P19	fixed speed at manual speed control(for factory testing only)	10~100 HZ	50HZ	
20	P20	running frequency control set(for factory only)	0: manual frequency; 1: auto running frequency	1	

21	P21	EEV manually initial open degree (heating) /2	50~240 (Only valid when P23=3)	175	
22	P22	EEV manually initial open degree (cooling)/2	50~240(Only valid when P23=3)	175	
23	P23	EEV control mode	0—no; 1—checking; 2—manual; 3—auto	3	
24	P24	EEV over heat Temp (heating)	-5~10℃ for factory only	0℃	
25	P25	EEV over heat temp (cooling)	-5~10℃ for factory only	0℃	
26	P26	water pump working mode	0(no stop)、1 (stop when reach temp) 、2 (running 1 minute every 15minutes)	0	
27	P27	second heat source function	0:invalid,1: normal 2nd heat source,2:together with E2,3:together with Gas boiler	0	
28	P28	starting air temp for second heat source	-30~15℃(0n when lower than this)	-15℃	
29	P29	room target temp	10-28℃	21℃	
30	P30	buffer tank highest temp	35-55℃	45℃	N/A
31	P31	buffer tank lowest temp	15-30℃	25℃	N/A
32	P32	water temp adjust range	1-5℃	2℃	N/A
33	P33	water temp adjust interval	20-255min	120min	N/A
34	P34	longest counting period	6-48H	24H	N/A
35	P35	target water temp modification value	-2℃-5℃	2℃	N/A
36	P36	ambient temp correction factor X100	10-200	75	N/A
37	P37	starting ambient temp for calculation	-7-15℃	12℃	N/A
38	P38	temp differential to reduce frequency	4-15℃	4℃	N/A
39	P39	target of low frequency(when reach the setting of P38, it will reduce to the P39/100 of the highest	15-90	15	N/A
40	P40	monitoring interval (to adjust frequency)	1-15min	2min	N/A
41	P41	temp interval (increase or decrease base on this setting. Every P40 minutes when reach P41 C/2, will change frequency)	1-4℃	1℃	N/A
42	P42	increase frequency adjustmentX100	2-50 (%)	15	N/A
43	P43	decrease frequency adjustment X100	2-50 (%)	15	N/A
44	P44	target temp tolerance	1-3℃	2℃	N/A
45	P45	AC AU curve offset value (our weather compensation curve AU)	-15~15℃	0℃	
46	P46	AC AU curve max temp value (our AU)	30~50℃	45	
47	P47	night mode validation (night mode: DHW increase 3C,	0 (off) 、1 (on)	0	
48	P48	night mode starting point	0-23 (time)	22	
49	P49	night mode ending point	0-23 (time)	6	
50	P50	Flow switch minimum enabled water flow switch On(CN5)	6~60L/min	6	
51	P51	Local RS485 address	0~99	1	
52	P52	Water flow switch type	0:on-off water flow switch; 1: YF-G1 water flow meter; 2:YF-DN50 waterflow meter 3:SEN-HZG1WA Copper waterflow sensor	3	
53	P53	Virus Killing function valiation	0= invalid; 1=valid	0	
54	P54	Cooling function validation	0= invalid; 1=valid	1	
55	P55	Heating function validation	0= invalid; 1=valid	1	
56	P56	DHW function validation	0= invalid; 1=valid	1	
57	P57	Air source or Geo soruce selection	0= invalid; 1=valid	0	
58	P58	Solar source validation	0= invalid; 1=valid	0	
59	P59	Simple or Inverter HP selection	0= invalid; 1=valid	1	
60	P60	Control method	0= method 1; 1=method 2	0	

61	P61	Fan selection	0= AC fan; 1=DC fan	0	
62	P62	Heating fan highest speed	71~100	80	
63	P63	Fan low speed	30~70	50	
64	P64	Manual set fan speed	30~100	50	
65	P65	DC fan speed adjustment temp for heating	2-15°C	4	
66	P66	DC fan speed adjustment temp for Cooling	3-18°C	5	
67	P67	C4 water pump selection	0: Normal 1:PWM	0	Only for USA
68	P68	C4 Water pump water temp difference	Range:1-10	5	Only for USA
69	P69	C4 lowest water pump	Range:2-8	4	Only for USA
70	P70	Restore default parameter	0:Normal 1:Restore Once	0	
71	P71	GEO water flow switch selection	0:on-off water flow switch; 1: YF-G1 water flow meter; 2:YF-DN50 waterflow meter 3.HZG1WA	1	Only for geo
72	P72	Geo minimum water flow	6~60	20	Only for geo
73	P73	G4 heat recovery valve selection	0:parallelly 1:Serially 2 freecooling	0	Only for USA
74	P74	Heat meter address	1~254	2	Only for geo
75	P75	Heat meter communication format	0-1stop, 1-2stop, 2-even CRC	0	Only for geo
76	P76	Heat meter baud rate	0-1200, 1-2400, 2-4800, 3-9600	3	Only for geo
77	P77	Electric meter address	1~254	1	Only for geo
78	P78	Electric meter communication format	0-1stop, 1-2stop (8n2), 2-even CRC	1	Only for geo
79	P79	Electric meter baud rate	0-1200, 1-2400, 2-4800, 3-9600	3	Only for geo
80	P80	Virus Killing once	0: no 1: Kill once	0	
81	P81	Virus killing interval days	X: 7—99 days	7	
82	P82	Virus killing start time	Y: 0—23	1	
83	P83	Virus killing duration time	Z: 5—99 minutes	10	
84	P84	Compressor protection current		40	Only for geo
85	P85	Heating 30°Cstandard	Range 53~93	60	Only for geo
86	P86	Heating 40°C standard	Range 53~93	70	Only for geo
87	P87	Cooling 30°Cstandard	Range53~93	60	Only for geo
88	P88	Cooling 40°C standard	Range53~93	70	Only for geo
89	P89	Temp unit		0	Only for USA
90	P90	E2 capacity * 100W		50	Only for SSR
91	P91	E2 rated voltage V		230	Only for SSR
92	P92	E2 heat exchange factor		200	Only for SSR
93	P93	E2 voltage compensation V		0	Only for SSR
94	P94	Cooling temp range(if set to 1, must use enough glycol)		0	Only for USA
95	P95	AC Antifreeze start temp		3	Only for USA
96	P96	AC heating mini frequency		30	
97	P97	AC Cooling fan max speed		80	
98	P98	Free cooling start air temp		5	Only for USA
99	P99	Free cooling temp difference		5	Only for USA
100	P100	Error reset		0	
101	P101	Resonance point 1		100	
102	P102	Resonance point 2		100	
103	P103	Resonance point 3		100	
104	P104	Resonance point 4		100	
105	P105	Resonance point 5		100	

Remarks:

The Default Parameter are different for different modles. The Main PCB Dipswitch SW1 is different for different model. You must check if the SW1 is correct if you replace the Main PCB. The SW1 and models relation is as below.

If the Dipswitch is set correctly. When you set P70=1, it will restore all the parameters according to below models.

Model	SW1-1	SW1-2	SW1-3	SW1-4	C57
6K	ON	OFF	ON	ON	11
9K	OFF	ON	OFF	ON	5
12K	OFF	ON	ON	OFF	6
14K	ON	OFF	ON	OFF	10
16K	OFF	ON	ON	ON	7
19K (230V)	ON	ON	OFF	OFF	12
17K (400V)	ON	OFF	OFF	OFF	8
19K (400V)	ON	OFF	OFF	ON	9


4.4.3 Working Mode Selection

Click “Mode” at homepage, you will enter model selection page. Just press the mode button that you want.

4.4.4 Check Error list

Click “Error” at homepage, you can see the current error and error history list as shown below. After solve the problem, you can press “Error reset” to clear the error, then heat pump will start to work normally.

YYYY/MM/DD HH:MM:SS



TIME	ERROR

Back

clear

Error reset

Next

4.4.5 Turn on/off heat pump

Click “ON” or “OFF” icon, it will popup a window, after click the “OK” or “Cancel” to confirm or cancel the operation.

4.4.6 Set different target temp for different modes

Click the temperature number of different mode at the Set target temp area, then enter the target temp.

Please attention the different range for different mode as shown below

Item	meaning	Setting range	default
1	AC cooling	10°C~25°C	12°C
2	AC heating	(AU)10°C~55°C	45°C
3	Hot water	(AU)10°C~60°C	50°C
4	Antibacterial	60°C~70°C	65°C

4.4.7、 Night mode

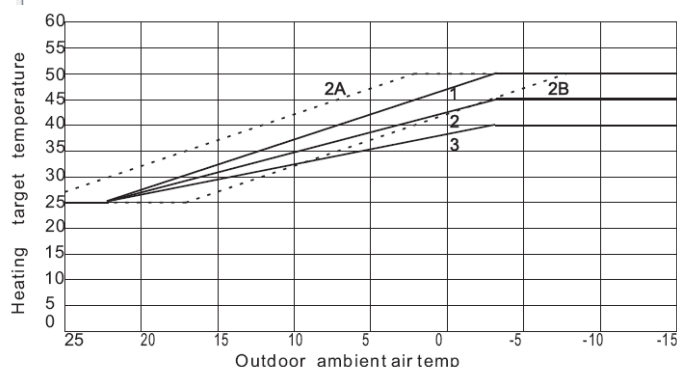
(1) Night mode valid or not is up to parameter P47. If the P47 is set 0, means off, 1 means on. The night mode starting time is decided by data 48. Ending time is decided by data 49.

(2) With night mode, hot water mode will run with the current setting temp +3C, room heating run with current setting -2C. Room cooling run with current setting +2C. Outdoor fan run at low speed.

4.4.8 Auto Heating Target Curve Function:

Click “Mode” button at home page-> click “AU TEMP” -> Click “Heating AU=OFF”, It will start AC heating target temp at “Weather compensation” mode. You can see the final calculated Ac heating temp at the home page.

The image shows two screenshots of a control interface. The top screenshot is titled 'mode' and contains six buttons: 'HEAT+DHW' (yellow), 'COOL+DHW' (blue), 'DHW' (yellow), 'Cooling' (blue), 'Heating' (yellow), and 'AU TEMP' (blue). The bottom screenshot is titled 'AU TEMP' and shows two settings: 'DHW AU=OFF' with a value of 15 °C, and 'HEATING AU=OFF' with a value of 45 °C. Both settings are accompanied by a 'P45 Weather compensation curve AU offset' and a 'P46 AC Heating AU curve max temp value' label respectively.



AU curve offset shift temp is adjusted by parameter(P45) , positive value means move up, negative value means move down. (-15~15C)

AC AU heat curve highest temp is set by parameter (P46), range 30~50C, default 45C. When the parameter is 45C, the AU highest target temp is 45c.

4.5 System Protection and Error Codes

If error, unit display“Ex” “Px” or“Fx”.For example: E2、 P5

Error Code	Error meaning
F01	Voltage protect
F02	Compressor drive module PFC Error
F03	Abnormal stop of compressor running
F04	Compressor drive radiator sensor error
F05	Outddor current sensor error
F06	IPM Error
F07	Compressor start fail
F08	Machine overcurrent protect
F10	Compressor dirve module PFC overcurrent
F11	Compressor dirve IPM overcurrent
F12	Compressor drive module comm error
F13	comprssor drive module busbar voltage error
F14	DC fan 1 error
F15	DC fan 2 error
E01	Exhaust high temp protect
E02	Outer ait temp sensor error
E03	Pipe temp sensor error
E04	AC return water sensor error
E05	AC outlet water sensor error
E06	Hot water tank sensor error
E07	Solar water temp sensor error
E08	coil high temp protect
E09	A CAnti freezing twice
E10	Hot water Antifreezing twice
E11	Refrigerant(indoor coil) temp sendor error
E12	water source inlet temp sensor error
E13	water source outlet water sensor error
E14	Suction temp sensor error
E15	Exhaust temp sensor error
E16	indoor temp sensor error
E17	outlet water sensor poor connect Or AC antifreeze 3 times within 20 minutes
E18	Error for inlet and outlet water temp difference too small
P01	high pressure protect

P02	low pressor protect
P03	Overheat protect
P05	water flow error
P06	water surce water flow error(ground source model)
P07	Phase loss
P09	Water source antifreeze(ground source model)
P10	Lack of water for geo heatpump

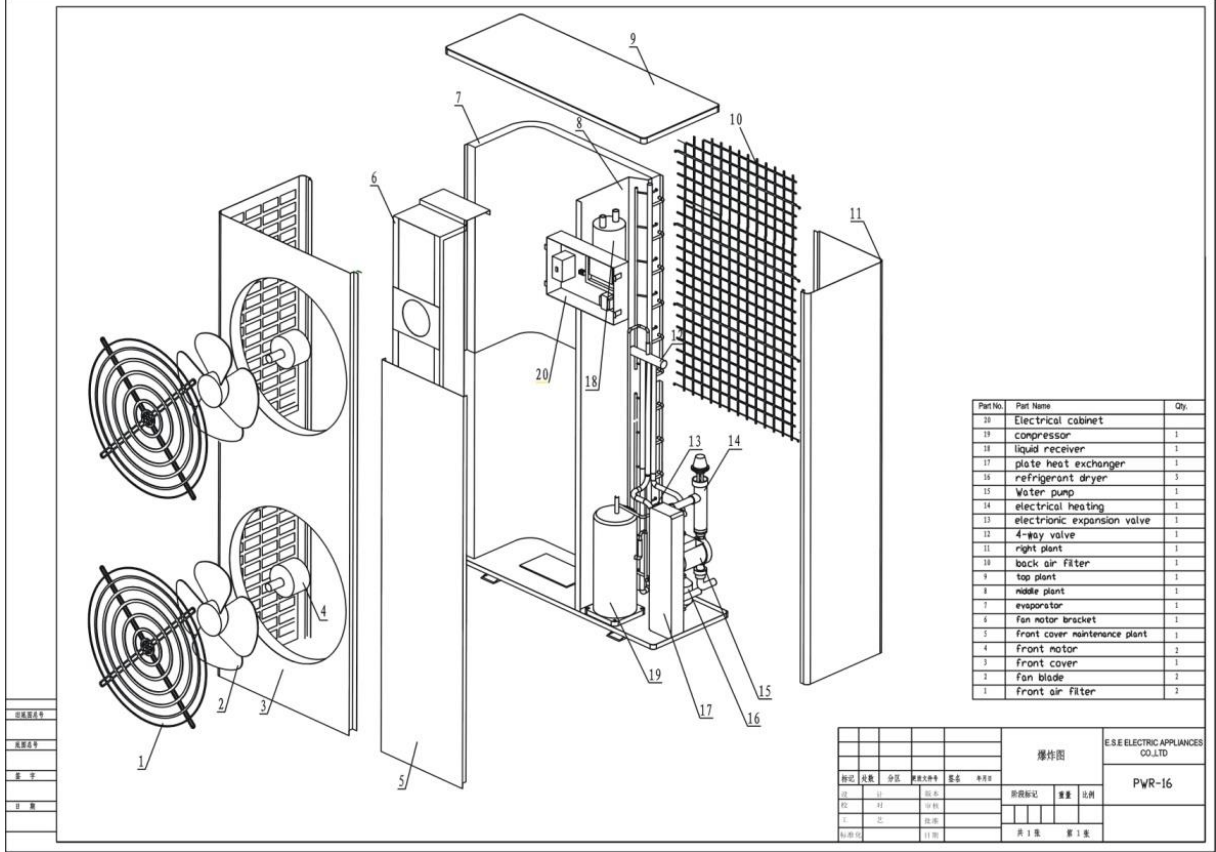
4.6 (Only checkable parameter list)

RS485 Add	LCD No.	Name
200	0	Coil temp
201	1	Exhaust temp
202	2	Ambient temp
203	3	AC outlet water temp
204	4	DHW tank temp
205	5	Solar temp
206	6	DIN9 status (N/A)
207	7	DIN6 status (Heating Switch)
208	8	DIN5 status (Cooling Switch)
209	9	sterilization status
210	10	High pressure switch status
211	11	2nd high pressure switch status
212	12	Low pressure switch status
213	13	Inside water switch
214	14	GEO water flow switch
215	15	compressor overcurrent protect switch status
216	16	Defrost
217	17	AC Antifreeze
218	18	DHW antifreeze
219	19	compressor running frequency
220	20	ASHP outdoor fan/ GEO HP water source pump
221	21	compressor heater
222	22	4-way-valve
223	23	bypass valve
224	24	Hot water solenoid valve G1
225	25	AC solenoid valve G2
226	26	Season solenoid valve G3
227	27	DHW heater E1
228	28	AC heater E2
229	29	C4 water pump
230	30	C5 Room AC water pump

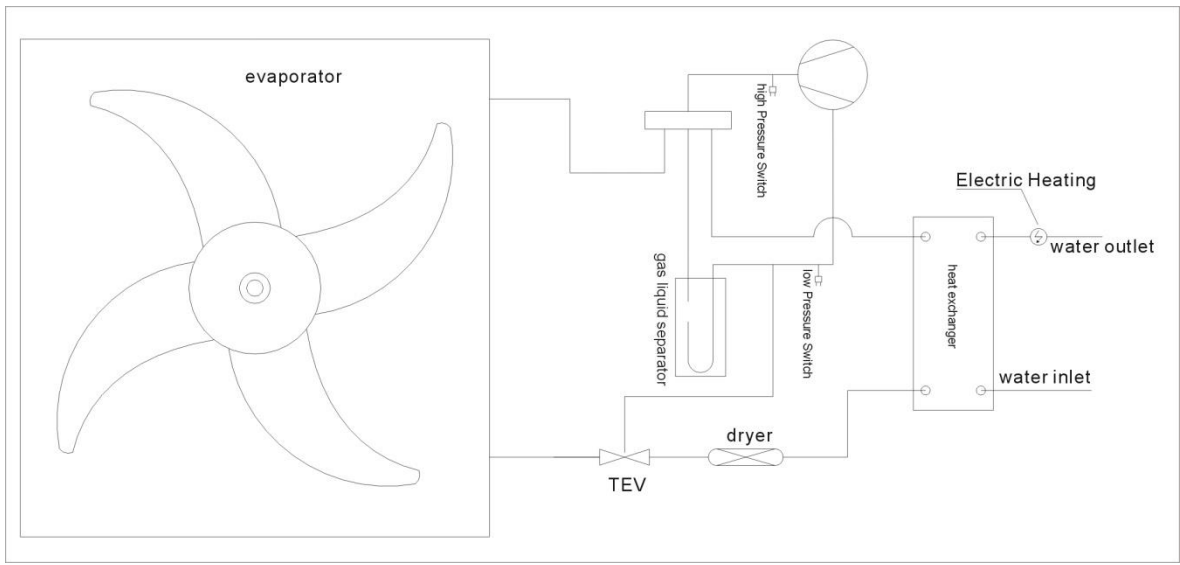
231	31	C6 AC assistant water pump
232	32	Working current
233	33	OUT7 status
234	34	Heat target temp
235	35	DHW target temp
236	36	sterilization target temp
237	37	compressor drive module temp
238	38	suction temp
239	39	Inner pipe temp(refrigerant pipe temp)
240	40	Expansion valve opening degree
241	41	water source inlet temp
242	42	water source outlet temp
243	43	solar water tank temp
244	44	Reserved
245	45	indoor temp
246	46	AC Heating target temp
247	47	water flow
248	48	compressor total running time1*1000 hour
249	49	Compressor total running time2
250	50	water flow sensor recyle
251	51	EC C4 water pump speed
252	52	water pump duty ratio
253	53	DC fan 1 rotate speed
254	54	DC fan 2 rotate speed
255	55	Running mode
256	56	Target frequency
257	57	Compressor model Encode
258	58	Low pressure
259	59	high pressure
260	60	Actual HP AC return water temp
261	61	water source side flow
262	62	Heat meter total heat *10000
263	63	Heat meter total heat*10
264	64	Heat meter total heat/100
265	65	Heat meter total cool*10000
266	66	Heat meter total cool*10
267	67	Heat meter total cool/100
268	68	Total active electric energy *1000
269	69	Total active electric energy
270	70	Total active electric energy/100
271	71	Heat meter error code
272	72	Software version No.
273	73	AC Input voltage
274	74	compensation power
275	75	stop code
276	76	busbar voltage

5. TECHNICAL SPECIFICATION

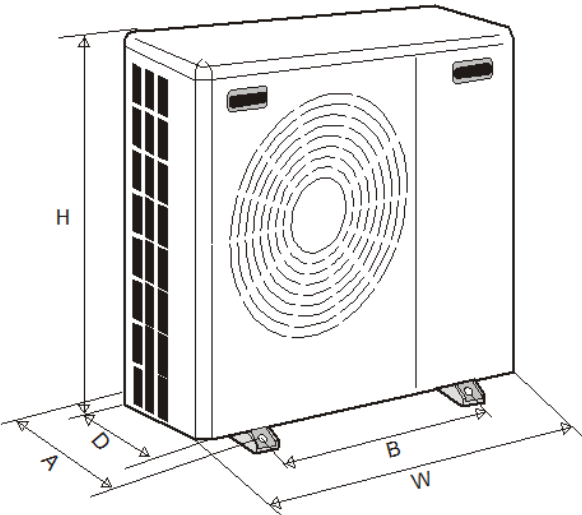
5.1 Internal View



5.2 System Drawing



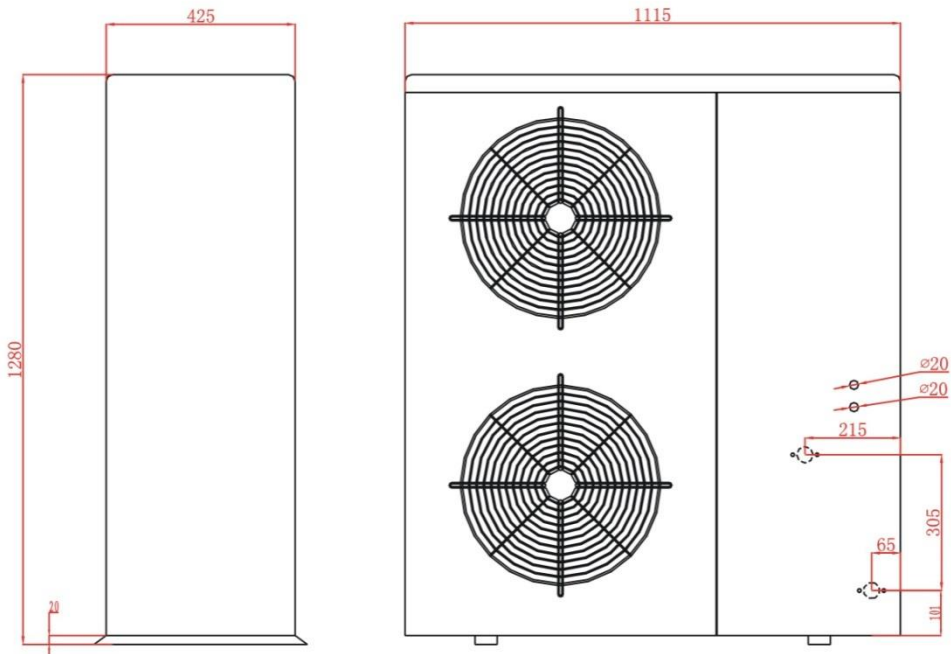
5.3 Dimension:



Model	9K	12K
W	1115	1115
D	425	425
H	710	960
A	440	440
B	810	810

16~23K

1280mm(for 16/19)
1462mm (for 23)



6. Maintenance

6.1 Maintenance and Cleaning for User

It is good practice to inspect your heat pump regularly. Maintenance should be carried out at least annually to maintain a good lifespan of your heat pump.

1. Regularly clean the Y type filters every 6 months to ensure that the system is clean and to avoid blockage to the system.
2. Units should be kept clean (no leaves or dirt) and no obstructions should be placed in front of or behind the unit. Good ventilation and regular cleaning (3-6 months) of the evaporator will help maintain efficiency.
3. Ensure the unit has power in the winter whether the unit is used or not.

6.2 Maintenance for Specialist

1. Check the power unit and electrical system.
2. Check the water system, safety valves and exhaust devices are working properly so as not to pump air into the system causing reduced circulation.
3. Check water pump is functioning properly. Make sure the water pipeline and pipe fittings are not leaking.
4. Clear evaporator of any debris.
5. Check the various components of the unit work properly. Inspect the pipe joints and valves branch have inflated oil, to ensure no leakage of the refrigerant unit.
6. Chemically flush the plate heat exchanger after every 3 years.
7. Check refrigerant gas content if necessary.
8. Check delta (water in/out) making it meets the guidelines of delta 3 to 7.

7. How To Get The Most Out Of Your Heat Pump

It is important to understand that you should operate heat pumps differently to conventional heating systems such as gas boilers. Below are some points you should be aware of:

- Since heat pumps produce water at a lower temperature (than gas boilers), it is important to remember the heat up time of your property is slower.
- The lower temperature the heat pump produces, the more efficient it is.
- The higher the ambient temperature (outside temperature), the more efficient the heat pump is.
- The heat pump has a simple job, and that is to maintain the water tanks at the set temperature.
- It's a good idea to let your heat pump maintain your water tank temperatures 24 hours a day during the winter. This will enable your central heating controller to call for heat in the home at any time. During the summer you can set the timer on the heat pump controller for your hot water requirements.

With the above in mind, you could decide between the following:

Option 1. You could decide to operate your heat pump during the day time (when temperatures are higher). At the same time you could set the water temperature lower. This will basically charge your home during the day so in the evening the home is warm and the heat pump simply maintains the heat. This is not controlled by the heat pump controller, it is controlled by your central heating controller.

Option 2. You could operate your central heating controller in a similar way to a conventional boiler. You must set the programme at least 1 hour before you need your property to be warm. The downside to this is that you may need to set the water that the heat pump produces to a higher temperature.

Option 3. You could decide to operate your home with back ground heat. This means you are always (24 hours a day) putting a trickle heat in your home

In all cases it is recommended to maintain a minimum temperature in your home (e.g. 14c to 16C) during the evening. This is controlled by your central heating controller.

There is no right and wrong way to operate your heat pump. We cannot tell you which is the most efficient way to operate it since every home is different. What we can say is that you should look for the best way to heat your home that suits your lifestyle. Nowadays with low cost energy monitors, you can easily find the most cost effective way to heat your home. We hope you enjoy your Heat Pump.

