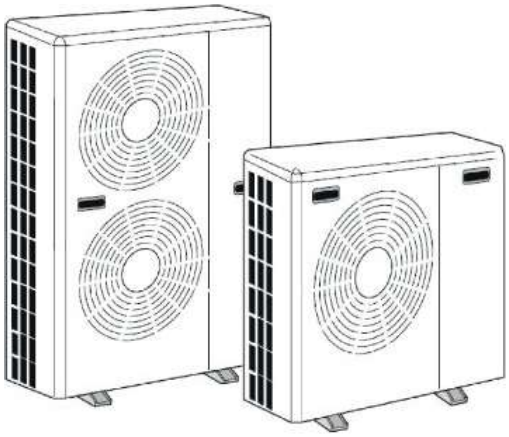
BLAUPUNKT

DC INVERTER Heat Pump
User Manual

(Carel controller)
Air to Water Heat Pump
Heating + Cooling + DHW



Enjoy It.

Attention!

Thank you for choosing our product, we shall be more than glad to service you. For you to better operate this product and to prevent accidents due to misoperation, please read carefully this user manual before carrying out any installation or operation, also please pay special attention to the warning, prohibition and attention instructions. We are continuously supplementing and upgrading this user manual to better service for you!

Hymon

Hymon Fotowoltaika Sp. z o.o.
ul. Dojazd 16A, 33-100 Tarnów

BLAUPUNKT

Exclusive distributor of modern Blaupunkt
solar photovoltaic systems and heat pumps

Contents

Installation Manual

Part 1

2 | Before use

2 | Attention

4 | Installation instructions

4 | R32 refrigerant introduction

11 | Heat pump installation and wiring

User Manual

Part 2

21 | Use

21 | Buttons function

24 | Operating panel display

24 | SG smart grid features

39 | APP function

44 | Parameters query and setting

Part 3

45 | Maintenance and repairing

45 | Daily maintenance

46 | Error code and repairing

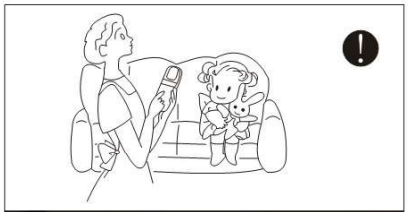
52 | Other problem and repairing

53 | Warranty

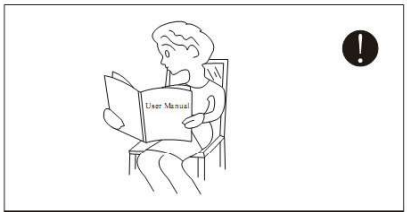
Part 1 | Before use

1. Attention

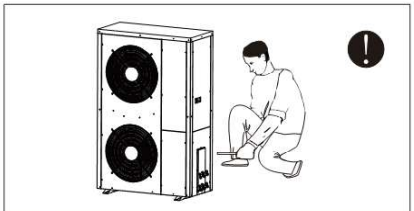
Warning Caution Prohibition



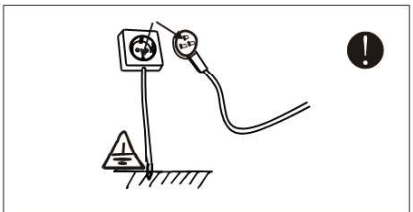
This appliance is not intended for use by persons, including children, with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be super vised to ensure that they do not play with the appliance.



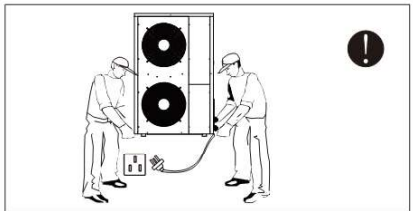
Be sure to read this manual before use.



Be sure to read this manual before use. The installation, dismantle mentand maintenance of the unit must be performed by qualified personnel. It is forbidden to do any changes to the structure of the unit. Otherwise injury of personor unit damage might happen.

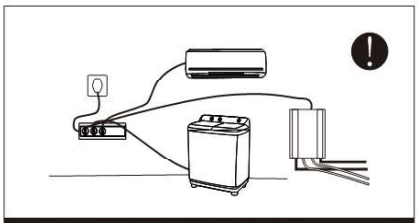


The power supply to the unit must be grounded.



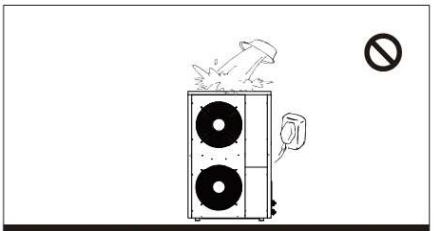
Make sure the power supply to the heat pump unit is off. Before any operations are done on the unit. When the power cord gets looser or is damaged, always get a qualified person to fix it.

Keep the unit away from the combustible or corrosive environment.

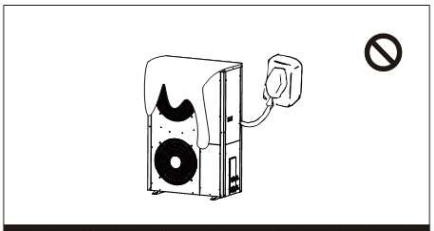


Use a dedicated socket for this unit, otherwise malfunction may occur.

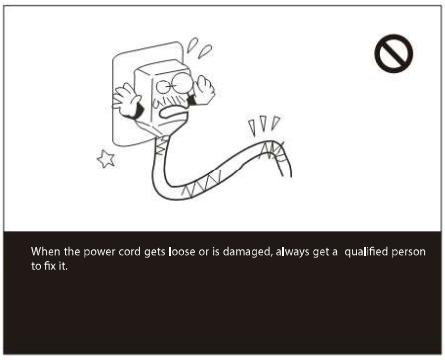
Do not touch the air outlet grill when fan motor is running.



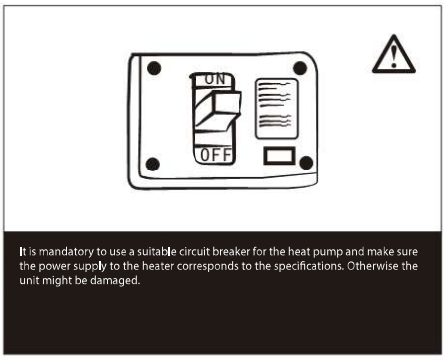
Water or any kind of liquid is strictly forbidden to be poured into the product, or may case creepage or breakdown of the product.



When running the unit, never cover clothes, plastic cloth or any other material that block ventilation on the product which will lead to low efficiency or even non-operation of this unit.



When the power cord gets loose or is damaged, always get a qualified person to fix it.



It is mandatory to use a suitable circuit breaker for the heat pump and make sure the power supply to the heater corresponds to the specifications. Otherwise the unit might be damaged.

2. Installation instructions

1. Installation should comply with local regulations and requirements.

2. Choose a suitable space for use (please refer to indoor/outdoor unit location selection). The cooling capacity/heating capacity of the heat pump should be compatible with the size, height, and heat insulation effect of the room.

3. Before installation, be sure to confirm the neutral line, L, N, A phase, B phase, C phase, ground line of the user power supply and the neutral line of the heat pump, L, N, A phase, B phase, C phase, ground One correspondence.

4. This heat pump complies with the safety and operation standards issued by the country.

5. When the heat pump needs to be installed or moved. It must be operated by professional refrigeration installation and maintenance personnel. Heat pumps installed by non-professionals are prone to quality or safety problems.

6. The user should provide a power supply that satisfies the installation and use. The allowable range of voltage that can be used by this product is ±10% of the rated value. If this range is exceeded, it will affect the normal operation of the heat pump. If necessary, use a voltage stabilizer to avoid property damage.

7. The heat pump must have an independent circuit. The independent circuit needs to install a leakage protector and an automatic circuit breaker. Need to be purchased by the user.

8. The heat pump should be installed in accordance with the national wiring regulations.

9. The heat pump must be grounded correctly and reliably, otherwise it may cause electric shock or fire

10. Please do not turn on the power of the heat pump until the piping and wires are connected and carefully checked.

3.R32 refrigerant introduction

The heat pump uses environmentally friendly R32 refrigerant. This is a slightly flammable refrigerant. Although it can burn and explode under certain conditions, as long as it is installed in a room of the correct area and used correctly, there will be no danger of combustion and explosion. Compared with ordinary refrigerants, R32 is an environmentally friendly refrigerant that does not destroy the ozone layer, and its greenhouse effect value is also very low.

R32 heat pump room area requirements

The area of the heat pump installation, operation and storage room should be larger than 4 square meters.

Warning

1. Please read this manual before installation, operate and maintenance.

2. Except as specifically recommended by the manufacturer, pls do not use any method to speed up the defrosting process or clean the frosted part.

3. Pls do not puncture or ignite the heat pump.

4. The heat pump should be stored in a room without a continuous fire source (such as gas appliances ignited by an open flame, electric heaters, etc.).

5. When repairs are required, please contact the nearest after-sales service center. When repairing, you must strictly abide by the operation manual provided by the manufacturer, and it is forbidden to repair by non-professionals.

6. Pls comply with the relevant national gas laws and regulations.

7. The refrigerant in the system needs to be recovered and removed during maintenance or disposal.

Repair of sealing elements

1.When repairing closed components, disconnect the power supply to the equipment before opening the sealed cover. If power supply is necessary during the maintenance process, continuous leak detection should be performed on the most dangerous parts to prevent potentially dangerous situations from happening.

2.In the following maintenance of electrical components, special care should be taken not to affect the protection level of the enclosure. Improper maintenance methods may cause: damage to cables, excessive connections, terminals not installed according to the original regulations, damage to the seal, incorrect installation of the sealing cover and other dangers. Ensure that the installation of the equipment is safe and reliable. Ensure that the sealing or sealing material will not lose its function of preventing the entry of

flammable gas due to aging. Replacement parts should meet the manufacturer's specifications.

Note: The use of silicon-containing sealants may reduce the detection capabilities of leak detection equipment. Intrinsically safe components do not need to be isolated before operation.

Maintenance of intrinsically safe components

If it is not possible to ensure that the heat pump does not exceed the allowable voltage and current limits during use, do not use any permanent inductive or capacitive load in the circuit.

Intrinsically safe components are the only components that can continue to work in flammable gases. The test instrument should be set in the correct gear.

The replacement components can be only used the parts specified by the manufacturer, other parts may cause the refrigerant leaking in the air to catch fire.

Cable

Check whether the cable will be affected by wear, corrosion, overpressure, vibration, sharp edges or other adverse environments. The inspection should also consider the influence of aging or continuous vibration of the compressor and fan on the cable.

Leak inspection of R32 refrigerant

Check for refrigerant leakage should be done in an environment where there is no potential ignition source. Halogen probes (or any other detectors that use open flames) should not be used for detection

Leak detection method

For systems containing R32 refrigerant, an electronic leak detector can be used for testing. The test should be calibrated in a refrigerant-free environment to ensure that the leak detector does not become a potential source of ignition and is suitable for the refrigerant being tested. The leak detector should be set to the lowest flammable concentration of the refrigerant (expressed as a percentage), calibrated with the refrigerant used and adjusted to the appropriate gas concentration test range (up to 25%).

The fluid used to detect leaks is suitable for most refrigerants, but do not use chlorine-containing solvents to prevent chlorine and refrigerants from reacting and corroding copper pipes.

If a leak is suspected, all open flames should be removed from the scene or the fire should be extinguished.

If welding is required at the location where the leakage occurs, all refrigerants should be recovered, or all refrigerants should be isolated away from the leakage point (use shut-off valves). Oxygen-free nitrogen (OFN) is used to purify the entire system before and during welding.

Remove and vacuum

Maintenance or other operations on the refrigeration circuit should be performed in accordance with normal procedures. However, the safety should also be considered, and the following procedures should be followed:

1. Remove refrigerant;

2. Purify the pipeline with inert gas;

3. Vacuum;

4. Purify the pipeline with inert gas again;

5. Cut the pipe or weld it.

The refrigerant should be recycled into a suitable storage tank. The system should be purged with oxygen-free nitrogen . This process may need to be repeated several times. Do not use compressed air or oxygen for this operation.
In the purging process, the system is filled with oxygen-free nitrogen to reach the working pressure under the vacuum state of the system, and then the oxygen-free nitrogen is discharged into the atmosphere, and finally the system is evacuated. Repeat this process until all refrigerant in the system is removed. After filling the oxygen-free nitrogen for the last time, exhaust the gas to atmospheric pressure, and then the system can be welded. The above operations are necessary for pipeline welding operations.
Ensure that there is no ignition source near the outlet of the vacuum pump and good ventilation.

Procedure of refrigerant filling

As a supplement for the conventional procedures, the following requirements have been added:

1. Ensure that when using equipment of refrigerant filling, there will not be the mutual contamination between different refrigerants. The pipeline of refrigerant filling should be as short as possible to reduce the residual amount of refrigerant;

2. When filling refrigerant, there should be without the fire source near the unit;

3. Make sure that the refrigerant system has taken grounding measures before charging the refrigerant;

4. After filling refrigerant (or not finished), stick the label on the system;

5. Must be careful not excessive filling;
Perform a pressure test with oxygen-free nitrogen before refilling refrigerant into the system. After filling, a leak test must be carried out before the trial operation. The leak test must be carried out again when leaving the area.

Scrapping

Before proceeding with this procedure, the technician should be fully familiar with the equipment and all of its characteristics. It is recommended to recover safe refrigerant. If it is necessary to re-use the recovered refrigerant, samples of refrigerant and oil should be analyzed before operation. Before testing, please ensure that you have got the required power source.

1. Being familiar with the equipment and its operation.

2. Disconnecting the power supply.

3. Before proceeding with this procedure making sure that.

If necessary, the equipment of mechanical operation should be convenient to operate the refrigerant storage tank.

All personal protective equipment are effective and can be used correctly.

The entire recycling process should be carried out under the guidance of qualified persons.

Recycling equipment and refrigerant storage tanks should meet the corresponding standards.

Maintenance safety matters

Warning
1. For repairs or scrapping, please contact the nearest or authorized service center.

2. Repairs performed by unqualified personnel may be dangerous.

3. When charging the heat pump with R32 refrigerant and maintaining it, please strictly observe the manufacturer's requirements. This chapter mainly focuses on the special maintenance requirements of R32 refrigeration appliances. Please refer to the after-sales service manual for detailed maintenance operations.

Qualification requirements for maintenance personnel

1. All operating personnel or refrigeration circuit maintenance personnel should obtain a valid certificate issued by an industry-recognized evaluation agency to determine that they have the qualifications for safe handling of refrigerants as required by the industry-recognized evaluation specifications.

2. The maintenance and repair of the equipment can only be carried out in accordance with the method recommended by the equipment manufacturer. If other professionals are required to assist in maintaining and repairing the equipment, it should be carried out under the supervision of personnel qualified to use flammable refrigerants.

Site inspection

Before repairing heat pumps using R32 refrigerant, safety inspections must be carried out to ensure that the risk of fire is minimized. When servicing the refrigeration system, the following precautions should be observed before handling the system.

Operational procedure

Operations should be carried out under a controlled procedure to ensure that the risk from combustible gases or vapors is minimal during operations.

General operating area

All maintenance people and other people in the operation area should be aware of the character of the operation being performed. Avoid working in confined Spaces.Work areas should be properly isolated to ensure safe working conditions within the work area by controlling combustible materials.

Check whether the refrigerant is present

Refrigerant monitors are necessary to be used in the area before and during operations to ensure that technicians are aware of the presence of potentially combustible gases.Ensure that the leak detection equipment used is suitable for R32 refrigerants, such as sparkless, fully sealed, or intrinsically safe.

Placement of fire extinguishers

The applicable fire extinguisher should be located close to the cooling system or related components during hot working operations.The refrigerant injection area should be equipped with dry powder or carbon dioxide fire extinguisher.

No fire

Any fire sources should not be used when performing work related to exposed pipes that hold or have held R32 refrigerant which may cause a fire or explosion hazard. All sources of fire, including smoking, should be kept away from the area of installation, repair, removal and disposal of combustible refrigerants that may release into the surrounding environment.Before starting operations, check the environment around the equipment to ensure that there is no danger of flammability or fire.There should be a "no smoking" sign.

Ventilated area

Ensure that the work area is open or fully ventilated before opening the system or performing thermal processing operations. Keep ventilation during operation. Ventilation will safely dilute the leaked refrigerant and quickly discharge it into the atmosphere.

Inspection of refrigeration equipment

If the electrical components are replaced, these electrical components should be installed in accordance with the purpose of use and correct operation regulations. At all times, you should follow the manufacturer's maintenance and repair guidelines. If you have any questions, please consult the manufacturer's technical department. For installations using R32 refrigerant heat pumps, the following inspection items apply:

1. The filling amount should be determined according to the marked amount on the heat pump's rating plate.

2.The ventilation equipment should operate normally, and the vents should be unobstructed.

3.If an indirect refrigeration cycle is used, please check whether there is refrigerant in the secondary circuit.

4. The logo or marking on the heat pump should be clearly visible, and the ambiguous signs and symbols should be corrected;

5. Refrigeration piping or electrical components should not be installed in an environment that contains components that may be corrosive to contact the refrigerant, unless the electrical components themselves are made of anti-corrosion materials or take appropriate anti-corrosion measures.

a. To avoid electrical shock, make sure to disconnect power supply 1minute or more before operating the electrical part. Even after 1minute, always measure the voltage at the terminals of main circuit capacitors or electrical parts and, before touching, make sure that those voltages are lower than the safety voltage.

b. Power supply wire line size must be selected according to this manual. And must be grounded.

c. Don't put in hands or stick to air outlet grill when fan motor are working.

d. Don't use wet hand touch wire lines, and don't pull any wire lines of the unit.

e. Water or any other kind liquid is forbidden to poured into the unit.

f. Select correct air breaker and leakage protection switch.

g. Don't touch the fin of source side heat exchanger, it may hurt your finger.

h. If any wire line is loose or damaged, suggest let qualified person to fix i

4. Heat pump installation and wiring

1. Heat pump installation location and attentions

* Heat pump is not allowed to be installed in the place where combustible gas may leaks.

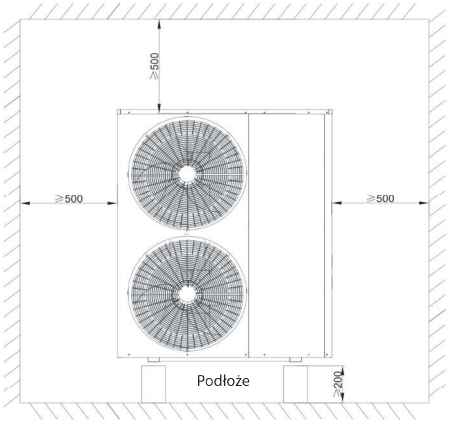
* Heat pump is not allowed to be installed in the place where there is oil or corrosion gas released.

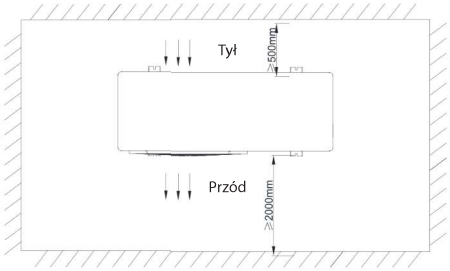
* Heat pump should be installed in a open space, and good ventilating.

* Heat pump each side to wall or barrel should be keep certain distance, air outlet to barrel distance should ≥2m, air inlet distance to wall or barrel≥0.5m, bottom distance to ground ≥0.5m, other side distance should be enough for installation or repairing.

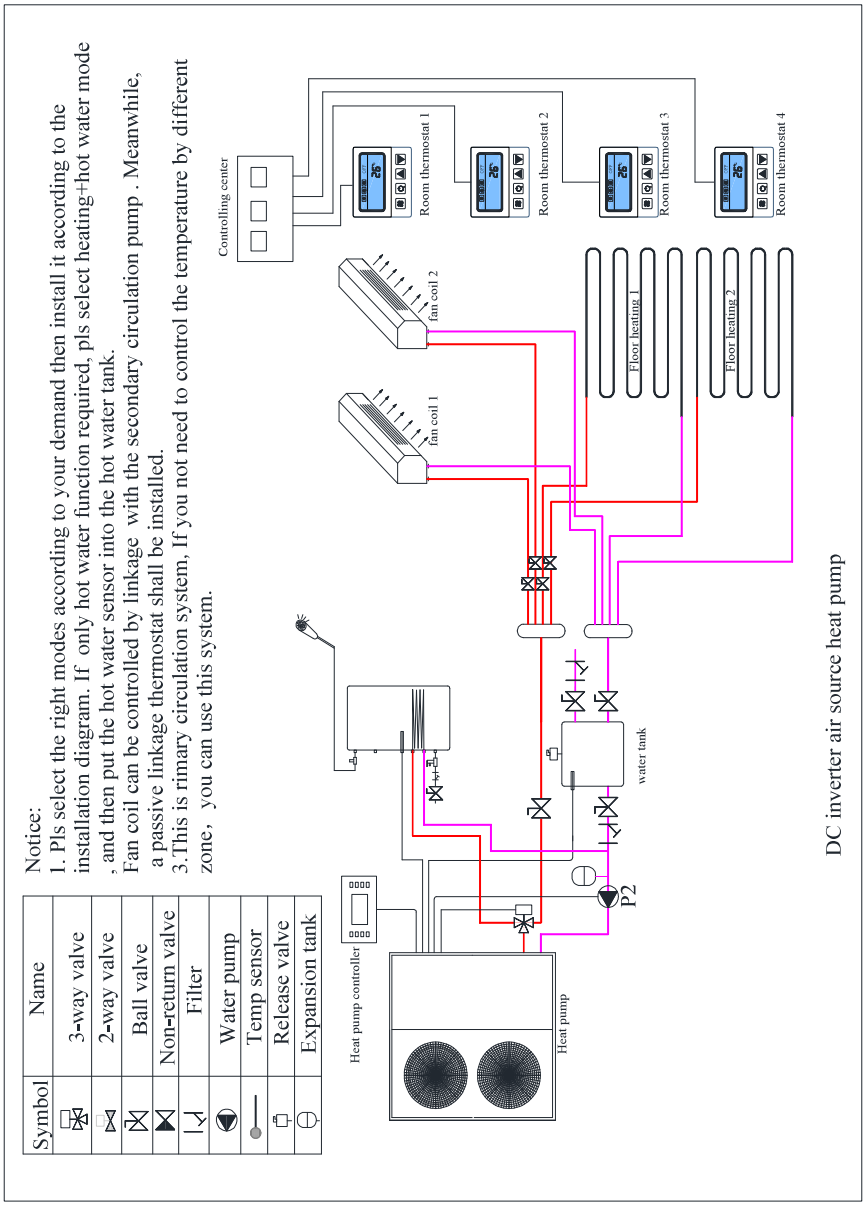
* Heat pump should be installed on concrete basic or steel bracket, and anti-shock pad should be put between heat pump and basic or bracket. Then use expansion bolt to fix heat pump on bracket.

* Water drainage pipe and ditch should be set around heat pump and water pipes and water tank. When testing or repairing, maybe need drain plenty of water, and when heat pump is working, there are some condensed water flow down.

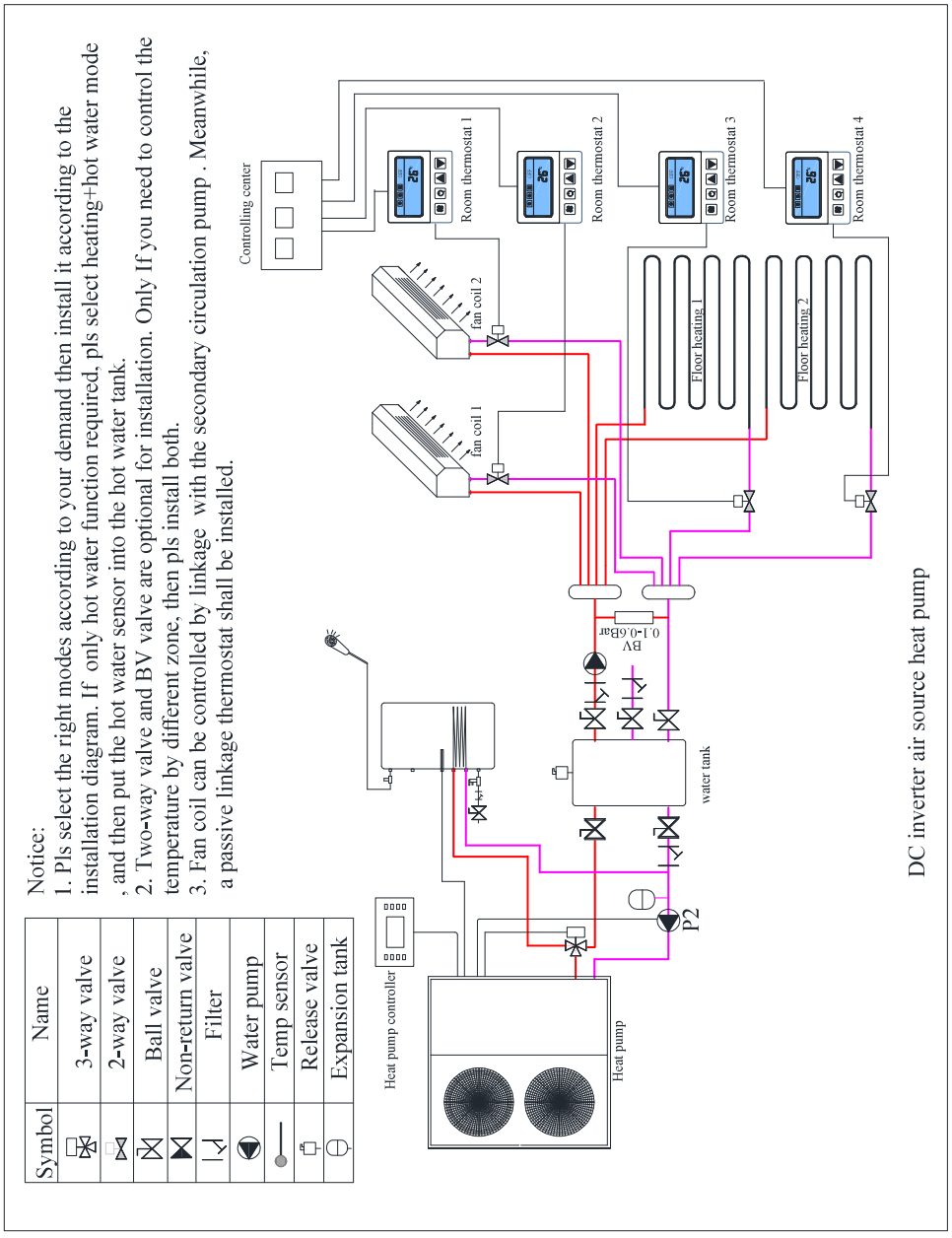




2. Primary circulation system



System wtórnej cyrkulacji



Tips for installation related to the water pipe part:

• Install a valve at the highest point of each water circulations for releasing air from water system.

• A Y-shape filter is very important in front of circulating water pump of heat pump.

• If more pieces heat pump installed in one water pipe system, the connection of these heat pumps can't be in series, only can be in parallel or independent.

The management specifications of the heat exchange plate will directly affect the heat transfer of the system, If there is insufficient heat exchange, the heating will not be possible, resulting in increased electricity consumption for the heat pump, serious high-pressure alarms in the system, and even shortening the lifespan of the unit.

Model	Recommended specification and length of heat exchange coil for hot water tank
CGK015V3L	304 Stainless steel bellows，DN32*6000mm；
CGK025V3L/CGK-025V3L	304 Stainless steel bellows，DN32*10000mm；
CGK030V3L/CGK-030V3L	304 Stainless steel bellows，DN32*10000mm；
CGK040V3L/CGK-040V3L	304 Stainless steel bellows，DN32*10000mm；
CGK050V3L/CGK-050V3L	304 Stainless steel bellows，DN32*15000mm；
CGK060V3L/CGK-060V3L	304 Stainless steel bellows，DN32*15000mm；
CGK-080V3L	304 Stainless steel bellows，2*DN32*10000mm；
CGK-100V3L	304 Stainless steel bellows，2*DN32*15000mm；

3. Pre-start up

① Checking before pre-start up

Check if the water pipe are connected well and if there is any leakage. The water supply valve are open.

• Make sure the water flow is enough and meet the demand of the heat pump selected and water flow smoothly without air . In cold area, pls make sure that the water flow is without freezing

• Check if the power cable is connected well and properly grounded.

• Check if fan blade is blocked by the fixing plate of fan blade and fan blade protecting grill.

• Check if the tank has been filled with water or enough water volume that can meet the demand of heat pump running

If everything above is OK, the unit can start up. If any of them fails, please improve it.

② Pre-start up

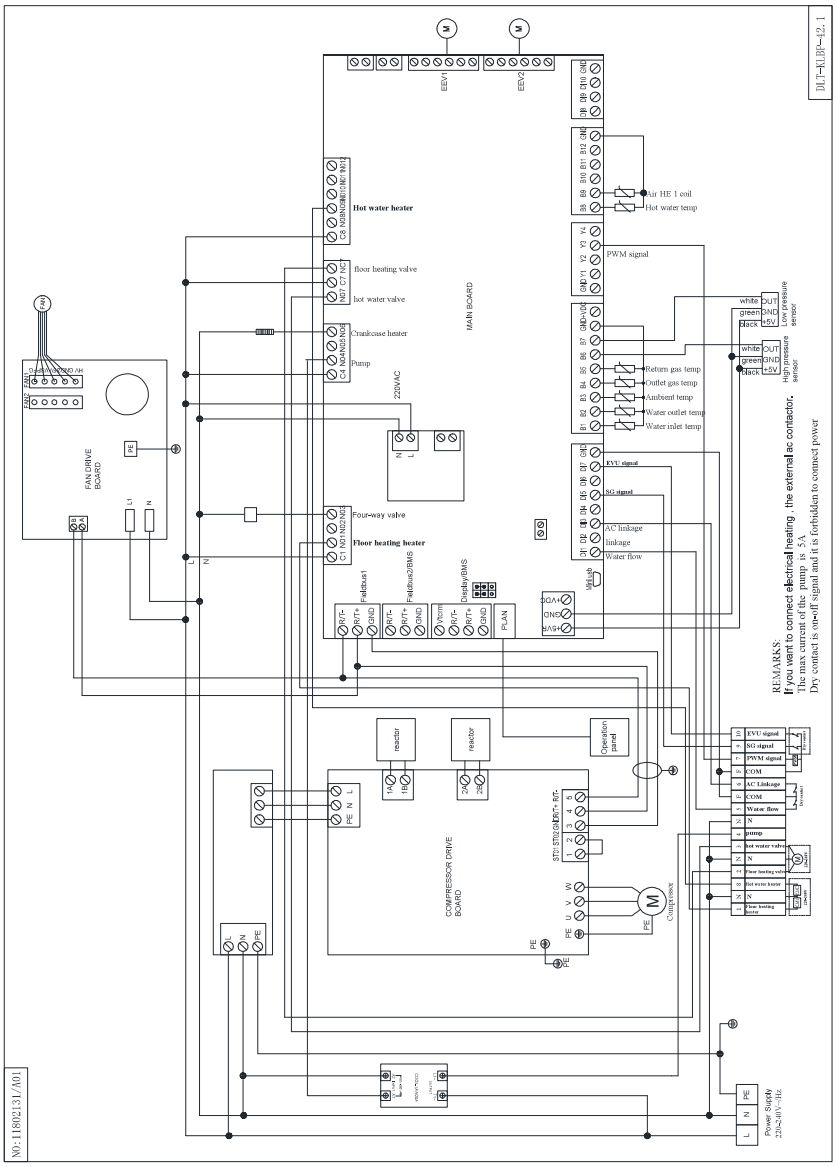
• After check completely and confirm no problem for installation, the unit can be power to start up .

• After connect power supply, heat pump delay 3mins to start. Check carefully is there is some abnormal noise or vibration or if the working current is normal or if water temp increasing is normal.

• After the unit is working properly for 10 minutes without any problem, then the pre-start up is usefully completed. If not, pls refer to Service and Maintenance

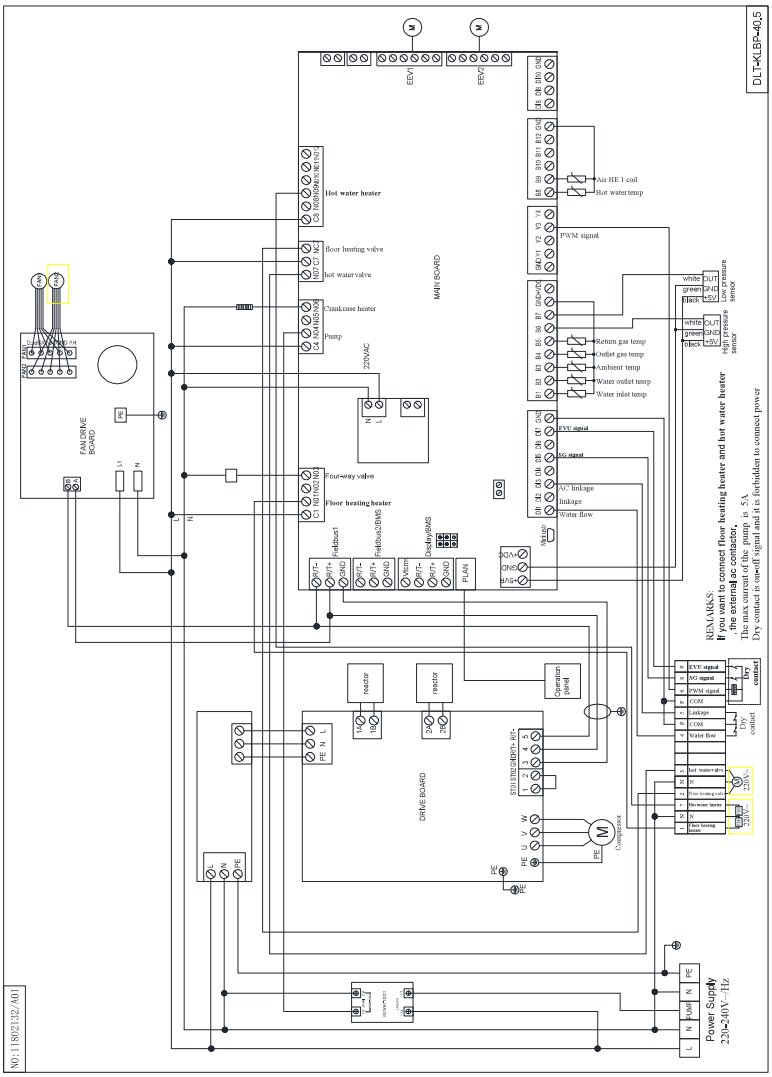
Chapter to solve the problem

4. 220V wiring



Voltage: 220V ~ 240V/50Hz or 60 Hz
for CGK015V3L

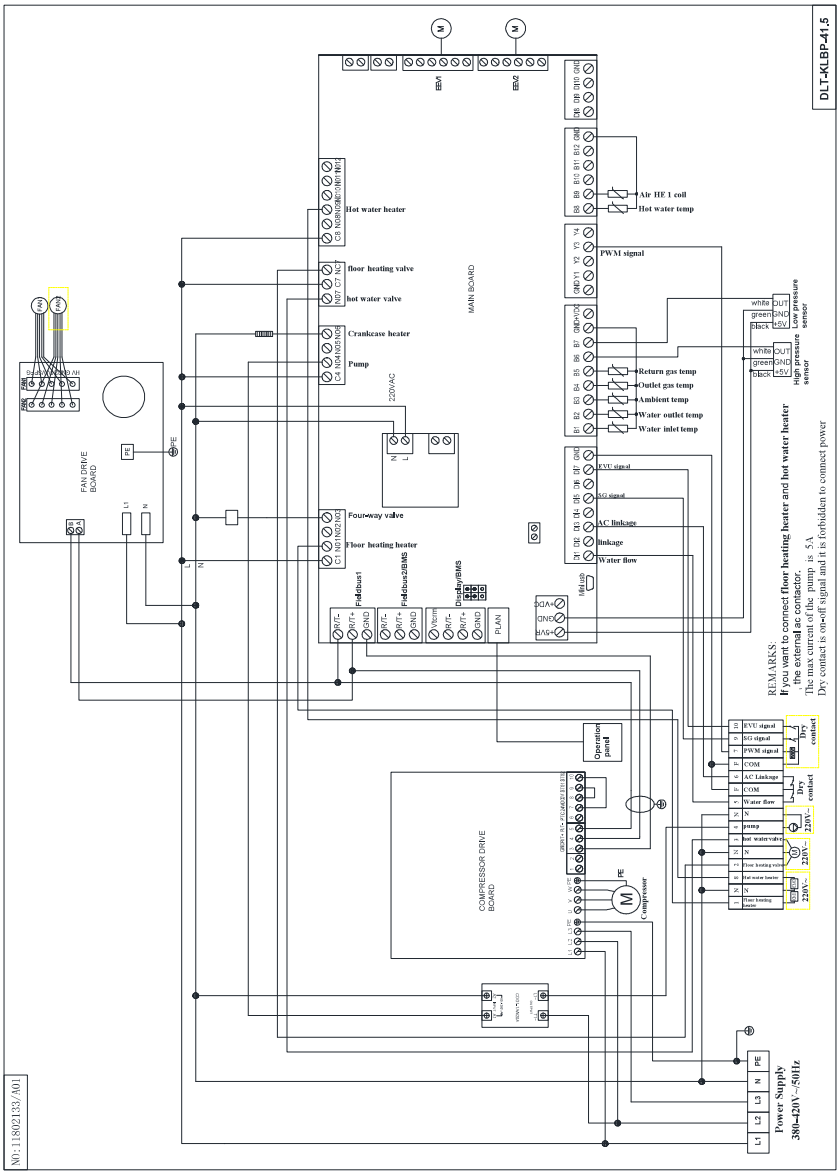
220V wiring



Voltage: 220V ~ 240V/50Hz or 60 Hz

for CGK025V3L/CGK030V3L/CGK040V3L/CGK050V3L/CGK060V3L

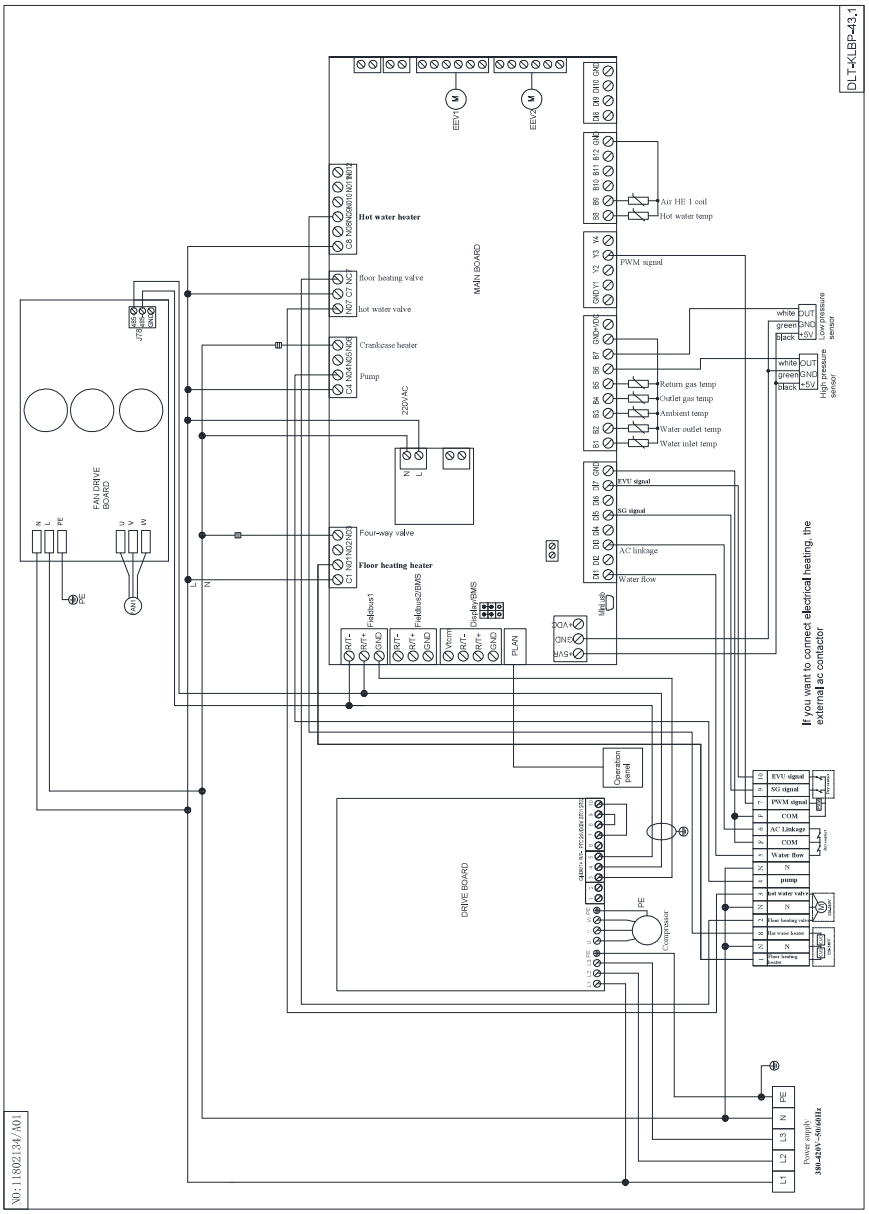
380V



Voltage: 380V ~ 420V/50Hz or 60 Hz/3N~

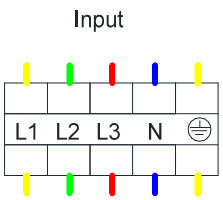
for CGK-025V3L/CGK-030V3L/CGK-040V3L/CGK-050V3L/CGK-060V3L//CGK-080V3L

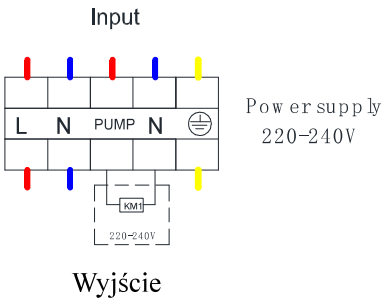
380V



Voltage: 380V ~ 420V/50Hz or 60 Hz/3N~

for CGK-100V3L

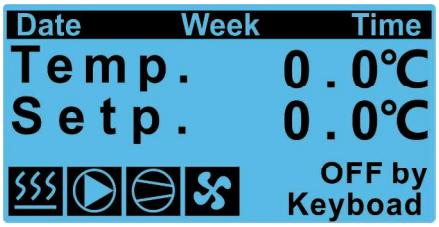




Model	Line(mm^2)	Max. Current(A)	Model	Line(mm^2)	Max. Current(A)
CGK-025V3L	2.5	6.3	CGK025V3L	4	14.4
CGK-030V3L	2.5	8.3	CGK030V3L	4	18.7
CGK-040V3L	2.5	10.4	CGK040V3L	4	23.6
CGK-050V3L	4	12.9	CGK050V3L	6	29.2
CGK-060V3L	4	14.5	CGK060V3L	6	33.0
CGK-080V3L	4	20.6			
CGK-100V3L	6	22.9			

Część 2. Use

Main interface

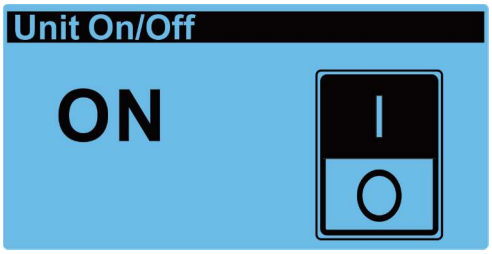


Icons:

1. Heating mode
2. Pump
3. Compressor
4. Fan
5. Defrost
6. Cooling mode
7. Alarm
8. Exit
9. Menu & Confirm
10. Select
11. Factory parameters

1. Turn on/off

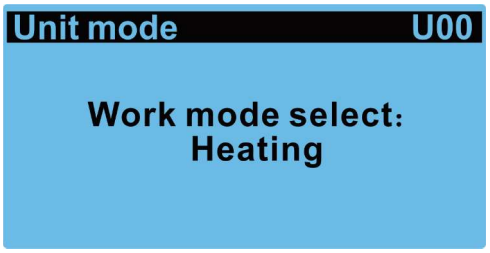
Press ↵ to access menu, press↑↓botton to select Unit On/Off, then press ↵ to confirm. Press↑↓Botton to turn on/off, and press ↵ to confirm:



2. Mode switching (Heating, Cooling,Hot water,Hot water+cooling, Hot water+heat)

Press ↵ to access menu, press↑↓botton to select User Mask, then press ↵ to confirm. Press↑↓Botton to switch mode, and press ↵ to confirm, Egc. Mode switching&Temperature setting.

Attention: Only switch mode when the unit is turn off

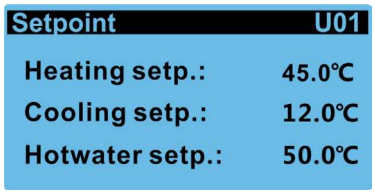


he setting temperature interface is as follows:

Heating setp: heating setting temperature

Cooling setp: cooling setting temperature

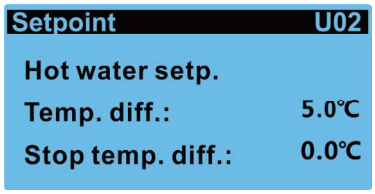
Hotwater setp: hot water setting temperature



Set Temp.diff and Stop temp. diff. of hot water

Temp.diff: The difference between the unit restart temperature and the set temperature after standby.

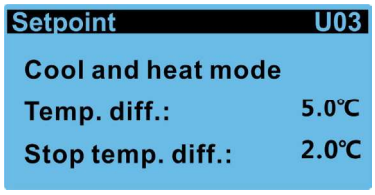
Stop temp.diff: The difference between the unit's shutdown temperature and the set temperature after reaching the setting temperature.



Set Temp.diff and Stop temp. diff. of heating and cooling

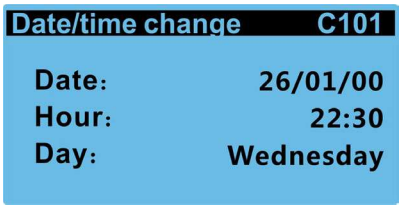
Temp.diff: The difference between the unit restart temperature and the set temperature after standby.

Stop temp.diff: The difference between the unit's shutdown temperature and the set temperature after reaching the setting temperature.



3. TimeZone/CLOCK

Press ↵ to access menu, press↑↓botton to select TimeZone/CLOCK , then press ↵ to confirm, Press↑↓Botton to change the setting, and press ↵, to confirm.



Timezone on off:

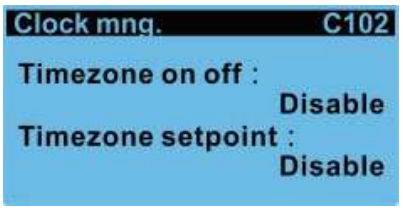
Enable - Turn on the timer switch function, the unit can be set to switch on and off time for one week after it is switched on;

Disable - Turn off the timer switch function.

Timezone setpoint:

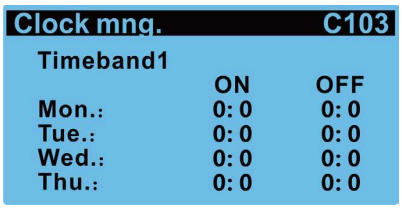
Enable - Turn on the timer temperature setting function, the unit can set different temperatures in four time periods of a day after it is turned on;

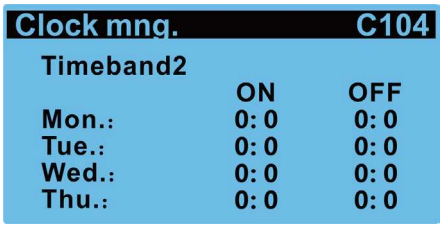
Disable - Turn off the timer setting temperature function.



Timezone on off

Timing setting interface, under ON is the power-on time, and under OFF is the off-time.

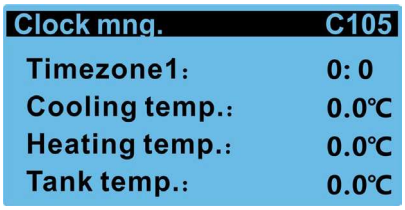


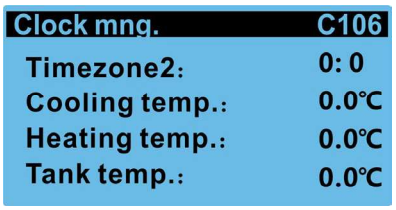


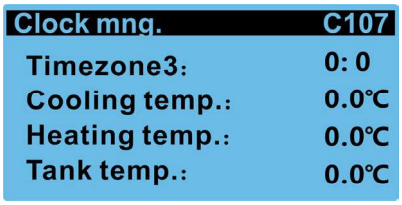
Timezone setpoint Timing setting temperature interface;

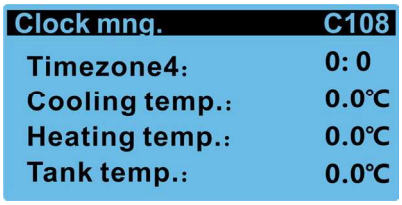
Timezone1 is the start time of the first time period, **Timezone2** is the cut-off time of the first time period and the start time of the second time period, and so on.

Cooling temp, Heating temp, Tank temp Set the temperature for cooling, heating, and hot water for the corresponding time period









4. Engineering mask:

Press the button in the main screen, and then press the or button to switch to the M05 page, and input the engineering parameter passwordas shown below:

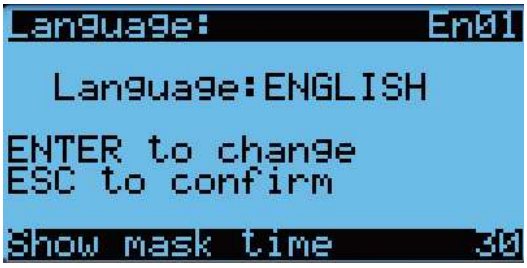
Set up heat pump function

Triple supply: indicates that there are optional refrigeration, hot water, and heating functions for the unit;

Dual supply: The unit only has heating and cooling functions;

Language selection function

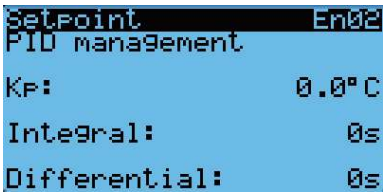
Press "ENTER" to select the language, and after the selection is completed, you can press "ESC to exit";



Set PID

Kp: The larger the value, the faster the heat pump adjustment speed (not recommended to adjust this parameter).

Integral and Differential: (not recommended to adjust this parameter).



Pump work:

Normal - the water pump is always on during standby; Interval, the water pump is on every 3 minutes during standby;

Demand - the water pump stops during standby.

Pump auto:

ENABLE - the water pump is automatically turned on according to the temperature difference adjustment;

DISABLE - the water pump is automatically turned off according to the temperature difference adjustment.

Fan mode:

Ecomode - economic mode, the heat pump can automatically output capacity as required according to the ambient temperature;

Nigt - night mode, the heat pump has low output capacity from 8 pm to 8 am, and high output at other times;

Daytime, day mode, the compressor outputs according to the maximum capacity; Pressure, test mode, the heat pumpoutputs according to the test capacity.

Enable heater:

ALL-both floor heating and hot water mode enable electric heating; This mode electric heater must be installed on the main pipe.

Heating-only start electric heating in heating mode; This mode electric heater must be installed in the expansion water tank.

Hot water-only enable electric heating in hot water mode; This mode electric heater must be installed in the hot water tank.

Independent: When adjusting to this mode, the hot water and electricity heating and heating electricity heating will have two separate relay outputs;

Note:

The default factory setting for electric heating mode of the heat pump is "Independent".

If the installation position is in a water tank, the electric heater must be installed inside the water tank and cannot be installed on the pipe. It is recommended that the engineering parameters change the "Hot water heater position" parameter to "TANK";

If you use pipe electric heating, you need to install the electric heater between the heat pump and the three-way valve, and set the electric heating mode to "ALL", so that the electric heating can heat in both heating mode and hot water mode;

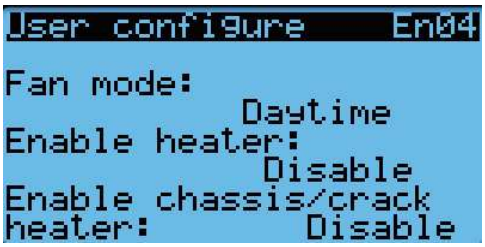
When the mode is set to "Heating", electric heating only starts in heating mode;When the mode is set to "Hot water", electric heating only starts in hot water mode. In addition, you need to enter the engineering parameters and change the parameter of "Hot water heater position" to "PIPE';

The instructions must be strictly followed during the installation process, otherwise serious consequences will occur.

Enable chassis/crack:

Enable - enable chassis electric heating/crankshaft electric heating;

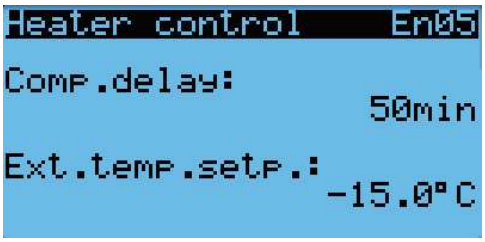
Disable - disable chassis electric heating/crankshaft electric heating.



Heater control:

Comp.delay: The delay time to start the electric heating after the compressor starts, the default is 50 minutes.

Ext.temp.setp: The maximum allowable ambient temperature for starting electric heating, the default is -15 degrees.



Delta temp.set:

Variable frequency water pump speed adjustment target value of temperature difference between inlet and outlet water: the default is 5 degrees.

The output of the variable frequency water pump increases when the temperature difference between the inlet and outlet water is more than 5 degrees, and the output of the variable frequency pump decreases when the temperature difference between the inlet and outlet water is less than 5 degrees.

Auto start:

Disable - when the heat pump is powered off, the heat pump will not automatically start;

Enable - the heat pump will automatically start after the heat pump is powered off

Enable Switch:

(With this function , the heat pump can do heating /cooling automatically based on the ambient temperature setting)

Enable Switch-Disable: turn off the automatic cooling/heating mode which is based on the ambient temperature; Original setting is Disable before delivery .

Enable Switch-Enable: turn on the automatic cooling/heating mode which is based on the ambient temperature.

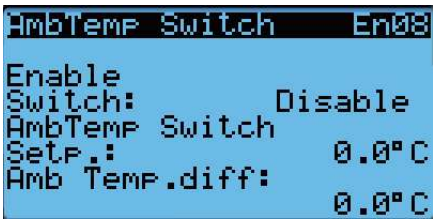
AmbTemp Switch setp: Switch the ambient temperature setting point of the cooling/heating mode;

when the ambient temperature is lower than the set point-hysteresis, the unit will automatically switch to heating or hot water + heating;

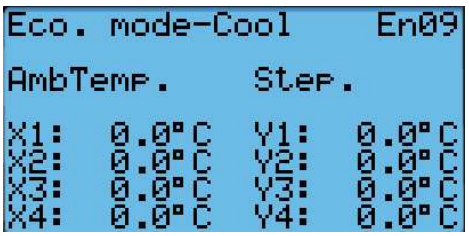
when the ambient temperature is higher than the set point +In case of hysteresis, the unit will automatically switch to cooling or hot water+refrigeration;

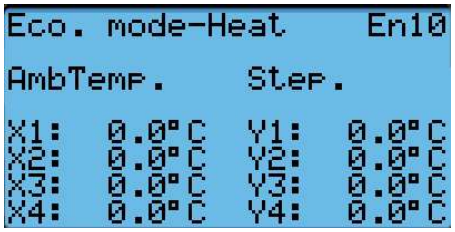
when the ambient temperature is higher than the set point-hysteresis and lower than the set point + hysteresis maintains the current mode

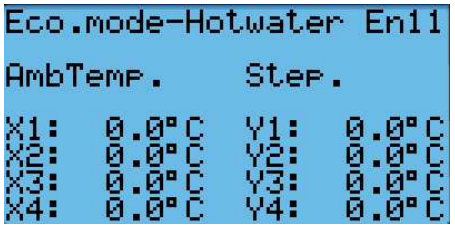
Amb Temp.diff: The difference between the ambient temperature switching mode and the set temperature.



Eco. mode setting: On the following page, you can set different ambient temperature set points and water temperature settings in cooling, heating and hot water modes under Eco. mode; X is the set point of Ambient temperature and Y is the set point of water temperature.







High temperature sterilization function:

Enable antileg: Set whether to enable sterilization function.

Temp. Setp.: Set the target water temperature for sterilization function.

TIMER: Set the working day and time period for sterilization time;

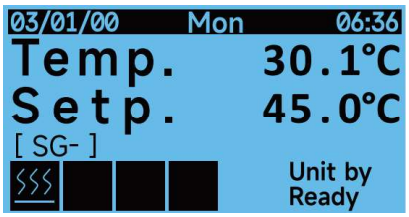
After the sterilization function is enabled, it will be sterilized every week according to the set time period. After reaching the target temperature, it will exit. If the target temperature cannot be reached within the time period, it will also exit;

4. SG smart grid features

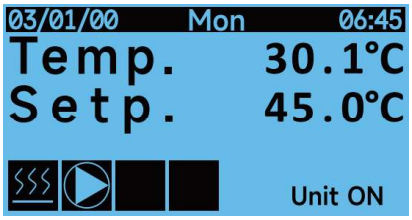
4.1 Signal status

Signal status		Screen Display	Operation Mode	Status Description
SG	EVU			
OFF	ON	SG-	Mode 1	Insufficient energy, the heat pump is forced to shut down, and the antifreeze can operate normally.
OFF	OFF	NULL	Mode 2	The heat pump is running normally.
ON	OFF	SG+	Mode 3	Automatically set the hot water to the highest temperature, the electric heating is turned off by default (can be set), store as much energy as possible, and switch to heating or cooling after meeting the requirements.
ON	ON	SG++	Mode 4	The energy is cheap, the heat pump adjusts the hot water temperature setting value to the highest temperature of the system operation, the electric heating is turned on, and the heating/cooling is turned after the temperature is met.

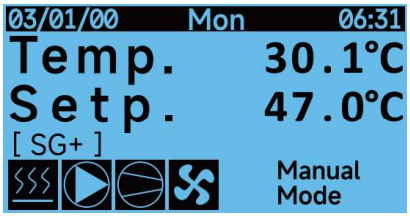
The main screen of undering the text “Setp”, shows the current mode of operation of the unit:



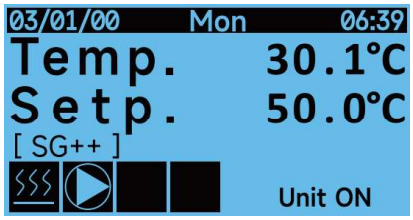
Mode1 （SG-）



Mode 2



Mode 3 （SG+）



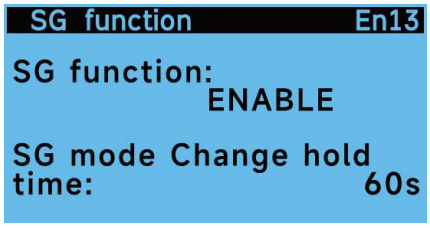
Mode 4（SG++）

4.2 Turn On/Off SG function.

4.2.1 Press the button in the main screen, and then press the or button, to switch to the M05 page, as shown below:

4.2.2 When the above diagram is displayed, press the button and enter the password (0815) to enter the Engineer parameters screen.

4.2.3 Enter the engineer parameters screen, press ↑ or ↓ to the M13 page, as shown below:

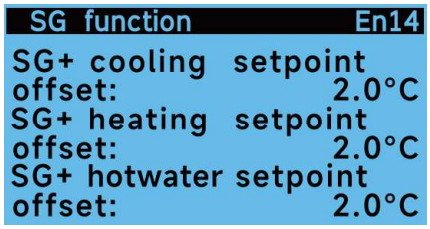


SG function: When "ENALBE" is set, the SG function operates, when "DISABLE" is set, the SG function does not operate.

SG mode change hold time: SG/EVU signal detection time, once every 60S.

4.3 Other parameters are described as follows:

Parameter "En14"

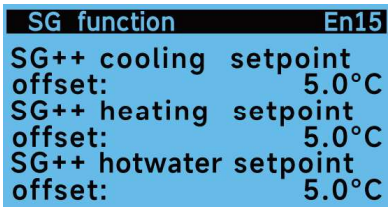


SG+ Cooling setpoint offset: when entering mode 3, cooling set a temperature correction value, set to 2 as an example, the final cooling set temperature = original set temperature - 2 when actually running

SG+ Heating setpoint offset : when entering mode 3, heating set a temperature correction value, set to 2 as an example, the final heating set temperature = original set temperature + 2 when actually running

SG+ Hotwater setpoint offset: when entering mode 3, hot water set a temperature correction value, set to 2 as an example, the final hot water set temperature = original set temperature + 2 when actually running

Parameter ”En15”

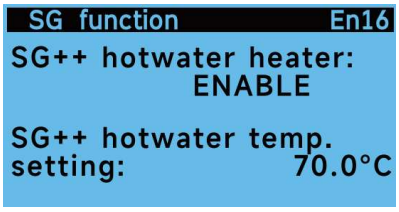


SG++ Cooling setpoint offset: when entering mode 4, cooling set a temperature correction value, set to 5 as an example, the final cooling set temperature = original set temperature - 5 when actually running.

SG++ Heating setpoint offset: when entering mode 4, heating set a temperature correction value, set to 5 as an example, the final heating set temperature = original set temperature + 5 when actually running.

SG++ Hotwater setpoint offset: when entering mode 4, hot water set a temperature correction value, set to 5 as an example, the final hot water set temperature = original set temperature + 5 when actually running.

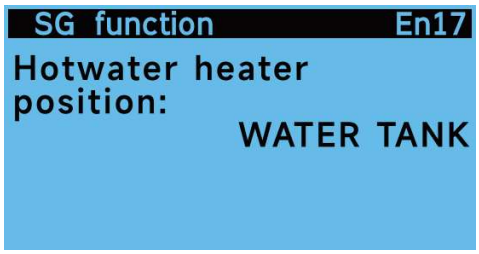
Parameter ”En16”



SG++ hotwater heater: when entering mode 4, does the hot water heater turn on. When set to "ENABLE", the hot water heater is forced on and works together with the heat pump, when set to "DISABLE", the hot water heater is not forced on.

SG++ Hotwater temp.setting: when entering mode 4, the stopping temperature after forced opening of the hot water heater.

Parameter ”En17”



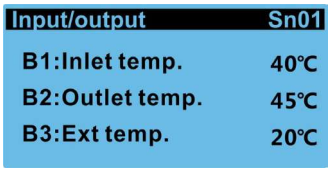
Hotwater heater position: Hot water heater installation position selection, according to the actual installation.

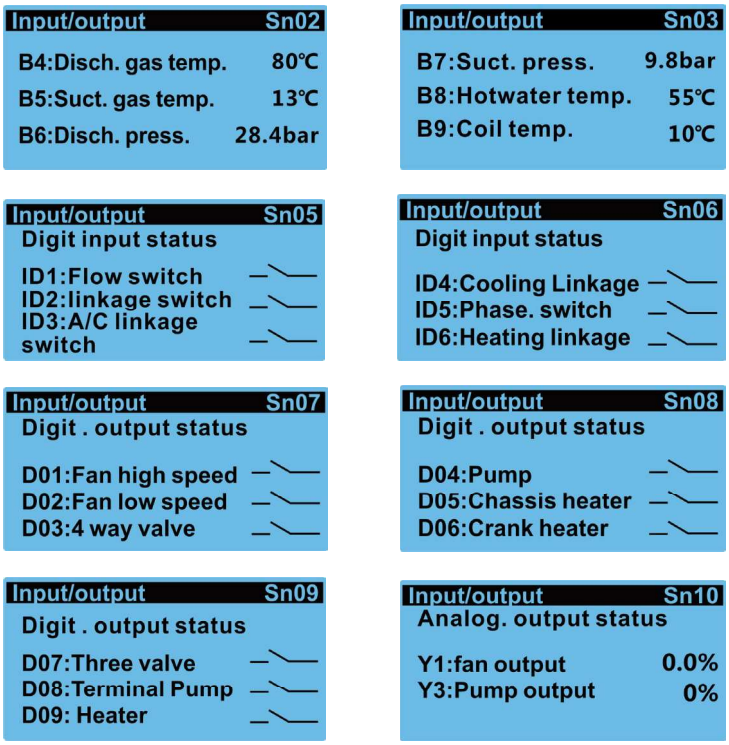
Tips:

When the SG function is set to"ENALBE", it is recommended to install the hot water heater in the tank and to set this option to "WATER TANK" so that the system will switch to heating or cooling mode when the hot water mode reaches the set temperature. If the hot water heater is installed in the pipe and "Pipe" is selected, the system will not switch to heating or cooling mode immediately when the hot water mode reaches the set temperature, but only when the tank temperature is higher than "SG++ Hotwater temp. setting " before switching to heating or cooling mode.

4.4. Input / Output

Press to access menu, press↑↓botton to select I/O mask, then press to confirm, Press↑↓Botton to see the I/O mask,E.gc Water temperature/ Pressure/Frequency and so on.

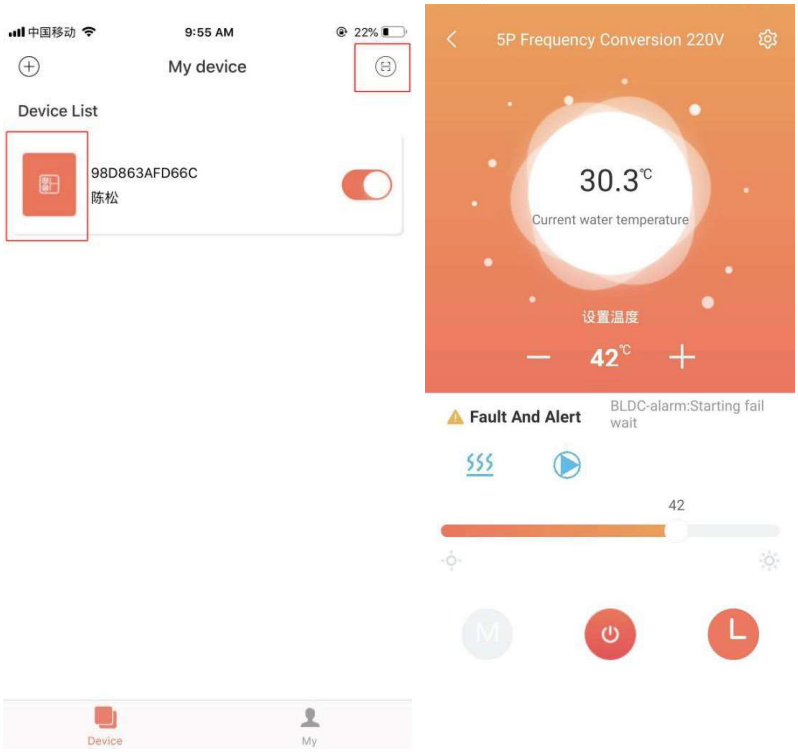




Firmware version information query: Switch to the last page to query the firmware and software information of the controller

5. APP Function

5.1 Device Homepage



Explanation

1. Click a device in the device list to enter this page.

2. The background color of the bubble indicates the current operating state of the device:

a. Gray indicates that the device is in the shutdown state, at this time, you can change the working mode, set the mode temperature, set the timing, or you can press the key to switch on and off.

b. Multicolor indicates that the device is turned on, each working mode corresponds to a different color, orange indicates heating mode, red indicates hot water mode, and blue indicates cooling mode。

c. When the device is in the power-on state, you can set the mode temperature, set the timer, press the k

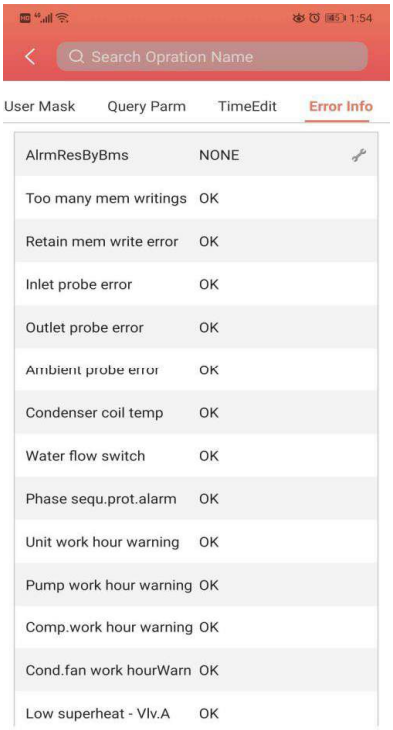
ey to switch on and off, but you can not set the working mode (that is, the working mode can only be set when the device is off)

3. The bubble shows the current temperature of the device.

4. Below the bubble is the set temperature of the device in the current operating mode.

5. Set the temperature is about +, − button, Each click adds or subtracts the current setting value to the device.

6. Below the setting temperature is the Fault And Alert. When the device starts to alarm, the specific Alert reason will be displayed next to the yellow warning icon. In case of device Fault And Alert, the Fault And Alert content will be displayed on the right side of this area. Click this area to jump to the detailed Error Information.



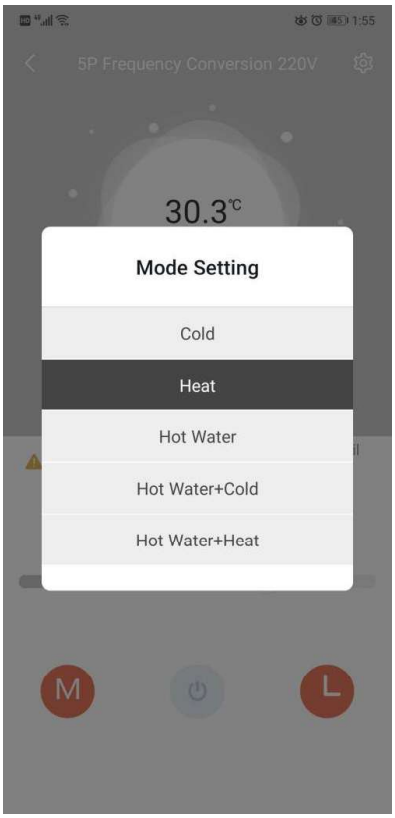
7. Immediately below the fault alarm area, display the current working mode, heat pump, fan and compressor in sequence (corresponding blue icon when it is on, but not displayed when it is off).

8. The slide bar below is used to set the temperature in the current mode.

Slide the slider left and right to set the allowable temperature in the current working mode.

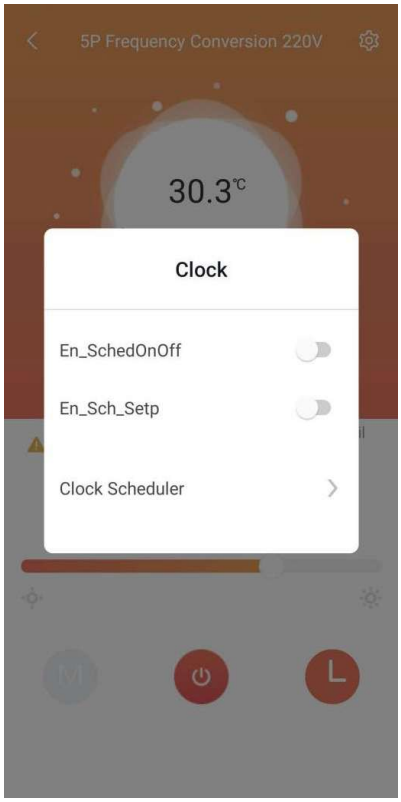
9. The bottom three buttons are in order from left to right: working mode, device switching machine and device timing. When the current background is color, the working mode button cannot be clicked.

a. Click Work Mode to see the mode selection menu, and you can set the working mode of the device (black is the current setting mode of the device). The diagram as below:



b. Click "on/off" and set "on/off" command to the device.

c. Click the device Timer to see the Timer Settings menu. Click the Clock Schedule to set the device Timer function. The diagram below:



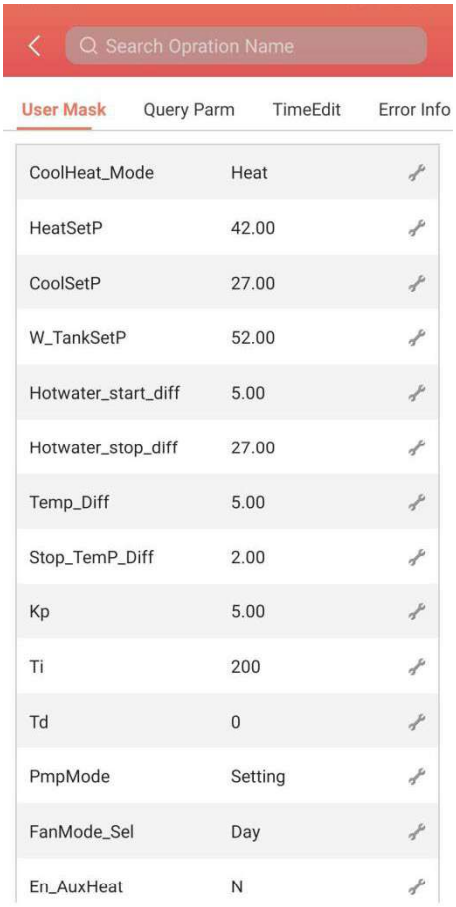
Detailed information of the units

Note :

1) Click this Main Interface menu on the upper right corner to enter this setting page.

2) Users with manufacturer rights can check all the functions , including:

User mask, defrost , other parm, factory settings, manual control , query parm, time edit, error info.



3) User with user rights , only can check part of the functions: User mask, query parm, TimeEdit , alarms.

User setting parameter:

Parameter Name		Initial Value
Unit mode		Heating
Heating setp.		45℃
Cooling setp.		12℃
Hotwater setp.		50℃
Temp. diff.		5℃
Stop temp. diff.		0℃
Cool and heat mode Temp. diff.		5℃
Stop temp. diff.		2℃
Kp		5℃
Integral		200s
Differential		0s
Pump work		Interval
Pump Auto		Enable
Fan model		Daytime
Enable heater		Enable
Enable chassic/crack heater		Enable
Heater control-Comp. delay		50min
Heater control-Ext.temp.setp.		-15℃
Pump control	Delta temp. set.	5℃
Auto start		Enable

Part 3. Maintenance and repairing

1. Maintenance Tips

The heat pump unit is a highly automated equipment. The unit status check is carried out regularly during use. If the unit can be maintained and maintained for a long time and effectively, the unit's operational reliability and service life will be unexpectedly improved.

1. Users should pay attention to the use and maintenance of this unit: all safety protection devices in the unit are set before leaving the factory, do not adjust by yourself;

2. Always check whether the power supply and electrical system wiring of the unit is firm, whether the electrical components are malfunctioning, and if necessary, repair and replace them in time;

3.Always check the water system's hydration, the water tank safety valve, the liquid level controller and the exhaust device to work properly, so as to avoid the air circulation into the system and reduce the water circulation, thus affecting the unit's heating capacity and unit operation reliability;

4. The unit should be kept clean and dry and well ventilated. Regularly clean (1-2 months) air-side heat exchangers to maintain good heat transfer;

5. Always check the operation of each component of the unit, check the oil pipe at the pipe joint and the gas valve, and ensure that the refrigerant of the unit is not leaking;
6. Do not stack any debris around the unit to avoid blocking the air inlet and outlet. The unit should be clean and dry and well ventilated.

7. If the downtime is long, the water in the unit piping should be drained, and the power supply should be cut off and the protective cover should be placed. When running again, check the system thoroughly before starting up;

8. If the unit fails and the user cannot solve the problem, please inform the company's special maintenance department in order to send someone to repair it in time;

9. The main unit condenser cleaning, the company recommends using a 50 ° C concentration of 15% hot oxalic acid to clean the condenser, start the host with a circulating water pump for 20 minutes, and finally rinse with tap water 3 times. (It is recommended to reserve a three-way interface when installing the pipe and seal one interface with a wire plug) in case of cleaning. Do not wash the condenser with a corrosive cleaning solution. The water tank needs to be removed after a period of use (usually two months, depending on local water quality).

2. Error input and protection alarm

AL001	Too many mem writings
AL002	Retain mem write error
AL003	Inlet probe error
AL004	Outlet probe error
AL005	Ambient probe error
AL006	Condenser coil temp
AL007	Water flow switch
AL008	Phase sequ.prot.alarm
AL009	Unit work hour warning
AL010	Pump work hour warning
AL011	Comp.work hour warning
AL012	Cond.fan work hourWarn
AL013	Low superheat - Vlv.A
AL014	Low superheat - Vlv.B
AL015	LOP - Vlv.A

AL016	LOP - Vlv.B
AL017	MOP - Vlv.A
AL018	MOP - Vlv.B
AL019	Motor error - Vlv.A
AL020	Motor error - Vlv.B
AL021	Low suct.temp. - Vlv.A
AL022	Low suct.temp. - Vlv.B
AL023	High condens.temp.EVD
AL024	Probe S1 error EVD
AL025	Probe S2 error EVD
AL026	Probe S3 error EVD
AL027	Probe S4 error EVD
AL028	Battery discharge EVD
AL029	EEPROM alarm EVD
AL030	Incomplete closing EVD
AL031	Emergency closing EVD
AL032	FW not compatible EVD
AL033	Config. error EVD
AL034	EVD Driver offline
AL035	BLDC-alarm:High startup DeltaP
AL036	BLDC-alarm:Compressor shut off
AL037	BLDC-alarm:Out of Envelope
AL038	BLDC-alarm:Starting fail wait
AL039	BLDC-alarm:Starting fail exceeded
AL040	BLDC-alarm:Low delta pressure
AL041	BLDC-alarm:High discarge gas temp
AL042	Envelope-alarm:High compressor ratio
AL043	Envelope-alarm:High discharge press.
AL044	Envelope-alarm:High current
AL045	Envelope-alarm:High suction pressure
AL046	Envelope-alarm:Low compressor ratio

AL047	Envelope-alarm:Low pressure diff.
AL048	Envelope-alarm:Low discharge pressure
AL049	Envelope-alarm:Low suction pressure
AL050	Envelope-alarm:High discharge temp.
AL051	Power+ alarm:01-Overcurrent
AL052	Power+ alarm:02-Motor overload
AL053	Power+ alarm:03-DCbus overvoltage
AL054	Power+ alarm:04-DCbus undervoltage
AL055	Power+ alarm:05-Drive overtemp.
AL056	Power+ alarm:06-Drive undertemp.
AL057	Power+ alarm:07-Overcurrent HW
AL058	Power+ alarm:08-Motor overtemp.
AL059	Power+ alarm:09-IGBT module error
AL060	Power+ alarm:10-CPU error
AL061	Power+ alarm:11-Parameter default
AL062	Power+ alarm:12-DCbus ripple
AL063	Power+ alarm:13-Data comm. Fault
AL064	Power+ alarm:14-Thermistor fault
AL065	Power+ alarm:15-Autotuning fault
AL066	Power+ alarm:16-Drive disabled
AL067	Power+ alarm:17-Motor phase fault
AL068	Power+ alarm:18-Internal fan fault
AL069	Power+ alarm:19-Speed fault
AL070	Power+ alarm:20-PFC module error
AL071	Power+ alarm:21-PFC overvoltage
AL072	Power+ alarm:22-PFC undervoltage
AL073	Power+ alarm:23-STO DetectionError
AL074	Power+ alarm:24-STO DetectionError
AL075	Power+ alarm:25-Ground fault
AL076	Power+ alarm:26-Internal error 1
AL077	Power+ alarm:27-Internal error 2

AL078	Power+ alarm:28-Drive overload
AL079	Power+ alarm:29-uC safety fault
AL080	Power+ alarm:98-Unexpected restart
AL081	Power+ alarm:99-Unexpected stop
AL082	Power+ safety alarm:01-Current meas.fault
AL083	Power+ safety alarm:02-Current unbalanced
AL084	Power+ safety alarm:03-Over current
AL085	Power+ safety alarm:04-STO alarm
AL086	Power+ safety alarm:05-STO hardware alarm
AL087	Power+ safety alarm:06-PowerSupply missing
AL088	Power+ safety alarm:07-HW fault cmd.buffer
AL089	Power+ safety alarm:08-HW fault heater c.
AL090	Power+ safety alarm:09-Data comm. Fault
AL091	Power+ safety alarm:10-Compr. stall detect
AL092	Power+ safety alarm:11-DCbus over current
AL093	Power+ safety alarm:12-HWF DCbus current
AL094	Power+ safety alarm:13-DCbus voltage
AL095	Power+ safety alarm:14-HWF DCbus voltage
AL096	Power+ safety alarm:15-Input voltage
AL097	Power+ safety alarm:16-HWF input voltage
AL098	Power+ safety alarm:17-DCbus power alarm
AL099	Power+ safety alarm:18-HWF power mismatch
AL100	Power+ safety alarm:19-NTC over temp.
AL101	Power+ safety alarm:20-NTC under temp.
AL102	Power+ safety alarm:21-NTC fault
AL103	Power+ safety alarm:22-HWF sync fault
AL104	Power+ safety alarm:23-Invalid parameter
AL105	Power+ safety alarm:24-FW fault
AL106	Power+ safety alarm:25-HW fault
AL107	Power+ safety alarm:26-reseved
AL108	Power+ safety alarm:27-reseved

AL109	Power+ safety alarm:28-reseved
AL110	Power+ safety alarm:29-reseved
AL111	Power+ safety alarm:30-reseved
AL112	Power+ safety alarm:31-reseved
AL113	Power+ safety alarm:32-reseved
AL114	Power+ alarm:Power+ offline
AL115	EEV alarm:Low superheat
AL116	EEV alarm:LOP
AL117	EEV alarm:MOP
AL118	EEV alarm:High condens.temp.
AL119	EEV alarm:Low suction temp.
AL120	EEV alarm:Motor error
AL121	EEV alarm:Self Tuning
AL122	EEV alarm:Emergency closing
AL123	EEV alarm:Temperature delta
AL124	EEV alarm:Pressure delta
AL125	EEV alarm:Param.range error
AL126	EEV alarm:ServicePosit% err
AL127	EEV alarm:ValveID pin error
AL128	Low press alarm
AL129	High press alarm
AL130	Disc.temp.probe error
AL131	Suct.temp.probe error
AL132	Disc.press.probe error
AL133	Suct.press.probe error
AL134	Tank temp.probe error
AL135	EVI SuctT.probe error
AL136	EVI SuctP.probe error
AL137	Flow switch alarm
AL138	High temp. alarm
AL139	Low temp. alarm

AL140	Temp.delta alarm
AL141	EVI alarm:Param.range error
AL142	EVI alarm:Low superheat
AL143	EVI alarm:LOP
AL144	EVI alarm:MOP
AL145	EVI alarm:High condens.temp.
AL146	EVI alarm:Low suction temp.
AL147	EVI alarm:Motor error
AL148	EVI alarm:Self Tuning
AL149	EVI alarm:Emergency closing
AL150	EVI alarm:ServicePosit% err
AL151	EVI alarm:ValveID pin error
AL152	Supply power error
AL153	Fan1 fault
AL154	Fan2 fault
AL155	Fans Offline
AL165	Slave1 Offline
AL166	Master Offline
AL167	Slave2 Offline
AL168	Slave3 Offline
AL169	Slave4 Offline
AL170	Slave5 Offline
AL171	Slave6 Offline
AL172	Slave7 Offline
AL173	Slave8 Offline
AL174	Slave9 Offline

3. Other problem and repairing

No	Error	Possible reason	Method
1	Heat pump doesn't run	1. Power supply cable is loose 2. The fuse of power supply is fused.	1. Cut off the power supply to check and repair. 2. Change the fuse.
2	Heating capacity is too small	1. Refrigerant is not enough 2. Water system insulating is not good 3. Air heat exchanger is dirty 4. Water heat exchanger scaled	1. Check leakage and repair and refill gas 2. Improve the insulation 3. Clean air heat exchanger 4. Clean water heat exchanger
3	Compressor doesn't run	1. Power supply has error 2. Cable connecting is loose 3. Compressor is overheat	1. Check reason and solve 2. Check loose and repair 3. Check reason and repair
4	Compressor noise is loud	1. Expansion valve damaged lead to liquid entering compressor 2. The internal parts of compressor damaged 3. Compressor lack of oil	1. Change expansion valve 2. Change compressor 3. Compensate oil for compressor
5	Fan motor doesn't run	1. Fan blade fixing screw is loose 2. Fan motor damaged 3. Fan motor capacitance damaged	1. Tight the screw 2. Change fan motor 3. Change the capacitance
6	Compressor run, but not heat	1. There is not refrigerant at all 2. Compressor damaged	1. Check leakage and repair 2. Change compressor

Warranty card

Product model: Bar code:

Buyer		Address	
Invoice No.		Date	

Repair date	Repair record	Repairer

Items of warranty:

1. Warranty terms: _____; Within warranty, any problem because of quality, please contact us for support.

2. When repair needed, please show the warranty card and invoice of order or other proof.

3. We don't afford the problem that is caused by re-fitment or adding other function by user.

4. Warranty card and invoice or other purchasing proof will be invalid if alerted.

5. Please keep the warranty card and invoice or other purchasing proofs well, we will need these for service purpose.

6. We will not provide free warranty for below conditions:

(1) without proof;

(2) errors caused by re-fitment or not correct operating;

(3) damage caused by not professional people operating;

(4) faulty by moving or falling;

(5) faulty caused by natural disaster;

(6) After the power failure, the water in the pipeline of the unit was not discharged, which caused the unit to freeze.

CERTIFICATE

Product Model: _____

_____

Bar code: _____

_____