

# **ПОСІБНИК З МОНТАЖУ ТА ЕКСПЛУАТАЦІЇ ТЕПЛОВОГО НАСОСУ НА ОПАЛЕННЯ ТА ОХОЛОДЖЕННЯ**



Перед використанням уважно прочитайте цю інструкцію та зберігайте її в безпечному місці.



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## I. Foreword

Please read this instruction carefully before installation and use. This instruction supports required messages for installation, adjustment and maintenance.

NEW ENERGY heat pump products are produced strictly follow the design standards to make sure that units can run safely and high-efficiently, support high reliability and outstanding adaptability.

NEW ENERGY won't take any responsibilities for the damages on people or units caused by improper installation, adjustment, maintenance and operations contrary to the instruction.

	The DANGER sign in this instruction is designed to identify those danger of personal injure or death.
	The WARNING sign in this instruction is designed to identify those danger of personal injure or death.
	The CAUTION sign in this instruction is designed to identify those danger that cause damages to unit, other device or air pollution. Generally it will also give an indication, and simple description and the result if you ignore it.
	The CAUTION sign in this instruction is designed to stress those extra message which is none of business with safety but probably useful to you.

Except for optional wiring of the product, other external wires are not allowed to be connected to the electric control cabinet. Relays, switches, sensors and controllers are not allowed to be installed in the electric control cabinet. external wiring can not cross over the electric control cabinet. all the wiring work must follow the NEW ENERGY specification, and done by NEW ENERGY professionals.

There will be lethal high voltage DC and AC in the electric control cabinet, please cut off the power supply before opening the cabinet and operating.

### Notes :

- The external wiring must be selected according to the maximum current or maximum power.
- Please ground correctly according to the National Electrical Code..
- Please confirm the fastening of wiring bolts in time before starting and regularly repairing the unit.
- The external wiring work must be done according to the wiring diagram.
- Unit installation must be done by professionals.
- Workers must wear the anti-static gloves during electrical operations.
- Please cut off the power supply before opening the electrical control cabinet, and do not move any parts of the unit.
- Please check the parts, aging and insulation of wiring, and solve them correctly.

- Unit must run in the specific range of this instruction
- It is strictly prohibited to refit the unit or modify the parameters .

It may cause damages to units ,even injury to people if not follow the notes above.

**Water system installation**

- Filters,three-way pipe and valves for sewage disposal shall be installed at the inlet and outlet water pipe.
- Gauges and thermometers must be installed on the inlet and outlet pipes to monitor the operation of the waterway system and equipment..
- The temp. difference of water inlet and outlet are suitable between 4°C and 6°C when operating at full load.
- The water quality should meets the requirement below,or it may cause negative influence on units:

pH value (25°C)	6.5 – 8.0	Chloridion (Cl (mg/L)	<50
Electrical conductivity (25°C) (μs/cm)	<250	Silver sulfate (SO <sub>4</sub> <sup>2-</sup> ) (mg/L)	<50
TFe (mg/L)	<0.3	Total alkalinity	<50
Total hardness (mg/L)	<50	Silicon dioxide (SiO <sub>2</sub> )	<30



The fixed foot pad of the compressor is only used to prevent the compressor from vibration during transportation. Please check the compressor foot (whether there is any color) during unit debugging. If there is a fixed foot, please be sure to remove it, otherwise it will cause bad operation.

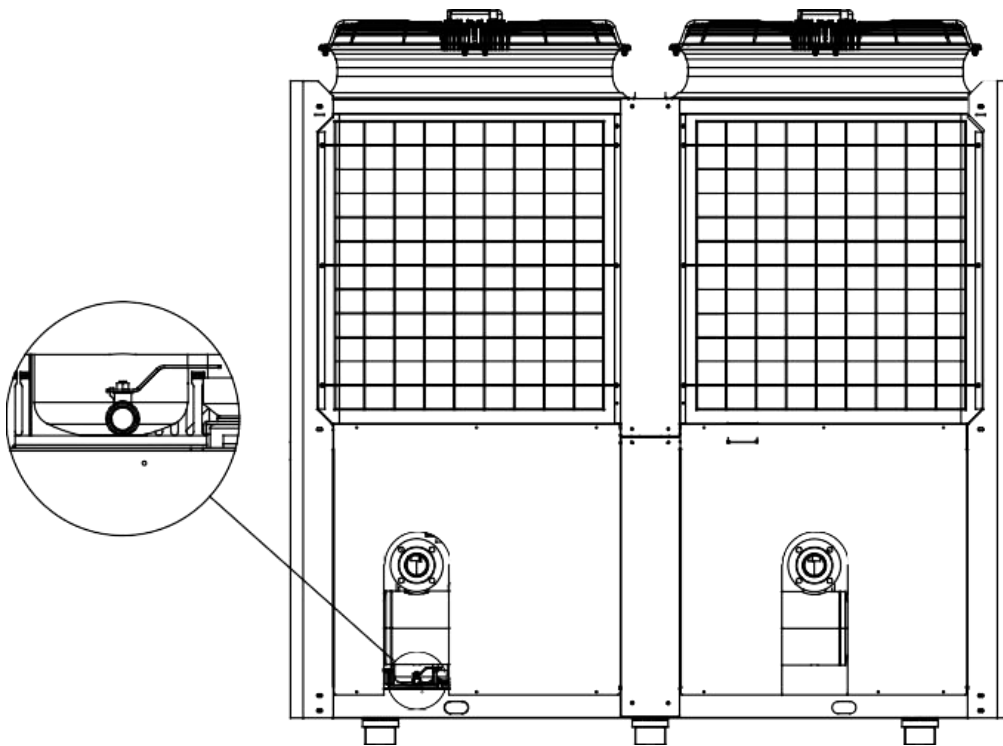
**Warning**

- The compressor must be powered on to preheat for more than 8 hours before starting, to improve the temp. of the compressor lubricating oil, otherwise the compressor will cause poor operation, and damage the compressor.
- CFCS can destroy the ozone layer in the atmosphere and pollute the environment. Please use the recovery device when discharging.
- If the air temp. of this heat pump test condition is lower than 0°C, antifreeze solution should be added to the water system, please refer to the relevant contents of the instruction manual for details. In addition, when standby in winter, please do not cut off the power of the unit, otherwise the antifreeze operation function cannot be started, which may cause the unit and pipeline to freeze.
- There will be the danger of getting an electric shock if you didn't cut off the power supply before unpacking or repairing .
- The wiring must be reliable,or it will cause short circuit and fire.
- All protection is strictly prohibited short operation (such as high voltage switch), otherwise the unit will not be able to operate reliably.
- It is strictly prohibited for the three-phase unit to operate inversely or without phase, otherwise it will cause serious damage to the unit which cannot be recovered.
- External connection wire through the machine sheet metal wire hole must be protected by rubber ring or plastic ring, otherwise there will be the risk of electric shock.

**Operation guidelines for defrosting and drainage in winter**

In winter, when the temp. is lower than 0°C, the unit does not run for a long time (including the commissioning unit after water test). In order to prevent the freezing crack of the internal pipelines of the unit, the water

discharge work of the unit shall be carried out as follows:



**Operational guideline:**

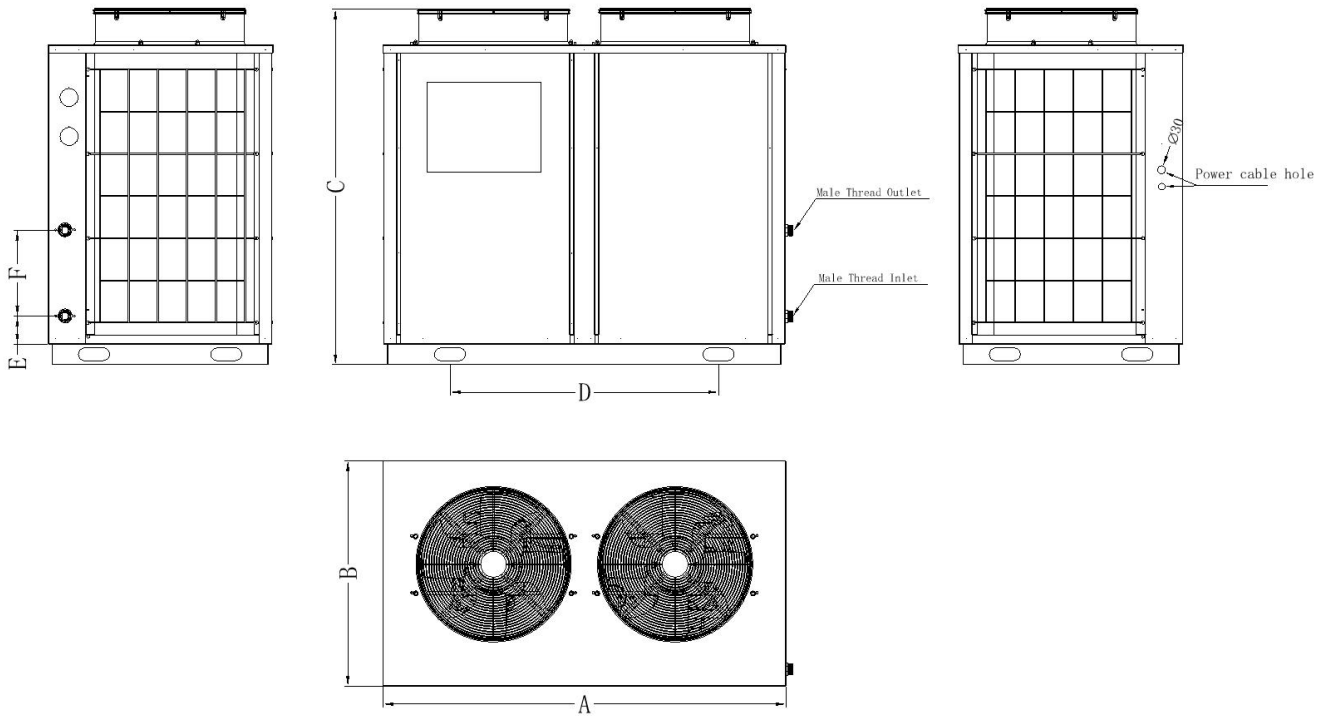
Turn on the wash port at the bottom of inlet water pipe to drain water over.Keep the wash port open until the next use before closing (To confirm that the water in the heat exchanger is drained over,please open the vent valve of the water system)



Cleaning,pressurizing and leak detective of engineering water system need to disconnect the water way of the unit.

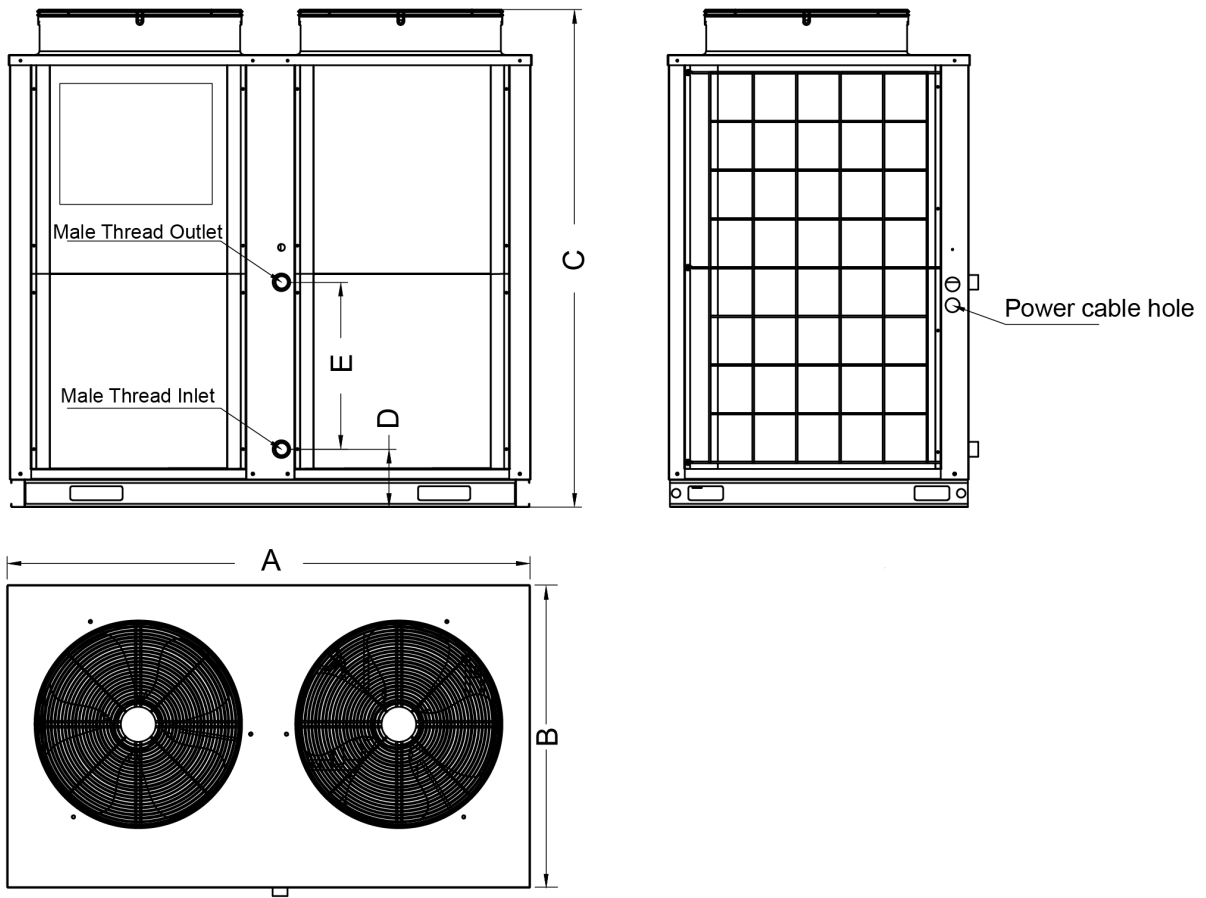
## II. Product Specification

### 1. Dimension



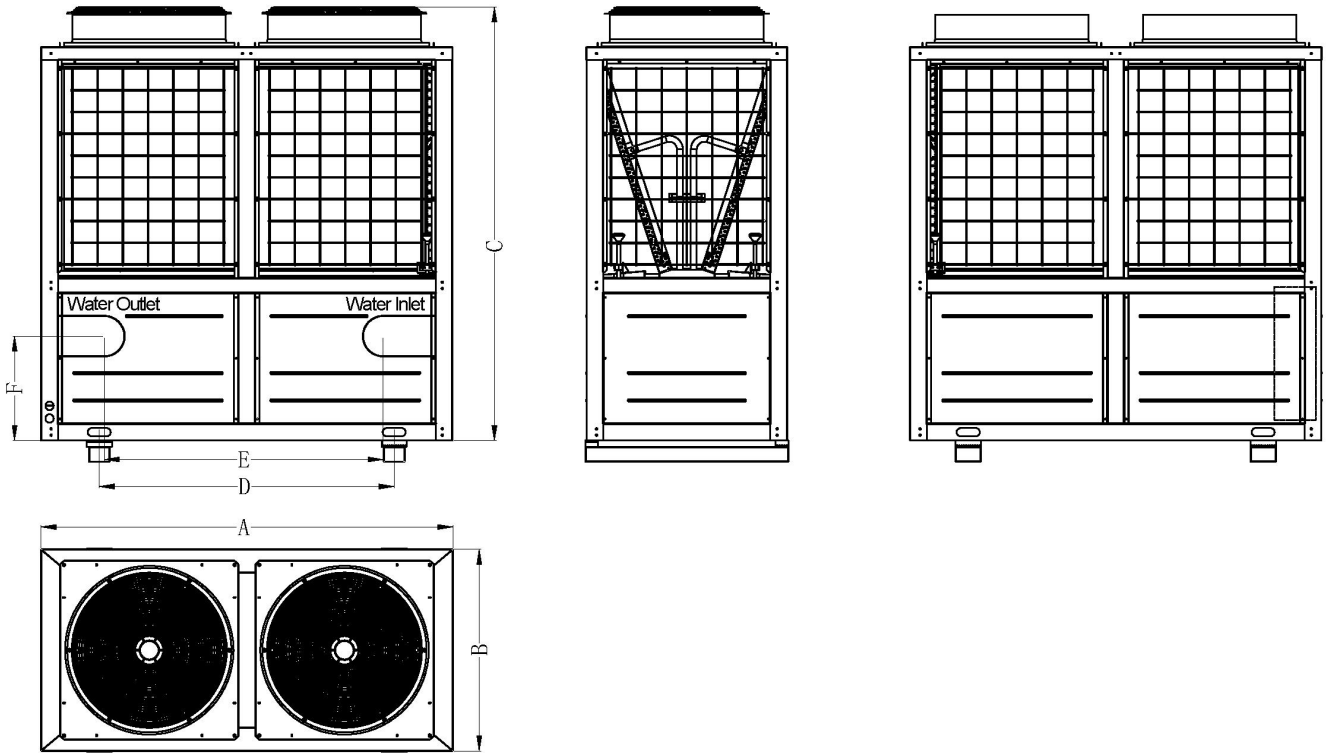
Unit:mm

Model:	A	B	C	D	E	F
NE-F325HCR3 TEVI-U	1555	870	1322	1035	108	331



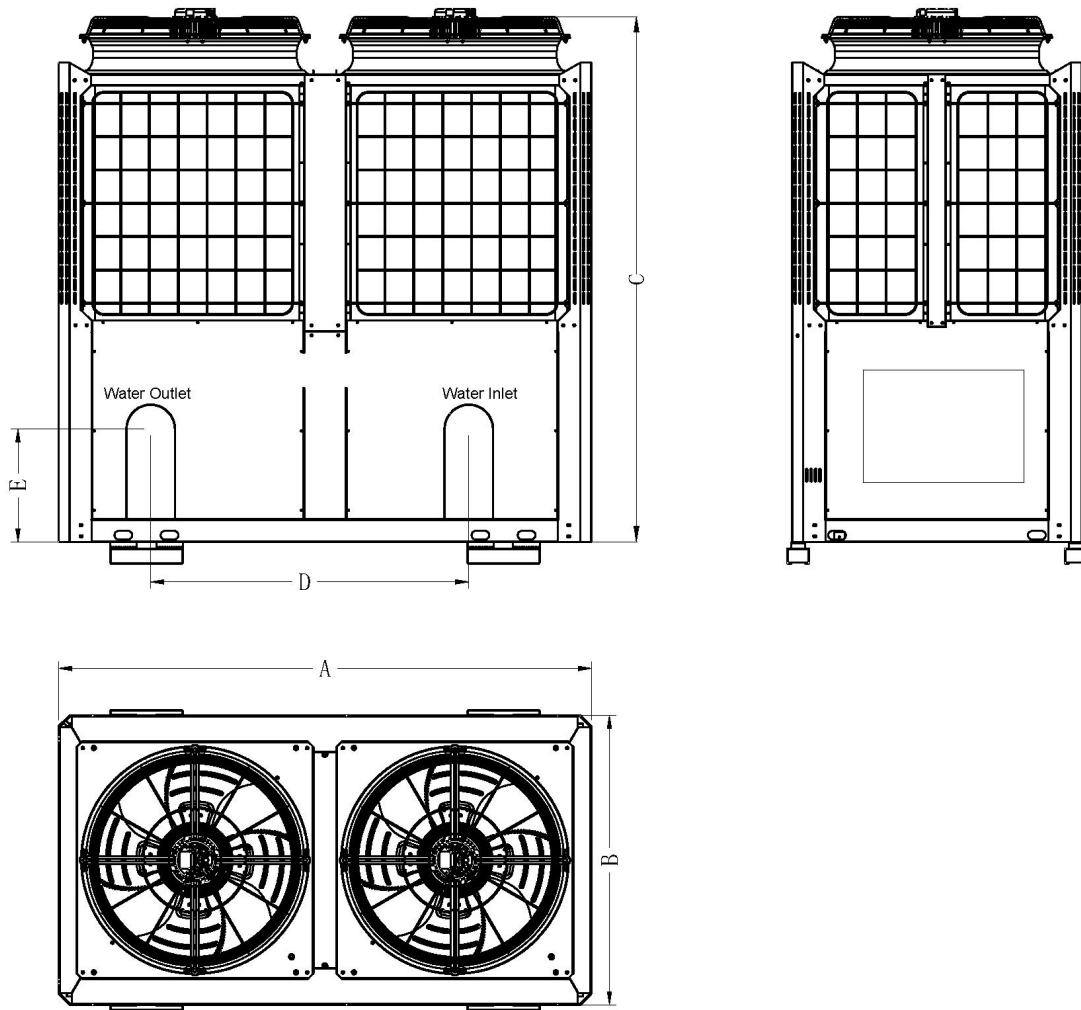
Unit:mm

Model	A	B	C	D	E
NE-F450HCR3 TEVI-U	1500	860	1430	166	480



Unit:mm

Model	A	B	C	D	E	F
<b>NE-F860HCR3 TEVI-U</b>	<b>1954</b>	<b>957</b>	<b>2021</b>	<b>1400</b>	<b>1324</b>	<b>495</b>



Unit:mm

Model	A	B	C	D	E
NE-F1680HCR3 TEVI-U	2400	1300	2260	1433	509

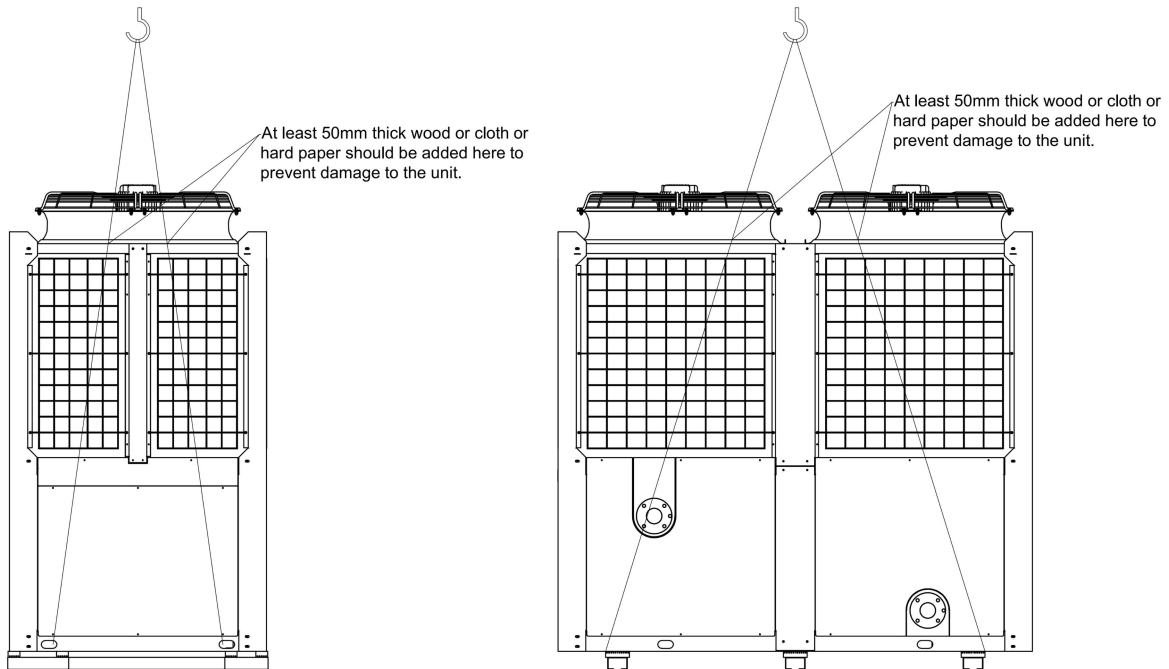
## 2. Technical parameter

<b>Model: NE-F</b>	<b>325HCR3TEVI-U</b>	<b>450HCR3TEVI-U</b>	<b>860HCR3TEVI-U</b>	<b>1680HCR3TEVI-U</b>
<b>Ambient Temp. (DB/WB): 7°C/6°C, Water Temp. (Inlet/Outlet): 30°C/35°C</b>				
Heating Capacity (kW)	33.68	46.35	88.58	173.04
Power Input (kW)	9.36	13.17	24.07	49.16
COP	3.6	3.52	3.68	3.52
<b>Ambient Temp. (DB/WB): 7°C/6°C, Water Temp. (Inlet/Outlet): 50°C/55°C</b>				
Heating Capacity (kW)	27.28	37.54	71.75	140.16
Power Input (kW)	11.14	15.14	29.17	56.52
COP	2.45	2.48	2.46	2.48
<b>Ambient Temp. (DB/WB): 35°C / -, Water Temp. (Inlet/Outlet): 12°C/7°C</b>				
Cooling Capacity (kW)	23.2	35	65	130
Power Input(kW)	8.35	12.2	23.8	46.6
EER	2.78	2.65	2.73	2.79
<b>General Info</b>				
Max Power Input (kW)	13.5	19	36	71
Max Current (A)	25	34	65	131
Max.Outlet Water Temp.(°C)	60			
Operation Range(°C)	-25~43			
Power Supply	380-415V/3N~/50Hz			
Refrigerant Type/Quantity	R410A/7.2	R410A/8.5	R410A/14.0	R410A/34.0
Fan Quantity	2			
Fan Motor Input(W)	250	900	750	3000
Water Pipe Connection	G1-1/4" (male)	G1-1/2" (male)	G2 1/2" (flange)	G2 1/2"(flange)
Noise Level at 1m dB(A)	≤64	≤68	≤69	≤75
Water Flow (m³/h)	4	6.4	11.2	22.4
Water Pressure Drop (kPa)	60	40	45	60
Net Weight (kg)	270	252	560	1280
Net Dimension (mm)	1555*870*1322	1500*860*1430	1954*957*2021	2400*1300*2260

### III. Installation

#### 1. Product handling

- Confirm the delivery route of the unit, which is enough for the package box of the unit to pass safely.
- Remove the packing box when the unit is transported near the installation position.
- During handling, the inclination of the unit shall not be more than 15 ° to prevent the unit from overturning.
- When rolling transportation is used, the same size roller shall be placed under the base of the unit. Each roller must be a little longer than the outer frame of the base and suitable for the balance of the unit.
- When using hoisting, the strength that the hoisting cable can bear shall be 3 times greater than the weight of the unit. Check and ensure that the lifting hook is fastened to the unit, and the hoisting angle shall be greater than 60 °. Add cloth or hard paper between the unit and the wire rope to prevent damage to the unit. Hoisting diagram is as follows:

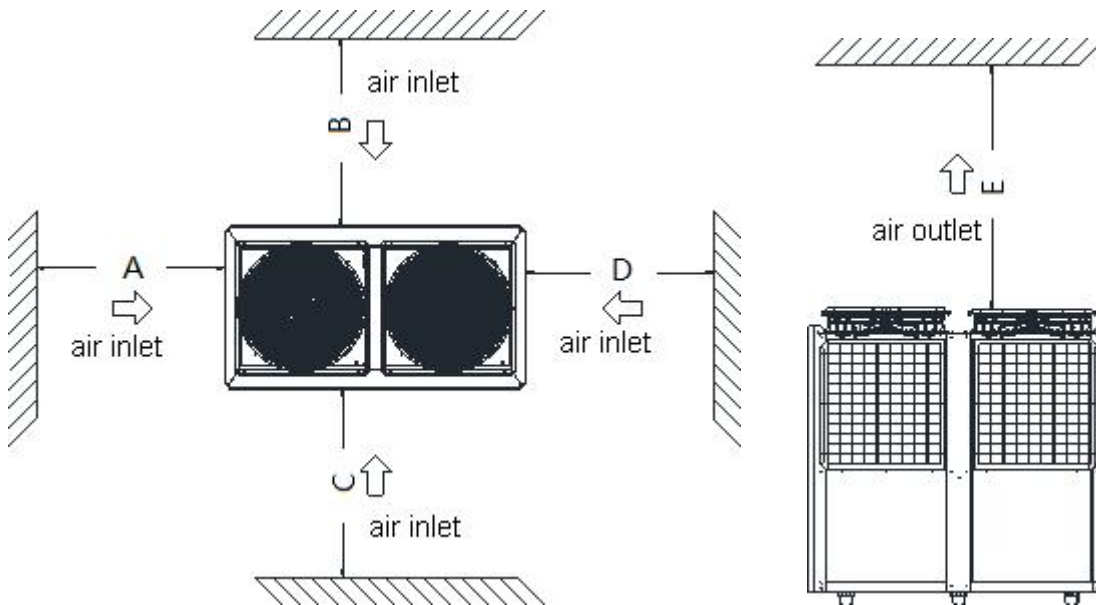


#### 2. Installation site selection

- The unit shall be installed in a place with enough installation and maintenance space and enough ventilation, such as the ground or appropriate roof, etc;
- If the unit is located in a place accessible to unauthorized personnel, isolation safety measures shall be taken, such as setting up protective fence, etc;
- It is better to choose places with noise, cold and hot air without affecting the surrounding environment, no leakage of combustible gas and convenient drainage, piping and maintenance
- The installation position shall facilitate the installation and maintenance of pipes and electrical connections.

- The place with strong ground strength, which is not easy to cause resonance and noise
- A drainage ditch must be built around the machine to discharge the condensate;
- The unit installed on the roof must be provided with anti typhoon and anti lightning measures, and snow proof shed shall be set in winter;
- It is forbidden to install the control panel in the bathroom to avoid affecting the normal operation of the unit.

Recommended unit spacing is as follows:



Recommended parameters table of unit installation

Installation space (mm)				
A	B	C	D	E
≥ 2000	≥ 2000	≥ 2000	≥ 2000	≥ 8000

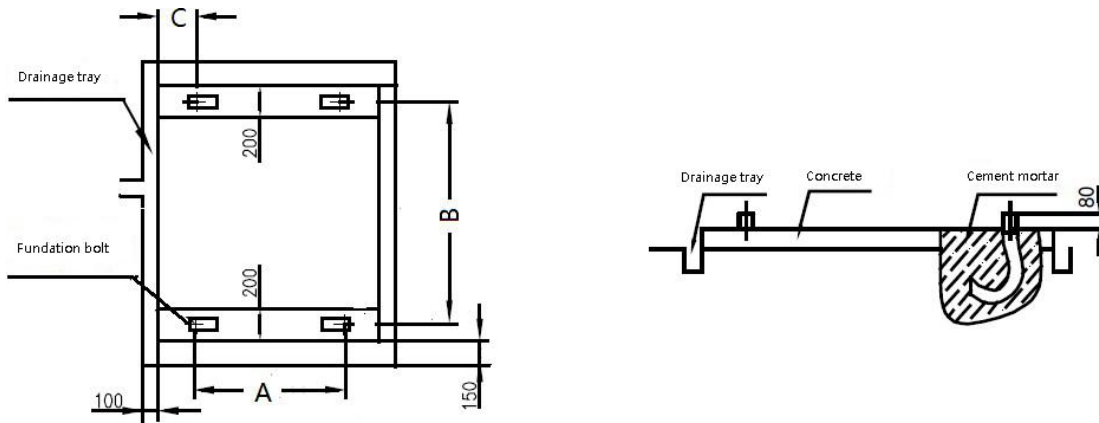


If the unit is installed indoors, it must be ensured that the static pressure at the air inlet and outlet is less than the static pressure of the installed fan.

### 3. Installation Foundation

- The installation foundation must be able to bear the operating weight of the whole set of equipment and the weight of maintenance personnel. The surface shall be flat. For the operating weight, please refer to the table of performance and specification parameters.
- Rubber damping pad must be installed under the water heater unit, fixed with bolts, and the installation of the unit shall be adjusted so that the inclination angle is less than 2 °, and the condensate drain outlet of the unit must be reserved on the ground.
- If the unit is too high, the scaffold can be erected around the unit for maintenance.
- The scaffold must be able to bear the weight of maintenance personnel and equipment.

The installation base of concrete of the unit is as follows:



Unit:mm

Model	A	B	C
<b>NE-F325HCR3TEVI-U</b>	1100	937	470
<b>NE-F450HCR3TEVI-U</b>			
<b>NE-F860HCR3TEVI-U</b>	1314	1254	550
<b>NE-F1680HCR3TEVI-U</b>			

#### 4. Water system piping layout

##### 4.1. Pipe size

- Inlet and outlet pipe diameter of the unit

Please refer to the performance specification for inlet and outlet pipe diameters.

##### 4.2. Water tank selection

If the heat pump water heater leaves the factory without water tank, please choose water tank according to the following requirements. The heat pump water heater can be equipped with open water tank and pressurized water tank.

###### A. Select open water tank:

The tank must be able to withstand the pressure at which it is filled.

An appliance with a capacity of more than 15L and which cannot be emptied through a drain hole installed in a pipe shall be equipped with a discharge device that can be used to make it work; (the discharge device can be combined with the pressure release device)

*If this unit is equipped with water level control output, it's not needed to add external water tank level control equipment.*

###### B. Select pressurized water tank:

*If there is no pressure relief device installed inside the water tank, the water system must be equipped with a pressure relief device, with the parameter set to 0.7MPa;*

*The water can flow out through the drain pipe of the pressure release device, and the drain pipe must be connected with the atmosphere;*

*The pressure relief device operates regularly to remove the calcium carbonate deposition and ensure the smooth operation of the device;*

*For the closed water heater directly connected with water source, the rated pressure shall be at least 0.6MPa;*

*For appliances with a capacity of more than 15L and cannot be emptied through the water outlet installed in the water pipe, a discharge device which can work only by using tools shall be installed; (the discharge device can be combined with the pressure release device);*

*The unit is equipped with high, medium and low water level, automatic water replenishment control function. If closed water tank is selected, the output line of high, medium and low water level control shall be short circuited;*

#### 4.3. Installation requirements

*Three way and valve must be installed at the water inlet and outlet pipe of the unit, so as to cut off the water circuit of heat exchanger and clean the external water system before commissioning and maintenance of the unit.*

*Install a 40 mesh or more filter near the water inlet interface of the unit as far as possible, and keep it warm;*

*Pressure gauge and temp. sensor must be installed on the water inlet and outlet pipes to monitor the operation of water system and equipment for easy maintenance. The unit is not equipped with pressure and temp. instruments, and users need to purchase them by themselves;*

*The water flow must enter the water heater through the water inlet, and the water flow cannot exceed the appropriate range;*

*When operating at full load, the temp. difference between inlet and outlet should be between 4 ~ 6 °C;*

*The piping and pipe joint must be supported independently, and it is forbidden to support on the unit;*

*The connecting pipe and pipe joint of the heat exchanger shall be easy to disassemble for cleaning and inspection;*

*All low points of the water system must be provided with drainage interfaces to facilitate the drainage of water in the water system; all high points must be provided with vent valves to facilitate the evacuation of air in the pipeline. Exhaust valve and drain port are not insulated for maintenance.*



Any impurities left in the water pipe between the filter and the condenser can cause damage to the line and must be avoided. Clean piping must be ensured before piping is connected to the system. Before installation, cover the evaporator interface and the chilled water pipe to prevent foreign impurities from entering the interior.

The installer/user must ensure that the quality of the recycled water meets the requirements of the equipment and that there is no gas which can cause the steel body of the oxidizing condenser.

#### 4.4. Water quality requirements

##### **A. Frozen water quality control**

When industrial water is used for chilled water, there is little scale, but when well water or river water is used, there will be more scale and sediment such as sand and soil, which will settle in the condenser and block the flow of water, resulting in the failure of the unit; if the water hardness is too high, it is easy to scale and corrode the equipment, so the water quality, such as pH value, conductivity, shall be analyzed before use, Chloride ion concentration, sulfur ion concentration, etc. Water must be filtered and softened with softened water equipment

before entering the water.

**B. Quality control of domestic hot water**

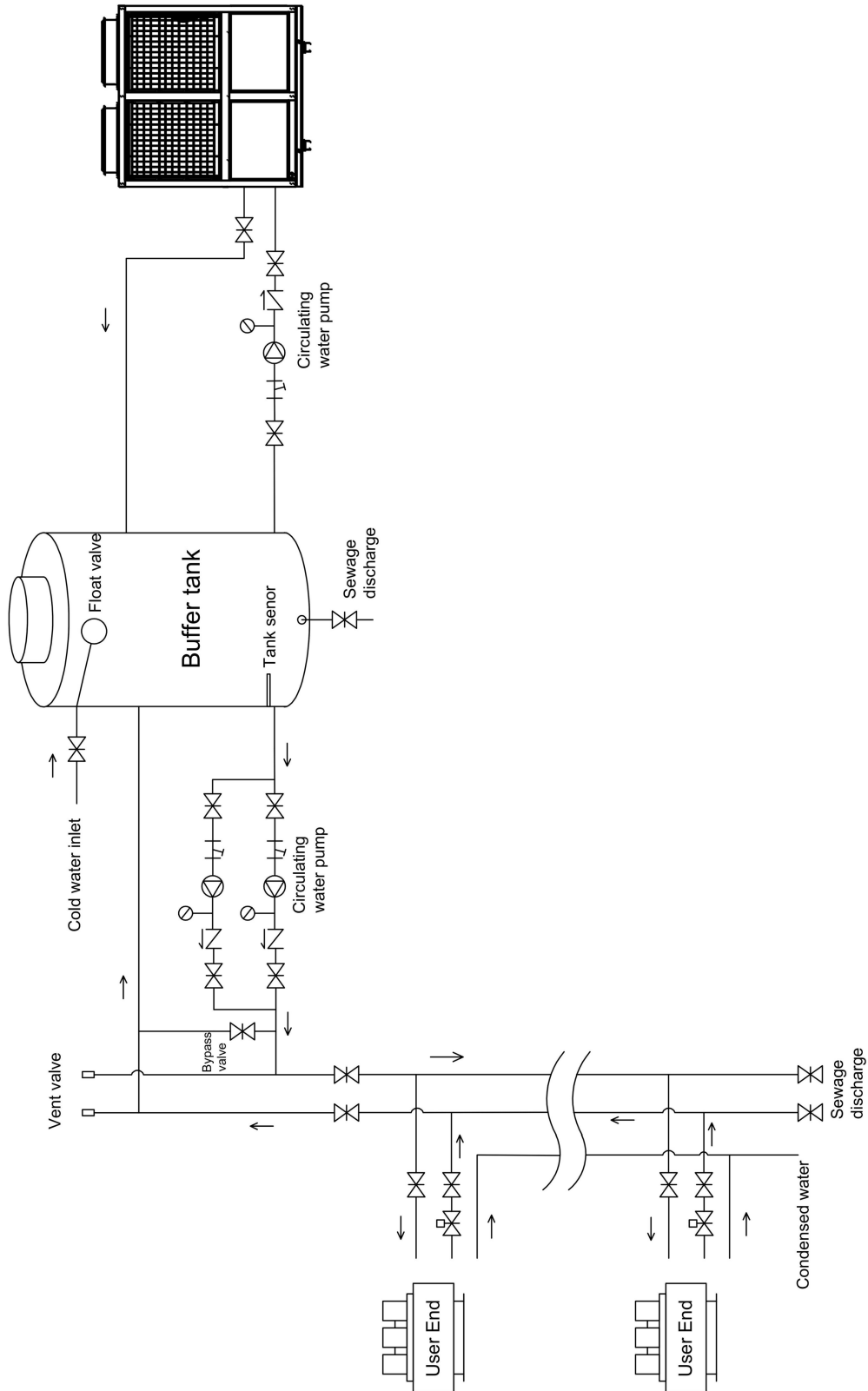
Domestic hot water is domestic water. Tap water or treated water is required. Lake water, river water and untreated groundwater are strictly prohibited.

**C. Applicable water quality standards of unit**

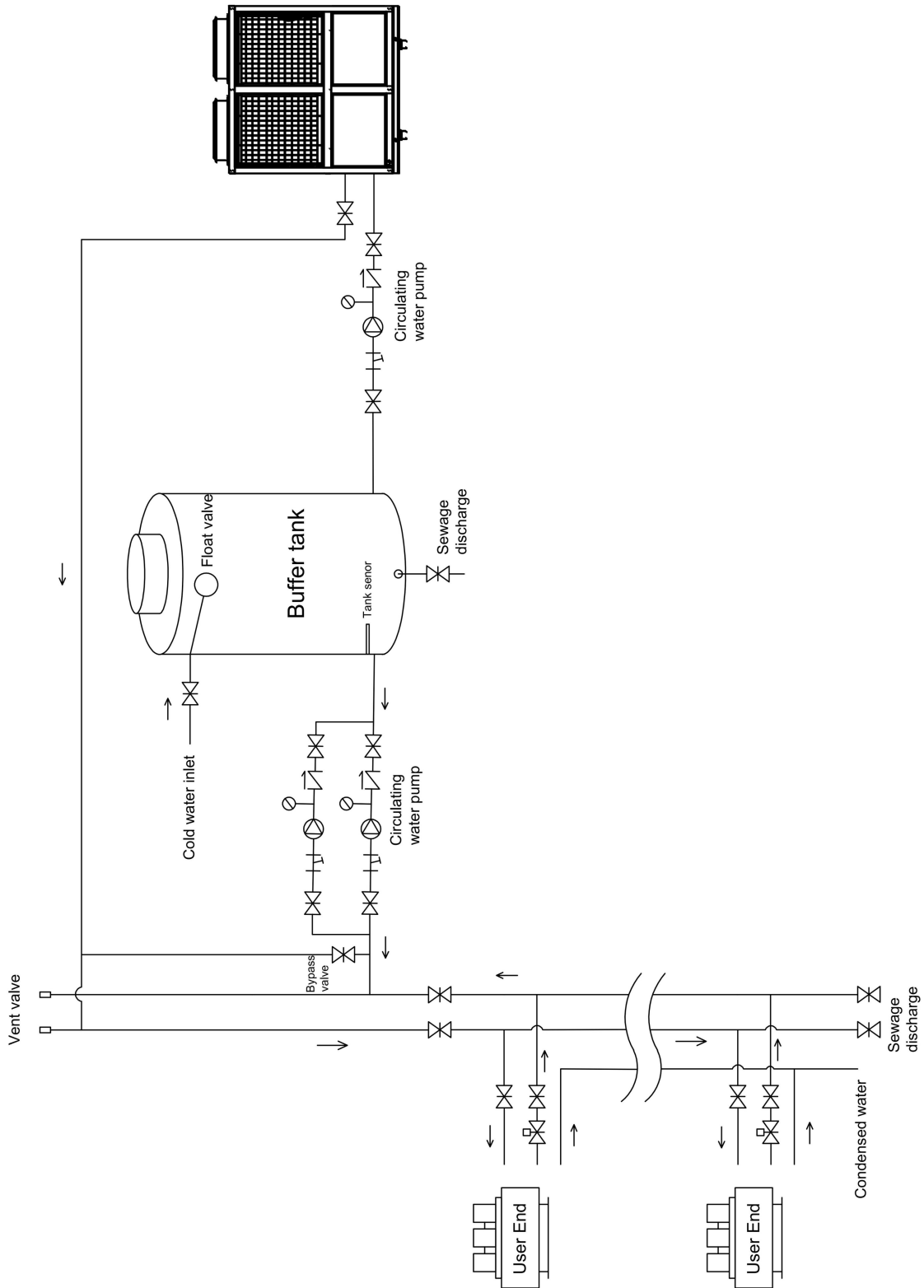
Ph value (25°C)	6.5 – 8.0	chloridion (CL)(mg/L)	<50
conductivity (25°C) (µs/cm)	<250	silver sulfate (SO42 – )(mg/L)	<50
total iron (mg/L)	<0.3	total alkalinity	<50
Total hardness (mg/L)	<50	silicon dioxide (SiO2)	<30

# 5. Water system piping

## Solution 1

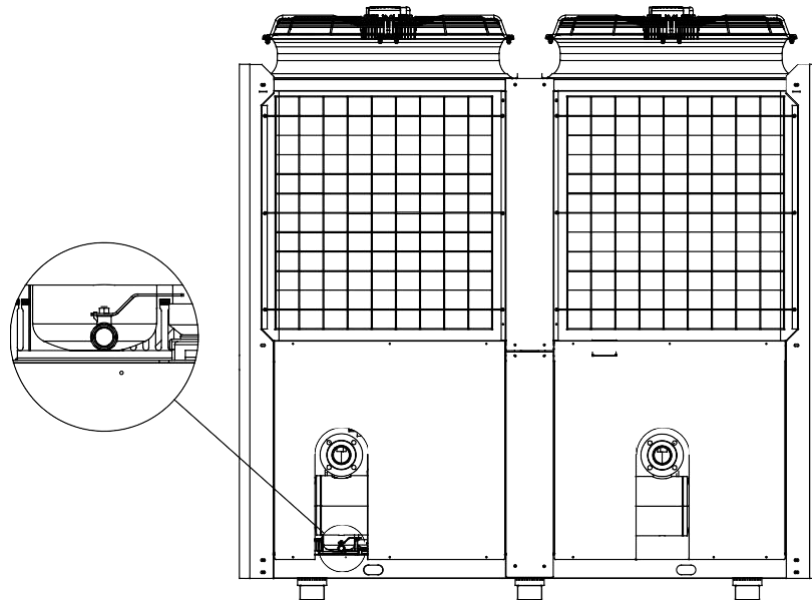


Solution 2



## 6. Winter antifreeze

In winter, when the temp. is lower than 0°C, the unit does not run for a long time (including the commissioning unit after water test). In order to prevent the freezing crack of the internal pipelines of the unit, the water discharge work of the unit shall be carried out as follows:



### Operational guideline:

Turn on the wash port at the bottom of inlet water pipe to drain water over. Keep the wash port open until the next use before closing (To confirm that the water in the heat exchanger is drained over, please open the vent valve of the water system)



Cleaning, pressurizing and leak detective of engineering water system need to disconnect the water way of the unit.

## IV. Electrical wiring diagram



### 1. Notice

- The unit must use the special power supply, the power supply voltage conforms to the rated voltage.
- Wiring must be carried out by a professional following the wiring diagram on the fuselage.
- Pay attention to the selection of the maximum current or maximum power of the unit for external cables of project connection (please refer to the performance specification and parameters table for details).
- The power cord and ground wire must be pressed together with proper terminals, and the components shall be installed according to the national wiring code.
- The power and ground wires must be tightened by applying the right torque with the right tools
- Only the electrical components specified by the company can be used, and the installation and technical services are required from the designated manufacturer or authorized dealer. If the wiring is not in accordance with the electrical installation specifications, it may lead to the failure of the controller or electric shock.
- According to the national technical standards for electrical equipment, set up leakage protection devices.
- After all the wiring is completed, the power can be connected only after careful inspection.
- Please read the labels on the electrical cabinet.
- Users do not try to repair the unit by themselves, there will be the danger of getting a electric shock or breaking the controller if repaired in a improper way. Please contact the after-sale center of NEW ENERGY for any repairing requirement.
- According to Article 25.7 of gb4706.32-2012, the power cord for outdoor installation of the unit shall not be lighter than the neoprene armored flexible cord (line 57 in IEC 60245), and the wire diameter specification of the power cord shall be selected according to the rated maximum current of the nameplate, as shown in the table below:

Power distribution equipment and electric wire of heat pump unit			
Maximum current(A)	Area of wire(mm <sup>2</sup> )	Recommended line model	Switch nominal specification(A)
≤16	≥2.5	YJV	25 A
≤25	≥4	YJV	32 A
≤32	≥6	YJV	40 A
≤41	≥6	YJV	50A
≤57	≥10	YJV	63 A
≤76	≥16	YJV	80 A
≤101	≥25	YJV	100 A
≤125	≥35	YJV	125 A
≤135	≥50	YJV	160A

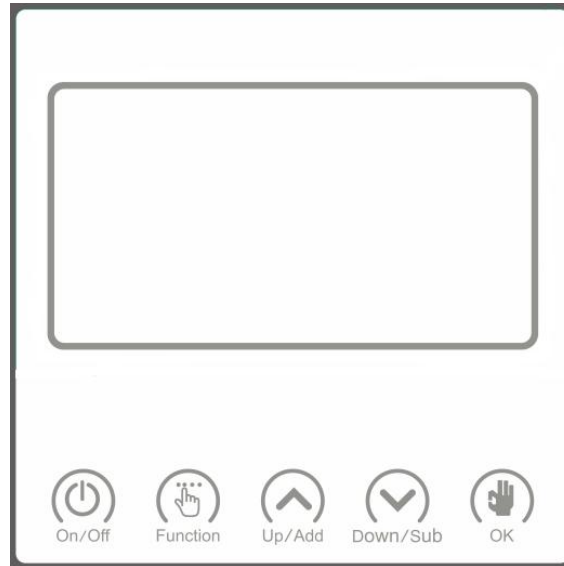
- When the power supply is connected, it must be equipped with a full-pole disconnection device matching with the unit and at least 3mm contact distance from the power supply and a leakage protection device.
- If the supply cord is damaged, it must be replaced by a professional in the designated manufacturer's maintenance department or similar department to avoid danger.

- The wire controller shall be fixed with screws in the indoor environment more than 1.5m above the ground. It is forbidden to be installed in the humid, rainy, acidic, corrosive environment where the light directly shines.
- Open the door of the electric cabinet, turn off the power first, do not remove or move any electrical components on the unit.
- Workers must wear anti-static gloves during electrical operation;

	<p>Do not insert hand or foreign matter into the outlet of the water heater unit</p>
	<p>It is forbidden to refit the unit and change the parameters of the unit without permission</p>

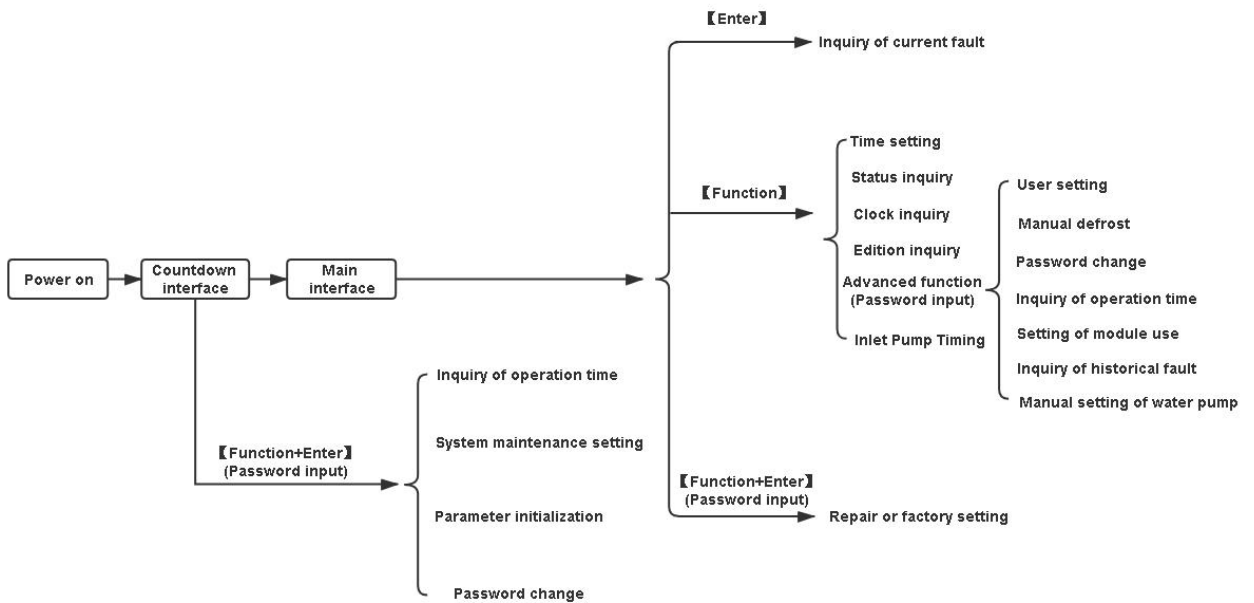
## V. Control function

### 1. Controller panel



### 2. Interface overview

- Key switching



Note:

- In the branch interface (except the countdown interface and the main interface), if there is no button for 1 minute, the system will automatically return to the main interface.

- When "▲" is displayed on the right side of the interface, it means that under this interface, you can press < up > to achieve up page turning.
- When the right side of the interface says "▼", it means that you can press < to scroll down > on this interface to scroll down.
- When the interface prompts "operation is currently prohibited, but operation is available XX seconds later", it means there is another screen operating and it needs to wait. After XX seconds, the interface can be operated.

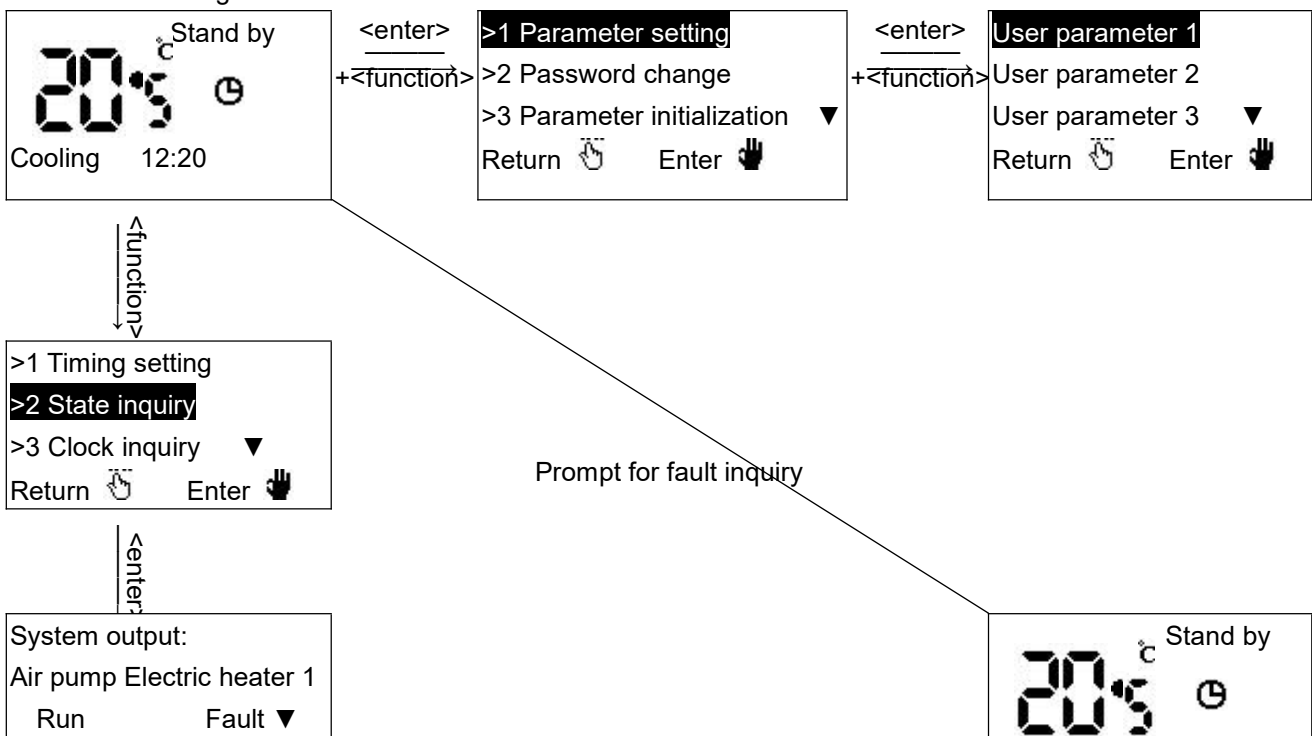
Icon	Meaning
	Indicating temp.
	Indicating page up, parameter selection, increasing value.
	Indicating page down, parameter selection, decreasing value.
	Indicating that whether the unit uses timing function.
	Indicating the icon of functional keys and only used for menu, cancellation, return and shift.
	Indicating the icon of confirming keys and only used for enter, confirmation, noise reduction, reset and switching module.
	Indicating the icon of ON/OFF and only used for starting/shutting down the unit.

### 3. Interface introduction

#### 3.1. Overview

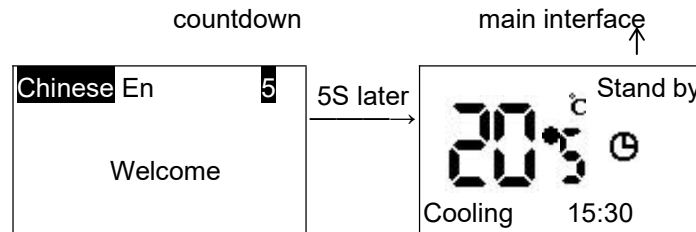
According to the actual use process, it is divided into: countdown interface, main interface, state inquiry interface, parameter setting interface, password interface and fault inquiry interface.

Interface switching



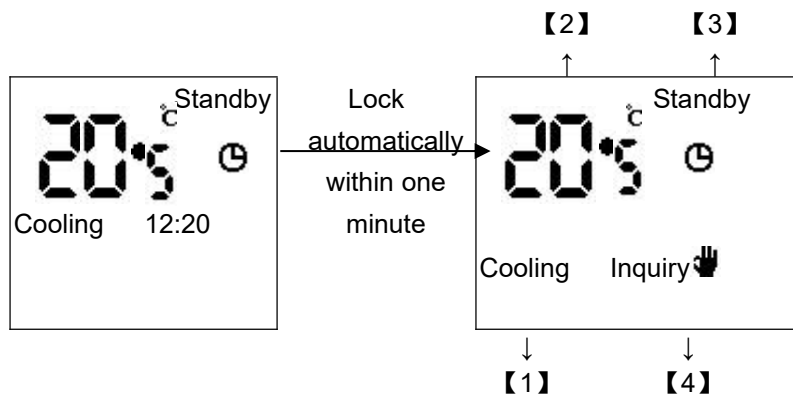


### 3.2. Countdown interface



Note: ① In the countdown interface at starting up, press <up> or <down> to switch language directly.

### 3.3. Main interface

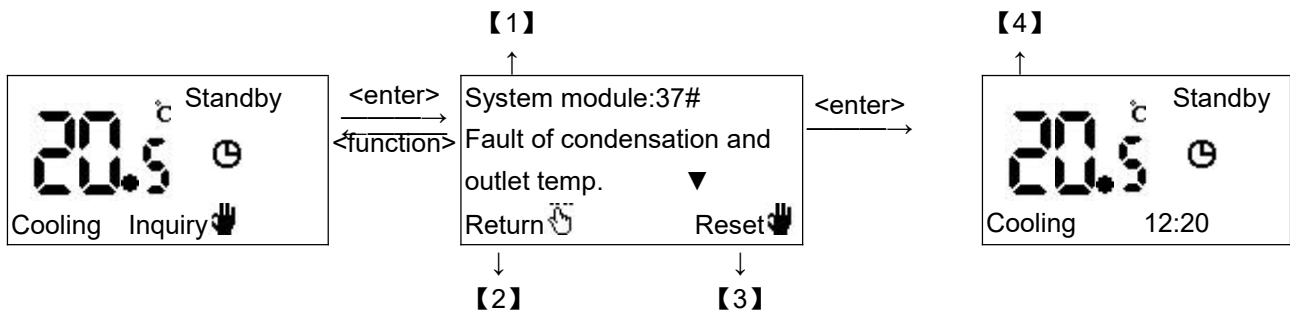


Description:

- 【1】 Current operation mode of the unit;
- 【2】 The current control temp. of the unit;
- 【3】 Indicates the current status of the unit and the timing status of the unit;
- 【4】 Fault inquiry of the unit.

### 3.4. Fault inquiry

When fault occurs to the main interface, press <enter> key to enter current fault inquiry.



Description:

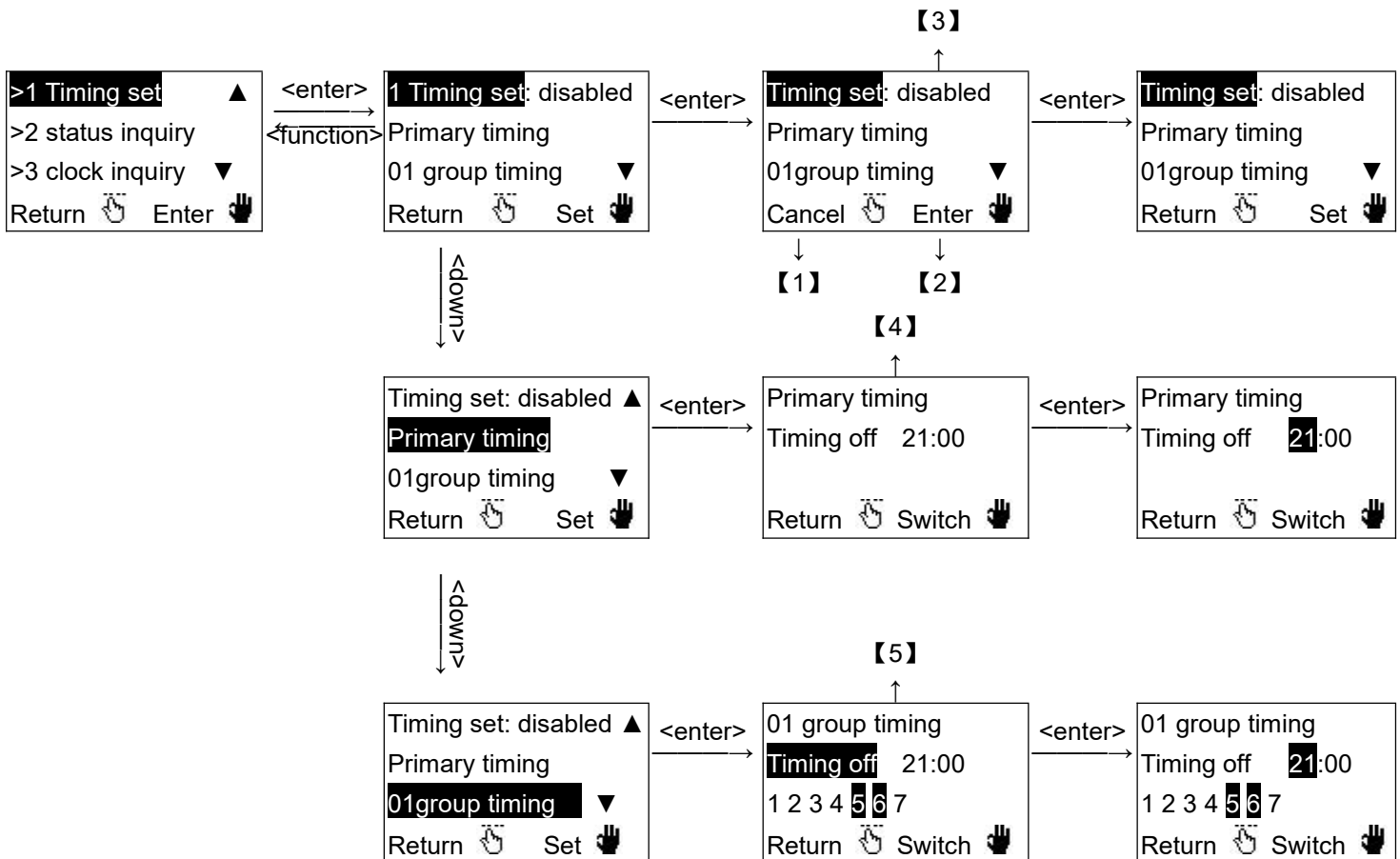
- 【1】Indicate the fault code of the current fault inquired in fault type and the corresponding fault information, please refer to the instruction book of control panel for concrete fault code. Press <up> or <down>

key to switch display of fault module or fault number: FF#→ system fault; 00#~15#→ module fault; the module number 00~15 corresponds to the module address setting of 0 to F of SR1 on control panel.

- 【2】 Indicates to press <function> key to return to menu of previous level.
- 【3】 Indicates to press <enter> key to reset fault. Indicate to return to the main interface if there is no fault at present. If there is any fault, it continues to display the current fault.
- 【4】 Indicate there is no fault after pressing <enter> key. Then it returns to the main interface.

### 3.5. Timing set interface

Press <down> or <up> to select timing set.



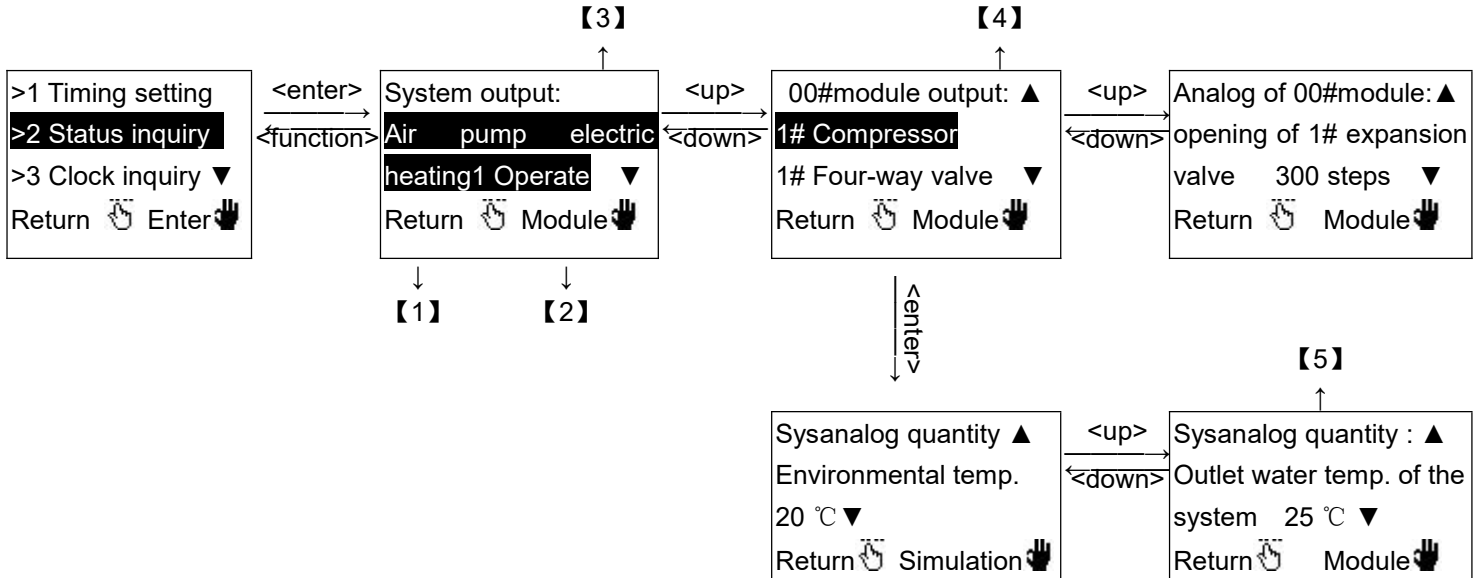
Description:

- 【1】 Indicates to press <function> key to return to menu of previous level.
- 【2】 Indicates to press <function> key to changed timing value.
- 【3】 indicate the selection of setting of timing
- 【4】 indicate the selection of primary timing
- 【5】 indicate to select 01 group timing. Press <up> or <down> to switch among use of timing, primary timing and setting from 01 group to 10# group. After entering the selected timing item, press <enter> key to change the set timing on/off, hour and minute, week (1, 2...7; when week is selected, the corresponding will flask); Press <up> or <down> key to change the selected value. Inverse display of week (1, 2...7) indicates that timing is effective on the day. As shown in the figure, shutdown will be performed at 21:00 on Friday and Saturday.

Note: if the time of timing is 00:00, it indicates the function is not used.

### 3.6. Status inquiry

After entering the status inquiry interface, press <enter> key to switch module status inquiry.

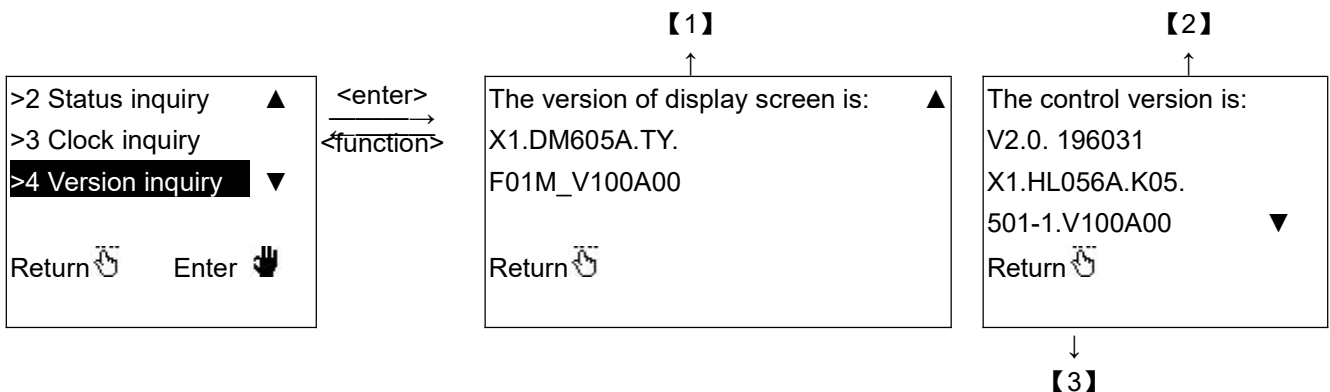


Description:

- 【1】 Indicates to return to the interface of previous level by pressing <function> key.
- 【2】 Press <enter> key to switch among different module interfaces. In the interface, the status of all modules of the unit may be inquired. The module number is subject to the actual number of modules. The last item is the system module and indicates the system status. Others correspond to 00~15 # modules and indicate the module status.
- 【3】 Display the operation status of output equipment corresponding to modules. Inverse display: indicate that the equipment is outputting at present. As shown in the figure, 1# compressor of 00# module have output. Normal display indicates no output such as 1# four-way valve.
- 【4】 Display the analog quantity signal of corresponding system module.
- 【5】 Display the analog quantity information of corresponding 00# module.

### 3.7. Version inquiry

After entering the status inquiry interface, press <down> or <up> to select version inquiry.

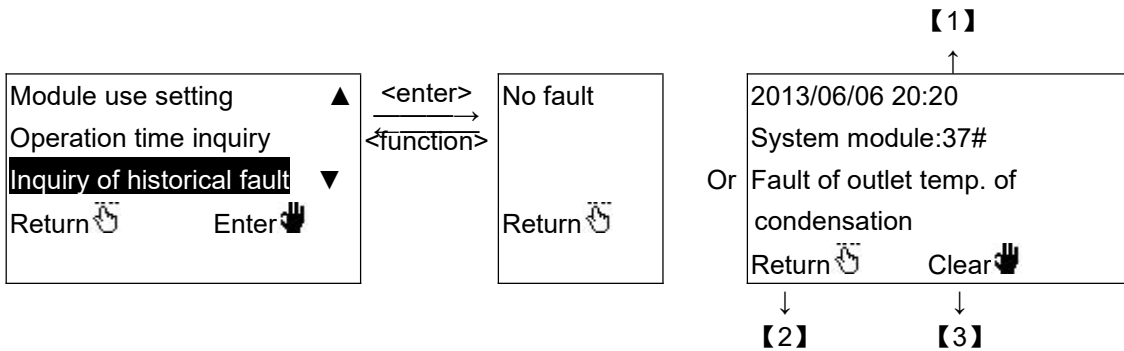


Description:

- 【1】 Indicate the version and function code corresponding to display screen. Press < up > to continue the inquiry.
- 【2】 Indicate the version and function code corresponding to control. Press < down > to continue the inquiry.
- 【3】 Indicates to press <function> key to return to menu of previous level.

### 3.8. Historical fault Inquiry

After entering the Advanced function , press <down>or<up> to select inquiry of historical fault.

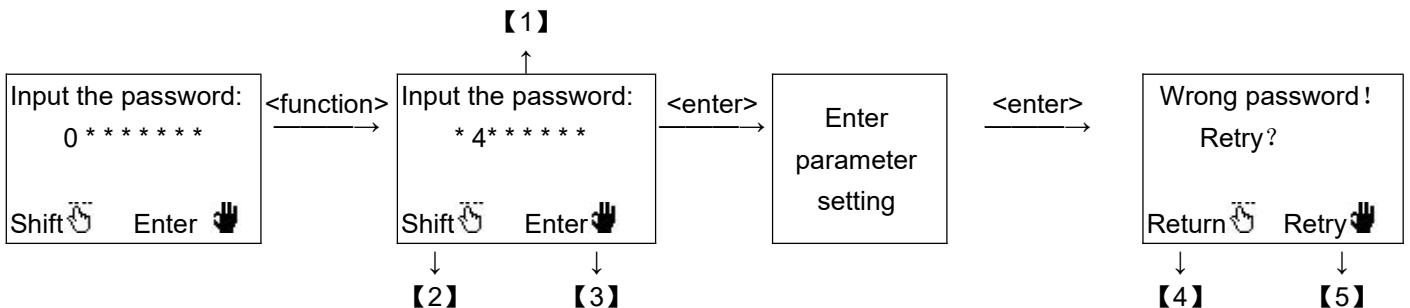


Description:

- 【1】 Time of fault occurrence: Indicate the time of fault occurrence. Press <enter> key to clear all historical faults.
- 【3】 Indicate the fault type displayed currently: press <module> to switch the display of module with fault; FF#→ system fault; 00#~15#→ module fault, the module number 00~15 corresponds to the module address setting of 0 to F of SR1 on control panel.
- 【3】 Indicate to return to the menu of previous level by pressing <function> key.

## 4. Password operation

### 4.1. Password input



Description:

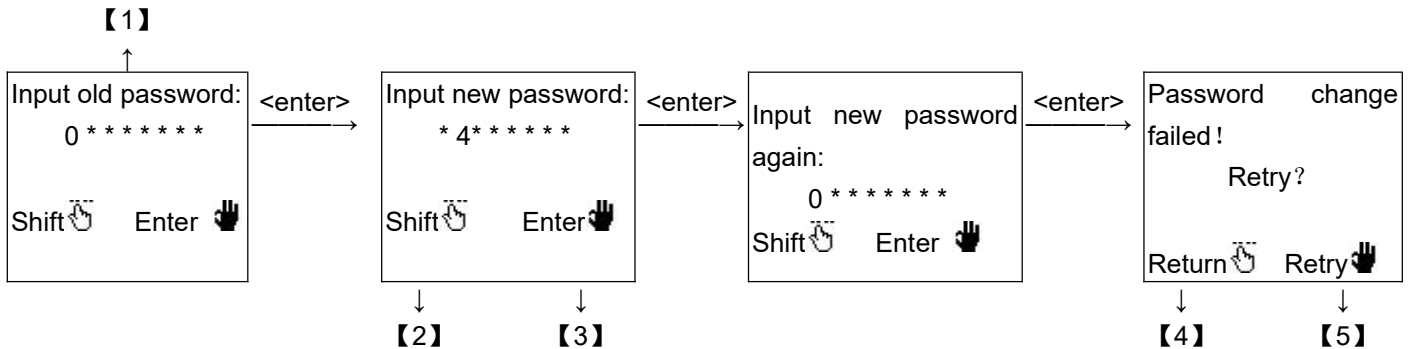
- 【1】 Remind the users to input password including repair and manufacturer password.
- 【2】 Indicates to press < function > key to shift the input password at present. Press up or down to input the current password value.

【3】 Press < enter > key to confirm the input password and enter parameter setting.

【4】 Indicates to return to the interface of previous level by pressing <function> key.

【5】 Indicates to press <enter> key to input password again.

#### 4.2. Password change



Description:

【1】Remind the users to input the old password including repair and manufacturer password respectively.

Different passwords may be changed at different levels.

【2】 Indicates to press < function > key to shift the input password at present. Press up or down to input the current password value.

【3】 Press <enter> key to confirm the input to change the password. If change is correct, successful change is prompted. Failure is prompted for wrong change.

Note: if the old password is input wrong, then it prompt wrong input of old password.

if the new password is input wrong, then it prompt wrong input of new password.

### 5. Parameter setting

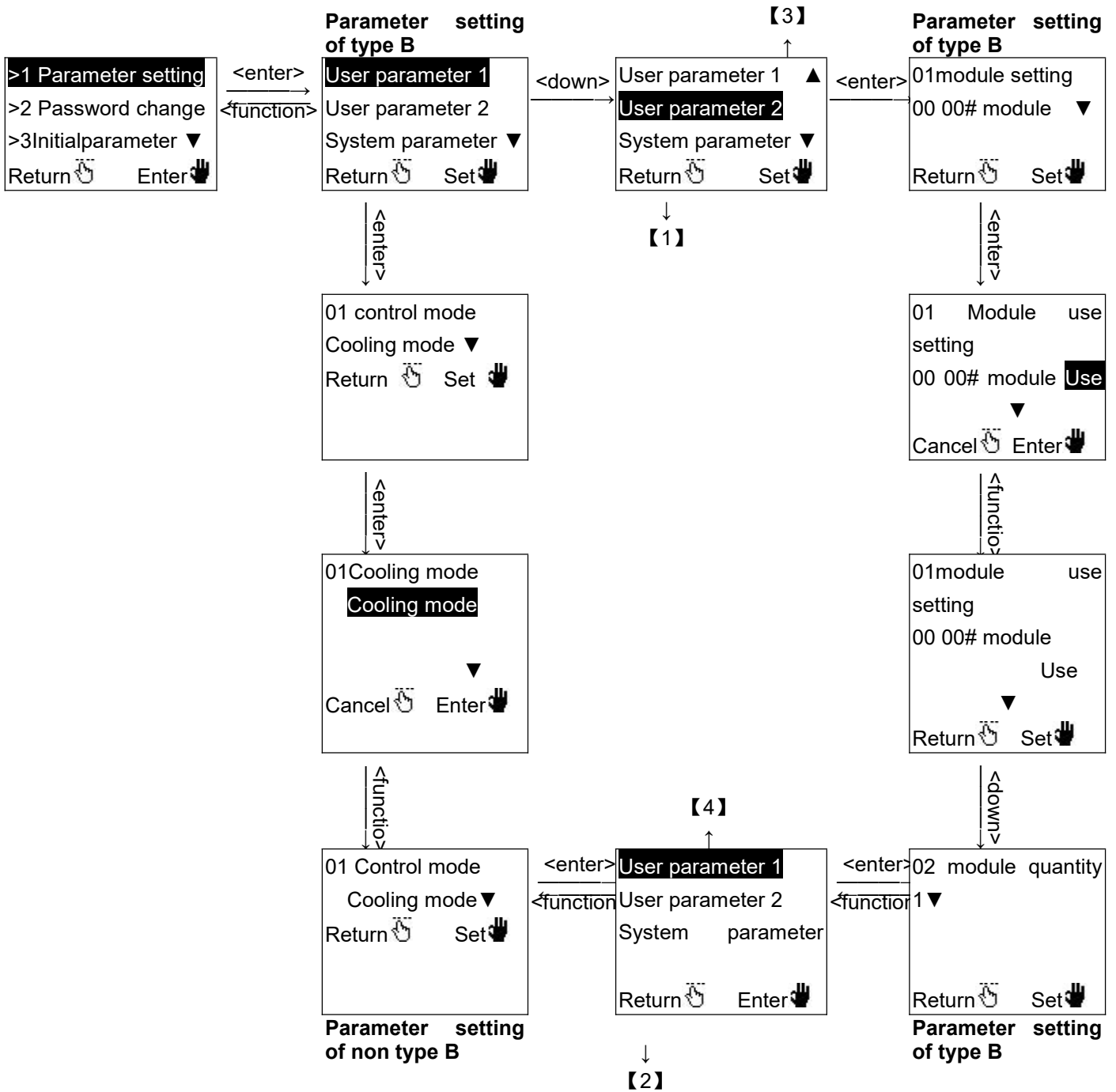
- Operation of the section is suitable for setting of all parameters.
- For parameter setting of repair setting and manufacturer setting, the parameters visible are different only due to password levels. But the setting method is the same.
- All settings have corresponding password change.
- The initialization of parameter and initialization of operation time of compressor are only provided in manufacturer parameter setting and are not set in other settings.

#### 5.1. Parameter level

Please refer to [password operation](#) for input of password.

Function	Key	Effective interface of key	Password
Advanced function	<Function>	Main interface	User password
Repair setting	<Enter + Function>		Repair password
Manufacturer setting			Manufacturer password
Maintenance setting	<Enter + Function>	Countdown interface	Maintenance password

5.2. Parameter setting



Description:

- 【1】 Indicates to press <function> key to cancel the changed parameter value and return to the interface of previous level.
- 【2】 Indicates to enter the parameter setting item and determine the content of changed parameter by pressing <enter> key.

【3】 Indicate the name of parameter group. The major item “PL01 user parameter 1” is displayed by prompt here.

“01 control mode” represents character string corresponding to the sub item; press <up> or <down> key to switch among sub-item of parameters in the parameter group circularly.

Press <up> or <down> key to make change directly and press <enter> to save the value of current parameter. If the parameter value is not accessible.

【4】 Indicates that the selected parameter is bit variable. It means that all sub-items of the parameter is operated according to bit.

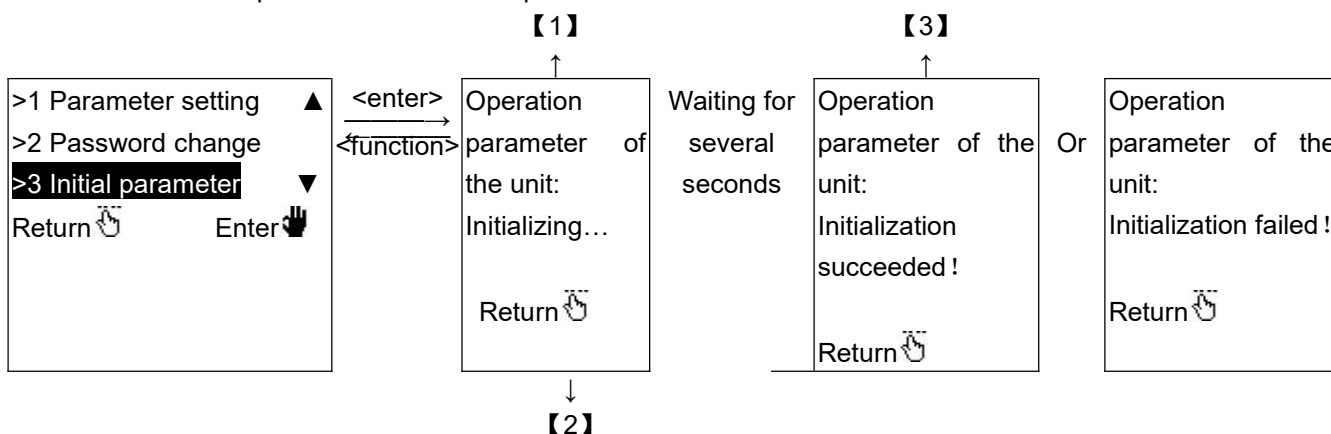
If the parameter is variable, it will be divided into 16 sub-items for operation.

e After entering manufacturer setting, press <down> or <up> to select the corresponding content for initialization.

Initialize parameter: the parameters are restored to default value.

Initialize compressor: the operation time of compressor and accumulate operation time of the unit is 0.

The operation of initialization of parameter and compressor is the same. The initialization process is introduced with initialization of parameter as an example.



Description:

【1】 Initialize the operation parameter of the unit, with the operation character of initialization is prompted.

【2】 Indicate to return to the interface of previous level by pressing <function> key.

【3】 When the prompt of “initialization failed” appears, If it failed, initialization may be performed according to above operation until success is prompted.



**Attention:**

If the unit is at the operation or alarm state, parameter cannot be initialized or parameter initialization failed may be prompted.

After parameter initialization of the unit is successful, ensure to power on the unit again and use after confirm that the parameters are in effective.

**User parameter table 1**

No.	Parameter name	Meaning	Unit	Range	Default	Reservation
1	Ctrl mode	Control mode	-	Heat mode Cool mode Auto mode Hotw mode		

2	Cool point	Cooling setting temp.	°F	Min. to Max	12	Min: 【Cool in min】 or 【Cool out min】 Max: 【Cool max】 Water heater unit is not available
3	Heat point	Heating setting temp.	°F	Min. to Max	50	Min: 【Heat min】 Max: 【Heat in max】 or 【Heat out max】 Water heater unit is not available
4	Hot point	Water heater setting temp.	°F	30-60	50	Heating&Cooling unit is not available
5	Hot diff	Water heater temp. differential	°F	1-30	5	Heating&Cooling unit is not available
6	cool freeze	Cooling antifreeze	-	Disabled/Enable	Enable	Water heater unit is not available
7	Power On Set	Memory function	-	Remember Auto ON None	Remember	
8	Auto point	Setting temp. in auto. mode	°F	10-60	25	
9	Toge Switch	Linkage function	-	Disabled/Enable	Disabled	
10	AlarmSoundSet	Fault alarm sound	-	sound off sound on once 10sec cycle 10sec	sound off	cycle 10sec: It rings 10 seconds every 30 minutes.
11	Air load di.	Load differential	°F	0-20	5	
12	Air unload d	Unload differential	°F	0-10	2	
13	DispWaterLine	Water level state	-	Disabled/Enable	Enable	Available only for water heater unit, can be set displayed or not.


### User parameter setting list 2

No.	Parameter name	Range	Default
1	Unit number	1-16	1
2	00#Unit	Disabled/Enable	Enable
3	01#Unit	Disabled/Enable	Enable
4	02#Unit	Disabled/Enable	Enable
5	03#Unit	Disabled/Enable	Enable
6	04#Unit	Disabled/Enable	Enable
7	05#Unit	Disabled/Enable	Enable
8	06#Unit	Disabled/Enable	Enable
9	07#Unit	Disabled/Enable	Enable
10	08#Unit	Disabled/Enable	Enable

11	09#Unit	Disabled/Enable	Enable
12	10#Unit	Disabled/Enable	Enable
13	11#Unit	Disabled/Enable	Enable
14	12#Unit	Disabled/Enable	Enable
15	13#Unit	Disabled/Enable	Enable
16	14#Unit	Disabled/Enable	Enable
17	15#Unit	Disabled/Enable	Enable

## 6. Module control and linkage wiring

### 1) Parameter setting required for module control

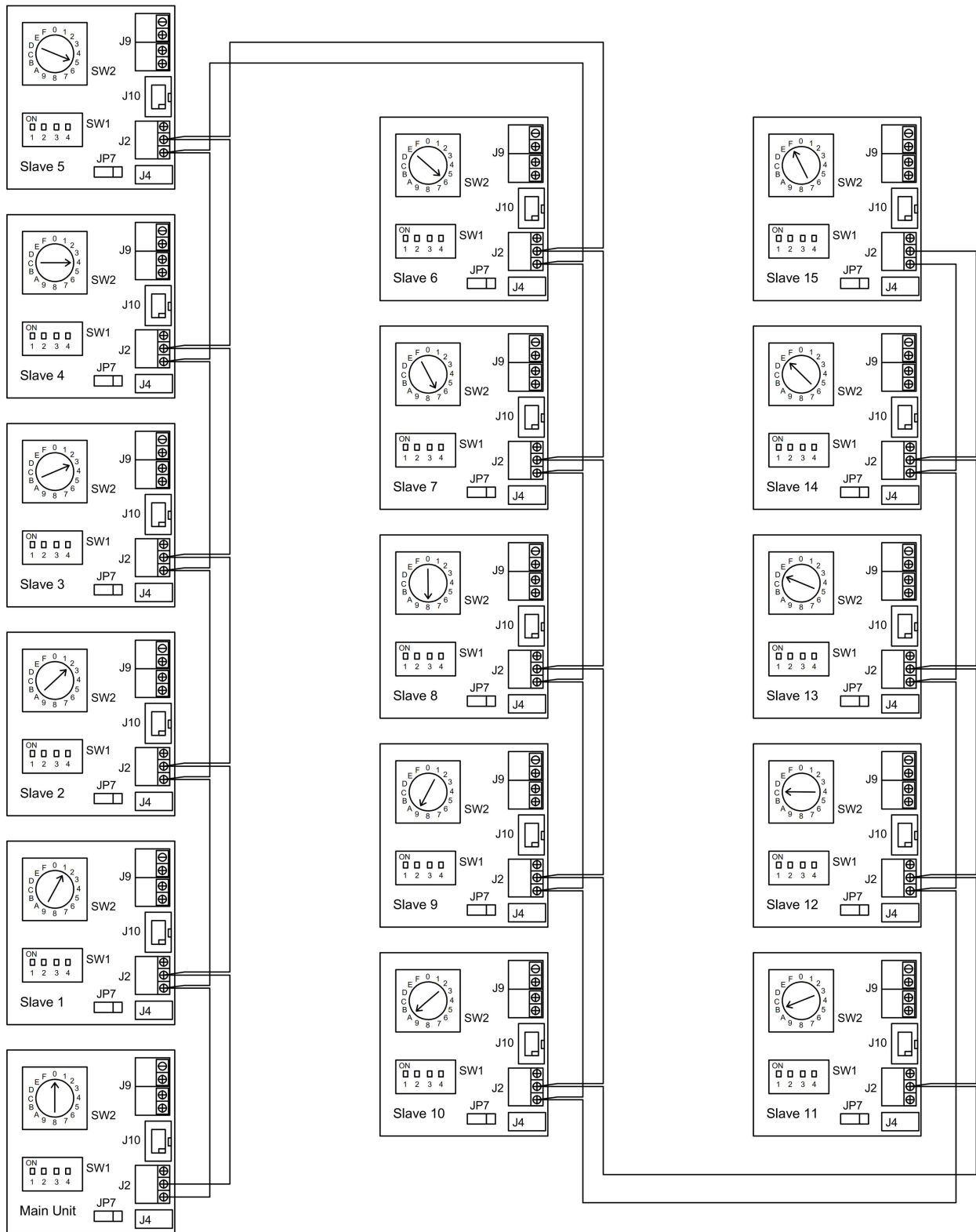
Under shutdown state, press "Function  " to enter password setting, enter password 123, enter the module parameter setting, and press the following table to set parameters.

A		Setting Range	Default	Unit	Type	Reservations
<b>Module parameter settings</b>						
1	Module quantities	1...16	1		2/N	The number of modules the unit can control(Total number of units, including host and slave),the corresponding address (SR1) is set to 0... F, 0# main module.

### 2) Dial code table of each module control dial code(Set the dial on the main board)

Module code	Main unit	Slave 1	Slave 2	Slave 3	Slave 4	Slave 5	Slave 6	Slave 7	Slave 8	Slave 9	Slave 10	Slave 11	Slave 12	Slave 13	Slave 14	Slave 15
Dial switch SW2	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

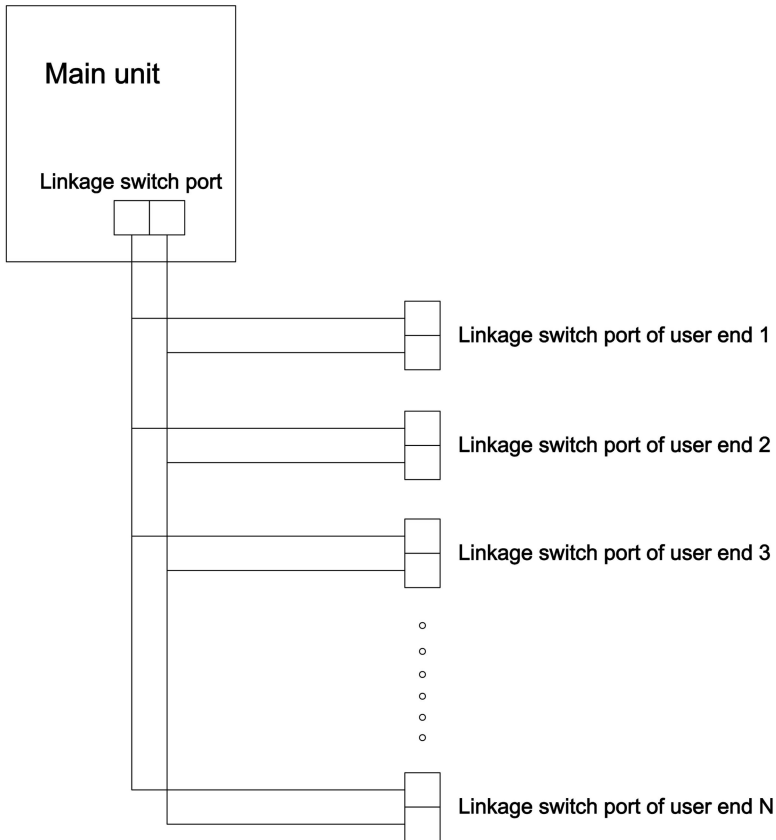
3) Schematic diagram of control wiring and code dialing of each module:



#### 4) Linkage control wiring diagram and parameter setting requirements

- Linkage control is not used by default when the unit leaves the factory, if the user needs to use linkage control. Turn 【Linkage Switch】 into 【Enable】 if needed.
- After the linkage control takes effect, when the linkage terminal of the unit is closed and the switch key command is "open", the unit is allowed to run. When the unit linkage terminal is disconnected, the unit will stop.
- When controlling the main module, the linkage switch only needs to be connected to the main module, not to the slave module
- Terminal linkage switch signal can only be passive signal, namely on and off signal, can not access active signal, such as voltage signal, otherwise will damage the electric control board. Due to improper operation of the main board damage our company shall not be responsible.

The connection mode is as shown below:



Linkage switch port of user end must be passive signal (communication signal). It is forbidden to connect to active signal (like voltage signal), otherwise the PCB will be damaged.

## VI. Trial running

### Note before trial running

- After repeated flushing and drainage of the water system pipelines, the water quality cleanliness shall be confirmed to meet the requirements. The water pump shall be turned on after the pipeline system refuses and empties, and the water flow and outlet pressure shall be confirmed to meet the requirements.
- Switch on the power supply 8 hours before the units starts to electrify the heating band to preheat the compressor,or it may cause damage to the compressor
- Settings of controller.refer to the content about the settings of controller in the forth part to complete basic heat or cool settings.usually,it is better for the units to operate at the standard working condition around.try not to put the units into extreme working condition.
- Adjust the target flow controller or stop valve on the water system, so that the water flow is more than 90% of the requirements of the nameplate.
- trial running must be done after completing all the installations.

Correct unit installation	<input type="checkbox"/>	The supply voltage is the same as the rated voltage of the unit	<input type="checkbox"/>
Correct piping, wiring	<input type="checkbox"/>	No obstacle at the air inlet and outlet	<input type="checkbox"/>
Drainage and emptying smoothly without leakage	<input type="checkbox"/>	Leakage protector can work normally	<input type="checkbox"/>
Pipe insulation has been improved	<input type="checkbox"/>	Correct grounding	<input type="checkbox"/>

- Confirm items below before trial running,then fill the blanks with √.

### Trial running

- Only after all wiring and piping work has been completed and checked correctly can the power supply be connected and the water tank be filled.
- Clean the air in the pipeline and water tank and start the unit to run at the set temp..
- Check the controller and check that the unit has a trouble-free code display. If there is a failure, first troubleshoot the cause of the failure, confirm that the unit can operate normally, and restart the unit.
- Trial running for 30 minutes,when the water outlet temp. gets constant,adjust the water flow to nominal value to keep units working normally.
- Don't start the units frequently,10 minutes is the proper time to restart the unit after it stops.
- Before unit trial running,items below must be checked:

*Check whether the running current of the unit is normal after starting up for the first time.*

*Operation panel function keys are normal.*

*Whether the display screen is working properly.*

*Is there a leak in the whole heating cycle?*

*Whether the condensation drainage is normal.*

*The unit has no abnormal sound and vibration during operation.*

- Do not start the unit until the water system has fully exhausted the air.
- In the season of regular operation, do not cut off the power supply after the unit stops running to avoid compressor heating, resulting in damage.



If it is necessary to cut off the power supply because the unit has stopped running for a long time, remember to electrify the unit 8 hours before starting up again and preheat the compressor.

## 1. Trouble shooting

### 1.1. Control protection function list

- 1) Cut-out protection
- 2) Protection of low water flow
- 3) Phase sequence protection
- 4) Low suction pressure protection
- 5) Compressor overcurrent protection
- 6) Compressor overload protection
- 7) Excessive exhaust pressure protection
- 8) Excessive exhaust temp. protection
- 9) Frost protection

### 1.2. Fault analysis and elimination of electric control panel display

- Reset mode: A = Automatic reset; M = Manual reset; A/M = limited automatic reset; Refer to the "Fault Reset Instructions".
- If there is no special explanation for the following switch quantity faults, they will alarm only after [general fault delay] shaking elimination.
- The following sensor faults will alarm after 4 seconds of quenching without special instructions.

#### **Fault reset instructions**

4 reset modes of faults:

##### 1) Power on and reset

*After fault clearance, can only be reset after power-on again.*

*Like EEPROM data fault.*

##### 2) Limited automatic reset (A/M)

*After the fault clearance, 【Automatic reset time】 delays, during this time no longer appear the same fault, automatic reset.*

*Within 【automatic reset allows】set time, it can automatically reset for 2 times, alarm cumulative number > 2 times, need to manually reset.*

*After manual reset, the alarm times can be accumulated again.*

*Limited faults: check the fault table.*

##### 3) Automatic reset (A)

*Alarm after the fault clearance, 【automatic reset time delay】 , this time no longer appear the same fault, automatic reset.*

*Automatic reset without number;*

*Fault self-recovery: check the fault table.*

4) Manual reset (M)

Alarm after the fault clearance, only by manual reset controller;

1) 2) 3) Type failure can also be manually reset.

1.3. Trouble shooting

Faults	Possible cause	Trouble shooting
Excessive exhaust pressure(Cooling)	There is air in the system or other non-condensable gas condenser fin dirty or debris blocked.	Remove the gas from the nozzle and vacuum the condenser fins again if necessary.
	Insufficient condensing air volume or failure of condensing fan suction pressure is too high.	Repair the condensing fan and resume operation. See "Excessive suction pressure".
	Overcharge of refrigerant.	Discharge excess refrigerant.
	Ambient temp. is too high.	Check ambient temp..
Low exhaust pressure(Cooling)	Refrigerant leakage or filling is not enough.	Check for leakage or fill with sufficient refrigerant.
	Low suction pressure.	See "Low suction pressure".
Low suction pressure(Cooling)	Insufficient water flow.	Check the temp. difference between inlet and outlet water, adjust the water flow and check the installation.
	water inlet temp. is low.	Check for leakage or fill with sufficient refrigerant.
	There is scale in evaporator due to refrigerant leakage or insufficient refrigerant filling.	Remove scale.
Excessive exhaust pressure(Heating)	Insufficient water flow.	Check the temp. difference between inlet and outlet water and adjust the water flow.
	There is air in the system or other non-condensable gas condenser fin dirty or debris blocked.	Remove the gas from the nozzle and vacuum the scale again if necessary.
	Water outlet temp. is too high.	Check the water temp..
	Excessive suction pressure	See "Excessive suction pressure".
Low exhaust pressure(Heating)	Water temp. is too low	Check water temp..
	Refrigerant leakage or insufficient refrigerant filling	Check for leakage or fill with sufficient refrigerant.
	Low suction pressure	See "Low suction pressure".
Excessive suction pressure(Heating)	Air side heat exchanger inlet temp. is high	Check ambient temp..
	Overcharge of refrigerant	Discharge excess refrigerant.
Low suction pressure(Heating)	Refrigerant leakage or filling is not enough	Check for leakage or fill with sufficient refrigerant.

	Insufficient air volume	Check fan steering.
	Air short circuit	Eliminate the cause of air short circuit.
	Insufficient defrost operation	Failure of four-way valve or sensor, replace if necessary.
Compressor stopped due to anti-freezing protection(Cooling)	Insufficient water flow	If water pump or water flow switch is failure, check if necessary, repair or replace.
	There is gas in the water loop	Discharge gas.
	There is something wrong with the sensor	If fault is confirmed, replace it.
The compressor stopped because of high pressure protection	Excessive exhaust pressure	See "Excessive exhaust Pressure".
	High pressure switch fault	Check for faults, repair or replace.
The compressor stopped because the motor was overloaded	Excessive exhaust pressure or suction pressure	See "Excessive exhaust pressure" and "Excessive suction pressure".
	High or low voltage, single phase or phase imbalance	Check that the voltage is not more than or less than 20V of rated voltage.
	Short circuit of motor or terminal	Check corresponding resistance of each terminal of the motor.
	Overload element fault	Replace it.
Compressor stops due to built-in temp. sensor or exhaust temp. protection	Voltage is too high or too low	Check that the voltage is not more than or less than 20V of rated voltage.
	Excessive exhaust pressure or low suction pressure	See "Excessive exhaust pressure" and "Low suction pressure".
	Component fault.	Check the built-in temp. sensor when the motor is cooled.
The compressor stopped because of low pressure protection	The front (or back) filter of the EEV is blocked.	Replace filter.
	Low pressure switch fault.	If defective, replace it.
	Low suction pressure.	See "Low suction pressure".
Abnormal compressor noise	The liquid refrigerant flows into the compressor from the evaporator and produces liquid shock.	Adjust refrigerant charge.
	Compressor aging.	replace the compressor.
There is noise	The fastening screw on the panel is loose.	Tighten all parts.
Compressor does not start	The overcurrent relay will jump and the safety will burn out.	Replace the damaged components.
	The control circuit is not on.	Check the wiring of control system.
	High pressure protection or low pressure protection.	See front suction and exhaust pressure fault section.
	The contactor coil is burnt out.	Replace the damaged components.

	Power phase sequence connection error.	Reconnect and adjust any two connections in the three phases.
	Water system failure, water flow switch is out of line.	Check the water system.
	There is a fault signal on the wire controller.	Find out the fault type and take corresponding measures.
Excessive frost on the air heat exchanger	Failure of four-way valve or sensors.	Check operation and replace if necessary.
	Air short circuit.	Eliminate the cause of air short circuit.

## 2. Maintenance

### ● Main parts maintenance

Pay attention to the suction and exhaust pressure of system during operating, find out the reason and troubleshooting in time if find abnormality.

Do not set the site of control and protect equipment around.

Check whether the electrical wiring is loose, there is no oxidation at the contact point, sundries and other causes of bad contact, if any, it should be handled promptly. Always pay attention to the working voltage, current and phase balance.

Timely check the reliability of electrical components and replace the failed and unreliable components.

### ● Descaling

After running for a long time, water side heat exchanger heat transfer surface deposition calcium oxide or other minerals, these substances on the heat transfer surface scale is large, can affect the heat transfer performance and lead to increased power consumption, exhaust pressure too high (or low suction pressure). Can be used of formic acid, citric acid, acetic acid and other organic acid cleaning. Never use cleaning agents containing fluoride chlorate or, because of the material is galvanized pipe water side, easy to corrosion, leading to leakage of refrigerant. Cleaning descaling process pay attention to the following aspects:

The waterside heat exchanger must be cleaned by professionals.

*after using cleaning agentia, clean water pipes and heat exchanger with water, take water treatment to prevent the system from being corroded or cleaned for scale adsorption.*

In the case of the use of cleaning agents, the concentration of cleaning agents, cleaning time and temp. are adjusted according to the dirt deposition.

After pickling and cleaning, the waste liquid shall be neutralized, and the treated waste liquid shall contact the relevant company for waste liquid treatment.

Cleaning agents and neutralizing agents have corrosive effects on the eyes, skin, mucous membranes of the nose, etc. Therefore, protective devices (such as goggles, protective gloves, protective masks, protective shoes, etc.) must be used in the cleaning process to prevent inhalation or contact with agents.

### ● Power off in winter

*in case of power off, water must be drained over.*

*in case of continuous power supply, water can't be drained over, units have freezing protection program which runs when units operate.*

### ● The following preparations shall be made when the unit is restarted after any prolonged outage:

*Thoroughly inspect and clean the unit.*

*Clean the plumbing system.*

*Inspect water pump, regulator and other equipment of water piping system.*

*Tighten all wire connections*

*Power on for 12 hours before starting*

- Parts replacement



Replacing parts should use the parts provided by the company, do not replace any different parts.

- Refrigerating system

Check the values of suction and exhaust pressure to determine whether to inject refrigerant, and to detect leakage, if there is a leak or replace components in the Cooling cycle system to conduct air tightness test, filling refrigerant should be treated differently in the following two cases.

A. The refrigerant is completely leaking. In this case, the system must be detected with high-pressure nitrogen. If repair welding is needed, the system must be drained of gas before welding.

Connect the vacuum tube to the low pressure side fluorine injection nozzle.

Vacuum the system line with vacuum pump, vacuum for more than 3 hours, confirm that the multi-meter indicating pressure in the specified range.

After reaching the required vacuum degree, the refrigerant bottle shall be used to fill the refrigerant into the Cooling system. The appropriate refrigerant filling amount has been indicated on the nameplate and in the main technical parameters table..

The charging amount of refrigerant will be affected by the ambient temp.. If the required charging amount is not reached and cannot be recharged, the chilled water can be circulated and the unit can be started for charging. If necessary, the low-voltage control switch can be temporarily short-circuited.

B. Replenish refrigerant

Make the frozen water cycle, and start the unit, if necessary, the low voltage control switch short

Slowly fill the system with refrigerant and check the suction and exhaust pressure

Warning: do not inject oxygen, acetylene or other flammable or toxic gases into the Cooling system during leak detection and air tightness test. Only high-pressure nitrogen or refrigerant can be used.

- Disassemble compressor

If the compressor needs to be removed, please follow the following steps:

*Turn off the unit power supply.*

*Remove the compressor power connector.*

*Remove compressor suction and exhaust pipe.*

*Disconnect the compressor retaining bolt.*

*Move the compressor.*

- Auxiliary electric heater

When the environment temp. is lower than 0 °C, heating efficiency with the outdoor temp. falls. For the air-cooled heat pump units in the cold region heating operation stability, complement part of heat loss due to defrost, when a user area winter minimum temp. in the range of 0 to 10 °C, equipped with auxiliary electric

heater may be considered. The selection of auxiliary electric heater power can consult relevant professionals.

- **System antifreeze**

If the water side heat exchanger runner freezes, it will be seriously damaged, that is, the heat exchanger will break and leak. The frost crack damage does not belong to the warranty scope, so special attention should be paid to the frost prevention.

If the unit is placed in an environment where the outdoor temp. is less than 2 °C, the water in the water system should be drained.

During operation. If the frozen water target flow controller and anti-freeze temp. sensor fail during operation, the water pipe may freeze, so the target flow controller must be connected according to the wiring schematic diagram.

During maintenance, it is possible to freeze and crack the water side heat exchanger when filling the unit with refrigerant or discharging the refrigerant for maintenance.



