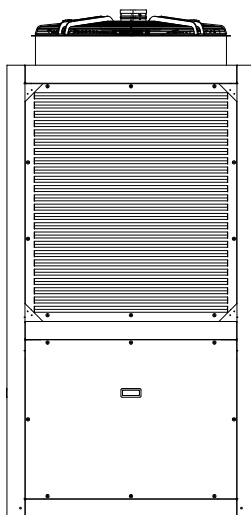




MHP50KC-02

USER MANUAL



Original instructions
DC INVERTER AIR TO WATER HEAT PUMP



CONTENT

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1. SAFETY PRECAUTIONS

The following safety precautions are categorized into distinct types. Each is crucial and must be adhered to without exception. Below is an explanation of the symbols DANGER, WARNING, CAUTION, and NOTE.

i INFORMATION

- 1.Carefully review these guidelines prior to commencing installation. Store this manual in an accessible location for future consultation.
- 2.Improper installation or use of equipment and accessories can lead to hazards such as electrical shocks, short circuits, leaks, fire, or other equipment damage. Always ensure the use of manufacturer-approved accessories specifically designed for this product and entrust installation to qualified professionals.
- 3.All tasks detailed in this manual should only be performed by certified technicians. During installation or maintenance, always wear appropriate personal protective equipment, such as safety gloves and goggles.
- 4.This appliance is intended to be used by expert or trained users in shops, in light industry and on farms, or for commercial use by lay persons.



Caution: Risk of fire due to flammable materials

⚠ WARNING

Service activities must strictly follow the manufacturer’s recommendations. Repairs or maintenance that require specialized expertise should only be carried out under the guidance of a professional trained in the handling of flammable refrigerants.

⚠ DANGER

This indicates an immediate hazard that, if not avoided, will result in severe injury or death.

⚠ WARNING

This highlights a potential danger that could result in serious injury or death if proper precautions are not taken.

⚠ CAUTION

This signifies a situation where minor to moderate injuries could occur if the warning is ignored. It may also serve as a reminder to avoid unsafe actions.

⚠ NOTE

This is used to indicate possible accidental damage to equipment or property without posing safety risks.

Explanation of Symbols Displayed on the Mono-Bloc

	WARNING	This symbol indicates the appliance uses flammable refrigerants. Leakage of refrigerants exposed to an external ignition source could cause a fire hazard.
	CAUTION	This symbol signifies that the operating manual must be thoroughly read.
	CAUTION	This symbol denotes that only trained personnel should handle this equipment, referring to the installation manual as a guide.
	CAUTION	This symbol indicates service technicians should use the installation manual as a reference while handling the equipment.
	CAUTION	This symbol signifies that information such as the installation or operating manual is available for consultation.



CAUTION

Correct Disposal of this product

This marking indicates that this product should not be disposed with other household wastes throughout the EU. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling.



DANGER

1. Live parts may be accidentally exposed when service panels are removed; exercise extreme caution.
2. Always disconnect the unit's power supply before handling any electrical parts.
3. Ensure the power switch is turned off before handling any electrical terminal components.
4. During installation or maintenance, never leave the unit unattended with the service panel detached.
5. Avoid touching water pipes during or immediately after operation, as they may be extremely hot and cause burns. Allow them to cool or use protective gloves to prevent injury.
6. Refrain from operating switches with wet hands, as this could result in electrical shock.



WARNING

1. Installation must be carried out by certified professionals as per the manual's guidelines. DIY installation could lead to risks like water leaks, electrical shock, or fire.
2. Proper installation considering extreme conditions like hurricanes or earthquakes is crucial to prevent equipment damage or accidents.
3. Mount the unit on a structure capable of bearing its weight. Weak foundations may lead to equipment collapse and injuries.
4. Only use authorized parts and accessories during installation to prevent accidents such as equipment failure, fire, or water leakage.
5. Electrical work should comply with local codes and be performed by licensed personnel using a dedicated circuit. Improper wiring can result in fire or electrical shock.
6. A ground fault circuit interrupter must be installed according to local regulations to minimize risks of fire or electric shock.
7. Ensure wires are arranged so the front panel fits securely; improper panel placement can cause overheating, fire, or electrical hazards.
8. Secure all wiring connections, ensuring they are protected from moisture and external factors. Loose or exposed connections could lead to fire hazards.
9. After installation, check for refrigerant leaks and take corrective action if necessary.
10. Avoid direct contact with leaking refrigerants as they can cause severe frostbite. Always allow refrigerant pipes to normalize in temperature or wear protective gloves if immediate handling is needed.
11. Internal components such as pumps or heaters can retain extreme temperatures post-operation. Allow adequate cooling time or wear protective gloves when handling.
12. Safely discard packing materials such as nails or sharp objects to avoid accidental injuries.
13. Dispose of plastic packaging materials immediately to prevent suffocation hazards for children.
14. The appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation.

 CAUTION

1. Ensure the unit is properly grounded according to local codes and standards
2. Verify that the power supply meets the unit's electrical requirements, including grounding, leakage prevention, and load capacity. Installation should not proceed until requirements are met.
3. Do not connect the ground wire to gas, water pipes, lightning rods, or telephone ground lines to avoid safety hazards.
 - ****Gas pipes****: Leaks could result in fire or explosion.
 - ****Water pipes****: Vinyl pipes are ineffective as grounding points.
 - ****Lightning rods/telephone lines****: Risk of abnormal electrical surges during lightning strikes.
4. Follow proper safety protocols for refrigerant handling. Any leaks should be addressed in accordance with local safety regulations.
5. Keep the power cord at least 1 meter (3 feet) away from TVs, radios, or other electronics to reduce interference or noise. If interference persists, increase the distance.
6. Do not wash the unit with water; this could lead to fire or electrical shock. Follow national wiring regulations for installation.
7. If the power cord is damaged, it must be replaced by the manufacturer, authorized agents, or qualified personnel to prevent hazards.
8. Avoid installing the unit in environments with the following:
 - Mineral oil mist, oil sprays, or vapors, which may degrade plastic components and cause leaks.
 - Corrosive gases like sulfur compounds that can corrode copper pipes and result in refrigerant leakage.
 - Areas with electromagnetic interference, as it may disrupt the control system and cause malfunction.
 - Flammable gases, volatile substances, or environments prone to combustible dust, as these may cause fire.
 - High-salt air environments, such as coastal areas, which accelerate corrosion.
 - Locations with significant voltage fluctuations or unstable power supply.
9. Children under 8 years old and individuals with limited physical, sensory, or mental abilities should only operate the appliance under supervision. Children shall not play with the appliance cleaning and maintenance should not be performed by unsupervised children.
10. Dispose of the product responsibly, ensuring compliance with local waste management regulations. Incorrect disposal may release harmful substances into the environment.
11. Avoid installing the unit in areas frequently used for construction or heavy dust activity without protective measures
12. Reinforce the installation if necessary to ensure stability, particularly in areas prone to strong winds or earthquakes.
13. Installation must allow sufficient servicing space and provide proper drainage to avoid water damage from leaks.
14. Check the installation area for hidden hazards such as water pipes, electrical wiring, or gas lines before proceeding.
15. Do not place heavy objects on top of the unit or allow individuals to climb, sit, or stand on it to prevent damage or accidents.
16. Ensure the unit is installed in well-ventilated areas, away from obstructions that may trap heat or interfere with air circulation.
17. When installing multiple air conditioners, ensure the power load is evenly distributed across all phases of a three-phase power system to prevent overloads.
18. Avoid placing the unit in workplaces or areas subject to heavy dust from construction activities unless protective covers are used.
19. Do not use means to accelerate the defrosting processor to clean, other than those recommended by the manufacturer.
20. The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames) an operating gas appliance or an operating electric heater.)
21. Do not pierce or burn.
22. Be aware that refrigerants may not contain an odor.
23. Compliance with national gas regulations shall be observed.



NOTE

1. This unit uses propane gases. Refer to the label for quantities and adhere to national regulations.
2. Maintenance, servicing, and uninstallation must be performed by certified professionals.
3. For systems with leak detection mechanisms, inspections should occur annually, with proper records maintained.
4. Any person who is involved with working on or breaking into a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorize their competence to handle refrigerants safely in accordance with an industry recognized assessment specification.
5. servicing shall be performed only as recommended by the manufacturer.
6. The appliance shall be stored so as to prevent mechanical damage from occurring.
7. The A-weighted sound pressure level of the product is below 70 dB.

2. INSTALLATION PRECAUTIONS



WARNING

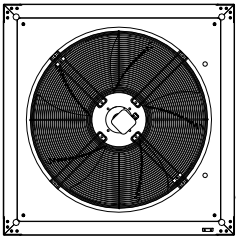
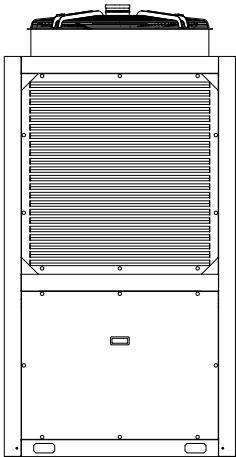
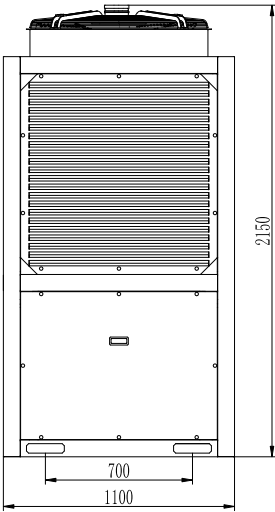
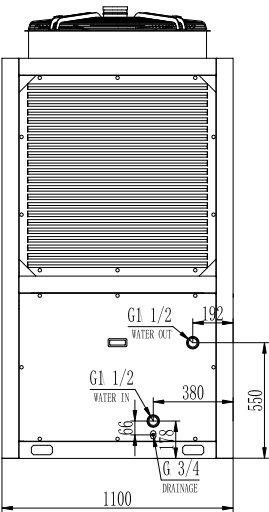
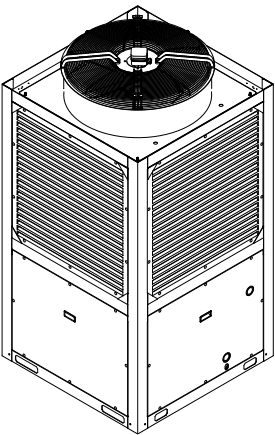
1. Install the unit in a well-ventilated area to ensure proper airflow and reduce safety risks associated with flammable refrigerants. If installed indoors, follow En378 standards by incorporating refrigerant detection and ventilation systems.
2. Select an installation site with sufficient space for maintenance activities and proper drainage to avoid water damage.
3. Avoid locations with flammable gases, corrosive substances, or frequent exposure to dust and particles that may impair the unit's functionality.
4. Ensure the surroundings are clear of debris and small animals to prevent operational malfunctions or potential hazards caused by nesting.
5. Protect the unit from strong winds that could lead to operational issues, such as short air circulation paths or pressure build-ups.
6. Install the unit in areas where rain exposure is minimized to protect the equipment.
7. Select an area that minimizes the risk of refrigerant leakage and complies with local safety regulations for leak prevention.
8. The site should ensure secure mounting to withstand operational vibrations and external impacts such as earthquakes or storms.
9. When exposed to strong winds, position the unit to avoid airflow disruptions that could lead to frost accumulation or high-pressure malfunctions.
10. When installing near coastal areas or in environments with high salt content, implement measures to prevent corrosion and prolong the unit's life.
11. Do not use the unit in explosive atmospheres or areas with volatile substances like paint thinner or gasoline.
12. Maintain a proper distance from neighboring structures to prevent heat recirculation and maintain cooling efficiency.
13. Do not install the unit on uneven ground; ensure a flat and stable surface to support its weight.
14. For multi-unit installations, verify that piping and wiring lengths are within allowable ranges to maintain efficiency and avoid malfunctions.
15. Keep the unit away from machinery emitting electromagnetic waves, as they could interfere with the unit's controls.
16. Instruct the customer to maintain a clean area around the unit and to periodically inspect the site for potential issues such as debris accumulation or nesting animals.
17. Avoid placing the unit in workplaces or areas subject to heavy dust from construction activities unless protective covers are used.
18. Ensure compliance with local laws regarding refrigerant safety precautions, particularly in high-risk areas.
19. Choose a location that allows adequate ventilation, does not disturb nearby residents, and can support the unit's weight and vibration.
20. Ensure that no objects are placed on top of the unit, and prevent direct physical contact to maintain safety and operational efficiency.

3. SPECIFICATION

Sales Model		MHP50KC-02
Power Supply		
Nominal Heating (Max) (A7/6°C, W30/35°C,)		
Heating Capacity	kW	18.50 ~ 50.50
Power Input	kW	3.95 ~ 14.80
COP	/	3.5 ~ 4.7
Nominal Heating (Max) (A7/6°C, W47/55°C,)		
Heating Capacity	kW	10.85 ~ 40.00
Power Input	kW	3.74 ~ 13.79
COP	/	3.02 ~ 3.52
Nominal Cooling (Max) (A35/24°C, W12/7°C,)		
Cooling Capacity	kW	10.15 ~ 28.50
Power Input	kW	3.63 ~ 12.95
EER	/	2.20 ~ 2.70
Max Power Input	kW	19.3
Max Current	A	35.0
ERP Level(35°C)/(55°C)	/	A+++/A++
Refrigerant	/	R290/3.1Kg
Max. Allowable Pressure	MPa	3.2
Electrical Shockproof	/	I
Compressor quantity	/	1
Fan motor quantity	/	1
Fan motor Type	/	DC
Expansion Valve	/	EEV/sanhua
Air Flow Direction	/	Vertical
IP Class	/	IPX4
Rated water flow	m³/h	6.0
Water Pressure Drop	kPa	65
Operating temperature range	°C	-25~46
Noice	db(A)	55(39 ~ 55)
Water Piping Connections	/	G3/2
Net Weight	kg	450
Unpacked Dimensions (L×W×H)	mm	1100*1100*2150
Packing Dimensions (L×W×H)	mm	1144*1144*2250

Note: The data above is for reference only. Please refer to the nameplate on the unit if for more specific data.

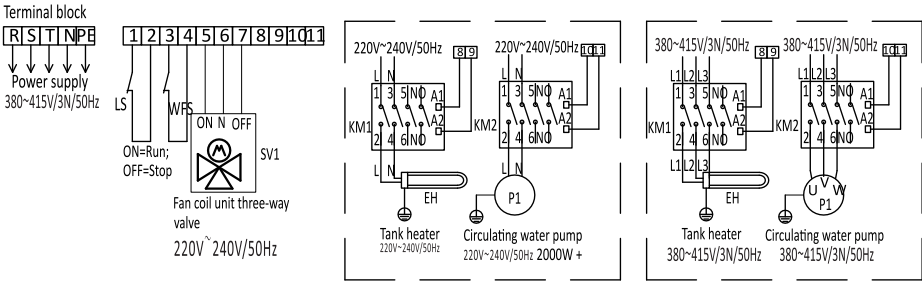
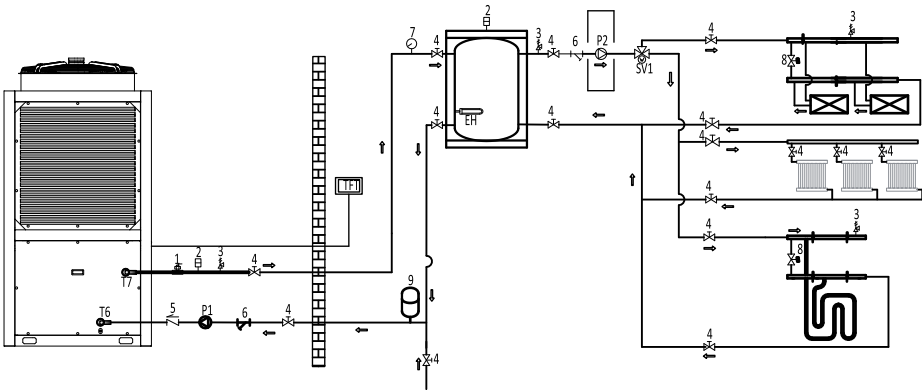
MHP50KC-02



4. INSTALLATION

4.1 Water system installation diagram and electrical wiring diagram

Application: Fan coil cooling/heating + Radiator heating + Floor heating



1		Water flow switch (WFS)	KM2		AC contactor: Circulating water pump
2		Automatic exhaust valve	KM1		AC contactor: Tank heater
3		Safety valve	LS		Linkage Switch
4		Stop valve	T6		Inlet water temp.
5		Check valve	T7		Outlet temp.
6		Y-type filter	EH		Buffer tank heater
7		Pressure gauge	SV1		Fan coil unit three-way valve
8		Differential pressure bypass valve	P1		Heat pump unit circulating water pump
9		Expansion tank	P2		Secondary water system circulating water pump

4.2 Selection of Heat Pump Unit

- 4.2.1 Evaluate the required cooling and heating capacity per square meter based on local climate conditions, construction characteristics, and insulation levels.
- 4.2.2 Calculate the total capacity needed for the entire building.
- 4.2.3 Select the appropriate model by referencing the heat pump specifications.
- 4.2.4 Details of type and rating of fuses are as below; The diameter of the cable selected shall be larger than that as required below, and the wiring shall comply with IEC 57.

Model	MHP50KC-02
Power Supply	380–415V/3N/50Hz
Main Board	GH-DP-M001
Fuse	T; H;10A 250VAC;
Power Board	GH-DP-P001
Fuse	T;3.15A L 300VAC;
Cable(mm²)	3*10mm²+2*4mm²
Cable(AWG)	3*8AWG+2*12AWG

4.3 Installation Method

The heat pump can be mounted on a concrete base using expansion screws or on a steel frame equipped with rubber feet. It may be installed on the ground or rooftop. Ensure the unit is positioned horizontally.

4.4 Installation Location

Install the unit in an outdoor area capable of supporting heavy equipment, such as terraces, rooftops, or ground-level spaces.

Ensure the location is well-ventilated.

Avoid areas exposed to heat radiation or open flames.

Protect the heat pump with a cover during winter to prevent snow accumulation.

Maintain clear space around the air inlet and outlet to avoid obstructions.

Choose a site sheltered from strong winds.

Ensure proper drainage is available for condensate water.

Provide sufficient clearance for maintenance access.

Locate the unit away from operating or potential ignition sources, such as open flames, gas appliances, electric heaters, or other heat-producing devices.

WARNING

When the unit is installed on the roof of the building, it is easy to suffer from lightning strikes. Ensure to implement appropriate lightning protection measures!

4.5 Water Loop Connection

When connecting the water piping, adhere to the following guidelines:

Minimize water flow resistance within the piping.

Ensure the pipes are clean and free from debris or blockages. Perform a water leakage test before applying insulation.

Conduct pressure testing of the pipes independently; do not include the heat pump in the test.

Install an expansion tank at the highest point of the water loop, ensuring the water level is at least 0.5 meters above the loop's top point.

Verify that the flow switch within the heat pump is correctly wired and functioning, as controlled by the system's controller.

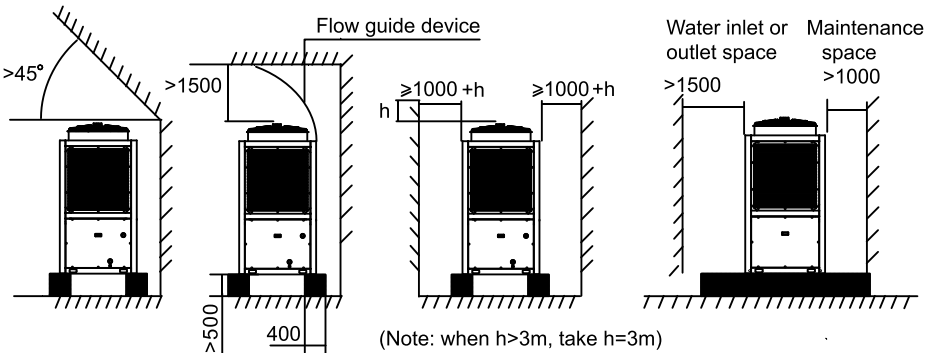
Prevent air entrapment in the water loop by installing air vents at the highest points.

Place thermometers and pressure gauges at the water inlet and outlet for easy operational inspection.

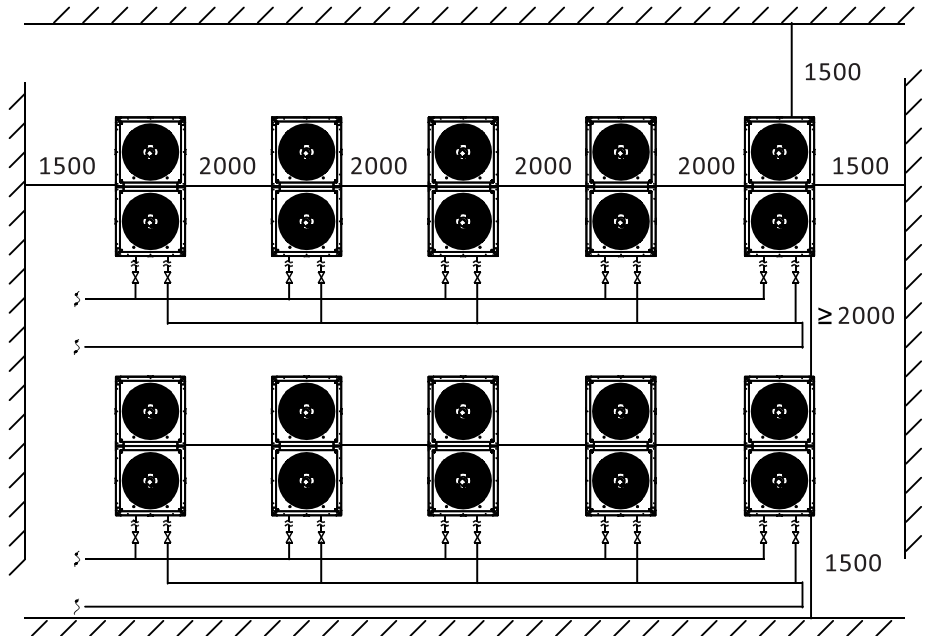
4.7 Installation Space Requirements

The heat pump unit can be installed as a standalone system or in combination with multiple units. When multiple units are installed, pay attention to their arrangement to ensure optimal performance and accessibility.

Single Unit Installation Space: (unit: mm)



Multiple Unit Installation Space (Same Piping Length): (unit: mm)



Note:

Do not obstruct the air outlet of the unit.

If there is a barrier above the unit, ensure a clearance of at least 3000mm above the unit.

If objects are stacked around the unit, ensure the height of the stacked items is at least 400mm lower than the top of the unit.

For installations in confined spaces, appropriate measures must be taken to prevent refrigerant leakage.

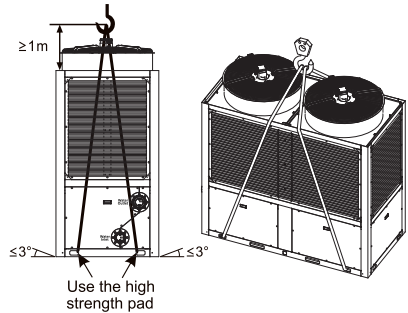
If the leakage exceeds safe concentration levels, it could lead to suffocation. Please consult your dealer for specific safety precautions and measures.

4.8 Transit

During transportation, the heat pump should be kept in an upright position. The unit must not be laid down, as this could cause damage to the internal components.

If the unit needs to be suspended during installation, an 8-meter cable is required. Soft material must be placed between the cable and the unit to prevent damage to the heat pump casing (see Picture 1).

Alternatively, a forklift may be used, as the unit is packaged with a wooden chassis.



⚠ WARNING

Do not touch the heat exchanger of the heat pump with fingers or other objects to avoid damage.

4.9 Trial Running

Pre-Startup Inspection

Check the indoor unit to ensure correct pipe connections and that the relevant valves are open.

Inspect the water loop to confirm the expansion tank has sufficient water, the water supply is normal, the loop is fully filled, and free from air. Ensure proper insulation for the water pipes.

Inspect the electrical wiring to confirm that the power voltage is correct, all screws are tightened, the wiring matches the provided diagram, and grounding is properly connected.

Check the heat pump unit, including all screws and components, to ensure they are in good condition. Upon powering on, observe the controller's indicator for any fault indications. A gas gauge can be connected to the check valve to monitor system pressures (high or low) during trial operation.

Trial Running

Start the heat pump by pressing the " " key on the controller. Check if the water pump operates normally. If functioning properly, the water pressure meter should indicate 0.2 MPa.

After one minute of water pump operation, the compressor will start. Listen for any unusual sounds from the compressor. If abnormal sounds are heard, stop the unit and inspect the compressor. If the compressor runs normally, check the refrigerant pressure meter.

Verify that the power input and running current align with the specifications in the manual. If discrepancies are found, stop the unit and investigate the issue.

Adjust the valves on the water loop to ensure adequate hot or cool water supply to each room, meeting heating or cooling requirements. Monitor whether the outlet water temperature stabilizes.

The controller's parameters are pre-set at the factory and must not be altered by the user.

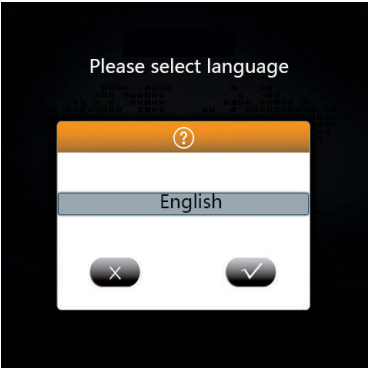
5.WIRE CONTROLLER OPERATION INSTRUCTIONS

5.1 Icons

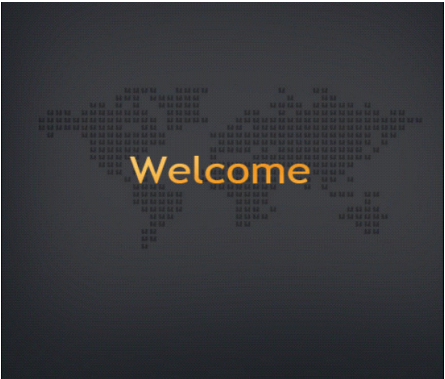
-  -- Power
-  -- Mode
-  -- Function
-  -- Query
-  -- Setting

5.2 Display Screen

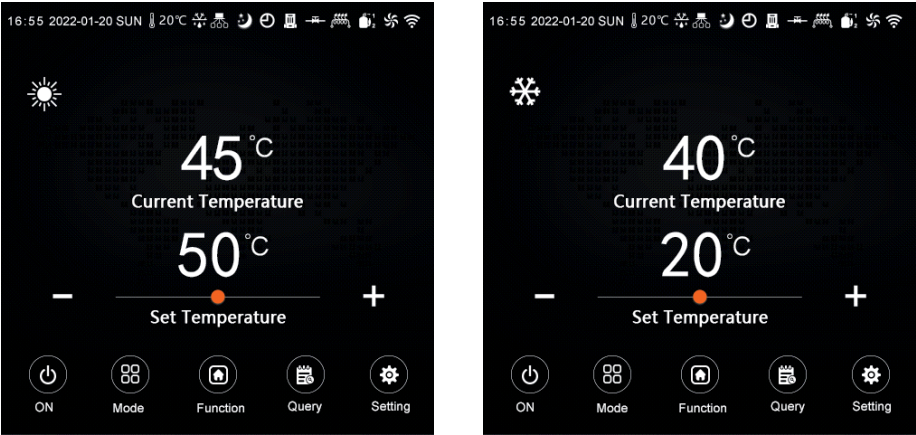
After powering on, the following interface will appear. Select the appropriate language and tap “” to enter the system. If no language is selected within 2mins, the system will automatically proceed using the currently selected language and the screen will turn off.



After entering the system, the following page will be displayed. After 3s, if the communication is successful, it will enter the home page. Otherwise, it will stay in this page. Tapping the screen will trigger a button sound, and if no operation for 2mins, the screen will be lighted off. Tap the screen to wake it up.



5.3 Home Page



5.4 Icon Explanation

The top of the main interface, from left to right, shows the following information: Time, Day-Month-Year, Day of the Week, Ambient Temperature, Defrosting, Cascade, Silent Mode, Water Pump, Return Water Valve, Electric Heater, Compressor, Fan, WiFi.

Mode/Power-off: When the system is on, the current operating mode is displayed in the upper left of the home page. When off, no operating mode is displayed.

	Heating
	Cooling

Fault: If a fault occurs, the “” icon will flash. Tap this icon to check current fault status or history. Entering the page of system time setting, click related Year-Month-Day and enter values through the keyboard. Finally tap “Enter” to save the setting.

Defrosting: When the unit enters defrosting mode, the "❄️" icon will continuously lighting. when reclaiming refrigerant, the icon will flash.

Cascade: When the unit is networked, the "🏠" icon will continuously lighting.

Silent Mode: When the unit is in silent mode, the "🌙" icon will continuously lighting.

Timer: When the timer function is enabled, the "⌚" icon will continuously lighting.

Water Pump: When the water pump is running, the "💧" icon will continuously lighting.

Return Water Valve: When the return water valve is on, the "🚰" icon will continuously lighting. If the valve is off but a return water timer is set, the icon will flash.

Electric Heater: When the electric heater is on, the "🔥" icon will continuously lighting. If it is off and Quick Heat is enabled, the icon will flash at 1Hz. If off but sterilization mode is enabled, it will flash at 0.5 Hz.

Compressor: When the compressor is running, the "🏠" icon will continuously lighting.

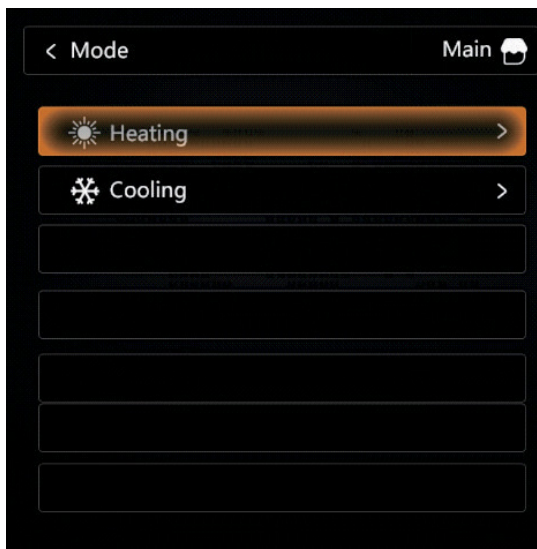
Fan: When the fan is running, the "🌀" icon will continuously lighting.

WIFI: When the unit is connecting to WIFI, the "📶" icon will continuously lighting.

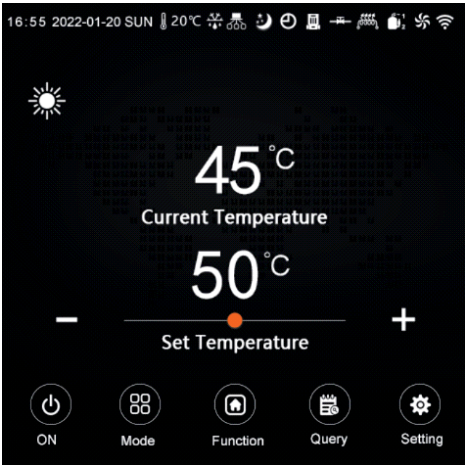
5.5 Controller Operation

5.5.1 Power: When the screen is active, tap the "🔌" icon to turn the unit on or off. When the system is on, "ON" is displayed below the icon, and the current mode is shown in the upper left. When off, "OFF" is displayed and the mode icon turns off.

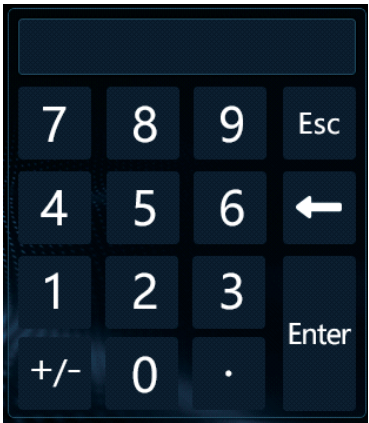
5.5.2 Mode: When the screen is active, tap the "🔧" icon to enter the mode selection page. On this page, tap the corresponding mode to switch. Tap "Mode" in the upper left corner or "Main" in the upper right corner to return to the home page.



5.6 Temperature Setting

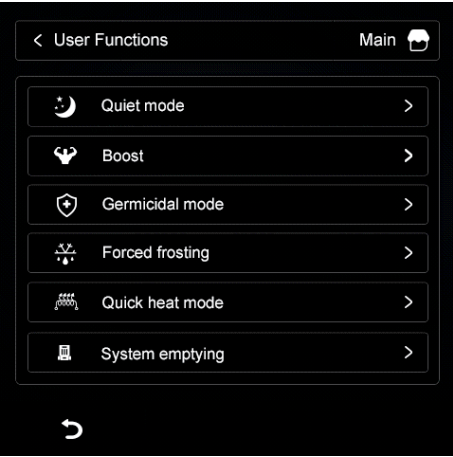
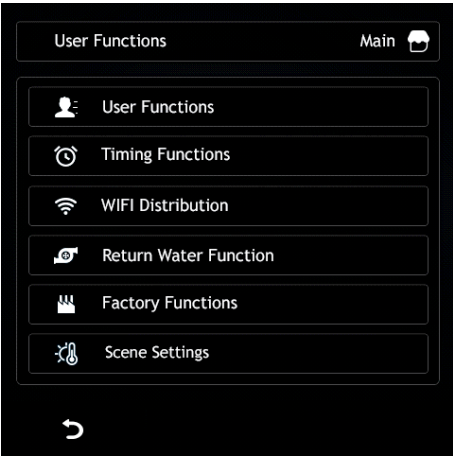


When selecting a mode (Heating or Cooling), tap the "+" or "-" icons to adjust the set temperature. Alternatively use the slider to adjust the set temperature or tap the set temperature value to input the desired temperature using the on-screen keyboard and tap "Enter" to confirm.



5.7 Boost Mode, Silent mode, Sterilization mode, Forced defrosting, and System emptying

When the main screen is active, tap the "  " icon to enter the function selection page. Then tap "  User Functions > " to access user functions. From top to bottom are Silent mode, Sterilization mode, Forced defrosting, Boost Mode, and System emptying. Tap the corresponding button to activate or deactivate each function.

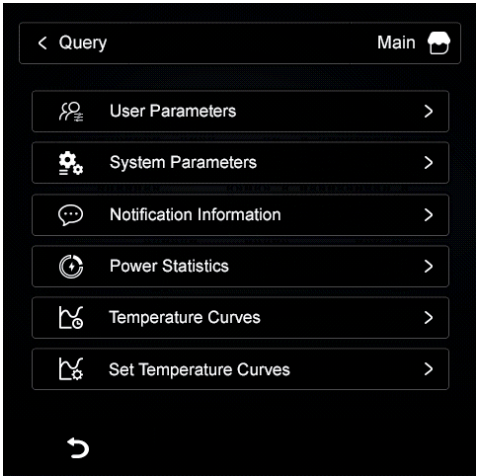


5.8 Operating Parameter Query

When the screen is active, press "  " to access the query page, then tap "  System Parameters " to view the Temperature Status.

When operating in a networked system, press "  System Parameters " to enter the Unit Selection interface. Tap the corresponding online unit number to check the temperature status of that specific unit. Gray-colored units indicate offline status.

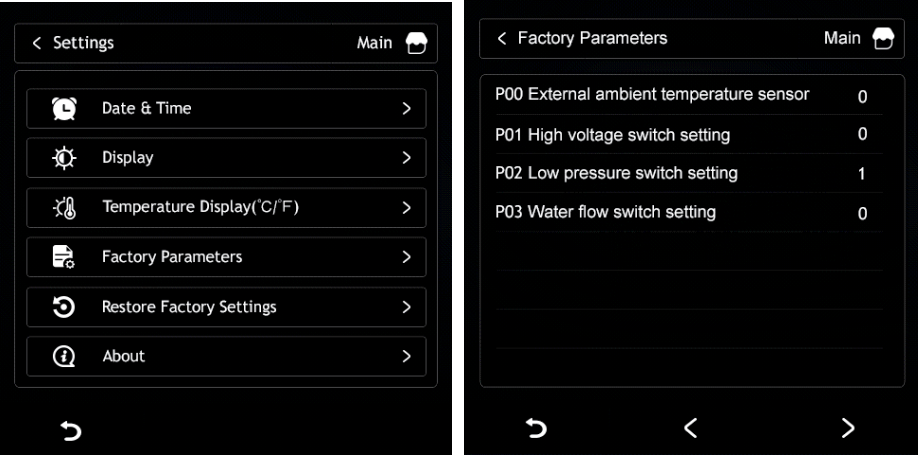
For detailed operating parameters, refer to the attached table.



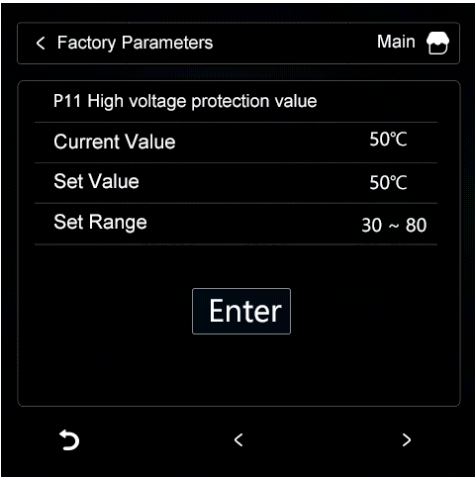
5.9 Parameter Setting

When the screen is active, press "  " to access the Settings Page, then tap "  Factory Parameters " to view the Temperature Status.

to enter the Parameter Settings Page.
When operating in a networked system, press " Factory Parameters" to enter the Unit Selection interface.
Tap the corresponding online unit number to access the parameter settings of that specific unit.
Gray-colored units indicate offline status.

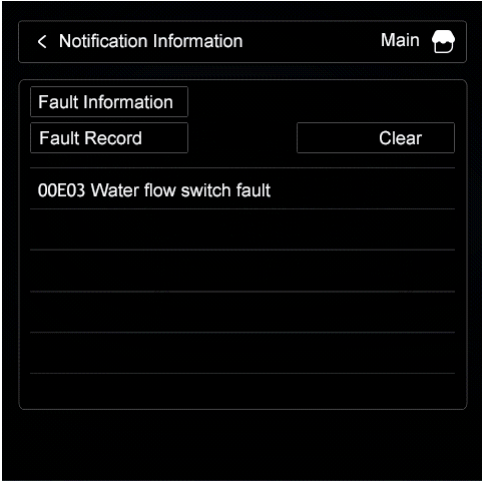


At this stage, press ">" or "<" to view various parameter values. Tap the parameter you wish to modify to enter the Parameter Modification Page.
On this page, the Parameter Number, Current Value, Set Value, and Adjustment Range will be displayed.
Tap the Set Value, input the desired value using the on-screen keyboard, and press "Enter". Then, on the following screen, press "Enter" again to save the parameter.
You can also press ">" or "<" to switch to the next parameter.



5.10 Fault Display

When a fault occurs, the "🔔" icon will flash. When the fault is resolved, the icon will turn off. Tap the icon to enter the fault query page; up to 20 real-time faults and 50 historical faults can be displayed. 00E03:00 represents the master unit, 02.03... represents the slave unit, and E03 is the fault code. Tap "Fault Record" to view historical faults. Tap "Fault Information" to check current faults. Tap "Clear" to clear historical faults. When the screen is on, press "📅" to enter the query page, then tap "Notification Information" to access the Fault query page.



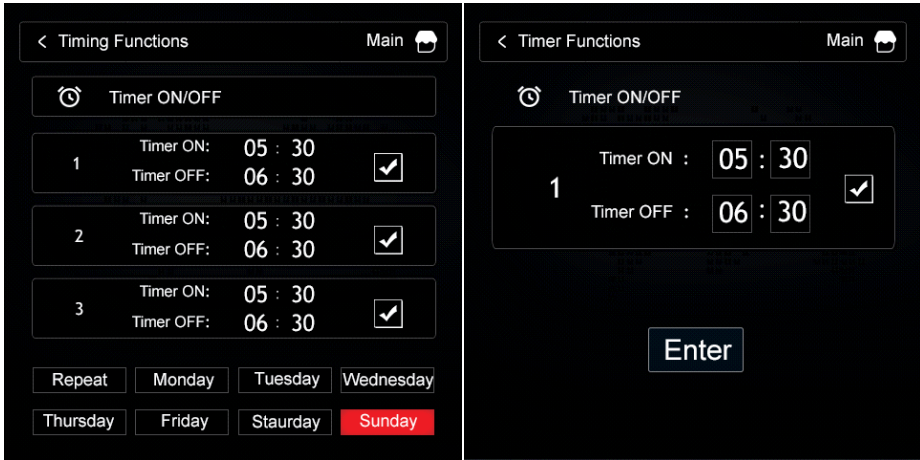
5.11 Time Setting

When the screen is active tap the button "⚙️" then tap "🕒 Date & Time" to access the Time Settings Page. Tap the corresponding year, month, or day, enter the value using the keyboard, and press "Enter" to save the time.



5.12 Timer on/off setting

When the screen is active, tap the button "  " to enter the function selection page Timing Functions. Then tap "  Timing Functions > " to **timer on/off setting page**. If you need to enable weekly timer, you can tap any button from Monday to Sunday. Click on the time slot to enter the time setting and input the time using the keyboard. Click the button of "  ", can enable/disable the timer for this period. After the setting finished, tap "Enter" to save the setting.

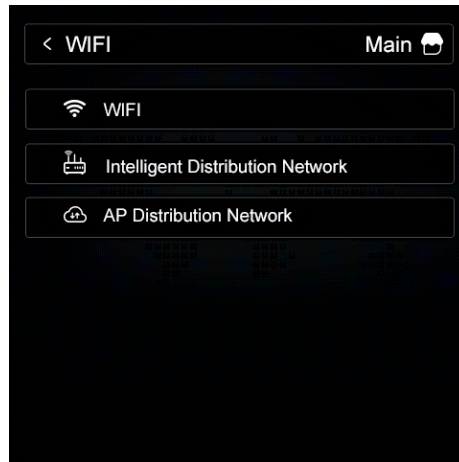


5.13 Return Water temperature setting

When the screen is active, tap the button "  " to enter the function selection page. Then click "  Return Water Function > " to Return Water function setting page. The setting operation is similar to the power on/off timing.

5.14 WIFI connection

When the screen is active, tap the button "  " to enter the function selection page. Then click "  WIFI Distribution > " to WIFI connection page. Long press for 3s to enter the WIFI provisioning configuration mode. The corresponding button lights on. The wifi provisioning time is 3mins, timeout exit.



5.15 4G Network Configuration

On the online controller, tap “” button, on the second page, locate “Module ID.” Tap it to display the QR code.



Use the downloaded app to scan the QR code to bind and control the device.

5.16 Scene Settings

.When the screen is active, tap the button “” to enter the function selection page. Then click “ Scene Settings >” to scene settings.

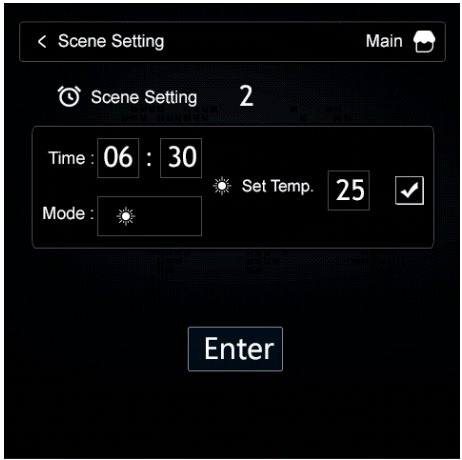
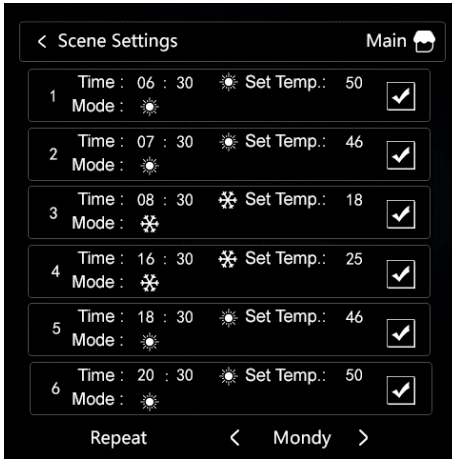
Total 6 time slots can be set each day, with options for daily scheduling and weekly cycle scheduling.

Click the button of “” can enable/disable the scene setting. Click on the scene segment you want to modify to enter the scene editing interface.

Click on the mode area “” can change the mode. Click on the corresponding value to modify it via keyboard.

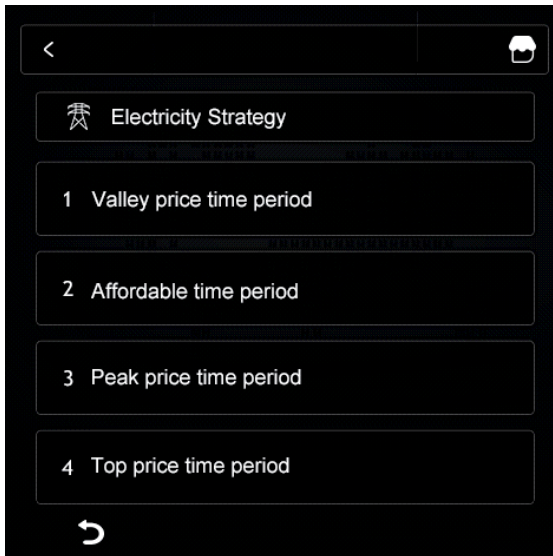
Click the button of “” can enable/disable the scene setting. After the setting finished, tap “Enter” to save the setting.

Scene Operation: When the time reaches the set time, the operating mode and set temperature will automatically switch to the values defined in the scene, but the power on/off status will not be changed.



5.17 Time-of-Use (TOU) Power Management

When the screen is active, tap "  " to enter the Function Selection Page. Scroll down to the second page, then tap "  Electricity Strategy " to access the TOU Power Management Settings. You can configure time periods for Valley Time, Affordable Time, Peak Time, and Top Time separately. Then, tap "  " to enable this function. The system will prioritize energy storage during off-peak hours and minimize electricity usage during peak pricing periods, effectively optimizing energy consumption and reducing operational costs.



5.18 User Parameter Modification

Set temperature, return water temperature, Sterilization.

When the screen is active, tap the button " " to enter the query page, click again " " to entering the page of user parameter list. Operation is similar as the factory parameter setting.

5.19 Power module parameter query(optional)

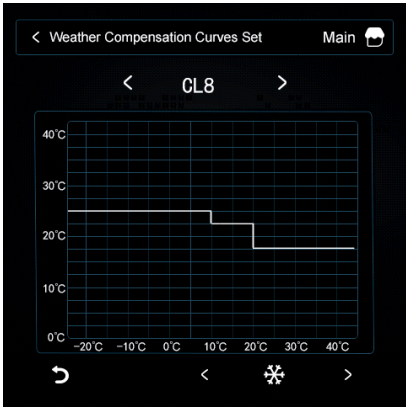
When the screen is active, tap the button " " to enter the power consumption information query. Can query the total power consumption, current power, voltage, and current parameters.

5.20 Temperature Curves query

When the screen is active, tap the button " " to enter the query page, click " " again to enter the page of curve, can record the 5-hour curves of four parameters: water inlet, water outlet, compressor frequency and ambient temperature.

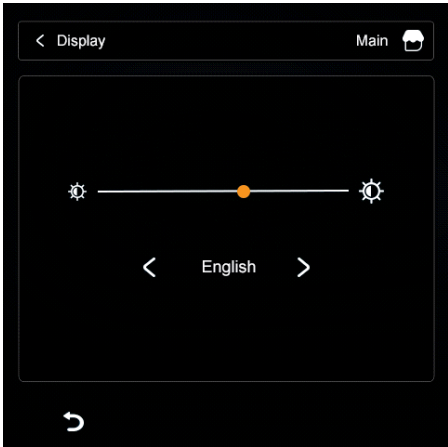
5.21 Temperature Curves Setting

When the screen is active, tap the button " " to enter the query page, then click " " to enter the page of temperature curve setting. Click " " " " to switch between different mode of curve setting. Click " " to select different curve control, and the specific parameters of the current curve will be displayed in the curve area.



5.22 Brightness settings

When the screen is active, press "⚙️" to enter the query page, then press "⚙️ Display >" to enter the brightness setting page, slide the slider to adjust the brightness level. Press ">" "<" to switch different languages, including Chinese and English.



5.23 Restore factory setting

When the screen is active, tap the button "⚙️" to enter the query page. Click "🔄 Restore Factory Settings >" to enter the page of restore factory setting page, then click "✅" can restore to factory settings.

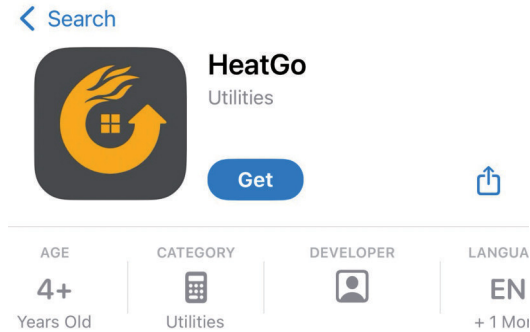
5.24 View program version

When the screen is active, tap the button "⚙️" to enter the query page. Click "🔍 About >" to enter the page of restore factory setting page. Can view the program version numbers of the display screen and the mainboard.

6. WIFI FUNCTIONALITY MANUAL

6.1 Download APP and Registration:

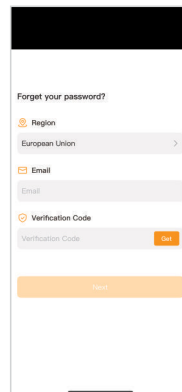
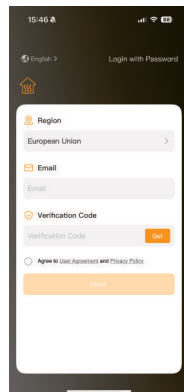
Download "Heat Go" app from the app store, as shown in the below:



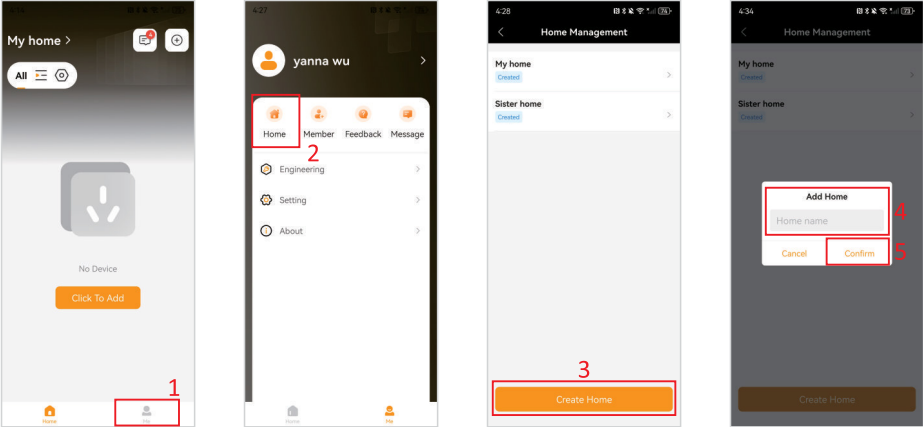
6.2 Software Registration and Settings

6.2.1 Registration

1. Email registration: Enter email → Get verification code → Complete registration.
2. Password login: Supports password recovery.



After registration is complete, users can create a Home for easier use:
Click the Me icon → Home → Create Home → Set Home Name → Add Rooms → Done, as shown in the sequence below.

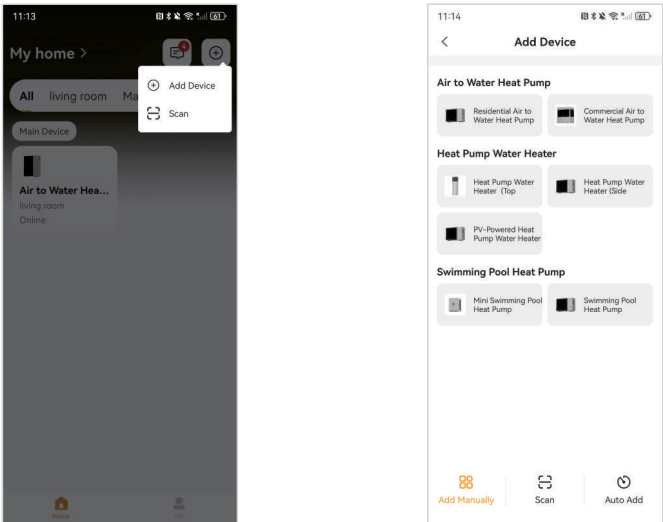


6.3 Device Network Configuration

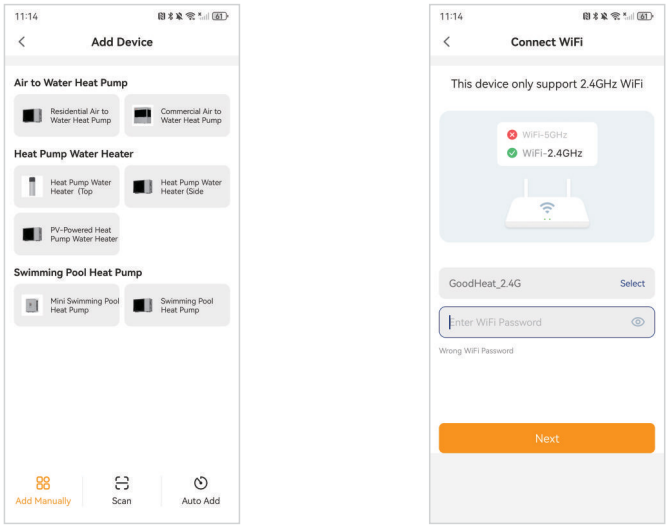
6.3.1 Wi-Fi Configuration Method:

First, press the Function button on the wired controller, then tap , and finally tap Smart Mode to enable network connection. Once successfully connected, a icon will appear at the top right corner of the controller display.

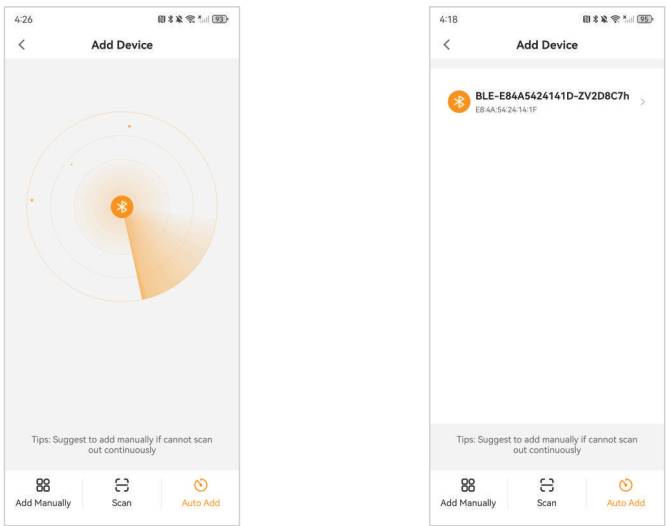
Next, tap the “+” icon in the top right corner of the app homepage, and select “Add Device” from the floating window to enter the device addition interface, as shown in the figure below.



(1) If the user is familiar with the specific category of the device, they can complete the network configuration step by step using the "Manual Add" method, as shown in the figure below.



(2) If the user is unfamiliar with the device classification rules, they can configure the network using Bluetooth scanning, which simplifies the setup process. Tap “Auto Add” in the bottom right corner of the screen, as shown in the figure below.

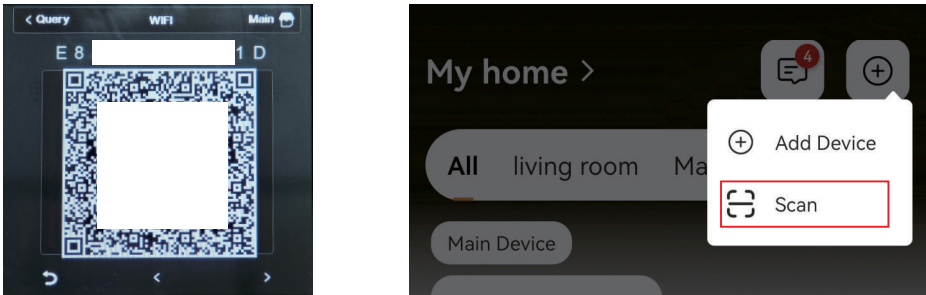


Auto Add requires the device to enter network configuration mode. Once the device emits a Bluetooth hotspot, it will be detected by the app. Tap the detected Bluetooth hotspot to proceed to the device configuration page, where the app will wait for the device to complete the network connection

6.3.2 4G Network Connection Method:

First, press the Function button on the wired controller, then tap the bottom-right page switch icon. On the second page, locate and tap Module ID to display a QR code.

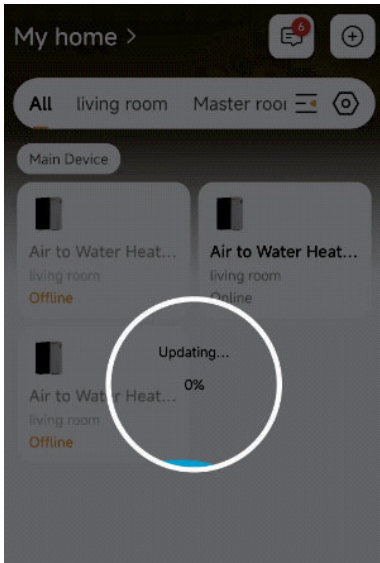
Next, use the scanning function in the app to scan the QR code and bind the device for use.



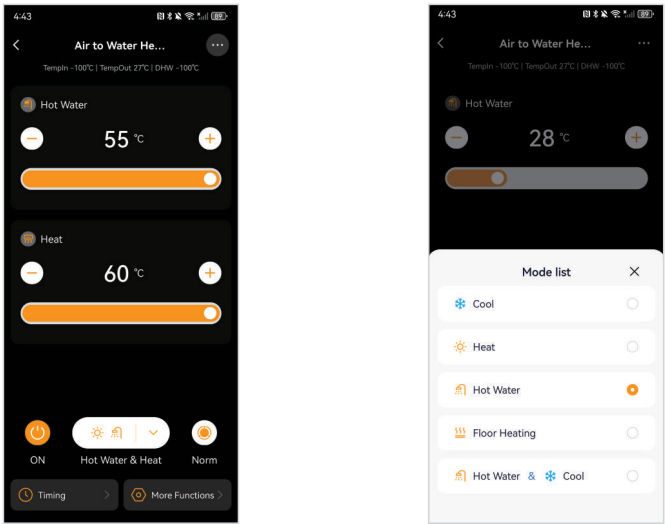
Note: If the connection fails or the APP device goes offline, please operate on the wired controller to re-enter the AP configuration mode, and repeat the above steps to reconnect.

6.4 Device Control

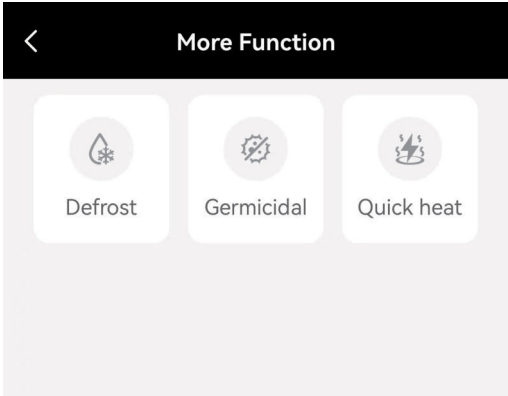
After the device has been successfully connected to the network, return to the homepage and tap the device card. The app will then download the corresponding product plug-in for the device. Once the download is complete, the device control page will be accessible, as shown in the figure below.



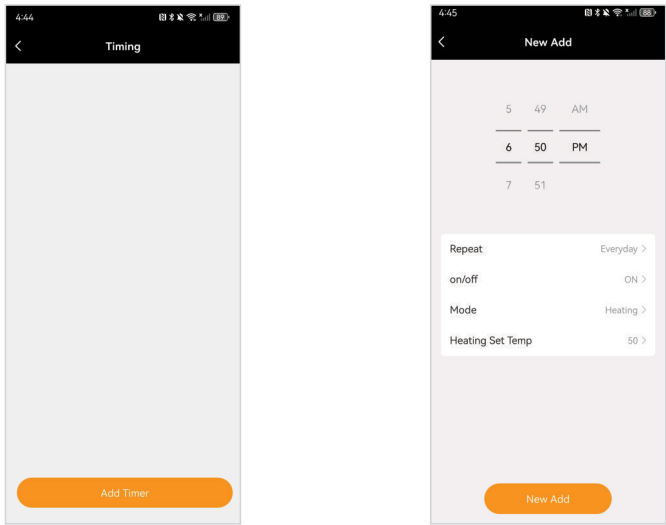
On the device control page, users can view the inlet and outlet water temperatures, control the device power, and switch between operating modes to achieve multi-mode temperature control, meeting household needs for hot water supply as well as air conditioning cooling and heating, as shown in the figure below.



Additionally, by tapping the “More Functions” button in the lower right corner, users can further adjust the device’s operating status, including individual settings for Defrost, Sterilization, and Quick Heat, as shown in the figure below.

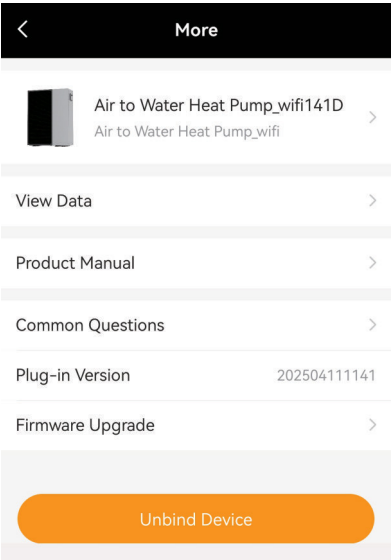


Additionally, users can set timers for the device, either as a single timer or multiple timers. Each timer can be independently enabled or disabled. When selecting timer tasks, users can combine and select from the supported controllable functions, as shown in the figure below.

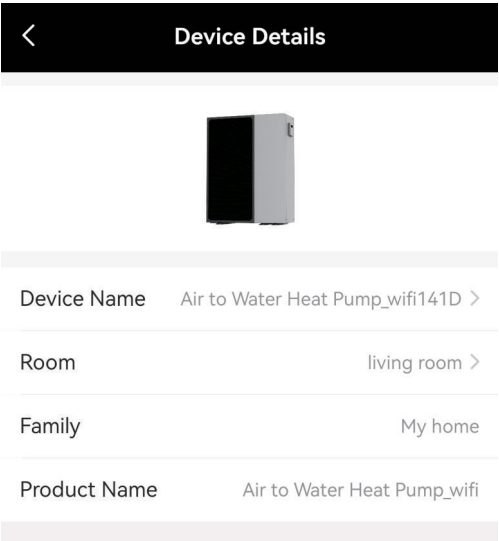


6.5 Device Details

In addition to control functions, users can also view the device’s operating parameters, FAQs, and other features. On the device control page, tap the “More” icon in the upper right corner to access the device details page, as shown in the figure below.

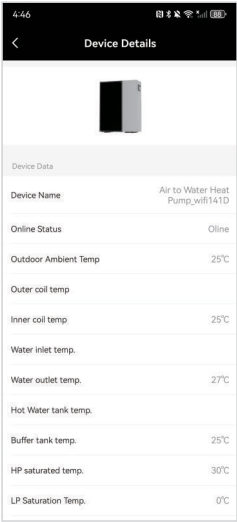


On the device details page, tapping the device name will navigate to the device information overview page, which displays basic information such as the device name, associated product, icon, and the corresponding home and room, as shown in the figure below.

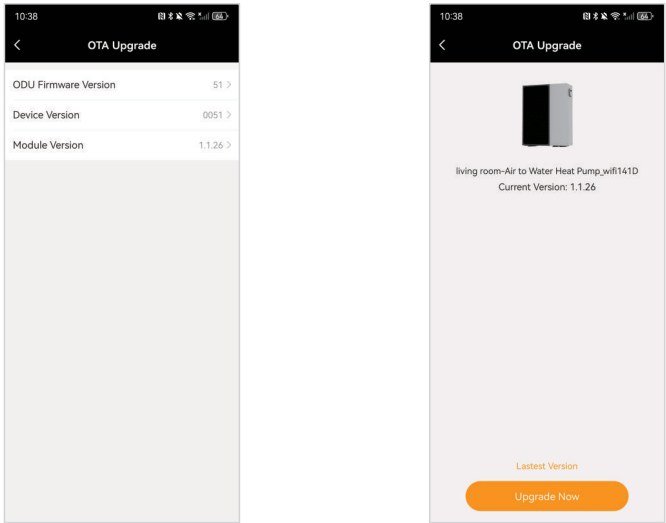


The device name can be edited, and the device’s assigned room can also be changed.

On the device details page, tapping “View Data” allows users to see all current operating parameters of the device, as shown in the figure below.

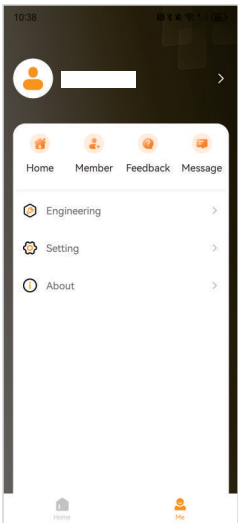


On the device details page, tapping “Firmware Upgrade” allows users to update the firmware of the wired controller and module, as shown in the figure below.



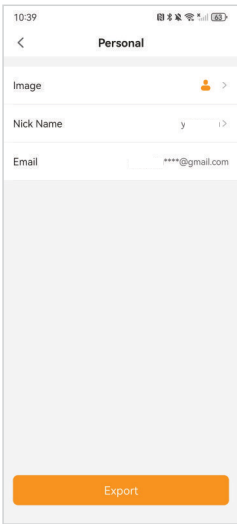
6.6 Family Management

1. On the "Me" page, users can view their personal information, manage homes and members, access the feedback and message center, as well as app settings and basic app information, as shown in the figure below.



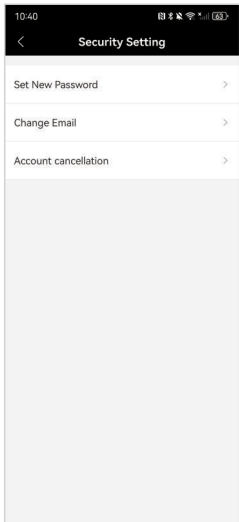
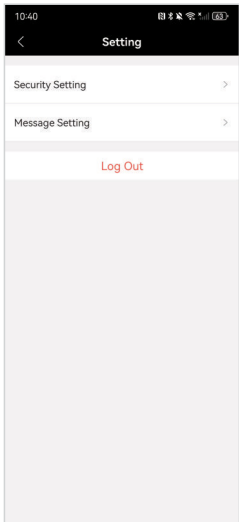
6.7 Personal Information

On the "Me" page, tapping the user's avatar or nickname will navigate to the personal information page. Here, users can modify their avatar and nickname. Additionally, if needed, users can export their personal information to a specified email address, as shown in the figure below.



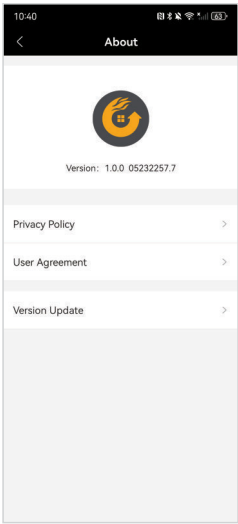
6.8 Settings

On the "Me" page, tapping "Settings" allows users to configure their account and notification preferences, as shown in the figure below.



6.9 About

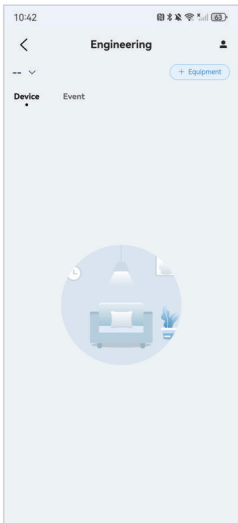
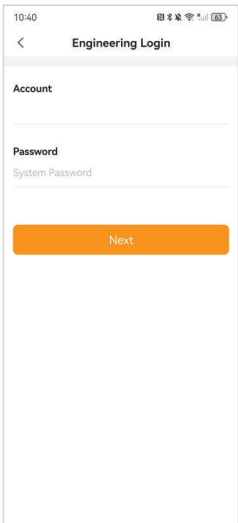
On the "Me" page, tapping "About" opens the app details page, where users can view the current app version, privacy policy, and user agreement information, as shown in the figure below.



6.10 Engineering

On the "Me" page, tapping "Engineering" opens the Engineering Mode page. Users must first log in with an engineering account. After logging in, they can view all devices within the projects visible to their account.

Tapping a device card allows viewing all device parameters; however, changing any parameters requires user consent. Additionally, events generated by devices can be tracked for their handling status, as shown in the figure below.



7. ERROR DIAGNOSIS AND TREATMENT

Code	Description	Troubleshooting
E01	Wrong phase fault	Power supply phase sequence error
E02	Phase loss failure	Power supply phase loss
E03	Water flow switch fault	1. Check if the installation of the water flow switch is correct. 2. Check the wire connection of the water flow switch is correct. 3. Check the installation of the water pump is correct.
E04	Main board and 4G module communication failure	Check the wiring between main board and 4G module
E05	High pressure switch protection	1. Check if the high pressure switch is damaged, check if the wiring is correct. 2. Too much refrigerant in the system. 3. Check the fan motor is working correctly, check the water flow is normal. 4. Check if any air in the refrigerant system, or any block in the system. 5. Check if the water side heat exchanger has too much dirt.
E06	Low pressure switch protection	1. Check if the low pressure switch is damaged, check if the wiring is correct. 2. Shortage of refrigerant in the system. 3. Check the fan is working correctly. 4. Check if any block in the system.
E09	Main board and controller communication failure	Check the wiring between control and main board.
E11	Timed Protection	The free trial period has ended. Please enter the startup password.
E12	Exhaust temperature too high failure	1. Check if any block in the system. 2. Shortage of refrigerant in the system. 3. Sensor damaged.
E14	DHW water temperature failure	1. Sensor damaged. 2. Connection of the sensor short-circuit or disconnected. 3. The terminal of main board damaged.
E15	Water inlet temperature sensor failure	1. Sensor damaged. 2. Connection of the sensor short-circuit or disconnected. 3. The terminal of main board damaged.
E16	Coil temperature sensor failure	1. Sensor damaged. 2. Connection of the sensor short-circuit or disconnected. 3. The terminal of main board damaged.
E18	Exhaust temperature sensor failure	1. Sensor damaged. 2. Connection of the sensor short-circuit or disconnected. 3. The terminal of main board damaged.
E20	Indoor temperature sensor failure	1. Sensor damaged. 2. Connection of the sensor short-circuit or disconnected. 3. The terminal of main board damaged.

E21	Ambient temperature sensor failure	1. Sensor damaged. 2. Connection of the sensor short-circuit or disconnected. 3. The terminal of main board damaged.
E22	Return water temperature sensor failure	1. Sensor damaged. 2. Connection of the sensor short-circuit or disconnected. 3. The terminal of main board damaged.
E23	Overcooling protection	1. Sensor damaged. 2. Connection of the sensor short-circuit or disconnected. 3. The terminal of main board damaged.
E24	Plate heat exchanger water outlet failure	1. Sensor damaged. 2. Connection of the sensor short-circuit or disconnected. 3. The terminal of main board damaged.
E26	Plate heat exchanger anti-freeze sensor failure	1. Sensor damaged. 2. Connection of the sensor short-circuit or disconnected. 3. The terminal of main board damaged.
E27	Water outlet temperature sensor failure	1. Sensor damaged. 2. Connection of the sensor short-circuit or disconnected. 3. The terminal of main board damaged.
E29	Suction temperature sensor failure	1. Sensor damaged. 2. Connection of the sensor short-circuit or disconnected. 3. The terminal of main board damaged.
E32	High outlet water temperature protection	1. Water flow too small 2. Sensor damaged
E33	High pressure sensor failure	1. Sensor damaged. 2. Connection of the sensor short-circuit or disconnected. 3. The terminal of main board damaged.
E34	Low pressure sensor failure	1. Sensor damaged. 2. Connection of the sensor short-circuit or disconnected. 3. The terminal of main board damaged.
E37	Excessive inlet/outlet water temperature difference protection	1. Water inlet/outlet sensor damaged. 2. Water inlet/outlet sensor put on wrong position. 3. Water flow too small.
E38	DC Fan failure	Fan driver or fan damaged.
E42	Cooling coil sensor failure	1. Sensor damaged. 2. Connection of the sensor short-circuit or disconnected. 3. The terminal of main board damaged.
E44	Low ambient temperature protection	Normal Protection
E47	EVI inlet temperature sensor failure	1. Sensor damaged. 2. Connection of the sensor short-circuit or disconnected. 3. The terminal of main board damaged.
E49	EVI outlet temperature sensor failure	Same as E47

E51	High pressure too high protection	Same as E05
E52	Low pressure protection	Same as E06
E55	Expansion board communication failure	1. Check the wiring of the signal wire. 2. Expansion board damaged. 3. Main board damaged.
E80	Power supply failure	There has three phase signal for single phase unit.
E88	Compressor driver protection	1. Compressor damaged. 2. Compressor driver damaged. 3. Please check the error table 1.
E94	Water pump failure	1. Input power<165V. 2. Input power>265V. 3. The electronic components on the water pump. driver board damaged or damped.
E96	Main board and compressor driver communication failure	1. Check the wiring of the signal wire. 2. The electronic components on the main board damaged or damped. 3. The electronic components on the compressor driver board damaged or damped. 4. No power for the compressor driver board.
E98	Main board and fan motor driver communication failure	1. Check the wiring of the signal wire. 2. The electronic components on the main board damaged or damped. 3. The electronic components on the compressor driver board damaged or damped. 4. No power for the compressor driver board.
EA1	Cascade unit address failure	Different series do no allow to cascade
EA2	Auxiliary heat source water temperature sensor failure	1. Sensor damaged. 2. Connection of the sensor short-circuit or disconnected. 3. The terminal of main board damaged.
EA3	Zone 2 water temperature sensor failure	1. Sensor damaged. 2. Connection of the sensor short-circuit or disconnected. 3. The terminal of main board damaged.
EA4	Buffer tank water temperature failure	1. Sensor damaged. 2. Connection of the sensor short-circuit or disconnected. 3. The terminal of main board damaged.
EA5	Total water outlet temperature sensor failure(cascade control)	1. Sensor damaged. 2. Connection of the sensor short-circuit or disconnected. 3. The terminal of main board damaged.
EC1	Gas leakage	1. Refrigerant leak in the system. 2. Refrigerant sensor damaged.
EC3	Low water flow protection	1. Check if the circulating water pump is normal, check if the water system is blocked. 2. Check the lift of the water pump is enough for the system.

E88/E89	P1	IPM overcurrent/IPM module protection
	P2	Compressor drive failure
	P3	Compressor overcurrent protection
	P4	Input voltage phase loss
	P5	IPM current sampling failure
	P6	Power components overheating shutdown
	P7	Compressor driver power supply circuit failure
	P8	DC bus overvoltage
	P9	DC bus undervoltage
	P10	AC input undervoltage
	P11	AC input overcurrent
	P12	Input voltage sampling failure
	P13	DSP and PFC communication failure
	P14	Heat sink temperature sensor failure
	P15	Compressor driver internal communication failure
	P16	Compressor and main board communication failure
	P17	Compressor overcurrent warning
	P18	Compressor weak magnetic protection warning
	P19	PIM overheat warning
	P20	PFC overheat warning
	P21	AC input overcurrent warning
	P22	EEPROM failure warning
	P24	EEPROM refresh completed
	P25	Temperature sensor fault frequency limitation
	P26	Undervoltage frequency limitation protection warning
	P33	IPM overheat shutdown
	P34	Compressor phase loss
	P35	Compressor overload
	P36	Input current sampling failure
	P37	PIM supply voltage failure
	P38	Compressor driver power supply circuit voltage failure
	P39	EEPROM failure
	P40	AC input overvoltage failure
	P41	Compressor driver circuit failure
	P42	Compressor driver software incorrect failure
	P43	Compressor current sampling overcurrent

8. ANNEX I: Refrigerant Handling Instructions

1.1 Checks to the area

Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized. For repair to the refrigerating system, the following precautions shall be complied with prior to conducting work on the system.

1.2 Work procedure

Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapor being present while the work is being performed.

1.3 General work area

All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided. The area around the workspace shall be sectioned off. Ensure that the conditions within the area have been made safe by control of flammable material.

1.4 Checking for presence of refrigerant

The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with flammable refrigerants, i.e. nonsparking, adequately sealed or intrinsically safe

1.5 Presence of fire extinguisher

If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO₂ fire extinguisher adjacent to the charging area.

1.6 No ignition sources

No person carrying out work in relation to a refrigeration system which involves exposing any pipe work that contains or has contained flammable refrigerant shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing removing and disposal, during which flammable refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. "No Smoking" signs shall be displayed.

1.7 Ventilated area

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

1.8 Checks to the refrigeration equipment

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt consult the manufacturer's technical department for assistance.

The following checks shall be applied to installations using flammable refrigerants:

- the charge size is in accordance with the room size within which the refrigerant containing parts are installed;
- the ventilation machinery and outlets are operating adequately and are not obstructed;
- if an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;
- marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;

8. ANNEX I: Refrigerant Handling Instructions

– refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

1.9 Checks to electrical devices

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised. Initial safety checks shall include:

- that capacitors are discharged; this shall be done in a safe manner to avoid possibility of sparking;
- that no live electrical components and wiring are exposed while charging, recovering or purging the system
- that there is continuity of earth bonding.

2 Repairs to sealed components

2.1 During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.

2.2 Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc. Ensure that apparatus is mounted securely.

Ensure that seals or sealing materials have not degraded such that they no longer serve the purpose of preventing the ingress of flammable atmospheres. Replacement parts shall be in NOTE The use of silicon sealant may inhibit the effectiveness of some types of leak detection equipment. Intrinsically safe components do not have to be isolated prior to working on them.

3 Repair to intrinsically safe components

Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use. Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating. Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

4 Cabling

Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of ageing or continual vibration from sources such as compressors or fans.

5 Detection of flammable refrigerants

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

6 Leak detection methods

The following leak detection methods are deemed acceptable for systems containing flammable refrigerants.

8. ANNEX I: Refrigerant Handling Instructions

Electronic leak detectors shall be used to detect flammable refrigerants, but the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed and the appropriate percentage of gas (25 % maximum) is confirmed.

Leak detection fluids are suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.

If a leak is suspected, all naked flames shall be removed/extinguished.

If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak. Oxygen free nitrogen (OFN) shall then be purged through the system both before and during the brazing process.

7 Removal and evacuation

When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional

procedures shall be used. However, it is important that best practice is followed since flammable is a consideration. The following procedure shall be adhered to:

- remove refrigerant;
- purge the circuit with inert gas;
- evacuate;
- purge again with inert gas;
- open the circuit by cutting or brazing.

The refrigerant charge shall be recovered into the correct recovery cylinders. The system shall be “flushed” with OFN to render the unit safe. This process may need to be repeated several times. Compressed air or oxygen shall not be used for this task.

Flushing shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum. This process shall be repeated until no refrigerant is within the system. When the final OFN charge is used, the system shall be vented down to atmospheric pressure to enable work to take place. This operation is absolutely vital if brazing operations on the pipework are to take place. Ensure that the outlet for the vacuum pump is not close to any ignition sources and there is ventilation available.

8 Charging procedures

In addition to conventional charging procedures, the following requirements shall be followed.

- Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.
- Cylinders shall be kept upright.
- Ensure that the refrigeration system is grounded prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already).
- Extreme care shall be taken not to overfill the refrigeration system.

Prior to recharging the system it shall be pressure tested with OFN. The system shall be leak tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

9 Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of reclaimed refrigerant. It is essential that electrical power is available before the task is commenced.

8. ANNEX I: Refrigerant Handling Instructions

- a) Become familiar with the equipment and its operation.
- b) Isolate system electrically.
- c) Before attempting the procedure ensure that:
 - mechanical handling equipment is available, if required, for handling refrigerant cylinders;
 - all personal protective equipment is available and being used correctly;
 - the recovery process is supervised at all times by a competent person;
 - recovery equipment and cylinders conform to the appropriate standards.
- d) Pump down refrigerant system, if possible.
- e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
- f) Make sure that cylinder is situated on the scales before recovery takes place.
- g) Start the recovery machine and operate in accordance with manufacturer's instructions.
- h) Do not overfill cylinders. (No more than 80 % volume liquid charge).
- i) Do not exceed the maximum working pressure of the cylinder, even temporarily.
- j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
- k) Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

10 Labeling

Equipment shall be labeled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. Ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

11 Recovery

- a) When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.
- b) When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge are available. All cylinders to be used are designated for the recovered refrigerant and labeled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.
- c) The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of flammable refrigerants. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.
- d) The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant Waste Transfer Note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.
- e) If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed to accelerate this process. When oil is drained from a system, it shall be carried out safely.

