DC Inverter Air Source Heat Pump

Instruction Manual

Model number: GT-SKR020KBDC-M290
GT-SKR030KBDC-M290
GT-SKR040KBDC-M290
GT-SKR040KBDC-M290T
GT-SKR050KBDC-M290T

- Please read the manual carefully before installation and maintenance.
- Please keep this manual well for future reference.

CONTENTS

Part I: General Information

1.1Caution

1. Ensure proper operation on the unit.
2. The unit must be installed and repaired by qualified technicians.
3. Install a leakage protection switch near by the unit.
4. Do not use any damaged cable and switch to avoid any leakage.
5. Do not open the electrical box without shutting off power supply.
6. Along transportation, don't incline the unit more than 45°in any direction.
7. Before maintenance, please shut off the power to the unit.
8. The unit is designed for outdoor installation, do not install it in a closed space without good ventilation.
9. Do not install the unit nearby inflammable or explosive goods.
10. Do not block the air inlet or outlet of the unit.
11. If there is no glycol (anti-freeze) between heat pump and buffer tank, when there is no power supply or water circulation pump failure, drain the water inside hydraulic system.
12. This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.
13. If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
14. The appliance shall be installed in accordance with national wiring regulations.
15. An all-pole disconnection device which has at least 3mm clearances in all poles, and have a leakage current that may exceed 10mA, the residual current device (RCD) having a rated residual operating current not exceeding 30mA, and disconnection must be incorporated in the fixed wiring in accordance with the wiring rules.
16. Keep safety distance between the unit and other equipment or structures according local norm, and ensure that adequate space for maintenance or service operations.
17. Power supply: the diameter of electrical cables must be suitable for the unit and the power supply

voltage must correspond with the value indicated on the units. All units must be earthed in conformity with legislation in force in the country concerned.


18. Please attention that hot water produced by the unit is not to be used for drink.

1.2 Warning

1. Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
2. 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.)
3. Do not pierce or burn.
4. Be aware that refrigerants may not contain an odour.
5. Spaces where refrigerant pipes shall be compliance with national gas regulations.
6. Servicing shall be performed only as recommended by the manufacturer.
7. The appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation.
8. All working procedure that affects safety means shall only be carried by competent persons.

1.3 Requirements

1. **Transport of equipment containing flammable refrigerants**

   Compliance with the transport regulations
2. **Marking of equipment using signs**

   Compliance with local regulations
3. **Disposal of equipment using flammable refrigerants**

   Compliance with national regulations
4. **Storage of equipment/appliances**

   The storage of equipment should be in accordance with the manufacturer’s instructions.
5. **Storage of packed (unsold) equipment**

   Storage package protection should be constructed such that mechanical damage to the equipment inside the package will not cause a leak of the refrigerant charge.

   The maximum number of pieces of equipment permitted to be stored together will be determined by local regulations.
6. **Information on servicing**

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.

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.

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.

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. non-sparking, adequately sealed or intrinsically safe.

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.

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.

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.

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;

– 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.

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 there no live electrical components and wiring are exposed while charging, recovering or purging the system;

• That there is continuity of earth bonding.

7. Repairs to sealed components

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) 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 accordance with the manufacturer's specifications.

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.

8. 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.

9. 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 aging or continual vibration from sources such as compressors or fans.

10. 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.

11. Leak detection methods

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

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.

12. 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 flammability 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 pipe-work are to take place.

Ensure that the outlet for the vacuum pump is not close to any ignition sources and there is ventilation available.

13. 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 minimise the amount of refrigerant contained in them.

– Cylinders shall be kept upright.

– Ensure that the refrigeration system is earthed 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.

14. 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.

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.

15. Labelling

Equipment shall be labelled 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.

16. Recovery

When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.

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 is available. All cylinders to be used are designated for the recovered refrigerant and labelled 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. 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.

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.

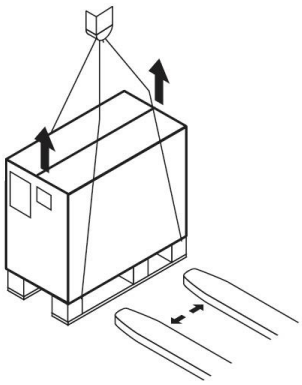
If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric 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.

Part II Installation

2.1 Transportation

Along transportation, don't incline the unit more than 45°in any direction.

The unit in its packaging can be transported with a lift truck or hand truck.



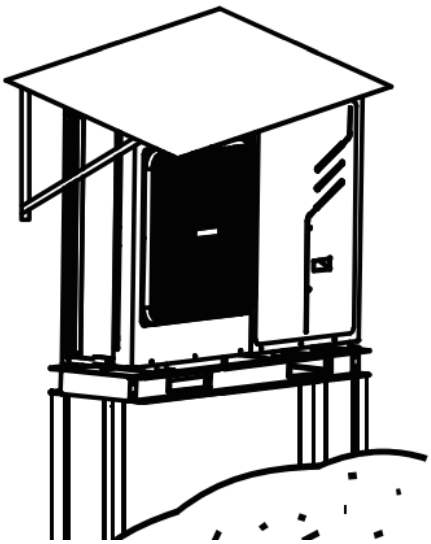
2.2 Installation site requirement

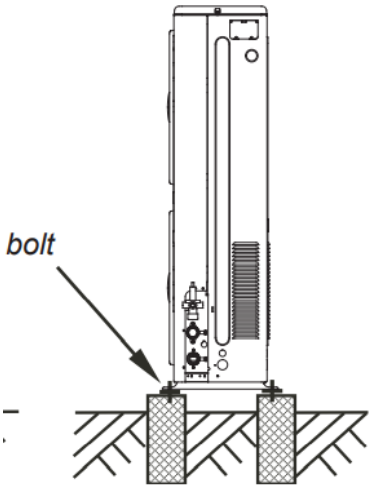
This unit is designed for outdoor installation, do not install it in a closed space.

Please consider the condition as following factors when selecting installation site.

- The installation site should be large enough and well ventilation.
- The installation site should be convenient for water drainage.
- Select a smooth, horizontal site where it can support the weight of the unit.
- Do not install the unit where there is pollution, accumulation, fallen leaves or bad ventilation.
- Don't install the unit near inflammable or explosive goods.

- Install shockproof pad under the unit.
- Recommended to install a canopy above the machine to prevent snow from falling on the evaporator, which will reduce the efficiency of the heat pump and increase the difficulty of frosting.
- Recommended that the pedestal of the unit is higher than 30cm to avoid snow or ice on the ground to reach the machine, or affect condensation water discharge of the unit and cause icing in the unit.
- Fasten the feet of this unit with bolts firmly to prevent it from collapsing in case of earthquake or strong wind.



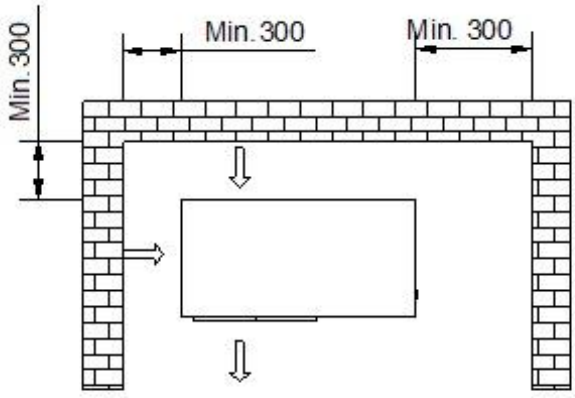


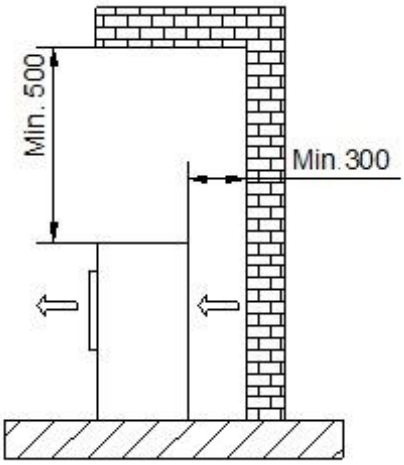
2.3 Minimum distance to wall

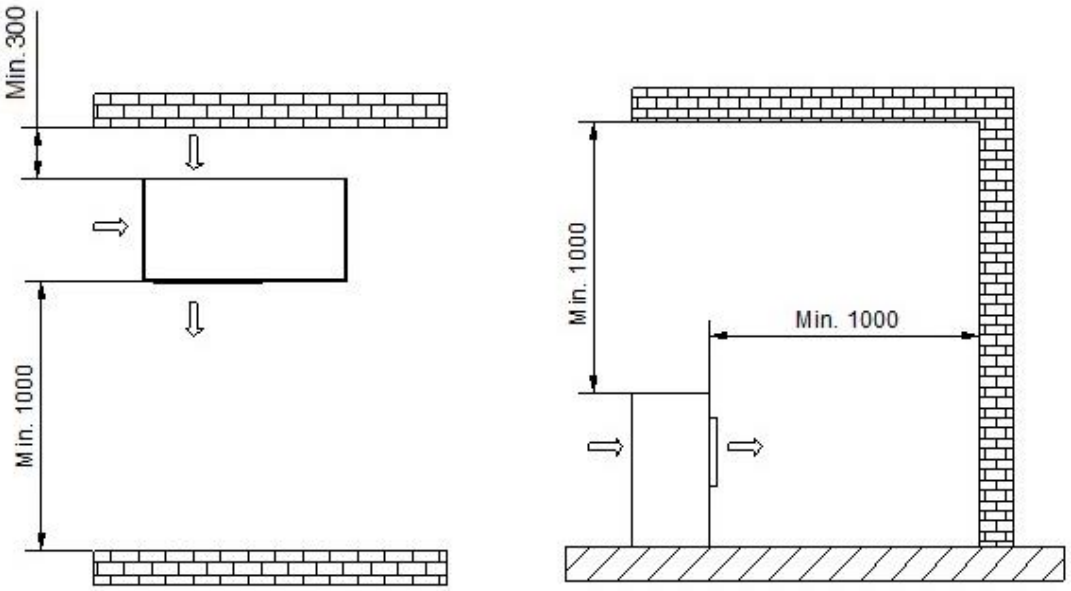
Air discharge

Minimum 1000mm to obstacles obstructing the air discharge.

Minimum 3000mm to footpaths and patios due to the formation of ice, even when outside temperatures are above 0 °C



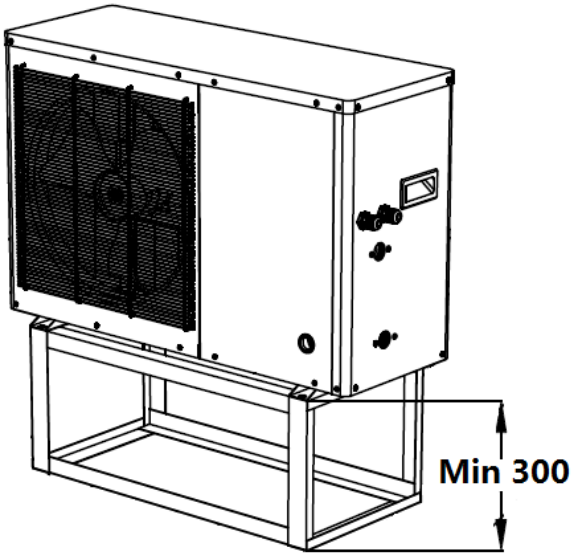




2.4 Clearance between outdoor module and ground

The minimum installation height must be 300mm.

A canopy must be constructed over the outdoor module in areas with heavy snowfall.



2.5 Hydraulic system installation

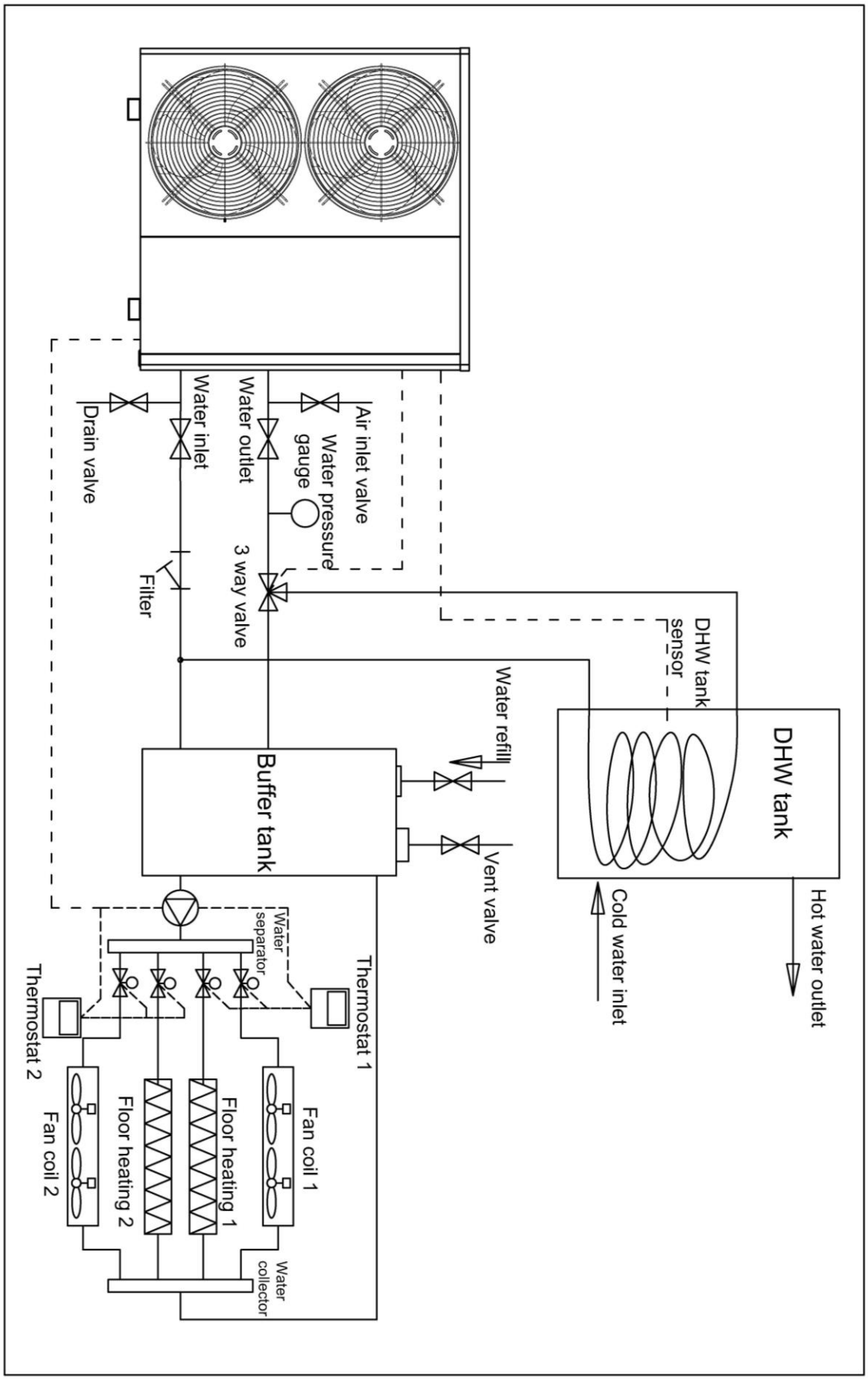
1. If sand and clay settle in the plate heat exchanger, circulation of chilled water may be blocked, and thus leading to freezing accidents, so water must be filtered.
2. The maximum water pressure cannot exceed 3 bar.
3. The maximum water temperature is 75°C according to safety device setting.
4. Drain taps must be provided at all low points of the system to permit complete drainage of the circuit during maintenance.
5. Air vents must be provided at all high points of the system. The vents should be located at points that are easily accessible for servicing. An automatic air purge is provided inside the unit. Check that this air

purge valve is not tightened too much so that automatic release of air in the water circuit remains possible.

6. The hydraulic system must be equipped with expansion vessel.
7. The complete water circuit including all piping, must be insulated to prevent condensation during cooling operation and reduction of the heating and cooling capacity as well as prevention of freezing of the outside water piping during winter.
8. Depending on the expected lowest outdoor temperature, make sure the water system is filled with a concentration of glycol. If no glycol is added, the water must be drained out when there is a power failure.
9. Water quality requirements of plate heat exchanger.

Water quality	Suspended solids	< 5mg/L
	Total hardness	< 0.6mmol/L
	Oxygen content	< 0.1mg/L
	PH value	>7-8.5

2.6 Recommended hydraulic connection



2.7 Electrical connection

1. Ensure proper operation of the unit, the unit must be installed and repaired by qualified technicians.
2. Install a leakage protection switch near by the unit.
3. Do not use any damaged cable and switch.
4. Do not open the electrical box without shutting off all power to the unit.

- All the wiring must meet the local electrical safety norm and performed by qualified electricians.
- Ensure that the heat pump water heater is well connected to the earth, do not disconnect the earth connection of the power in any condition.
- Provide a separate power supply which meets rated requirements for the unit.
- When the unit connects to the electricity network, there must be a short-circuit protection.
- Choose the suitable cable when use the power outdoor.
- Do not control the unit on or off by the main power switch.
- After finish installation, check before connect the unit to the power.
- Connect the signal (power) from PCB to water circulation pump.(Remark: Monobloc heat pumps are already inbuilt circulation pump inside the unit)

The Specification of Power

Following information is for reference, please subject to the local safety norm.

Type	GT-SKR020KB DC-M290	GT-SKR030KB DC-M290	GT-SKR040KB DC-M290	GT-SKR040KB DC-M290T	GT-SKR050KB DC-M290T
Power supply	220-240V/1Ph	220-240V/1Ph	220-240V/1Ph	380-415V/3Ph	380-415V/3Ph
Circuit Breaker	25A	32A	32A	32A	32A
Power cables	2.5 mm2	4.0 mm2	4.0 mm2	2.5 mm2	2.5 mm2
Ground cables	2.5 mm2	2.5 mm2	2.5 mm2	2.5 mm2	2.5 mm2
Rated current	13.5A	18.2A	26.5A	9.5A	14A
Max startup current	6.4A	8.3A	12A	4.2A	6.3A

Type	GT-SKR020KB DC-M290	GT-SKR030KB DC-M290	GT-SKR040KB DC-M290	GT-SKR040KB DC-M290T	GT-SKR050KB DC-M290T
Compressor oil	HAF68 630	HAF68 630	HAF68 630	HAF68 630	HAF68 630
Water heat exchanger material	SS316	SS316	SS316	SS316	SS316
Water heat exchanger capacity	6.4kW	8.3kW	12.0kW	12.0kW	16.3kW
Max water pressure drop	22.2KPa	22.5KPa	26.3KPa	26.3KPa	31.7KPa

2.8 Trial operation

- The unit should only be operated by qualified technician.
- Please drain air inside hydraulic system before operation.
- The unit is designed according to the conditions as follows: the range of ambient temperature is -25℃～43℃ and the range of water pressure is 0.15～0.8Mpa.

2.8.1 Preparation

The following items should be checked before startup:

a. The heat pump should be connected completely.

b. All valves that could impair the proper flow of the heating water in the heating circuit must be open.

c. The air inlet and air outlet paths must be cleared.

d. The ventilator must turn in the direction indicated by the arrow.

e. The settings of the heat pump controller must be adapted to the heating system in accordance with the controller's operating instructions.

f. Ensure the condensate outflow functions.

g. Drain the air inside hydraulic system.

2.8.2 Trial run

- Turn on the power, start up the unit by the controller, after 30 seconds, the unit (compressor) start to work, then observe whether the unit works normally.
- When you restart the unit, the compressor will start up after three minutes to protect the compressor.

2.8.3 Caution

When following happen during trial operation, please stop the unit immediately and cut off the power and contact with our authorized agent or maintenance technician.

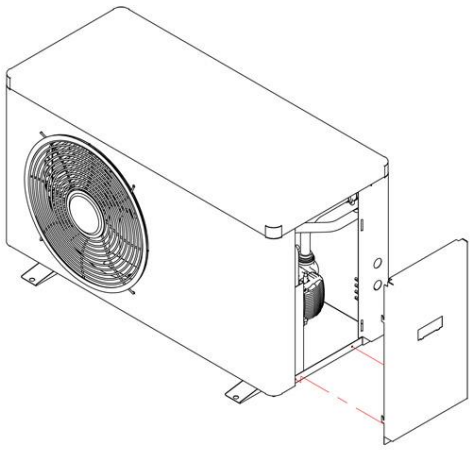
Fuse blown or protection activated frequently.

- The wire and switches are heated abnormally.
- Abnormal sounds coming from the unit.
- Abnormal smell comes out of the unit.
- Electricity leakage.

Part III Control System

3.1 Controller position

The controller is installed inside the unit before factory, open the front panel as following picture, you will find the controller.

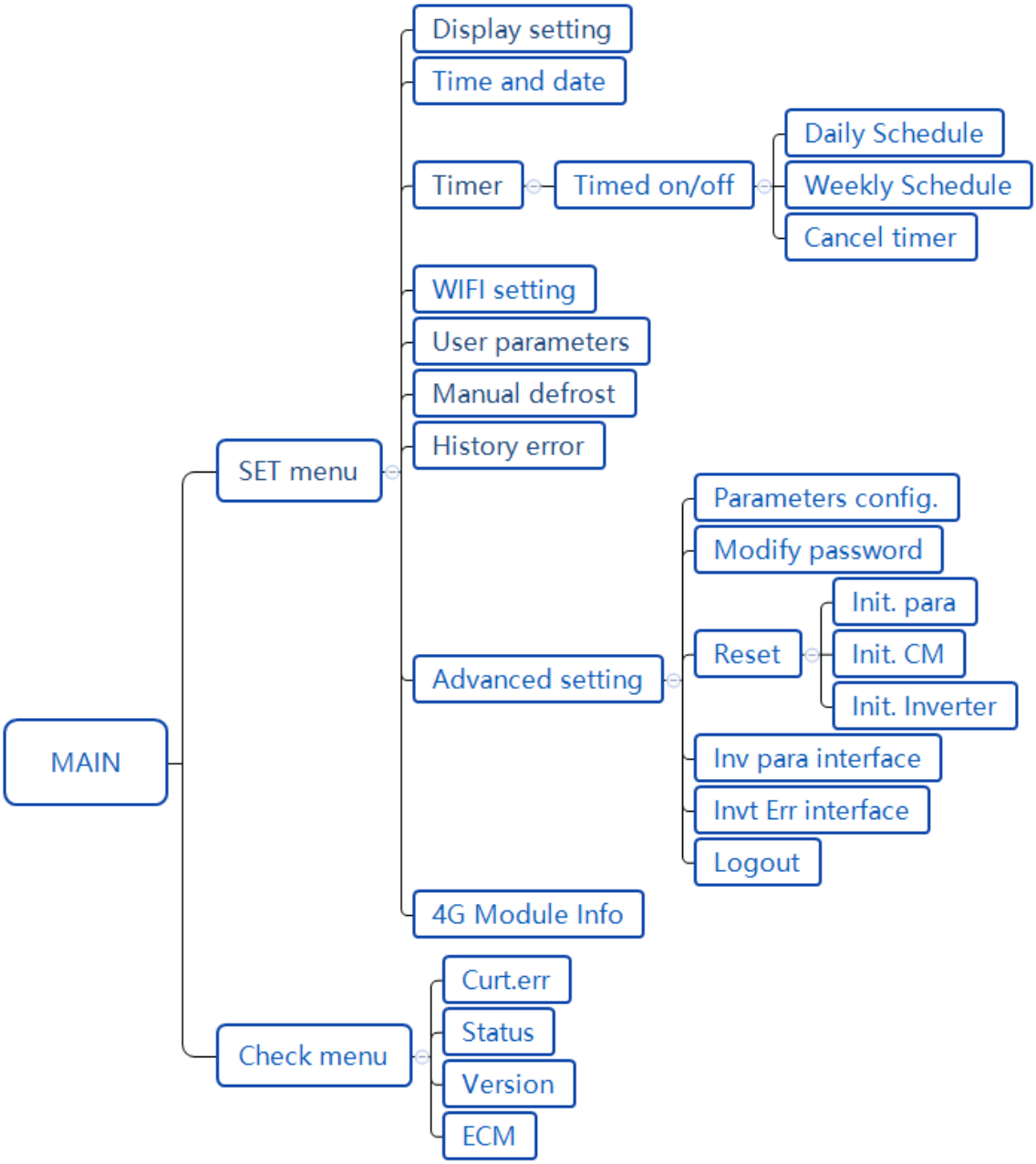


There is 8 meters cable for the controller, it is allowable to move the controller to outside the unit, but avoid a place with sunshine and rain.

3.2 Controller introduction

Icon	Meaning	Name
	Turn on/off	【 ON/OFF 】
	press on the main interface to enter the query menu	【CHECK】
	Set mode	【 MODE 】
	Set	【 SET 】

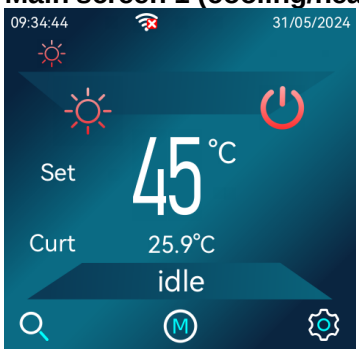
3.3 Interface Structure



3.4 Main Interface Introduction

The main interface will vary according to different application configuration. Here are some possible configurations.

Main screen 1 (cooling/heating):



The system is for heating.

Note: The pictures in the manual are for explanation and may be different from the actual screen display.

Main screen 2 (DHW):

The system is DHW.

Main interface 3 (cooling/heating+DHW):

The system is heating+DHW.

3.5 Basic usage

3.5.1 ON/OFF Operation

To press M and press ✓ to confirm ON/OFF the Heat pump on the main interface.

Below example, press M on the main interface, select Heating mode, press ✓ to confirm, then press ⏻ and press ✓ to confirm to turn on the Heating mode:

3.5.2 Adjust expected temperature

1. Single zone mode: Cooling, Heating, DHW

   Press “the set temperature” on the main interface to pop up the parameter setting box. Select the target value by sliding and then press the ✓ to modify the set temperature value.

2. Two-zone mode: Cooling+DHW, Heating+DHW on the main interface, press “the set temperature” of the corresponding area, the parameter setting box of the area will pop up.

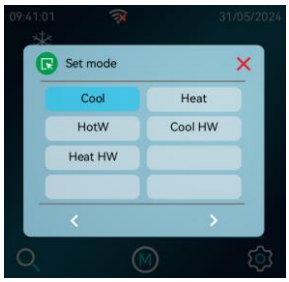
   Select the target value by sliding and then press the ✓ to modify the set temperature value.

3.5.3 Mode of Zone settings

There are five spatial modes:

1. Cool
2. Heat
3. HotW
4. Cool HW
5. Heat HW

Press M in the main interface to pop up the space mode setting window:



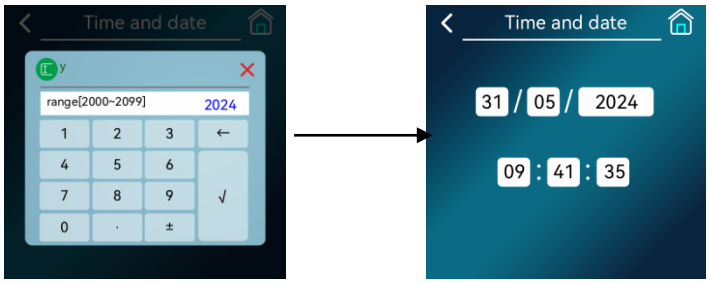
Press on the desired mode in the Set Mode box to change the mode. If you press X, the pop-up window will be closed directly to cancel this mode setting.

3.5.4 Time and date settings

All the time modification operation of this wired controller is the same, here to modify the year in the date and time for example

Press ⚙ on the main interface to enter the setting menu, and select "Time and date" to enter. Please refer to 3.7.2 "Time and date" for the path.

In the above interface, press the box of the year, the parameter setting box will pop up, enter the correct year and press ✓ to modify the year value.



3.6 Query Menu

There are four query menus:

1. Curt.err query
2. Status query
3. Version query
4. ECM query

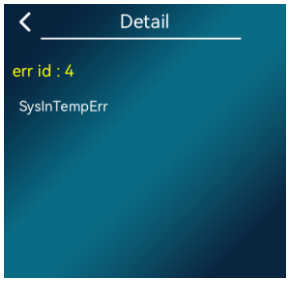
3.6.1 Curt.err query

Press 🔍 on the main interface to enter the query interface.

When the error comes, press the “Curt.err” option to view the error.

Then press  to reset the error that meets the reset conditions.

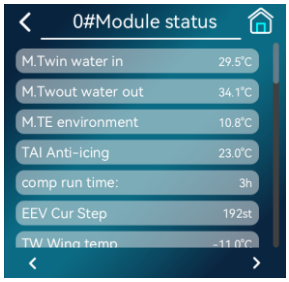
Press the error can see the specific meaning of the error code.



3.6.2 Status query

When you need to check the current status information of the unit (such as temperature, output of the relays, etc.), you can enter the status query interface to check.

Press < or > to switch between module status and system status.



3.6.3 Version query

In the version query, you can check version of the system.

3.6.4 ECM query

When you need to check the Power, Capacity and COP (EER) of the unit in the last 24 hours, the last 30 days, the last 12 months or the last 10 years, you can enter the ECM query interface to check.

The operation of this wired controller to check the Power, Capacity and COP (EER) in any time period is the same, taking the last 30 days as an example:

Press the "Last 30 Days" enter the option.

Press < and > to switch the Power, Capacity and COP (EER) on other dates.

3.7 Setting Menu

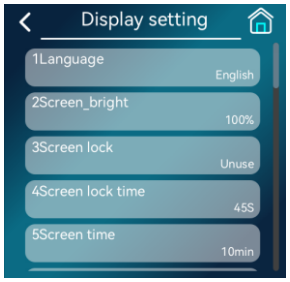
In the main interface, press to enter the setting menu.

3.7.1 Display Setting

Display Setting can set the daily needs, such as language, screen lock, screen time, etc. Enter the display settings interface through the following paths.

" Main interface" >" Set menu" >" Display setting"

In the display setting interface, you can press different items to modify the value.



Note: If the value of "Screen time" is “0”, the function will be disabled. Then the screen will stay on.

3.7.2 Time and date setting

If the date and time do not correspond to the reality, you can modify the date and time through the following paths.

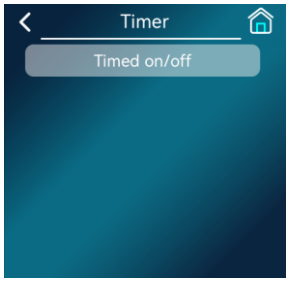
" Main interface" >" Set menu" >" Time and Date "

Please refer to 3.5.4 for time modification.

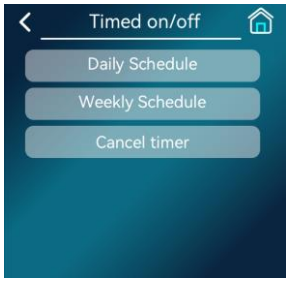
3.7.3 Timer setting

You can enter the timer settings through the following paths.

" Main interface" >" Set menu" >" Timer"



Press the "Timer on/off" to enter the Timer on/off interface. In this interface you can set the timing according to your requirements.



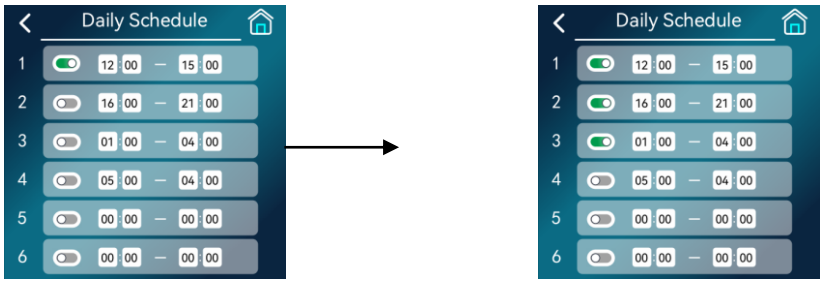
Press to select daily schedule, weekly schedule or Cancel timing to enter the options.

The timer icon will be shown on the main interface when the timer is activated.

The timer icon will not be shown on the main interface when the timer is invalid.

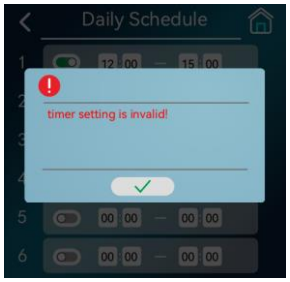
1. Daily Schedule

Enter the daily schedule interface, press  to use or cancel the group of timings. After press the corresponding "hour" or "minute" will pop up the parameter setting box, enter the target value and press ✓ to save.



Tip:

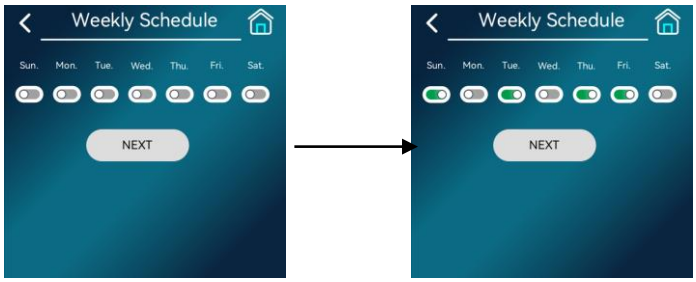
If the start time is later than the end time or cross-day setting, the timing setting will be invalid, and the following interface will appear.



2. Weekly Schedule

The following operations can set the unit to on or off at a fixed time every week, such as turn on at 8:00 every Monday to Friday and turn off at 22:00.

Enter the weekly schedule interface, press  to use or cancel the Monday-Friday timer turn on/off.

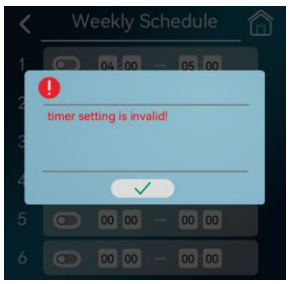


Press "Next" to enter the timing group setting.

Please refer to 3.7.1 for timing group setting.

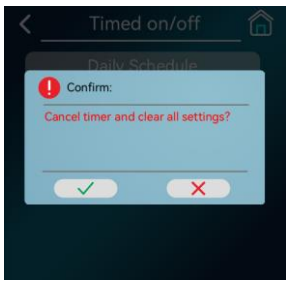
Tip:

If the start time is later than the end time or cross-day setting, the timing setting will be invalid, and the following interface will appear.



3. Cancel timer

Enter the interface of cancel timer, and press ✓ to cancel the timer and clear all settings.



3.7.4 Network Configuration Guidelines

This wired controller has built-in WIFI module, which can establish communication with mobile phone APP and operate the unit using mobile phone App.

When configuring the wired controller to the WIFI network for the first time, it is necessary to ensure that the wired controller and the mobile phone are in the same WIFI signal, and the signal cannot be too weak.

Through the" Main interface" >" Set menu" >" WIFI setting", press to enter the WIFI settings interface. We can

see the current WIFI status, MAC address and the instructions.

Press "QR code" will bring up the QR code for doenloading the Huilian Smart APP and the QR code linking to the device.

If the WIFI status shows "Connected to cloud server", the wired controller has been distributed and can be operated on the account that has been distributed before.

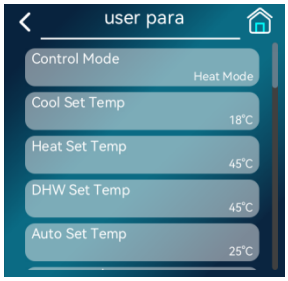
If the WIFI status displays other contents or needs to cancel the previously completed distribution network, the following steps can be followed:

(Note: the account with completed distribution network and successful communication will no longer be able to operate the unit.)

Press "Connected to cloud server" on the first interface, and when we see WIFI status is “configuring the network in smart mode”, we can start to connect to APP.

3.7.5 User Setting

The user parameters can be used directly by user. According to the path:" Main interface" >' Set menu" >" User para":



Please refer to the following table for more parameters. Actual parameters are subject to the display of the wired controller):

No.	Item	Setting range	Default value	Unit
1	Control Mode	Cool Mode Heat Mode DHW Mode DHW&Cool Mode DHW&Heat Mode	Heat Mode	/
2	Cool Set Temp	-15...35	12	℃
3	Heat Set Temp	16...75	45	℃
4	DHW Set Temp	30...60	50	℃
5	Auto Set Temp	10...60	25	℃
6	Power Mode	Standard Strong Silent Auto	Standard	/
7	Mode Silent	Disable Night All day	Disable	/
8	SilentBgnHour	0...23	22	h
9	SilentBgnMin	0...59	0	min
10	SilentEndHour	0...23	7	h
11	SilentEndMin	0...59	0	min
12	Duty fun en	Disable Enable	Disable	/
13	Duty set HT.	16...85	30	℃
14	Duty set CL.	-15...35	17	℃
15	Duty on hour	0...23	20	h
16	Duty on min.	0...59	0	min
17	Dutyoff hour	0...23	5	h
18	Dutyoff min	0...59	0	min
19	HT.2-WAY.INTLK	disable enable	disable	/
20	Lock screen	disable enable	disable	/
21	AlarmSoundSet	sound off sound on once 10sec cycle 10sec	once 10sec	/
22	PUMP.MODE	run off inter run	inter run	/
23	END.PUMP.EN	disable enable	enable	/

25	MaxRunTime	0...999	5	min
26	Cool time min	0...999	30	min
27	Heat time min	0...999	30	min
28	DHW time max	0...999	240	min
29	H.PUNP Set Temp	30...80	55	℃
31	Unit number	1...8	1	
32	00#Unit	disable enable	enable	
33	01#Unit	disable enable	enable	
34	02#Unit	disable enable	enable	
35	03#Unit	disable enable	enable	
36	04#Unit	disable enable	enable	
37	05#Unit	disable enable	enable	
38	06#Unit	disable enable	enable	
39	07#Unit	disable enable	enable	
40	AllCompDiff	0...20	6	℃
41	EgyCtrlPeriod	0...999	60	s
42	Steri. on day	Sunday Monday Tuesday Wednesdays Thursdays Fridays Saturdays	Sunday	/
43	Steri. on hour	0...23	0	h
44	Steri. on min	0...59	0	min
45	Sterilization	disable enable	enable	/

46	COOL_CURVE	OFF CURVE#1.L CURVE#2.L CURVE#3.L CURVE#4.L CURVE#5.L CURVE#6.L CURVE#7.L CURVE#8.L CURVE#1.H CURVE#2.H CURVE#3.H CURVE#4.H CURVE#5.H CURVE#6.H CURVE#7.H CURVE#8.H CURVE#1.L CURVE#2.L CURVE#3.L CURVE#4.L CURVE#5.L CURVE#6.L CURVE#7.L CURVE#9	OFF	
47	Heating curve	OFF CURVE#1.L CURVE#2.L CURVE#3.L CURVE#4.L CURVE#5.L CURVE#6.L CURVE#7.L CURVE#8.L CURVE#1.H CURVE#2.H CURVE#3.H CURVE#4.H CURVE#5.H CURVE#6.H CURVE#7.H CURVE#8.H CURVE#1.L CURVE#2.L CURVE#3.L CURVE#4.L CURVE#5.L CURVE#6.L CURVE#7.L CURVE#9	OFF	

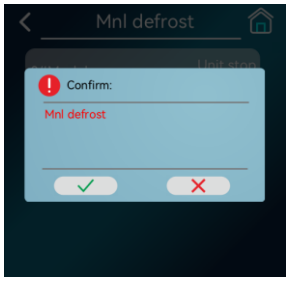
3.7.6 Manual defrost

The unit has intelligent (automatic) defrosting function during normal operation, but manual defrosting function may be required in some cases, and manual defrosting function can be used through the following Path:'' Main interface'' >'' Set menu' >'' Mnl defrost''.

Press to enter the manual defrost setting interface, you can see the status of the module heat pump: unit run,

unit stop, unit defrost.

If you need to defrost manually, first press on the corresponding module to pop up the manual defrost OK box, then press on it to enter the defrost.

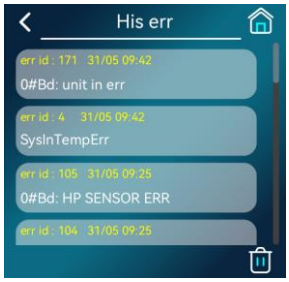


Only when the module is in the running state, the water temperature and fin temperature and other conditions are met, and then we can press to enter the defrosting successfully. At this time, the current state of the module will be switched to Unit defrost. Otherwise, the heat pump will maintain the original status.

3.7.7 History error

The errors that have occurred to the unit (including those that have been reset) will be recorded in the controller. The history error interface is as follow:

According to the path: '' Main interface'' >'' Set menu' >'' His err''.



In this interface, you can see the code and occurrence time of each error in the past, press  will clear all the history error, press the error can see the specific meaning of the error code.

Part IV Maintenance

Before performing any maintenance on the unit, you should turn the unit off first and shut off the power.

A well-maintained heat pump could save your energy costs and make the unit durable, but must be done by a qualified technician. Below are some tips for your reference to help your heat pump gives you optimum performance.

1. Turn the power off when the unit is being maintained.
2. Do not use petrol, naphtha, dissolvent and any other chemicals on the unit, otherwise, it may damage the surface. External heat pump parts can be wiped with a damp cloth and domestic cleaner.
3. Avoid leaning or putting objects on the device.
4. Keep dry and drafty round the unit. Clean heat exchangers regularly (usually once per 1～2 months) to keep a good heat exchange efficiency.
5. If the unit will be shut down for a long time, you should drain the water in the pipe, turn the power off and cover it with protective cover, check it roundly before you start it again.
6. It is advised to use the phosphoric acid whose temperature is about 50～60℃ and consistency is 15% to clean the heat exchanger of the unit. First start the circulation pump to clean it for 3 hours, and then flush it with tap water for three times. Do not use any amyctic detergent to clean the heat exchanger and the tank.
7. Change the installation place

   If the customer wants to change the site, please contact with the dealer or the local Customer Service for help.

8. Cleaning and maintenance

   Regular maintenance is essential to ensure optimal use of the unit. Doing maintenance the wrong way can reduce the performance of the unit and shorten the life of the system.

   The frequency of regular maintenance should be guaranteed at least 1 time/year.

   To be safe, the unit must be shut down and the power supply must be shut off, before cleaning.

   If necessary, the temperature sensor can be dismounted before the unit is cleaned, But it must be installed back after the cleaning is finished.

   To ensure the long-term work efficiency, it is recommended to drain the inner water out totally and clean one time every six months, remove accumulative sediment during the operation

   Please check whether the TP valve of water system is working properly or not, so as not to affect the heating capacity and the reliability of the operation.

9. External maintenance

   Check around the heat pump unit regularly to make sure the inlet grille is not blocked by leaves, snow or other thing

   at least once a year to clean the heat exchanger inlet grille, if the unit is located in dirty environment, need to be cleaned often to ensure that the unit runs well. Make sure that there is not too much frost or snow covering the heat pump unit in colder times;

   Regularly check the unit for loose, damaged or broken parts, if there is and note liminate these hidden dangers, the unit may cause injury and loss of personal, goods and property.

Regularly check the water circuit system for leaks, if there are leaks, they should be repaired immediately;>Regularly check the refrigerant circuit for leakage, if there is any leakage, there frigerant recovery equipment should be applied to recover the remaining refrigerant the system, repair and re-test it before filling it into the unit.

When the appliance is breakdown and the user cannot solve the problem, please contact the local service center or dealer to send servicemen to repair the appliance promptly.

Part V Trouble Shooting

Error ID	Error Name
The system failure:	
1	wrong phasic
2	eep data err
3	SysEnvTempErr
4	SysInTempErr
5	SysOutTempErr
6	Protect eep err
7	lack phasic
8	lack fan
9	DHW Sensor Err
10	TACt temp. error
16	Fcu01_commu_err
17	Fcu02_commu_err
18	Fcu03_commu_err
19	Fcu04_commu_err
20	Fcu05_commu_err
21	Fcu06_commu_err
22	Fcu07_commu_err
23	Fcu08_commu_err
24	Fcu09_commu_err
25	Fcu10_commu_err
26	Fcu11_commu_err
27	Fcu12_commu_err
28	Fcu13_commu_err
29	Fcu14_commu_err

30	Fcu15_commu_err
31	Fcu16_commu_err
32	Fcu01_err
33	Fcu02_err
34	Fcu03_err
35	Fcu04_err
36	Fcu05_err
37	Fcu06_err
38	Fcu07_err
39	Fcu08_err
40	Fcu09_err
41	Fcu10_err
42	Fcu11_err
43	Fcu12_err
44	Fcu13_err
45	Fcu14_err
46	Fcu15_err
47	Fcu16_err
48	Fcu17_commu_err
49	Fcu18_commu_err
50	Fcu19_commu_err
51	Fcu20_commu_err
52	Fcu21_commu_err
53	Fcu22_commu_err
54	Fcu23_commu_err
55	Fcu24_commu_err
56	Fcu25_commu_err
57	Fcu26_commu_err
58	Fcu27_commu_err
59	Fcu28_commu_err
60	Fcu29_commu_err
61	Fcu30_commu_err
62	Fcu31_commu_err
63	Fcu32_commu_err
64	Fcu17_err
65	Fcu18_err

66	Fcu19_err
67	Fcu20_err
68	Fcu21_err
69	Fcu22_err
70	Fcu23_err
71	Fcu24_err
72	Fcu25_err
73	Fcu26_err
74	Fcu27_err
75	Fcu28_err
76	Fcu29_err
77	Fcu30_err
78	Fcu31_err
79	Fcu32_err
The compressor failure:	
97	CM DI LP
98	CM DI HP
99	CM curr high
100	CM curr low
101	WING T ERR
102	EXH T ERR
103	EXH T HIGH
104	LP SENSOR ERR
105	HP SENSOR ERR
106	CM press low
107	CM press high
108	CM GAS IN ERR
109	CM EVAP IN ERR
110	GasInLow
111	Emerg defrost
112	gasInOutErr
113	EvapLow
114	SubFreq
115	bak
116	temp in low
117	temp in high

118	fan1 except
119	fan2 except
120	ec1 commu err
121	ec1 err
122	ec2 commu err
123	ec2 err
124	invt commu err
125	invt err
126	invt model set
127	EVI in err
128	EVI out err
161	unit env err
162	commu err
163	eeprom data err
164	lack phasic
165	wrong phasic
166	temp out low
167	temp out high
168	unit out err
169	air lack water
170	Air fan OL
171	unit in err
172	anti-ice low
173	anti-ice err
174	outInDiffHigh
175	outInDiffErr
176	power error
177	commu except
178	EAH OL
179	PUMPF alarm
180	EAH over load
181	PUMPF err
182	Flow sensor error
183	IDU and ODU communication error
184	Protocol version mismatch
185	R290 sensor error

186	R290 gas letout
The inverter failure:	
193	Er.ocb(1) Overcurrent at start
194	Er.ocA(2) Overcurrent during acceleration
195	Er.ocd(3) Overcurrent during deceleration
196	Er.ocn(4) Overcurrent during constant-speed operation
197	Er.ouA(5)Overvoltage during acceleration
198	Er.oud(6) Overvoltage during deceleration
199	Er.oun(7) Overvoltage during constant-speed operation
200	Er.ouE(8) Overvoltage in standby state
201	Er.dcL(9) Undervoltage during running
202	Er.PLI(10) Input phase loss
203	Er.PLo(11) Output phase loss
204	Er.FoP(12) Power device protection
205	Er.oHI(13) Inverter overheating
206	Er.oLI(14) Inverter overload
207	Er.oLL(15) Motor overload
208	Er.EEF(16) PFC startup failure
209	Er.oLP(17) Motor load overweight
210	Er.ULd(18) Motor over speed
211	Er.Co1(19) Motor D-axis overcurrent
212	Er.Co2(20) Motor Q-axis overcurrent
213	Er.EEP(21) Parameter saving failed
214	Er.CFE(22) Communication error
215	Er.ccF(23) Current test error
216	Er.ArF(24) Heat temperature test error for PFC
217	Er.Aco(25) Motor Lock at start
218	Er.Pgo(26) Motor lock during running
219	Er.rHo(27) Heat temperature test error
220	Er.Abb(28) Stall error
221	Er.Io1(29) Interrupt overflow 1
222	Er.Io2(30) Interrupt overflow 2
223	Er.PnL(31) Rotor shake at start
224	Er.rr1(32) Rotor shake during running
225	Er.PF1(33) PFC Overcurrent
226	Er.PF2(34) PFC peak current over

227	Er.PF2(35) PFC rms current over
The inverter circulation pump failure:	
289	PUMPf error code[1]
290	PUMPf error code[2]
291	PUMPf error code[3]
292	PUMPf error code[4]
293	PUMPf error code[5]

Fault	Reset Way	Detect Conditions	Alarm Action	Troubleshooting
The controller failure:				
EEPROM data failure	Power on to reset	Detect after power on.	Alarm, cannot start.	● Initialize all parameters. ● If the fault persists after initialization, please contact us!
System maintenance data error	Power on to reset	Detect after power on.	Alarm, cannot start.	● Initialize system maintenance settings. ● If the fault persists after initialization, please contact us!
Inverter communication failure EC1, 2 communication failure	A	Detect after power on.	Stop the compressor.	Check if the communication cable is properly connected and in good contact.
Inverter failure	A/ M	Detect after power on.	Stop the compressor.	Refer to the inverter manual for specific fault meanings.
EC1, 2 failure	A	Detect after power on.	Stop the compressor.	Refer to the inverter manual for specific fault meanings.
Inverter model setting in progress	A	Detect after power on.	Stop the compressor.	This fault may appear when the inverter is first connected. If it does not resolve automatically, try restarting. If it persists, the inverter driver may lack the corresponding compressor model.
Fan coil communication failure	A	Detect only when [Number of End Unit] is not 0. Fault confirmation delay: 60s.	Only alarm, not stop.	Check the communication connections, settings, and power status, etc.
Fan coil failure	A	Detect only when [Number of End Unit] is not 0.	Only alarm, not stop.	Check the fan coil.
n# Module communication failure/abnormality	A	Detect only when [Number of Modules] ＞1,	Stop the corresponding module	1. Check the cascade communication wiring. 2. Check the address dip switches.
Smart meter communication failure	A	Detected only when [Smart Meter Code] is not 0.	Disable grid limit logic	Check the smart meter and address settings.
The unit failure				
System total outlet temp. too high	A/ M	Detection during heating/hot water mode operation: When system total outlet temp. ≥ [System Outlet Temp. Overheat], alarm; When system total outlet temp. < [System Outlet Temp. Overheat] - [Exit Temp. Protection Diff.], allow recovery.	Stop the unit and AC pump;	

Water flow insufficient	A/ M	Detected 30s after pump start; When the switch remains open for [Water Flow Insufficient Detection Delay], alarm.	Stop the unit and AC pump; End pump not stopped; If [Water Flow Insufficient Pump] is "Enabled" and ambient temp. < 2°C, AC pump is not stopped.	Check if the corresponding input point is closed.
Power failure	M	After power-on, detect the "power failure" input point;	Alarm, cannot start; "Non-frequency reduction shutdown".	
Fan protection	M	After power-on, detect the "fan overload" input point;	Alarm and stop the compressor.	Check if the fan overload input status is normal.
Compressor high pressure	A/ M	Detected after compressor start; If defrosting, exit defrost, no alarm.	Stop the compressor; "Non-frequency reduction shutdown"	Check if the high pressure input status is normal.
Compressor high pressure sensor too high	A/ M			Check high pressure sensor. |
Compressor low pressure	A/ M	Detected after [Low Pressure Detection Delay] (or if [Standby Low Pressure Detection] is enabled and during standby). When low pressure remains below [Cooling Low Pressure Delay] or [Heating Low Pressure Delay], alarm.	Stop the compressor.	Check if the low pressure input status is normal.
Compressor low pressure sensor too low	A/ M			Check the low pressure sensor.
Exhaust temp. too high	A/ M	If [Compressor Top Temp. Setting] is "Enabled", use the higher of "Compressor Top Temp." and "Exhaust Temp." for judgment; When exhaust temp. > [Exhaust Temp. Overheat], alarm; When exhaust temp. ≤ [Exhaust Temp. Overheat] - [Exit Temp. Protection Diff.], allow recovery.	"Non-frequency reduction shutdown"	1. Check if there is a lack of refrigerant. 2. Check for refrigerant shortage.
AC outlet temp. too low	A/ M	Detected during cooling: When outlet temp. ≤ [Cooling Outlet Temp. Too Low], alarm; When outlet temp. > [Cooling Outlet Temp. Too Low] + [Exit Temp. Protection Diff.],	Stop the compressor.	Check outlet and return water temp. probes.

		allow recovery.		
AC return temp. too low	A/ M	Detected during cooling: When return temp. ≤ [Cooling Outlet Temp. Too Low] + 1, alarm; When return temp. > [Cooling Outlet Temp. Too Low] + [Exit Temp. Protection Diff.] + 1, allow recovery.		
AC outlet temp. too high	A/ M	Detected during heating: When outlet temp. ≥ [Heating Outlet Temp. Too High], alarm; When outlet temp. < [Heating Outlet Temp. Too High] - [Exit Temp. Protection Diff.], allow recovery.	Stop the compressor.	
AC return temp. too high	A/ M	Detected during heating: When return temp. ≥ [Heating Outlet Temp. Too High] - 1, alarm; When return temp. < [Heating Outlet Temp. Too High] - [Exit Temp. Protection Diff.] - 1, allow recovery.		
Outlet-return temp. diff. too high	A/ M	Detected during compressor start and non-defrost operation: When outlet-return temp. diff. > [Outlet-Return Temp. Diff. Too High] and lasts for 1min, alarm; When outlet-return temp. diff. < [Outlet-Return Temp. Diff. Too High] - 5, allow auto-reset.	Stop the compressor.	Check outlet and return water temp. probes; Check water flow, etc.
Outlet-return temp. diff. abnormal	A/ M	Detected during compressor start and non-defrost operation: When outlet-return temp. diff. reverses and > [Outlet-Return Temp. Diff. Abnormal] and lasts for 10min, alarm; After compressor shutdown, allow auto-reset.	Stop the compressor.	Check outlet and return water temp. probes; Check water flow, etc.

Anti-freeze temp. too low	A/ M	Detected only when anti-freeze temp. is enabled and during cooling: When anti-freeze temp. < 3°C, alarm; When anti-freeze temp. > 7°C, allow recovery.	Stop the compressor; "Non-frequency reduction shutdown"	Check anti-freeze temp. probe.
Emergency defrost frequent	M	Three emergency defrosts within two hours.	Stop the compressor.	Check refrigerant level.
Cooling suction temp. too low	A/ M	During cooling operation: Within 3min of compressor start, if suction temp. < [Cooling Suction Temp. Too Low] - 5 and lasts for 30s, alarm; After 3min, if suction temp. < [Cooling Suction Temp. Too Low] and lasts for 30s, alarm; If suction temp. > [Cooling Suction Temp. Too Low] + 2, allow reset.	Stop the compressor; "Non-frequency reduction shutdown"	Check refrigerant level.
Fan 1 speed abnormal Fan 2 speed abnormal	M	Detected only when [Inverter Fan Setting] is PWM fan; After fan start, if speed remains < [PWM Speed Too Low] for [PWM Speed Detection Delay], alarm.	Stop the compressor.	Check PWM fan wiring.
Suction-discharge temp. diff. abnormal	M	Disabled if [Suction-Discharge Abnormal Detection Delay] is 0; No detection during defrost; After compressor runs for [Suction-Discharge Abnormal Detection Delay], if suction temp. > discharge temp. + 5, alarm.	Stop the compressor; "Non-frequency reduction shutdown"	
Cooling evaporation temp. too low	A/M	During cooling operation: Within first 3min, if valve temp. < [Cooling Evaporation Temp. Too Low] - 3°C and lasts for 30s, or after 3min, if valve temp. < [Cooling	Stop the compressor; "Non-frequency reduction shutdown"	

		Evaporation Temp. Too Low] and lasts for 30s, alarm; If valve temp. > [Cooling Evaporation Temp. Too Low] + 2, allow reset.		
Frequency reduction switch	A	When "Frequency Reduction Switch" is triggered, compressor enters forced frequency reduction protection; when restored, compressor resumes normal frequency control.		
Air pressure difference	M	Detected when fan is on; When switch remains open for [General Fault Delay], alarm.	Stop the compressor.	
Inverter pump warning	A			
Inverter pump failure	M		Stop the compressor; "Non-frequency reduction shutdown"	
R290 Leak	M	Detected only when [R290 Sensor Code] is not "0". When sensor detects high R290 concentration, alarm.	Stopping the compressor; "Non-frequency reduction shutdown" Turn off auxiliary heating; Turn off chassis electric heating; Turn off the crankshaft electric heating; The fan runs at minimum speed.	Check refrigerant piping.
The sensor failure:				
Ambient temp. sensor failure	A	Detect after power on.	Stop the compressor.	Check if the probe is connected and functioning.
Return temp. sensor failure	M			
Outlet water temp. sensor failure	M			
DHW tank temp. sensor failure	A			
Buffer tank temp. sensor failure	A			

Flow sensor failure	A			
Coil temp. sensor failure	M			
Exhaust temp. sensor failure	M			
Suction temp. sensor failure	M			
Valve temp. sensor failure	M			
Anti-freeze temp. sensor failure	A			
Economizer inlet temp. sensor failure	A			
Economizer outlet temp. sensor failure	A			
Low pressure sensor failure	M			
High pressure sensor failure	M			
R290 sensor failure	A			Check sensor wiring and communication address. Check if the sensor hardware is functioning.

The inverter failure:

Fault Code	Fault Name	Possible Causes	Troubleshooting
Er.ocb (1)	Overcurrent at start	Compressor model parameters do not match actual.	Check the press model and model parameters
		Restarting a rotating compressor.	Wait for compressor to stop completely before restarting.
		Short circuit or ground fault in UVW output lines.	Check UVW output lines for shorts.
		Inverter module damaged.	Seek service.
Er.ocA (2)	Overcurrent during acceleration	Compressor model parameters do not match actual.	Check compressor model and parameters.
		Low grid voltage.	Check input power.
		Inverter power too small.	Use a higher-power inverter.
		Acceleration time too short.	Extend acceleration time.
Er.ocd (3)	Overcurrent during deceleration	Compressor model parameters do not match actual.	Check compressor model and parameters.
		Inverter power too small.	Use a higher-power inverter.
		Deceleration time too short.	Extend the deceleration time
Er.ocn (4)	Overcurrent during constant-speed operation	Compressor model parameters do not match actual.	Check compressor model and parameters.
		Low grid voltage.	Check input power.
		Abnormal load.	Inspect the load.
		Inverter power too small.	Use a higher-power inverter.
Er.ouA (5)	Overvoltage during acceleration	High input voltage.	Check input power.
		Restarting a rotating compressor.	Wait for compressor to stop completely before restarting.
		Compressor model parameters do not match actual.	Check compressor model and parameters.

Er.oud (6)	Overvoltage during deceleration	High input voltage.	Check input power.
		Compressor model parameters do not match actual.	Check compressor model and parameters.
		Deceleration time too short.	Extend deceleration time.
Er.oun (7)	Overvoltage during constant-speed operation	High input voltage.	Check input power.
		Compressor model parameters do not match actual.	Check compressor model and parameters.
		Acceleration / deceleration time too short.	Adjust acceleration / deceleration time.
Er.ouE (8)	Overvoltage in standby state	High input voltage.	Check input power.
		DC bus voltage detection circuit fault.	Seek service.
Er.dcL (9)	Undervoltage during running	Abnormal input voltage or power loss during operation.	Check input power and wiring.
		Input phase loss.	Check input power and wiring.
		Charging contactor damaged.	Check and replace.
Er.PLI (10)	Input phase loss (Only available for three-phase input)	Missing phase in three-phase input.	Check wiring.
		Input three-phase imbalance.	Check input voltage.
		Severe output oscillation.	Adjust parameters to eliminate oscillation.
Er.PLo (11)	Output phase loss	Missing phase in output U, V, W.	Check output wiring, motor, and cables.
Er.FoP (12)	Power device protection	Compressor model parameters do not match actual.	Check compressor model and parameters.
		Short circuit or ground fault in UVW output lines.	Re-wire.
		Long connection between compressor and inverter.	Add output reactor or filter.
		Severe interference or inverter damage.	Seek service.
Er.oHI (13)	Inverter overheating	High ambient temperature.	Reduce ambient temperature.
		Fault upon power-on, possibly due to damaged or disconnected temp. probe.	Seek service.
		Blocked air duct or fan damage.	Clean air duct or replace fan. |
		Excessive load.	Inspect load or use a higher-power inverter.
Er.Oli (14)	Inverter overload (PFC overheating)	Inverter temperature too high.	Check fan, air duct, and ambient temp.
		Acceleration time too short.	Extend acceleration time.
		Low input voltage.	Check input voltage.
		Compressor model parameters do not match actual.	Check compressor model and parameters.
Er.oLL (15)	Motor overload	Compressor model parameters do not match actual.	Check compressor model and parameters.
		Compressor locked or sudden load change.	Check compressor model and parameters.
		Low input voltage.	Check input voltage.
Er.EEF (16)	PFC startup failure	Input grid voltage too low for several seconds after startup, preventing PFC activation.	Check input voltage.
		PFC module self-protection or circuit anomaly.	Power off for a few minutes and restart, or seek service.
Er.oLP (17)	Motor load overweight	Current exceeds overload detection level and duration.	Check compressor model and parameters.

Er.ULd (18)	Motor over speed	Compressor speed exceeds 1.1x upper limit.	Compressor phase sequence reversed or not connected. Check compressor model and parameters.
Er.Co1 (19)	Motor D-axis overcurrent	Compressor model parameters do not match actual.	Check compressor model and parameters.
		Compressor restarted too soon after shutdown.	Wait a few minutes before restarting.
		Current detection circuit anomaly.	Seek service.
		PMSM motor demagnetized.	Replace motor.
		Compressor stator winding open circuit.	Check stator resistance and replace motor.
Er.Co2 (20)	Motor Q-axis overcurrent	Compressor model parameters do not match actual.	Check compressor model and parameters.
		Compressor restarted too soon after shutdown.	Wait a few minutes before restarting.
		Current detection circuit anomaly.	Seek service.
		PMSM motor demagnetized.	Replace motor.
		Motor stator winding open circuit.	Check stator resistance and replace motor.
Er.EEP (21)	Parameter saving failed	Error during parameter writing.	Power off and on to retry. If issue persists, seek service.
Er.CFE (22)	Communication error	Control board and inverter drive board wiring incorrect or disconnected.	Check control board, inverter drive board, and wiring.
		Incorrect communication parameter settings.	Check communication parameters.
		Severe communication interference.	Check communication wiring and grounding.
Er.ccF (23)	Current detection fault	Current sensor damaged or circuit anomaly.	Power off and on to retry. If issue persists, seek service.
Er.ArF (24)	PFC temperature detection fault	Fault upon power-on, possibly due to damaged or disconnected PFC temp. probe.	Power off and on to retry. If issue persists, seek service.
Er.Aco (25)	Motor lock at start	Motor rotor oscillation exceeds limit, motor out of sync.	Check compressor model and parameters.
		Compressor restarted too soon after shutdown.	Wait a few minutes before restarting.
		Incorrect motor startup or lock detection parameters.	Check compressor model and parameters.
		PMSM motor demagnetized.	Replace motor.
		Motor stator winding open circuit.	Check stator resistance and replace motor.
		Excessive running load.	Inspect motor load.
Er.PGo (26)	Motor lock during running	Motor rotor oscillation exceeds limit, motor out of sync.	Check compressor model and parameters.
		Compressor restarted too soon after shutdown.	Wait a few minutes before restarting.
		Incorrect motor startup or lock detection parameters.	Check compressor model and parameters.
		PMSM motor demagnetized.	Replace motor.
		Motor stator winding open circuit.	Check stator resistance and replace motor.
		Excessive running load.	Inspect motor load.
Er.rHo (27)	Heat sink temperature detection fault	Fault upon power-on, possibly due to damaged or disconnected temp. probe.	Power off and on to retry. If issue persists, seek service. |

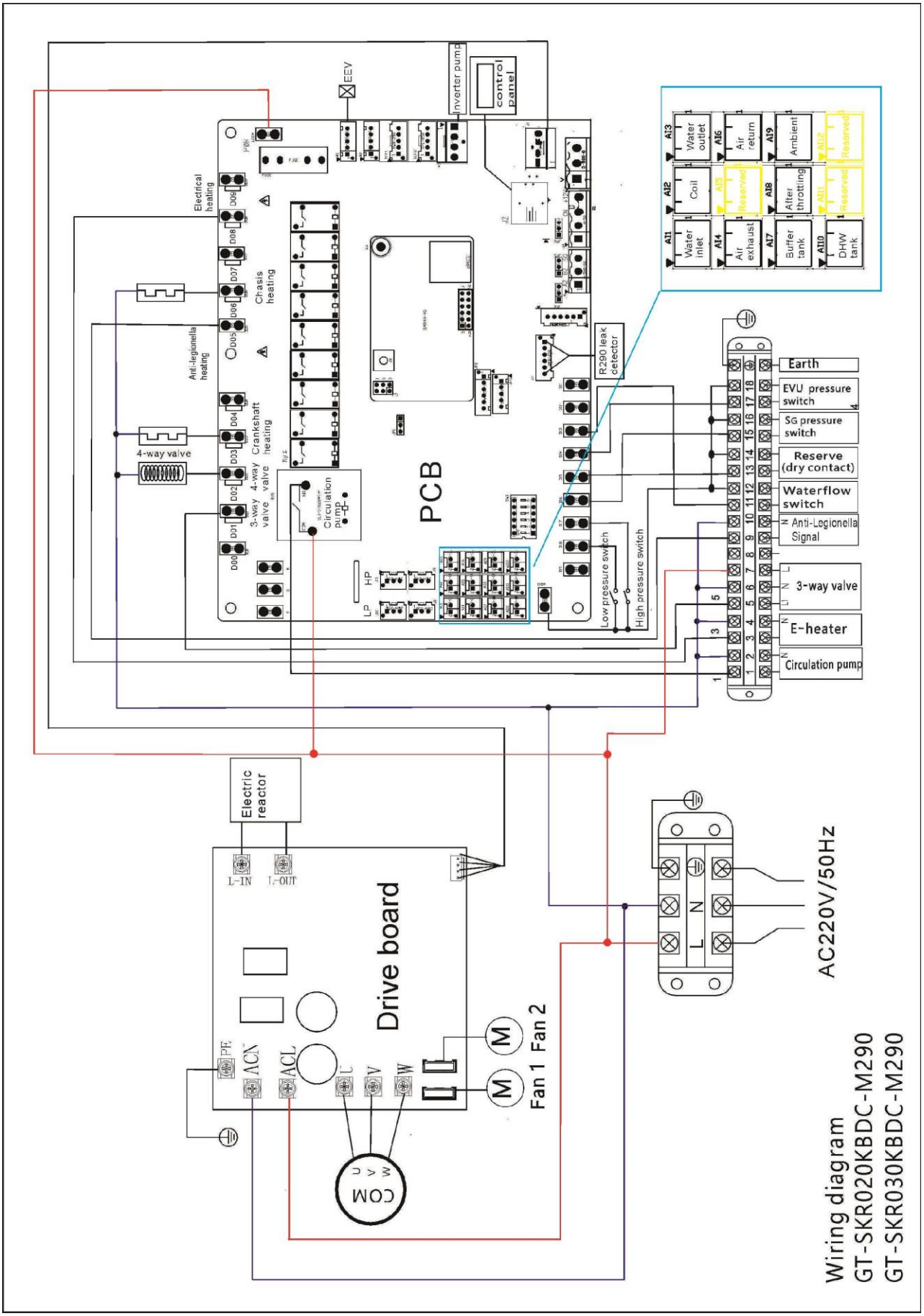
Er.Abb (28)	Stall error	The motor does not run as commanded.	Check compressor model and parameters.
Er.Io1 (29)	Interrupt overflow 1	Internal fault.	Seek service.
Er.Io2 (30)	Interrupt overflow 2	Internal fault.	Seek service.
Er.PnL (31)	Excessive rotor shake at start	Compressor restarted too soon after shutdown.	Wait a few minutes before restarting.
		Incorrect motor startup or lock detection parameters.	Check compressor model and parameters.
		PMSM motor demagnetized.	Replace motor.
		Motor stator winding open circuit.	Check stator resistance and replace motor.
		Excessive running load.	Inspect motor load.
Er.rr 1 (32)	Excessive rotor shake during running	Compressor restarted too soon after shutdown.	Wait a few minutes before restarting.
		Incorrect motor startup or lock detection parameters.	Check compressor model and parameters.
		PMSM motor demagnetized.	Replace motor.
		Motor stator winding open circuit.	Check stator resistance and replace motor.
		Excessive running load.	Inspect motor load.
Er.PF1 (33)	PFC Overcurrent	Low input grid voltage and overload operation.	Check input power.
		Short circuit or ground fault in PFC inductor wiring or PFC circuit fault.	Check PFC inductor wiring or seek service.
Er.PF 2 (34)	PFC peak current over	Low input grid voltage and overload operation.	Check input power.
		Short circuit or ground fault in PFC inductor wiring or PFC circuit fault.	Check PFC inductor wiring or seek service.
Er.PF 2 (35)	PFC rms current over	Low input grid voltage and overload operation.	Check input power.
		Excessive compressor load or refrigerant anomaly.	Inspect mechanical system or seek service.

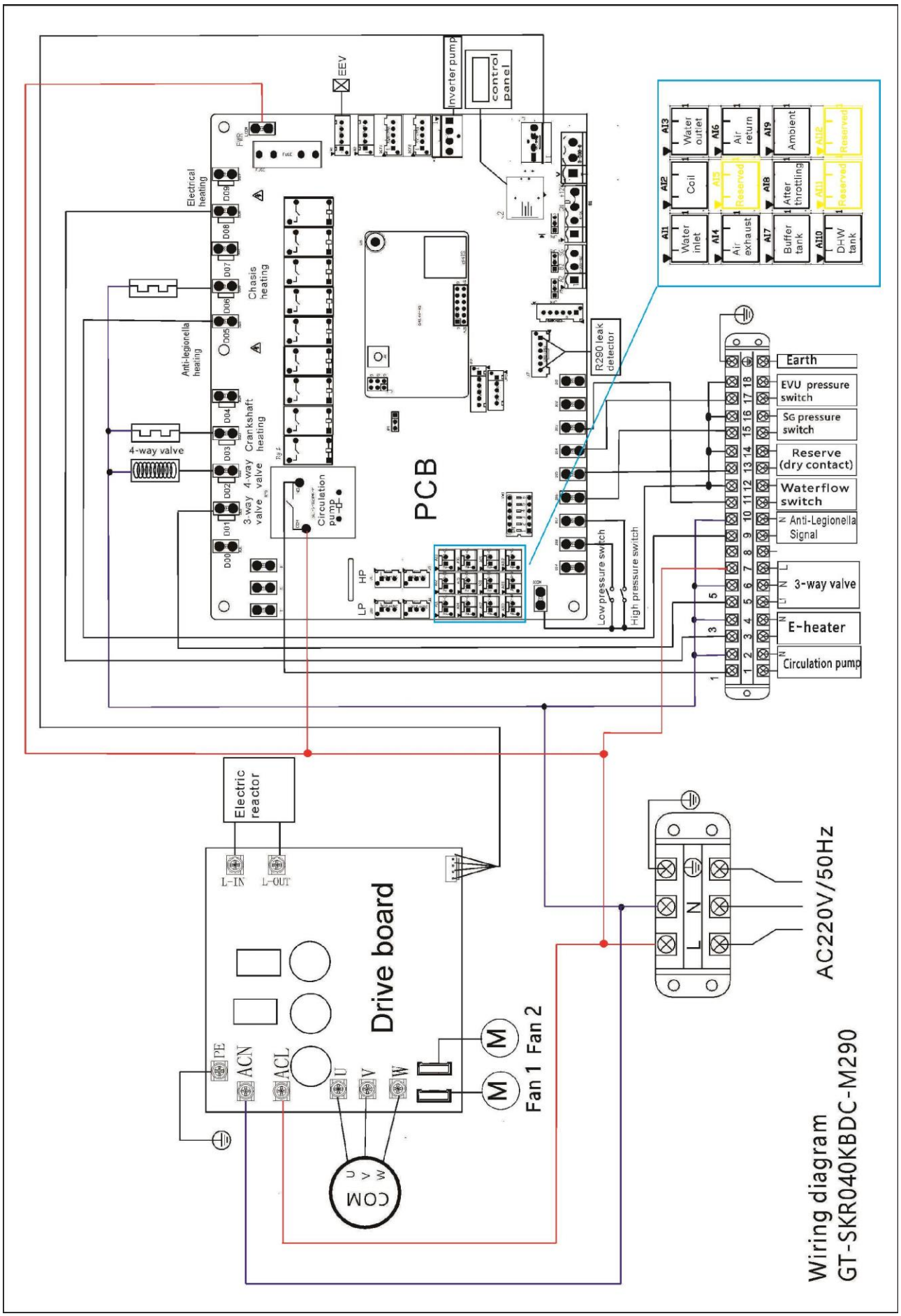
The possible causes and treatment of common failure.

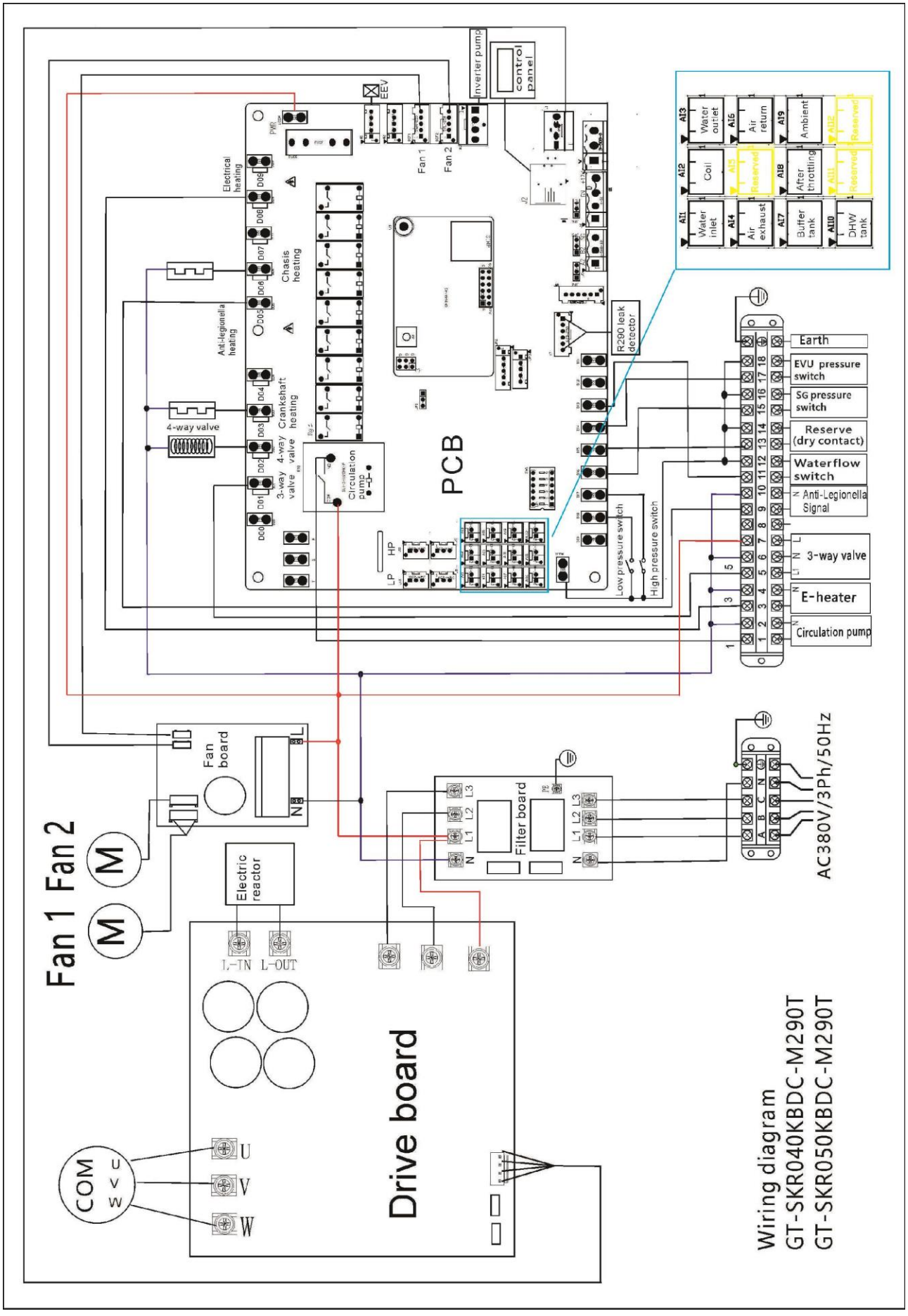
Fault Condition	Possible Causes	Treatment
The unit doesn't work	◇Power fault ◇Bad connection to the power ◇Fuse blow	◇Turn off the switch, check the Power source ◇Find the causes and renovate them ◇Replace the fuse
The pump is working but too noisy and the water is not cycled	◇Lack water in the system ◇There is air in the water circulation ◇Any valve in the system is not open ◇Filter stoppage	◇Check the water make-up device and fill in with water ◇Discharge the air in water system ◇Open all valves ◇Clean filters

Low heating capacity	◇Inadequate refrigerant ◇bad insulation of the water system ◇Drying filter stoppage ◇Air side heat exchanger is un-efficient ◇Inadequate water-flow	◇Leak hunting and fill in standard quantity of refrigerant ◇Improve the heat insulation ◇Replace the drying filter ◇Clean the heat exchanger ◇Clean the water filter
The compressor doesn't work	◇Power failure ◇Compressor contactor destroyed ◇Poor connection ◇Overheating protection ◇water outlet temperature is too high ◇Inadequate water-flow	◇Check it and solve the problems ◇Replace contactor ◇Check and renovate it ◇Check and solve the problems ◇Reset a proper temperature ◇Clean the water filter and discharge the air in the water system
The compressor works but too noisy	◇Liquid refrigerant goes into the compressor ◇interior components destroyed ◇Inadequate refrigeration oil	◇Check the expansion valve ◇Replace the compressor ◇Add in adequate refrigeration oil
The fan doesn't work	◇Capacitor damaged ◇The fans are not fixed well ◇The electromotor burned out ◇Contactor destroyed	◇Replace it ◇Fix it well again ◇Replace the electromotor ◇Replace the Contactor
Compressor works but not heating	◇Refrigerant leakage ◇Compressor fault	◇Leak hunting and fill in standard quantity of refrigerant ◇Replace the compressor
Low water-flow protection	◇Hydraulic switch destroyed ◇Inadequate water-flow	◇Replace the switch ◇Clean the filter and discharge the air
Excessive discharge pressure	◇Too much refrigerant ◇Non-condensable gas in the Refrigeration cycle ◇Inadequate water-flow	◇Draw off the superfluous refrigerant ◇Drive the gas out ◇Check the circulation and increase the flow
Low suction pressure	◇Drying filter stoppage ◇Lack of refrigerant ◇Excessive pressure drop in the heat exchanger	◇Replace the filter ◇Leak hunting and fill in standard quantity of refrigerant ◇Check the opening of electronic expansion valve

Part VI Wiring Diagram




Wiring diagram
GT-SKR040KBDC-M290
AC220V/50Hz
L
N
Fan 1 Fan 2
M
M
Drive board
PE
ACN
ACL
U
V
W
COM
Electric reactor
L-IN
L-OUT
PCB
EEV
Inverter pump
control panel
Electrical heating
Chasis heating
Anti-legionella heating
4-way valve
Crankshaft heating
4-way valve
3-way valve
Circulation pump
HP
LP
R290 leak detector
Low pressure switch
High pressure switch
Earth
EVU pressure switch
SG pressure switch
Reserve (dry contact)
Waterflow switch
Anti-Legionella Signal
3-way valve
E-heater
Circulation pump
Water outlet
Air return
Ambient
Coil
Reserved
After throttling
Reserved
Water inlet
Air exhaust
Buffer tank
DHW tank


Wiring diagram
GT-SKR040KBDC-M290T
GT-SKR050KBDC-M290T
Drive board
PCB
Fan 1 Fan 2
Fan board
Filter board
Electric reactor
AC380V/3Ph/50Hz
Earth
EVU pressure switch
SG pressure switch
Reserve (dry contact)
Waterflow switch
Anti-Legionella Signal
3-way valve
E-heater
Circulation pump
R290 leak detector
Low pressure switch
High pressure switch
4-way valve
Water outlet
Coil
Air return
Ambient
Water inlet
Air exhaust
Buffer tank
After throttling
DHW tank
Reserved
inverter pump
control panel
EEV
Fan 1
Fan 2
Electrical heating
Chasis heating
Anti-legionella heating
Crankshaft heating
4-way valve
3-way valve
Circulation pump
HP
LP
L-IN
L-OUT
COM
U
V
W

Disposal

Do not dispose this product as unsorted municipal waste. Collection of such waste separately for special treatment is necessary.

Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities.

Contact your local government for information regarding the collection systems available. If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging you health and well-being.

There won’t be a further notice if anything changes as the unit improved.
If there is anything difference with rating label, please subject to the rating label on the unit.