Air to Water Heat Pump

Instruction Manual

For model: GT-SKR100G

GT-SKR150G

◆ Please read the manual carefully before installation and maintenance.

◆ Please keep this manual well for future reference.

Contents

Part I: General Information

1.1 Caution

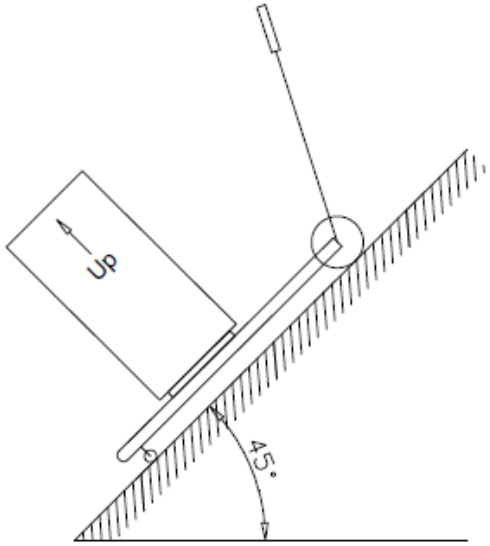
1. Ensure proper operation on the unit,
2. The unit must be installed and repaired by qualified technician, not consumer.
3. A leakage protection switch must be installed near the unit.
4. Do not use any damaged cables and switches to avoid any leakage.
5. Do not open the electrical box of the unit without shutting off power supply.
6. Along transporting, do not incline the unit more than 45° in any direction.
7. Before maintenance, please shut off the power to the unit first.
8. The outdoor unit may only be installed outdoors. Do not install it in a closed space without good ventilation.
9. Do not install the unit near inflammable or explosive goods.
10. Do not block the air intake or outlet of the unit.
11. When the unit is in off status for more than 5 hours with the ambient temperature lower than 2℃, please drain the unit to prevent the formulation of ice in it.
12. This unit is not intended for operation by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience or knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
13. Keep safety distance between the unit and other equipment or structures according local norm, and ensure that adequate space for maintenance or service operations.
14. 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.
15. Please attention that hot water produced by the unit is not used for drink.

Part II Installation & Application

2.1 Transportation

Along transporting , do not incline the unit more than 45° in any direction

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



2.2Installation site requirement

The outdoor unit may only be installed outdoors, do not install it in a closed space.

When select a proper place to install the unit, please consider the condition as following:

● The installation place should be large enough and well ventilation.

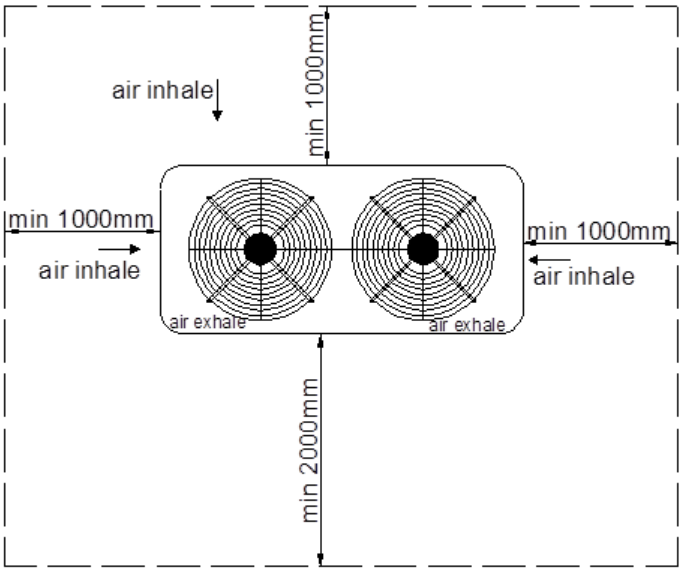
● The installation place should be convenient for water discharge.

● Select a smooth, horizontal position where it can support the weight of the unit, if necessary you can install the unit on bracket which fix it on wall,

● Do not install the unit where there is pollution, accumulation, fallen leaves or bad ventilation.

● Do not install the unit near inflammable or explosive goods.

2.3 Minimum clearances for the unit



Clearance between the unit and ground

In areas with heavy snowfall, the minimum installation height must be increased or a canopy must be constructed over the outdoor module.

2.4 Installation guide

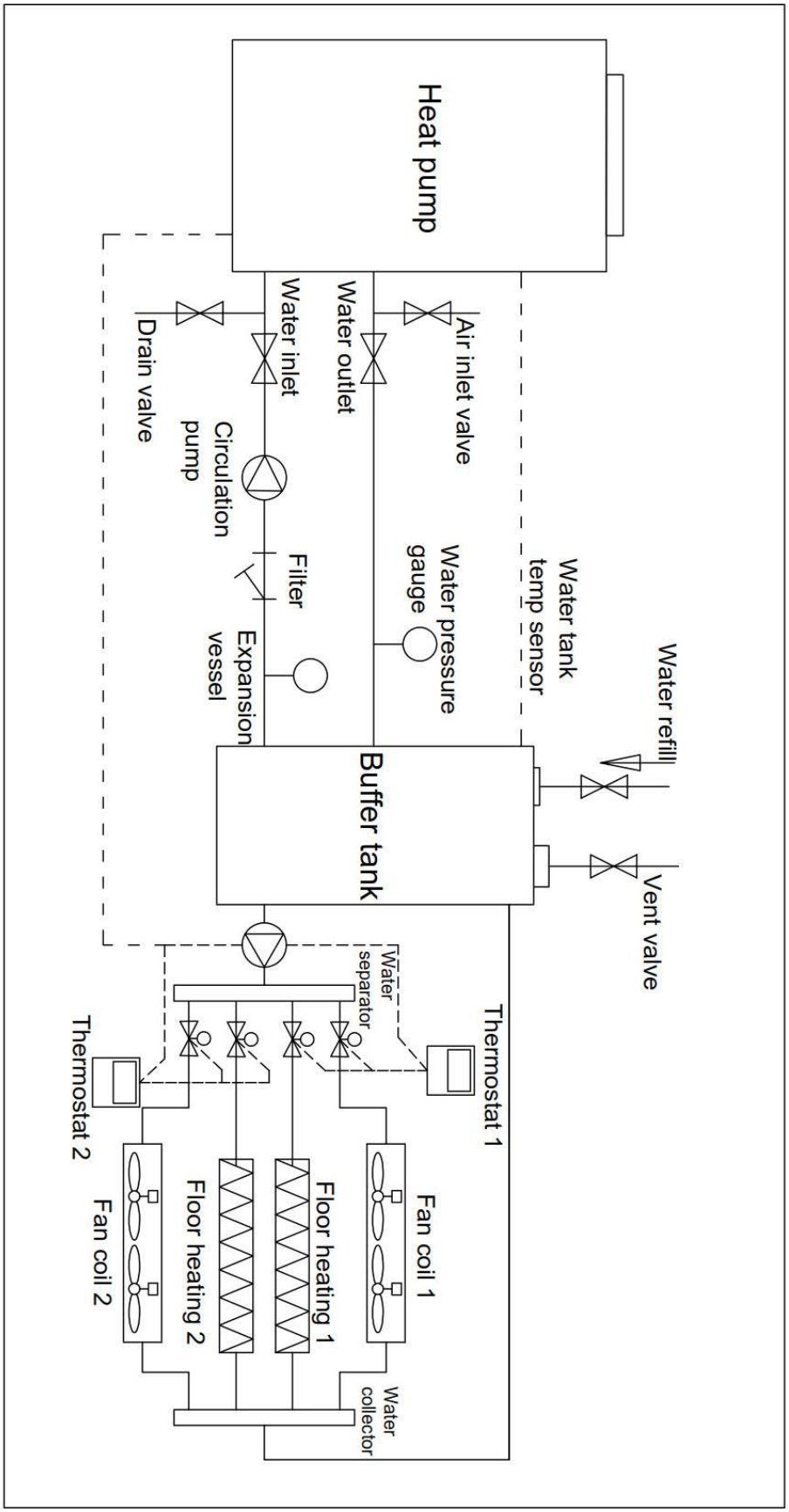
a. Install 4 pieces shockproof rubber pad between the feet of the unit and ground.

b. If install the unit on the wall with bracket, please insure the wall is strong enough.

c. The vertical distance between the unit and the water tank must be less than 6m, and their horizontal distance should not be more than 20m.

d. Connect the condensate connector to the drain hole on the bottom sheet.

2.5 Hydraulic connection (for reference)



2.6 Electrical connection

1. For your own security, and to ensure proper operation of the unit, this heat pump unit must be installed and repaired by qualified technician, not consumer.

2. A leakage protection switch must be installed near 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 there is a good earth connection for the power. Do not disconnect the earth connection of the power in any condition.

●Ensure that the heat pump water heater is well connected to the earth.

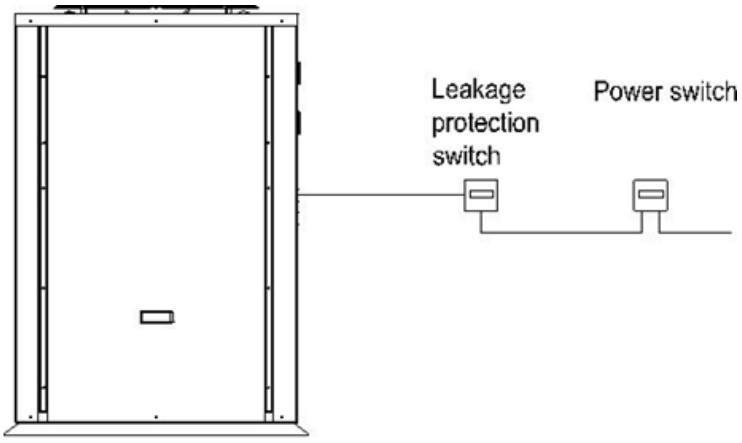
● Provide a separate power supply which meets rated requirements for the unit.

● When the unit connects to the electricity network, there must be a short-circuit protection.

● Choose the suitable type of cable when use the power outdoor.

●Do not control the unit on or off by the main power switch.

●After finish installation, double check before connect it to the power.



The Specification of Power （for reference, please subject to local safety norm）

Type	GT-SKR100G	GT-SKR150G
Power supply	380-415V/3Ph/50Hz	380-415V/3Ph/50Hz
Circuit breaker(A)	40	63
Min. power cable (mm^2)	4	6
Ground wiring (mm^2)	4	6

2.7 Trial Operation

●The unit should only be operated by qualified technician.

● The unit is designed according to the conditions as follows: the range of ambient temperature is -7℃～43℃and the range of water pressure is 0.15～0.6Mpa. The maximum water outlet temperature is 80℃.

●Make sure the piping system and water tank is filled up with water before running.

2.7.1 Preparation

The following items need to be checked prior to start-up:

a. The heat pump must be fully connected.

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

c. The air intake and air outlet paths must be clear.

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 piping system.

2.7.2 Trial run

●Make sure the piping system is filled up with water before operation.

● Turn on the power, start up the unit by the controller. After the water pump has been running for 30 seconds, the unit starts to work, then observe whether it works normally.

● When you restart the unit, the compressor will start up after three minutes to protect the compressor.

2.7.3 Caution

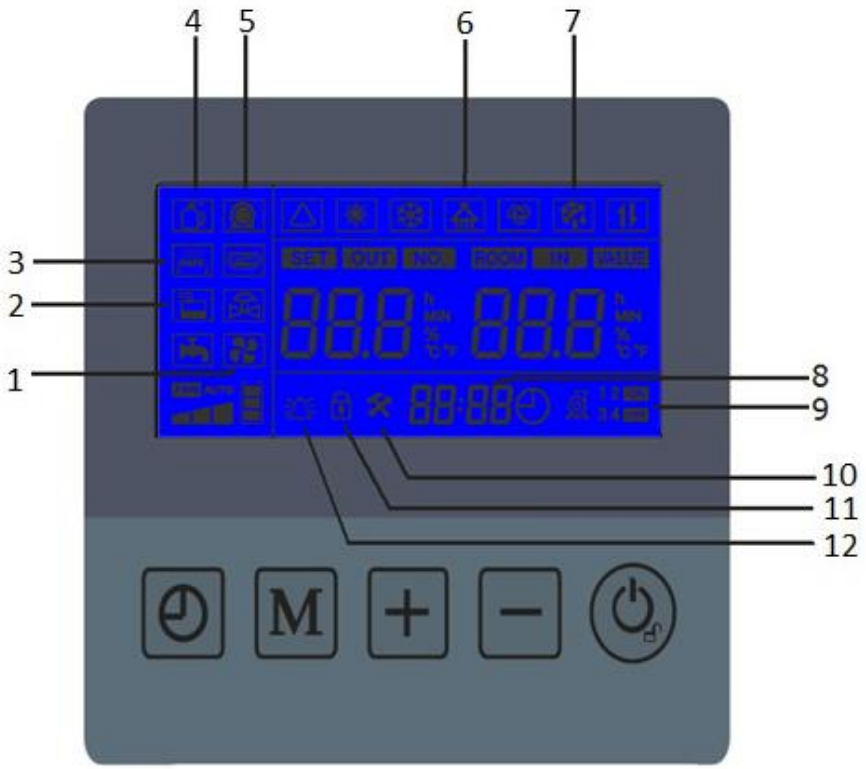
If something happen as follows, please stop the unit immediately and cut off the power. You should contact with our authorized agent or maintenance technician, don't repair by yourselves.

Without professional technology, you may get hurt.

- 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 introduction



1	Fan	7	Defrosting
2	Water refill valve	8	Clock
3	Electrical heater	9	Timer
4	Compressor	10	Maintenance
5	Circulation pump	11	Button locked
6	Heating	12	Alarm

3.2 Operation introduction

A. Lock/Unlock the buttons

a. Unlock the buttons: In lock status, press  for 5 seconds to unlock the buttons.

b. Lock the buttons: In unlock status, no operation for 120 seconds continuously, lock the buttons automatically.

B. Turn on/off the unit

Turn on/off the unit: In unlock status, press  for 1 second to turn on/off the unit;

C. Set the time

a. In main menu, press  for 5 seconds to enter time setting status.

b. Press  , hour area flash, press  or  to set hour.

c. After hour setting, press  , minute area flash, press  or  to set minute.

d. After minute setting, press  to save time setting, and back to main menu.

e. In time setting menu, no further operation for 60 seconds, then save time setting, and back to main menu.

f. In time setting menu, press  to save time setting, and back to main menu.

D. Set/Cancel ON timer and OFF timer.

There are two timers allowable to be set on the controller system, the unit can run and stop automatically according timer.

a. In main menu, press  to enter timer setting status.

b. Press  or  to select timer 1or timer 2.

c. Select timer 1, timer 1flash, press  to enter ON timer hour setting, ON timer hour area flash, press  or  to set ON timer hour.

d. After set ON timer hour, press  to enter ON timer minute setting, ON timer minute area

flash, press  or  to set ON timer minute.

e. After set ON timer minute, press  to enter OFF timer hour setting, setting as above.

f. After set OFF timer, press  to save timer 1 setting, and enter timer 2 setting. Setting same as timer 1.

g. In timer setting status, press  for 5 seconds to cancel the current timer.

h. In timer setting status, no further operation for 60 seconds, save current setting timer, and back to main menu (Timers are with power-off memory function).

i. In timer setting status, press  to save current setting time and back to main menu.

Remark: Timer 1 and timer 2 are timers for unit ON/OFF.

E. Set target temperature

Press  or  to enter water temperature setting status, target water temperature will flash on the screen, then press  or  to set target water temperature. Press  to save the setting.

F. Forced defrosting

a. In ON status, press  for 5 seconds to enter forced defrosting.

b. Long-press  , turn off the unit and exit forced defrosting completely.

G. Restore factory settings

In main menu, press  for 3 seconds, no operation on buttons, after 10 seconds, reset all parameters to default, enter OFF status.

H. Heat pump status inquiry (can set when unit on and off). FOR TECHNICIAN ONLY.

a. In main menu, press  to enter heat pump status inquiry, press  or  to inquire all status.

b. No operation for 60 seconds, back to main menu

Table 1:

Code	Description	Range
00	Version of main board	
01	Failure code	
02	Water tank temp	-30℃～100℃
03	Inlet water temp	-31℃～99℃
04	Outlet water temp	-31℃～99℃
05	Environment temp	-31℃～99℃
06	Water return temp	
07	Reservation	
08	Reservation	
09	Current setting	
10	Current	
11	Exhaust temp.	0℃～150℃
12	Coil temp	-31℃～99℃
13	Air return temp	-31℃～99℃
14	Opening of EEV	measured value
15	Reserved	measured value
16	Reserved	-31℃~99℃
17	Reserved	-31℃~99℃
18	Reserved	-31℃~99℃

I. Parameters inquiry and setting (can set when unit on and off). FOR TECHNICIAN ONLY.

a. In main menu, press  for 3 seconds to enter user parameters inquiry menu, press  or  to inquire parameters.

c. In parameter inquiry menu, press  to enter current user parameter setting menu, press  or  to set current parameter, press  again to exit setting status, press  to back to main menu.

d. In parameter inquiry or parameter setting menu, if no operation for 60 seconds, will exit automatically and back to main menu; or press  back to main menu.

Table 2:

Code	Description	Range	Default
L0	Water tank temp setting	20℃～80℃	50℃
L1	Cooling water temp setting	8℃～30℃	12℃
L2	Auto mode water temp setting	8℃～80℃	28℃

L3	Water temp. difference	1℃～18℃	5℃
L9	Water return temp setting	20℃～80℃	35℃
L11	Water temp to refill water setting	20℃～80℃	43℃
L12	Environment temp to start E-heater	0℃～35℃	5℃
L15	Circulation pump working mode	0min～61min	15min
L16	Protection of water temp difference between inlet and outlet	5℃～50℃	13℃

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.

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.

Part V Trouble shooting

Table 1

Fault Code	Fault Description	Possible Causes	Treatment
00E	Power sequence failure	◇Anti-phase ◇Open-phase	◇Anti-phase Exchange two phases. ◇Open-phase * Check power supply, the voltage between N & each L line should be 220V, the voltage between two L line should be 380V. * Check the power of PCB. If the voltage is abnormal, check the connection between terminals of main power & phase sequence detection board. * If the error occurs when the unit is running, please check the voltage after compressor starts running, if it is abnormal obviously, then please check the power which is connected to the unit, make sure the power is sufficient and stable, please Install a voltage-stabilizing device if necessary. * If the error still be there, please replace the phase sequence detection board first. * If the error code still be there after the above steps, please replace the PCB.
01E	Water flow switch fault	◇Inadequate water-flow ◇There is air in the circulating water inlet tube ◇Circulation pump destroyed	◇Clean the filter, increase the water-flow ◇Discharge the air ◇Check and repair the pump and the capacitor
02E	Over current protection	◇Over current	◇Check the power supply
03E	High pressure protection	◇High pressure switch destroyed ◇Inadequate water-flow ◇The system is jammed, the probe of sensor falls down ◇circulating pump damaged ◇excessive refrigerant ◇some incondensable gas in the refrigerant system	◇Replace the high pressure switch ◇Increase the flow ◇Check and clean the system, retighten the probe ◇Check and repair the circulating pump and the capacitor ◇Drain out the superfluous refrigerant ◇Drain out the incondensable gas

04E	Low pressure protection	◇Low pressure switch destroyed ◇low refrigerant ◇The fins of the evaporator are dirty	◇Replace the low pressure switch ◇Check for proper charge and possible refrigerant leak ◇Clean the fins
05E	Overheated protection	◇Insufficient water flow ◇water outlet temperature sensor fault ◇PCB damaged	◇Check hydraulic system and water pump ◇Check the resistance of the sensor, replace if the sensor is damaged ◇ Replace PCB
09E	Communication fault	◇Open circuit or short circuit between the controller and PCB	◇Renovate or replace the wire between the controller and PCB
10E	Coil temp sensor fault	◇The sensor open circuit/ short circuit ◇The probe of the sensor falls off ◇The plug connected to PCB is bad contact	◇Renovate/Reconnect the wirings of the sensor ◇Probe close to the measured object
12E	Environment temp sensor fault		
13E	Outlet water temp sensor fault		
14E	Return water temp sensor fault		
18E	Exhaust temp sensor fault		
26E	Inlet water temp sensor fault		
64E	Air return temp sensor fault		
16E	Overcooled protection	◇Inadequate water-flow	◇Clean the filter, increase the water-flow ◇Check and repair the pump and the capacitor
20E	Exhaust overheat protection	◇System is over-load, normal protection ◇Inadequate water-flow ◇Insufficient of refrigerant	◇Clean the filter, increase the water-flow ◇Check leakages and fill refrigerant according rated label.
40E	Compressor under-current protection	◇Compressor over-heated ◇ Compressor wiring falls down, compressor capacitor is damaged ◇Low voltage ◇Insufficient of refrigerant ◇Transformer is damaged ◇PCB is damaged	◇Check voltage and power source ◇Check leakages and fill refrigerant according rated label. ◇Replace transformer ◇Replace PCB ◇Renovate/Reconnect the wirings of the sensor ◇Retighten the probe ◇Replace sensor
52E	Temperature	◇Inadequate water-flow ◇The sensor open circuit/	◇Clean the filter, increase the water-flow ◇Check and repair the pump and the

	difference between inlet and outlet water is too large	short circuit ◇The probe of the sensor falls down ◇Temperature sensor is damaged	capacitor ◇Renovate/Reconnect the wirings of the sensor ◇Retighten the probe ◇Replace sensor
53E	Medium pressure protection	◇over-cooled in cooling	◇Clean the filter, increase the water-flow ◇Check and repair the pump and the capacitor
55E	Heating water temperature is abnormal	◇Inlet and outlet water backwards ◇Four way valve is abnormal	◇Check water pipe connection ◇Check the four way valve
72E	Environment temp too low protection	Protect when ambient temperature is too low. And will recover when ambient temperature rises.	

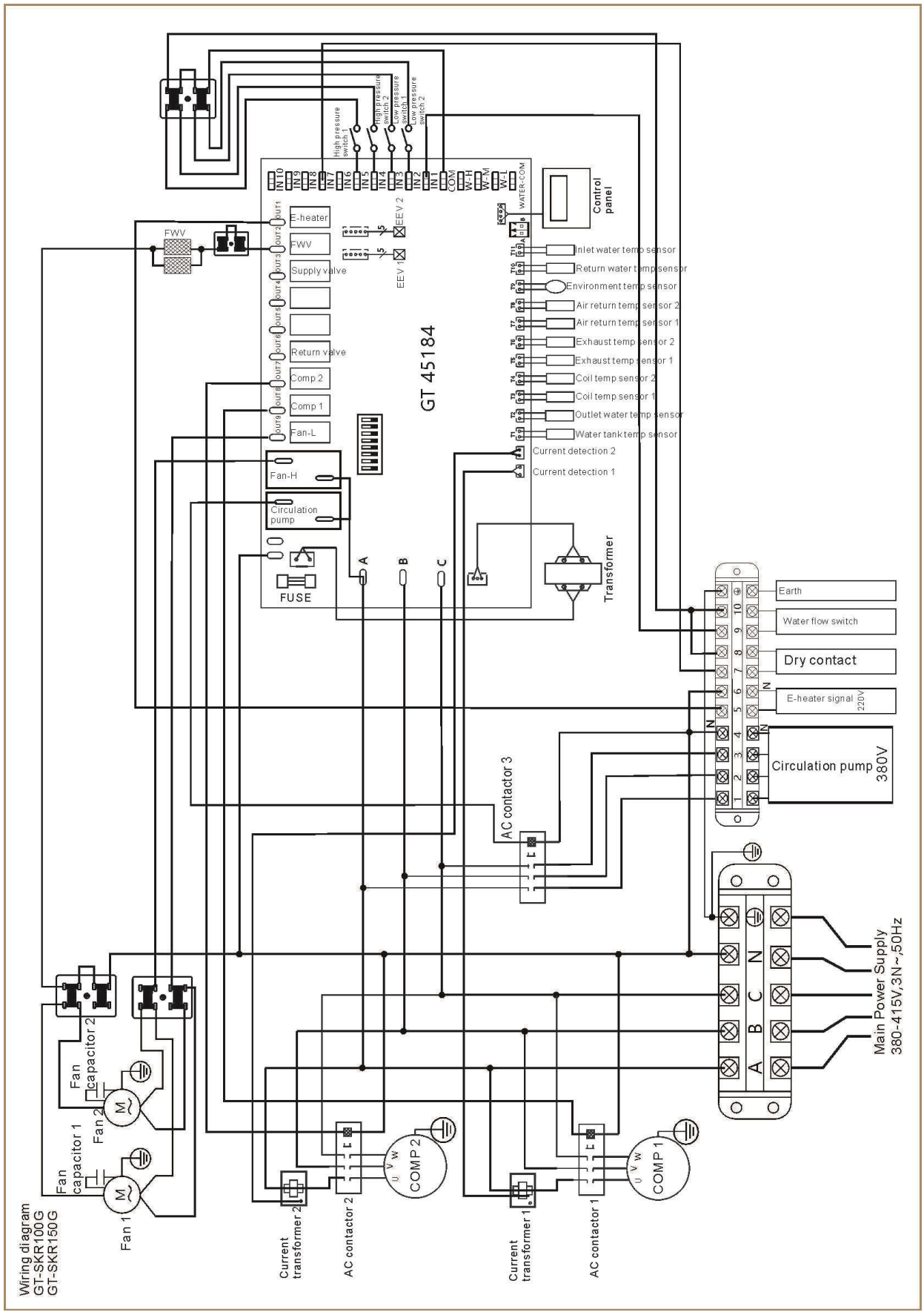
Note: when fault happen, the fault code will show on the screen and the alarm will sound.

Table 2

Fault Condition	Possible Causes	Treatment
The unit doesn't work	1. Power failure. 2. Poor connection to the power. 3. Fuse is blew.	1. Turn off the switch, check the power source 2. Find the causes and renovate it. 3. Replace the fuse
The unit work but too noisy and the water is not cycled	1. Insufficient of water In hydraulic system. 2. There is air in hydraulic. 3. Any valve is not open. 4. Filter is blocked.	1. Check the water make-up device and fill in with water. 2. Discharge the air in water system. 3. Open all valves. 4. Clean filters.
Low heating capacity	1. Insufficient of refrigerant. 2. Poor insulation of hydraulic system. 3. Drying filter is blocked. 4. Evaporator is un-efficient. 5. Insufficient of water flow.	1. Check leakage and fill refrigerant according rated label. 2. Improve the heat insulation. 3. Replace the drying filter. 4. Clean the heat exchanger. 5. Clean the water filter.

The compressor doesn't work	1. Power failure. 2. Compressor contactor is damaged. 3. Poor connection . 4. Overheat protection. 5. Water outlet temperature is too high. 6. Insufficient of water flow.	1. Check power supply. 2. Replace contactor. 3. Check and renovate it. 4. Check and solve the problems. 5. Reset a proper temperature. 6. Clean the water filter and discharge the air in the water system.
The compressor works but too noisy	1. Liquid refrigerant gone into the compressor. 2. Interior components is damaged. 3. Insufficient of refrigeration oil.	1. Check the electronic expansion valve. 2. Replace the compressor. 3. fill refrigeration oil according rated label of compressor.
The fan doesn't work	1. Capacitor is damaged. 2. Pool installation of fan. 3. The electromotor burned out. 4. Contactor is damaged	1. Replace the capacitor. 2. Fix the fan well again. 3. Replace the electromotor. 4. Replace the Contactor
Compressor works but not heating	1. Refrigerant leakage. 2. Compressor fault.	1. Check leakages and fill refrigerant according rated label. 2. Replace the compressor.
Low water-flow protection	1. Hydraulic switch is damaged. 2. Insufficient of water flow.	1. Replace the switch. 2. Clean the filter and discharge air.
Excessive discharge pressure	1. Too much refrigerant. 2. Non-condensable gas in the Refrigeration cycle. 3. Insufficient of water flow.	1. Discharge the superfluous refrigerant. 2. Drive the gas out. 3. Check hydraulic system.
Low suction pressure	1. Drying filter stoppage. 2. Insufficient of refrigerant. 3. Excessive pressure drop in the heat exchanger.	1. Replace the filter. 2. Check leakage and fill refrigerant according rated label. 3. Check the opening of electronic expansion valve.

Part VI Wiring Diagram



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.