

AIR-SOURCE HEAT PUMP WATER HEATER

Installation & Operation Instruction Manual



GZKRS06Eng

Thanks for choosing our product!

Air-source heat pump heater belongs to valuable goods, please have it installed by professionals to insure your legal rights.

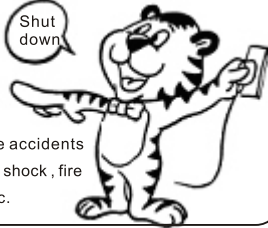
Before operating it, please read carefully the sections corresponding to the model you choose and keep the manual properly so as to facilitate your reference at later time.

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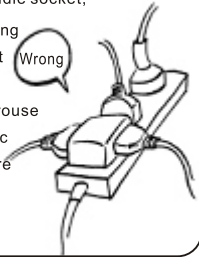
User Notice

1. Please don't pull out the power line to stop running of the machine, or



2. Please don't make the power line connected to a middle socket;

Forbid using en-longing line or sharing a socket with other electric appliances, or may arouse accidents like electric shock, heating up, fire disaster, etc.



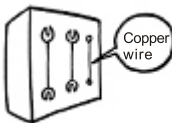
3. Please don't operate the switch with wet hands, which is danger of electric shock.



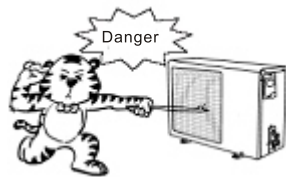
4. Make sure that attaching plug is inserted firmly. If not, may cause accidents like electric shock, heating up, fire disaster, etc.



5. Please don't make use of fuses with incorrect capacity or other metal wire. If using metal wire or copper wire, may arouse fault or fire disaster.




6. Please don't extrude fingers or rods into the draft outlet of the indoor and outdoor machine set, or may cause injury.



◆ Safety notice

Please make sure that you have read "User notice" before operating this air-source heat pump heater(it will called for short as water heater in the following); In case that there are the most important information on safety notice and the operation of the unit included in "User notice", so please operate the unit according with it.

The meanings of the symbols in this manual are as follows:

 **Warning**

The improper operation may result in serious consequences, such as serious injuries or accident even death.

 **Note**

The improper operation may result in the safety accident, machine breakdown or reducing of the performance of the unit.

Please read the labeling on the main unit carefully, if there is some abnormal phenomenon, such as abnormal noise, odor, aerosol, rising temperature, creepage and fire ignition, cut off the power and contact with the local sale-service center the sales agency of our company as soon as possible, do not repair it by yourself. If necessary you should get in touch with the local fire-fighting department and first-aid center at once.

 **Warning**

1. User can't install this unit by themselves, only salesman or authorized professional company can install, or it will cause safety accident and affect the performance.
2. Except there are special tutor operation, non-profession don't disassemble this unit, or it will cause accident or damage.
3. Never use or store inflammable thing such as fixture, oil paint, gasoline and alcohol around unit or below it, or will have the danger of fire.
4. The main power switch of the heater should keep away from children, in case that children will have danger if they play with power.
5. This appliance is not intended for use by persons(including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been give supervision or instruction concerning use of the appliance by a person responsible for their safety.
6. Never spray water or other liquid on the unit in case of causing danger.
7. Never touch the unit with wet hand or will get an electric shock.
8. Turn off the main power at thunder storm weather, or else the unit lightning shock or other damage may occur because of lightning.
9. The unit must be allocated with special switch, avoiding show the same circuit with other electric machine; The power wire is with regulate cross section and allocated with a breaker with the corresponding specification(with the leakage protection function). The outdoor unit and insulating water tank are powered on separately for the air source heat pump water heater with the auxiliary electric heater.

10. The unit must be allocated with earth line with stated- cross section , which can not connect with gas fuel pipe, water pipe, lightening conductor or the earth wire of telephone in order to avoid an electric shock.
11. Never turn off the power when running normally in case of danger.
12. Cut off the main power if the unit will be idle for a long time in case of danger.
13. If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similar qualified persons in order to avoid a hazard.
14. The new hose-sets supplied with the appliance are to be used and that old hose-sets should not be reused.
15. Keep the waterproof cover of the auxiliary electric heater no less 0.5 m away from the combustible.



Note

1. Never put hands or other things into the air outlet, or else high-speed running fan will be danger to you.
2. Never take down the guide vane of the outdoor unit to avoid that the fan with a high speed may endanger you or others.
3. The unit may be interfered by lighting or electromagnetism radiative source, if there is some thing wrong, please cut off the power and then restart it after eliminating faults.
4. Keep the running water switch and water tank turned on to provide with enough water for the system.
5. When the water tank be lack of water or the supply of running water is cut off, please turn off the unit to avoid of any damage.
6. If the temperature of the water in the tank is quite high, adjust the blending valve for hot water and cold water located at the outlet of the hot water. Only when the temperature is comfortable can you make use of it .
7. Do not open the waterproof cover of the tank at will, for there is the electro-circuit in it, otherwise the electric shock will occur.

◆ Other safety cautions

1. Read " Safety Notice " carefully before operation.
2. Please comply with " Safety Notices " , which covers with most of important points about the safety operation.
3. The fuse with regulated capability must be used and not replaced by iron wire or copper wire.
4. Keep the unit away from the place with fire hidden trouble. If the fire happens for short circuit , turn off the power chief switch immediately and put out fire with dry power fire extinguisher.

5. Turn off the power before maintenance.
6. Keep away from sharp edge and surface of fin of unit because it may hurt you.
7. Keep your hands or other things away from revolving fan vane in case of the damage to the unit even accidents.
8. Never lay anything on the unit in case that the thing drops and cause danger when unit is running.
9. For the equipment with fixed wiring, it should be collocated the whole poles disconnection switch with 3mm distance between contacts
10. The appliance shall be installed in accordance with the national wiring regulations.

Operation instruction

Air-source Heat Pump Water Heater adopts the working principle of air-source heat pump that the refrigerant sucks the heat of air and then has been compressed into the high-pressure gas by the compressor; The high-pressure gas exchanges the heat with the cold water in the heat exchanger to supply the hot water for users. Started by electricity, this product is not limited by time, space, direction and sunlit, featuring of high-efficiency, safety, energy-saving, long life-span and so on.

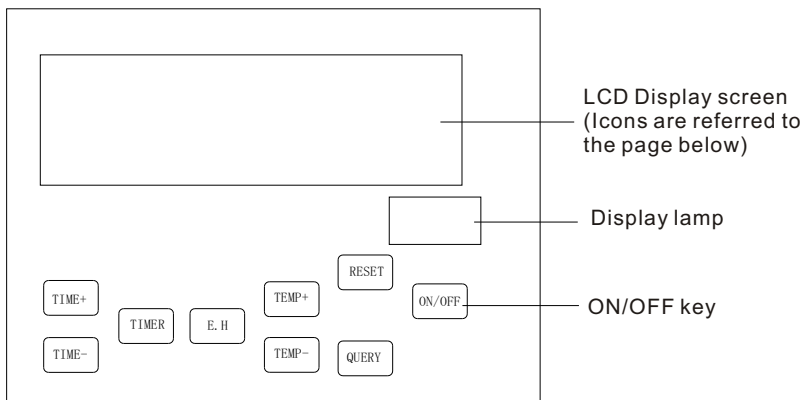
The product has excellent temperature adjustment function, which can be altered from -7°C to 43°C and is available through the whole year no matter what the weather is, applicable in residence community, villadom, public bathroom, natatorium, hotel, sauna, school, hospital and factory etc.

Controlled by computer, Air-source heat pump water heater will be turned on or turned off under the control the wire controller. Pressing "Temperature+" or "Temperature -" key, you can set the temperature of the water tank, the range is from 40°C to 60°C . If you want to get a better performance of the heater, however, you'd better set the temperature less than 55°C .

Once the heater is turned on, the wire controller will detect the temperature of the water tank automatically. When the temperature reaches the set value, the unit can stop running automatically; If some hot water is used, the water tank will be complemented with running water and the temperature will also be reduced. When the temperature detected is 7°C lower than the set value, the heater will be restarted automatically and continue to heat the running water in the tank until the temperature meets the requirement.

The water tank from our company has excellent insulation and the time for heat preservation is quite short. You can get the hot water in 24 hours in the condition of few electric energy consumed.

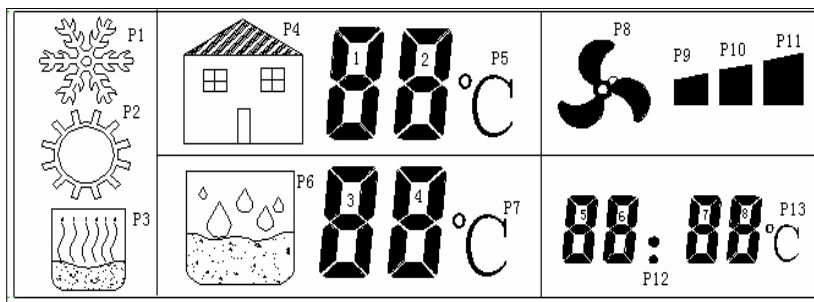
PS. The sketch diagram of the wire controller



1. Functional keys introduction:

- 1) "TIME+" key: At the timing state, the timing time will increase 1 by pressing the key once and the maximum is 24 hours;
- 2) "TIME-" key: At the timing state, the timing time will reduce 1 by pressing the key once and the minimum is 1 hour;
- 3) "TIMER"key: it is used for setting timing mode. At the idle state, press the key once to set timing ON; At the running state, press the key once to set timing OFF and cancel timing setting by pressing it again in timing state;
- 4) "E.H." Key: it is used for setting the way of heating water. Press the key once to set the electric heating mode and press the key again to cancel it;
- 5) "TEMP+" key: it is used for setting water temperature in operating state. The setting temperature will increase 1°C by pressing it once and the highest value is 60°C. At the idle state, it is used for setting the temperature difference;The temperature difference will increase 1°C by pressing it once and the highest value is 10°C.
- 6) "TEMP-" key: it is used for setting water temperature in operating state. The setting temperature will reduce 1°C by pressing it once and the lowest value is 40°C. At the idle state, it is used for setting the temperature difference;The temperature difference will reduce 1°C by pressing it once and the lowest value is 3°C.
- 7) "RESET" key: It is used for resetting the setting before delivery, that are, the end setting water temperature is 55°C , the temperature difference is 7°C, heat pump for hot water and condenser fan;
- 8) "QUERY" key: Pressing the key, query items will be switched as following order:
C0→C1…C9 →Cancel query →C0
- 9) "ON/OFF" key:
 - a. Press "ON/OFF" key to turn on the power, the wire controller will begin to autodiagnose and the program will be indicated in full of the LCD for 2 seconds;
 - b. In ON state, the unit will turn off by pressing the key and the unit will start by the key in OFF state;
 - c. Pressing the key will cancel the timing and electric heating setting;
 - d. This key is out of use when the unit shut down for the beyond repairable fault.
- 10) "TEMP+" /"TEMP-" key combination: At the idle state, press down "TEMP+" key and "TEMP-" key at one time for 3 seconds to set the temperature difference(from 3°C to 10°C) and repeat the operation to exit from the setting and renovate the new temperature difference.

2. Definition of display icons on the LCD



P2: This icon lightens when setting the electric heat mode and flashes during heating operation;

P3: The icon lightens when setting the heat pump mode(it is the default mode for the system);

P5/P7: The icons lighten when starting or stopping the unit ;

P8: It lightens when setting the condenser fan(it is the default) ;

P9,P10 and P11: It lightens when the condenser fan is running and it will turn off when the fan shuts down;

P6: It lightens when setting the water temperature after starting up and setting the temperature difference at the idle state;

P12: It lightens in timing or query state ;

P13: It lightens in inquiring the temperature;

P1 and P4: Powered on by pressing "ON/OFF"key, the wire controller begins to carry on self-diagnosis process and all icons of LCD are displayed for 2 seconds. For other time, however, P1 and P4 won't be displayed any more.

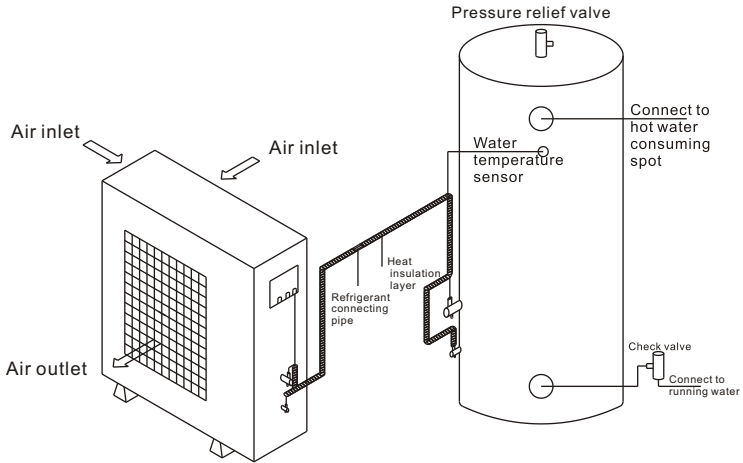
Installation guide

◆ Installation notices

If the water heater is installed at the following places, it may go wrong:

- a. Location full of machine oil;
 - b. Damp location;
 - c. Seaside saline alkali region;
 - d. Location with sulfuration gas(sulfuration hot spring);
 - e. The place with high frequency facilities, such as radio equipment, welding machine and medical equipment;
 - f. The place in special environment;
1. Outdoor unit
 - a. The place where is convenient to install the unit, dry and ventilated;
 - b. The place is level and can stand the weight of the outdoor unit. Besides, it will not make more noise and vibration;
 - c. The place without leakage of flammable gas;
 - d. Don't place any obstacle which may keep the gas from radiating;
 - e. Please install a sunshade camp at the place with the sunlit for a long time in summer;
 2. Water tank
 - a. Location on the wall or mounting plane where can bear the weight of the water tank;
 - b. Install the water tank at the place close to the outdoor unit and keep the distance between them not more than 5 m to reduce the energy consumption and improve the performance of the unit;
 - c. While in use, keep the switch of running water and the inlet pipe of the water tank turned on to get the stable pressure in the tank and the normal use of the tank.

◆ Installation sketch map of outdoor unit and water tank

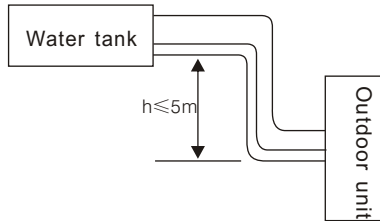


◆ Installation space

<p>1. There is an obstacle above it.</p>	<p>2. The front (air outlet) is free.</p>	<p>3. There is an obstacle in the front (air outlet).</p>
<p>4. There is an obstacle in the front or the back..</p>		<p>5. The unit can not be installed in the place where there is an obstacle on the four sides ever if the above is free.</p> <p>● Keep more than two sides free.</p>

◆ Mounting height difference

1. It doesn't matter whether the water tank is above the outdoor unit or below, so long as the height difference meets the requirement of the figure below;
2. Reduce the number of pipe bent to improve the performance of the water heater.



3. The longest tubing is not longer than 8 meters.

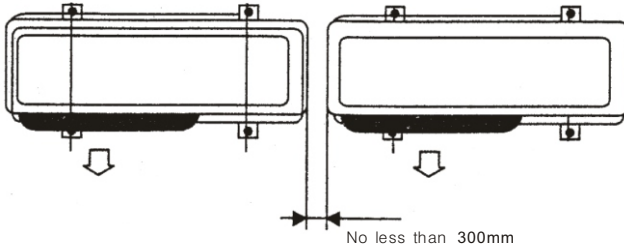
◆ Introduce the pressure relief device

1. The pressure relief device should be installed for this unit;
2. The water will be discharged from the drainpipe, which is opened to the atmosphere; The pressure range of the water is 0.1MPa~0.6MPa;
3. Maintain the pressure relief device once per month to get rid of the calcium carbonate and keep the device unclogged;
4. The drainpipe, connected with the relief device and downward, is located at the place where the frost doesn't occur.
5. The model of the pressure relief device is 0.7Mpa. The device will begin to work when the pressure of the device is more than the rated pressure of the water tank, that is, if the pressure of the water tank is 0.6MPa, the device will work with the pressure no more than 0.7MPa.
6. The pressure relief device is located at the horizontal section of the outlet of the water tank; Keep the caliber upright when installing the scupper.

◆ Install outdoor unit

1. Fix the mounting bracket on the wall with the expansion bolt;
2. And then fix the outdoor unit on the bracket with bolts and nuts and keep it level;
3. If the outdoor is installed on the wall or the roof, please fasten the bracket firmly to prevent from earthquake or strong wind.

The mounting dimension of the outdoor units in parallel:



◆ Pipeline connection

1. Never let the dust or water into the air-source heat pump heater. Pay attention to connect the pipeline of water tank and outdoor unit and avoid of many times bends to prevent pipes from hardening even rupture;
2. Please adopt proper wrenches when connecting pipeline. If the torque force is too large , it will do damage to t he connector; If the torque force is too small, air will leak out; The torque refers the following table.

Torque Table:

Diameter(mm)	Torque (N .cm)	Torque for further wring(N .cm)
Φ6.35	1570 (160kgf • cm)	1960 (200kgf • cm)
Φ9.52	2940 (300kgf • cm)	3430 (350kgf • cm)
Φ12.7	4900 (500kgf • cm)	5390 (550kgf • cm)
Φ15.88	7360 (750kgf • cm)	7850 (800kgf • cm)
Φ19.05	11760 (1200kgf • cm)	13720 (1400kgf • cm)

◆ Emptying and leak detection

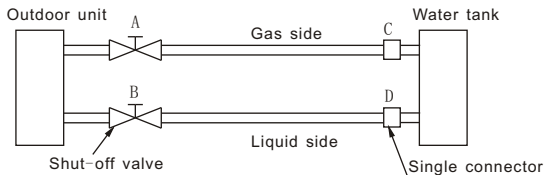
1. Please choose the emptying method according to the following table:

Note: If you remove the old water heater to another place, empty the system with refrigerant cylinder.

Tube length	Emptying method	Adding refrigerant charge (R22)	
Less than 5m	Refrigerant in outdoor unit	/	
5-10m	Refrigerant charge	Liquid pipe diameter: $\phi 6.35$	Liquid pipe diameter: $\phi 9.52$
		(Tube length-5m) \times 30g	(Tube length-5m) \times 65g

2. Empty the air with the refrigerant in outdoor unit:

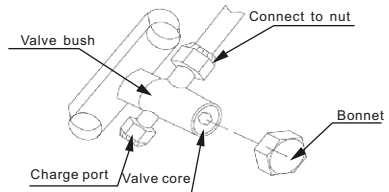
- a. Screw down Nut B, Nut C and Nut D with the torque listed in Torque Table;
Screw down Nut A on the connection pipe and then unscrew half ring;
- b. Turn the valve core of Valve B anticlockwise 45 and keep it for 6-7 seconds to let the air out from Valve A (the refrigerant discharged is about 30 g). Then screw down Nut A on the connection pipe, refer to Torque Table;
- c. Turn on the valve core of shut-off valve B and A fully and then screw down the bonnet.



3. Empty the air with the refrigerant cylinder

- a. Screw down Nut A and Nut B of water tank and Nut A of connection pipe of outdoor unit completely;
- b. Connect the charging hose of the refrigerant cylinder and charge port of Valve A;

- c. Unscrew Nut B of the connection pipe of outdoor unit a little bit;
- d. Turn on the valve of the cylinder and charge the refrigerant for 10-15 seconds, then turn off the valve;



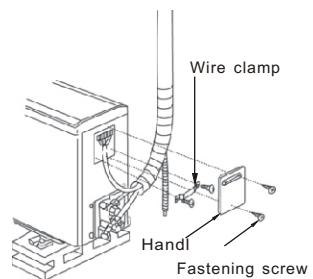
- e. After the sound of air-flow from Nut B of the connection pipe has been reduced much more, screw down Nut B;

- f. Take down the charging hose from the charging port of Valve A and pull the pin valve at the port with hexagonal spanner to discharge the rest refrigerant.
When there is no sound of airflow, screw down the bonnet of the charging port;
- g. Turn on the valve core of shut-off valve B and A fully and then screw down the bonnet.
4. After emptying, carry out the leak detection at the potential leakage points which was found during the process of installing the water heater:
 - a. Foam leak detection: Spray evenly some soap bubble or foam at the potential points and then observe whether there are some bubble;
 - b. With leak detector: Aim the probe of the detector at the leak potential point;
5. Empty the water tank of air-source heat pump water heater
 - a. Turn off the valve of running water and water consumption for user and then make sure that the drain has been sealed;
 - b. Turn on the valve of running water and water consumption for user and then make sure that the water flows from it ;
 - c. After emptying, open the water valve and discharge water for 1-2 minutes and then close the valve. Finally, you can adjust the unit;
6. Connection of the wires
 - a. Take down the bracket of outdoor unit, connect the lead of the water tank to the corresponding terminal according to the electric wiring diagram and then fix them;
 - b. Fix the wire with wire clamping bar and then fit on the bracket.

Note:

- 1) Never connect the wrong wire with the terminal, which may lead to electric failure even burn down the equipment;
- 2) The model and rated capacity of the fuse is based on the standard marked on the relevant controller or the cartridge fuse-link(Model/ rated capacity of the fuse: FSD, 3.15A/250V, the special model refers to the fuse you used);
- 3) User should purchase IECYZW57# power line, which are not allocated for the water heater.

The detail of the wire refers to the line specification table below:



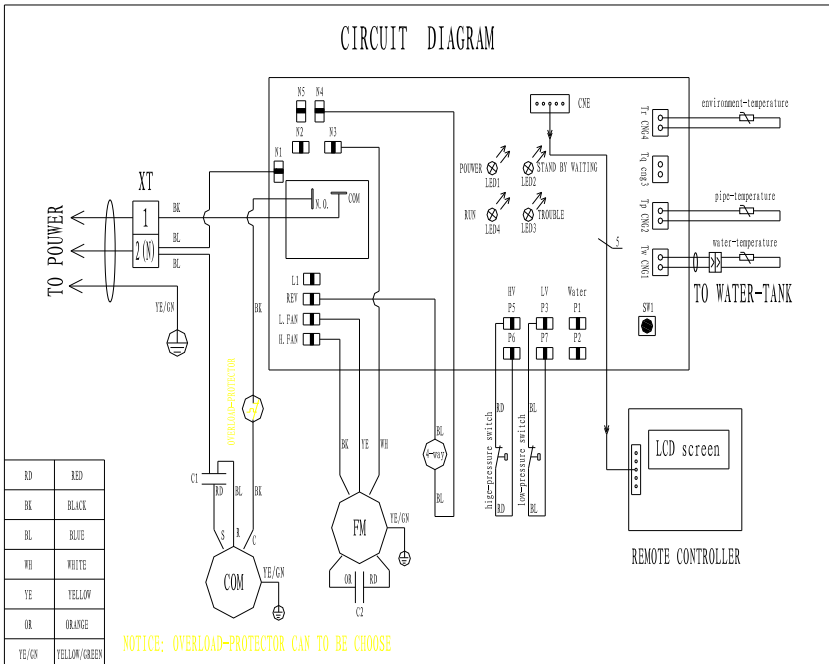
Model			3.5kW, 4.8kW	6.0kW
Power line	Phase line	Cross-section area (mm ²)	2.5	4.0
		Number	1	1
	Zero line	Cross-section area (mm ²)	1.5	1.5
		Number	1	1
	Earth line	Cross-section area (mm ²)	1.5	1.5
		Number	1	1

c. The wiring schematic diagram

The wiring schematic diagram below may vary for the improvement of the product without further notice. Please follow the wiring schematic diagram which includes the latest technological originality of our company.

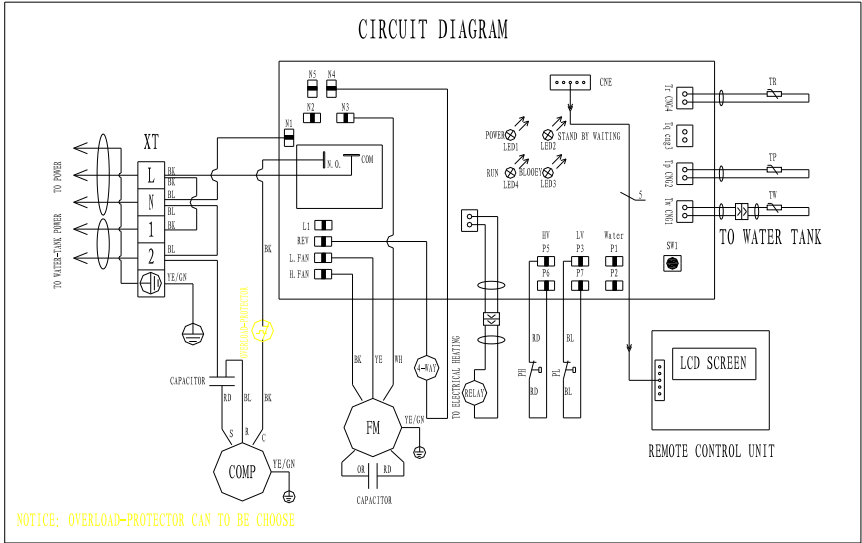
Electronic wiring diagram for the air source heat pump water heater

Power:220V-240V 50Hz



Electronic wiring diagram for the air source heat pump water heater with the auxiliary electric heater

Power:220V-240V 50Hz



Maintenance

1. Please inspect whether the earth line is connected safely to the earth before operating the unit and if there is anything abnormal, please replace it in time;
2. Please periodically inspect whether air outlet and inlet is unclogged or not;
3. Please ask the professionals to periodically clean the heat exchanger and the surface of the outdoor unit;
4. The maintenance of the unit is carried out by professionals. Please cut off the power before operating any electric device;
5. Please collocate the drain off at the bottom of the water tank for draining the water. If you want to drain the water, connect the drain-pipe to the drain with the water tube and then turn on the tap on the drain-pipe.

Fault analyses and treatments

◆ Fault code

Fault	Fault code
Fault of water tank temperature sensor	E0
Communication fault	E1
Fault of condensing temperature sensor	E2
High pressure protection	E3
Low pressure protection	E4
Exhaust temperature protection	E5
Environment temperature sensor fault	E7

◆ Fault analyses

1. Protection for water cut off and lack of water

When the system is lack of water or the water is cut off, it will start the high pressure protection device and the compressor stops running, at the case , the user should cut off the power at once. Restart the power after the water supply is normal, the unit will run as usual and it doesn't affect the performance of the unit.

2. The temperature control of outlet water

1) If the temperature of outlet water is too high, check the unit following the steps below:

- a. Whether there is no water or just a little water;
- b. Whether the bending water valve goes wrong;

- c. Whether the wire controller is out of work, if so, replace it with another one in time;
- 2) If the temperature of outlet water is too low, check the unit following the steps below:
- a. Whether the bending water valve goes wrong;
 - b. Whether the wire controller works well;
 - c. If the wire controller is out of work, contact with the appointed maintenance personnel in time according to fault code;
 - d. According to the installation instruction, keep the outdoor unit clean and clean the magnesium rod periodically when installing the outdoor unit to get the stable and good performance of heat exchanging for the water tank.
3. When fault protection is detected, the compressor stops running and it will delay 3 minute restarting after the fault is eliminated. If the system is in the low pressure protection mode or the high pressure protection or exhaust temperature protection is detected 4 times in one hour, the compressor stops running at once; After eliminating the fault, restart the power and wire controller, the compressor will begin to run. If the compressor stops running for the fault of water tank sensor or condenser temperature sensor, however, after eliminating the fault, the compressor continue to run after 3 minutes delay;

