OWNER'S AND INSTALLATION MANUAL

SANITARY WATER HEAT PUMP



ENGLISH

VAX 500 lit.

HTW-ATS-O-500VAX

Thanks for choosing our product.
Please, read carefully this manual
before using the product

HTW
HIGH TECHNOLOGY WORLD

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READ THIS MANUAL CAREFULLY BEFORE STARTING UP THE UNIT. DO NOT THROW IT AWAY.KEEP IT IN YOUR FILES FOR FUTURE REFERENCE.

BEFORE OPERATING THE UNIT, MAKE SURE THE INSTALLATION HAS BEEN CARRIED OUT CORRECTLY BY A PROFESSIONAL DEALER. IF YOU FEEL UNSURE ABOUT OPERATION, CONTACT YOUR DEALER FOR ADVICE AND INFORMATION.

INTRODUCTION

This manual

This manual includes the necessary information about the unit. Please read this manual carefully before you use and maintain the unit.

The unit

The hot water heat pump is one of the most economical systems to heat the water for family domestic use. Using free renewable energy from the air, the unit is highly efficient with low running costs. Its efficiency can be up to 3 ~ 4 times more than conventional gas boilers or electrical heaters.

Waste Heat recovery
Units can be installed near the kitchen, in the boiler-room or the garage, basically in every room which has a large number of waste-heat so that the unit has the higher energy efficiency even with very low outside temperatures during the winter.

Hot water and dehumidification
Units can be placed in the laundry room or clothing room. When it produces hot water it lowers the temperature and dehumidifies the room as well. The advantages can be experienced particularly in the humid season.

Storage room cooling
Units can be placed in the storage room as the low temperature keeps the food fresh.

Hot water and fresh air ventilation
Units can be placed in the garage, gym, basement etc. When it produces hot water, it cools the room and supplies fresh air.

Compatible with different energy sources
Units can be compatible with solar panels, external heat pumps, boilers or other different energy sources.

Ecological and Economical Heating
Units are the most efficient and economical alternative to both fossil fuel boilers and heating systems. By making use of the renewable source in the air, it consumes much less energy.

Compact design
Units are especially designed for offering sanitary hot water for family use. Its extremely compact structure and elegant design are suitable for indoor installation.

Multiple Functions
The special design of the air inlet and outlet makes the unit suitable for various ways of connections. With different ways of installation, the unit can work as just a heat pump but also as a fresh air blower, a dehumidifier, or an energy recovery device.

Other features
Stainless steel tank and a magnesium stick assure the durability of components and the tank.
Highly efficient compressor with the R134a refrigerant.
Electrical element available in the unit as a back-up, assuring constant hot water even in extreme cold winters.

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SAFETY INSTRUCTIONS

To prevent injury to the user, other people, or property damage, the following instructions must be followed. Incorrect operation due to ignoring of instructions may cause harm or damage.

Install the unit only when it complies with local regulations, by-laws and standards. Check the main voltage and frequency. This unit is only suitable for earthed sockets, connection voltage 220 – 240 V ~ / 50Hz.

The following safety precautions should always be taken into account:
- Be sure to read the following WARNING before installing the unit.
- Be sure to observe the cautions specified here as they include important items related to safety.
- After reading these instructions, be sure to keep it in a handy place for future reference.

Warning

⚠ WARNING

Do not install the unit yourself.
Incorrect installation could cause injury due to fire, electric shock, the unit falling or leakage of water. Consult the dealer from whom you purchased the unit or a specialized installer.

Install the unit securely in a place.
When insufficiently installed, the unit could fall causing injury. The bearing surface should be flat to bear the weight of the unit and suitable for installing the unit without increasing noise or vibration. When installing the unit in a small room, please take measures (like sufficient ventilation) to prevent the asphyxia caused by the leakage of refrigerant.

Use the specified electrical wires and attach the wires firmly to the terminal board (connection in such a way that the stress of the wires is not applied to the sections).
Incorrect connection and fixing could cause a fire.

Be sure to use the provided or specified parts for the installation work.
The use of defective parts could cause an injury due to possible fire, electric shocks, the unit falling etc.

Perform the installation securely and please refer to the installation instructions.
Incorrect installation could cause an injury due to possible fire, electric shocks, the unit falling, leakage of water etc.

Perform electrical work according to the installation manual and be sure to use a dedicated section, fused with 16A.
If the capacity of the power circuit is insufficient or there is an incomplete electrical circuit, it could result in a fire or an electric shock.

The unit must always have an earthed connection.
If the power supply is not earthed, you may not connect the unit.

Never use an extension cable to connect the unit to the electric power supply.
If there is no suitable, earthed wall socket available, have one installed by a recognized electrician.

Do not move/repair the unit yourself.
If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard. Improper movement or repair on the unit could lead to water leakage, electrical shock, injury or fire.

The unit is no intended for use by children.
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 given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

Do not tear off the labels on the unit.
The labels are for the purpose of warning or reminding, keeping them can ensure your safe operations.

THE APPLIANCE SHALL BE INSTALLED IN ACCORDANCE WITH NATIONAL WIRING REGULATIONS.
See technical specification table for ambient temperature range and water temperature range. The water pressure range for the appliance is 0.15-0.7MPa.
- The water may drip from the discharge pipe of the one-way safety valve and that this pipe must be left open to the atmosphere.
- The one-way safety valve is to be operated regularly to remove lime deposits and to verify that it is not blocked. Please beware of burn, because of the high temperature of water.

Caution

⚠ CAUTION

Do not install the unit in a place where there is a chance of flammable gas leaks.
If there is a gas leak and gas accumulates in the area surrounding the unit, it could cause an explosion.

Perform the drainage/piping work according to the installation instruction.
If there is a defect in the drainage/piping work, water could leak from the unit and household goods could get wet and be damaged.

Do not clean the unit when the power is 'ON'.
Always shut 'OFF' the power when cleaning or servicing the unit. If not, it could cause an injury due to the high speed running fan or an electrical shock.

Do not continue to run the unit when there is something wrong or there is a strange smell.
The power supply needs to be shut 'OFF' to stop the unit; otherwise this may cause an electrical shock or fire.

Do not put your fingers or others into the fan, or evaporator.

The inside parts of the heat pump may run at high speed or high temperature, they could cause serious injury. Do not remove the grills on the fan outlet and top cover.

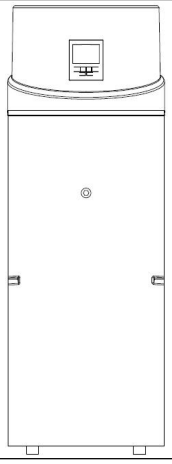
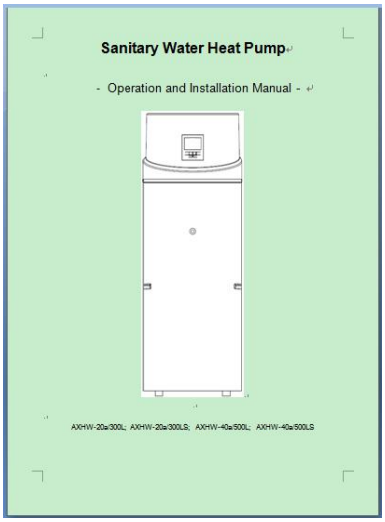
The hot water probable need to mix with cold water for terminal usage, too hot water (over 50℃) in the heating unit may cause injury.

The installation height of power supply should be over 1.8m, if any water may spatter, the unit can be safe from water.

Fuse specification is T 3.15A 250V
Global Warming Potential (GWP) of R134a = 1300.
Dismantling of the unit, treatment of the refrigerant, of oil and of other parts must be done in accordance with relevant local and national legislation.

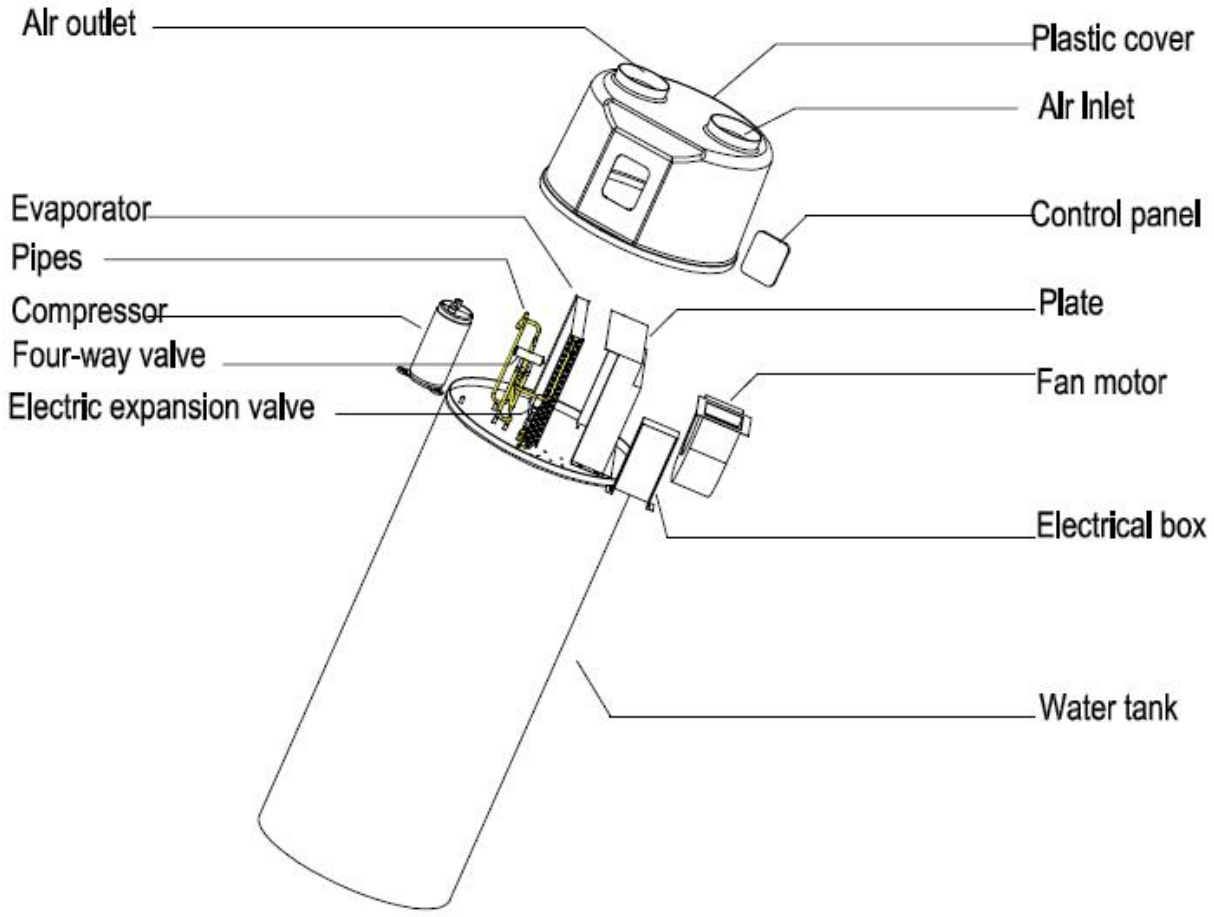
ITEMS INSIDE PRODUCT BOX

Before starting the installation, please make sure that all parts are found inside the box.

The Unit Box		
Item	**Image**	**Quantity**
Domestic hot water heat pump		1
Operation and Installation Manual		1

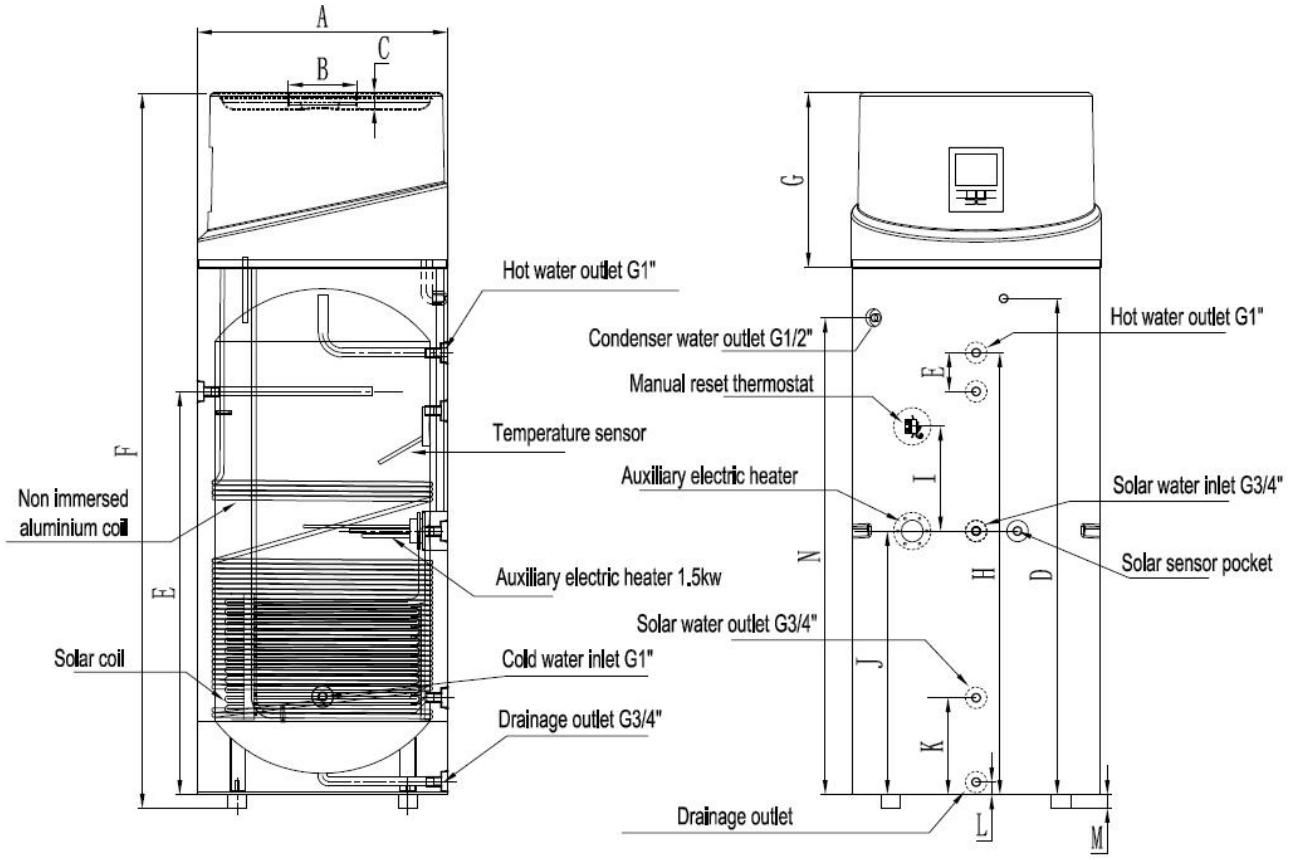
OVERVIEW OF THE UNIT

Parts and descriptions



Dimensions

Model: HTW-ATS-O-***VAX



	300L	300LS	500L	500LS
A	Φ640	Φ640	Φ700	Φ700
B	Φ177	Φ177	Φ177	Φ177
D	1280	1280	1680	1680
E	1040	1040	1420	1420
F	1845	1845	2250	2250
G	450	450	450	450
H	1140	1140	1520	1520
I	270	270	270	270
J	680	680	893	893
K	250	250	280	280
L	32.5	32.5	32.5	32.5
M	35	35	35	35
N	1230	1230	1633	1633

Remark:

1) The extra heat source is optional.

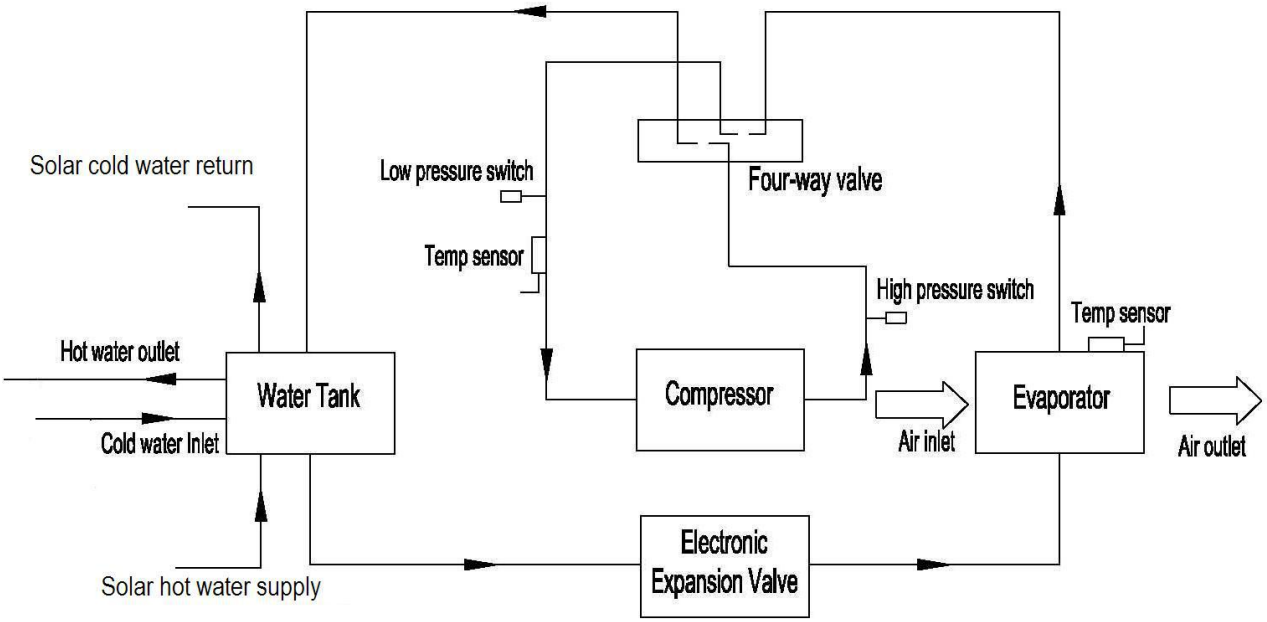
2) The Magnesium stick is an anti-corrosion element. It is assembled in the water tank to avoid the

creation of fur around the inside tank and to protect the tank, and other components. It can help to extend the life-span of the tank. **Check the magnesium stick every half year and change it if it has been used out！** **Note: replace by professional.**

How to replace the magnesium stick :

- Turn the power of the unit 'OFF' and pull out the plug.
- Drain all the water out of the tank.
- Remove the old magnesium stick from the tank.
- Replace the new magnesium stick.
- Recharge the water.

Schematic overview of the water and refrigeration circuit



Choose the suitable unit

Please refer to the table below to choose the suitable unit.

Family members	Tank capacity
2 ~ 3 people	200L
4 ~ 5 people	250L
6~ 7 people	300L
More than 8 people	500L

Note: The table is just for reference.

INSTALLATION

⚠ WARNING

- Asked your supplier to install the unit. Incomplete installation performed by yourself may result in a water leakage, electric shock, or fire.
- Indoor installation is highly recommended. It is not allow to install the unit at outdoor or rain achieving place.
- The installation place without direct sunlight and other heat supplies is recommended. If no way to avoid these, please install a covering.
- The unit must be securely fixed to avoid noise and shaking.
- Make sure that there's no remora around the unit.
- In the place where there is strong wind, fix the unit in the location protected from the wind.

Transportation

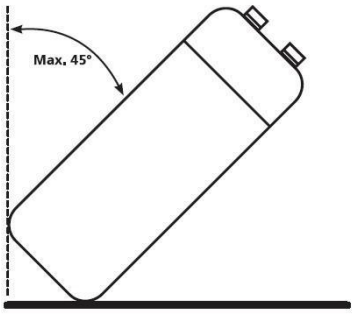
As a rule, the unit is to be stored and/or transported in its shipping container in upright position and without water charge. For a transport over short distance (provided that it is done with care), an inclination angle up to 30 degrees is permitted, both during transport and storage. Ambient temperatures of –20 to +70 degrees Celsius are permitted.

- **Transport using a forklift**

When transported by a forklift, the unit must remain mounted on the pallet. The lifting rate should be kept to a minimum. Due to its top-heaviness, the unit must be secured against tipping over.
To prevent any damage, the unit must be placed on a level surface.

- **Manual transport**

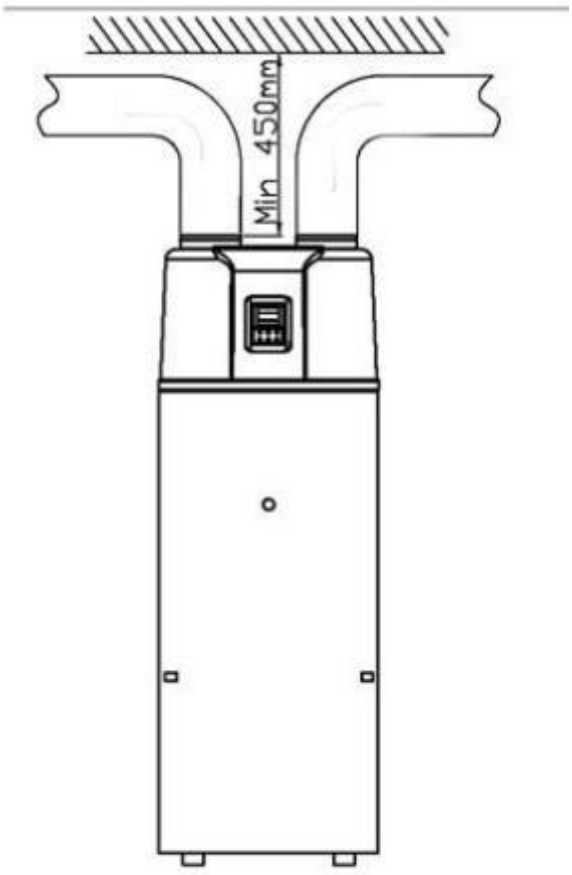
For the manual transport, a wooden/plastic pallet can be used. Using ropes or carrying straps, a second or third handling configuration is possible. With this type of handling, it is advised that the maximum permissible inclination angle of 45 degree is not exceeded. If transport in an inclined position cannot be avoided, the unit should be taken into operation one hour after it has been moved into final position.

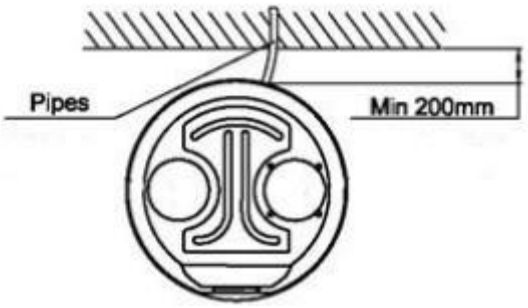


⚠ ATTENTION: DUE TO THE HIGH CENTER OF GRAVITY, LOW OVERTURNING MOMENT, THE UNIT MUST BE SECURED AGAINST TIPPING OVER.

Required service space

Below you will find the minimum space required to be able to complete service and maintenance tasks on the units.

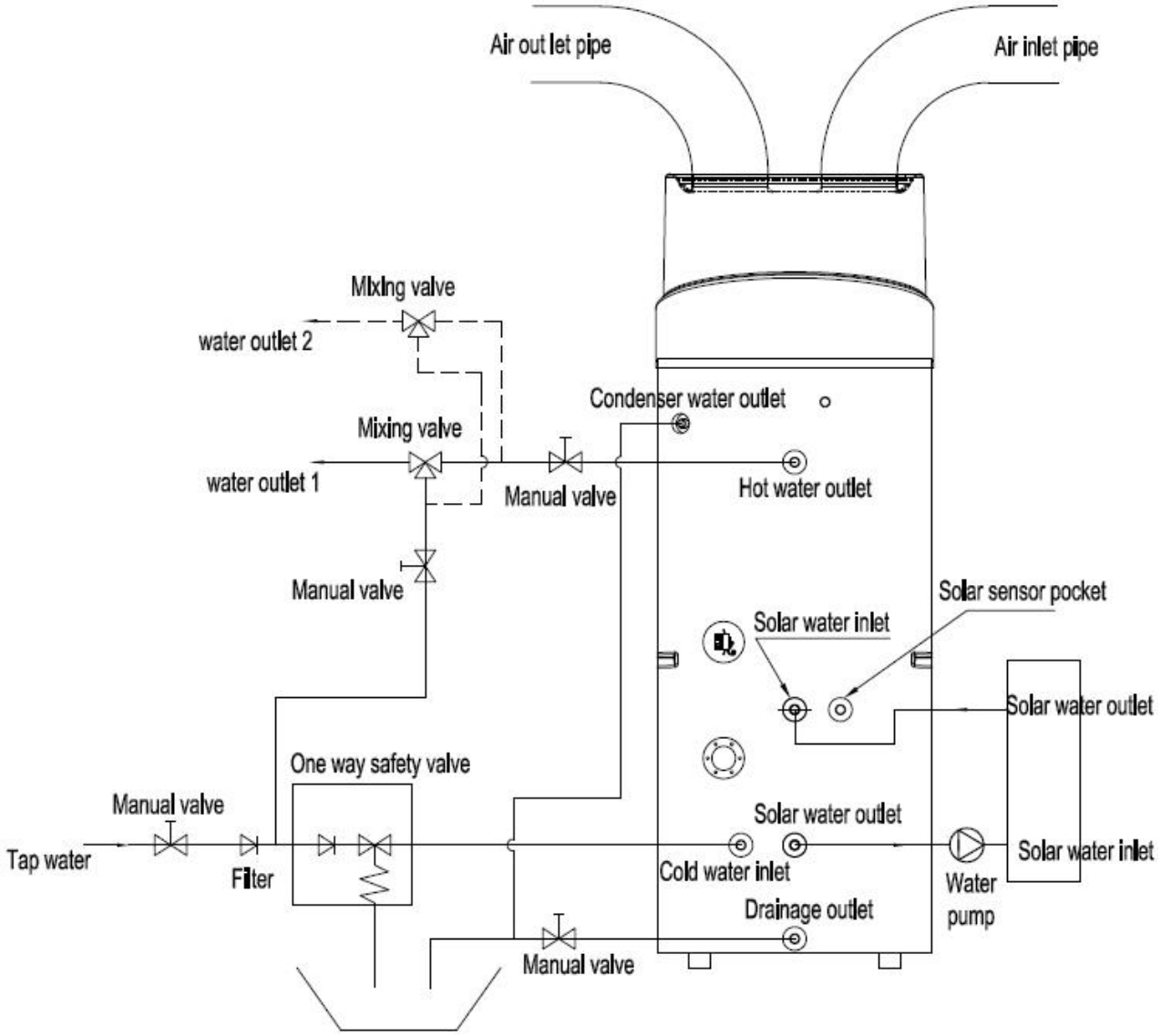




Note:

- If air inlet and/or outlet pipes are connected, portion airflow and capacity in heat pump unit will lose.
- If the unit connects with air ducts it should be DN 180mm for pipes or 180mm internal diameter flexible hose. Total length of the ducts should not be longer than 8m or the maximum static pressure should not exceed than 60Pa. Be in mind of bending site of the duct no more than 4m.

Installation overview



Note: Solar heat exchange coil is optional.

ATTENTION:

- The one-way safety valve must be installed. If not, it could cause damage to the unit, or even hurt people. The set point of this safety valve is 0.7 MPa. For the installation place please refer to the pipeline connection sketch.

- The condensate water drainage pipe should be installed in a continuously downward direction and in a frost-free environment.

- The water may drip from the discharge pipe of the one-way safety valve and that this pipe must be left open to the atmosphere.

- The one-way safety valve is to be operated regularly to remove lime deposits and to verify that it is not blocked. Please beware of burn, because of the high temperature of water.

- The tank water can be drained through the drainage hole on the bottom of the tank.

- After all the pipes installed turn on the cold water inlet and hot water outlet to fill the tank. When there is water normally following out from water outlet, the tank is full. Turn off all valves and check all pipes. If any leakage, please repair.

- If the inlet water pressure is less than 0.15MPa, a pressure pump should be installed at the water inlet. For ensure the long safety using age of tank at the condition of water supply hydraulic higher than 0.7MPa, a reducing valve should be mounted at the water inlet pipe.

- Filters are needed in the air inlet. If the unit is connected with ducts, filter in there must be put forward to the air inlet of duct.

- To fluently drain condensate water from evaporator, please install the unit at the horizontal floor. Otherwise, please make sure the drain vent is at the lowest place. Recommending the inclination angle of unit to be ground should no more than 2 degree.

Installation positions

(1) Waste heat can be useful heat

Units can be installed near the kitchen, in the boiler-room or the garage, basically in every room which has a large number of waste-heat so that the unit has the higher energy efficiency even with very low outside temperatures during the winter.



(2) Hot water and dehumidification

Units can be placed in the laundry room or clothing room. When it produces hot water it lowers the temperature and dehumidifies the room as well. The advantages can be experienced particularly in the humid season.



(3) Solar panel or external heat pump could be the second heat source

Units can work with solar panel, external heat pump, boiler or other different energy source.



NOTE:

· Choose the right path to move the unit.

· This unit complies with the relevant technical standards of electrical equipment.

Water loop connection

Please pay attention to the below points when connecting the water loop pipe:

1. Try to reduce the water loop resistance
2. Make sure there is nothing in the pipe and the water loop is smooth, check the pipe carefully to see if there is any leak, and then pack the pipe with the insulation.
3. Install the one way valve and safety valve in the water circulation system according to scretch on page 12. The specification of the one way safety value is 0.7Mpa. Make sure the direction marked on the valve align with the water flow direction.
4. The nominal pipe wide of the field- installed sanitary installations must be selected on the basis of the available water pressure and the expected pressure drop within the piping system.
5. The water pipes may be of the flexible type. To prevent corrosion damage, make sure that the materials used in the piping system are compatible.
6. When installing the pipe-work on the customers' site, any contamination of the piping system must be avoided.

Water affusion and water emptying

Water Affusion:

If the unit is used for the first time or used again after emptying the tank, please make sure that the tank is full of water before turning on the power.

- Open the cold water inlet and hot water outlet.
- Start the water affusion. When there is water normally flowing out from the hot water outlet, the tank is full.
- Turn off the hot water outlet valve and water affusion is finished.

 ATTENTION: Operation without water in water tank may result in damage of auxiliary e-heater!

Water emptying:

If the unit needs cleaning, moving etc, the tank should be emptied.

- Close the cold water inlet
- Open the hot water outlet and open the manual valve of drainpipe
- Start the water emptying.
- After emptying, close the manual valve.

Wire connection

- The specification of the power supply wire is 3*1.5 mm².
- Fuse specification is T 3.15A 250V
- There must be a switch when connecting the unit to the power system. The current of the switch is 16A.
- The unit must be installed a Creepage Breaker near the power supply and must be effectively earthed. The specification of the creepage breaker is 30mA, less than 0.1sec.

THE APPLIANCE SHALL BE INSTALLED IN ACCORDANCE WITH NATIONAL WIRING REGULATIONS.

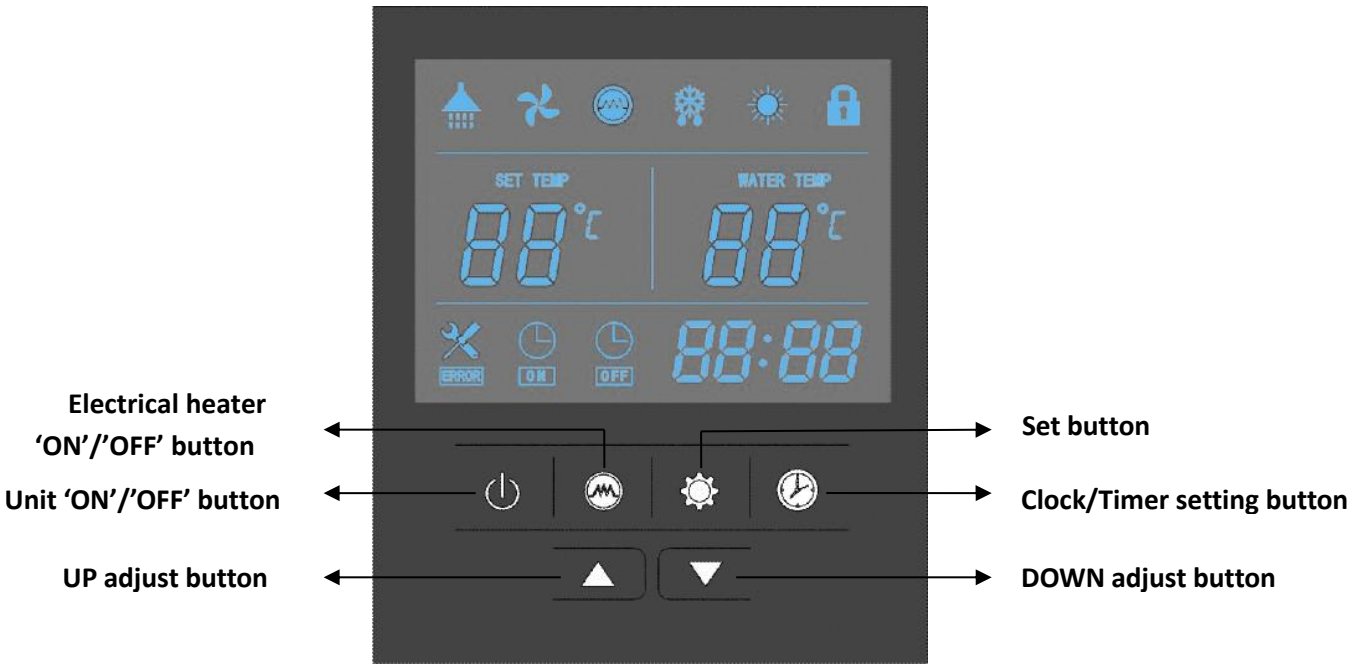
Trial running

Checks before trial running

- Check both the water in the tank as well as the water pipe connection.
- Check the power system, make sure that the power supply is normal and the wire connection is ok.
- Check the inlet water pressure, make sure that the pressure is sufficient (above 0.15Mpa).
- Check if any water flows out from the hot water outlet, make sure that the tank is full of water before turning on the power.
- Check the unit; make sure everything is ok before turning ‘ON’ the power of the unit, check the light on the wire controller when the unit runs.
- Use the wire controller to start the unit.
- Listen to the unit carefully when turning ‘ON’ the power of the unit. Turn the power ‘OFF’ when you hear an abnormal sound.
- Measure the water temperature, to check the undulation of the water temperature.
- Once the parameters have been set, the user cannot change the parameters optionally. Please use a qualified service person to do this.

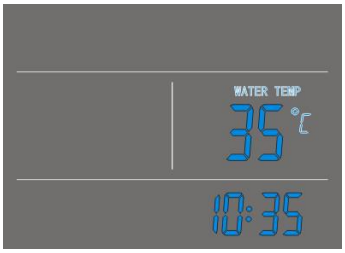
OPERATION THE UNIT

User interface and operation

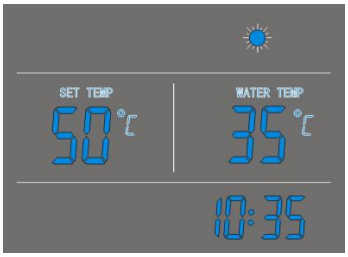


Operations

1. **Power 'ON'**
   When turning 'ON' the power, whole icons are displayed on the controller screen for 3 seconds. After checking if everything is ok, the unit enters into the standby mode.



2. **button**
   Press this button and keep for 2 seconds when the unit is standby, the unit can be turned 'ON'.
   Press this button and keep for 2 seconds when the unit is running, the unit can be turned 'OFF'.
   Short press this button to entry or exit the parameter setting or checking.



3. And buttons

- These are the multi-purpose buttons. They are used for the temp setting, parameter setting, parameter checking, clock adjustment and adjustment of the timer.
- During running status, press ▲ or ▼ button to adjust the setting temperature directly.
- Press these buttons when the unit is on clock setting status, the hour(s) and the minute(s) of the clock time can be adjusted.
- Press these buttons when the unit is on timer setting status, the hour(s) and the minute(s) of the timer 'ON'/'OFF' can be adjusted.

- Press ▲ and ▼ buttons at the same time and hold for 5 seconds, the buttons are locked.
- Press ▲ and ▼ buttons at the same time and hold for 5 seconds again, the buttons are unlocked.

4. button

Clock setting:

- After power on, short press button to entry the clock setting interface, hour and minute icons "88:88" flash together;
- Short press button to switch hour/minute setting, press the ▲ and ▼ buttons to set the exact hour(s) and minute(s);
- Press button again to confirm and exit.

Timer setting:

- After power on, long press button for 5 seconds to entry the timer setting interface, the timer on icon and hour icon "88:" flash together;
- Press the ▲ and ▼ buttons to set the exact hour(s).
- Press button to transfer to minute setting, minute icon ":88" flash, press the ▲ and ▼ buttons to set the exact minute(s).
- Press button again to transfer to timer off setting, the timer off icon and hour icon "88:" flash together.
- Press the ▲ and ▼ buttons to set the exact hour(s).
- Press button to transfer to minute setting, minute icon ":88" flash, press the ▲ and ▼ buttons to set the exact minute(s).
- Press button again to save and exit the timer setting interface.

Press button to cancel the timer settings during the timer 'ON' (or timer 'OFF') programming.

NOTE:

1) The timer 'ON' and timer 'OFF' functions can be set at the same time.
2) The timer settings are repeating.
3) The timer settings are still valid after a sudden power cut.

6. button

1) When the heat pump is ON, press this button to turn 'ON' the electrical heater. The heater icon will be showed, and the electrical heater will work according to the control program (parameter 3).
2) When the heat pump is ON, press this button and hold for 5 seconds to enable or disable the fan ventilation function.
3) When the heat pump is OFF, press this button to entry E-heater heating mode.

7. button

1) Check the temperatures and EXV open steps(running parameter)
   -Press this button to entry temp and EXV open step checking.
   -Press the ▲ and ▼ buttons to check the temp sensor values and EXV open steps (parameters A-H).

2) Check the system parameters
   -In any status, press this button and hold for 5 seconds, entry the system parameter checking interface.
   -Press the ▲ and ▼ buttons to check the system parameters.

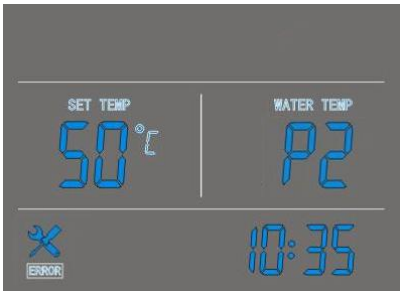
3) Adjust the system parameters
   - When the unit is off, press for 5 seconds, entry the parameter checking interface.
   - Press ▲ or ▼ button to select the parameter, and press button to confirm it.
   - Press the ▲ and ▼ buttons to adjust the selecting parameter, then press to confirm the setting.

   If no action to the buttons for 10 seconds, the controller will exit and save the setting automatically.

   NOTE: The parameters have been set; the user cannot change the parameters optionally. Please ask a qualified service person to do this when required.

8. Error codes

During standby or running status, if there is a malfunction, the unit will stop automatically and show the error code on the left screen of the controller.



LED icons

1. Hot water available

   The icon indicates that the domestic hot water temperature reaches the set point. The hot water is available for use. Heat pump is standby.

2. **Fan ventilation**
   The icon indicates that the fan ventilation function is enabled.
   When the unit is on, press the button and hold it for 5 seconds the fan ventilation function can be enabled or disabled. If this function is enabled the fan will continue working to ventilate the air, when the water temperature reaches the set point and unit is standby. If this function is disabled the fan will stop, when the water temperature reaches the set point and unit is standby.

3. **Electrical heating**
   The icon indicates that the electrical heating function is enabled. The electrical heater will work according to the control program.

4. **Defrosting**
   this icon shows the heat pump is under defrosting

5. **Heating**
   this icon shows the heat pump is working

6. **Key lock**

   The icon indicates the key lock function is enabled. The keys cannot be operated until this function is disabled.

7. **Left temperature display**
   The display shows the setting water temperature.
   When checking or adjusting the parameters, this section will display the relating parameter number.

8. Right temperature display 

The display shows the current downside temperature of the water tank.

When checking or adjusting the parameters, this section will display the related parameter value.

In case any malfunction occurs, this section will display the related error code.

9. Time display 

The display shows the clock time or timer time.

10. Timer ‘ON’ 

The icon indicates that the timer ‘ON’ function is enabled.

11. Timer ‘OFF’ 

The icon indicates that the timer ‘OFF’ function is enabled.

12. Error 

The icon indicates there is malfunction.

PARAMETER CHECKING AND ADUSTMENT

Parameter list

Some system parameters can be checked and adjusted by the controller. Below is the parameter list:

Parameter No.	Description	Range	Default	Remarks
0	Tank water setting temp.	10 ~ 70°C	50°C	Adjustable
1	Water temperature gap to restart	2 ~ 15°C	5°C	Adjustable
2	E-heater off tank water temp	10 ~ 85°C	55°C	Adjustable
3	E-heater delay time	0 ~ 90min	6	t * 5 min
4	Week disinfection temperature	50 ~ 70°C	70°C	Adjustable
5	High temp disinfection time	0 ~ 90 min	30 min	Adjustable
6	Defrosting period	30~90 min	45 min	Adjustable
7	Defrosting entry coil temp.	-30 ~ 0°C	-7°C	Adjustable
8	Defrosting exit coil temp.	2 ~ 30°C	13°C	Adjustable
9	Max defrosting cycle period	1 ~ 12 min	8 min	Adjustable
10	Electronic expansion valve adjustment	0/1	1	Adjustable (0-manual，1-auto)
11	Target over-heat degree	-9 ~ 9°C	5°C	Adjustable
12	Steps of manually adjusting the electronic expansion valve	10 ~ 50 step	35 step	Adjustable
13	Disinfection start up time adjusting	0~23	23	Adjustable(hour)
14	Parameter of solar water pump	0/1	0	Adjustable(0 without water pump，1with water pump)
15	Solar water pump star return difference	2-20℃	10	Adjustable
16	High temp disinfection frequency	7-28day	7	Adjustable
A	Inlet water temp. sensor detect range	-9 ~ 99°C	Actual testing value. Error code P1 will be shown in case of a malfunction	
B	Outlet water temp. sensor detect range	-9 ~ 99°C	Actual testing value. Error code P2 will be shown in case of a malfunction	
C	Evaporator coil temp. sensor detect range	-9 ~ 99°C	Actual testing value. Error code P3 will be shown in case of a	

			malfunction
D	Return gas temp. sensor detect range	-9 ~ 99°C	Actual testing value. Error code P4 will be shown in case of a malfunction
E	Ambient temp. sensor detect range	-9 ~ 99°C	Actual testing value. Error code P5 will be shown in case of a malfunction
F	Electronic expansion valve step	10 ~ 47 step	N*10 step
H	Temp of solar thermal collector	0-140℃	Measured value，if failure，show P6

Malfunctioning of the unit and error codes

When an error occurs or the protection mode is set automatically, the circuit board and the wired controller will both display the error message.

Protection/ Malfunction	Error code	LED indicator	Possible reasons	Corrective actions
Standby		Dark		
Normal running		Bright		
Lower tank water temp. sensor failure	P1	☆● (1flash 1 dark)	1) The sensor open circuit 2) The sensor short circuit 3)PCB board failure	1) Check the sensor connection 2) Replace the sensor 3)change the PCB board
Upper tank water temp. sensor failure	P2	☆☆● (2 flashes 1 dark)	1) The sensor open circuit 2) The sensor short circuit 3) PCB board failure	1) Check the sensor connection 2) Replace the sensor 3) change the PCB board
Evaporator coil temp. sensor failure	P3	☆☆☆● (3 flashes 1 dark)	1) The sensor open circuit 2) The sensor short circuit 3) PCB board failure	1) Check the sensor connection 2) Replace the sensor 3) change the PCB board
Return air temp sensor failure	P4	☆☆☆☆● (4 flashes 1 dark)	1) The sensor open circuit 2) The sensor short circuit 3) PCB board failure	1) Check the sensor connection 2) Replace the sensor 3) change the PCB board
Ambient	P5	☆☆☆☆☆	1) The sensor open	1) Check the sensor

temp. sensor failure		● (5 flashes 1 dark)	circuit 2) The sensor short circuit 3) PCB board failure	connection 2) Replace the sensor 3) change the PCB board
Solar temp. sensor failure	P6	☆☆☆☆☆ ☆☆☆☆☆ ● (10 flash1dark)	1) The sensor open circuit 2) The sensor short circuit 3) PCB board failure	1) Check the sensor connection 2) Replace the sensor 3) change the PCB board
Emergency switch off	EC	only show the protection code	1) Connecting wire off 2) PCB board failure	1) According to the physical truth judging whether is normal or not 2) change the PCB board
High pressure protection (HP Switch)	E1	☆☆☆☆☆ ☆● (6 flashes 1 dark)	1) Too high air inlet temp 2) Less water in the tank 3) The electronic expansion valve assembly blocked 4) Too much refrigerant 5) The switch damaged 6) The uncompressed gas is in refrigerant system 7) PCB board failure	1) Check if the air inlet temp is over the working limited 2) Check if the tank is full of water. If not, charge water 3) Replace the electronic expansion valve assembly 4) Discharge some refrigerant 5) Replace a new switch 6) Discharge and then recharge the refrigerant 7) change the PCB board
Low pressure protection (LP Switch)	E2	☆☆☆☆☆ ☆☆● (7 flashes 1 dark)	1) Too low air inlet temp 2) The electronic expansion valve assembly blocked 3) Too less refrigerant 4) The switch damaged 5) The fan assembly can not work 6 PCB board failure	1) Check if the air inlet temp is over the working limited 2) Replace the electronic expansion valve assembly 3) Charge some refrigerant 4) Replace a new switch 5) Check if the fan working when the compressor working. If not, some problems with the fan assembly 6) change the PCB board

Over heat protection (HTP Switch)	E3	☆☆☆☆☆ ☆☆☆● (8 flashes 1 dark)	1) Too high tank water temp 2) The switch damaged 3) PCB board failure	1) If the tank water temp is over 85C, the switch will open and the unit will stop for protection. After the water comes to normal temp, 2) Replace a new switch 3) Change the PCB board
Solar thermal collector high tem protection	E4	☆☆☆☆☆ ☆☆☆☆☆ ☆ ● (11flash1 dark)	1) solar water circuit water flow very little or without water flow 2) Related connecting wires off 3) Water pump failure 4) PCB board failure	1) Solar water circuit fluid infusion and exhaust 2) Related connecting wires being reconnected 3) Change the water pump 4) change the PCB board
Water flow failure	E5	☆☆☆☆☆ ☆☆☆☆● (9 flash 1dark)	1) solar water circuit water flow very little or without water flow 2) Related connecting wires off 3)water pump failure 4)water flow switch failure 5) PCB board failure	1) Solar water circuit fluid infusion and exhaust 2) Related connecting wires being reconnected 3) Change the water pump 4) Change the water flow switch 5) Change the PCB board
Defrost	Defro sting indica te	☆☆☆☆☆ ☆☆☆……(all long flashes)		
Communicati on failure	E8	Bright		

MAINTENANCE

Maintenance activities

In order to ensure an optimum operation of the unit, a number of checks and inspections on the unit and the field wiring have to be carried out at regular intervals, preferably yearly.

- Check the water supply and air vent frequently, to avoid lack of water or air in the water loop.
- Clean the water filter to keep a good water quality. Lack of water and dirty water can damage the unit.
- Keep the unit in a place where it is dry and clean, and which has good ventilation. Clean the heat exchanger every one to two months.
- Check each part of the unit and the pressure of the system. Replace the defect part if there is any, and recharge the refrigerant if it is required.

- Check the power supply and the electrical system, make sure the electrical components are good, and the wiring is well. If there is a damaged part or a strange smell, please replace it in time.
- If the heat pump is not used for a long time, please drain out all the water from the unit and seal the unit to keep it good. Please drain the water from the lowest point of the boiler to avoid freezing in winter. Water recharge and full inspection on the heat pump is required before it is restarted.
- Do not turn the power 'OFF' when you use the unit continuously, or the water in the pipe will freeze and split the pipe.
- Keep the unit clean by means of soft damp cloth, no maintenance is required by the operator.
- It is recommended to clean the tank and e-heater regularly to keep an efficient performance.
- Generally no maintenance is required by the operator, except below: It is recommended to set a lower temperature to decrease the heat release, prevent scale and save energy if the outlet water is sufficient. Keep the unit clean by means of soft damp cloth.

TROUBLESHOOTING

This section provides useful information for diagnosing and correcting certain troubles which may occur. Before starting the troubleshooting procedure, carry out a thorough visual inspection of the unit and look for obvious defects such as loose connections or defective wiring.
Before contacting your local dealer, read this chapter carefully, it will save you time and money.

⚠ WHEN CARRYING OUT AN INSPECTION ON THE SWITCH BOX OF THE UNIT, ALWAYS MAKE SURE THAT THE MAIN SWITCH OF THE UNIT IS SWITCHED 'OFF'.

The guidelines below might help to solve your problem. If you cannot solve the problem, consult your installer/local dealer.

- No image on the controller (blank display). Check if the main power is still connected.
- One of the error codes appears, consult your local dealer.
- The scheduled timer does work but the programmed actions are executed at the wrong time (e.g. 1 hour too late or too early). Check if the clock and the day of the week are set correctly, adjust if necessary.

ENVIRONMENTAL INFORMATION

This equipment contains fluorinated greenhouse gases covered by the Kyoto Protocol. It should only be serviced or dismantled by professional trained personnel.

This equipment contains R134a refrigerant in the amount as stated in the specification. Do not vent R134a into the atmosphere: R134a, is a fluorinated greenhouse gas with a Global Warming Potential (GWP) = 1300.

DISPOSAL REQUIREMENTS

Dismantling of the unit, treatment of the refrigerant, of oil and of other parts must be done in accordance with relevant local and national legislation.



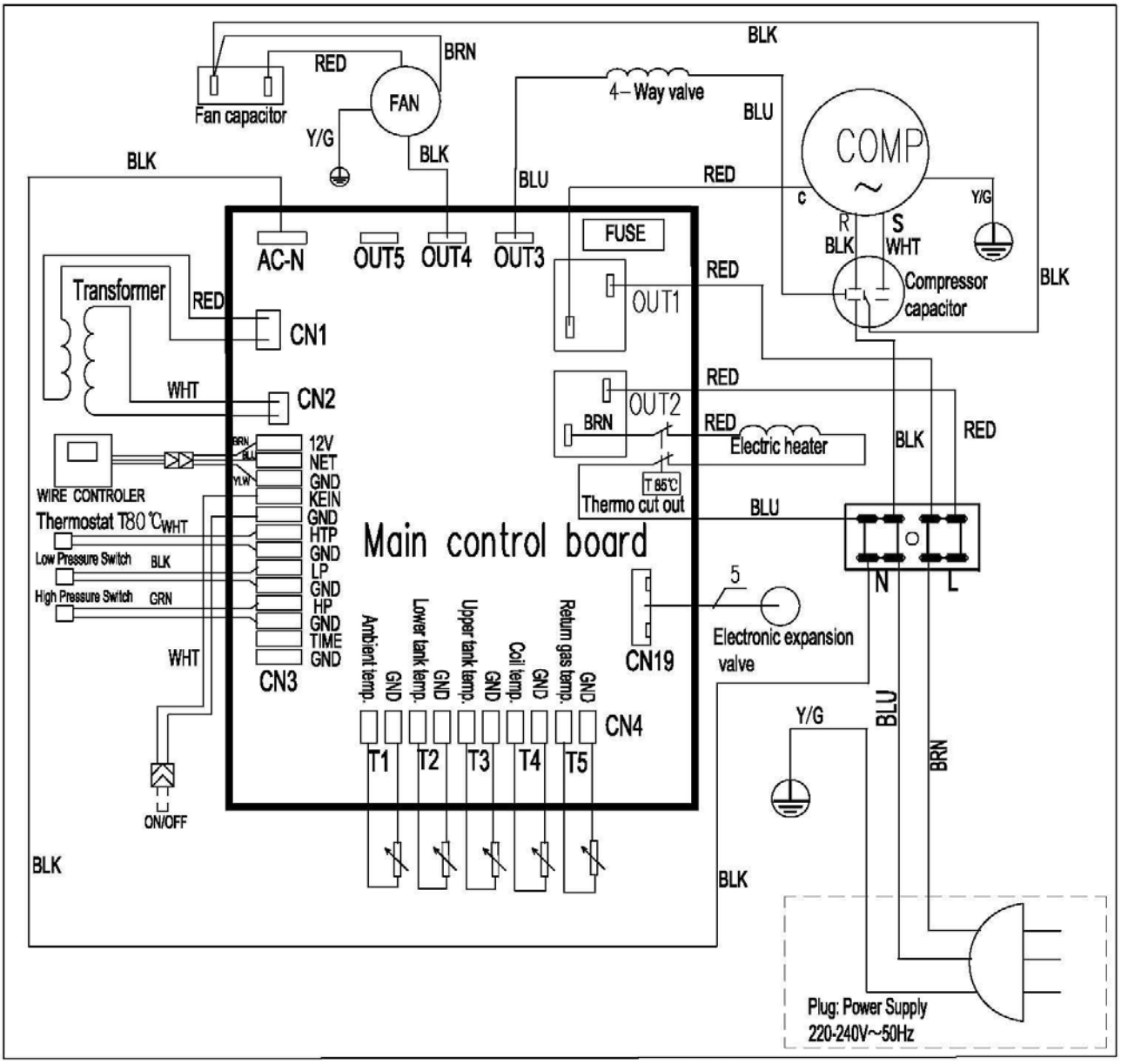
Your product is marked with this symbol. This means that electrical and electronic products shall not be mixed with unsorted household waste.

Do not try to dismantle the system yourself: the dismantling of the system, treatment of the refrigerant, of oil and other parts must be done by a qualified installer in accordance with relevant local and national legislation.
Units must be treated at a specialized treatment facility for re-use, recycling and recovery. By ensuring that this product is disposed off correctly, you will help to prevent potential negative consequences for the environment and human health. Please contact the installer or local authority for more information.

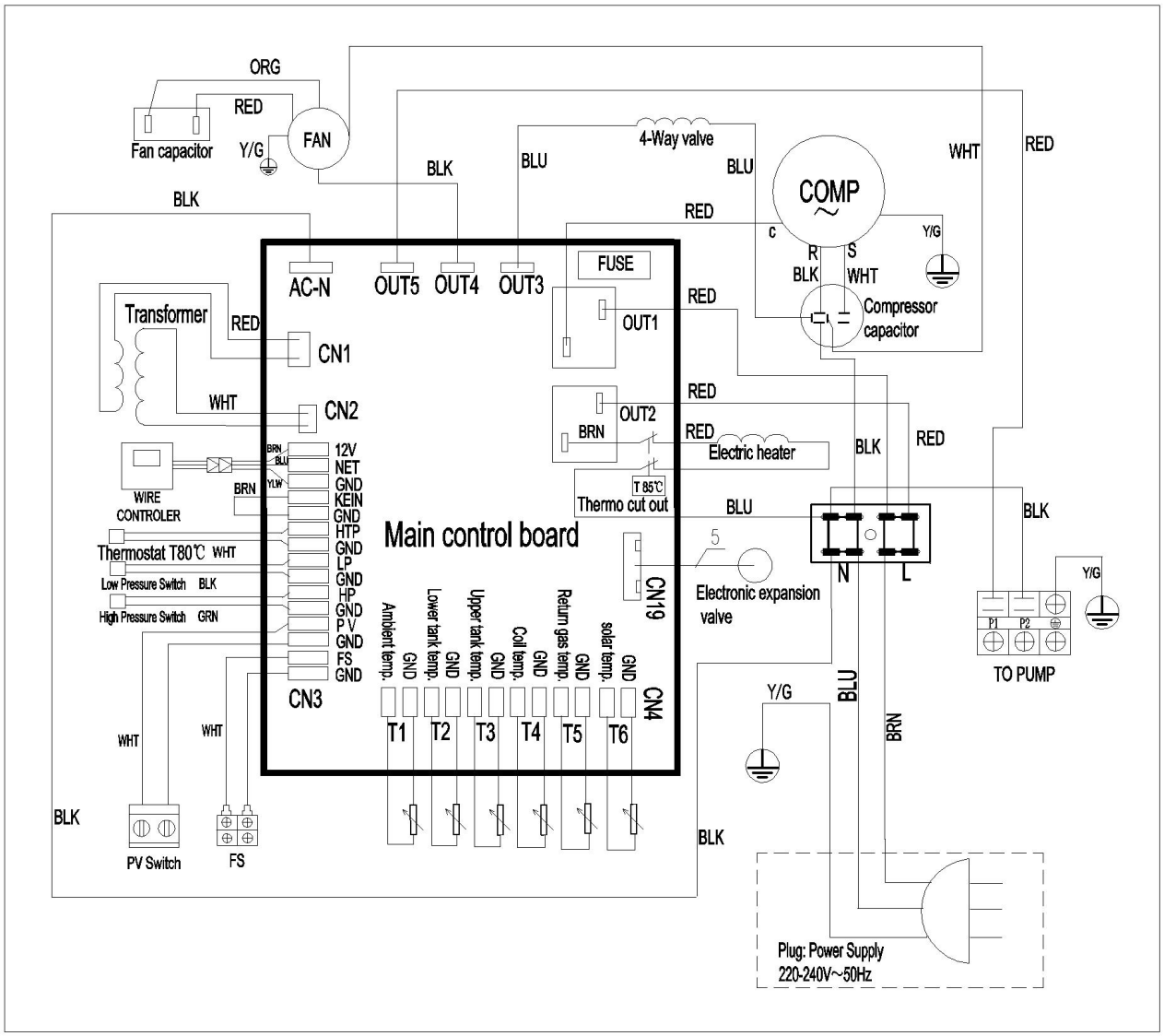
WIRING DIAGRAM

Please refer to the wiring diagram on the electric box.

HTW-ATS-O-300VAX(S)



HTW-ATS-O-500VAX (S)



TECHNICAL SPECIFICATION

TECHNICAL DATA		300L	300LS	500L	500LS
Power supply	V/Ph/Hz	220-240/1/50			
Water tank Volume	L	300	300	500	500
Max power input	W	700+1600 (e-heater)		1420+1600 (e-heater)	
Max current	A	3.2 +6.8 (e-heater)		6.2 +6.8 (e-heater)	
Max.outlet water temperature range(without using E-heater)	°C	60			
Max. water temperature	°C	70			
Min. water temperature	°C	1			
Ambient working temp.	°C	-5-43			
Max. discharge pressure	bar	20			
Min. suction pressure	bar	6			
Refrigerant type		R134a			
Compressor	Type	Rotary			
	Brand	GMCC			
	Model	PJ125G1C-4DZDE		PJ250M2C-4FT	
Fan motor	Type	asynchronous motor			
	W	80		194	
	RPM	1280		1300	
Air flow	m3/h	450		900	
Duct diameter	mm	177 (Fit flexible 180/200mm duct)			
Max allowed pressure of tank	bar	10			
Inside body material of tank		SUS 304			
Auxiliary electrical heater	kW	1.6（incoloy825）			
Electronic expansion valve		yes			
Magnesium stick		yes			
Solar heat exchanger		N/A	SUS316 ~ 1m2	N/A	SUS316 ~ 1m2
Hot water outlet	inch	G 1			
Solar heat source inlet/outlet	inch	G 3 / 4			
Cold water inlet	inch	G 1			
Drainage	inch	G 3 / 4			
Condensed water outlet	inch	G 1 / 2			
Heat pump heat exchanger material		Aluminium alloy			

Net Dimensions	mm	φ640x1845	φ640x1845	Φ700x2250	Φ700x2250
Packing Dimensions	mm	695x695x1965	695x695x1965	750x750x2355	750x750x2355
Net Weight	Kg	97	104	115	122
Gross Weight	Kg	101	108	120	127
Noise level	dB (A)	46	46	48	48
NOTES: * During disinfection, the max water temp could be up to 70°C by electrical heater					

TEMPERATURE SENSOR R-T CONVERSION TABLE

R25= 5.0KΩ±1.0% B25-50 = 3470K±1.0%

℃	Rmin /KΩ	KΩ	Rmax/ KΩ	℃	Rmin /KΩ	KΩ	Rmax/ KΩ	℃	Rmin /KΩ	KΩ	Rmax/ KΩ
-20	36.195	37.303	38.441	21	5.779	5.847	5.914	62	1.343	1.374	1.406
-19	34.402	35.437	36.499	22	5.558	5.62	5.683	63	1.301	1.331	1.362
-18	32.709	33.676	34.668	23	5.346	5.404	5.463	64	1.26	1.29	1.321
-17	31.109	32.012	32.939	24	5.144	5.198	5.252	65	1.221	1.25	1.28
-16	29.597	30.441	31.306	25	4.95	5	5.05	66	1.183	1.212	1.242
-15	28.168	28.957	29.765	26	4.761	4.811	4.861	67	1.147	1.175	1.204
-14	26.816	27.554	28.308	27	4.58	4.63	4.68	68	1.111	1.139	1.168
-13	25.538	26.227	26.932	28	4.408	4.457	4.507	69	1.077	1.105	1.133
-12	24.328	24.972	25.631	29	4.242	4.292	4.341	70	1.045	1.072	1.099
-11	23.183	23.785	24.4	30	4.084	4.133	4.182	71	1.013	1.04	1.067
-10	22.098	22.661	23.236	31	3.933	3.981	4.03	72	0.983	1.009	1.035
-9	21.071	21.598	22.135	32	3.788	3.836	3.885	73	0.953	0.979	1.005
-8	20.098	20.59	21.093	33	3.649	3.697	3.745	74	0.925	0.95	0.975
-7	19.176	19.636	20.106	34	3.516	3.563	3.611	75	0.897	0.922	0.947
-6	18.301	18.732	19.171	35	3.388	3.435	3.483	76	0.871	0.895	0.919
-5	17.472	17.875	18.285	36	3.266	3.313	3.36	77	0.845	0.869	0.893
-4	16.686	17.063	17.446	37	3.149	3.195	3.241	78	0.82	0.843	0.867
-3	15.94	16.292	16.65	38	3.037	3.082	3.128	79	0.796	0.819	0.842
-2	15.231	15.561	15.896	39	2.929	2.974	3.019	80	0.773	0.795	0.818
-1	14.559	14.867	15.18	40	2.826	2.87	2.915	81	0.751	0.773	0.795
0	13.92	14.208	14.501	41	2.726	2.77	2.815	82	0.729	0.751	0.773
1	13.313	13.582	13.856	42	2.631	2.675	2.718	83	0.708	0.729	0.751
2	12.736	12.988	13.244	43	2.54	2.583	2.626	84	0.688	0.709	0.73
3	12.188	12.423	12.662	44	2.452	2.494	2.537	85	0.668	0.689	0.709
4	11.666	11.887	12.11	45	2.368	2.409	2.451	86	0.649	0.669	0.69
5	11.17	11.376	11.585	46	2.287	2.328	2.369	87	0.631	0.651	0.671
6	10.698	10.891	11.086	47	2.209	2.25	2.29	88	0.613	0.632	0.652
7	10.249	10.429	10.611	48	2.135	2.174	2.214	89	0.596	0.615	0.634
8	9.822	9.99	10.16	49	2.063	2.102	2.141	90	0.579	0.598	0.617
9	9.414	9.572	9.73	50	1.994	2.032	2.071	91	0.563	0.581	0.6
10	9.027	9.173	9.321	51	1.927	1.965	2.003	92	0.548	0.566	0.584
11	8.657	8.794	8.932	52	1.863	1.901	1.938	93	0.533	0.55	0.568
12	8.305	8.432	8.561	53	1.802	1.839	1.876	94	0.518	0.535	0.553
13	7.969	8.088	8.208	54	1.743	1.779	1.815	95	0.504	0.521	0.538
14	7.648	7.76	7.872	55	1.686	1.721	1.757	96	0.49	0.507	0.524
15	7.343	7.446	7.551	56	1.631	1.666	1.701	97	0.477	0.493	0.51
16	7.051	7.148	7.245	57	1.579	1.613	1.647	98	0.464	0.48	0.496
17	6.773	6.863	6.953	58	1.528	1.561	1.595	99	0.452	0.467	0.483
18	6.507	6.5911	6.675	59	1.479	1.512	1.545	100	0.439	0.455	0.47
19	6.253	6.331	6.41	60	1.432	1.464	1.497				
20	6.011	6.083	6.156	61	1.386	1.418	1.451				

TEMPERATURE SENSOR R-T CONVERSION TABLE

Only use for the solar temp sensor

R25=50KΩ±1.0%　　B25/50 = 3950K±1.0%

℃	R(cent)	℃	R(cent)	℃	R(cent)	℃	R(cent)
-20	466.6	15	78.38	50	17.93	85	5.227
-19	441.1	16	74.85	51	17.26	86	5.061
-18	417.2	17	71.5	52	16.61	87	4.902
-17	394.7	18	68.32	53	15.99	88	4.748
-16	373.5	19	65.29	54	15.4	89	4.6
-15	353.6	20	62.41	55	14.83	90	4.457
-14	334.8	21	59.68	56	14.29	91	4.319
-13	317.2	22	57.07	57	13.77	92	4.188
-12	300.6	23	54.6	58	13.27	93	4.058
-11	284.9	24	52.24	59	12.79	94	3.935
-10	270.2	25	50	60	12.33	95	3.815
-9	256.3	26	47.86	61	11.89	96	3.7
-8	243.1	27	45.83	62	11.46	97	3.589
-7	230.7	28	43.89	63	11.06	98	3.482
-6	219	29	42.05	64	10.67	99	3.378
-5	208	30	40.28	65	10.29	100	3.278
-4	197.6	31	38.61	66	9.936	101	3.182
-3	187.7	32	37.01	67	9.591	102	3.088
-2	178.4	33	35.49	68	9.259	103	2.998
-1	169.6	34	34.03	69	8.941	104	2.911
0	161.3	35	32.65	70	8.635	105	2.827
1	153.4	36	31.32	71	8.341	106	2.746
2	146	37	30.06	72	8.058	107	2.667
3	139	38	28.85	73	7.786	108	2.591
4	132.3	39	27.7	74	7.525	109	2.517
5	126	40	26.6	75	7.247	110	2.446
6	120	41	25.55	76	7.032	111	2.378
7	114.3	42	24.54	77	6.8	112	2.311
8	109	43	23.58	78	6.576	113	2.247
9	103.9	44	22.66	79	6.361	114	2.184
10	99.04	45	21.78	80	6.153	115	2.124
11	94.47	46	20.94	81	5.954	116	2.065
12	90.12	47	20.14	82	5.762	117	2.009
13	86	48	19.37	83	5.577	118	1.955
14	82.09	49	18.64	84	5.398	119	1.902

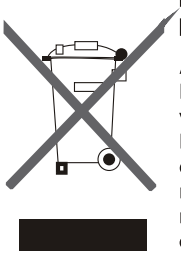
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GIA GROUP



IMPORTANT INFORMATION FOR CORRECT DISPOSAL OF THE PRODUCT
IN ACCORDANCEWITH EC DIRECTIVE 2002/96/EC.

At the end of its working life, the product must not be disposed of as urban waste.
It must be taken to a special local authority differentiated waste collection centre or to a dealer pro viding this service.
Disposing of a household appliance separately avoids possible negative consequences for the environment and health deriving from inappropriate disposal and enables the constituent mate-rials to be recovered to obtain significant savings in energy and resources.As a reminder of the need to dispose of household appliances separately, the product is marked with a crossed-outwheeled dustbin.