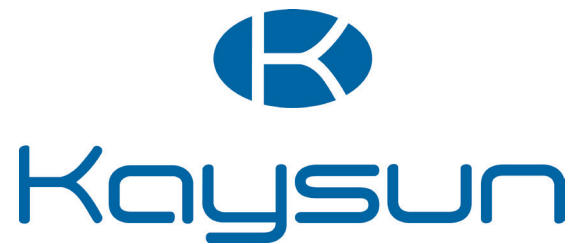


ORIGINAL
MANUAL



INSTALLATION & OWNER'S MANUAL

Floor Standing Compak

KHP-15/185 ACS3



Warning notices: Before using this product, please read this manual carefully and keep it for future reference. The design and specifications are subject to change without prior notice for product improvement.

Consult with your dealer or manufacturer for details.

The diagram above is just for reference. Please take the appearance of the actual product as the standard.

This installation manual needs to be used in conjunction with the safety manual.

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SAFETY PRECAUTIONS

Read the instructions and warnings in this manual carefully, they contain important information regarding safe installation, use and maintenance. Incorrect installation due to ignoring instructions can cause serious damage or injury. The seriousness of potential damage or injuries is classified as either a **WARNING** or **CAUTION**.



WARNING

The signal word indicates a hazard with a medium level of risk which, if not avoided, may result in serious injury.



CAUTION

The signal word indicates a hazard with a low degree of risk which, if not avoided, may result in minor or moderate injury.



DANGER

You may be killed or seriously injured immediately if you don't obey instructions.

LIMIT OF APPLICATION

This product is only suitable for household use, for the preparation of domestic hot water at 38-70°C. It must be connected to the household water supply and electricity supply. It is prohibited to use the equipment for other purposes like industrial production, or install it in any environment exposed to corrosion and combustion risks. The manufacturer is not responsible for damage to the equipment due to incorrect installation or improper use.

⚠ WARNING

- This appliance may be used by children 8 years of age or older, and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge, if they have been supervised or instructed concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and maintenance shall not be made by children without supervision.
- 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.

⚠ WARNING

- This unit is required reliable earthing before usage, otherwise might cause injury.



If you can't make sure that your house power supply is earthed well, please don't install the unit. Please have a qualified person perform the reliable earthing connection and the installation of the unit. Examples of a qualified person include: licensed plumbers, authorized electric company personnel, and authorized service personnel.

- The maximum refrigerant charge amount is 0.15kg.
- Ask qualified person to perform the installation of this unit in accordance with local national regulations and this manual.
- Improper installation may result in water leakage, electric shock or fire.
- Electric connection work should obey the instructions of local power company, local electric utility and this manual.

⚠ INSTALLATION WARNING

- The unit must be earthed effectively. A creepage breaker must be installed adjacent to the power supply.
- Before wiring/pipes, confirm the safety of the installation area (walls, floors, etc.) without hidden dangers such as water, electricity, and gas.
- Before installation, check whether the user's power supply meets the electrical installation requirements of unit (including reliable grounding, leakage, and wire diameter electrical load, etc.). If the electrical installation requirements of the product are not met, the installation of the product is prohibited until the rectification is complete.
- The installation height of power supply should be over 1.8m, if there is any water spattered, separate the power supply from water.
- The wiring must be performed by professional technicians in accordance with national wiring regulations and the circuit diagram.
- Never use the wire and fuse with wrong rated current, otherwise unit may break down and cause fire furthermore.
- Place the appliance in an accessible place.
- Appliance shall be installed, operated and stored in a room with a floor area larger than 4m².

⚠️ INSTALLATION WARNING

- Do not leave flammable materials in contact with or in the vicinity of the appliance.
- If the unit has an auxiliary electric heater, it must be installed at least 1 meter (40in) away from any combustible materials.
- Install the appliance in a frost-free room. The warranty does not cover destruction of the appliance through excess pressure caused by a blockage in the safety valve.
- If the appliance has to be installed in a room or location with an ambient temperature always above 35°C, this room must be ventilated.
- In order to avoid a hazard due to inadvertent resetting of the thermal cut-out, this appliance must not be supplied through an external switching device, such as a timer, or connected to a circuit that is regularly switched on and off by the utility.
- When installing multiple units in a centralized manner, please confirm the load balance of the three-phase power supply, and multiple units are prevented from being assembled into the same phase of the three-phase power supply.
- Product installation should be fixed firmly.

⚠️ HYDRAULIC CONNECTIONS WARNING

- The water inlet temperature of the equipment shall not be lower than 4°C, and the Maximum water temperature of the equipment can be set as 70°C.
- The Minimum water pressure of the water transmission pipeline system is 0.15MPa. A pressure reducer (not supplied) is needed when pressure is more than 7 bar (0.7 MPa) and it will be placed on the main supply.
- A discharge pipe connected to the pressure-relief device is to be installed in a continuously downward direction and in a frost-free environment. This pipe must be left open to the atmosphere, so that the water can drip from the discharge pipe of the pressure-relief device.
- A one-way valve must be installed on the water inlet side, which is available from accessories, see manual "accessories" part.
- Do not connect hot water piping directly to the copper piping. It must be equipped with a dielectric connection (not supplied with the appliance).
- Connect the safety unit to a drain pipe kept in the open air, in a frost-free environment, with a permanent downward gradient, to remove any expansion water from the heating process, or drainage water from the water-heater.
- The drainage pipe should be well insulated in order to prevent water inside pipe from freezing in cold weather.

⚠️ HYDRAULIC CONNECTIONS WARNING

- Arrange the drain pipe to ensure smooth draining. Improper drainage work may cause wetting of the building, furniture etc.

⚠️ OPERATION WARNING

- The earthing pole of socket must be grounded well, make sure that power supply socket and plug are dry enough and connected tightly.
- How to check the power supply socket and plug are qualified?
Turn on the power supply and keep the unit running for a half hour, then turn off the power supply and plug out, check whether the socket and plug are hot.
- Do not turn off the power supply.
- System will stop or restart heating automatically. A continuous power supply for water heating is necessary, except service and maintenance.
- Do not operate the unit with a wet hand. An electric shock may be caused.
- Water heated to over 50°C can cause immediate serious burns if delivered directly to the taps. Children, disabled persons and the aged are particularly at risk. We recommend installing a thermostatic mixer or water temperature limiting valve on the water delivery line. Feel water before bathing or showering.
- Before cleaning, be sure to stop the operation and turn the breaker off or unplug the unit. Otherwise, an electric shock and injury may be caused.
- Ask qualified person for relocating, repairing and maintaining the unit instead of doing by yourself.
- Do not insert fingers, rods or other objects into the air inlet or outlet. When the fan is rotating at high speed, it will cause injury.
- Never use a flammable spray such as hair spray, lacquer paint near the unit. It may cause a fire.
- If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person.
- Do not leave the packaging materials (staples, plastic bags, expanded polystyrene, etc.) within the reach of children -they can cause serious injury.
- After a long term use, check the unit base and fittings. If damaged, the unit may sink and result in injury.
- Do not touch the inner parts of the controller.



OPERATION WARNING

- Do not remove the front panel. Some parts inside are dangerous to touch, otherwise a machine malfunction may be caused.
- The pressure-relief device is to be operated regularly to remove lime deposits and to verify that it is not blocked.
- DANGER: The operation of the thermal cut-out indicates a possibly dangerous situation. Do not reset the thermal cut-out until the water heater has been serviced by a qualified person.
- DANGER: Failure to operate the relief valve easing gear at least once every six months may result in the water heater exploding. Continuous leakage of water from the valve may indicate a problem with the water heater.
- If the unit has not been used for a long period of time (2 weeks or more), hydrogen gas will be produced in the water piping system. Hydrogen gas is extremely flammable. To reduce the risk of injury under these conditions, it is recommended that open the hot water tap for several minutes at the kitchen sink before using any electrical appliance connected to the hot water system. When hydrogen is present, there will probably be an unusual sound such as air escaping through the pipe as the water begins to flow. There should be no smoking or open flame near the tap at the time it is open.

OPERATION CAUTION

- Do not remove, cover or deface any permanent instructions, labels, or the data label from either the outside of the unit or inside of unit panels.
- It is normal that water drips from the overpressure safety device or from the EN 1487 safety unit when the appliance is heating. For this reason one must install a drain, open to the air, with a continuously downwards sloping pipe, in an area not subject to subzero temperatures. A condensate drain should also be connected to the same pipe with a special coupling.
- Make sure you drain the appliance when it is out of service in an area subject to subzero temperatures.
- Regarding how the water heater can be drained, thanks to refer to the below paragraphs of the manual.
- SMART mode is not recommended when water consumption is low or irregular.

1. PRODUCT INFORMATION

1.1 Content of packaging

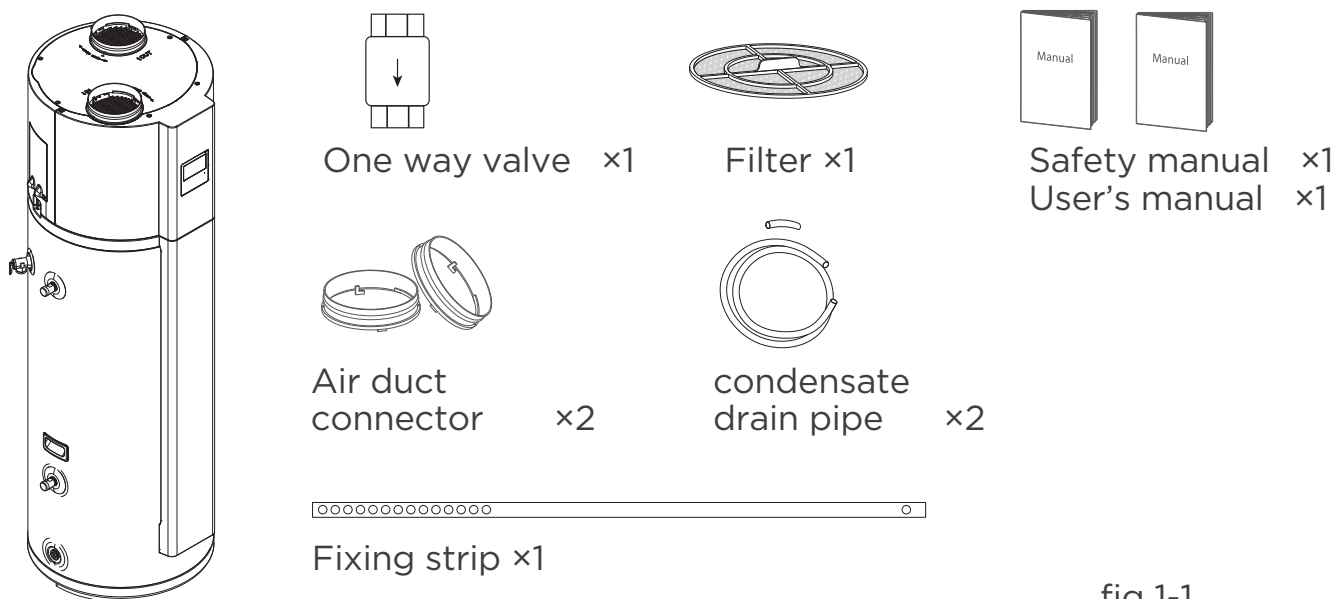


fig 1-1

All the pictures in this manual are for explanation purpose only. They may be slightly different from the heat pump water heater you purchased (depending on the model). Please refer to the real sample instead of the picture of this manual.

1.2 Basic working principle

The natural process of heat transfer is moving from a higher temperature source to a lower temperature source. But heat pumps can transfer heat from a lower temperature source to a higher temperature source, thereby we can use the heat in the ambient air to produce domestic hot water with a heat pump.

The working process goes through the following thermodynamic cycle:

- 1) The fan conveys air to the evaporator, in which the refrigerant absorbs heat and evaporates.
- 2) The compressor compresses the refrigerant gas, whereby its temperature and pressure increase.
- 3) The high-pressure, high-temperature refrigerant vapor condenses then in the microchannel condensers around the tank and releases heat to the water in the tank.
- 4) The thermostatic expansion valve will then regulate the liquid flow so that it is ready to re-enter the evaporator to start the cycle again.

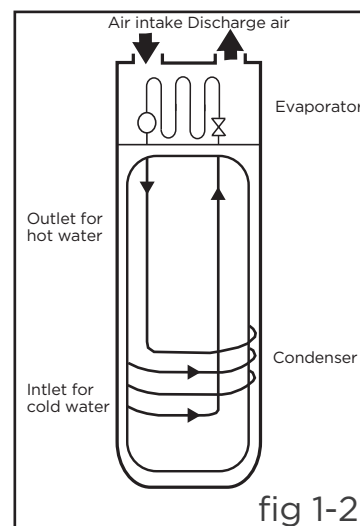


fig 1-2

The principle of the domestic hot water heat pump makes it possible to generate three times the amount of heat from electrical energy compared to conventional electric heaters and gas water heaters, which significantly reduces the daily energy consumption for heating water.

1.3 Structure

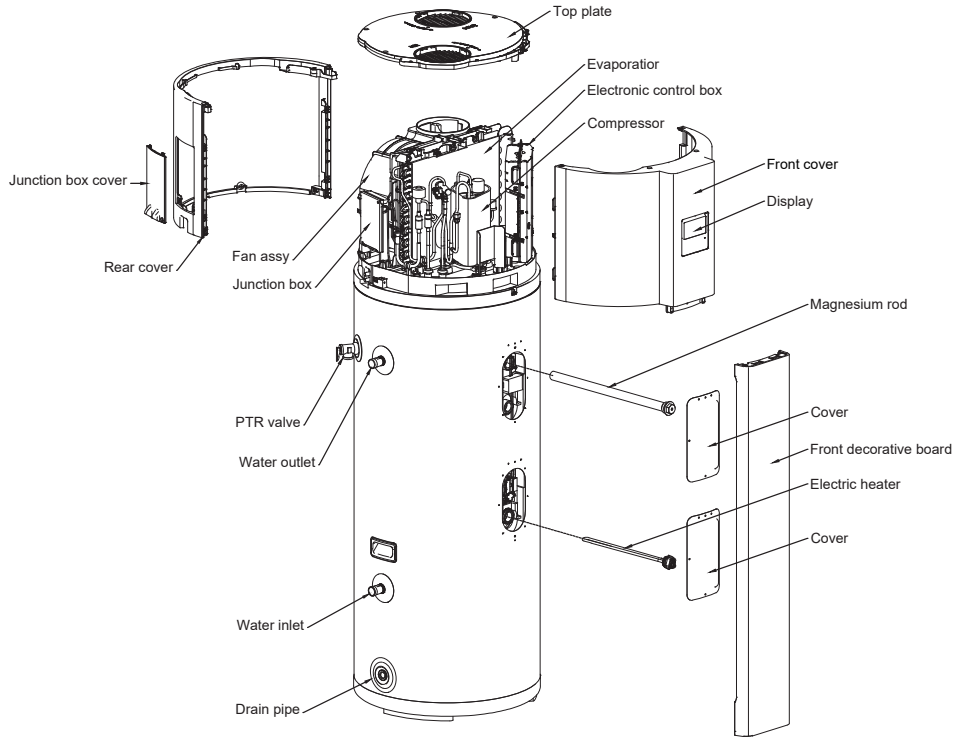
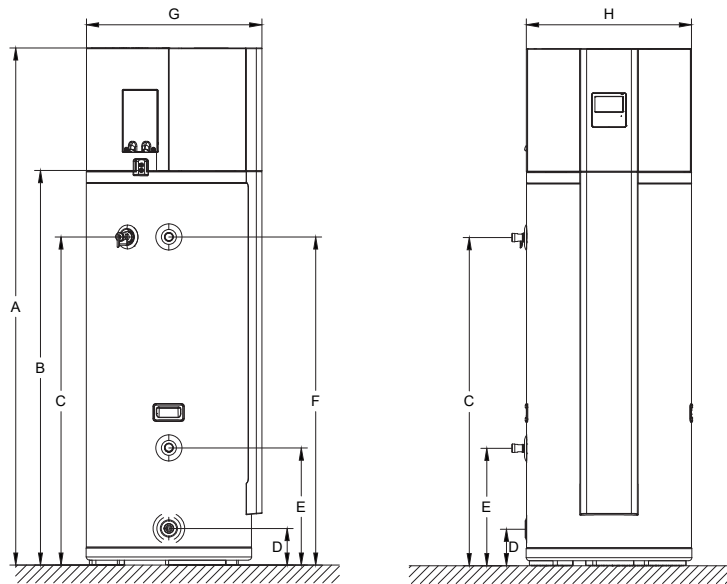


fig 1-3

When ordering spare parts, please give the following information:

- 1) Model, serial and product number.
- 2) Parts name

1.4 Dimension & connections



	Description	Spec.	Hight
A	Unit body	1730mm	/
B	Drain vent	/	1325mm
C	PTR valve	R3/4	1100mm
D	Drain pipe	NPT3/4	125mm
E	Water inlet	DN20	395mm
F	Water outlet	DN20	1100mm
G	Unit body	595mm	/
H	Unit body	560mm	/
I	Air inlet	160mm	/
J	Air outlet	160mm	/

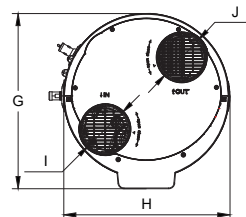


fig 1-4

1.5 Technical characteristic

Model	KHP-15/185 ACS3
UNIT GENERAL INFO	
Water tank cap.	185 L
Net weight	91 kg
Dimension	Ø560×1730 mm
Refrigerant	R290 (0.15 kg)
Running air inlet temp.	-7-43℃ (E-heater:-20-46℃)
Max. hot water temp (heat pump)	65℃
Max. hot water temp (e-heater)	70℃
Water heating cap. ①	Heat pump:1430 W, E-heater:1640 W
Air side exchanger	Hydrophilic aluminum fin, inner groove copper tube
Water side exchanger	Microchannel heat exchanger
Fan type	Centrifugal
Ari volume flow rate	350 m ³ /h
Max. sound power (EN12102)	56 dB(A)
PERFORMANCE (EN 16147) ②	
Load profile	L
Water heating energy efficiency class	A+
Water heating energy efficiency /	131.1%
COP _{DHW}	3.146
Maximum volume of mixed water at 40℃-V ₄₀	245 L
Reference hot water temperature-θ _{wh}	53℃
Rated heat output	11.697 kW·h
Heating up time-t _h	07:32 hh:mm
Annual electricity consumption	780.8 kW·h
Stand-by power input(P _{es})	27W
TANK	
Material	Steel tank with vitreous enamel coating
Cathodic protection	Magnesium rod
Insulation thickness	42 mm Polyurethane foam
Max. inlet water pressure	0.7 MPa
Max. operating pressure (safety valve)	0.85 MPa
ELECTRICAL DATA	
power supply spec.	220-240V
E-heater power	1640 W
Motor power	30 W
Max. heat pump power input	600 W
Max. power input	2240 W
Max. current input	10.5 A
Protection	Over-load Protector, Temp Controller & Protector, Electric Leakage Protector, etc.
Fusible link type	T5A 250VAC/T16A 250VAC
Insulation protection rating	IP21

Model	KHP-15/185 ACS3
SOLAR COIL	
Material	/
Surface	/
Max. pressure	/
NOTE:	
<p>① The test conditions: outdoor temp. 15/12 °C(DB/WB),inlet water temp = 15°C, outlet water temp = 45 °C.</p> <p>② Data according to EN 16147: 2017 standard for AVERAGE climate (unit in ECO mode, Hot water setpoint = 53 °C; Inlet water = 10 °C; Inlet air temp = 7 °C DB / 6 °C WB) * according to European regulation 812/2013.</p>	

2. INSTALLATION

2.1 Before installation

2.1.1 How to transport / handling

⚠ CAUTION

- Please carry the unit according to the factory state, do not disassemble it by yourself.
- This unit is heavy, it needs to be carried by two people or more, otherwise it might cause injury to people and damage to the unit.
- Keep away your fingers from the vanes.
- In order to avoid scratch or deformation of the unit surface, protect the surface from contacting with hard objects.
- While moving, please use the handles on both sides of the unit.

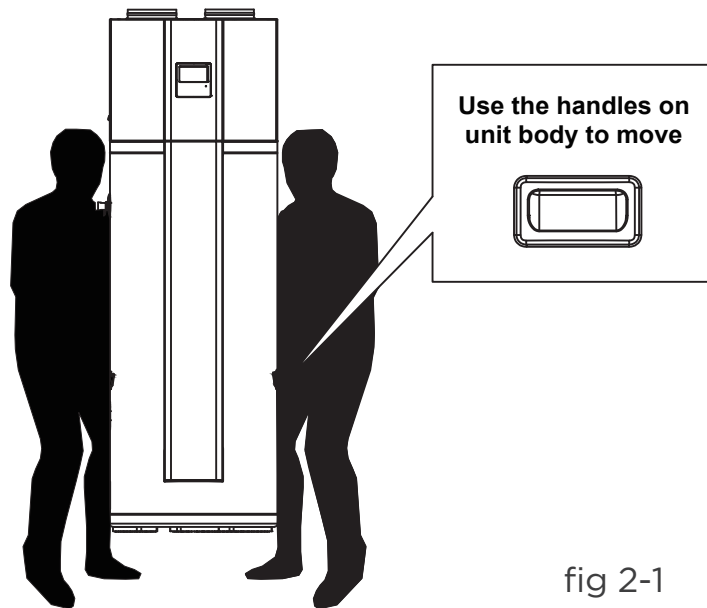
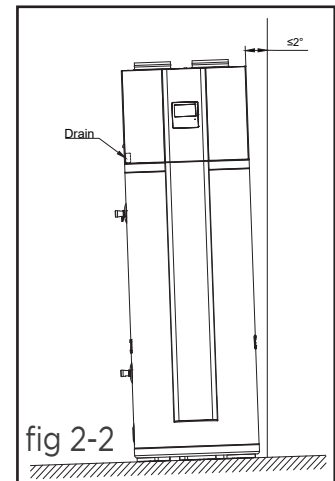


fig 2-1

2.1.2 Location requirements

- The unit must be installed indoor , it is not allowed to be installed outdoor without shelter.
- Enough space for installation and maintenance shall be preserved.
- The ground surface should be flat, and inclined no more than 2°.
- The ground must able to bear the weight of the unit and suitable for installing the unit without increasing noise or vibration.
- To smoothly drain condensate water from the unit, please install the unit at a horizontal floor. Otherwise, ensure the drain vent is at the lowest level.
- The air inlet and outlet should be free from obstacles and strong wind.
- The operation noise and air flow expelled shall not affect neighbors.
- No obstacle around the unit.
- No flammable gas is leaked nearby.
- It is convenient for piping and wiring.
- The ambient air temperature must also be considered when installing this unit, in heat pump mode the air inlet temperature must be above -7°C and below 43°C. If the inlet air temperature falls outside these upper and lower limits, the electrical elements will be activated to meet the hot water demand and the heat pump does not operate.



In order to prevent toppling, please use fixed strip fixed unit. The installation method of fixing strips is shown at page 14.

⚠ WARNING

- In case of rain entering to internal components of the unit, the component might be damaged or causing physical danger.
- In terms of the unit connect with duct reaching to outdoor, a reliable water resistant measure must be conduct on the duct, to prevent water from dropping into internal of the unit.
- The unit needs to be securely fixed, otherwise it may cause heavy consequences.

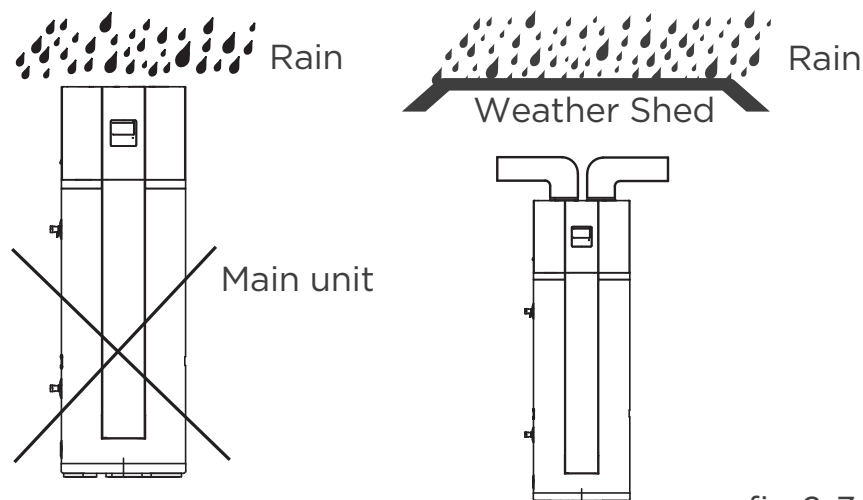


fig 2-3

⚠ CAUTION

- If the unit is installed on the balcony, the water full weight should not exceed the load-bearing limit of the balcony.
- If the unit has to be installed on a metal part of building, make sure the well electric insulation which should meet the relevant local electric standard.
- The unit installed in indoor space might cause indoor temperature decrease and noise. Please take preventive measures for this.
- The unit should be located in an area not subject to freezing temperatures. The unit located in unconditioned spaces (i.e., garages, basements, etc.) may require the water piping, condensate piping, and drain piping to be insulated to shelter against freezing.
- Installing the unit in any of the following places may lead to malfunction (If it is inevitable, consult the supplier).
 - The site contains mineral oils such as lubricant of cutting machines.
 - Seaside where the air contains much salt.
 - Hot spring area where corrosive gases exist, e.g., sulfide gas.
 - Factories where the power voltage fluctuates seriously.
 - Inside a car or cabin.
 - The place with direct sunlight and other heat supplies. If there's no way to avoid these, please install a covering.
 - Place like kitchen where oil permeates.
 - Place where strong electromagnetic waves exist.
 - Place where flammable gases or materials exist.
 - Place where acid or alkali gases evaporate.
 - Other special environments.

2.1.3 Maintenance space requirements (unit: mm)

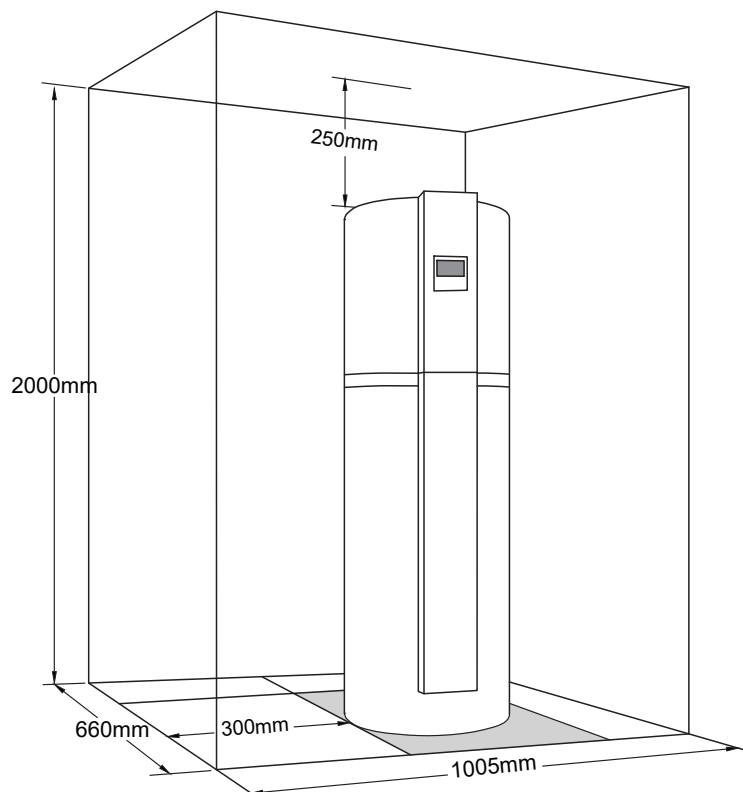


fig 2-4

2.2 Fixing method

⚠ CAUTION

In order to prevent accidental fall (see art. 20 of the EN 60335-1 standard) please fasten the Water heater to the walls.

Water heater fixing steps are as follows:

- 1) Take off the front decorative board.
- 2) Install the expansion bolts(not provided) in the wall according to the drawing.
- 3) Fix the end with less holes for mounting the fixing strip on the expansion bolt.
- 4) Tighten the fixing strip and fix the other end to the second expansion bolt through appropriate hole.
- 5) Check whether the water tank is securely fixed. If there's extra fixing strip, please cut it off.
- 6) Put back the decorative board.

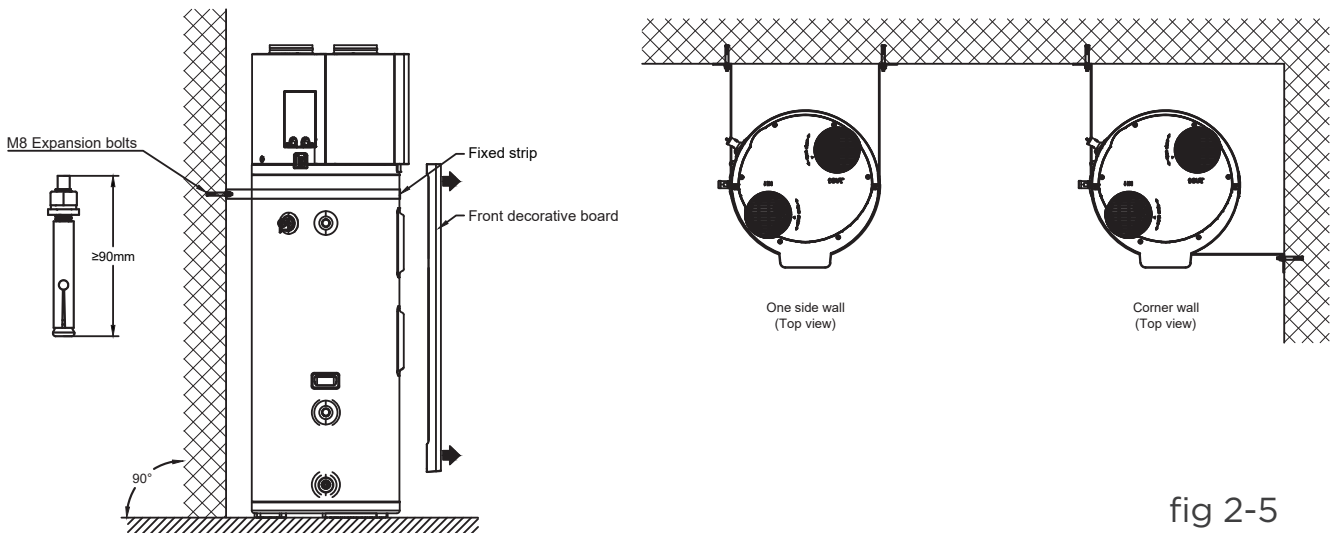


fig 2-5

⚠ CAUTION

- The appearance of the water tank and the orientation of the water tank orifice are for reference only and can be adjusted according to the actual installation.
- The position of the fixed strip can be adjusted according to the actual situation, make sure the unit is safely and securely fixed.
- The expansion bolt requirement must match the weight of the product (loaded with water)

2.3 Hydraulic connection

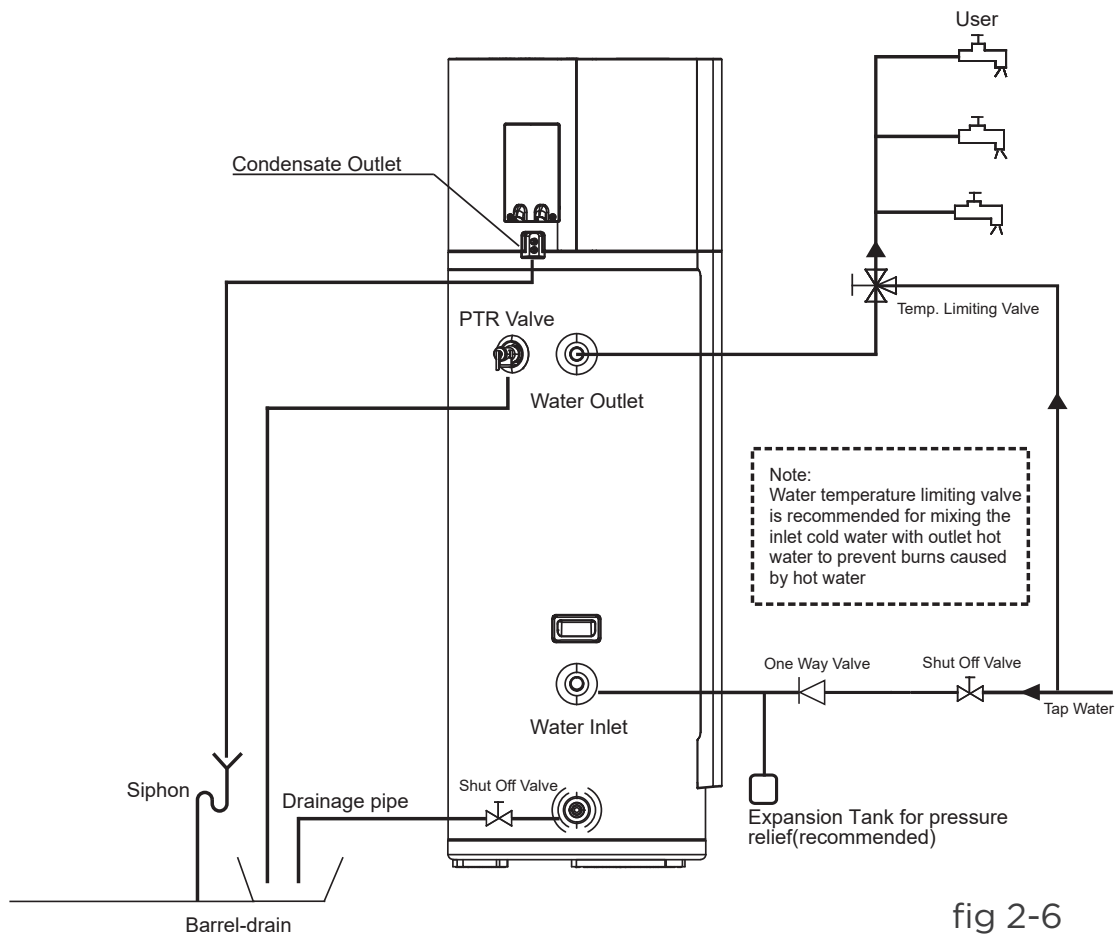


fig 2-6

- Connect water pipes as the above figure.
- Check before connection, make sure the pipe is clean and free of any foreign matter.

1) Cold water connection

The spec of the water inlet thread is DN20(external thread). Use well-insulated pipes to connect the water inlet to the house's water supply. Install the one way valve (thread RC3/4") provided in accessories to the inlet pipe to prevent water from flowing backwards.

⚠ CAUTION

- In any type of installation there should be a stop valve (not provided) on the cold water inlet.
- We recommend a supply pressure of 3~4 bar (0.3 to 0.4 MPa). If the inlet water pressure is less than 0.15MPa, a pump should be installed at the water inlet. If the main water supply pressure is higher than bar (0.7MPa), a reducing valve should be used at the water inlet pipe.
- For regions with a lot of scale ($Th > 20^{\circ}f$), we recommend to treat the water. The hardness after softener has to be higher than $15^{\circ}f$. The use of a softener does not influence the warranty if the softener is approved for the country of installation and set to the rules of art, with regular checking and maintenance.
- Local criteria of drinking water quality have to be respected.

2) Hot water connection

The spec of the water outlet thread is DN20(external thread). Use well-insulated pipes to connect the water outlet to the water terminal in the house

⚠ CAUTION

Water temperature over 50°C can cause severe burns instantly from scalds. We recommend installing a thermostatic mixer valve on the water delivery line.

3) Drainage connection

The spec of the Drainage is NPT3/4. The unit comes with a plug. Replace the plug with a shut off valve and connect the unit to the drain pipe open to air.

4) Condensate evacuation

Connect the two condensate drain pipes in the fitting to the condensate outlet, as shown in fig 2-7.

Depending on the degree of humidity in the air you can get up to 0.25L/h of condensation. The condensate drain line should not be connected to the house sewer directly. Instead, use a siphon which contains water to prevent the unit from corrosive gases.

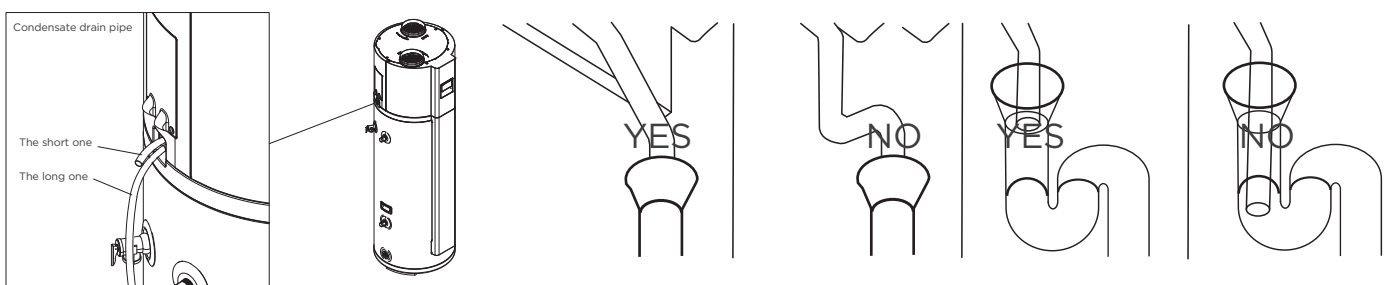


fig 2-7

5) Installation of the pipe for PTR valve

The spec of the safety valve connecting thread is RC3/4”(internal thread) and it was installed already.

The overflow of the safety valve has to be connected to a drainpipe that is open to the air, and connect to the used water evacuation through a siphon. Installation has to be in a frost-free environment. The safety valve has to be operated regularly (every half year) to check the working condition.

After water system piping work, turn on the cold water inlet valve and hot water outlet valve and start effusing the tank. Check pipeline to make sure there is not any leakage. When water flow smoothly out from water outlet pipe (tap water outlet), the tank is full, turn off all the outlet valves.

Tips:

Condensate may be leaked from unit if drainage pipe is blocked or unit operates in high humidity environment, a drainage pan is recommended as shown as following figure.

⚠ WARNING



Do not block off the safety valve drainage pipe. It will cause explosion and injury, if do not comply with the above instruction.

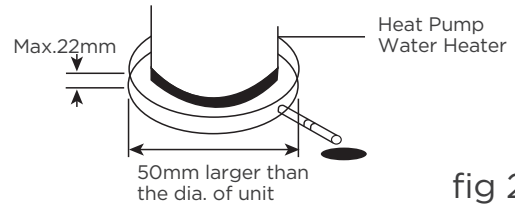
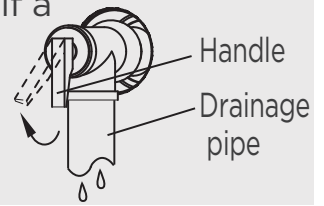


fig 2-8

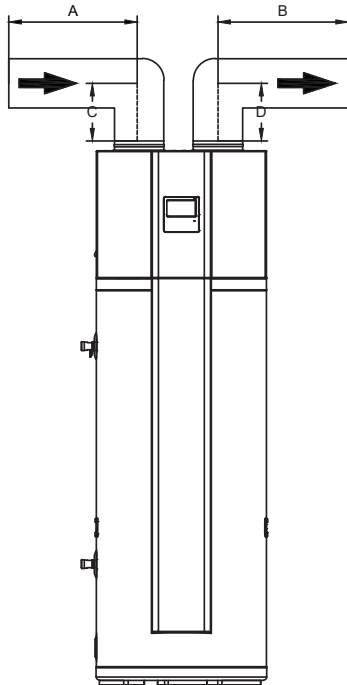
⚠ CAUTION

- In case of installing it at a place where outside temperature below freezing point, insulation must be provided for all hydraulic components.
- The handle of PTR valve should be pulled out once per half a year to make sure that there is no jam of the valve. Please beware of burn, beware of the hot water from the valve.
- The drainage pipe should be well insulated in order to prevent water inside pipe from freezing in cold weather.

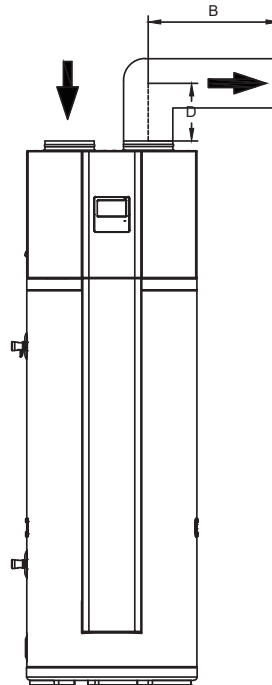


2.4 Air duct connection

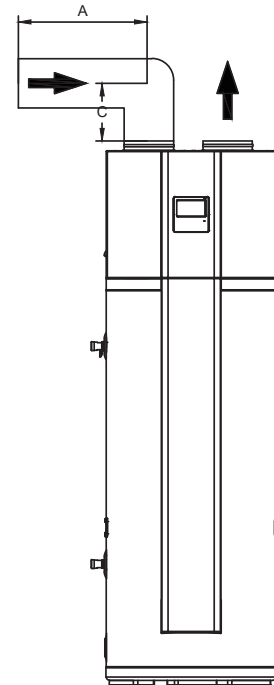
2.4 .1 Different ways of air ducts connection



1. Air inlet and outlet with ducts.
($A+B+C+D \leq 5m$)



2. Air outlet connects to duct, air inlet without ducts.
($B+D \leq 5m$)



3. Air inlet connects to duct, air outlet without ducts.
($A+C \leq 5m$)

fig 2-9

2.4.2 Ducts description and maximum length

It is strongly recommended to use rigid ducts (HDPE ducts for example).

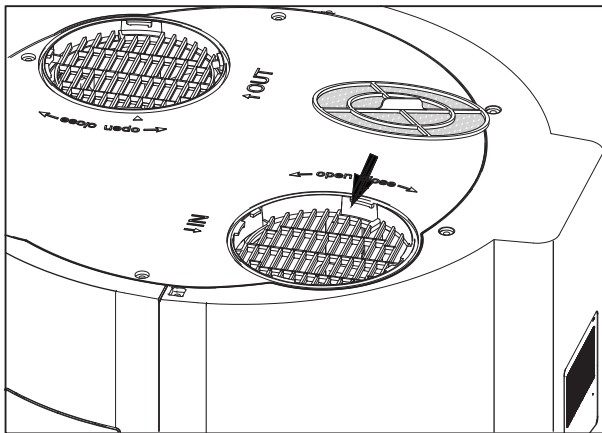
Duct	Round duct	Rectangle duct	Other shaped duct
Dimension(mm)	Φ160	160×160	Refer to above data
Straight-line pressure drop (Pa/m)	≤2	≤2	
Straight-line length (m)	≤5	≤5	
Bent pressure drop(Pa)	≤2	≤2	
Bent's qty.	≤5	≤5	

NOTE

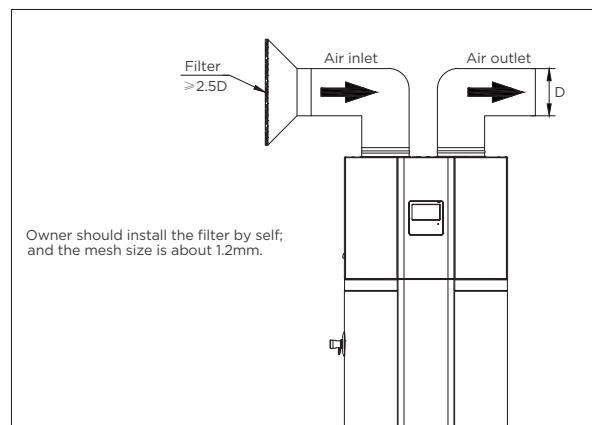
- The resistance of duct will decrease air-ow-rate, which will lead to capacity of unit decreased.
- For the case of unit with duct, the maximums static pressure should be within 20Pa. For example, when 5 bents are installed, the duct length should be no more than 5m($20Pa = 2 \times 5 + 2 \times 5$).
- For unit air outlet with duct, when unit operating, condensate will be generated around outside of duct. Please pay attention to the drainage work, we suggest to wrap the thermal insulated layer around outsideof the duct.

2.4.3 Filter

Filter should be installed at the unit air inlet. In terms of the unit with duct, filter in there must be put on the position of duct inlet.



Filter installation without duct.



Filter installation with duct

fig 2-10

2.5 Electrical Connection

⚠ CAUTION

- The power supply should be an independent circuit with rated voltage.
- Power supply circuit should be earthed effectively.
- The wiring must be performed by professional technicians in accordance with national wiring regulations and this circuit diagram.
- An all - pole disconnection device which has at least 3mm separation distance in all pole and a residual current device (RCD)with the rating of above 10mA(30 mA is recommended) shall be incorporated in the fixed wiring according to the national rule.
- Set the electric leakage protector according to the relevant electric technical standards of the state.
- The power cord and the signal cord shall be laid out neatly and properly without mutual interference or contacting the connection pipe or valve.
- After wire connection, check it again and make sure the correctness before power on.

2.5.1 Specifications of Power Supply

The recommended power cord model is H05RN-F. You can choose the power cord according to the following table, and it should comply with local electric standard.

Model Name	KHP-15/185 ACS3
Power Supply	220-240V
Min. Diameter of Power Supply Cord (mm)	1.5
Earth Cord(mm)	1.5
Manual Switch(A)	30/25
Creepage Breaker	$30\text{mA} \leq 0.1 \text{ sec}$

2.5.2 Power cord connection

The steps for connecting power cables are as follows:

- 1) Remove both screws and take off the junction cover ;
- 2) Remove both screws and take off the metal protective cover ,
- 3) Route the power cable through the bottom cable hole;
- 4) Connect the power cable to \oplus , N, L and fix the cable with the below tie;
- 5) Put the metal protective cover and junction box cover back. The power cable should route through the left hole reserved on the junction box cover.

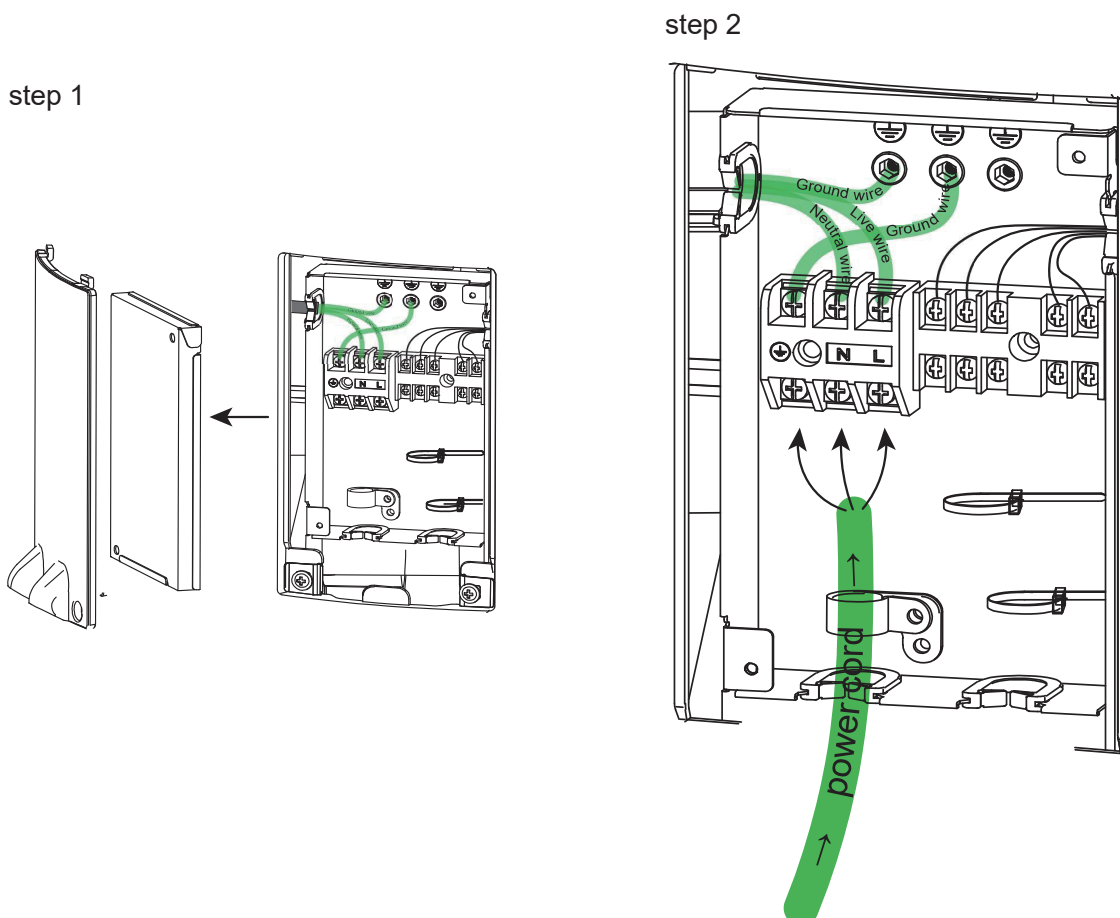


fig 2-11

⚠ CAUTION

When wiring the power supply, please add additional insulation sheath at the place without rubber insulation layer.

⚠ WARNING

The unit must be installed with a Creepage Breaker near the power supply and must be effectively earthed.

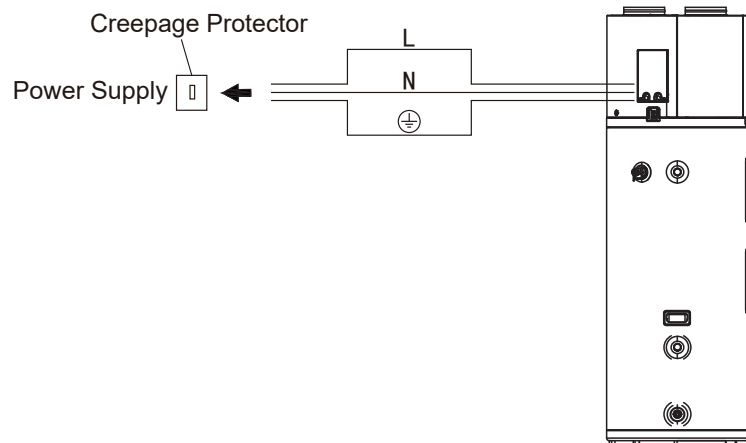


fig 2-12

2.6 Installation checklist

2.6.1 Location & space

- The floor must be able to bear the weight of the unit when filled with water (more than 276kg).
- Located indoor such as a basement or garage) and in a vertical position. Protected from freezing temperature.
- Allow sufficient space for maintenance and service.
- Allow sufficient air for the heat pump to operate. The water heater heat pump must have unrestricted air flow.

NOTE

For optimal efficiency and serviceability, the following clearances should be maintained: 250mm on the top, 300mm on the left, and 100mm on the right.

- The unit cannot be placed into any type of closet or small enclosure.
- The site location must be free from any corrosive elements in the atmosphere such as sulfur, fluorine, and chlorine. These elements are found in aerosol sprays, detergents, bleaches, cleaning solvents, air fresheners, paint, and varnish removers, refrigerants, and many other commercial and household products. In addition excessive dust and lint may affect the operation of the unit and require regular cleaning.
- The inlet air temperature must be above -7°C and below 43°C . If the inlet air temperature goes out of this limits the electrical elements will be activated to meet the hot water demand and the heat pump will not operate.

2.6.2 Hydraulic connection

- PTR valve (Temperature and pressure relief valve) has to be properly installed with a discharge pipe going to an adequate drain and sheltered from freezing.
- All pipes must be properly installed and with no water leakage.
- Water temperature limit valve or mixer tap (recommended) has been installed.
- Condensate drain lines must be installed with an easy access.
- The condensate drain outlet must be at the lowest position of the unit.
- A siphon has been connected to the condensate drain pipings.

2.6.3 Electrical connections

- The water heater requires 220-240 VAC for proper operation.
- Wiring size and connections comply with all local applicable codes and the requirements of this manual.
- Water heater and electrical supply must be properly earthed.
- Proper overload fuse or circuit breaker protection must be installed.

2.6.4 Post Installation review

- Make sure the users understand how to use the User Interface Module to set the different modes and access the different functions.
- Make sure the users understand the importance of routine inspection/maintenance of the condensate drain pan and lines. This is to help prevent any possible drain line blockage resulting in the condensate drain pan overflowing.
- **IMPORTANT:** Water coming from the plastic shroud is an indicator that both condensation drain lines may be blocked. Immediate action is required.
- To maintain optimal operation check, remove and clean the air filter.

3. USE

3.1 Checklist before trial running

- Correct installation of the system.
- Correct connection of water/air piping and wiring.
- Smooth condensate drainage and proper installation of all hydraulics.
- Correct power supply.
- No air in the water pipeline and all valves opened.
- Effective installation of electrical protections (residual-current device, RCD).
- Sufficient inlet water pressure (between 0.15MPa and 0.7MPa).
- Unit completely filled with water.

⚠ CAUTION If the unit has been placed in horizontal position, keep it in a vertical position for at least 60 min before start-up.

3.2 Initial start up

Follow the steps below to start up the unit.

1) Filling the tank with water before operation

Please ensure that the tank is full of water before turning on the power. Water filled method is as follows:

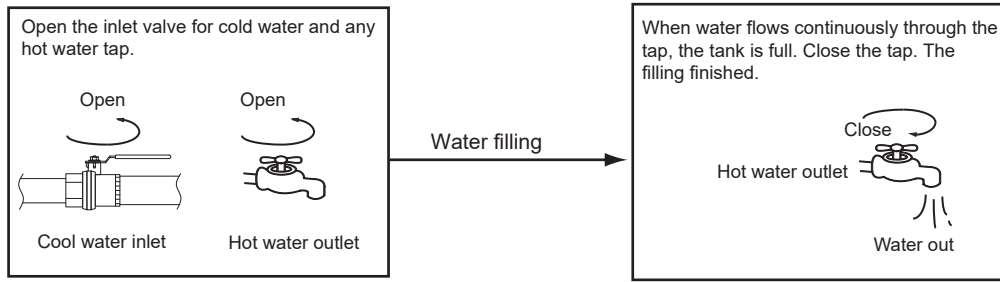
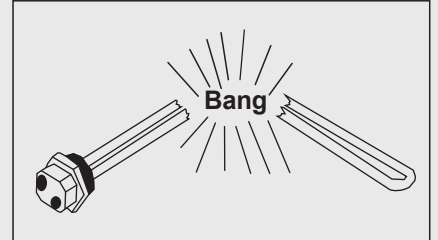


fig 3-1

the water tank should be filled when the unit is used again after emptying.

CAUTION

- The water tank must be filled when using the unit again after emptying it.
- Ensure that there is no water leakage in the pipe before starting up.
- Operation without water in water tank may result in the damage of E-Heater. Manufacturer is not liable for any damages caused by this issue.



CAUTION:

If the unit needs cleaning, moving, stop using, etc., the tank should be emptied. Emptying Method is as follows:

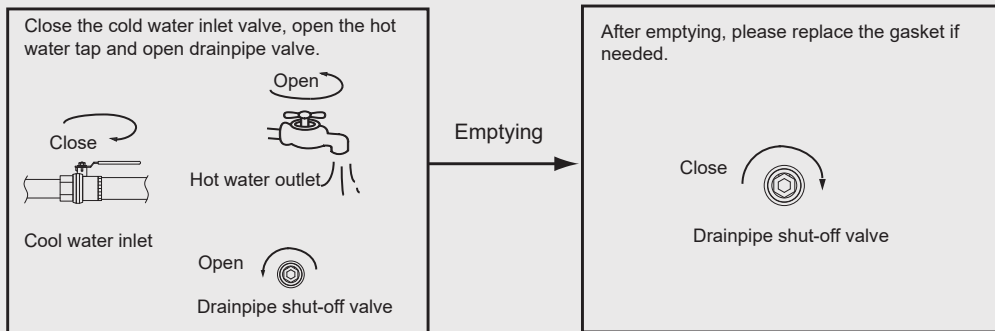


fig 3-2

CAUTION: The water will flow through drainpipe shut-off valve! It could be hot! Pipe it into the sewage system!

2) Start up

After powered on, the display will light up.

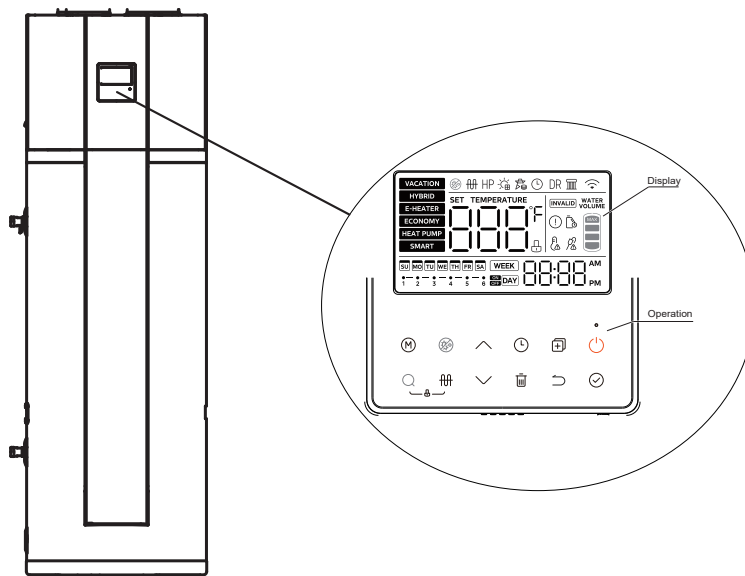










fig 3-3

- Press  →the unit will be switch on→press  to select the set temperature (38-70°C)→press  →The unit will automatically select heat source and start to heat water to set temperature.
- **Date and time setting.**
In the main screen, press and hold  for 3 seconds to enter the weekday setting, press  to select the date, press  to enter the time setting, use  to modify the time. Press  to finish the setting and return to the main screen.
- The factory default setting gives priority to heat pump operation. During installation, it is necessary to make the operating mode selection settings with the customer and guide the customer in the use of the equipment.

3.3 About running

System structure figure

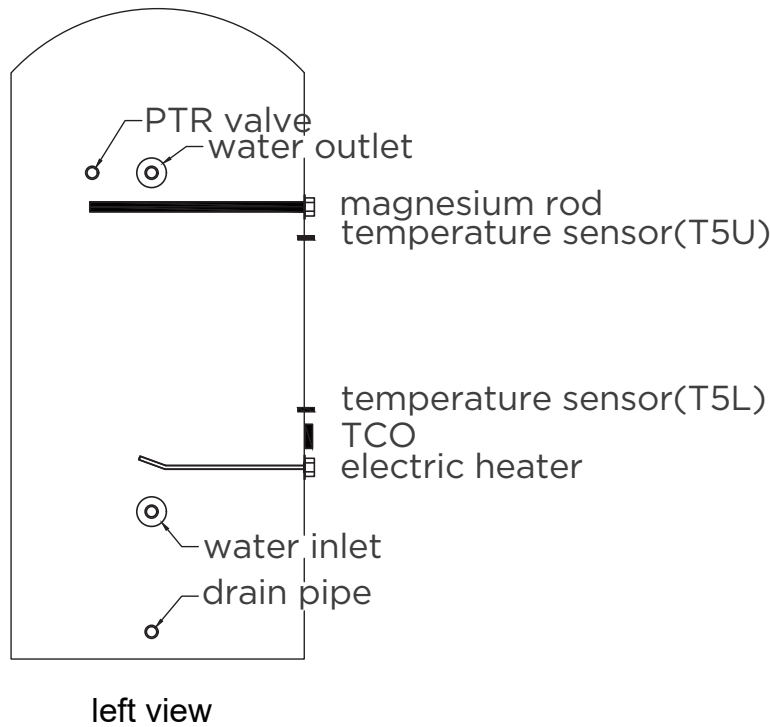


fig 3-4

Water temperature display

The temperature shown on the display is the maximum of the temperatures registered by the upper sensor and the lower sensor. It is possible that once the display shows that the setpoint temperature has been reached on one of the sensors, compressor still running, because the water temperature around the other sensor does not get to set temperature.

Running temperature range

- Water set temperature range: 38°C~70°C.
- Temperature of room of installation range: 0°C~43°C.
- Heat pump running inlet air temperature range: -7°C~43°C.
- E-heater running inlet air temperature range: -20°C~46°C.

Water temperature limits:

Air inlet Temp.(T4)	T4 < -7	-7 < T4 < -2	-2 < T4 < 2	2 < T4 < 7	7 < T4 < 35	35 < T4 < 43	43 < T4
Max. Temp.(Heat pump)	--	45	55	60	65	60	--
Max. Temp.(E-Heater)	70						

Heat source shift

- Unit has two kinds of heat sources: heat pump (compressor) and electric heater.
- Unit will automatically select heat sources to heat water to the target temperature.
- The default heating source is heat pump. If inlet air temperature is out of the range of heat pump, heat pump will stop running, the unit will shift automatically to activate E-heater, then if the inlet air temperature goes into the running range of heat pump again, it will stop E-heater and shift automatically to heat pump again.
- If the water set temperature is higher than Max. Temp (Heat pump), for the existing inlet air temperature, the unit will first activate the heat pump until Max. Temp (Heat Pump), then stop heat pump, and activate E-heater to heat the water continuously until the desired temperature is reached.
- Manually E-Heater operation is available. If manually activate the E-heater when heat pump running, E-heater and heat pump will work together until the water temperature gets to set temperature. So, if want to heat quickly, please manually activate E-heater.

NOTE

- E-heater will be activated once for the current heating progress, if want to apply E-heater again, please press ⏏ again.
- If only use E-heater, about only 150 liters water will be heated, so you must set a higher target water temperature if air temperature is out of heat pump running range and only the e-heater works.

Defrosting during water-heating

In heat pump running period, if the evaporator frosts in lower air temperature, the system will automatically defrost to keep effective performance (about 3-10min). At the time of defrosting the fan motor will stop, but compressor will continue to run.

Heat-up time

There are different heat-up times in different ambient temperature. Lower inlet air temperature result longer heat-up time because of lower effective performance.

When air temp below 2°C, heat pump and E-heater will take different portions of heating capacity, generally the lower of inlet air temperature, the lower portion of heat pump will be taken as well as the higher portion of E-heater will account for.

Heat-up Time(h)

		MODE		
		ECONOMY	HYBRID	E-HEATER
INLET AIR TEMP.(°C)	-7	14.9	4.6	4.6
	0	12.7	5.3	4.4
	2	11.4	5.1	4.2
	7	9.7	9.7	4.0
	15	7.3	7.3	3.5
	20	6.4	6.4	3.3
	25	6.1	6.1	3.2
	30	5.5	5.5	3.0
	32	5.2	5.2	2.9
	35	5.1	5.1	2.9
	40	4.4	4.4	2.7
		Highest efficiency	Medium efficiency	Highest consumption

About TCO

The power of compressor and E-heater will be automatically shut-off or turn on by TCO. If the water temperature is higher than 85°C, the TCO will automatically shut off the power of compressor and E-heater. After that it needs to be reset manually.

Resetting TCO requires a qualified person, please contact the supplier or the after-sale service.



Restart after a long term stop

When the unit is restarted after a long term stop (trail running included), it is normal that outlet water is unclean. Keep the tap on and the water will be clean soon.

NOTE

When the air inlet temperature is lower than -7°C, heat pump efficiency will decrease dramatically, the unit will automatically shift to E-heater running.

If system occurs some malfunctions

Error code "EHHP" and  will be shown on the display, and heat pump will stop running. The unit will activate automatically E-heater as the backup heat source, but the code "EHHP" and  will be shown until power off Refer to[TROUBLE SHOOTING]for details.

Auto restart

If electricity power failed, the unit can memorize all setting parameters, unit will be back to the previous setting when power recover.

Buttons auto lock

When there is no operation of any button for 1 minute, button will be locked. Push  +  simultaneously for 2s to unlock buttons.

Screen auto lock

If there is no operation of button for 60s, screen will be locked (extinguished) except for error code and alarm icon. Press any button to unlock the screen (lighten).Enter engineering mode 35 channel enable this function.

3.4 Control panel explanation

3.4.1 Display explanation

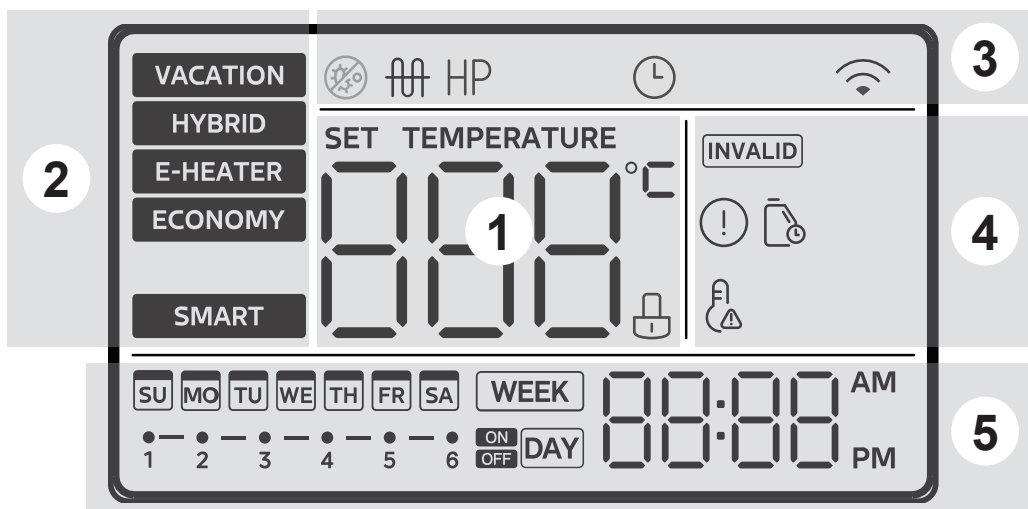


fig 3-5

Area	Icon	Description
1 Information		000 will be lighted if screen is unlocked. It shows water temperature on normal; It shows setting temperature on setting process; It shows remaining vacation days on vacation mode; It shows unit setting/running parameters, error/protection code on querying.
	SET TEMPERATURE	The icon lights up when the water temperature is being set.
		Child lock: If button is locked, the icon will be lightened, otherwise it will be extinguished.
2 Mode	VACATION	VACATION MODE: For the outgoing vacation mode, the water tank is set at 15°C. Maintains low tank water temperature, preheats hot water and anti-freeze lines, while reducing on/off operation of the tank.
	HYBRID	HYBRID MODE: Operating in heat pump mode, The unit will determine whether to turn on the e-heater according to the current state(when the water can not reach the set temperature only with heat pump).
	E-HEATER	E-HEATER MODE: Operate in accordance with the heat pump mode, the heat pump and the E-heater running at the same time.
	ECONOMY	ECONOMY MODE: It is recommended to use this mode of operation whenever possible, as it saves more energy. The heat pump unit heats up to the maximum water temperature before turning on the e-heater for heating, the heat pump and the e-heater will not be turned on at the same time.
	SMART	SMART MODE Records the hot water usage habits of users over the past 7 days and turns on the heating in advance according to the user's peak water usage hours. All other unconventional hot water hours are in standby mode, without heating operation (it is recommended that users set this mode after 7 days of regular and normal operation of the water heater to avoid affecting the normal use of the water heater by failing to record the complete user habits.)

Area	Icon	Description
3 Function		It will be lighted when the machine is disinfecting.
		E-heater: It will be lighted when e-heater is running, otherwise it will be extinguished. NOTE: When the operating conditions are not met to turn on the e-heater, the corresponding icon will briefly light up and then goes off.
	HP	Heat pump icon: When the heat pump is operating and producing hot water, the icon lights up.
		The icon lights up when the clock is being set.
		Wireless: (some units) will be lightened when Wireless is connected; will be extinguished when Wireless is not connected; will flash with 2Hz frequency when setting Wireless.
4 Warning	INVALID	When any key is invalid, this icon will flash 3 sec.
		Error: It will be lightened when unit is under protection/error.
		It flashes to remind the user to maintain the water tank. If you do not need maintenance reminders, you can enter engineering mode channel 2 to disable this function, or engineering mode 4 to reset the maintenance reminder time, the default maintenance reminder time is 365 days.
		High temp. alarm If water temp is higher than 50°C, it will be lightened, otherwise it will be extinguished.
5 Timer	88:88 ^{AM} 88:88 ^{PM}	Time and clock setting It shows the clock.
	SU MO TU WE TH FR SA WEEK 1 2 3 4 5 6 ON DAY	Schedule settings There is an option to set a schedule on weekly or daily basis. If no schedule is set, the appropriate part of the screen remains blank. Otherwise "WEEK" or "DAY" is displayed accordingly. During setting the corresponding icon ("WEEK" or "DAY") is flashing.

3.4.2 Button explanation

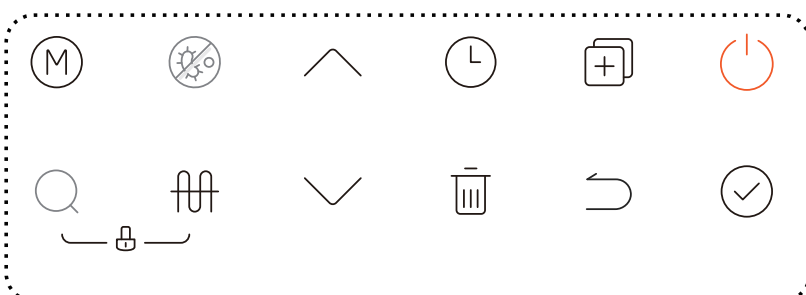




fig 3-6





NOTE:

Any pressing of button is effective only under button and display unlocked state. When the operating conditions are not met to turn on this function, the corresponding icon on the wire controller lights up briefly and then goes out.

Basic function**1) Weekly disinfect function**

Under disinfection unit immediately start to heat water up to 70°C to kill the potential legionella bacteria inside water of tank,  icon will light on the display screen during disinfection. Unit will quit disinfection if water temperature is higher than 70°C and extinguish  icon.











2) Vacation function






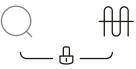
Press  to select VACATION, then unit will automatically heat water to 15°C for the purpose of energy saving during vacation days. Press   to adjust vacation days and press  to make the setting effective.


3) Remote shutdown function

Users can connect a switch. If the switch is closed, the unit will be stopped forcibly. If switch breaks, the unit can run normally according settings.

Detailed operating instructions

No.	Icon	Description
1		POWER ON/OFF Press the button to start / stop the unit.
2	 	UP & DOWN If screen is unlocked, press   to adjust corresponding value. While setting temperature/timer/vacation days, press more than 1s to change the value continuously. Press  to make the setting effective On querying, use the buttons to switch check items.
3		MODE Press this button to switch mode HYBRID(default)→ E-HEATER→ ECONOMY→ SMART→ VACATION→ HYBRID
4		Click the button to turn on the forced sterilization function.
5		If screen is unlocked, press this button to manually activate E-HEATER.
6		TIMER Press the TIMER button to select daily/weekly timer, and press the CONFIRM button to enter the setting interface. Daily timer setting: When setting the daily timer, there is a total of 6 periods, each period has on/off time, mode and water temperature can be set (the default settings: energy saving mode, 60°C). <ul style="list-style-type: none"> • Set the target value for current period, and press the CONFIRM button to enter the next, or press the RETURN button to return previous setting. After all settings for all periods, press the CONFIRM button again to return to the main screen. • While setting the on/off time, you can restore to the default value (displaying-.-) by pressing the DELETE button. • If there is a conflict between two time periods, settings of the later one will be valid, and the earlier one will be canceled and turn back to default values. • If you adjust a value again after all the setting is completed, then the settings after the adjustment period will be canceled and turn back to default values. • You can enter the timer setting in both power-on and power-off state.

		<p>Weekly timer setting:</p> <p>Weekly timer has a total of 7 days, press CONFIRM button to enter the setting of the selected day. Then it can be set by the same way as a daily timer.</p> <ul style="list-style-type: none"> To copy the settings of one day to other days: While in the day selection, press the COPY button to copy a base day's settings, then select other days by pressing the COPY button again (the status will become fast flashing). Use CONFIRM button to confirm the operation and the settings will be copied to the selected days.
7		<p>SEARCH / QUERY MODE</p> <ul style="list-style-type: none"> In the main screen, press and hold the search button for 1 second to enter the query mode. Use ^ v to switch the spot check channel, and the attribute value of the channel will be displayed, please refer to the following table for details. After 30 seconds from the last operation, or by pressing the return key or the on/off key, you can directly exit the query mode Query mode can be entered in both power-on and power-off state.
8		<p>COPY / ENGINEERING MODE</p> <ul style="list-style-type: none"> In the main screen, press and hold this button for 3 seconds to enter the engineering mode. Use ^ v to switch the inspection channel, and the attribute value of the channel will be displayed. You can modify the parameter setting with ^ v, and after adjusting, press confirm key to make the setting effective. Press ↵ to return to the channel selection screen. <p>⚠ CAUTION It is strictly prohibited for the customer to change the parameter settings of other channels in the engineering mode without authorization to avoid affecting the normal operation of the unit or causing damage to the unit.</p> <ul style="list-style-type: none"> After 30 seconds from the last operation, or by pressing the return key or the on/off key, you can directly exit the engineering mode. If the ventilation function is configured, you can enter the engineering mode 12 channel to select the wind gear, 0 means off, 1 means low wind, 2 means middle wind, and 3 means high wind. When the ventilation function takes effect, the main interface displays "FAN".
9		<p>DELETE</p> <p>This key is used to cancel all settings and exit the setting state. When the wireless connection is working, long press the Cancel button for more than 8s to exit Wireless connection.</p>
10		<p>RETURN</p> <p>Press the button to return to the previous setting or main screen.</p>
11		<p>CONFIRM</p> <p>If screen and buttons are unlocked, press it to upload setting parameters after setting any parameter.</p>
12		<p>CHILD LOCK</p> <ul style="list-style-type: none"> In the main screen, long press the key combination for 2 seconds to enter the child lock state; In the state of child lock, long press the key combination again for 2 seconds to release the child lock state; In the locked state, there will be an icon Ⓜ next to the water temperature display.

13	 Press for 3 sec	<p>Connecting the wireless function</p> <p>1) In the main interface, long press the on/off key for 3 seconds to enter the AP wireless network mode, there will be a wireless icon in the upper right corner of the line controller. At this time, enter the APP, select the category of air water heater, choose the correct model, and then network according to the APP prompts, and after the network is completed, the wireless icon will be always on;</p> <p>2) Wireless matching can last up to 8 minutes, after 8 minutes, if the matching is not successful, the wireless icon will go out;</p> <p>3) Long press the delete button for 8 seconds in the main interface to reset the wireless function;</p> <p>4) It can be set in both power on and power off state.</p>
----	--	--

Query mode

Press and hold the SEARCH button for 1 second to enter query mode, then system running parameters will be shown one by one with following sequence by each pushing of UP or DOWN button, refer to the table below.

No.	Hour low bit	Min. high bit	Min. Low bit	unit	Explanation
1	T	S	U	Temp.	T5U
2	T	S	L	Temp.	T5L
3	T	S	I	Temp.	----
4		T	S	Temp.	Heat pump stop temp
5		T	3	Temp.	T3
6		T	4	Temp.	T4
7		T	P	Temp.	TP
8		T	H	Temp.	Th
9		o	n		----
10	T	F	r		----
11		T	T	Temp.	Disinfect temp.
12		L	o	Current	Compressor and electric heating current
13		F	o	Fan	Ac Fan Dc Fan 0: OFF Real speed/10 1: LOW 2: MID 3: HIGH
14		E	o	Machine parameters	0~255
15	E	E	r		Electronic expansion valve opening
16	E	E	L		Compression mechanism hot water demand
17	P	U	P		----
18		P	S		----

19		F	T		0: Ac Fan 1: Dc Fan
20		H	T		1(Eheater control type)
21		H	P		0(Compressor control type)
22	F	S	I		----
23	S	I	o		Tank capacity
24	P	4	P		Four-way valve status
25		U	U		0
26		U	I	Version	Host software version
27		U	2	Version	LCD panel software version
28		U	3	Version	000
29		U	4		0: One electric heater 1: Two electric heaters
30		U	T		3
31	I	E	r		Last error code
32	2	E	r		Previous 1 st error or protection code
33	3	E	r		Previous 2 nd error or protection code
34	H	H	H		Maintenance time
35	T	L	F		Target Temp
36	E	n	d		End sign

3.5 Use Your Appliance with the NetHome Plus App

NOTE

- Ensure that your mobile phone is connected to the home wireless network, the 2.4GHz band wireless signal is enabled on your wireless router and you know the network password.
- Turn on Bluetooth on your phone and the device must also be powered up.

Step 1: Download NetHome Plus App

CAUTION: The following QR code is only available for downloading App. It is totally different with the QR code packed with unit.

Android Phone users: scan Android QR code or go to google play, search “Nethome Plus” App and download it.

IOS users: scan IOS QR code or go to APP Store, search “Nethome Plus” app and download it.



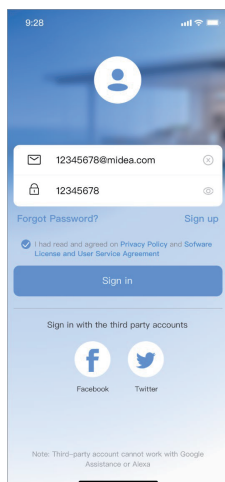
Android



IOS

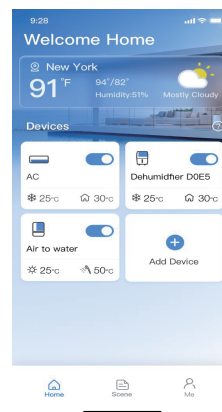
Step 2: Register or Login account

Open the App and create a user account, if you already have one, just log in.

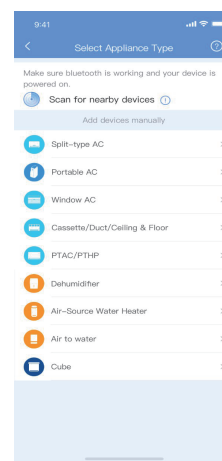


Step 3: Add your appliance

Tap the "+" icon to add home appliance to your NetHome Plus account.



Step 4: Choose Air Source Heat Pump Water Heater.

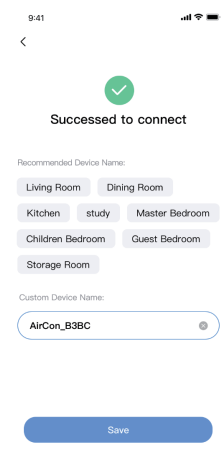


Step 5: Connected to the network.

Follow the instructions in the app to set up the Wireless connection.

If the network connection fails, please refer to the App tips for operation.

The actual UI design may look different from examples due to app updates.



Compliance

We, hereby declare that this device is in compliance with the relevant provisions of RE Directive 2014/53/EU. A copy of the full DoC is attached (European Union products only).

Wireless module models:

EU-SK110, US-SK110:

FCC ID: 2ADQOMDNA23

IC: 12575A-MDNA23

BLE:2402-2480MHz, TX Power: <10dBm

Wi-Fi:2400-2483.5MHz, TX Power: <20dBm

This device complies with Part 15 of the FCC Rules and it contains licence exempt transmitter(s) / receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s).

Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference;
- (2) His device must accept any interference, including interference that may cause undesired operation of the device.

Only operate the device in accordance with the instructions supplied.

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with FCC radiation exposure limits set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20cm (8 inches) during normal operation.

In Canada:

CAN ICES-3(B)/NMB-3(B)

Le présent appareil est conforme aux CNR Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- (1) il ne doit pas produire de brouillage et
- (2) l'utilisateur du dispositif doit être prêt à accepter tout brouillage radioélectrique reçu, même si ce brouillage est susceptible de compromettre le fonctionnement du dispositif.

Cet émetteur ne doit pas être Co-placé ou ne fonctionnant en même temps qu'aucune autre antenne ou émetteur. Cet équipement devrait être installé et actionné avec une distance minimum de 20 millimètres entre le radiateur et votre corps.

NOTE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures.

4. TROUBLE SHOOTING

4.1 Non-error tips

Q: Why can't compressor start immediately after setting?

A: The unit will wait for 3 minutes to balance the pressure of system before starting compressor again. It's a self protection logic of unit.

Q: Why dose the temperature shown on the display panel decreased sometimes while unit is running?

A: When the upper tank temperature is much higher than the bottom part, upper part hot water will be mixed by the bottom cold water which is continually flow from inlet tap water so that will decrease the upper part temperature.

Q: Why dose the temperature shown on the display sometimes decrease dramatically?

A: Because tank is pressure-bearable type, if here is massive hot demand, hot water will quickly tapped out from upper part of tank and cold water will quickly tapped into bottom part of tank. If the cold water surface emerge the upper temperature sensor, temperature shown on the display will decreased dramatically.

Q: Why dose the temperature shown on the display sometimes decrease a lot, but there is still a mount of hot water coming out?

A: Because the upper water sensor is located at the upper 1/4 of the tank, when temperature on the display starts decreasing, it means there is still 1/4 tank of hot water available.

Q: Why dose the unit sometimes shows "EHLA" on display ?

A: When the unit does not have electric heating function, the heat pump available running ambient air inlet range is-7-43°C. If ambient air inlet temperature is out of range, system will show above-mentioned signal to let user notice it.

Q: Why are the buttons sometimes unavailable?

A: if there is no operation on panel for 60s, the unit will lock the panel, shows "⏻". To unlock the panel, please press the "⊙" + "⊕" button for 2 seconds.

Q: Why sometimes there is some water flow from drainage pipe of safety valve?

A: Because the tank is pressure-bearable one, when water is heated inside the tank, water will expand, so the pressure inside of tank will ncrease, if pressure goes up more than 1.0Mpa, safety valve will activate to relief the pressure and hot water drop will be discharged correspondingly. If water drop is continually discharged from safety valve drainage pipe, it is abnormal, please contact qualified person to repair it.

4.2 Something about the self-protection of unit

- 1) When self-protection happens, the system will be stopped and start self-check, and restart when the protection resolved.
- 2) When the self-protection happens, the ① will flash and error code will be shown at water temperature indicator. But the ① and error code does not disappear until protection resolved.
In the following circumstance, self-protection may happen: Air inlet or outlet is blocked.
- 3) The evaporator is covered with too much dust; Incorrect power supply (exceeding the range of 220-240V).

4.3 When Error happened

- 1) If some normal errors happen, the unit will automatically shift to E-heater for emergent SHW supply, please contact qualified person to repair it.
- 2) If some serious error happen, unit will not start, please contact qualified person to repair it.

4.4 Error phenomenon shooting

Error phenomenon	Possible reason	Solution
Cold water was tapped out and display screen was extinguished	<ol style="list-style-type: none"> 1. Bad connection between power supply plug and socket; 2. Setting the water temperature too low; Temp. sensor broken; 3. PCB of indicator broken. 	<ol style="list-style-type: none"> 1. Plug in; 2. Setting a higher temperature; 3. Contact service center.
No hot water was tapped out	<ol style="list-style-type: none"> 1. Public water supply ceased; 2. Cold water inlet pressure is too low (<0.15 MPa); 3. Cold water inlet valve closed. 	<ol style="list-style-type: none"> 1. Waiting for public water supply to recover; 2. Waiting for inlet water pressure to increase; 3. Open water inlet valve.
Water leakage	Hydraulic pipeline joints are not sealed well.	Check and reseal all joints.

4.5 Error code shooting table

Display	Malfunction Description	Corrective action
EH0b	Tank and LCD panel communication error.	Maybe the connection between LCD panel and PCB has released or PCB has been broken.
EH00	Machine working parameters are abnormal.	Contact a qualified person to service the unit.
EH03	Dc fan fault.	Maybe the connection between fan and PCB has released or fan has been broken. Contact a qualified person to service the unit.
PH15	Electric leakage error. If PCB current_induction_circuit check the current difference between L,N >14mA, system consider it as"electric leakage error".	Maybe some wires have been broken or bad wire connection. Contact a qualified person to service the unit.
EC54	Compressor discharge temperature sensor TP error.	Maybe the connection between sensor and PCB has released or sensor has been broken. Contact a qualified person to service the unit.
EH5H	Compressor suction temperature sensor TH error.	Maybe the connection between sensor and PCB has released or sensor has been broken. Contact a qualified person to service the unit.
EC53	Ambient temperature sensor T4 error.	Maybe the connection between sensor and PCB has released or sensor has been broken. Contact a qualified person to service the unit.
EC52	Evaporator temperature sensor T3 error.	Maybe the connection between sensor and PCB has released or sensor has been broken. Contact a qualified person to service the unit.
EH5L	Error of sensor T5L(lower water temperature sensor)	Maybe the connection between sensor and PCB has released or sensor has been broken. Contact a qualified person to service the unit.
EH5U	Error of sensor T5U(upper water temperature sensor)	Maybe the connection between sensor and PCB has released or sensor has been broken. Contact a qualified person to service the unit.
EHLA	When the ambient temperature T4 is out of the compressor operating range, the compressor stops, and EHLA is displayed until T4 returns to the normal range. Only works on units without electric heaters. Devices with electric heaters will never display "EHLA".	It is normal, and no necessary to repair.
EH5d	electric heater open-circuit error	Maybe the electric heater has been broken or bad wire connection after repair.
EHPH	Heat pump system fault. When PH20, PH21, PC30, PC06 any protection appears 3 times or the protection lasts 1 hour.	The compressor works abnormally. Contact a qualified person to service the unit.
PHdH	Dry burning protection.	Ensure that there is water in the water tank before heating.
PH20	Compressor abnormally stopped protection The discharge temperature is not so higher than evaporator temperature after compressor running a term.	Maybe because of compressor broken or bad connection between PCB and compressor. Contact a qualified person to service the unit.
PH21	The working current of the compressor is too large.	Maybe because of compressor broken, system blocked, air or water or more refrigerant in system(after repair), water temperature sensor malfunction, ect. Contact a qualified person to service the unit.
PH24	Frost protection.T5L< 4°C and T4 < 7°C	The cold water temperature is too low, which will affect the water tank. The electric heater will work.
PC30	System high pressure protection ≥3.0MPa active; ≤2.4Mpa inactive	Maybe because of system blocked, air or water or more refrigerant in system(after repair), water temperature sensor malfunction, ect. Contact a qualified person to service the unit.
PC06	High TP protection.Tp>110°C, Protection active Tp<90°C, Protection inactive	Maybe because of system blocked, air or water or less refrigerant(leakage) in system(after repair), water temperature sensor malfunction, ect. Contact a qualified person to service the unit.
PH9b	Overtemperature protection.The current water temperature exceeds the target temperature by more than 5 °C.	The water temperature sensor is faulty or the current water temperature is too high. In case of burns, contact a qualified person to check.
PH91	Low T3 protection.	If the fault persists, Contact a qualified person to service the unit.

5. MAINTENANCE

⚠ CAUTION

Always turn off your Air-source Heat Pump Water Heater system and disconnect its power supply before cleaning or maintenance.

- Check the connection between the power supply plug and socket and ground wiring regularly;
- It is recommended to set a lower temperature if the outlet water volume is sufficient, to decrease the heat release, prevent scale and save energy.
- If the system will be stopped for a long time, please do as follows to avoid freezing of inner tank and damage of E-heater:
 - Shut off the power supply;
 - Release all the water in water tank and the pipeline and close all the valves;
 - Check the inner components regularly.
- Clean the air filter every month in case of any inefficiency on the heating performance. In terms of the filter set in air inlet directly (namely, air inlet without connecting with duct):
 - Unscrew the air duct connector anti-clockwise.
 - Take out the filter and clean it completely;
 - Remount it to the unit.

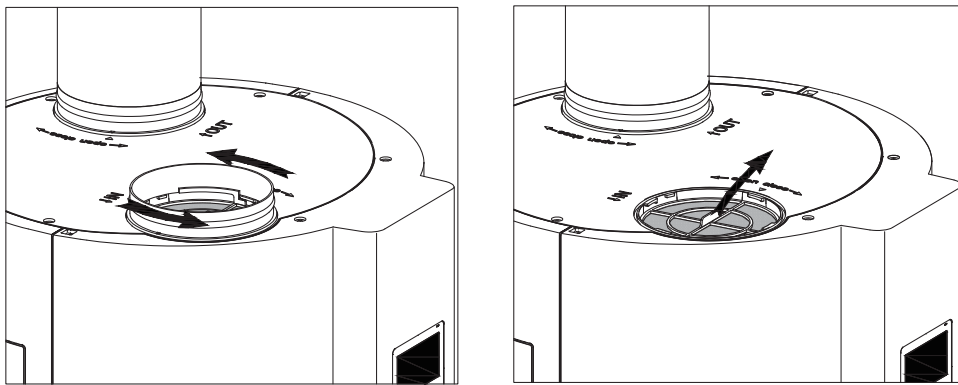
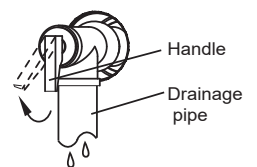


fig 5-1

- Operate and check the PTR valve every 6 months to prevent blockage.



⚠ CAUTION

The following maintenance items need to be performed by qualified persons. Please contact the supplier or the after-sale service.

- It is recommended to clean the E-heater every 6 months to maintain efficient performance.
- Check the Magnesium rod every 6 months and change it if it has been used out.

Recommended regular maintenance table

Checking Item	Checking Content	Checking Frequency	Action
1	Air filter(inlet)	Every month	Clean the filter
2	E-Heater	Every 6 months	Clean the E-Heater
3	Magnesium rod	Every 6 months	Replace it if it has been used out
4	PTR valve	Every 6 months	Check for blockage

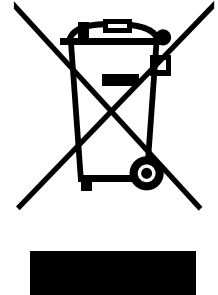
For more details, please contact the supplier or the after-sale service.

DISPOSAL AND RECYCLING

Important instructions for environment(European Disposal Guidelines)

Compliance with the WEEE Directive and Disposing of the Waster Product:
This product complies with EU WEEE Directive (2012/19/EU). This product bears a classification symbol for waster electrical and electronic equipment (WEEE).

This symbol indicates that this product shall not be disposed with other household wastes at the end of its service life. Used device must be returned to official collection point for recycling of electrical electronic devices. To find these collection systems please contact to your local authorities or retailer where the product was purchased. Each household performs important role in recovering and recycling of old appliance. Appropriate disposal of used appliance helps prevent potential negative consequences for the environment and human health.



⚠ WARNING

- Battery must be disposed of properly. Do not short circuit or dispose of in the fire.
- Keep batteries out of the reach of children.
- Caution for ingestion.
- Non-rechargeable batteries are not to be recharged.
- Exhausted batteries are to be removed from the product.
- Dispose of the old batteries in the special containers to be found in the sales outlets.
- Replace the battery must contact the supplier or the after-sale service.

DATA PROTECTION NOTICE

For the provision of the services agreed with the customer, we agree to comply without restriction with all stipulations of applicable data protection law, in line with agreed countries within which services to the customer will be delivered, as well as, where applicable, the EU General Data Protection Regulation (GDPR).

Generally, our data processing is to fulfil our obligation under contract with you and for product safety reasons, to safeguard your rights in connection with warranty and product registration questions. In some cases, but only if appropriate data protection is ensured, personal data might be transferred to recipients located outside of the European Economic Area.



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