ORIGINAL MANUAL

Kaysun

INSTALLATION & OWNER'S MANUAL

Floor Standing Compak

KHP-15/185 ACS3

KHP-15/275 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 drawing 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.

THANK YOU LETTER

Thank you for choosing **Kaysun**! Before using your new **Kaysun** product, please read this manual thoroughly to ensure that you know how to operate the features and functions that your new appliance offers in a safe way.

CONTENTS

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**.

⚠	**DANGER** This represents a serious hazard that must be taken seriously to avoid injury to yourself and others.
⚠	**WARNING** This represents a potentially hazardous situation. Warnings should be noted so that users can avoid situations that could result in damage to property and/or serious injury.
⚠	**CAUTION** This symbol indicates owner/user should take care to avoid minor or moderate injury in a potentially harmful situation.
	NOTICE This symbol is to indicate that attention should be directed towards a specified procedure or maintain a specific condition.

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.

⚠ CAUTION

This guide is an essential component of the product. Hand it over to the next user/owner in case of change of ownership.
Customer service and the manufacturer's website also provide access to this instruction manual.
Read the instructions carefully and thoroughly before using/commissioning the appliance and keep the manual in the immediate vicinity of the installation site or the appliance as it contains warnings for further use and maintenance.

⚠ WARNING

- This appliance is not intended for use by persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge (including children), unless they're under the supervision or guidance of a guardian, and understand the dangers involved. Besides, they can not do the cleaning and maintenance without supervision.

- Children should be supervised to make sure they don't play with the appliance.

- Installation of the unit must be perform by qualified person in accordance with local regulations this manual. Improper installation may result in water leakage, electric shock or fire.
  Examples of a qualified person include: licensed plumbers, authorized electric company personnel, and authorized service personnel.

- This unit is required reliable earthing before usage, otherwise might cause injury. The appliance shall be installed in accordance with local legislation on wiring in electrical installations.

- Please have a qualified person perform the reliable earthing connection and the installation of the unit. If you can't make sure that your house power supply is earthed well, don't install the unit.

- Electric connection work should also obey the instructions of local power company, local electric utility and this manual.

- The maximum refrigerant charge amount is 0.15kg.

⚠ INSTALLATION WARNING

- Before wiring/pipes, confirm the safety of the installation area (walls, floors, etc.) without hidden dangers such as water, electricity, or gas.
- Place the appliance in an accessible place.
- Appliance shall be installed, operated and stored in a room with a floor area larger than 4m^2 .
- 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.
- The installed product must be firmly fixed.
- Take lightning protection measures in the building in accordance with local legislation and/or ENV 61024-1 to ensure safe operation of the unit.

Wiring

- The wiring must be performed by professional technicians in accordance with national wiring regulations and the circuit diagram.
- The unit must be earthed effectively. A creepage breaker must be installed in the power supply.
- 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 the wall shocket if it is used, should be over 1.8m, if there is any risk of splashing of water, separate the power supply from water. Always follow the requirements of local electrical installation legislation.
- Never use the wire and fuse with wrong rated current, otherwise unit may break down and cause fire furthermore.
- 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.

⚠ INSTALLATION WARNING

- 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.

Hydraulic connection

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

⚠ AIR CONNECTION WARNINGS

Simultaneously running an open-chamber hearth, such as an open fireplace, and a heat pump with unducted or unsealed air intakes can create a hazardous negative pressure within the room. This negative pressure may lead to the backflow of exhaust gases into the room. Avoid therefore operating the heat pump concurrently with an open-chamber hearth. Use only approved sealed-chamber hearths with a separate combustion air supply. Do not install the product without air intake and exhaust air ducts in case of open hearth fires that may be affected by the air intake/exhaust of the unit . Install a protective grille at both the air intake and outtake connections to prevent the entry of foreign objects into the equipment.

⚠ OPPERATION 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 , the antifreeze protection keep active in Stand-by mode. The impressed current anode (if installed) also requires the power supply to work and protect the tank.

- System will stop or restart heating automatically. A continuous power supply for water heating is necessary, except for service and maintenance labours.
- 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. Never do it 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.

- Do not remove the front panel. Some parts inside are dangerous to touch, besides 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.

⚠ OPPERATION WARNING

- **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, please refer to the below paragraphs of the manual.

- SMART mode is not recommended when water consumption is low or irregular.

BATTERY WARNING

WARNING: Contains button or coin cell battery.

WARNING: The battery is hazards and **KEEP OUT OF REACH OF CHILDREN** (Whether the battery is new or used).

- If the battery compartment(if applicable) does not close securely, stop using the product and keep it away from children.
- For appliances which contain coin or lithium batteries:

BATTERY WARNING

KEEP OUT OF REACH OF CHILDREN.
Swallowing can lead to chemical burns, perforation of soft tissue. Severe burns can occur within 2 hours of ingestion. Seek medical attention immediately.

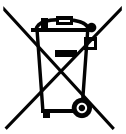
- For appliances which contain button or non-lithium batteries.
  - The battery can cause serious injuries if it is swallowed or placed inside any part of the body.
  - If you think batteries might have swallowed or placed inside any part of the body, seek immediate medical attention.

BATTERY PERFORMANCE

- For more durable batteries, it is recommended to turn off the power when not in use for a period of time.

BATTERY DISPOSAL

- Do not dispose of batteries as unsorted municipal waste. Refer to local laws for proper disposal of batteries.
- Batteries may have a chemical symbol at the bottom of the disposal icon. This chemical symbol means that the battery contains a heavy metal that exceeds a certain concentration. An example is Pb: Lead (>0.004%).
- Appliances and used batteries must be treated in a specialized facility for reuse, recycling and recovery. By ensuring correct disposal, you will help avoid possible negative consequences for the environment and human health.



Pb

- Dispose of used button/coin batteries immediately.
- Place sticky tape around both sides of the battery and dispose of it immediately in an outside bin, out of reach of children, or recycle safely.

1. PRODUCT INFORMATION

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.

1.1 Content of packaging

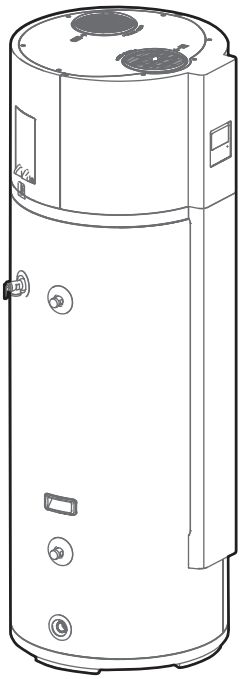
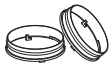


Fig 1-1 main unit

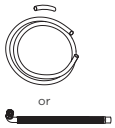
One way valve **(Page 18)**



Air duct connector **(Page 20)**

Filter **(Page 20)**

Safety & User's manual



condensate drain pipe **(Page 19)**

Fixing strip **(Page 16)**

1.2 How to transport / handl

⚠ 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/handling by two people or more, otherwise it might cause injury to people and damage to the unit. Please, comply the local Occupational risk prevention ORP regulations.
- 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.

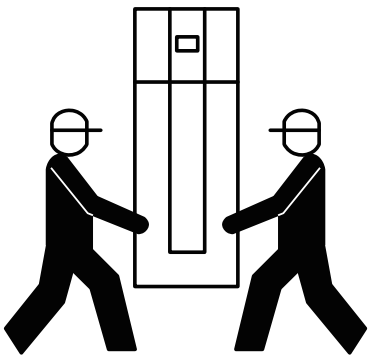


Fig 1-2

1.3 Structure

When ordering spare parts, please provide:
1) Model, serial and product number; 2) Parts name

KHP-15/185 ACS3

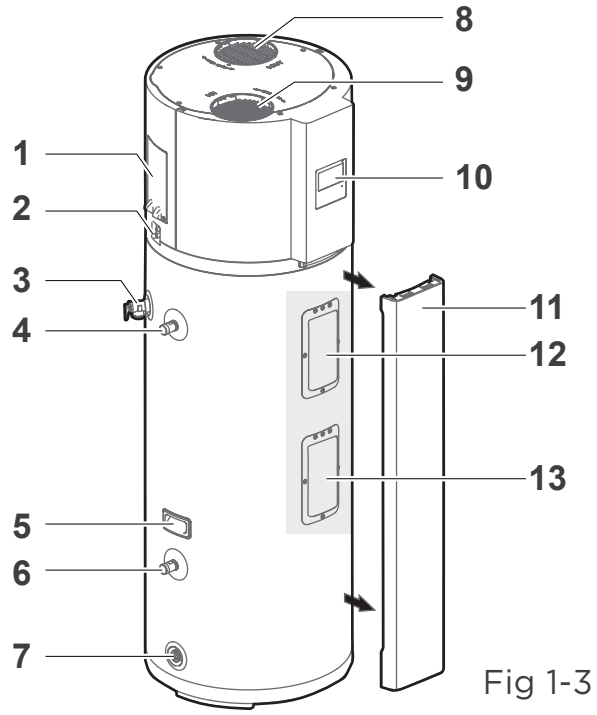


Fig 1-3

KHP-15/275 ACS3

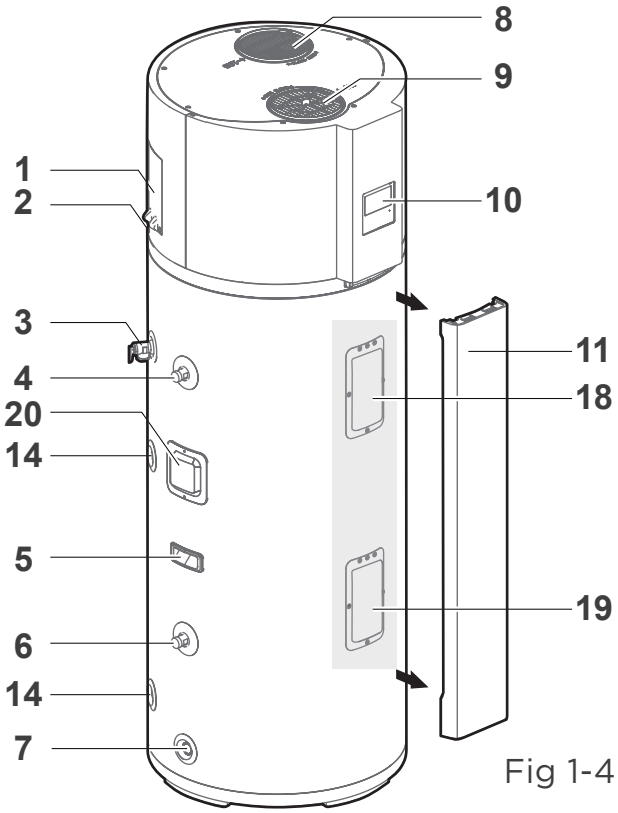
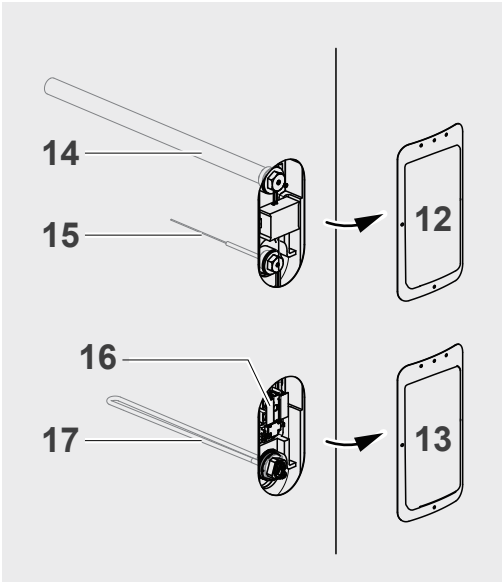
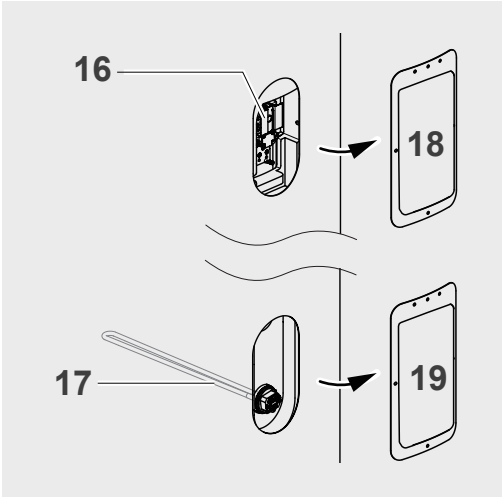


Fig 1-4

1. Junction box
2. condensate drain
3. PTR valve
4. water outlet
5. handle
6. water inlet
7. drain outlet
8. air outlet
9. air inlet
10. display
11. front decorative board
12(18). the unpper cover
13(19). the lower cover
14. magnesium rod
15. electronic anode
16. TCO
17. electrical heater
20. temperature sensor cover





The head's structure

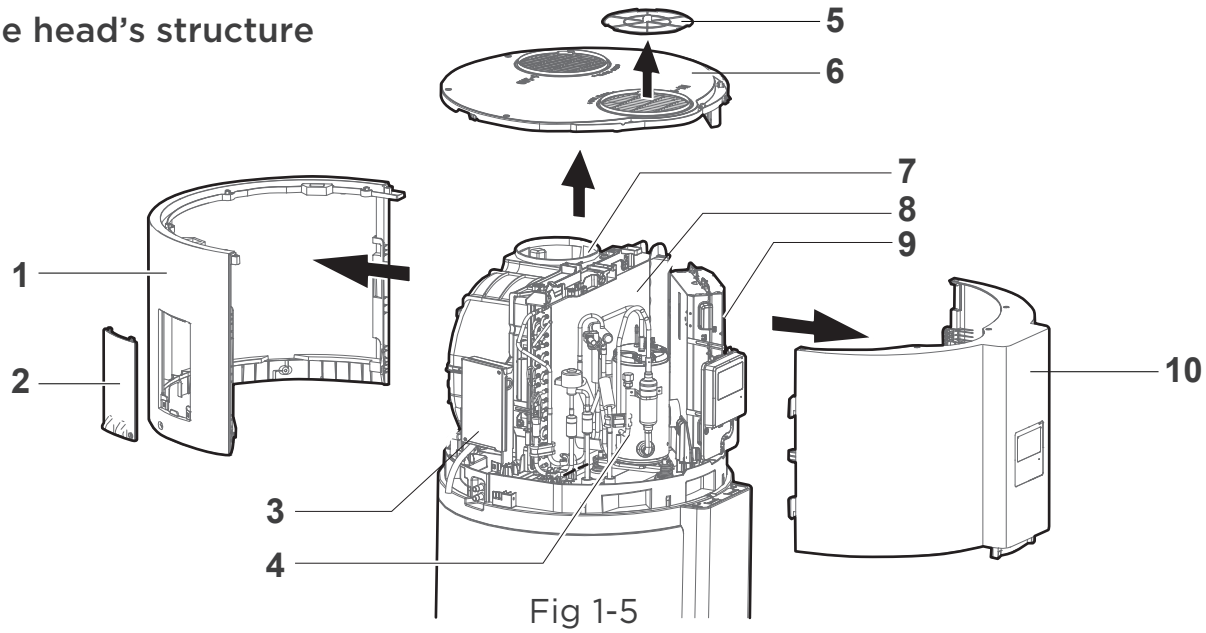


Fig 1-5

1. rear cover
2. junction box cover
3. junction box
4. compressor
5. filter
6. top cover
7. fan assy
8. evaporator
9. electronic control box
10. front cover

⚠ CAUTION

For your safety DO NOT attempt repair of electrical wiring, heating elements, heat pump or electronic controls. Refer repairs to qualified service personnel.

⚠ WARNING

FLAMMABLE CONTENTS UNDER PRESSURE.

The compressor is not a serviceable part. The compressor is not a serviceable part. Compressor contains pressurised flammable refrigerant and oil. In case of malfunction, or abnormal operation, contact after-sales service. Do not attempt to repair or tamper with the compressor under any circumstances, as this could cause serious damage to property, personal injury.

1.4 Dimensions

connector	spec.	connector	spec.
hot water outlet	R3/4”	Solar outlet	R3/4”
cold water inlet	R3/4”	Solar inlet	R3/4”
PTR valve	RC3/4”	drain pipe	NPT3/4”

KHP-15/185 ACS3

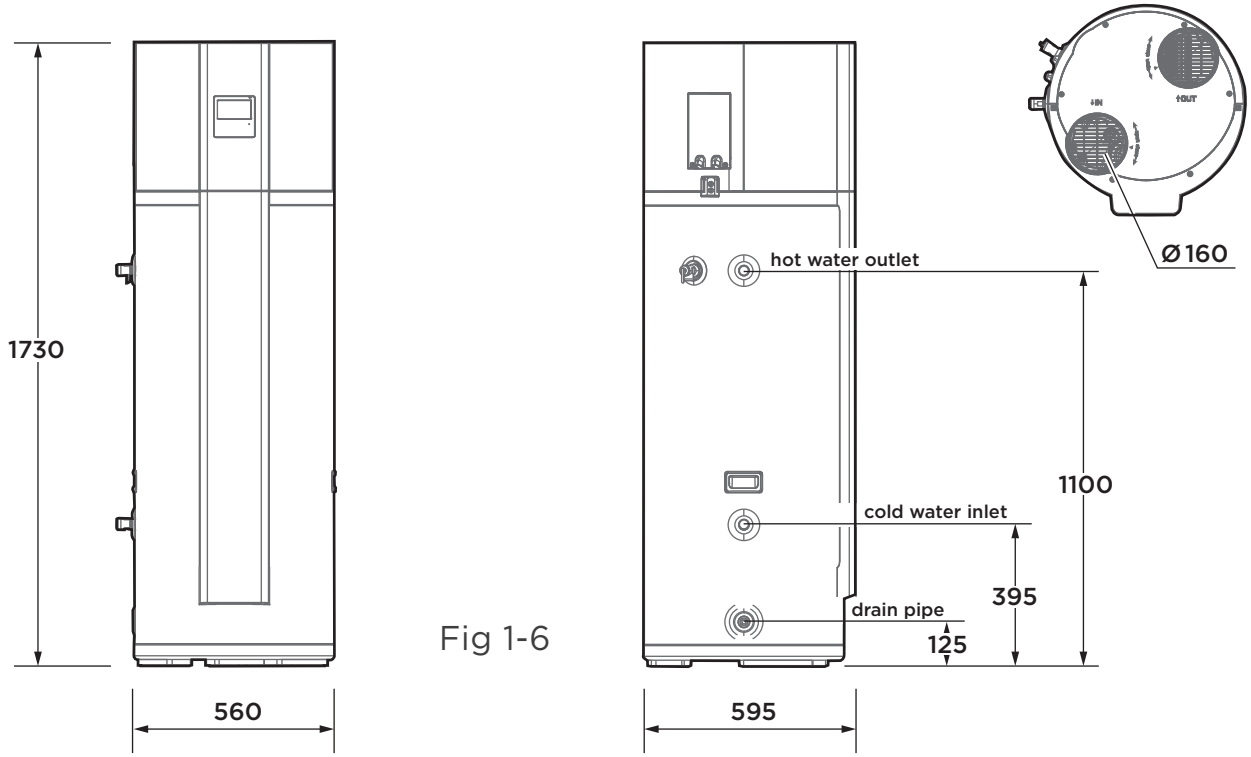


Fig 1-6

KHP-15/275 ACS3

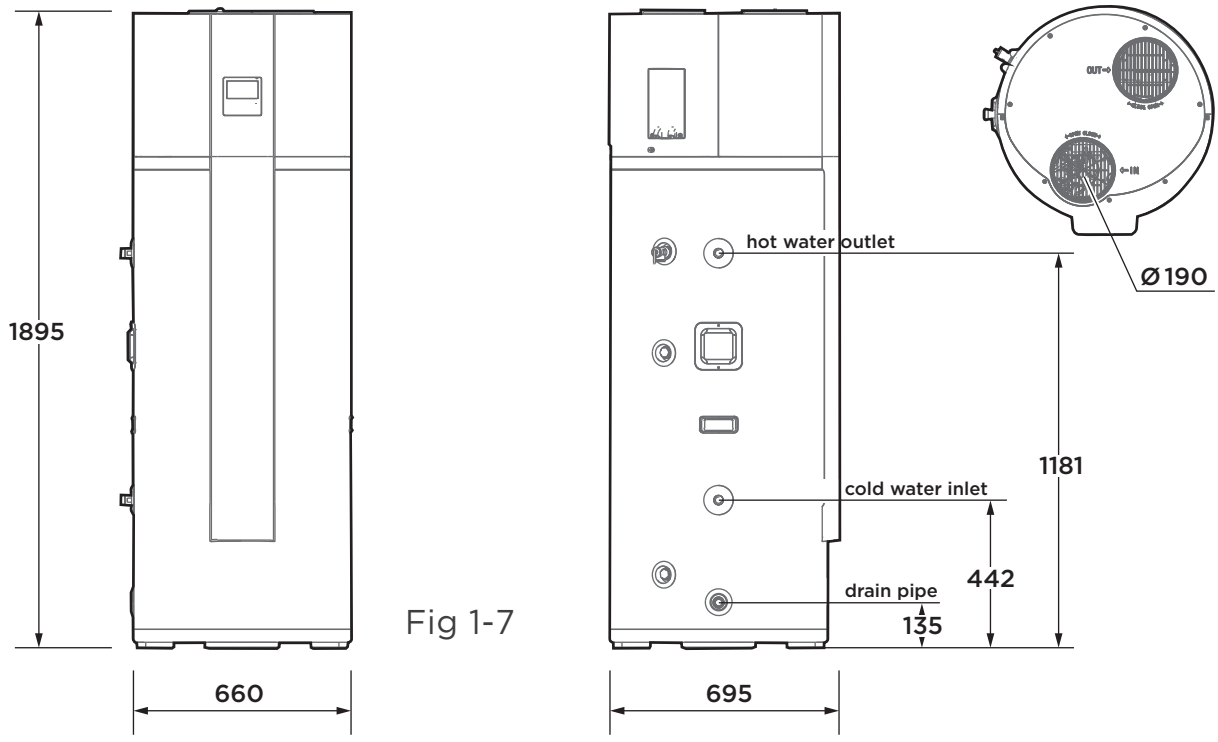


Fig 1-7

Fig 1-7

1.5 Technical characteristic

Model		KHP-15/185 ACS3	KHP-15/275 ACS3
UNIT GENERAL INFO			
Water tank cap.		185 L	275L
Net weight		91 kg	132 kg
Dimension		560×595×1730 mm	660×695×1895 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	1500 W
	E-heater:	1640 W	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	450 m^3/h
Indoor sound power level ②		56 dB	54 dB
Outdoor sound power level ②		56 dB	54 dB
PERFORMANCE (EN 16147) ③			
Load profile		L	XL
Water heating energy efficiency class		A+	A+
Water heating energy efficiency / η		131.10 %	132 %
COP_{DHW}		3.146	3.25
Maximum volume of mixed water at 40 °C-V_{40}		245 L	350 L
Reference hot water temperature-θ_{wh}		53 °C	52 °C
Rated heat output		11.694 kW·h	19.07 kW·h
Heating up time-t_h		07:32 hh: mm	08:58 hh: mm
Annual electricity consumption		780.8 kW·h	1267 kW·h
Stand-by power input(P_{es})		27 W	19.1 W
TANK			
Material		Steel tank with vitreous enamel coating	
Cathodic protection		Magnesium rode anode	
Insulation thickness		42 mm Polyurethane	46mm Polyurethane
Max. inlet water pressure		0.7 MPa	
Max. operating pressure (safety valve)		0.85 MPa	
ELECTRICAL DATA			
power supply spec.		220-240V ~ 50Hz	
E-heater power		1640 W	
Motor power		30 W	30 W
Max. heat pump power input		600 W	710 W
Max. power input		2240 W	2350 W
Max. current input		10.5 A	11 A

IP21

Model	KHP-15/185 ACS3	KHP-15/275 ACS3
Protection	Over-load Protector, Temp Controller & Protector, Electric Protector, etc.	
Fusible link type	T5A 250VAC/T16A 250VAC	
Insulation protection rating	IP21	
SOLAR COIL		
Material	/	
Surface	/	
Max. pressure	/	

NOTE:

① The test conditions: outdoor temp. 15/12 °C(DB/WB), inlet water temp = 15°C, outlet water temp = 45°C.

②Data according to EN 12102-2: ECO mode with inlet and outlet air ducts at 30 Pa.

③ Data according to EN 16147: 2017 standard for AVERAGE climate (unit in ECO mode, Hot water setpoint = 53 °C (185L)/ 52°C (275L); Inlet water = 10°C ; Inlet air temp = 7°C DB / 6°C WB) * according to European regulation 812/2013.

2. INSTALLATION

2.1 Before installation

2.1.2 Location requirements

- **IMPORTANT!** The unit must be installed indoor , it is not allowed to be installed outdoor without shelter. Avoid installation in direct sunlight.

⚠ WARNING

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

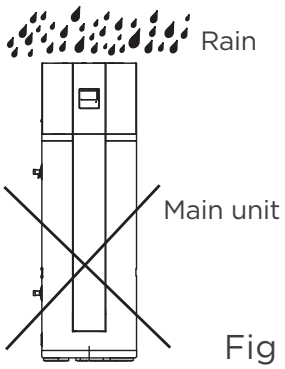


Fig 2-1

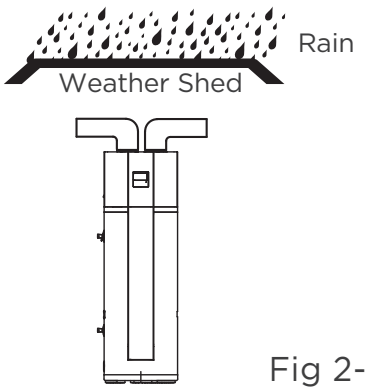


Fig 2-2

- 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 on a horizontal floor. Otherwise, ensure the drain outlet 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 must be around the unit.
- No flammable gas is leaked nearby.
- It must be suitable for installing 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 is outside these upper and lower limits, the electrical heater will be activated to meet the hot water demand and the heat pump does not operate.

⚠ CAUTION

- If the unit is installed on the balcony, the water full weight should not exceed the load-bearing limit of the balcony. Besides, protect the unit from adverse weather conditions such as low temperatures and/or rain. Remember that the equipment has IP21 protection.
- If the unit has to be installed on a metal part of building, make sure the electric insulation meet the local electric regulations.
- 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 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 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 with strong electromagnetic waves .
☒ Place with flammable gases or materials exist.
☒ Place where acid or alkali gases evaporate.
☒ Other aggressive or dirty environments.

2.1.3 Maintenance space requirements

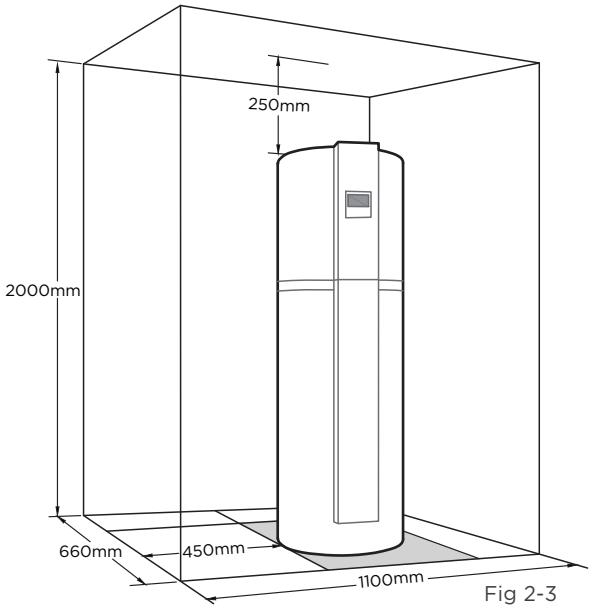


Fig 2-3

KHP-15/185 ACS3

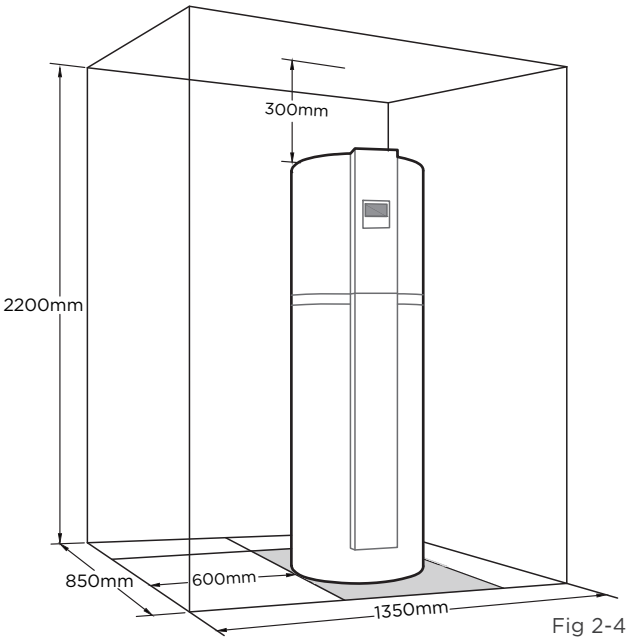


Fig 2-4

KHP-15/275 ACS3

2.2 Fixing method

⚠ CAUTION

- In order to prevent accidental fall, please fasten the water heater to the walls.

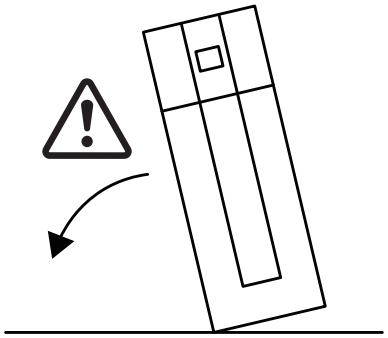


Fig 2-5

Water heater fixing steps are as follows:

1) Take off the front decorative board.
2) Install the expansion bolts or wall dowels(not provided) in the wall. Select the appropiate dowels and bolts/screws for the material of the wall.
3) Fix the end with less holes of mounting fixing strip on the expansion bolt/dewel.
4) Tighten the fixing strip and fix the other end to the second expansion bolt/dewel 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.

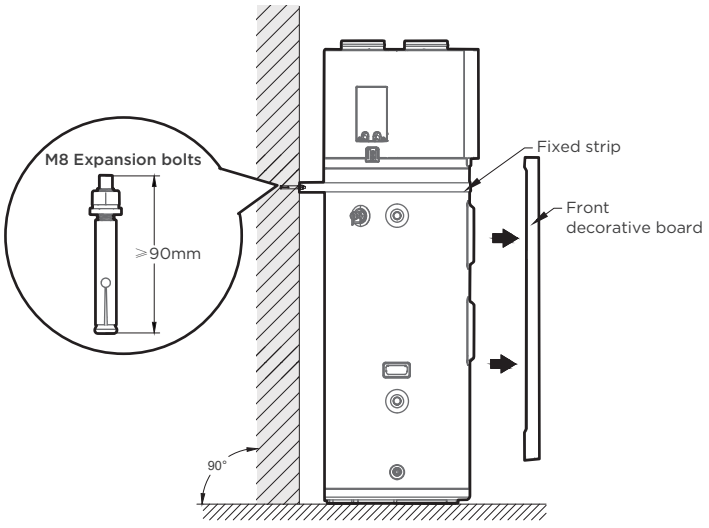
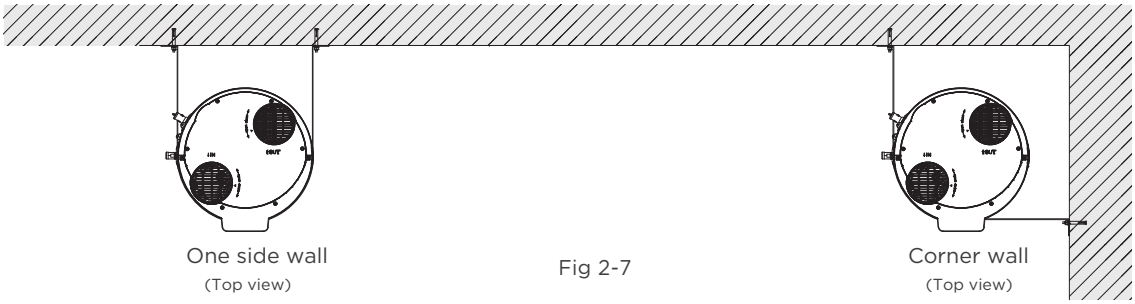


Fig 2-6



One side wall
(Top view)

Fig 2-7

Corner wall
(Top view)

⚠ CAUTION

- The appearance and installation orientation of the unit shown above are for reference only and can be adjusted according to the actual installation.
- The position of the fixing 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

⚠CAUTION:

Follow the local regulations related with Thermal Solar Systems and DHW production systems. Attend also the state of the art guidelines for these systems.

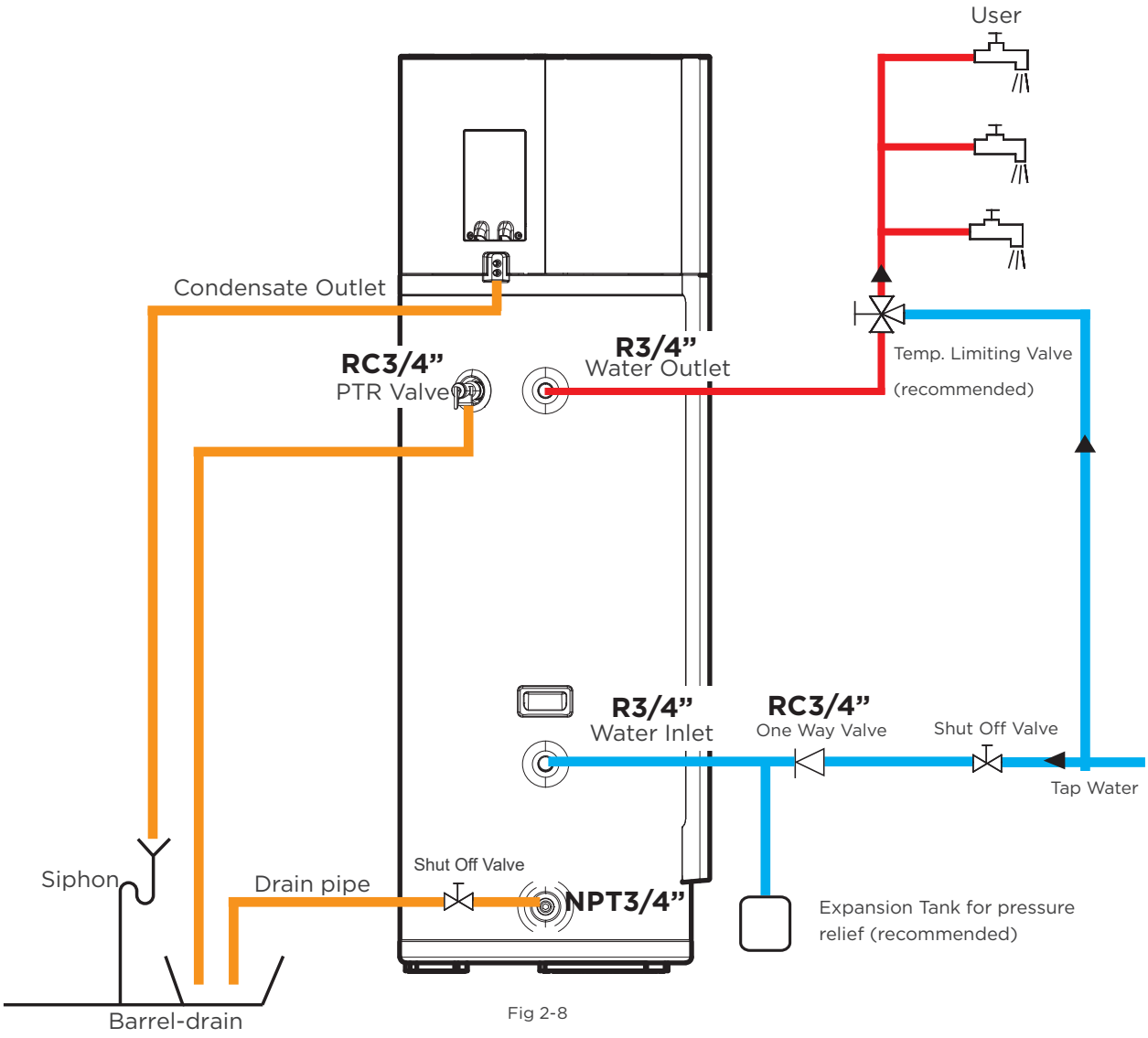


Fig 2-8

NOTE

- Connect water pipes as the above Figure 2-8 .
- Water temperature limiting valve is recommended for mixing the inlet cold water with outlet hot water to prevent burns caused by hot water.
- Check before connection, make sure the pipe is clean and free of any foreign matter.
- It is recommended to use dielectrical connectors to avoid potential
- corrosion;
  When installing a circulation pump between the domestic hot water and cold water inlet, dry burning protection may be accidentally triggered. It is recommended to enter engineering mode and turn off this funtion(set the parameter F15=0).

1) Cold water connection

The spec of the water inlet thread is R3/4”(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 7 bar (0.7MPa), a reducing valve should be used at the water inlet pipe.
- If there is a large fluctuation in the water pressure of the system, it is recommended to install an expansion vessel (actual volume ⩾7%) to balance the pressure.
- For regions with a lot of scale (Th>20°f), we recommend to treat the water. The hardness after softener has to be higher than 15°f. The use of a softener does not influence the warranty if the softener is approved for the country of installation and set according to the state of the art guidelines, 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 R3/4”(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 supply line.

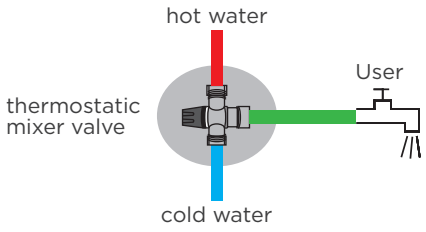


Fig 2-9

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 2-11.
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 and to prevent odours from escaping.

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.

⚠ CAUTION

- In case of installation 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.

⚠ WARNING

EXPLOSION

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

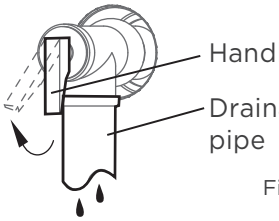


Fig 2-10

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 figure.

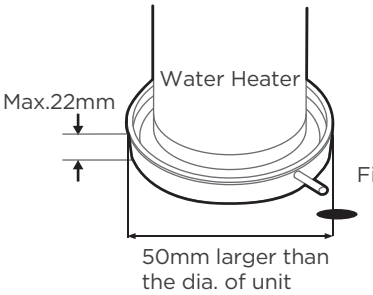


Fig 2-11

Once the water piping work is done, turn on the cold water inlet valve and hot water outlet valve and start filling 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.

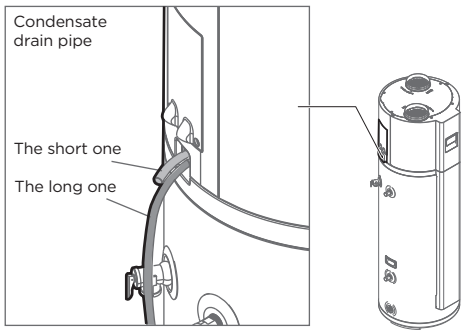


Fig 2-12

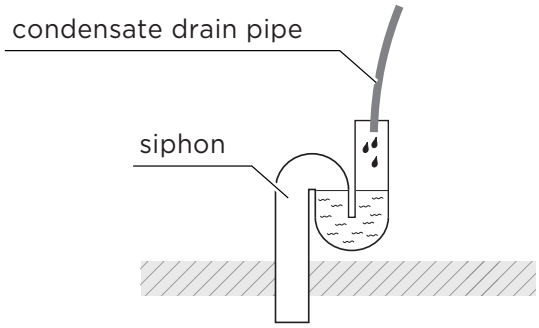
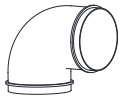


Fig 2-13

2.4 Air duct connection

The total pressure drop of ducts and accessories for air inlet and outlet has to be less than 80 Pa. It is strongly recommended to use rigid ducts and the recommended length of ducts has to be respected.
The following table lists the corresponding pressure drops and equivalent lengths for different air ducts and accessories.

		1m PVC/HDPE straight pipe	PVC/HDPE 90° curve	Filter
Type				
185L (Ø160)	Pressure drop(Pa)	2.5	9.5	19.0
	Equivalent length(m)	1.0	3.8	7.6
275L (Ø190)	Pressure drop(Pa)	2.0	8.0	15.2
	Equivalent length(m)	1.0	4.0	7.6

It is necessary to enter engineering mode and set parameter F40 according calculated pressure drop, as shown in the following table.

Total pressure drop	0-20 Pa	20-40 Pa	40-60 Pa	60-80 Pa
F40	0	1	2	3

NOTE

- **The pressure drop in the duct will decrease the air flow rate, which will reduce the capacity of the unit.**
- **Condensation may form on the outer surface of the ducts, harder in the exhaust air one. Be aware of this condition. We strongly recommend using thermally insulated ducts or thermally insulating the installed ducts. installed ducts.**
- **The filter must be installed at the air inlet of the unit in dirty and dusty environments. As for the ducted unit, the filter, if needed must be placed at the duct inlet. In normal air conditions, only a grill to prevent the entrance of foreing bodies.**

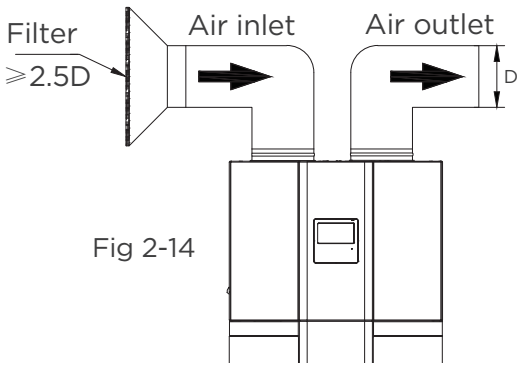


Fig 2-14

The grille or filter must be provided by the owner. The recommended mesh size is around 1.2 mm.

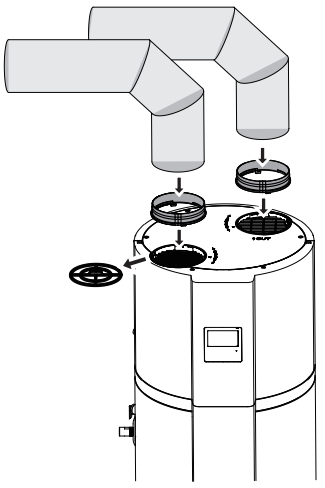
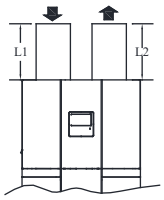
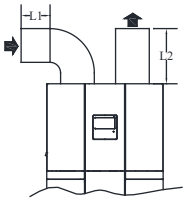
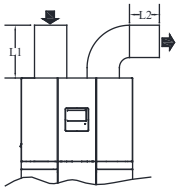
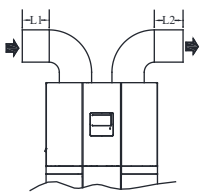


Fig 2-15

2.4 .1 Typical installation

Different ways of air ducts connection

Type					
185L	**Maximum piping length L1+L2 (without filter)**	32 m	28 m	28 m	24 m
275L		40m	36 m	36 m	32 m

Different directions of air ducts connection

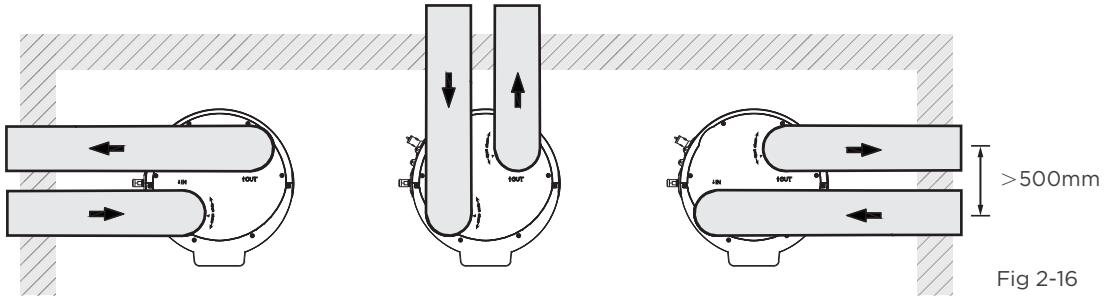


Fig 2-16

2.5 Electrical Connection

⚠ CAUTION

- The power supply should be an independent circuit with rated voltage.
- Power supply circuit should be earthed.
- The wiring must be performed by professional technicians in accordance with national wiring regulations and the circuit diagram. (Please open the front cover of unit's head , you will see the circuit diagram on the electronic control box.)
- A circuit breaker which has at least 3mm separation distance in all pole and a residual current device (RCD)with high sensivity, at least 30 mA ,shall be incorporated in the power supply wiring according to the national rule. Compliance with local legislation in force is mandatory in all cases.
- Set the electric leakage protector according to the relevant electric technical standards of the state.
- The power cable and the signal cable shall be laid out neatly and properly without mutual interference nor touching the connection pipe or valve.
- After wire connection, check it again and make sure the correctness before power on.
- Optional element will not be shipped with the machine.If you have installation requirements, please contact the after-sales professional technical personnel to purchase compliant components, and have them installed by professional technical personnel.

NOTE 1:

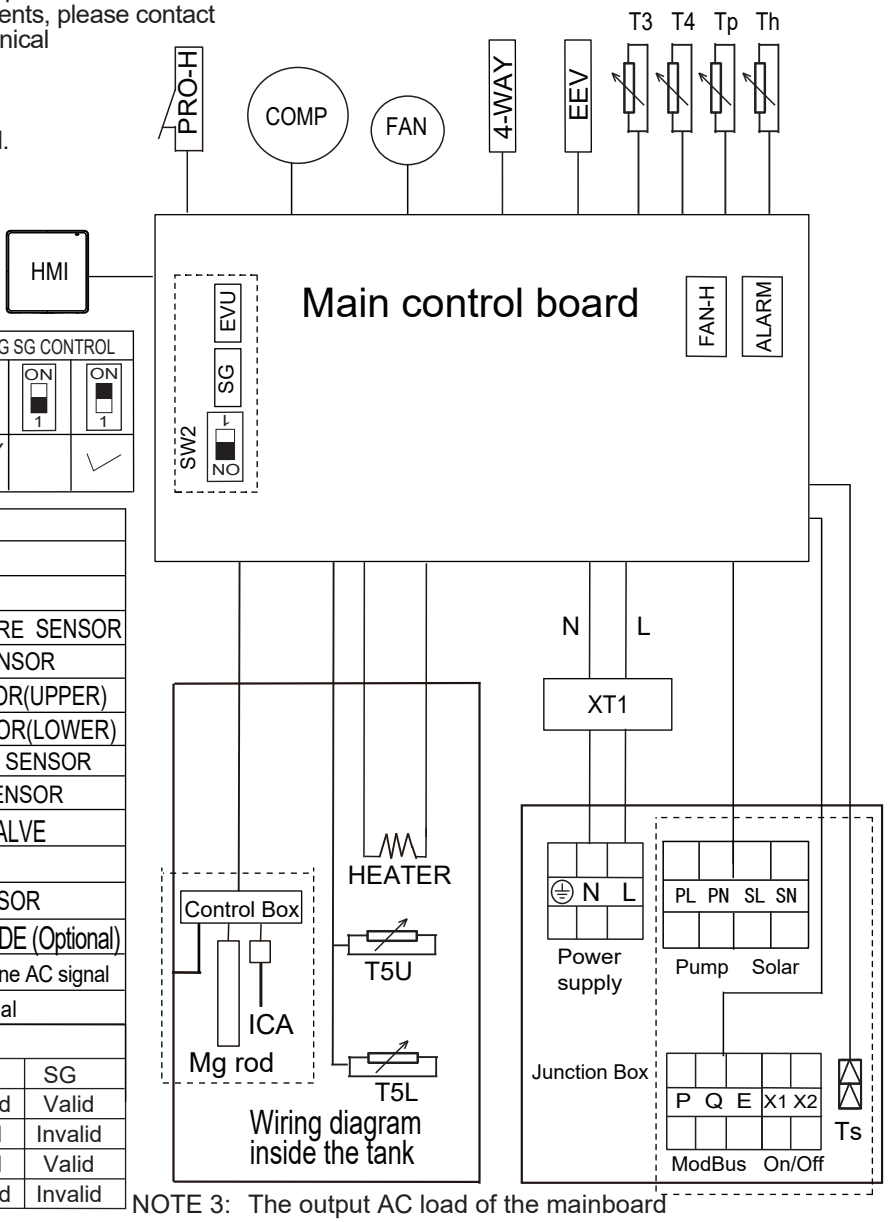
This symbol indicates the element is optional,the actual shape shall prevail.
Optional element will not be shipped with the machine.
If you have installation requirements, please contact the after-sales professional technical personnel to purchase compliant components, and have them installed by professional technical personnel.

NOTE 2:

The wiring coming out of the tank, must be connect with the corresponding component.

Please put SW2 to "1" side to activate the SG port.

FOR SETTING SG CONTROL		
SW2	ON 1	ON 1
FACTORY SETTING		✓



CODE	NAME
PRO-H	HIGH PRESSURE SWITCH
4-WAY	FOUR WAY VALVE
T3	EVAPORATOR TEMPERATURE SENSOR
T4	AMBIENT TEMPERATURESENSOR
T5U	TANK TEMPERATURE SENSOR(UPPER)
T5L	TANK TEMPERATURE SENSOR(LOWER)
TP	DISCHARGE TEMPERATURE SENSOR
TH	SUCTION TEMPERATURE SENSOR
EEV	ELECTRONIC EXPANSION VALVE
XT1	MID TERMINAL BASE
Ts	SOLAR TEMPERATURE SENSOR
ICA	IMPRESSED CURRENT ANODE (Optional)
PL/PN	Pump for Solarcoil Output L/N line AC signal
SL/SN	Solarcoil Input L/N line AC signal

SMART GRID		
Operating behavior	EVU	SG
Normal operation(Default)	Invalid	Valid
Increased operation output	Valid	Invalid
	Valid	Valid
Decreased operation output	Invalid	Invalid

NOTE 3: The output AC load of the mainboard must be controlled through an AC contactor;

NOTE 4: Modbus terminal: P-RS485A; Q-RS485B; E-RS485 GND

2.5.1 Specifications of Power Supply

The recommended power cable model is **H05RN-F**. You can choose the power cable recommended in the following table such a minimum.The installed cable cross-section has to comply with comply with local electric standard.

Power Supply	220-240V
Min. Diameter of Power Supply Cord	1.5 mm²
Earth Cord	1.5 mm²
Circuit Breaker	16 A
Residual Current Device (RCD)	30mA⩽0.1 sec

⚠ CAUTION

Follow local regulations and electricity supplier company requirements. The information in the manual is the minimun requirements.

2.5.2 Power cord connection

The steps for connecting power cables are as follows:

step1

Remove both screws and take off the junction cover;Remove both screws and take off the metal protective cover;

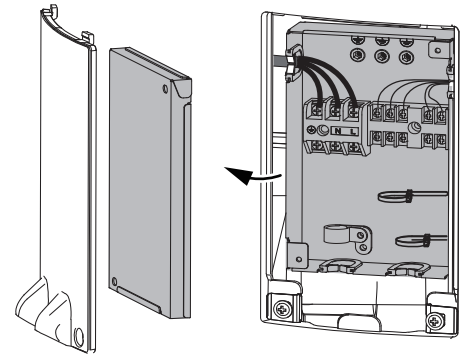
step2

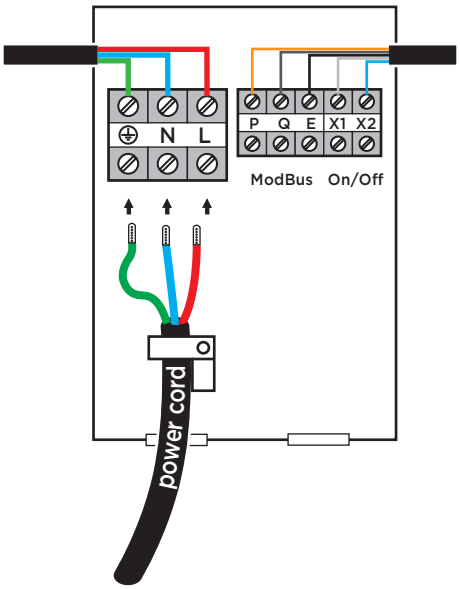
Route the power cable through the bottom cable hole;Connect the power cable to ⏚ , N, L and fix the cable with the below tie; The power cable should route through the left hole reserved on the junction box cover.Put the metal protective cover and junction box cover back.

⚠ WARNING

- Ensure the ground wire has the longest length, to prevent it from being pulled.

step 1





⚠ 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.

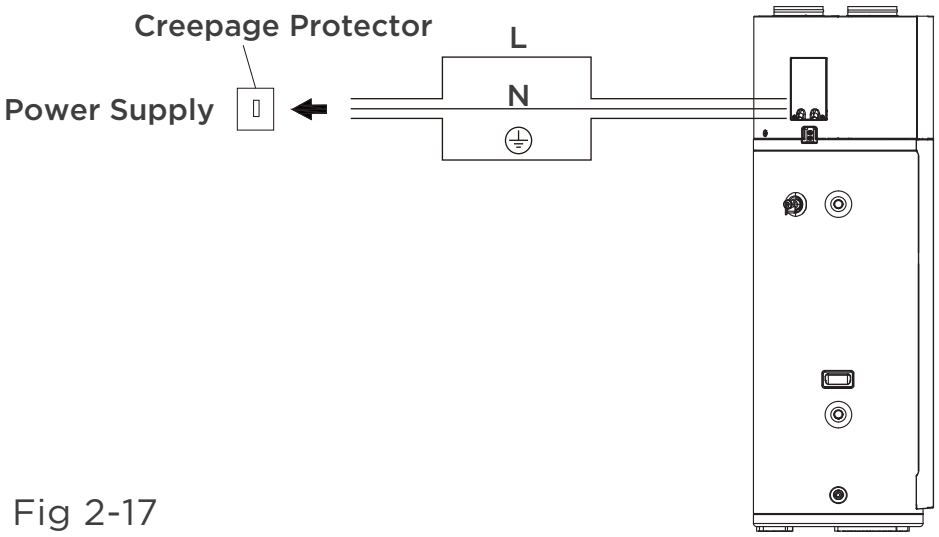


Fig 2-17

⚠ CAUTION

- When wiring the power supply, please add additional insulation sheath at the place without rubber insulation layer.
- This unit should be installed by a qualified professional electrician in accordance with the local regulations. The selection of cables and wires should be in accordance with local regulations requirements.
- For safety reasons, up to 30mm insulation can be peeled off at the end of the power supply cord , if the stripping wire is too long, there may be a risk of short circuit or insufficient insulation protection.
- The electrical connection must be carried out by authorized installer. and it is strictly forbidden to carry out transformation and setting beyond the guidance specifications.
- Risk of electric shock: When the equipment is repaired, it is necessary to turn off the power supply and its external power supply to prevent the risk of electric shock.

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.
- ☐ 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.
- ☐ 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℃ and below 43℃.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 is recommended to be installed.
- ☐ Condensate drain lines must be installed with an easy access.
- ☐ The condensate drain outlet must be at the lowest position of the unit.
- ☐ The condensate drain pipes have been connected to a drain siphon.

2.6.3 Electrical connections

- ☐ The water heater requires 220-240 VAC~ for proper operation.
- ☐ Cable specifications and connections must 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).
- Proper 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 postion 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:

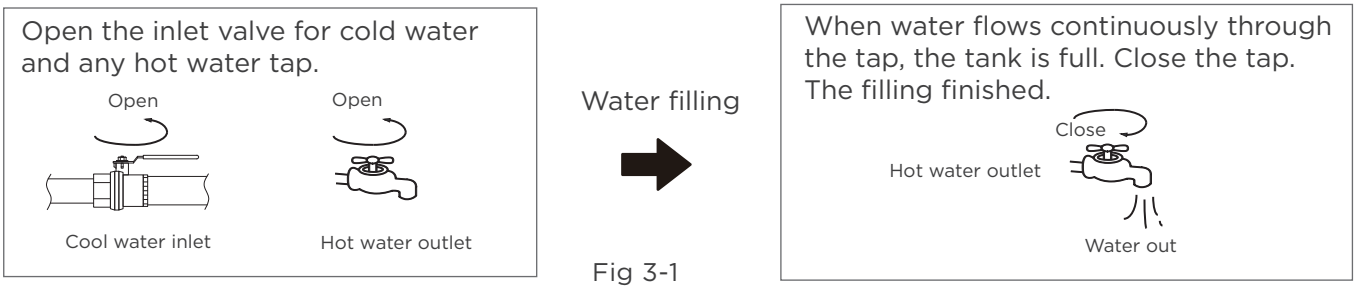


Fig 3-1

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.

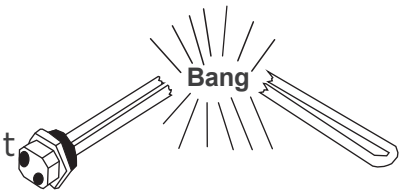


Fig 3-2

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

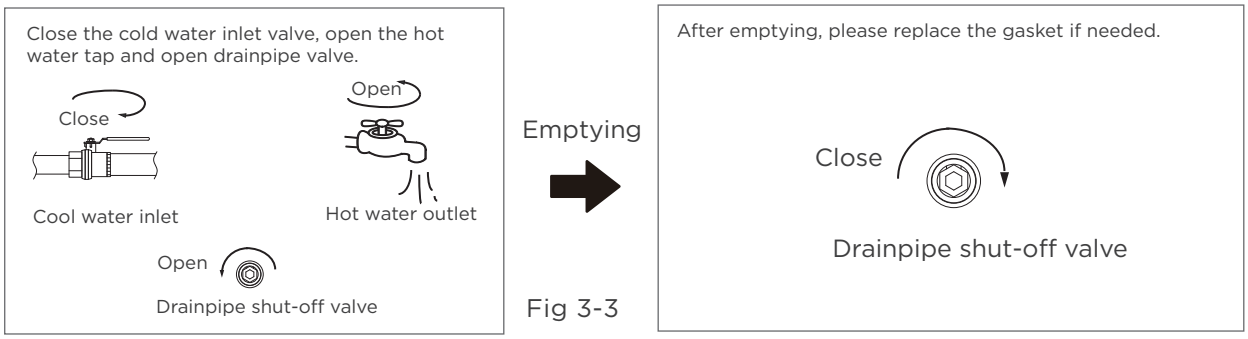


Fig 3-3

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.

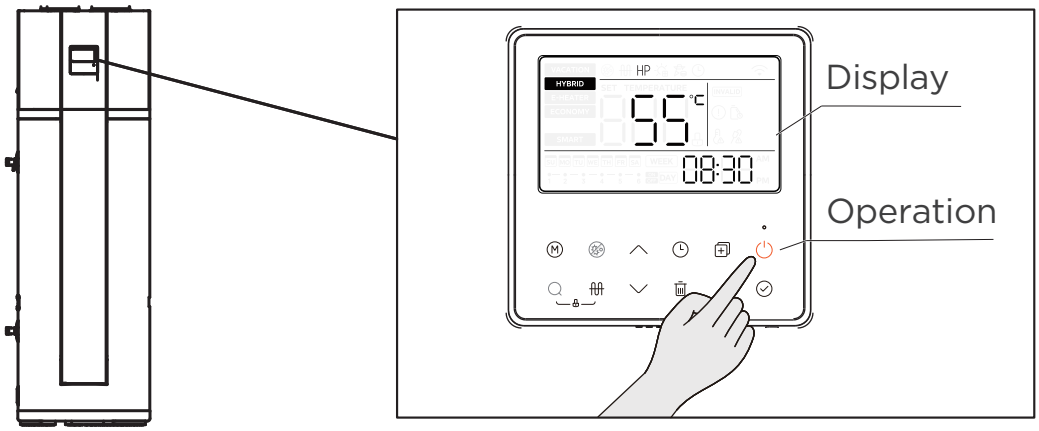


Fig 3-4

- Press ⏻ → the unit will be switch on → press ∧∨ to select the setting temperature (38-70°C) → press ✓ → The unit will automatically select heat source and start to heat water to set temperature.

- **Change the running mode**
  Press the Ⓜ button to select running mode.

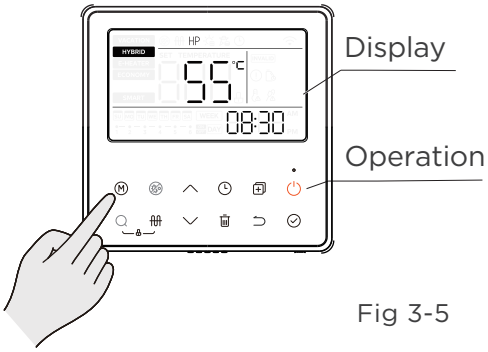


Fig 3-5

- **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

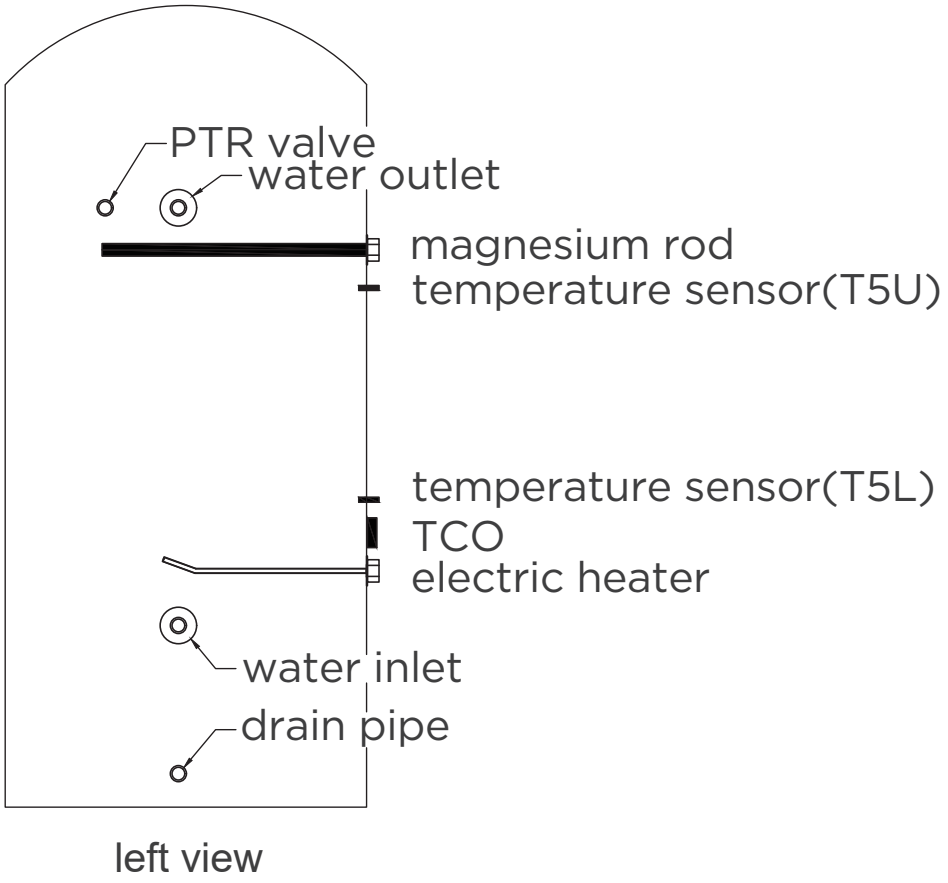


Fig 3-6

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:

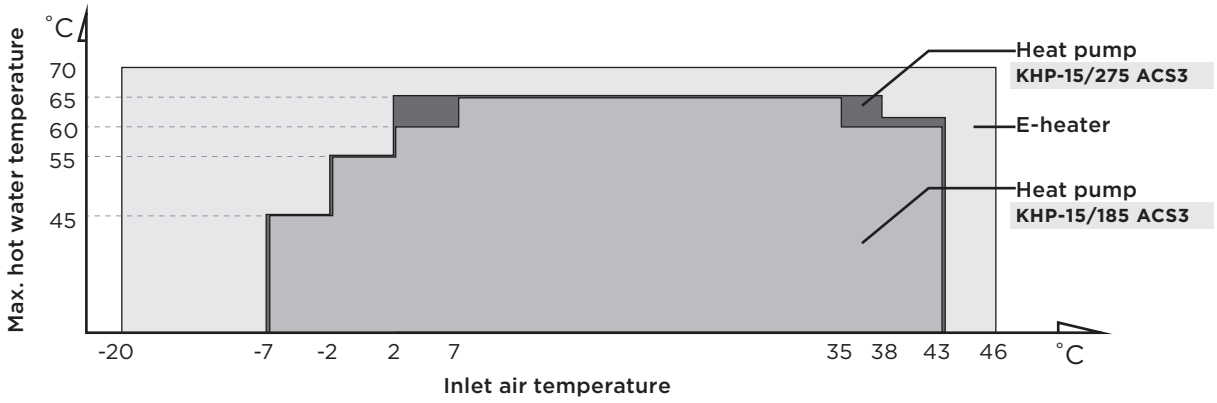


Fig 3-7

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.
- For ECONOMY and HYBRID modes, 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. hot water termperature (Heat pump working limits), for the existing inlet air temperature, the unit will first activate the heat pump until Max. Temp (Heat Pump working limits), then stop heat pump, and activate E-heater to heat the water continuously until the desired temperature is reached.
- Manually E-Heater operation is in ECONOMY and HYBRID modes. If manually activate the E-heater while heat pump is running, E-heater pushing the E-heater button, and heat pump will work together until the water temperature gets to set temperature. So, if quick water heating is required , please manually activate E-heater.

NOTE

- **Pressing E-heater button (INCLUDE THE SIMBOL OF E-HEATER BUTTON)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, for same volume of usable water, 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 is frosted when the inlet air temperature is low the system will automatically defrost to keep effective performance(the process will take 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 capacity of the unit.

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.

KHP-15/185 ACS3 **Heat-up Time(h, water temperature 9 ~ 55°C)**

		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

KHP-15/275 ACS3 **Heat-up Time(h, water temperature 9 ~ 55°C)**

		MODE		
		ECONOMY	HYBRID	E-HEATER
INLET AIR TEMP.(°C)	-7	18.4	6.9	6.9
	0	17.7	7.4	6.5
	2	15.7	7.2	6.3
	7	14.4	14.4	5.9
	15	9.8	9.8	5.2
	20	9.0	9.0	4.9
	25	8.4	8.4	4.8
	30	7.4	7.4	4.5
	32	7.0	7.0	4.3
	35	6.7	6.7	4.3
	40	6.0	6.0	4.1
		Highest efficiency	Medium efficiency	Highest consumption

About 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 and the error cause is solved. 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 60 seconds, button will be locked. Press ○ + ⫛ simultaneously will be unlocked.

Screen backlight auto turns off

If there is no operation of button for 10s, screen will be locked (extinguished) . Push any vaild buttons to unlock buttons (lighted) . Enter engineering mode 30 channel to switch on-off .

3.4 Control panel explanation

3.4.1 Display explanation

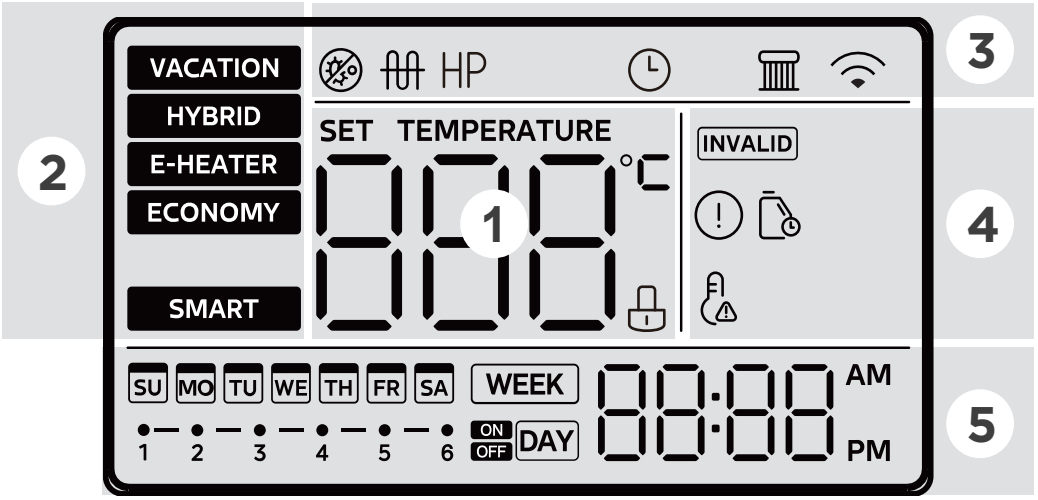
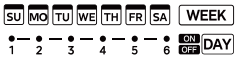


Fig 3-8

Area	Icon	Description
1 Information	888°F	888 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 buttons are locked, the icon will be lightened, otherwise it will be turned off.
2 Mode	**VACATION**	**VACATION MODE:** For the vacation mode, the water temperature will be set at 15℃ to keep a low energy consumption while preventing freezing in the tank.
	HYBRID	**HYBRID MODE:** When the ambient temperature is above 5 ° C, it is executed in eco mode. When the ambient temperature is 0-5 ° C, the e-heater is turned on after the heat pump works for 1 hour. When the ambient temperature is below 0 ° C, it is executed in e-heater mode.
	E-HEATER	**E-HEATER MODE:** When there is a demand for heat, , the heat pump and the E-heater running at the same time if there are heat pump working conditions.
	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 achievable at that inlet air 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** The smart mode will record the user's hot water usage habits in the past 7 days, heat the water in advance according to the user's water consumption time, and stay on standby(do not heat the water) at other times. (It is recommended that the user set this mode after 7 days of normal operation of the unit, so as to avoid the machine failing to record complete user habits and affecting the use experience)

Area	Icon	Description
3 Function		It will be lighted when the disinfection process is active.
		**E-heater:** It will light up when e-heater is running, otherwise it will be off. 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.***
		**Heat pump icon:** When the heat pump (compressor) is operating and producing hot water, the icon lights up.
		The icon lights up when the clock is being set.
		**Wireless:**  will be llight up when Wireless is connected;  will be off when Wireless is not connected;  will flash with 2Hz frequency when setting Wireless.
		**Solar pump icon:** When the solar pump is operating, the icon lights up.
4 Warning		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, the warning light will turn on, when temperature descreases then warning light will turn off.
5 Timer		**Time and clock setting** Displays the current time or the time programmed during the programming of the time schedule.
		**Schedule settings** There is an option to set a schedule on weekly or daily basis. If no schedule is set, the corresponding 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

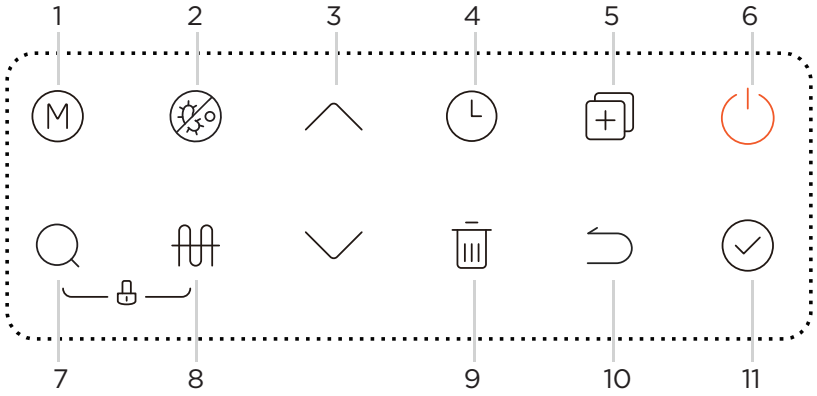


Fig 3-9

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 turns off.

1) Weekly disinfect function

In disinfection mode, 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 while disinfection mode is working. Unit will quit disinfection if water temperature is higher than 70°C and light off icon.

2) Vacation function

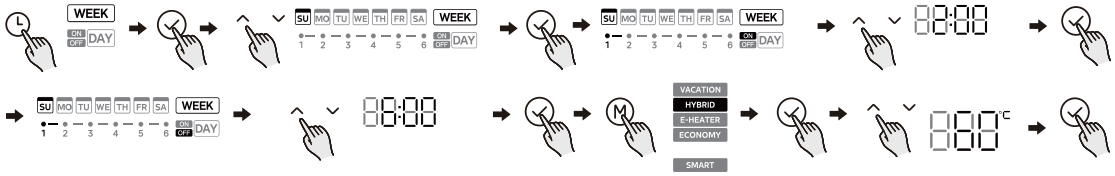
Press to select VACATION, then unit will automatically heat water to 15°C for the purpose of energy saving during vacation days. Press to adjust vacation days and press to make the setting effective.

3) Remote shutdown function

If the switch is turned off, the unit will be stopped forcibly. If the switch breaks, the unit can run normally according settings.

Detailed operating instructions

No	Icon	Description
1		**MODE** Press this button to switch mode HYBRID ▸ E-HEATER ▸ ECONOMY ▸ SMART ▸ VACATION
2		Click the button to force the turn on of disinfection function.
3		**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 select check items.
4		**Daily timer setting:** • While setting the **[on/off time]**, you can restore to the default value (displaying-.--) by pressing .

		• 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. **Weekly timer setting:**  • To copy the settings of one day to other days: While in the day selection, press to copy a base day's settings, then select other days by pressing again (the status will become fast flashing). Press to confirm the operation and the settings will be copied to the selected days. **Note**: When setting the daily/weekly timer, model "VACATION"and "SMART"can not be selected.
5	**ENGINEERING MODE only for qualified person**	**COPY / ENGINEERING MODE** In the main screen, press and hold for 3 seconds to enter the engineering mode. Use to switch the inspection channel, and the attribute value of the channel will be displayed. You can modify the parameter setting with ,and after adjusting, press to make the setting effective. Press to return to the channel selection screen. 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. **⚠ CAUTION** • It is strictly prohibited for the customer to change the parameter settings of the channels in the engineering mode without authorization to avoid affecting the normal operation of the unit or causing damage to the unit.
6		**POWER ON/OFF** Press the button to start / stop the unit.
7		**SEARCH / QUERY MODE** • In the main screen, press and hold for 1 second to enter the query mode. Use 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 or , you can directly exit the query mode. • Query mode can be entered in both power-on and power-off state.
8		If screen is unlocked, press this button to manually activate E-HEATER.
9		**DELETE** This key is used to cancel all settings in progress and exit the setting state. When the wireless connection is working, long press for more than 8s to exit Wireless connection.
10		**RETURN** Press the button to return to the previous setting or main screen.
11		**CONFIRM** If screen and buttons are unlocked, press it to upload setting parameters after setting any parameter.

12		**CHILD LOCK** • 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	**Connecting the wireless function** • In the main interface, long press for 3 seconds to enter the AP wireless network mode, there will be a in the upper right corner of the controller display. 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; • Wireless matching can last up to 8 minutes, after 8 minutes, if the matching is not successful, the wireless icon will go out; • Long press for 8 seconds in the main interface to reset the wireless function; It can be set in both power on and power off state.

Query mode

Press and hold the 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 button, refer to the table below.

No.	parameters	unit	Explenation
1	T5U	Temp.	T5U
2	T5L	Temp.	T5L
3	T5I	Temp.	T5M
4	T5	Temp.	Heat pump stop water temp
5	T3	Temp.	T3
6	T4	Temp.	T4
7	TP	Temp.	TP
8	TH	Temp.	Th
9	on		-.-.--
10	TFr		-.-.--
11	TT	Temp.	Disinfect temp.
12	Co	Current	Compressor and electric heating current
13	Fo	Fan	Ac Fan Dc Fan 0: OFF Real speed/10 1: LOW 2: MID 3: HIGH
14	Eo	Machine parameters	0~255
15	EEr		Electronic expansion valve opening
16	EEC		Compression mechanism hot water demand
17	PUP		Recirculation pump opening 0: OFF 1: ON
18	PS		-.-.--

No.	parameters	unit	Explenation
19	FT		0: Ac Fan 1: Dc Fan
20	HT		1(Eheater control type)
21	HP		0(Compressor control type)
22	FSI		——
23	SIo		Tank capacity
24	P4P		Four-way valve status
25	UU		0
26	U1	Version	Host software version
27	U2	Version	LCD panel software version
28	U3	Version	000
29	U4		0: One electric heater 1: Two electric heaters
30	UT		3
31	1Er		Last error code
32	2Er		Previous 1 st error or protection code
33	3Er		Previous 2 nd error or protection code
34	HHH		Maintenance time
35	TLF		Target Temp
36	End		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. Please be aware that in some locations the wifi signal could be poor and not allow the connection. A signal amplifier could be needed.

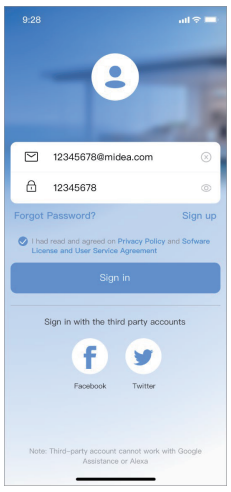
Step 1: Download the NetHome Plus app

Scan the QR code below to download the SmartHome app from app store or search for it directly on the Google Play Store or Apple's App Store.

Android IOS

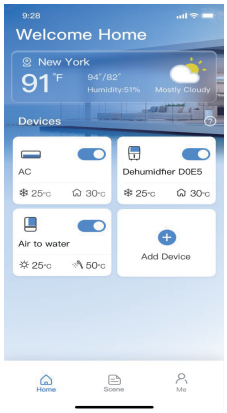
Step 2: Log in

Open the **NetHome Plus** app. Log in directly if you have an existing **NetHome Plus** account or create a new account. Alternatively, you can also use a 3rd party login platform.

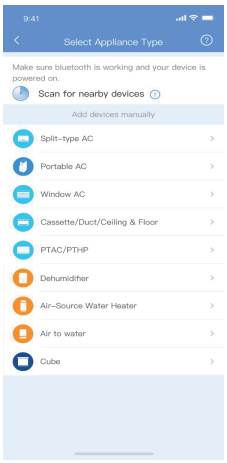


Step 3: Connecting the device 1)

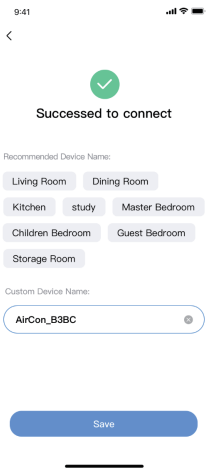
When you log in, you may see the message "Smart devices discovered nearby " . Tap to add your device.



2) If no such message appears, proceed as follows:
Tap on "+" and select your device in the list of nearby available devices. If your device is not listed, please add your device manually, first selecting the device category e.g. Water Heater.



3) Follow the steps in the app to connect your device to the wireless network. If your device fails to connect, follow the additional instructions in the app.



■ Step 4: Controlling the device

After pairing successfully, a card will be created for the device in the **NetHome Plus** app.
Shortcuts for basic functions will appear on the card such as changing the humidity or switching the device on or off.
Tapping on the card, will reveal additional features and settings. 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 (Europen 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)This device must acceptany 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.

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 does 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 pipe so that will decrease the upper part temperature.

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

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 quickly.

Q: **Why does 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 does 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 pressurized 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 0.85Mpa, 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 ⓘ will flash and error code will be shown at water temperature indicator. But the ⓘ and error code does not disappear until protection resolved.
3) In the following circumstance, self-protection may happen: Air inlet or outlet is blocked.

   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 DHW 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
The tap water is cold and the screen turned off.	1. Bad connection between power supply plug and socket; 2. Setting the water temperature too low; 3. Temp. sensor broken; PCB of indicator broken.	1. Plug in; 2. Setting a higher temperature; 3. Contact service center.
No hot water coming out of the tap.	1. Public water supply ceased; 2. Cold water inlet pressure is too low (<0.15 MPa); 3. Cold water inlet valve closed.	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. A pipe or fitting is broken.	Check and reseal all joints. Check piping.

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 been loose 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 been loose 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".	If 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.	
EC53	Ambient temperature sensor T4 error.	
EC52	Evaporator temperature sensor T3 error.	
EH5L	Error of sensor T5L (lower water temperature sensor).	
EH5U	Error of sensor T5U (upper water temperature sensor).	
EH5N	Error of sensor T5M (solar collector temperature sensor).	
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.	If the electric heater has been broken or bad wire connection after repair.
EHHP	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, etc.. 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 ≥ 3.0 MPa active; ≤ 2.4 MPa inactive	Maybe because of system blocked, air or water or more refrigerant in system(after repair), water temperature sensor malfunction, etc. Contact a qualified person to service the unit.
PC06	High TP protection. Tp > 110°C（185L） Tp > 105°C（275L）.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, etc. Contact a qualified person to service the unit.
PH9b	Overtemperature protection. The current water temperature exceeds the Maximum 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.
- In dirty or dusty environment, install the filter in the inlet air connection and 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.

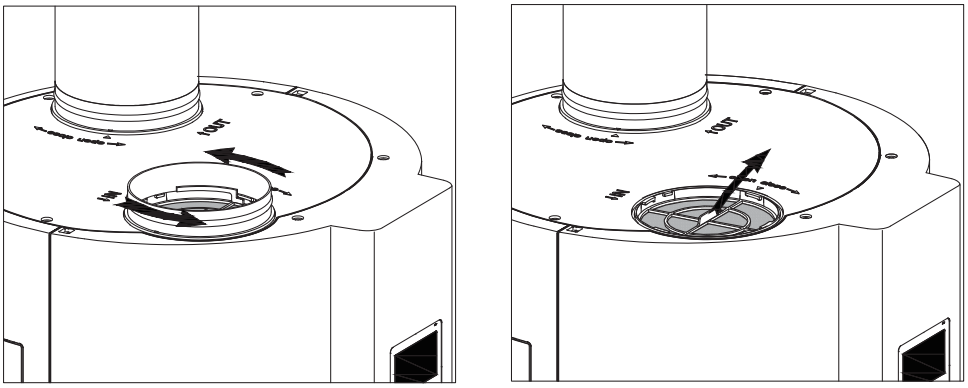


Fig 5-1

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

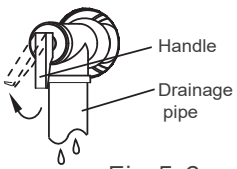


Fig 5-2

⚠ 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.
- Please contact professional technical after-sales service if the battery needs to be replaced.

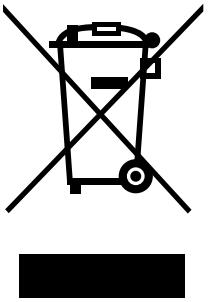
Recommended regular maintenance table

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 (with electronic anode)	Magnesium rod	Check every 6 months after the electronic anode reports a fault.	It is recommended to replace the electronic anode and the physical magnesium rod.
4 (witohut electronic anode)		Every 6 months	Replace it if it has been used out
5	PTR valve	Every 6 months	Check for blockage

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 have to be removed from the product.
- Dispose of the used batteries in the special containers to at the point of sale or recycling points.
- Replace the battery must contact the supplier or the after-sale service.

The design and specifications are subject to change without prior notice for product improvement. Consult with the sales agency or manufacturer for details. Any updates to the manual will be uploaded to the service website, please check for the latest version.

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