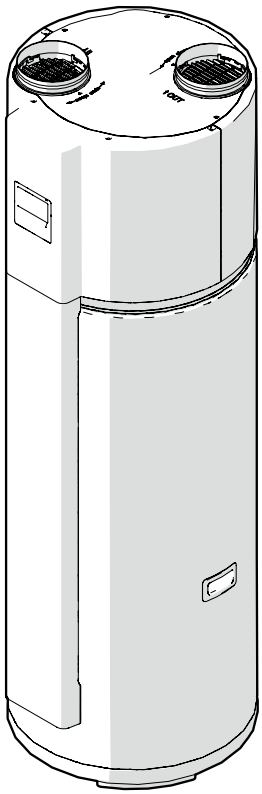
IST 03 J 117 - 05

fondital

MELORIA 190 S
MELORIA 300 S
FLOOR DOMESTIC HOT WATER HEAT PUMP HEATER

INSTALLATION & OWNER'S MANUAL



EN

Translation of the original instructions (in Italian)

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 Fondital! Before using your new Fondital 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.

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1. PRODUCT DATA PLATE

Specific and main product data can be found on the label attached to the appliance.

1	**SCALDACQUA POMPA DI CALORE** **HEAT PUMP WATER HEATER**		fondital
2	**Modello** **Model**		
3	**Alimentazione** **Power Supply**		
4	**Potenza termica** **Heating capacity**		
5	**Potenza nominale in ingresso** **Rated input**		
6	**Potenza nominale ingresso resistenza elettrica** **Electric heater rated input**		
7	**Peso netto** **Net weight**		
8	**Refrigerante / Quantità** **Refrigerant / Quantity**		
9	**GWP / CO_2 equivalente – equivalent**		
10	**Volume accumulo** **Tank Volume**		
11	**T massima acqua calda ammissibile** **Hot water allowable T max**		
12	**Pressione massima accumulo** **Water tank maximum pressure**		
13	**Pressione massima di esercizio (Scarico/aspirazione)** **Maximum operating pressure (Discharge Side / Suction Side)**		
14	**Grado di protezione elettrica** **Moisture protection**		
15	**Data di produzione** **Manufactured date**		

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.

⚠	**CAUTION: The signal word indicates a hazard with a low degree of risk which, if not avoided, may result in minor or moderate injury.**
⚠	**WARNING: The signal word indicates a hazard with a medium level of risk which, if not avoided, may result in death or serious 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 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.
- Installation of the unit must be perform by qualified person in accordance with local regulations. 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 or death. 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.

WARNING

- 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.
- The company excludes all contractual and extra-contractual liability for damage caused to persons, animals or property, from installation, adjustment and maintenance errors, improper use or partial or superficial reading of the information contained in this manual.
- It is prohibited to carry out repair work on the refrigerant circuit and any component that is part of it at the site where the appliance is installed. Carry out such work in a workshop set up for repair and maintenance of equipment containing flammable gases and by qualified and competent personnel.
- These units are made for domestic water heating. A different application, not expressly authorized by the manufacturer, is to be considered improper and therefore not allowed.
- The location, plumbing and electrical installation must be determined by the designer of the system plant and must take into account both purely technical requirements and any applicable local legislation and specific permits.
- The execution of all work must be carried out by experienced and qualified personnel who are competent in the relevant regulations in different countries.
- Use only original spare parts, otherwise there is a risk of compromising the safety of the device, which will void the warranty.
- Before beginning any kind of operation on the water heaters each operator must be fully familiar with the operation of the machine and its controls and have read and understood all the information in this manual.
- Fill the water heater tank with water and then drain it completely to remove any impurities. Perform this operation at the time of first use or following maintenance work.
- It is mandatory to comply with all the installation requirements of the appliance and the system stipulated by the applicable laws, regulations, local and national standards. It is mandatory to provide at the water inlet of the appliance a safety valve that complies with the requirements of laws, regulations, national standards; in particular, for nations that have implemented the requirements according to EN 1487, it is mandatory to install a safety unit having a maximum pressure of 7 bar (0.7 MPa) and consisting of at least a shut-off valve, manual drain valve, non-return valve and safety valve with 7 bar (0.7 MPa) setting.
- The safety unit should be inspected regularly to remove scale deposits and to make sure it is not blocked. Beware of scalding due to high water temperature.
- The appliance can deliver hot water at temperatures above 45°C. It is recommended that a thermostatic mixing valve be installed at the hot water outlet of the appliance so as to regulate the water outlet temperature.
- Prevent any flammable items from being placed in the vicinity of the device.
- Prohibited to install the appliance near other heat-generating appliances or near materials that are flammable or hazardous.
- The device is intended for indoor installation only.

WARNING

- Removal and/or tampering with any safety device is strictly prohibited. Do not remove grilles placed on the fan outlet or plastic cover.
- Children and unassisted incapacitated persons are prohibited from using the device.
- It is forbidden to touch the device if you are barefoot and with wet or damp body parts.
- It is forbidden to pull, unplug, twist the electrical wires coming out of the appliance, even if it is disconnected from the power supply.
- It is forbidden to step on the device with your feet, sit on it and/or place any kind of object on it.
- It is forbidden to spray or throw water directly onto the device.
- Scattering, abandoning or leaving packaging material (cardboard, staples, plastic bags, etc.) within the reach of children is prohibited as it can be a potential source of danger.

- Any routine or extraordinary maintenance operations must be carried out with the machine stationary, without power supply.
- The plastic cover can only be removed by qualified operators.
- Do not put your hands or introduce screwdrivers, wrenches or other tools on moving parts.
- The machine manager and maintenance worker, must receive the appropriate training and instruction to perform their duties in a safe situation.
- It is mandatory for operators to be familiar with personal protective equipment and accident-prevention rules required by national and international laws and standards.
- Maintenance, repair, disposal and recovery work can only be carried out by competent personnel, licensed and certified by a recognized and accredited body in the relevant nation.

WARNING

- Do not use means to accelerate the defrosting process or for cleaning other than those recommended by the manufacturer.(IEC 60335-2-40 ANNEX DD.2)
- The appliance should be stored in a room free of continuously operating ignition sources (for example: open flames, an operating gas appliance, or an operating electric heater).(IEC 60335-2-40 ANNEX DD.2)
- Do not pierce or burn.
- Keep in mind that refrigerants may have no odor.
- The refrigerant circuit of the appliance is filled with the amount of R290 refrigerant gas necessary for its operation. R290 gas is a category A3 flammable gas, characterized by a very low coefficient of global warming potential (GWP = 3).
- The water heater is filled with an R290 refrigerant gas charge of 0.15 kg. It is not allowed to exceed the indicated amount of gas.
- Refrigerant recharging can only be done by qualified personnel with proper equipment.(IEC 60335-2-40 Annex HH)
- Ensure that the equipment and installation environment comply with applicable national regulations.

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.
- 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.
- 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.

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 , 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 polysty-rene, 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.

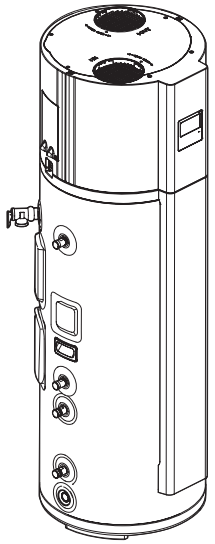
OPERATION WARNING

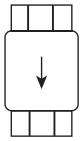
- Do not remove the front panel. Some parts inside are dangerous to touch, besides a machine malfunction may be caused.
- The pressure-relief device is to be operated regularly to remove lime deposits and to verify that it is not blocked.
- **DANGER**: The operation of the thermal cut-out indicates a possibly dangerous situation. Do not reset the thermal cut-out until the water heater has been ser-viced 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), hydro-gen 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 recommend-ed 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 hydro-gen 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.

2. 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.

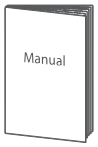
2.1 Content of packaging



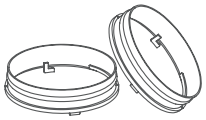


One way valve ×1

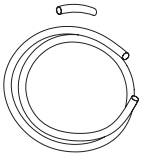
Filter ×1



User's manual ×1

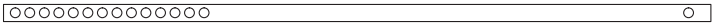


Air duct connector ×2



or

Condensate drain pipe ×2

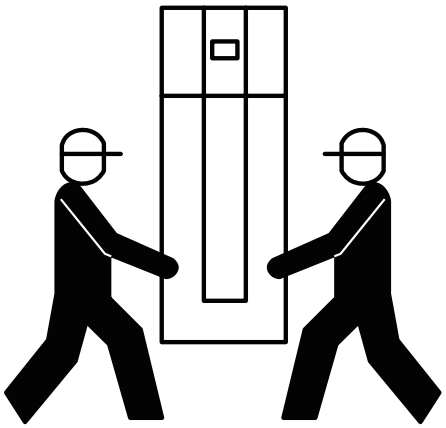


Fixing strip ×1

2.2 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.

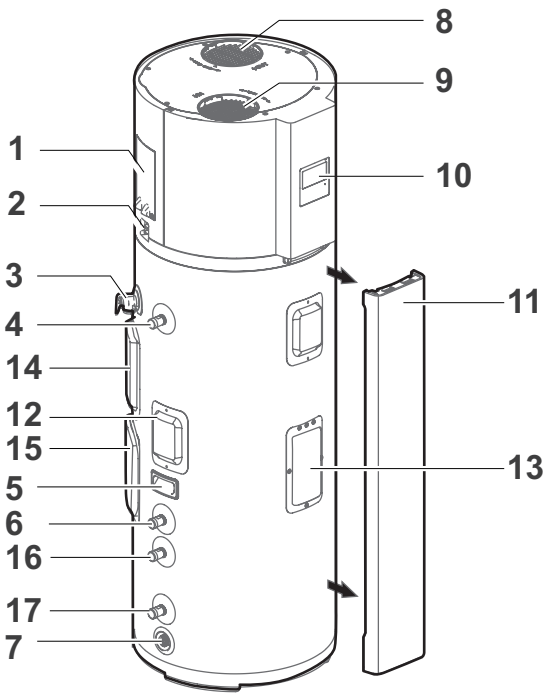


2.3 Structure

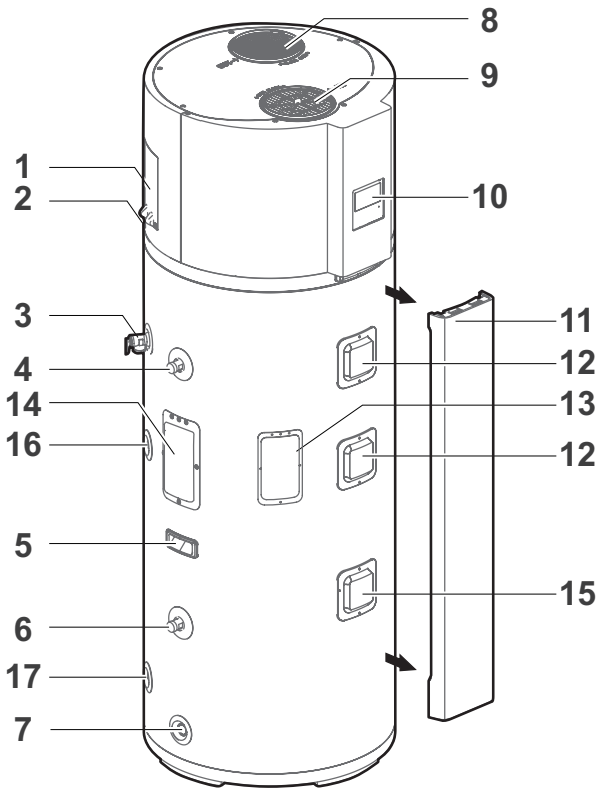
When ordering spare parts, please provide:

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

MELORIA 190 S

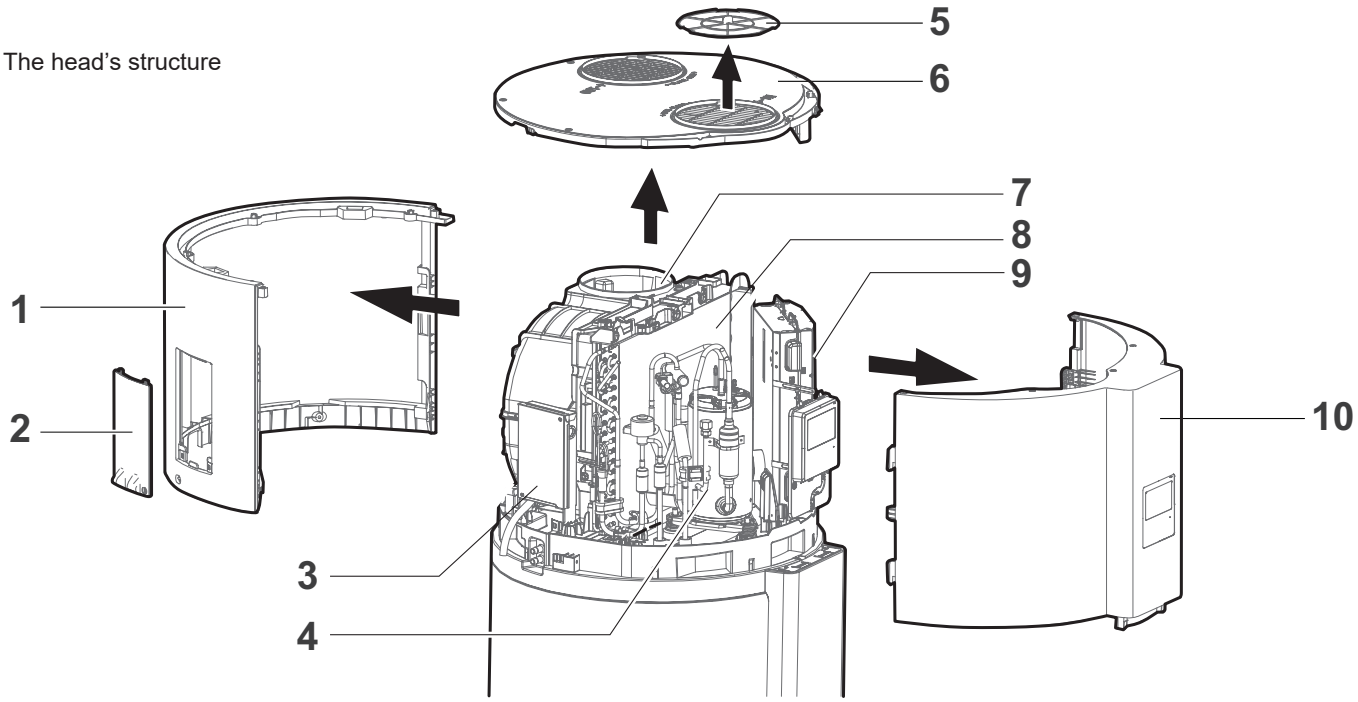


MELORIA 300 S



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	magnesium rod
13	TCO + Temperature sensor fixation
14	electronic anode (optional)
15	electrical heater
16	solar/boiler inlet
17	solar/boiler outlet

The head's structure



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

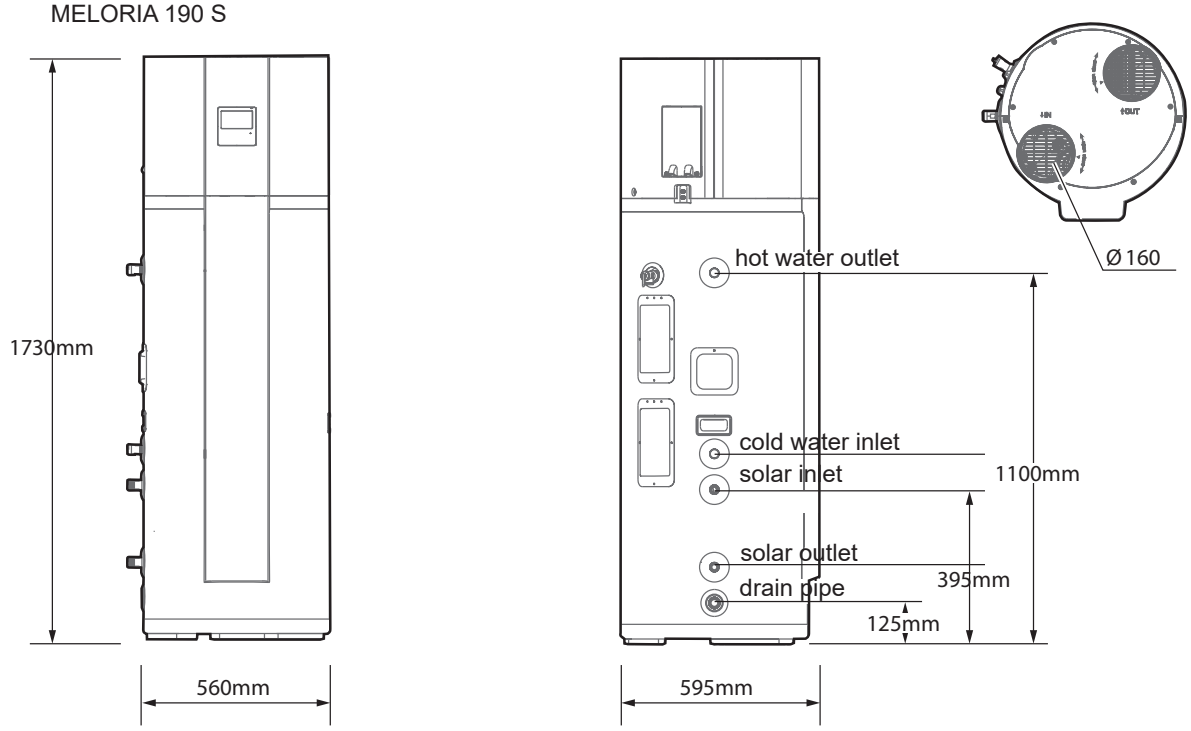
FLAMMABLE CONTENTS UNDER PRESSURE.

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 or even death.

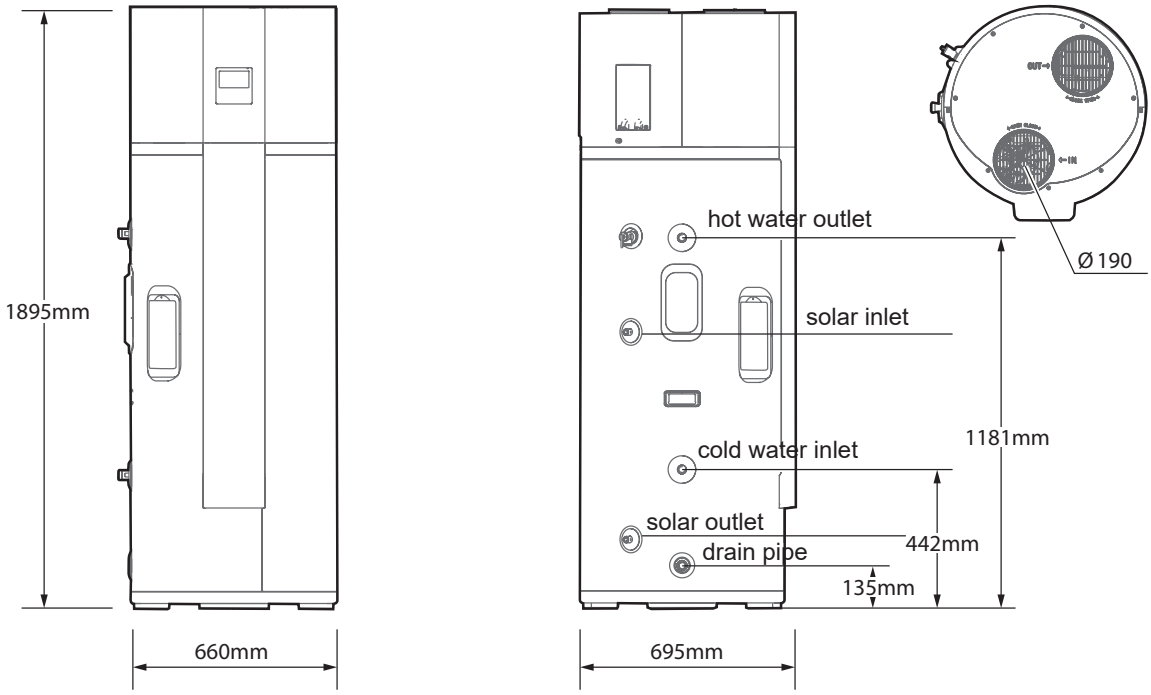
2.4 Dimension & connections

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

MELORIA 190 S



MELORIA 300 S



2.5 Technical features

Model		MELORIA 190 S	MELORIA 300 S
UNIT GENERAL INFO			
Water tank capacity		181 L	270L
Net weight		94 kg	132 kg
Dimension		560×595×1730 mm	660×695×1895 mm
Refrigerant		R290 (0.15 kg)	
Running air inlet temperature		-7~43°C (E-heater:-20~46°C)	
Max. hot water temperature (heat pump)		65°C	
Max. hot water temperature (e-heater)		70°C	
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 m³/h	450 m³/h
Indoor sound power level (2)		51 dB	51 dB
Outdoor sound power level (2)		54 dB	54 dB
PERFORMANCE (EN 16147) (3)			
Load profile		L	XL
Water heating energy efficiency class		A+	A+
Water heating energy efficiency / η		130.40%	128%
COP_{DHW}		3,14	3,13
Maximum volume of mixed water at 40°C-V_{40}		245 L	345 L
Reference hot water temperature-θ_{wh}		53°C	53°C
Rated heat output		1.10 kW * h	1.33 kW * h
Heating up time-t_h		07:47 hh:mm	09:02 hh:mm
Annual electricity consumption		785 kW * h	1312 kW * h
Stand-by power input(P_{es})		26 W	22 W
TANK			
Material		Steel tank with vitreous enamel coating	
Cathodic protection		Magnesium rod anode	
Insulation thickness		42 mm 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
Protection		Over-load Protector, Temp Controller & Protector, Electric Protector.	
Fusible link type		T5A 250VAC/T16A 250VAC	
Insulation protection rating		IP21	
SOLAR COIL			
Material		SUS316L	SUS316L
Surface		0.6m²	1.1m²
Max. pressure		1.0MPa	1.0MPa

NOTE:

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

(2) Data 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; Inlet water = 10 °C; Inlet air temp = 7 °C DB / 6 °C WB) * according to European regulation 812/2013.

3. INSTALLATION

WARNING

- The installation of the equipment must be carried out by qualified personnel; the installation must be carried out in accordance with national regulations and to all additional requirements of local authorities.
- Do not use means to accelerate the defrosting process or for cleaning other than those recommended by the manufacturer.(IEC 60335-2-40 ANNEX DD.2)
- Do not pierce or burn.
- Keep in mind that refrigerants may have no odor.
- Prohibited to install the appliance near other heat-generating appliances or near materials that are flammable or hazardous.
- Do not install appliances that require air for operation, such as boilers and open chamber gas water heaters, in the same installation room.
- The electrical system, water system and installation room must comply with the nation's current installation and safety standards.

CAUTION

- Verify that the installation space is suitable for the minimum installation clearances and product overall dimensions given in this manual as well as the overall dimensions of all hydraulic safety components and accessories.
- Installation without ductwork: check that the installation room has a minimum volume of 20 m^3 and that said room has adequate air exchange.
- Installation with ducting: check that air ducting can be installed so that outside air can reach. Such ducts must not contain sources of fire ignition.
- The installation of this device is intended to be indoors.
- The electrical system, the plumbing system and the installation room itself, must comply with current national installation and safety regulations.
- The device must not be in communication (with or without conduits) with environments characterized by aggressive atmospheres, such as in the presence of solvents or acidic vapors.
- Verify that the IP rating indicated on the device is compatible with the selected installation room.
- Install the appliance as close as possible to hot water tapping points to minimize heat loss.

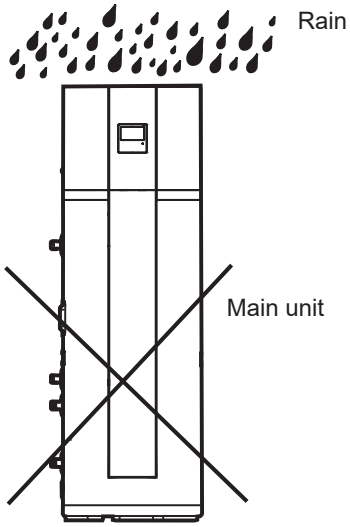
3.1 Before installation

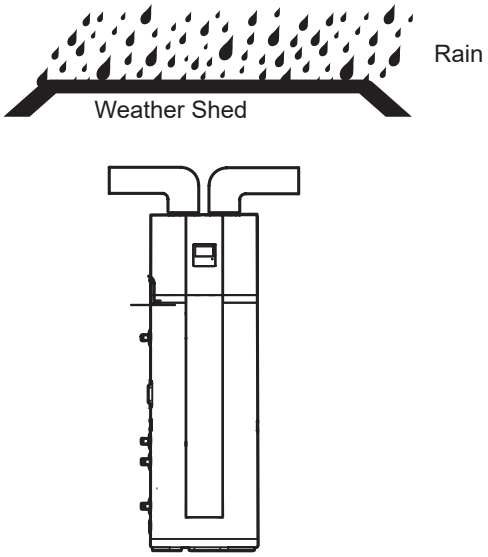
3.1.1 Location requirements

- **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.





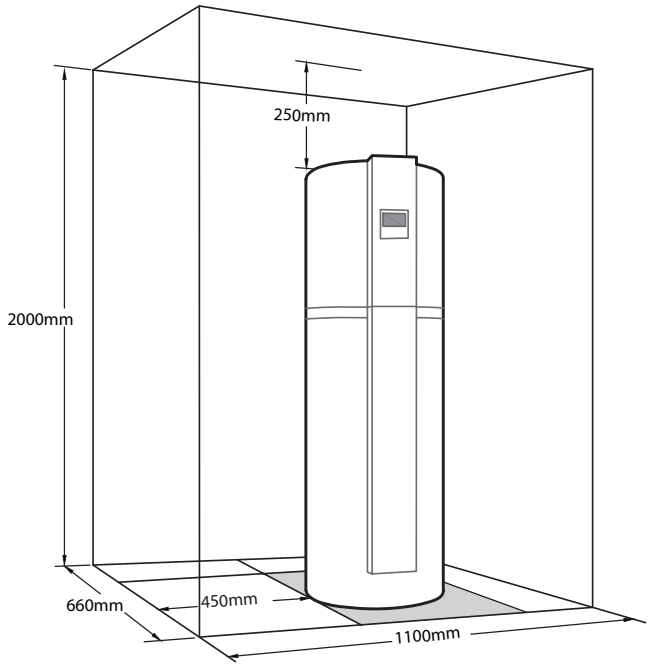
- Enough space for installation and maintenance shall be preserved.
- The ground surface should be flat, and inclined no more than 2°.
- The ground must able to bear the weight of the unit and suitable for installing the unit without increasing noise or vibration.
- To smoothly drain condensate water 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

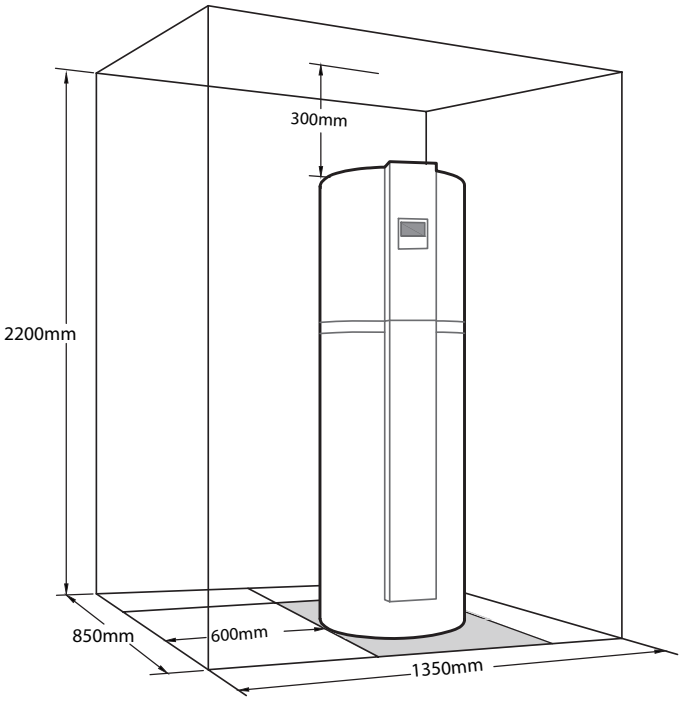
- If the unit is installed on the balcony, the water full weight should not exceed the load-bearing limit of the balcony. Besides, protect the unit from adverse weather conditions such as low temperatures and/or rain. Remember that the equipment has IP21 protection.
- If the unit has to be installed 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.

3.1.2 Maintenance space requirements (unit: mm)

MELORIA 190 S



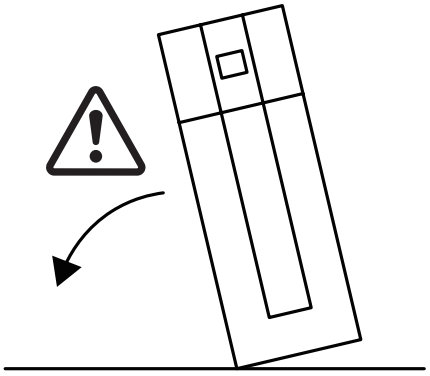
MELORIA 300 S



3.2 Fixing method

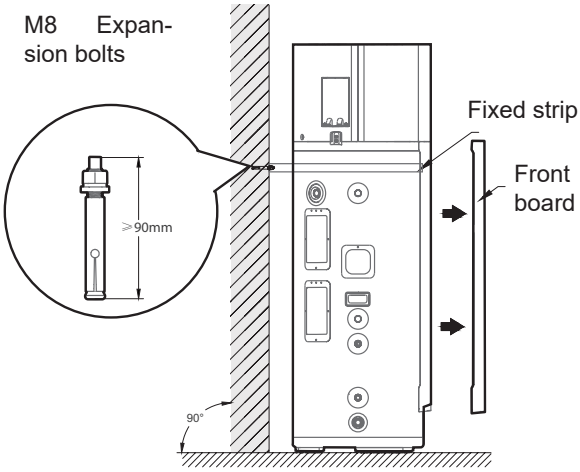
CAUTION

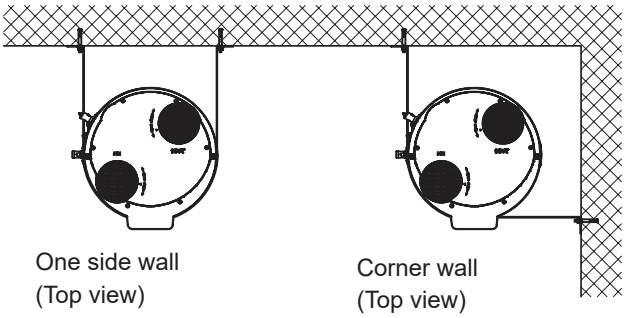
In order to prevent accidental fall, please fasten the water heater to the walls.



Water heater fixing steps are as follows:

1. Take off the front decorative board.
2. Install the expansion bolts 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.





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).

3.3 Hydraulic connection

Integrated Components			
1	Heat pump	5	Solar thermal coil
2	Hot water outlet	6	Solar coil Inlet
3	Cold water inlet	7	Solar coil outlet
4	Solar water tank temperature sensor		
Additional Components Required			
8	Drainage outlet and valve	14	Solar collectors
9	Automatic thermostatic mixing device	15	Expansion vessel
10	Mechanical overtemperature protector for solar water pumps	16	Safety valve
11	Solar pump	17	External boiler
12	Solar electronic controller	18	Water pump AC contactor
13	Solar collector temperature sensor		

Note: The additional components above 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.

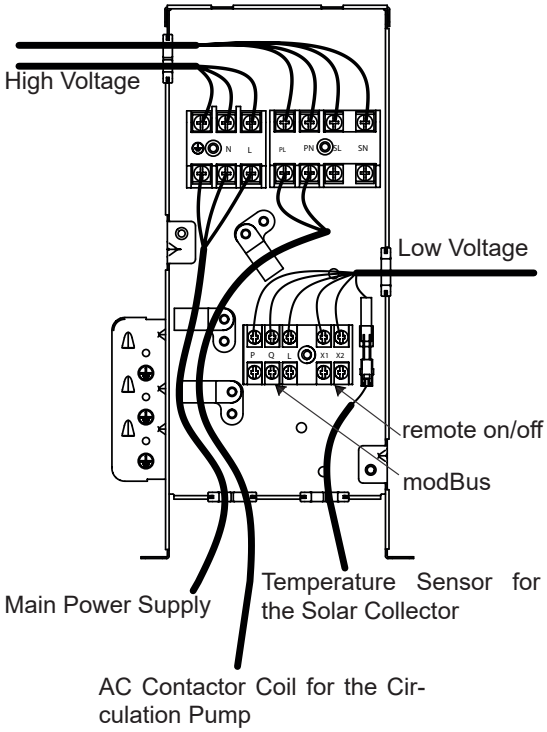
3.3.1 Integration with solar thermal system

Explain:

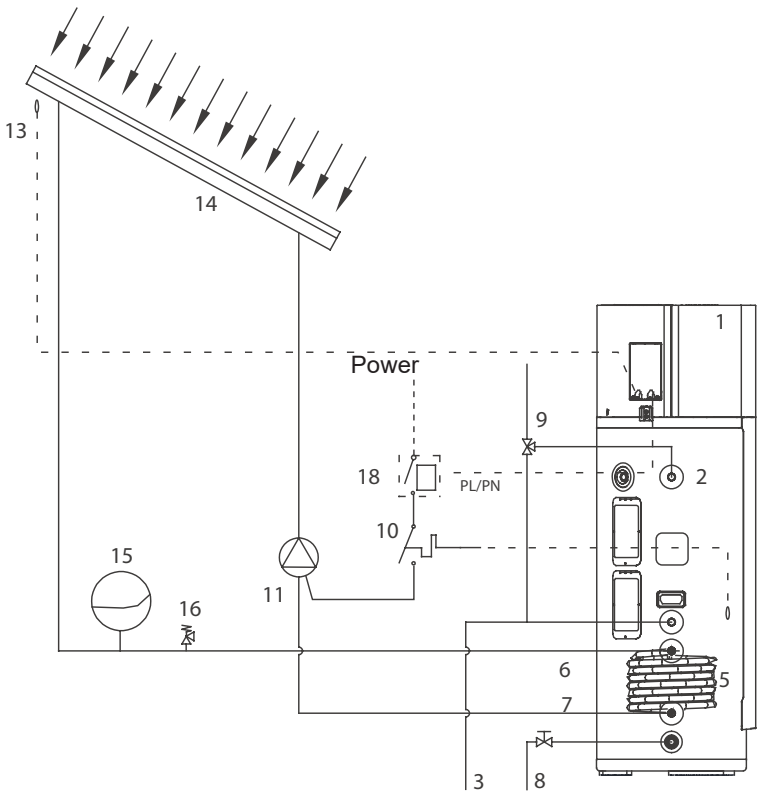
- The solar collector is a heat pump water heater that is compatible with solar energy collection function. It needs to be used correctly. Improper use and modification may cause equipment damage, property damage, and personal injury.
- The accessory of system (8-18) needs to be designed and selected by professionals and must comply with their specifly regulatory requirements.
- The hydraulic connection diagram is only a functional demonstration and cannot fully represent the actual piping connection.

CAUTION

- The solar collector temperature sensor need to be installed at the highest temperature position of the solar collector.
- The system needs to add an over temperature controller, which can store high-temperature hot water when the solar collector exceeds the temperature limit.



Hydraulic Connection with Solar thermal System



1	heat pump water heater unit
2	domestic hot water
3	water inlet
5	water inlet
6	Heat exchange coil
7	hot water inlet from solar panel
8	water return from solar panel
9	drain
10	thermostatic mixing valve
11	mechanical thermostat
13	circulating pump
14	solar panel probe
15	solar panel
16	solar circuit expansion vessel
18	solar circuit safety valve

CAUTION

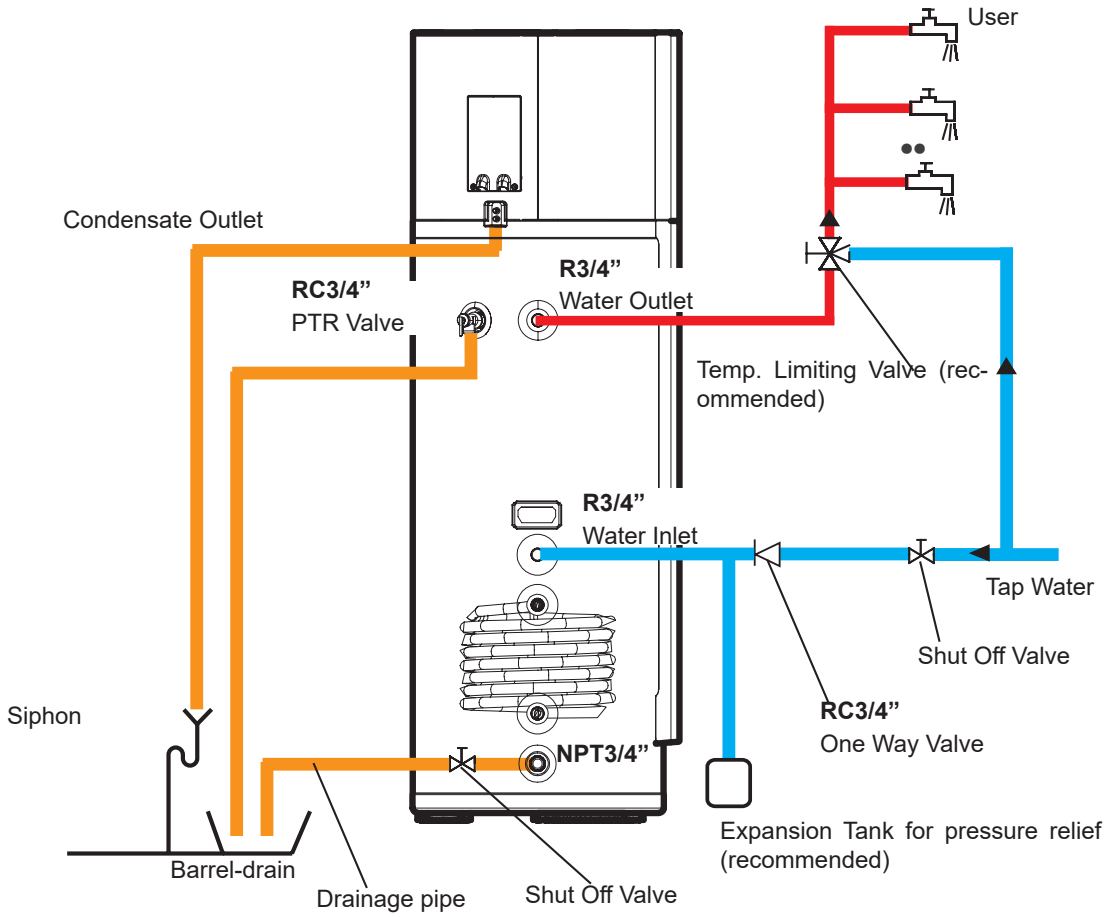
- It is recommended to install the solar collector and DHW heat pump as close together as possible. It is essential to properly insulate the pipes between the two. This will reduce the thermal losses of the system.
- The solar system piping and fittings can reach a very high temperature during use, please check the temperature before touching to advoid scalding.

Technical requirements:

- When the system is installed in a cold environment, the pipeline from the solar circuit to the storage tank should be insulated, and it is recommended to mix water and ethylene glycol to ensure anti freezing protection at low temperatures. If necessary, heating can be applied to the circulating water circuit.
- The solar collection circuit may generate a large amount of high-temperature water and gas. It is recommended to add automatic exhaust valves and automatic water replenishment valves.
- During the cyclic heating process of solar collector pipes, water will expand and steam could be generated in the solar collector and pipelines, resulting in an increase in volume. It is mandatory to add expansion vessel and safety valves to the pipes. And the liquid discharged by the safety valve needs to be directed to an appropriate drainage point to avoid burns.
- The height difference and length issues should be considered in the circulation water pipe system of the heat collection pipe to avoid the problem of insufficient flow rate of the heat collection fluid caused by insufficient power of the recirculation pump.
- A high-temperature circuit breaker temperature controller should be installed on the water tank to prevent overheating caused by heat collection, which can lead to burns or cracking.

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.



NOTE

- Connect water pipes as the above figure.
- 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**

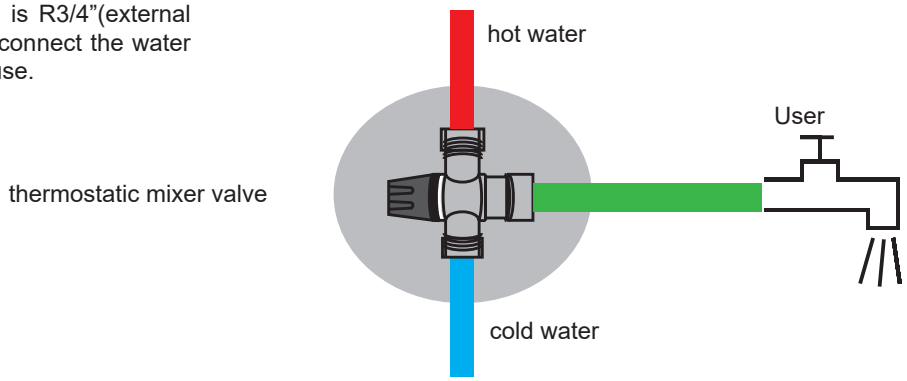
The spec of the water inlet thread is R3/4”(external thread). Use well-insulated pipes to connect the water inlet to the house's water supply. Install the one way valve (thread RC3/4”) provided in accessories to the inlet pipe to prevent water from flowing backwards.

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.

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 the figure on the previous page.

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**

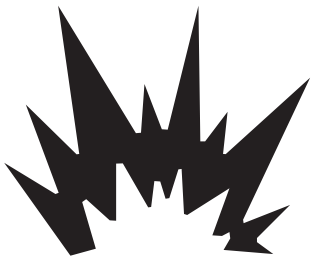
The spec of the safety valve connecting thread is RC3/4”(internal thread) and it was installed already.

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

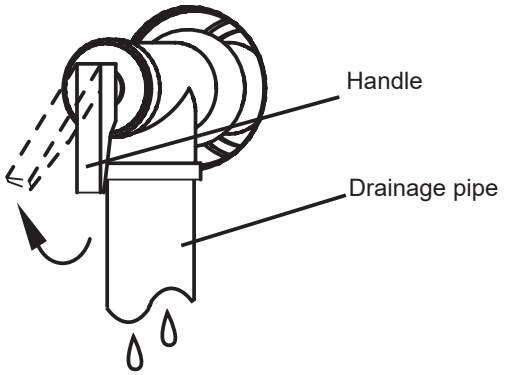
- In case of installation at a place where outside temperature below freezing point, insulation must be provided for all hydraulic components.
- The handle of PTR valve should be pulled out once per half a year to make sure that there is no jam of the valve. Please beware of burn, beware of the hot water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

WARNING

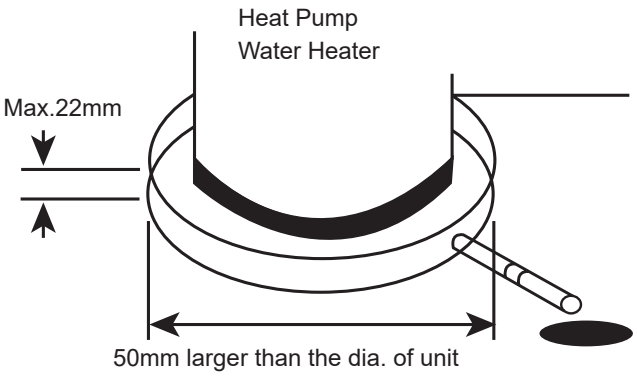


EXPLOSION

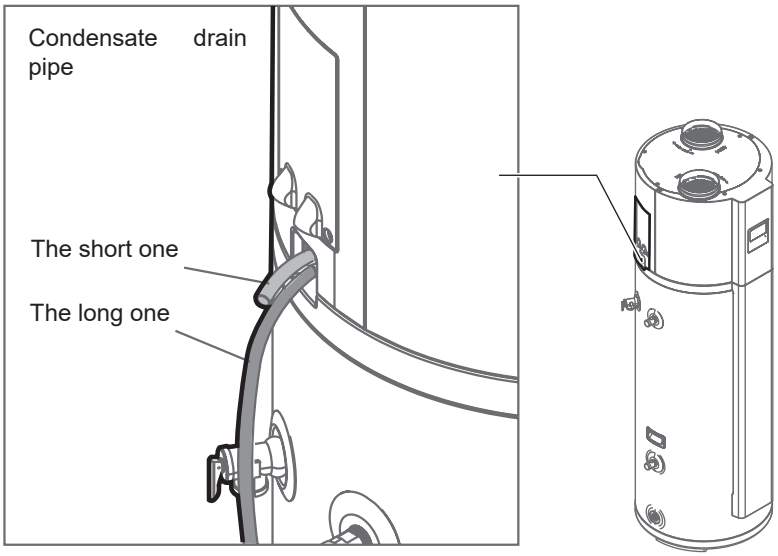
Do not block off the safety valve drainage pipe.
It will cause explosion and injury, if do not comply with the above instruction.

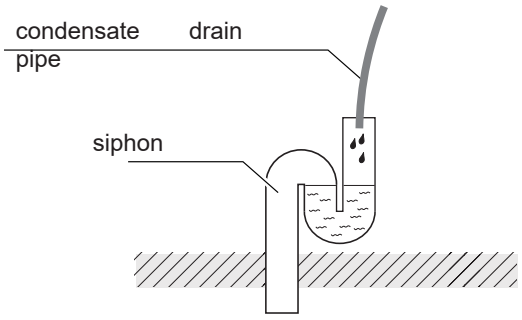


Tips:
Condensate may be leaked from unit if drainage pipe is blocked or unit operates in high humidity environment, a drainage pan is recommended as shown as following figure.



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.

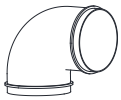




3.4 Air duct connection

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.

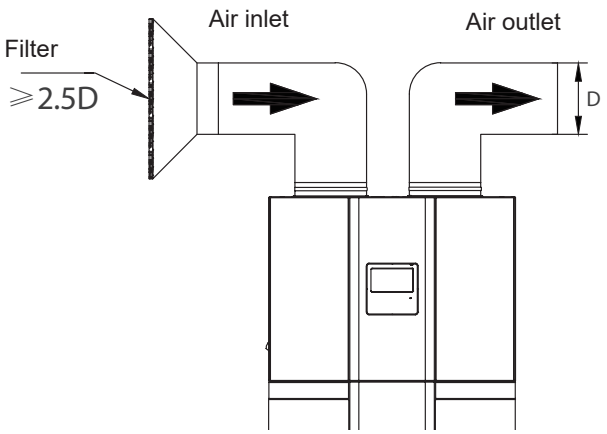
		1m PVC/HDPE straight pipe	PVC/HDPE 90° curv e	Filter
Type				
181L (Ø160)	Pressure drop(Pa)	2,5	9,5	19,0
	Equivalent length(m)	1,0	3,8	7,6
270L (Ø190)	Pressure drop(Pa)	2,0	8,0	15,2
	Equivalent length(m)	1,0	4,0	7,6

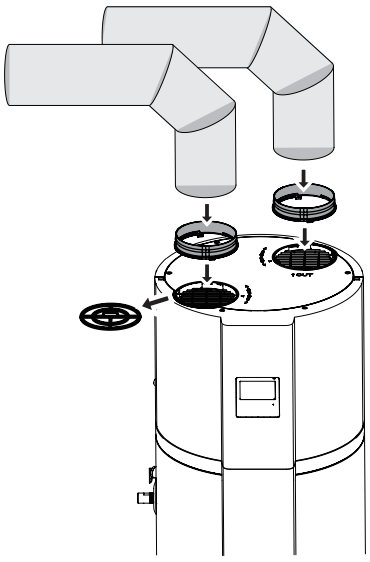
It is necessary to enter engineering mode and set parameter F40 according calculated pressure drop, as shown in the following table.

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.
- 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.

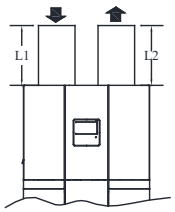
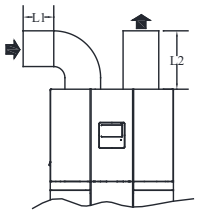
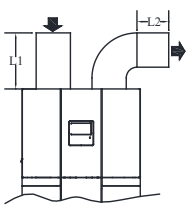
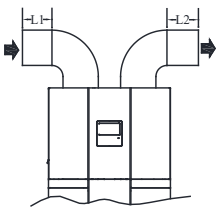




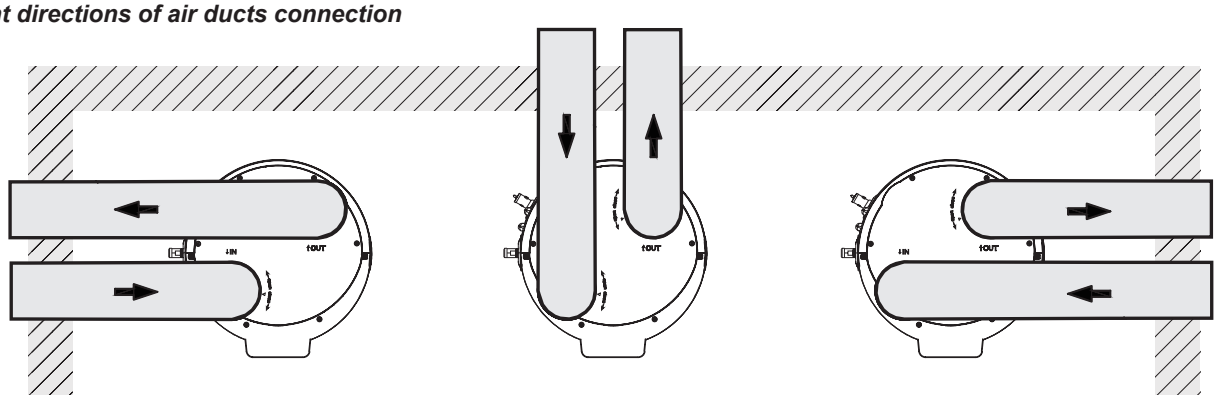
The grille or filter must be provided by the owner. The recommended mesh size is around 1.2 mm.

3.4.1 Typical installation

Different ways of air ducts connection

Type					
181L	Maximum piping length L1+L2 (without filter)	32	28	28	24
270L		40	36	36	32

Different directions of air ducts connection



3.5 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.□
- If the appliances that are intended to be permanently connected to fixed wiring, an all-pole disconnection device which has at least 3mm clearances in all poles, the installation of a residual current device (RCD) having a rated residual operating current not exceeding 30 mA, and disconnection must be incorporated in the fixed wiring in accordance with the wiring rules.
- 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.

3.5.1 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.

Description	Value
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

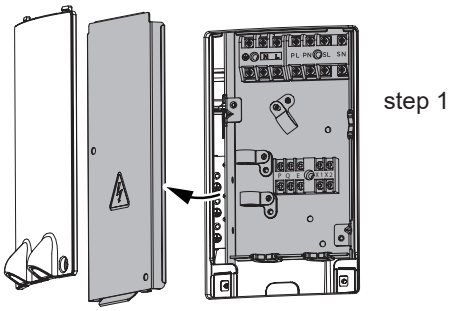
Follow local regulations and electricity suppller company requirements. The information in the manual is the minimun requirements.

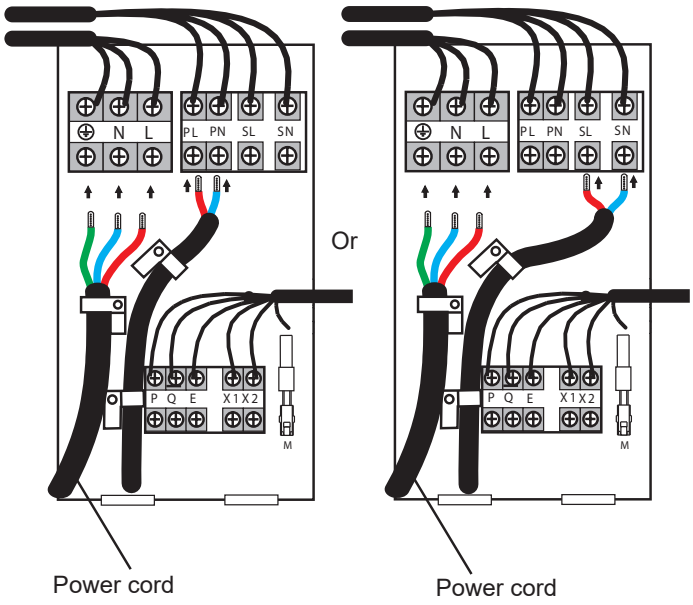
3.5.2 Power cable connection

The steps for connecting power cables are as follows:

1. Remove both screws and take off the junction cover; remove both screws and take off the metal protective cover;
2. Route the power cable through the bottom cable hole; connect the power cable to ⏚, N, L and fix the cable with the cable tie; the power cable should be routed through reserved left hole on the junction box cover.Put the metal protective cover and junction box cover back.

* wiring Guidelines shown in maintenance technical manual.



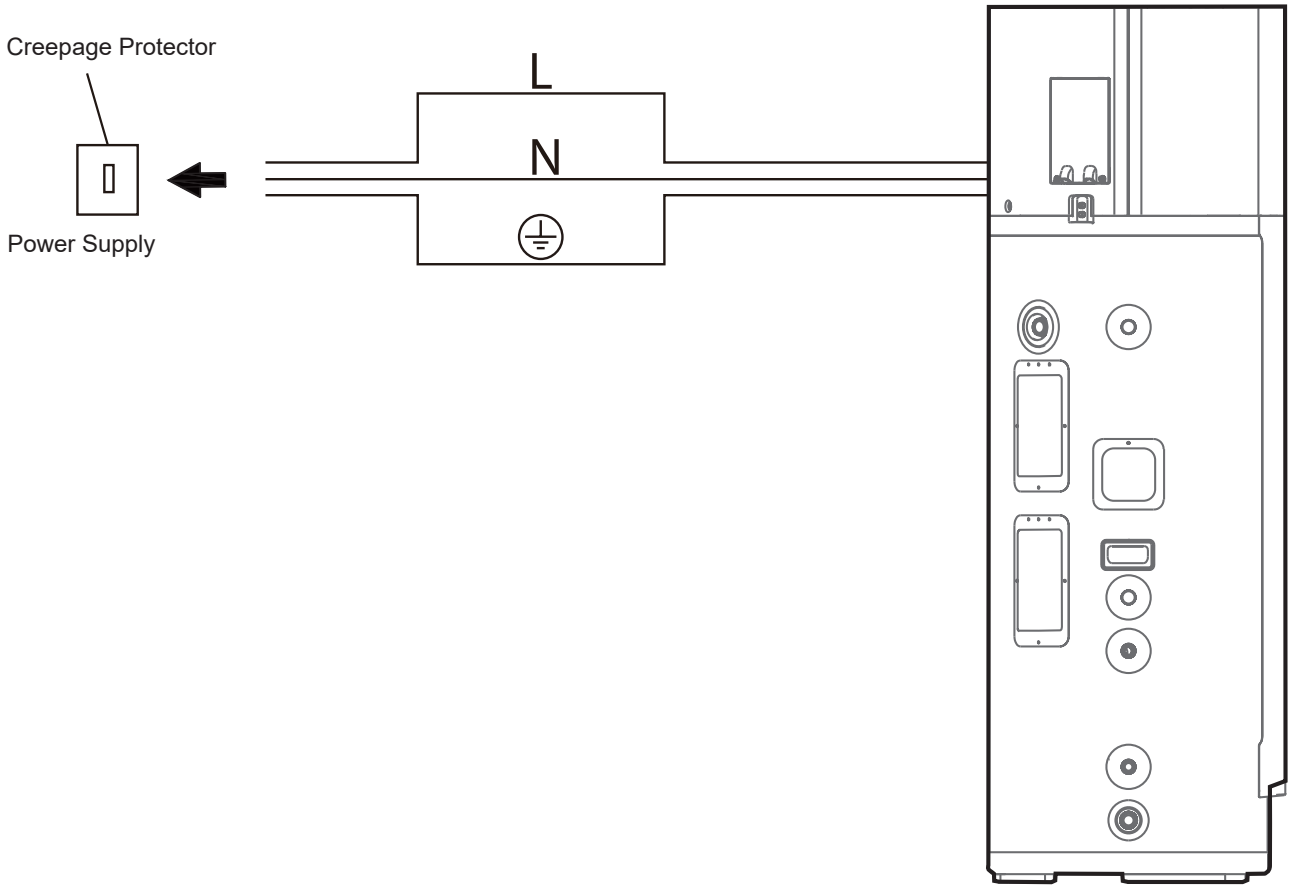


NOTE

- Additional cables need to be connected by professional personnel and connected to either PL and PN or SL and SN depending on the actual situation.
- The cross-sectional area of Additional cables shall not be less than 1.0 mm².
- Using wire strippers, strip the rubber jacket from both ends of the signal cable to reveal approximately 15cm (5.9”) of wire. Strip the insulation from the ends. Using a wire crimper, crimp u-lugs on the ends.
- When connecting the wires, strictly follow the wiring diagram found inside the electrical box cover.

WARNING

- Ensure the ground wire has the longest length, to prevent it from being pulled out.
- The unit must be installed with a RCD near the power supply and must be effectively earthed.
- Additional cables need to comply with code design 60245 IEC 57, i.e. H05RN-F and must be installed by professionals.
- To prevent loosening and breakage, the routing of strong/weak power supply lines needs to be secured through cable clamps.



3.5.3 Electrical connections with different integrated systems

With this unit system, one different systems is available (as shown in figure at the page *19*).

The integrated system correspond to the electrical wiring connections showed in the figure and there is also one different settings in the engineering mode.

WARNING

It is important to ensure that the electrical connections done, are appropriate to the engineering settings.

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.
- The temperature of the solar collector pipe may be too high, please do a good job of heat insulation along the way, and prohibit contact with the power supply wire to avoid damaging the wire.

3.6 Installation checklist

3.6.1 Location & space

Description	Check
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°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.	□

3.6.2 Hydraulic connection

Description	Check
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.	□

3.6.3 Electrical connections

Description	Check
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.	□

3.6.4 Post Installation review

Description	Check
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.	□

4. USE

4.1 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.

4.2 Initial start up

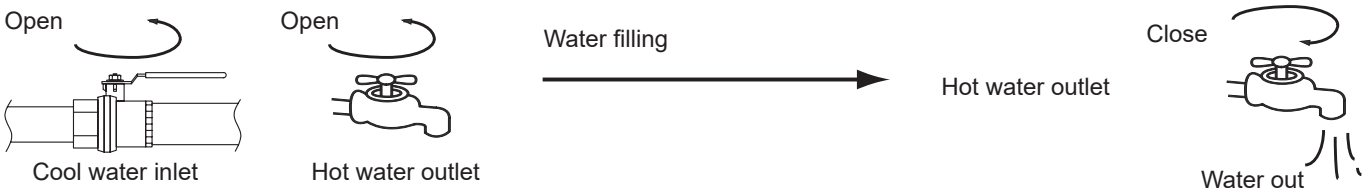
Follow the steps below to start up the unit.

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:

Open the inlet valve for cold water and any hot water tap.

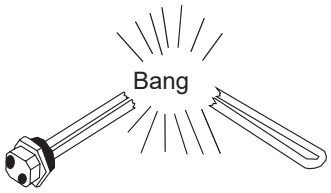
When water flows continuously through the tap, the tank is full. Close the tap. The filling finished.



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.

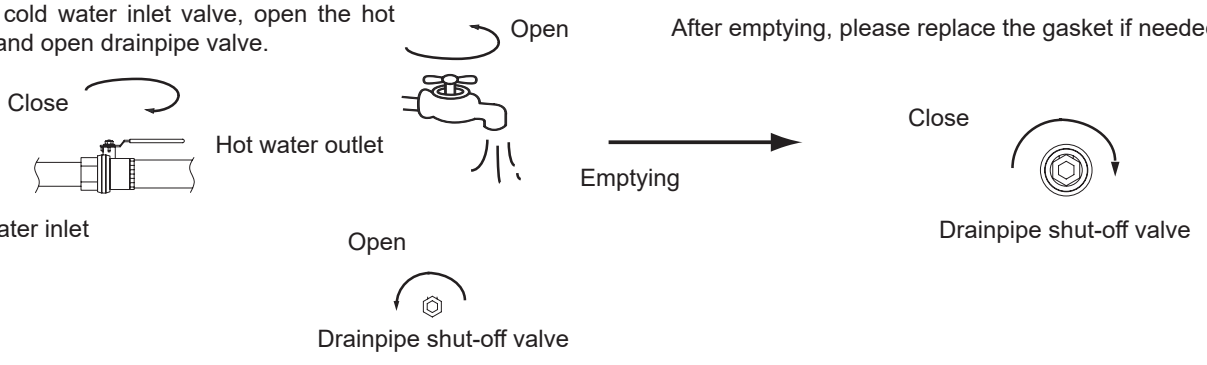


CAUTION

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

Close the cold water inlet valve, open the hot water tap and open drainpipe valve.

After emptying, please replace the gasket if needed.

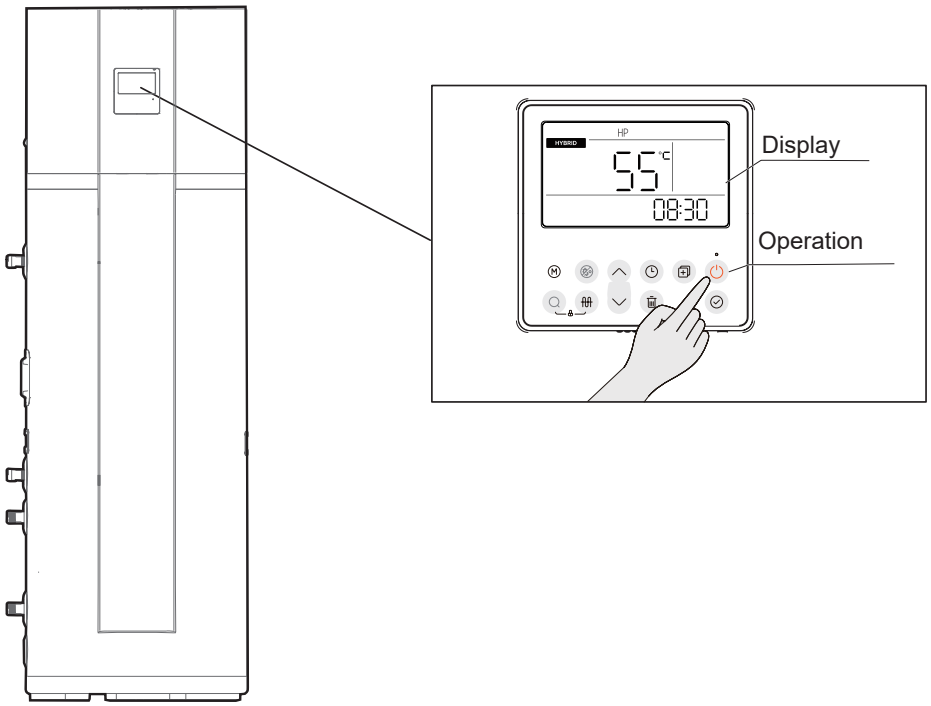


CAUTION

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

2. Start up

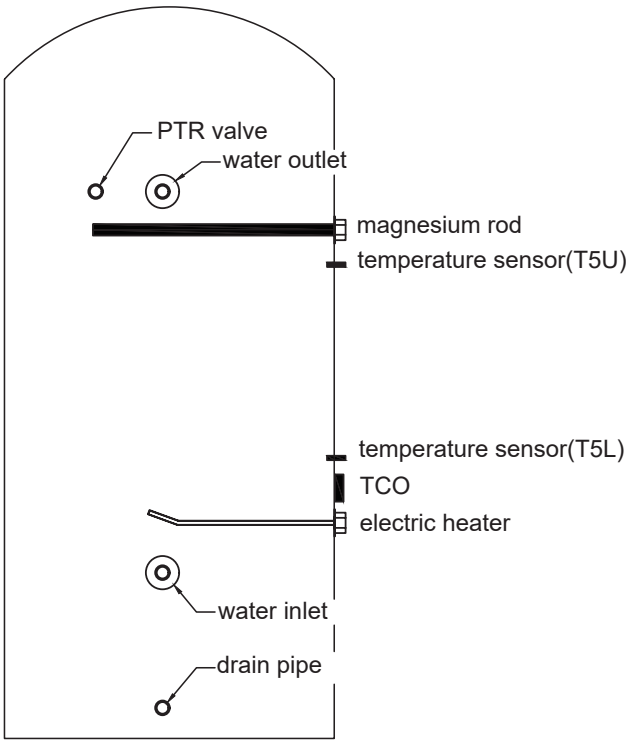
After powered on, the display will light up.



- 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.
- **Change the running mode:** press the Ⓜ button to select running mode.
- **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.

4.3 About running

System structure figure



left view

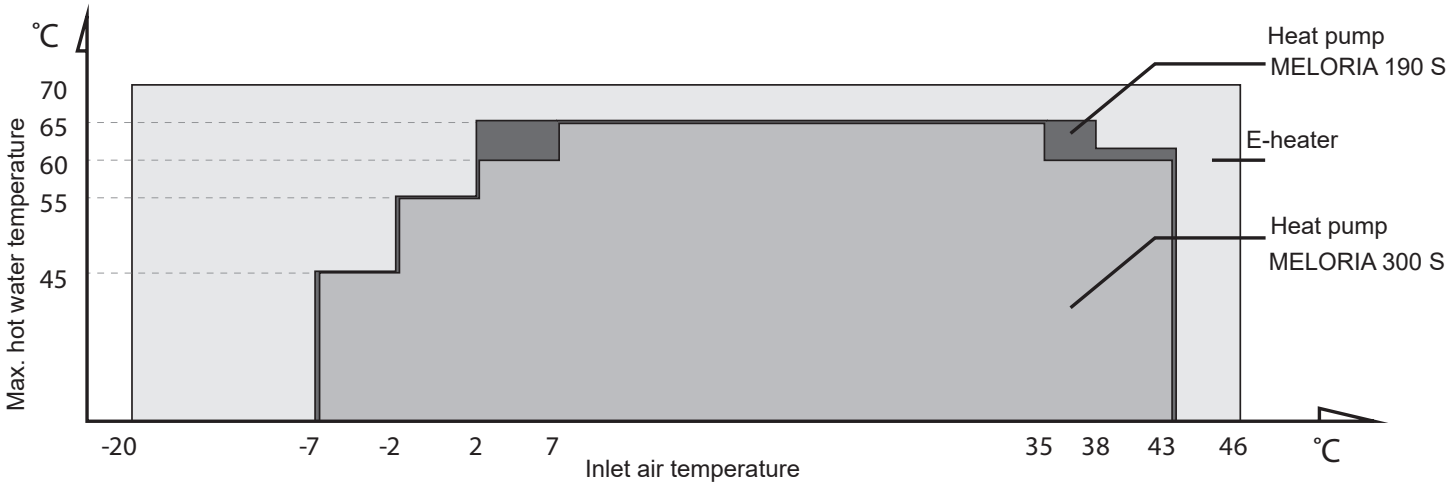
Water temperature display

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:



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.

MELORIA 190 S Heat-up Time (h, water temperature 9 ~ 55°C)

-	MODE		
INLET AIR TEMP.(°C)	**ECONOMY**	**HYBRID**	**E-HEATER**
-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

MELORIA 300 S Heat-up Time (h, water temperature 9 ~ 55°C)

-	MODE		
INLET AIR TEMP.(°C)	**ECONOMY**	**HYBRID**	**E-HEATER**
-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 TC O

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 [TROUBLESHOOTING] 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

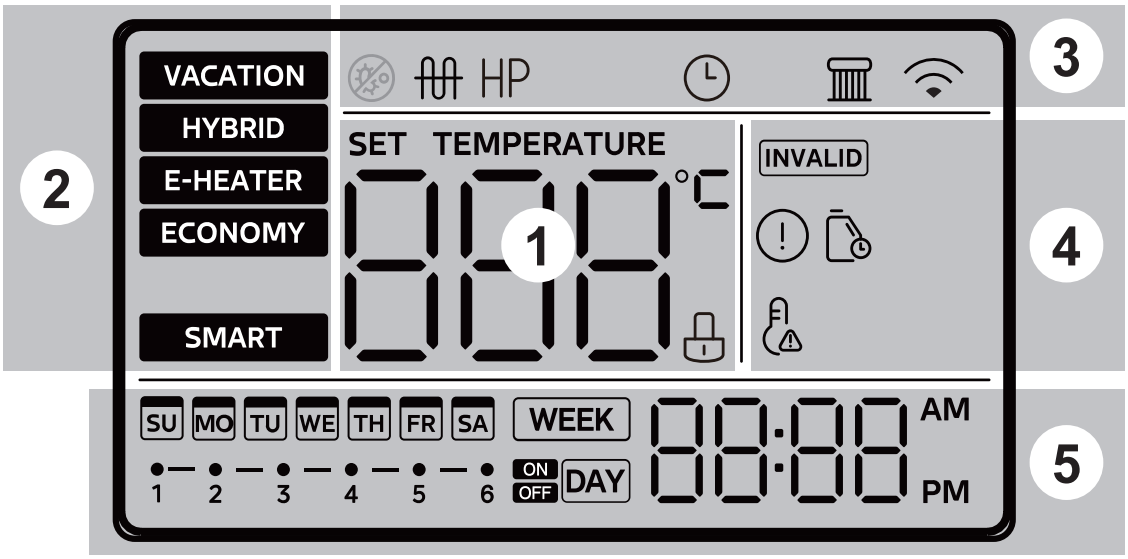
If there is no operation of button for 10s, screen will be locked (extinguished) . Push any vaild buttons to unlock buttons (lighted) . Enter engineering mode 30 channel to switch on-off.

NOTE

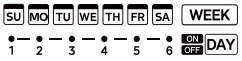
It is recommended to connect to wireless network before using the daily timer function, weekly timer function, weekly disinfect, vacation mode and smart mode. If there is no network connection, please ensure that the correct time is set on the control panel before using these functions. When there is no network connection, please set it correctly on the panel after the unit is powered off for a long time.

4.4 Control panel explanation

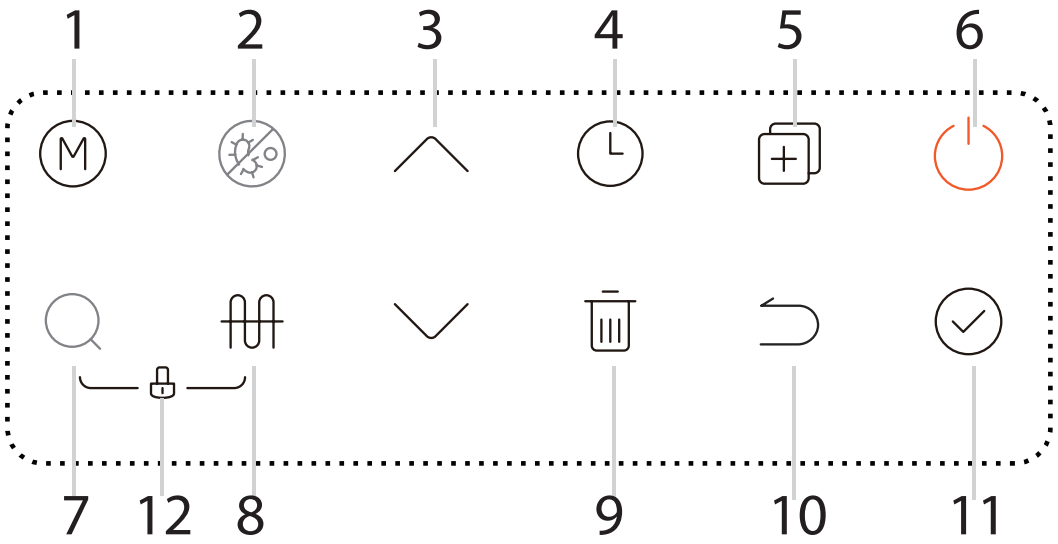
4.4.1 Display explanation



Area	Icon	Description
1 Information		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°C 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 affeting the use experience)

Area	Icon	Description
3 Function		It will be lighted when the disinfection process is active.
		E-heater: It will be lighted 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 lightened when Wireless is connected; will be extinguished 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.

4.4.2 Button explanation



NOTE

The unit will conduct a self-test within 10 seconds of being powered on, and it is recommended that no operations be performed during this time. 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**

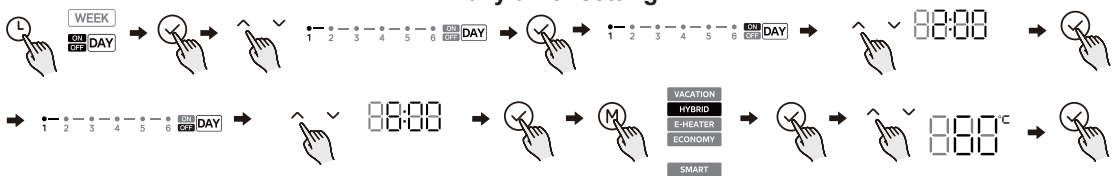
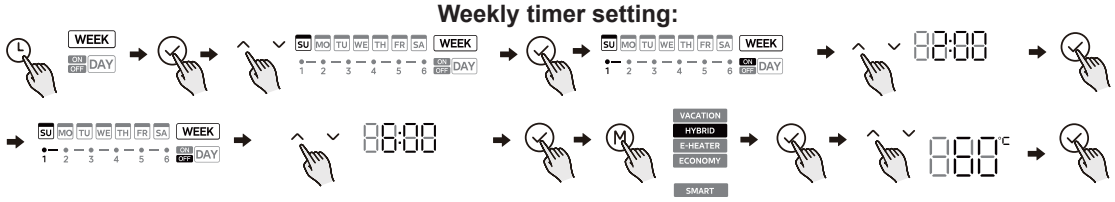
Press to select VACATION, then unit will automatically heat water to 15°C for the purpose of energy saving during vacation days. Press to adjust vacation days and press to make the setting effective.

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

Icon	Description
1	**MODE** Press this button to switch mode. The default mode is ECONOMY mode. ECONOMY→ SMART→ VACATION→ HYBRID→ E-HEATER **NOTE**: If there is insufficient hot water in the default mode, please choose the E-HEATER mode/ HYBRID mode.
2	Click the button to force the turn on of disinfection function.
3	**UP & DOWN** If screen is unlocked, press to ad just 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.

Icon	Description
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	**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 channels in the engineering mode without authorization to avoid affecting the normal operation of the unit or causing damage to the unit. **ENGINEERING MODE only for qualified person.**
6	**POWER ON/OFF** Press the button to start / stop the unit.
7	**SEARCH / QUERY MODE** 1.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. 2.After 30 seconds from the last operation,or by pressing the or , you can directly exit the query mode 3. 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.

Icon	Description
11	**CONFIRM** If screen and buttons are unlocked, press it to upload setting parameters after setting any parameter.
12	**CHILD LOCK** 1. In the main screen, long press the key combination for 2 seconds to enter the child lock state; 2. In the state of child lock, long press the key combination again for 2 seconds to release the child lock state; 3. In the locked state, there will be an icon next to the water temperature display.
13	**CONNECTIONG THE WIRELESS FUNCTION** 1. 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; 2. 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	TS	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 0: OFF 1: LOW 2: MID 3: HIGH Dc Fan Real speed/10
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	-	-
19	FT	-	0: Ac Fan 1: Dc Fan
20	HT	-	1(Eheater control type)
21	HP	-	0(Compressor control type)

No.	parameters	unit	Explenation
22	F S 1	-	-
23	S 1 o	-	Tank capacity
24	P 4 P	-	Four-way valve status
25	U U	-	0
26	U 1	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	1 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

To turn on /off the electrical heater.

NOTE

- In order to avoid to affect the effectiveness of the hot water heating process, we recommend users not to turn off the electrical heater.

1	Long press for 3 seconds to enter engineering mode and select F6 channel.		Press the up and down keys to operate
2	F6 set to 0 means the electrical heater is deactivated and will not turn on during heating time.	 	Press the up and down keys to operate Confirm
3	F6 set to 1 means the electrical heater is activated and will be turned on during heating time according to the need.	 	Press the up and down keys to operate Confirm

To active the Weekly disinfect function .

NOTE

- Weekly disinfect function activation will turn on the electrical heater. The factory setting is off (desactivated) by default.

1	Long press for 3 seconds to enter engineering mode and select F7 channel.		Press the up and down keys to operate
2	F7 set to 0 means the weekly disinfect functions is turn off.	 	Press the up and down keys to operate Confirm
3	F7 set to 1 means the weekly disinfect functions turn on.	 	Press the up and down keys to operate Confirm

4.5 Use Your Appliance with the NetHome Plus App

- 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.

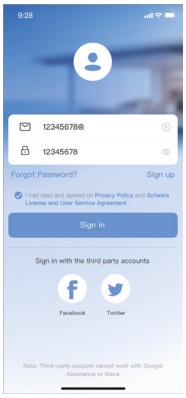
Android Phone users: scan Android QR code or go to google play, search “Nethome Plus” App and download it.
IOS users: scan IOS QR code or go to APP Store, search “Nethome Plus” app and download it.

Android

IOS

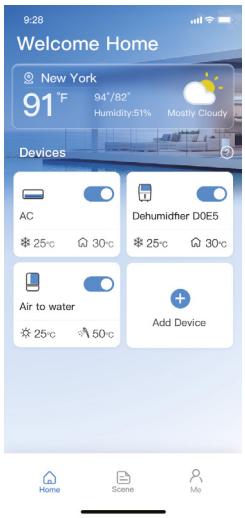
Step 2: Register or Login account

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

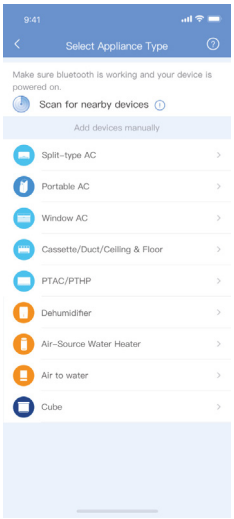


Step 3: Add your appliance

Tap the “+” icon to add a appliance to your NetHome Plus account.

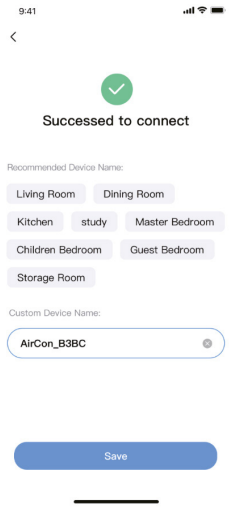


Step 4: Choose Air Source Heat Pump Water Heater



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.
Wireless module models:
EU-SK110, US-SK110:
FCC ID: 2ADQOMDNA23
IC: 12575A-MDNA23
BLE:2402-2480MHz,
TX Power:<10dBm
Wireless: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 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.

4.6 Wiring diagrams

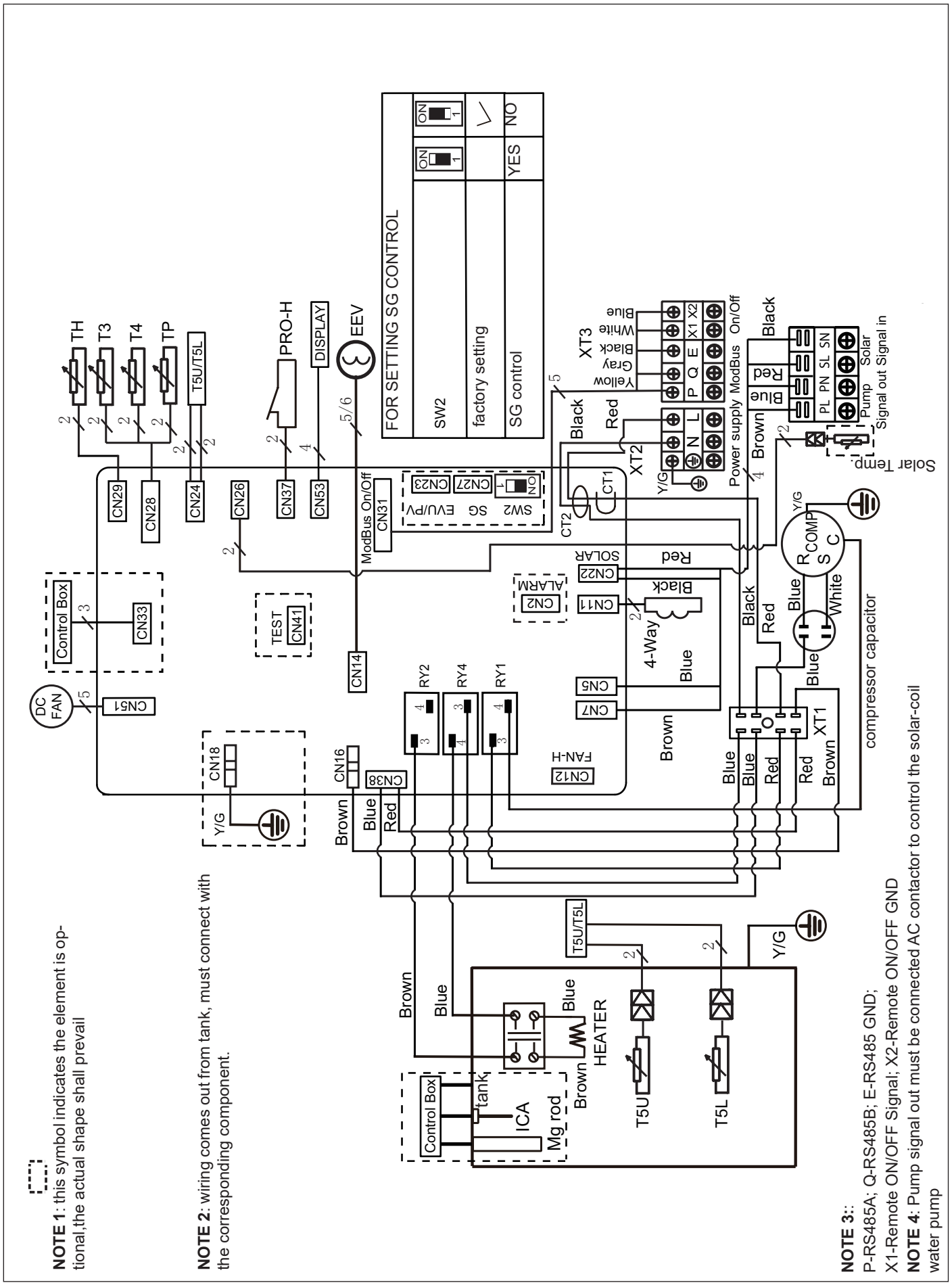


Fig. 1 Wiring diagram

Code	Description
CT1	Current transformer
CT2	Zero sequence current transformer
T3	Evaporator temperature sensor
T4	Ambient temperature sensor
T5U	Tank temperature sensor (upper)
T5L	Tank temperature sensor (lower)
TP	Discharge temperature sensor
TH	Suction temperature sensor
EEV	Electronic expansion valve
XT1-3	Mid terminal base
T5M	Solar temperature sensor
ICA	Impressed current anode

SMART GRID		
Operating behavior	**EVU/PV**	**SG**
Normal operation (Default)	Open	Closed
Increased operation output	Closed	Open
	Closed	Closed
Decreased operation output	Open	Open

5. TROUBLE SHOOTING

5.1 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 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 tankand 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 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 presure-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 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.

5.2 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. 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).

5.3 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.

5.4 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; Temp. sensor broken; 3. 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.

5.5 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, 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 ≥ 3.0 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.

6. MAINTENANCE

GENERAL WARNING

- Do not exceed the allowable amount of R290 refrigerant of 0.150 kg (MAXIMUM QUANTITY).
- Refrigeant R290 is flammable and odorless.
- Maintenance and repair must be carried out by qualified personnel possessing the appropriate tools and equipment. The training of qualified personnel must be certified by nationally recognized organizations.
- It is prohibited to carry out repair work on the refrigerant circuit and any component that is part of it, at the site where the appliance is installed. Carry out such work in a workshop set up for repair and maintenance of equipment containing flammable gases and by qualified and competent personnel.
- Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimised.(IEC 60335-2-40 ANNEX DD.4.2)
- Work shall be undertaken under a controlled procedure so as to minimise the risk of a flammable gas or vapour being present while the work is being performed
- All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.
- The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. nonsparking, adequately sealed or intrinsically safe.(IEC 60335-2-40 ANNEX DD.4.5)
- If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO_2 fire extinguisher adjacent to the charging area.(IEC 60335-2-40 ANNEX DD.4.6)
- No person carrying out work in relation to a refrigerating system which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept.(IEC 60335-2-40 ANNEX DD.4.7)
- Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.(IEC 60335-2-40 ANNEX DD.4.8)

ELECTRICAL PARTS WARNINGS

- Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.(IEC 60335-2-40 ANNEX DD.4.10)
- Initial safety checks shall include (IEC 60335-2-40 ANNEX DD.4.10):
  - » that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
  - » that no live electrical components and wiring are exposed while charging, recovering or purging the system;
  - » that there is continuity of earth bonding.
- Sealed electrical components shall not be repaired.(IEC 60335-2-40 ANNEX DD.4.10)
- Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.(IEC 60335-2-40 ANNEX DD.7)
- Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer's technical department for assistance.(IEC 60335-2-40 ANNEX DD.4.10)

REFRIGERANT LEAK DETECTION WARNING

- Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.(IEC 60335-2-40 ANNEX DD.8)
- The following leak detection methods are deemed acceptable for all refrigerant systems (IEC 60335-2-40 ANNEX DD.8):
  - » Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity can be inadequate, or can need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the lower flammability limit (LFL) of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed.
  - » Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine can react with the refrigerant and corrode the copper pipe-work.
- If a leak is suspected, all naked flames shall be removed/extinguished.
- Do not perform soldering or brazing operations if refrigerant gas is present in the circuit.

REFRIGERANT REMOVAL AND CIRCUIT RECHARGE WARNING

- It is very important, given the presence of flammable refrigerant, to follow best practice according to conventional and recognized procedures in national and local regulations (IEC 60335-2-40 ANNEX DD.9):
  - » safely remove refrigerant following local and national regulations
  - » evacuate
  - » purge the circuit with inert gas (Nytrogen)
  - » evacuate
  - » continuously flush with inert gas (Nytrogen) when using flame to open circuit
  - » open the circuit.
- The refrigerant charge shall be recovered into the correct recovery cylinders.
- For equipment containing flammable refrigerants other than A2L refrigerants, the system must be purged with oxygen-free nitrogen to make the equipment safe for flammable refrigerants.(IEC 60335-2-40 ANNEX DD.9)
- This process may need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems. (IEC 60335-2-40 ANNEX DD.9)
- For appliances containing flammable refrigerants, other than A2L refrigerants, refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum. This process shall be repeated until no refrigerant is within the system. When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place. This operation is absolutely vital if brazing operations on the pipe-work are to take place.(IEC 60335-2-40 ANNEX DD.9)
- Ensure that the outlet for the vacuum pump is not close to any potential ignition sources and that ventilation is available.(IEC 60335-2-40 ANNEX DD.9)

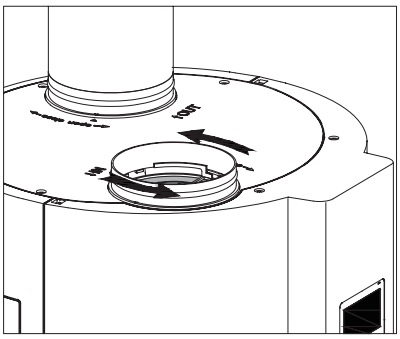
RECHARGING OPERATIONS WARNING

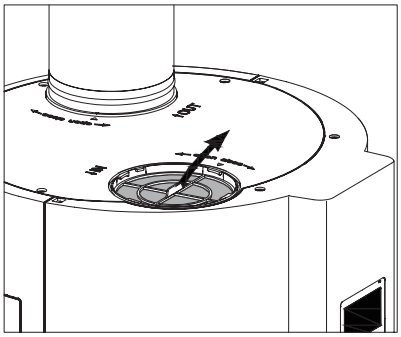
- Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.(IEC 60335-2-40 ANNEX DD.10)
- Cylinders shall be kept in an appropriate position according to the instructions.(IEC 60335-2-40 ANNEX DD.10)
- Ensure that the refrigerating system is earthed prior to charging the system with refrigerant.(IEC 60335-2-40 ANNEX DD.10)
- Label the system when charging is complete (if not already labelled).(IEC 60335-2-40 ANNEX DD.10)
- Extreme care should be taken not to overfill the refrigeration system.(IEC 60335-2-40 ANNEX DD.10)
- Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas. The system shall be leak-tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.(IEC 60335-2-40 ANNEX DD.10)

CAUTION

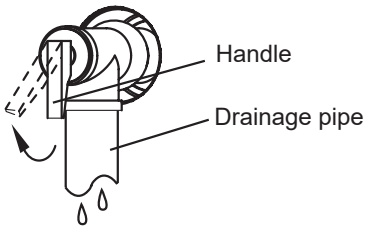
Always turn off your Air-source Heat Pump Water Heater system and disconnect its power supply before cleaning or maintenance.

- 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.





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



CAUTION

The follow ing 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 be en 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	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 (**)		Every 6 months	Replace it if it has been used out
5	PTR valve	Every 6 months	Check for blockage

(*) with electronic anode

(**) without electronic anode

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

7. DISPOSAL AND RECYCLING

WARNING

- Decommissioning and disposal operations must be carried out by qualified personnel in accordance with local and national regulations.
- Good practice for safely recovering all refrigerants is recommended.
- Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant. It is essential that electrical power is available before the task is commenced.(IEC 60335-2-40 ANNEX DD.11)
- The following procedure is recommended (IEC 60335-2-40 ANNEX DD.11):
- Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed.
- Ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.
  - » Become familiar with the equipment and its operation
  - » Isolate system electrically.
  - » Before attempting the procedure, ensure that
  - » mechanical handling equipment is available, if required, for handling refrigerant cylinders;
  - » all personal protective equipment is available and being used correctly
  - » the recovery process is supervised at all times by a competent person;
  - » recovery equipment and cylinders conform to the appropriate standards.
  - » Pump down refrigerant system, if possible
  - » If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
  - » Make sure that the cylinder is situated on the scales before recovery takes place
  - » Start the recovery machine and operate in accordance with instructions.
  - » Do not overfill cylinders (no more than 80 % volume liquid charge).
  - » Do not exceed the maximum working pressure of the cylinder, even temporarily.
  - » When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
  - » Recovered refrigerant shall not be charged into another refrigerating system unless it has been cleaned and checked.

REFRIGERANT GAS RECOVERY WARNING

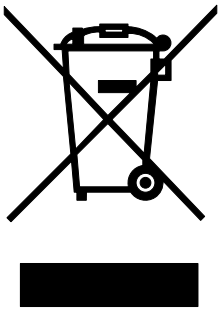
- When removing refrigerant from a system, whether for service or decommissioning, good practice rules must be followed so that all refrigerant is removed safely.
- When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.
- The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of the flammable refrigerant. Consult manufacturer if in doubt. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition.
- The recovered refrigerant shall be processed according to local legislation in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.
- If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The compressor body shall not be heated by an open flame or other ignition sources to accelerate this process. Draining of oil from a system shall be carried out safely.

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.

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The manufacturer reserves the right to modify his/her products as deemed necessary, without altering the basic characteristics of the products themselves.

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